

FRONTIERS
OF
ENTREPRENEURSHIP
RESEARCH
2009

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We will cherish the pleasant memories of the 2009 BCERC, our colleagues and our new friends, and the camaraderie we enjoyed at the conference, until we meet again.

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ACQUIRING FINANCIAL RESOURCES TO FORM NEW VENTURES: PECKING ORDER THEORY AND THE EMERGING FIRM



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ABSTRACT

The “pecking order theory” of financing says that firms and individuals will use personal funds before acquiring external debt and equity. The theory has been applied to the study of established firms, but it is not clear whether entrepreneurs follow a “pecking order” when financing their start-ups. This study investigates the types of financial resources acquired over time, by individuals in the process of creating a new venture. It uses data from the Panel Study of Entrepreneurial Dynamics to investigate relationships between sources of funding and characteristics of the firm and entrepreneur. Results indicate that entrepreneurs do follow a pecking order when financing. However, contrary to most studies on entrepreneurial financing, results indicate that individual characteristics (e.g., race and prior start-up experience) may have an effect on the source of funding acquired.

INTRODUCTION

Nearly all research on business financing has focused on established firms (Astebro & Bernhardt, 2003; Chaganti et al., 1995; Ou & Haynes, 2006; Verheul & Thurik, 2001). This shift from traditional, corporate finance research to small firm financing has enhanced our understanding of how entrepreneurs finance their businesses. However, little work has been done on how entrepreneurs use financial resources in their nascent ventures. Nascent ventures are not up-and-running firms, but are firms in the process of being created. Understanding how entrepreneurs use and acquire financial resources during the nascent stage is critical to our understanding of the link between resources and new firm creation.

Pecking Order Theory (POT) is a framework for examining firm financing that states that firms attempt to reduce information asymmetries and maintain ownership by first using internal financing, followed by external debt and equity (Myers, 1984; Berger & Udell, 2003). POT was originally devised to examine the financing of large corporations, but it has also been applied to small and medium-sized businesses. This study examines the entrepreneur’s acquisition of financing at the earliest stages of a firm’s creation. Specifically, it explores how progression through the venture creation process affects the acquisition of financial resources, and whether nascent entrepreneurs first use personal sources of financing, followed by external debt, and then equity.

Using theory from research on the sources of funding for new ventures (Cassar, 2004; Gartner et al., 2009), and on pecking order and small firm financing (Holmes & Kent, 1991; Cosh & Hughes, 1994; Lopez-Gracia & Aybar-Arias, 1999; Zoppa & McMahon, 2002; Fitzsimmons & Douglas, 2006), this study offers a set of hypotheses about the sources of financing that nascent entrepreneurs pursue. These hypotheses are tested using data from the Panel Study of Entrepreneurial Dynamics; a longitudinal dataset that tracks the efforts of entrepreneurs toward starting ventures.

The remainder of this paper proceeds as follows: First, a theoretical background on small firm financing and pecking order theory is provided. Second, hypotheses are presented on how certain characteristics of the firm and entrepreneur affect how financial resources are acquired over time. Third, the dataset, variables, and research design are described. Fourth, results of the data analysis are presented. The study concludes with a discussion of the findings' implications, and suggestions for further research.

THEORY DEVELOPMENT AND HYPOTHESES

Traditional finance theories are centered on agency conflicts between shareholders and debtholders. Up until the 1990s, the vast majority of finance studies focused on large corporations and publicly traded companies. Scholars began to realize that small firms, on the other hand, differ considerably from larger firms. Small and medium-sized businesses face different agency and information asymmetry challenges. For example, they are not likely to be publically traded or incorporated, which limits the sources of financing available to them. And, because they are not required to share as much information as public companies, they are information opaque (Ang, 1991). Financing decisions for small and new ventures may also be more complex because they are closely linked to the personal wealth or contacts of the owner/manager. Consequently, agency problems may be more intense as shareholders and partners are often made up of family and friends (Ang, 1992).

The "pecking order" model of firm financing is one method firms might use to address these agency problems. According to this theory, firms do not aim for a target debt ratio. Instead, firms select from funding sources that minimize the cost of capital (Myers, 1984; Myers and Majluf, 1984). In the case of the small firm or entrepreneur, personal sources are used first, external debt next, followed by outside equity. Equity is acquired last because the entrepreneur presumably has more information than the investor. The presence of significant information asymmetries causes the investor to charge a higher rate of return on equity than on debt (Frank and Goyal, 2003). Indeed, information asymmetry costs may be much higher for small firms than for large, and the pecking order framework may therefore explain a great deal of financing behavior by entrepreneurs (Scherr, 1993; Hall et al., 2000).

To the extent that information asymmetries increase the cost of capital the smaller (and younger) the firm, the more we would expect to see entrepreneurs engage in a "pecking order" financing strategy. But, at the nascent stage of the venture creation process, is it true that all financiers who expect to own or share in a firm's profits raise the cost of equity such that the entrepreneur is driven to use more personal sources of funding? If so, then it represents a significant resource barrier for the nascent entrepreneur to overcome. This study examines the issue using the Panel Study of Entrepreneurial Dynamics I (PSED I), a sample of individuals in the process of creating a business. This allows for testing of the pecking order theory in a unique context that also takes into account the passage of time.

Based on the financial categories in pecking order theory (personal funds, external debt, and outside equity), I develop hypotheses about how nascent entrepreneurs acquire financing during the venture creation process, taking into consideration characteristics of the firm, industry, and individual. Clearly, the main component of pecking order theory is time. According to the theory, entrepreneurs should use personal funds first. As time goes by they should use more and more debt and equity sources of financing.

H1: Nascent entrepreneurs will be more likely to use personal funds early in the venture creation process. As time goes by, they will be more likely to use external debt and outside equity.

The entrepreneur's expectations of the future size of the business will significantly influence whether personal and external sources of outside funds are acquired during the start-up process. Smaller companies would require less capital. Finally, the cost to access certain kinds of funding may decline the larger the firm. Ang (1992) finds that the high transaction costs faced by small businesses in securing outside financing may preclude some sources of funding. Cosh and Hughes (1994) and Cassar (2004) find that smaller firms use relatively less outside financing.

H2: Nascent ventures that are expected to be larger in size will more likely acquire external debt and equity than nascent ventures that are expected to be smaller in size.

Financial institutions and venture capitalists may consider the form of incorporation to be a signal of credibility. Prior evidence by Coleman and Cohn (2000), and Cassar (2004) suggest a positive relationship between incorporation and leverage and/or bank financing.

H3: Nascent ventures that are incorporated will more likely acquire external debt and equity than nascent ventures that are un-incorporated.

Agency conflicts between debt and equity holders tend to be higher for firms that are expected to grow more quickly. Michaelas et al. (1999) finds that leverage and debt are positively relative to future growth. Cassar (2004) finds that future growth is positively related to the use of bank financing.

H4: Nascent entrepreneurs who intend to start firms with higher rates of growth will more likely acquire external debt than nascent entrepreneurs who do not intend to grow.

Our categorization of financing into personal and external sources assumes that the entrepreneur will be required to put in more effort (e.g. preparation of a business plan and financial projections, and legally registering the firm) when seeking external funds. It also assumes that providers of these funds will require this type of information to closely monitor the start-up's performance.

H5: Nascent entrepreneurs that have completed financial projections will more likely acquire external debt and equity than nascent entrepreneurs who did not create financial projections.

Start-ups in more asset-intensive industries such as mining, manufacturing, and construction, would be expected to require larger capital outlays early-on compared to start-ups in service industries such as consulting, financial services, and consumer services.

H6: Nascent ventures in asset-intensive industries will more likely acquire external sources of financing than nascent ventures in service-oriented industries.

Characteristics of the entrepreneur may affect access to funding. For example, education and start-up experience may provide entrepreneurs access to funding networks that may otherwise not be available, or signal lower risk to outside investors. Verheul and Thurik (2001) and Haynes

and Haynes (1999) find that gender has no influence on the likelihood of getting a loan, whereas Carter and Rose (1998) find that women tend to use less institutional finance. Bates (1990) finds that owner educational background is a major determinant of the capital structure of small firms. Coleman and Cohn (2000) find that education is positively related to acquiring external loans. Findings on the effects of the personal wealth of the nascent entrepreneur on funding choice are mixed. Avery et al. (1998) find that the majority of small business loans are backed by personal commitments made by the entrepreneur. Cassar (2004) found that once firm characteristics were taken into consideration, the characteristics of the business owner do not affect the financing of the firm.

H7a: Male nascent entrepreneurs will more likely acquire external debt and equity financing compared to females.

H7b: Non-minority nascent entrepreneurs will more likely acquire external debt and equity compared to minorities.

H7c: Nascent entrepreneurs with higher levels of education will more likely acquire external debt and equity compared to nascent entrepreneurs with low levels of education.

H7d: Nascent entrepreneurs with more start-up experience will more likely acquire external debt and equity compared to nascent entrepreneurs with little industry experience.

METHOD

Sample

This study uses data from the Panel Study of Entrepreneurial Dynamics I (PSED). The PSED is a representative sample of working-age adults in the United States that were in the process of creating a new venture between 1999 and 2003. The first stage of the sampling procedure took place between July 1998 and November 1999, and involved a nationwide telephone screening of 64,622 households (Gartner et al., 2004). Two samples were created from the telephone screener: one made up of 830 nascent entrepreneurs; and a comparison group of 431 respondents not involved in starting a business. Respondents in the nascent entrepreneur group met each of the following criteria: they expected to be owners or part owners of a new firm; they had been active in trying to start a new firm in the previous 12 months; and the new venture had not had positive monthly cash flow covering expenses for more than 3 months. Follow-up interviews were conducted at 12, 24, and 36 months after the initial interview.

This study makes a number of corrections to the original data file. First, note that 384 of the 830 nascent entrepreneurs in the PSED are from two oversamples (female and minority). The first follow-up interview for the minority oversample actually took place at the time of the *second* follow-up interview for the rest of the PSED sample. Therefore, the variable names for the oversample respondents were recoded to match the item numbers in the rest of the sample. Second, a “cleaning” file written by Kelly Shaver in July 2006 was used to eliminate a number of problem cases. Cases excluded from the analysis include start-ups that are actually infant businesses with positive monthly cash flow, and start-ups that show expected non-person ownership of greater than 50%. Finally, this study does not use the 431 cases in the comparison group, and they are dropped from the analysis. The resulting sample consists of 817 nascent entrepreneurs.

Dependent variable

Personal, debt, or equity financing. Table 1 lists the different sources of financing from the PSED questionnaire, and illustrates how the different items were combined to construct the dependent variable. Personal sources reflect financing that comes directly from the entrepreneur, other members of the start-up team, spouses or household partners, 2nd mortgages, and credit cards. Respondents were classified as “personal only” if they acquired no external financing and used *only* personal sources. Funding sources were classified as “debt” if the questionnaire asked “... how much money has/have [source] loaned the business – money they expect to get back, with or without interest?” Debt financing includes money from a current employer; suppliers or subcontractors; personal finance companies; the Small Business Administration and other government agencies; family; friends; banks; and private investors. A funding source was classified as “equity” if the questionnaire asked “...how much money has/have [source] put into the business, expecting to share ownership and profits?” Equity sources of funds include funds from family and relatives; friends and business associates; federal, state, or local government agencies; banks; venture capitalists; and private investors.

Note that the questionnaire items related to funding sources in the PSED I are inconsistent across waves. Questions asking about one source of financing in Wave 1 might, in subsequent waves, disappear. And, questions that ask about sources separately in one wave (e.g. bank and venture capital financing), might be combined into one question later on. Analyses using PSED financial data must take all of this into account. For example, Wave 1 financing questions do not ask respondents about what was actually acquired, but rather about expectations of future financing behavior. To correct for this, two additional questionnaire items for each source of financing are considered. The first asks whether the respondent has asked [source] for funding for the new firm; the second asks whether that source agreed to provide the funds. If the response to both questions is “yes”, then the dollar amount for that source was included in the analysis. However, the principal Wave 1 items that ask about personal contributions (e.g., q198) do not ask about expectations. These questions ask what has actually been contributed to the nascent venture.

Although the questions on sources of financing are not consistent across waves, they are consistent in asking whether the funding should be categorized as debt or equity. For this study the dependent variable was coded “1” if the respondent used some external equity financing; “2” if some external debt, but no equity; and “3” if the respondent used only personal sources of financing. “Personal only” serves as the reference category for the multinomial logistic regression model.

Independent variables

Time in the venture creation process. The passage of time during which financial resources were acquired was calculated by observing the number of interview waves the respondent participated in. Data was collected across four waves. Individuals who either started a new firm or abandoned the process after Waves 1 or 2 were coded “1”. Waves 1 and 2 were combined because only one respondent acquired equity financing in the first wave (recall that the Wave 1 financing questions ask about external financing expectations, not what was actually acquired). Individuals who exited the process after Wave 3 were coded “2”, and those who remained through all four waves were coded “3”. Wave 4 is the baseline.

Firm and industry-level variables. Firm size is the log of the expected revenue in the fifth year of operations. The legal form of the business is a dichotomous variable coded “1” for non-incorporated start-ups and “2” for incorporated. Non-incorporated start-ups include sole-proprietorships, general partnerships, and limited partnerships. Incorporated start-ups include limited liability corporations, sub-chapter S corporations, and general corporations. Intent for firm growth is a self-reported measure coded “1” for respondents who “want the business to be as large as possible” and “2” for those who “want a size to manage by self or with key employees.” Financial projections identifies whether the nascent entrepreneur has prepared income states, cash-flow projections, or break-even analyses: “1” if they have; “2” if they have not been developed. Industry is a categorical variable, broken up into dummies for the analysis. The variable coding is based on the industry SIC codes: “1” for asset-intensive industries (agriculture, construction, mining, transportation, utilities, manufacturing); “2” for wholesale distribution and retail; and “3” for service-oriented industries (business, consumer, health and education, social). Team size is categorical and coded “1” for solo, “2” for partnerships, and “3” for teams of three or more.

Individual-level variables. Gender is a dichotomous variable coded “1” for female and “2” for male. Race is a categorical variable broken up into dummies and coded “1” for Other races, “2” for Hispanic, “3” for Black, and “4” for White. Education is categorical and coded “1” for individuals with a high school diploma, “2” for post-high school, “3” for college, and “4” for post-college. Finally, entrepreneurial experience is measured as the number of prior start-ups the respondent was involved in, and coded as “1” for none, “2” for one previous start-up, and “3” for two or more.

Design

The categorical dependent variable representing the three categories of financing (personal funds only, external debt, and external equity) was tested using multinomial logistic regression. The model estimates the odds of a respondent acquiring either debt or equity versus the use of only personal funds, given a set of predictor variables (i.e., time, firm characteristics, and individual characteristics). All analyses are weighted so that the sample better matches the general population. Of the 817 cases in the sample, 605 are used, since cases with missing values were dropped from the analysis.

RESULTS

Descriptive statistics

Table 2 shows a cross tabulation of the use of equity, debt, and personal funds by interview wave. In Waves 1 and 2, of those nascent entrepreneurs that acquired financing, about 5% did so from equity sources compared to almost 70% who used only personal funds. By Wave 4, half of all nascent entrepreneurs that acquired financing of any time acquired equity financing (i.e., the personal or institution providing the funds expected to own part of the new firm, or share in the profits). The difference between frequencies is statistically significant at $p < .001$.

Analysis

Hypothesis 1 is supported. Table 3 shows the results of the multinomial logistic regression. The amount of time in the venture creation process (wave) is statistically significant across all models. Nascent entrepreneurs in later waves are 3.7 times more likely to acquire equity financing, and almost 1.5 times more likely to acquire debt financing, compared to those in Waves 1 and 2.

Hypothesis 2 is partially supported. Firm size, measured as the log of expected revenue in the fifth year of operations, was significant for the use of debt compared to personal funds. Nascent entrepreneurs that expected a larger firm size were 1.5 times more likely to acquire debt than entrepreneurs expecting a smaller firm size. Results for equity financing were not statistically significant. Hypothesis 3 is partially supported. Nascent ventures that are incorporated were twice as likely to acquire debt financing over personal funds, compared to ventures that are unincorporated. Findings comparing equity financing to personal financing were not statistically significant. Hypothesis 4, that nascent entrepreneurs intending to start firms with higher rates of growth will be more likely to acquire external debt, was not supported. Results for neither the equity or debt model were statistically significant. Hypothesis 5 was partially supported. Nascent entrepreneurs that did not complete financial projections were only half as likely to acquire equity financing. So, financial planners were more likely seek out and acquire equity compared to non-planners. Results comparing debt to personal funds were not statistically significant. Hypothesis 6 was supported. Firms in asset-intensive industries were 2.5 times more likely to acquire debt financing over use of personal funds, compared to firms in service-oriented industries. And, firms in the wholesale and retail industries were twice as likely to acquire debt, compared to service firms.

Hypothesis 7a, that males are more likely to acquire external debt and equity, was not supported. Results were not statistically significant. Hypothesis 7b was partially supported. Hispanics were half as likely to acquire equity financing than Whites. However, respondents of “other” racial makeup were over four times more likely than Whites to acquire debt financing, compared to using personal funds only. Hypothesis 7c, that nascent entrepreneurs with higher levels of education will more likely acquire external debt and equity, was not supported. Results were not statistically significant. Hypothesis 7d, that nascent entrepreneurs with more start-up experience are more likely to acquire external debt and equity, was not supported. Results were not statistically significant. However, respondents with significant start-up experience were less likely to use debt over equity, compared to those with no start-up experience.

Figures 1-4 illustrate the predicted probabilities as one independent variable changes from its minimum to maximum value, holding all other variables at their base value. The changes in predicted probabilities for each independent variable can be found on the right side of Table 3. Figure 1 shows how in Waves 1 & 2, entrepreneurs are highly likely to use personal funds as their sole source of funding. In subsequent waves, this probability drops, while the probability of acquiring equity financing rises. In Figures 2 – 4 we see a similar pattern for each of the independent variables: for Waves 1 & 2 (the reference category), the probability of using personal funds decreases if the firm incorporates, is larger in size, and for educated entrepreneurs. At the same time, the probably of using debt increases.

DISCUSSION

Consistent with prior research on pecking order theory in small and medium-sized businesses, this study finds that nascent entrepreneurs do seem to use personal funds as the sole source of financing, early in the venture creation process. As these individuals advance in the process, the likelihood of acquiring external sources of debt and equity increases. Perhaps of greater interest is the finding that characteristics of the entrepreneur do seem to have an effect on the acquisition of financial resources. Most studies on start-up financing find that it is only characteristics of the firm and industry that affect the decision (or ability) to finance. I would surmise that these individual characteristics play a crucial role for firms in the process of being created, especially when it comes

to resource acquisition. As Gartner (1988) reminds us, “How can we know the dancer from the dance?” (Yeats, 1956). These findings suggest that the further back one examines the process, the more difficult it is to separate the entrepreneur from what he or she is creating.

This study is not without limitations. The dependent variable only reflects whether a certain type of funding was used. It does not specify how much. If in later waves, the entrepreneurs in the sample are using more personal money as a proportion of total funds, it may indicate that pecking order does not apply to nascent ventures. One could create a different model, with a dependent variable that is coded according to whether the firm acquired greater than, or less than, the median amount of a certain type of funding (Zoppa & McMahon, 2002). It also is not clear whether the apparent confirmation of pecking order theory in emerging firm financing reflects actual strategy on the part of the entrepreneur, or if entrepreneurs are simply using those resources which are on hand. It might be that entrepreneurs use their own money first, and as the start-up and entrepreneur grow the venture and gain more legitimacy, they are able to attract external funds. Once it is possible to use debt, why continue paying out of pocket? Future research might control for the value of the opportunity, or, the entrepreneur’s social network (which may provide easy access to financial resources).

Also, the model in this study does not take into consideration the time period *prior* to Wave 1 data collection. Some respondents in the PSED took their first action toward creating a firm five years prior to the interview, and others only a few months before. Entrepreneurs who have been dabbling about for decades are likely to receive less money than someone who just started since either the opportunity being pursued is not a good one, or that person is putting in less effort as the years have gone by. This study was primarily interested in the specifics of acquiring and using financial resources, and detailed information on this process is available only for the 4-year time period of the interview.

CONCLUSIONS

Nascent entrepreneurs do seem to use personal funds as the sole source of financing during the early stages of the venture creation process. The likelihood of using external sources of funding increases as time goes on (at least to the point where the interviews stopped). This conclusion might seem obvious if we assume that entrepreneurs will first use those resources that are least costly and easy to obtain. It also might seem self-explanatory that the longer in process, the greater the chance that the opportunity being pursued is worthwhile, which in turn leads to the acquisition of more financing.

However, we often assume that entrepreneurs get others to bear the risks of pursuing opportunities. These findings suggest that only after personal financing occurs do external financing partners participate. It may be that entrepreneurs are more likely to use resources close at hand, lending support to “bricolage” theory (Baker and Nelson, 2005) and more effectual strategies (Sarasavathy, 2007) in assembling financial resources to start firms.

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Table 1: Dependent variable construction from funding sources in the PSED I data set

Source of Financing*	Personal Only	External Debt	External Equity
Personal savings	•	–	–
Spouse or household partner	•	–	–
Team member	•	–	–
Spouse of team member	•	–	–
2 nd Mortgage	•	–	–
Credit cards	•	–	–
Current employer	–	•	–
Suppliers or subcontractors	–	•	–
Personal finance companies	–	•	–
Small Business Administration	–	•	–
Family and relatives	–	•	•
Friends and business associates	–	•	•
Banks, financial institutions, or venture capital	–	•	•
Private investors	–	•	•
Federal, state, or local government agencies	–	•	•
Other	–	•	•
Banks	–	•	•
Venture capital firms	–	–	•

* Each listing above represents an item from the PSED questionnaire. Some sources appear more than once due to inconsistencies in the questionnaire between waves. Also, sources categorized as both debt and equity are actually two-part questions that ask how much is expected to be paid back (debt), and how much is expected to lead to ownership or profit sharing (equity).

Table 2: Cross tabulation of use of funding source by PSED wave

		Financing Category			Total	
		Equity	Debt	Personal		
Wave	Wave 1 and 2	Count	11	54	143	208
		Expected Count	74.1	43.0	90.9	208.0
		% (across)	5.3%	26.0%	68.8%	100.0%
	Wave 3	Count	23	20	52	95
		Expected Count	33.8	19.7	41.5	95.0
		% (across)	24.2%	21.1%	54.7%	100.0%
	Wave 4	Count	257	95	162	514
		Expected Count	183.1	106.3	224.6	514.0
		% (across)	50.0%	18.5%	31.5%	100.0%
	Total	Count	291	169	357	817
		Expected Count	291.0	169.0	357.0	817.0
		% (across)	35.6%	20.7%	43.7%	100.0%

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	141.026	4	.000
N of Valid Cases	817		

Table 3: The impact of time spent in the venture creation process, and firm and individual characteristics, on the acquisition of financial resources

Independent Variables	Multinomial Logit Estimates ^a			Δ in Predicted Probabilities ^b		
	Equity vs. Personal	Debt vs. Personal	Debt vs. Equity	Personal	Equity	Debt
Wave	1.307*** (.157)	.301* (.133)	-1.006*** (.169)	-.26	.26	-.01
Log expected revenue	.205 (.120)	.353** (.140)	.148 (.141)	-.48	-.01	.49
Legal form	.378 (.290)	.695* (.298)	.317 (.291)	-.17	.001	.16
Intent for growth	.230 (.273)	.040 (.285)	-.191 (.293)	-.02	.01	.001
Financial projections	-.792*** (.221)	-.411 (.245)	.381 (.243)	.11	-.02	-.09
Industry [Asset Intensive]	.371 (.299)	.906** (.310)	.535 (.311)	-.19	.003	.19
Industry [Wholesale & Retail]	.087 (.251)	.715** (.271)	.629* (.281)	-.15	-.01	.15
Gender	-.199 (.229)	-.162 (.267)	.036 (.274)	.04	-.01	-.04
Race [Other]	.663 (.636)	1.465* (.623)	.802 (.523)	-.28	.01	.27
Race [Hispanics]	-.818* (.416)	-.129 (.379)	.689 (.472)	.05	-.04	-.01
Race [Blacks]	.266 (.270)	-.047 (.313)	-.313 (.315)	.005	.01	-.02
Education	.118 (.119)	.153 (.135)	.036 (.133)	-.11	.01	.11
Start-up experience	.167 (.131)	-.127 (.146)	-.294* (.146)	.04	.02	-.07
Intercept	-4.366*** (1.142)	-3.717** (1.260)	.649 (1.300)			

(N = 605)
 χ^2 (df=26) = 169.706
Pseudo R² = .244

^a The top entries are multinomial logit coefficients. Standard errors are in parentheses.

^b Change in the predicted probabilities of using the different categories of financing, for an increase from the minimum to the maximum value of each independent variable, while holding all other independent variables constant at their means.

***p<.001; **p<.01; *p<.05

Figure 1: Predicted probabilities of change in financing over TIME

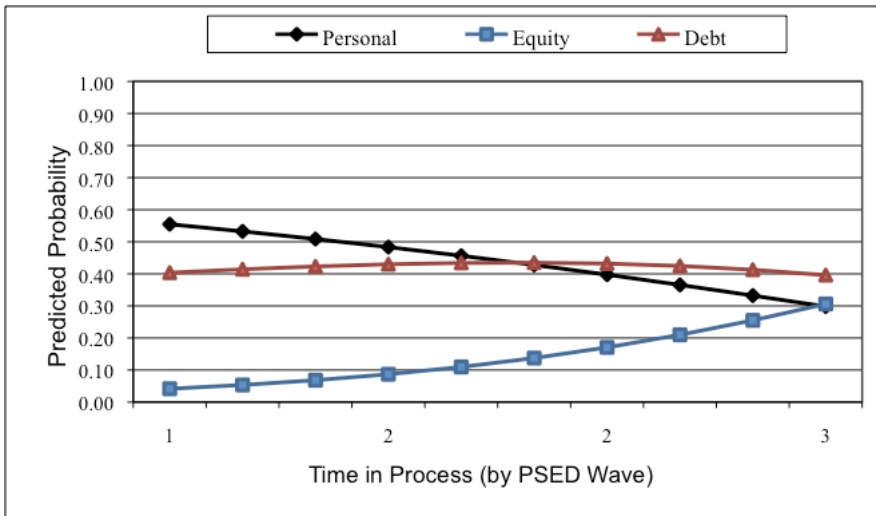


Figure 2: Predicted probabilities of change in financing by LEGAL FORM

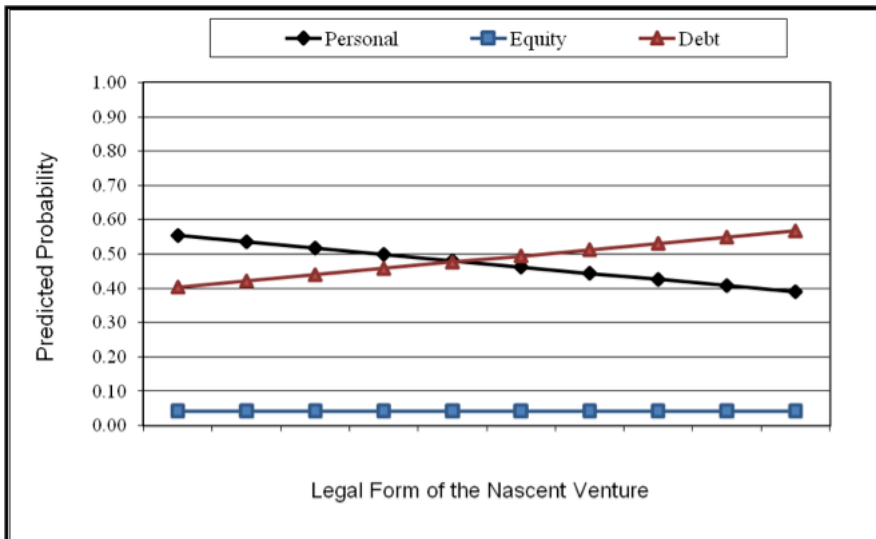


Figure 3: Predicted probabilities of change in financing by EDUCATION LEVEL

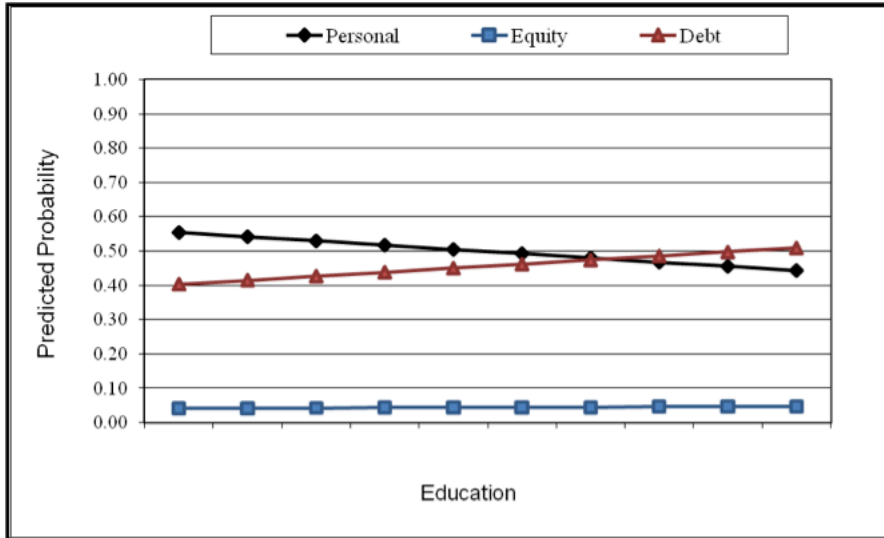
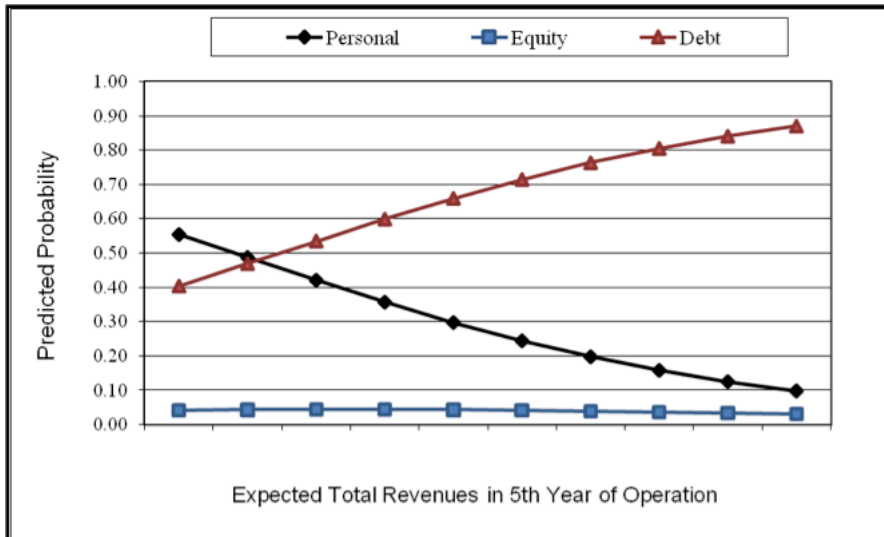


Figure 4: Predicted probability of change in financing by EXPECTED YEAR-5 REVENUE



PERCEPTIONS OF BANK-FIRM RELATIONSHIP: DOES GENDER SIMILARITY MATTER?



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ABSTRACT

This study examined how the gender of the entrepreneur and of the bank account manager influences perceptions about the banking relationship. Drawing from social network and status expectations state theories of gendered interaction, we test hypotheses exploring the influence of trust, the bank's knowledge of the firm, satisfaction with credit, and the likelihood of switching banks on the bank-firm relationship. Results show that male-male pairs of entrepreneurs and bankers have the highest levels of trust, satisfaction, knowledge, and the lowest likelihood of switching banks, while female-female pairs showed the opposite results for each measure with mixed pairs in the middle on all accounts. Implications are discussed.

INTRODUCTION

The number of women entrepreneurs is rising rapidly and many are creating substantial businesses. In the US, there are more than 10.1 million women-owned firms comprising 40% of all privately held firms, employing more than 13 million people, and generating \$1.9 trillion in sales as of 2008 (CWBR, 2009 <http://www.nfwb.org/facts/index.php>). Existing research suggests important average differences in the access to and use of key resources between the male business owners and this growing population of women business owners (Elam, 2008). For certain, the access to and use of credit is a particularly resource for business growth and success. Indeed, while most companies rely on some form of bank financing during their lifetime, growth and sustainability for women entrepreneurs is funded by credit cards, personal savings/investments, and personal and commercial debt with an extremely small percentage drawing on private equity (Brush, Carter, Gatewood, Greene & Hart, 2004).

In fact, the research on gender differences in the access to and use of credit is mixed. Recent studies indicate that women entrepreneurs start ventures with fewer resources, have expectations for slower growth, and are less familiar with credit sources (Carter, Brush, Greene, Gatewood & Hart, 2003). Carter and Rosa (1998) also found that women business owners in the UK were more likely to launch with smaller sums of capital, and less likely to use bank loans, supplier credit and overdrafts. In part, these differences are explained by evidence that women more often launch businesses in more highly competitive, slower growing services and retail while men are more often present in manufacturing, construction and high technology which may be faster growing (Miskin & Rose, 1990; Olsen, 1993). The Global Entrepreneurship Monitor (GEM) women's report further indicates that women more often start businesses within known technology and established markets (Minitti, Allen & Langowitz, 2005). Such factors generally constrain a firm's credit access (Petersen & Rajan, 1994). When controlling for these factors, women-owned firms are no less likely to be turned down for credit or receive credit with less favorable terms (Orser,

Riding & Manley, 2006). For instance, Robb and Wolken (2002) find no differences in bank lending practices, approval rates or terms between men and women-owned businesses. Similarly, other research shows that few gender differences exist in terms and conditions of bank financing, level of service provision and the overall quality of the relationship, (McKechnie, Ennew, & Read, 1998).

Other studies challenge these findings. For instance there is evidence that access to financing may not differ but that women are charged higher interest rates and require higher collateral to meet terms (Coleman, 2000). Additionally, experimental design studies suggest that there are discriminatory behaviors in personal interactions between women business owners and bank managers (Buttner & Rosen, 1992; Fay & Williams, 1993). Hence, even though studies are mixed on whether or not women owners are equally or less likely to obtain bank financing, women are still generally less satisfied with both the business-related and interpersonal aspects of their banking relationships than men owners (Fabowale, Orser & Riding, 1995). Recent evidence from the Center for Women's Business Research supports this point. A survey shows that women business owners are very likely to pursue bank financing to support growth of their businesses, that they choose financial products based on their relationship and experiences with lenders and that their overall satisfaction with banking relationship has improved since 1992 (CWBR, 2009 <http://www.nfwb.org/facts/index.php>). However, these studies also show that women obtaining bank loans or lines of credit must make an average of four applications or attempts. As such, important questions arise as to whether women business owners view their relationships with banks differently than do men (Coleman & Carsky, 1996)?

This study addresses this question. We explore how the gender of the entrepreneur and of the bank manager responsible for the account influences various perceptions about the banking relationship, including trust, bank's knowledge of the firm, satisfaction with credit, and the likelihood of switching banks. We draw from two theoretical perspectives to examine this relationship. Social networking theory suggests that gender homophily will lead to better perceptions of banking relationships between similar pairs in a given institutional setting (McPherson & Smith Lovin, 2001; Kim & Aldrich, 2005; Brashears, 2008). In contrast, status expectations state theory implies that, in the context of male-typed occupations, better perceptions of banking relationships will be found among men, not because of homophily, but because social ideals attribute greater competence to men in male-type jobs (Foschi, 2000; Ridgeway & Correll, 2000; Ridgeway, 2004). We argue that these social type-casting ideals serve as the basis of trust in relationships, especially in new relationships.

PERCEPTUAL FACTORS IN BANK-FIRM RELATIONSHIPS

Both bank and entrepreneur perceptions within bank-firm relationships play a pivotal and central role (Haines, Riding & Thomas, 1994; Holland, 1994; Saporito, Chen & Sapienza, 2004; Uzzi & Lancaster, 2003). Based upon these perceptions entrepreneurs choose to share information or expand business with banks and banks choose to extend credit and other business services to entrepreneurs (Holland, 1994, Saporito et al., 2004; Uzzi & Lancaster, 2003). The formation of these perceptions is complex and is based upon significant interactions between the entrepreneur and bank (Holland, 1994; Uzzi, 1999). While finance scholars have focused on such direct factors as how firms' size, age or industry influences the interest rates on loans (e.g., Petersen & Rajan, 1994), management scholars have focused on how social embeddedness, measured by the length and breadth of the bank-firm relationship, influences perceptual factors such as trust or the likelihood to switch to an alternative bank (e.g., Uzzi, 1999; Saporito et al., 2004). Perceptions about

inter-firm relationships are influenced by many factors and gender is one of these important factors (Ely, 1995). Thus, in this paper we examine how gender influences the entrepreneur's perceptions of their banking relationship.

Research investigating bank-small firm relationships identifies several factors of particular importance to entrepreneurs including: trust between firm and bank (Saparito et al., 2004; Uzzi, 1999; Uzzi & Lancaster, 2003), a bank's knowledge about the firm (Haines et al., 1994; Uzzi, 1999), the firm's satisfaction with access to credit (Dunkelberg, Scott, & Cox, 1984; Ennew & Binks, 1993; 1997; Haines, Riding & Thomas, 1991; Riding, Haines & Thomas, 1994; Uzzi, 1999), and small business proclivity to shop for alternate financial institutions (Haines et al., 1991; Riding et al., 1994; Saparito et al., 2004). Each of these factors is highly related to one another. For example, *trust* defined as the intention of one party to accept vulnerability based upon positive expectations of the intentions or behavior of another party (Rousseau, Sitkin, Burt & Camerer, 1998) is associated with greater knowledge transfer between investors and emerging firms (Uzzi & Lancaster, 2003; Yli-Renko, Autio & Sapienza, H. 2001), greater access to debt financing for small- and mid-sized firms (Uzzi, 1999), and reduces small firms' likelihood to shop for and switch to alternative banks (Saparito et al., 2004).

Other research focuses on the central role of *knowledge about firm* in bank-firm relationships. Information on small- and mid-sized firms' situations is generally not publicly available and is unevenly dispersed (Petersen & Rajan, 1994; Uzzi & Lancaster, 2003). Efficient debt markets depend upon a sufficient understanding by investors (e.g., banks) to make informed investment decisions (Diamond, 1991; Uzzi & Lancaster, 2003). Insufficient knowledge and understanding surrounding a loan application increases the lender's perceived risk of the loan, and lenders may decide to restrict a small firm's credit access (Diamond, 1991). Thus, bank knowledge about a firm is presumed to be positively associated with small firm credit access (Petersen & Rajan, 1994; Uzzi & Lancaster, 2003).

Customer satisfaction with credit access refers to satisfaction with the amount of credit generally made available by the bank as compared to the size of the loan request, the terms of attaining credit (e.g., collateral or equity investment requirements, etc.), and interest rate (Ennew & Binks, 1993, 1997; Haines, Riding & Thomas, 1991; Riding, Haines & Thomas, 1994). Adequate access to financial resources is essential to new and small firm growth, and barriers to access may attenuate these companies' success (Coleman, 2000).

Perceptions about trust within the bank-firm relationship, a bank's knowledge about the firm, and satisfaction with credit access are negatively associated with a small firm's likelihood to switch to an alternative bank (Riding et al., 1994; Saparito et al., 2004). A small firm's *likelihood to switch to an alternative bank* refers to the firm's current and future potential to shop for and switch to an alternative financial institution (Riding, Haines & Thomas, 1994). Customer shopping activity has received considerable scholarly interest because durable bank-customer relationships positively impact a bank's profitability (Berlin & Mester, 1998). This profitability arises because banks avoid the costs of replacing customers that have shopped and switched to another bank, customers that are committed a particular bank may be willing to pay small premiums in interest rates and fees, and long-term banking relationships facilitate achieving economies of scope through selling additional financial services and products (Berlin & Mester, 1998). In short, many activities that banks undertake are designed to maintain and expand the economic relationships with existing customers.

As mentioned, while research appears to demonstrate that women- and men-owned are not significantly different in terms of credit access (Robb & Wolken, 2002; Orser, Riding & Manley, 2006), women business owners have less positive perceptions about many factors surrounding their business relationship than men (Fabowale, Orser & Riding, 1995). Consequently, a simultaneous exploration of genders' influence on these central perceptual attributes of bank-firm seems warranted.

THEORIES OF GENDER INTERACTION

In this study we draw on two sets of theories to investigate the influence of gender on entrepreneur-banker relations. First, we consider social networking theory, in particular the structural concept of homophily. Homophily is one of the most robust findings in social network research has been defined as “the tendency for similar individuals to associate” (Brashears, 2008). In other words, “similarity breeds connection” and results in social ties that not only confer important advantages, or resources, but also result in stronger ties that are more likely endure over time (McPherson & Smith-Lovin, 2001). Of course, while all social networks tend towards homogeneity, not all relationships are the same and some individuals are sought out more than others (Kim & Aldrich, 2005). Indeed, research on gender and homophily suggests that men accumulate more social capital than women in the sense of larger professional networks with more diverse, powerful, and ultimately resourceful ties (Aldrich et al., 1997; Ibarra, 1992; Brashears, 2008; Elam, 2008).

Such findings on the importance of homophily in individual-level interactions have powerful implications for the role that gender might play in connections made between entrepreneurs and bankers. If men have more useful professional networks, then in a strictly structural sense homophily produces certain professional advantages for men relative to women. There is, however, more to the question of how homophily produces gender advantage or disadvantage than simply structural effects. Social status (i.e., the legitimacy or valuation of an individual based on ascribed status characteristics) also tends to confer different rewards, or resources, on women compared to men (Burt, 1998). In this sense, then, homophily in professional relationships produces additional disadvantages—status disadvantages—for women compared to men. On this point, Ibarra (1992) found that men tend to form stronger homophilous ties across multiple networks, while women tend to adopt stronger, denser homophilous ties in personal networks and more instrumental, diverse ties in their professional networks. In a later study, Ibarra (1997) found that high advancement potential female managers tend to have much less homophilous networks than other female and all male managers, suggesting that high performing females may find ways to compensate for both the structural and status effects of homophily on social capital advantages.

Second we consider status expectation state theory, in particular the concept of culturally-defined expectations of competence. Status expectation states refer to the cultural beliefs organized along the lines of social status differences, like gender, that set individual expectations about how the self or others will perform at a given task (Foschi, 2000; Ridgeway & Correll, 2000). An important distinction in this theory is the concept of salience—when gender is salient in the context of a particular task situation, cultural beliefs about gender function as rules of the game (Ridgeway & Correll, 2004). In effect, when gender is salient, “double standards of competence” are applied in pre-judgments of competence (Foschi, 2000).

Research on the double standards of competence applied in professional contexts indicates that women face considerable disadvantages in both pre-judgments of expectations and in stan-

dards of performance (Foschi, 2000; Ridgeway, 2004). In laboratory studies modeling the hiring process, researchers have consistently found that men tend to be rated, or, selected for hire, more often than women, notwithstanding evidence of higher qualifications (Foschi, 2000; Ridgeway, 2004). Moreover, studies have found that women, especially in newer generations, tend to favor evidence of qualification and ability over external status claims, compared to men (Foschi et al, 1994).

Status expectations state theory is an important, but underutilized, body of theory in gender studies (Chafetz, 1997). Gender scholars have argued that the persistent cultural beliefs linking gender with task-specific abilities constitute a “gender system” – i.e., an institutionalized system of relations organized around distinctions between two genders, resulting in different roles, identities, expectations of competence, performance assessments, and, consequently, the distribution of resources and rewards (Ridgeway & Correll, 2000). Cultural beliefs linking gender and expectations of competence are perpetuated in large part through confirmatory experience of individual actors. Ridgeway and Smith-Lovin (1999) argue that while research on peers with equal status and power show few gender differences in behavior, most gender interactions do not occur on equal footing. In most, professional interactions, men hold higher status positions and women lower status positions, leading to confirmatory experiences of existing beliefs.

The distinction between homophily and status effects has attracted little attention in entrepreneurship studies. One exception is Ruef et al (2003) who found that homophily and ecological constraints work together to produce minority isolation among entrepreneurial founding teams. Typically, however, the application of the concept of homophily in social networking theory takes for granted the status differences between males and females in the context of entrepreneur. In contrast, status expectations state theory makes explicit the possibility that status differences that result from gender-linked expectations of competence will vary with the task set as well as with the gender of the individual studied.

FOUR SETS OF HYPOTHESES

For this study, we develop four sets of hypotheses, comparing predictions of homophily versus status expectation effects on key aspects of entrepreneur-banker relationships. We theorize that both homophily, defined as a similarity in social status, and gender, as a status characteristics linked to culturally-defined expectations of competence, provide a basis of connection and trust in banking relationships. However, as theoretical constructs, each concept constitutes a distinct social process and must be considered separately.

Social networking theory posits that trust and positive perceptions are governed by the homophily mechanism (McPherson & Smith-Lovin, 2001). In other words, individuals will experience the highest levels of trust in relationships, or pairings, with like others. As a result the rankings from a social networking perspective place male-to-male and female-to-female tied for first place in the level of trust and positive perceptions and mixed-pair relationships as tied for second place with a lower level of trust and less positive perceptions.

In contrast, status expectations state theory argues that trust and positive perceptions will most likely occur in relationships, or pairings, where the fit between the diffuse status characteristic of the person being judged (male or female) and the task set, or role, at hand (banker or entrepreneur) follows conventional ideals (Foschi, 2000; Ridgeway, 2004). Both banking and

entrepreneurship are typically stereotyped as highly masculine endeavors (Bird & Brush, 2003). As a result the rankings look quite different. We expect to find that male-to-male relationships have the highest ratings of trust and positive perceptions, followed by female-to-male, male-to-female, and finally by female-to-female pairings.

H1a: Small firm owner's trust in the bank will be higher for male-male and female-female pairs, compared to mixed pairs.

H1b: Small firm owner's trust in the bank will be highest for male-male pairs, followed by mixed pairs, and female-female pairs.

H2a: Satisfaction with credit will be higher for male-male and female-female pairs, compared to mixed pairs.

H2b: Satisfaction with credit will be highest for male-male pairs, followed by mixed pairs, and female-female pairs.

H3a: Bank knowledge of firm will be higher for male-male and female-female pairs, compared to mixed pairs.

H3b: Bank knowledge of firm will be highest for male-male pairs, followed by mixed pairs, and female-female pairs.

H4a: Likelihood to switch banks will be lower for male-male and female-female pairs, compared to mixed pairs.

H4b: Likelihood to switch banks will be lowest for male-male pairs, followed by mixed pairs, and female-female pairs.

DATA AND METHODS

This study employed a matched sample design of entrepreneurs and respective bank managers that had responsibility for each firm's business account. In the first phase of data collection, two hundred eighty six banks were approached in Connecticut, Missouri, New Jersey, and Pennsylvania. Twenty-two banks agreed to have surveys distributed to both their small and mid-sized commercial customers and bank managers. We distributed 7,298 surveys to this sample list of bank clients and 1,093 surveys were returned representing a 14.98 percent response. We asked that the survey be completed by either the business owner/operator or the person primarily responsible for interacting with the bank if that was a different person. Since surveys were anonymous, it was not possible to calculate differences between respondents and non-respondents. Late respondents, however, are considered similar to non-respondents (Churchill, 1991), and t-tests comparing early versus late respondents found no significant differences for any firm variables. In the second phase of data collection, each responding firm identified the bank officer primarily responsible for the company's account. Two hundred and sixty-three bank managers were identified and sent surveys, which were kept confidential. Managers returned 217 surveys representing an 82.51 percent response rate. Complete data for the matched sample yielded 696 pairs of entrepreneurs-bank managers.

We used multivariate analysis of covariance (MANCOVA) to test for differences in levels of trust, satisfaction with credit, perceptions of a bank's knowledge about the firm, and likelihood to switch to an alternative bank between female-female, mixed gender, and male-male entrepreneur-bank manager pairs.

Measures

We measured *trust* using Saporito and colleagues (2004) four-item index measure. Using a seven-point scale 1 (very rarely true) to 7 (very often true) small firm customers rated the following items: 1) We feel that the bank would act in a fashion consistent with what we would recommend without prior discussion with us; 2) We can freely share concerns and problems about our company and know that they will respond constructively; 3) We can freely share concerns and problems about our company and know that they will be interested in listening; and 4) We share common business values with the bank ($\alpha = .89$).

We measured *likelihood to switch to an alternative bank* using Saporito and colleagues (2004) five-item measure. Using a seven item scale 1 (very unlikely) to 7 (very likely) the extent to which they were likely within the next year to 1) switch to an alternative bank to service their borrowing needs, 2) switch to an alternative bank for checking and other deposit accounts, 3) move accounts to banks with slightly more attractive interest rates, 4) move accounts to banks with slightly more attractive fees, and 5) shop for banks with more attractive fees and interest rates ($\alpha = .92$).

We measured *customer satisfaction with credit* by a five-item scale. Items were created and adapted from measures used in large national investigations of small business banking in the United States, the United Kingdom, and Canada (e.g., Dunkelberg, et al, 1984; Ennew & Binks, 1997; Haines, et al., 1991). The measure was piloted tested on a sample of small businesses that were clients of a Northeastern U.S. state's small business development center. Using a 7-point scale with 1 (very dissatisfied) to 7 (very satisfied) small firm customers rated the following items: 1) The credit amount that the bank generally makes available when our company makes loan requests; 2) The bank's security and collateral requirements for obtaining a loan; 3) The bank's requirements for personal/company equity invested in the business prior to granting a loan; 4) The bank's financial reporting requirements for granting a loan; and 5) Interest rates charged on loans ($\alpha = .91$).

Drawing upon the literature and previous measures (Binks, Ennew & Reed, 1992; Haines, Riding & Thomas, 1991; Riding, Haines & Thomas, 1994) we created and adapted four items to measure a *bank's knowledge of the firm*. This measure was pilot tested along with the measure for customer satisfaction with credit. Using a seven point scale 1 (very dissatisfied) to 7 (very satisfied) small firms rated: (1) the bank's knowledge of our business; (2) the bank's knowledge of the local market/community; (3) the bank's anticipation of our credit and other financial needs; and (4) The bank's anticipation of our financial needs other than credit ($\alpha = .92$).

Control Variables

We controlled for numerous factors considered to influence the nature of bank-firm relationships (Petersen & Rajan, 1994; Uzzi & Lancaster, 2003). Bank market and organizational variables included: *local market competitiveness*, *bank size* (Berlin & Mester, 1998; Petersen & Rajan, 1994; Uzzi, 1999). Less competitive banking markets are associated with greater credit constraint problems (Berlin & Mester, 1998, Uzzi, 1999). Therefore, the U.S. Federal Reserve Bank's *HHI*, bank

concentration index was included as a measure of local bank market competitiveness (Berlin & Mester, 1998; Uzzi, 1999). Since large banks are generally less involved with smaller loans, *bank size* (the natural log of total assets reported in each bank's 1999 annual report) was included (Berlin & Mester, 1998; Petersen & Rajan, 1994).

Important firm specific characteristics related to access to debt credit included: *firm size*, *growth rate*, *firm age* and *industry* (Berlin & Mester, 1998; Petersen & Rajan, 1994, Uzzi, 1999). Smaller firms may be relatively less important to the bank and be in an unfavorable bargaining position (Petersen & Rajan, 1994). Firm size was measured by two factors (number of employees, and sales revenues). The growth rate of sales may signal the health of a firm as well as the potential future business for the bank. Growth rate was measured by asking the firm to indicate the growth rate of the firm's sales over the past five years (less if the firm was younger) using a seven-point scale from 1 = decreasing rapidly to 7 = increasing rapidly). Finally, firm age is positively associated with the likelihood of firm survival and it may be relatively more difficult for young firms to obtain alternative lines of credit at the same or better costs (Petersen & Rajan, 1994). Firm age was the number of years that the firm has been in operation. Using SIC categorization, the *firm's industry* was measured by asking the firm to indicate which industry best described the firm and was coded using dummy variables.

Uzzi (1999) suggested that the length of a banking relationship and the breadth of products used may be seen as proxies for the embeddedness of the relationship. Consequently, relationship-level factors identified as important included: *relationship age* and whether or not it was the firm's *main bank* (Berlin & Mester, 1998; Petersen & Rajan, 1994, Saporito et al. 2004; Uzzi, 1999). Both factors were collected directly from the customer firm. Longer relationships allow both a bank and customer firm time to get to know one another, develop social ties, and exchange information (Petersen & Rajan, 1994; Uzzi, 1999). Relationship age was measured by the number of years the customer had a business account with the bank. Finally, whether or not a particular bank is a firm's primary banking institution can influence the willingness of a bank to extend additional credit (Uzzi, 1999). Therefore, main bank was measured using a dummy variable (1 indicating if the bank was the firm's primary bank and otherwise 0).

RESULTS AND DISCUSSION

The correlations, means, and standard deviations appear in Table 1. As expected trust, bank knowledge about a firm, satisfaction with credit access all show large and highly significant positive correlations with one another (each at $p < .01$). Also, as expected trust, bank knowledge about a firm, and satisfaction with credit access show large and highly significant negative correlations with likelihood to switch to an alternative bank (each at $p < .01$).

Because each of these variables is highly correlated with one another it is appropriate to simultaneously test for differences using MANCOVA instead of separate ANCOVA analyses for each of the four dependent variables (Hair, Anderson, Tatham & Black, 1995). Our hypotheses suggested two different orderings for the gender pairings—the homophily argument predicts that homophilous pairs will produce most favorable scores on test factors, while status expectations argument suggests that male-male pairs will reflect best scores, followed by mixed pairs and female-female pairs. Statistical results support the assertion that gender pairings do influence the dependent variables (Wilks Lambda $\lambda = .97$, $F_{10, 1336} = 2.23$, $p < .01$). Looking more closely we see in Table 2 that female-female pairs show the lowest levels of small firm owners' trust in the bank, mixed pairs

and intermediate level of small firm owners' trust in the bank, and male-male small firm owners' the greatest trust in the bank ($F = 4.79, p < .01$). As indicated in Table 3, this pattern of results suggests that Hypothesis 1a (homophily argument for differences in trust) is not supported, but Hypothesis 1b (status expectations state argument for differences in trust) is supported.

Hypothesis 2a proposed a homophily argument for differences in satisfaction with credit access, while Hypothesis 2b proposed that differences in levels of satisfaction with credit access would vary according status expectations state theory. As is shown in Table 2, female-female pairs show the lowest levels of satisfaction with credit access, mixed pairs and intermediate level of satisfaction with credit access, and male-male small firm owners' the most satisfaction with credit access ($F = 3.45, p < .05$). Again, this pattern of results suggests that Hypothesis 2a (homophily argument for differences in satisfaction with credit access) is not supported, but Hypothesis 2b (status expectations state argument for differences in trust) is supported.

Hypothesis 3a proposed a homophily argument for differences a small firm owners' perceptions about a bank's knowledge about the firm, while Hypothesis 2b proposed that differences in levels of a small firm owners' perceptions about a bank's knowledge about the firm would vary according status expectations state theory. Again, results in Table 2 show that female-female pairs have the lowest levels of small firm owners' perceptions about a bank's knowledge, mixed pairs and intermediate level of small firm owners' perceptions about a bank's knowledge, and male-male small firm owners' the highest small firm owners' perceptions about a bank's knowledge ($F = 4.01, p < .01$). Again, this pattern of results suggests that Hypothesis 3a (homophily argument for differences in satisfaction with credit access) is not supported, but Hypothesis 3b (status expectations state argument for differences in trust) is supported.

Finally, hypothesis 4a proposed a homophily argument for differences a small firm owners' likelihood to switch to an alternative bank, while Hypothesis 4b proposed that differences in a small firm owners' likelihood to switch to an alternative bank would vary according status expectations state theory (See Table 2). The differences between means for likelihood to switch to an alternative bank are not significant ($F = 0.14, n.s.$). Thus, neither hypothesis 4a nor 4b are supported.

CONCLUSIONS

This study examined how the gender of the entrepreneur and of the bank account manager influences perceptions about the banking relationship. We drew from social network and status expectations state theories of gendered interaction, and tested hypotheses exploring the influence of trust, the bank's knowledge of the firm, satisfaction with credit, and the likelihood of switching banks on the bank-firm relationship. Our findings, summarized in Table 3, offer strong support for a status expectations state perspective, with one important caveat. Male-to-male pairings did indeed show the highest levels of trust, satisfaction with service and credit, feel the bank-firm relationship facilitates their firm's growth most, and are the least likely to switch to an alternative bank. In contrast, we found that the female-female pairs demonstrate the lowest levels of trust, satisfaction with service and credit, feel the bank-firm relationship constrains their firm's growth most, and are the most likely to switch to an alternative bank. Mixed gender pairs exhibit intermediate levels of all of these variables.

In conclusion, we find that homophily does not fully explain differences in perceptions of the bank-firm relationship. Instead, as indicated by status expectations state theory, the gender of

both the entrepreneur and the bank manager may be pertinent for explaining perceptions in the bank-firm relationship. However, neither the homophily nor the status expectations state theories proved useful for predicting different likelihoods in bank switching, suggesting that other factors may be at play here.

There are several areas for future research. As noted earlier, banking and entrepreneurship were traditionally male dominated occupations (Bird & Brush, 2003), and therefore men in these roles might more typically be accorded high status. When men are not in these roles, it raises a question as to whether the expectations for the role and behavior of the entrepreneur and/or the banker might influence perceived satisfaction with the relationship? An alternative is consideration of the nature of the engagement. Recent work suggests that women perform differently in competitive environments than their male counterparts (Gneezy, et al 2003). Arguably, financing negotiations could be considered competitive in some respects and women may be less better prepared and/or less confident in these relationships which could lead to lower satisfaction. Overall, our results suggest that the role of gender in entrepreneur-banker relationships is more complex than previous results show.

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Table 1: Correlations, Means and Standard Deviations for Variables in the Study

	1	2	3	4	5	6	7	8	9	10	11	12
1. HHI												
2. Bank Size	-.02											
3. Firm Employees	.00	.11**										
4. Firm Sales	-.05	.14**	.50**									
5. Firm Growth	-.02	.06	.12**	.20**								
6. Firm Age	.03	-.03	.23**	.20**	-.12**							
7. Relationship Age	-.07*	-.12**	.03	-.03	-.16**	.35**						
8. Main Bank	-.05	.08*	-.06	-.06	-.03	.01	.15**					
9. Relational Trust	.03	-.02	.05	.09**	.06	.03	-.02	.14**				
10. Bank Knowledge	.04	-.04	.08*	.10**	.04	.00	-.01	.10**	.73**			
11. Customer Satisfaction	.02	.00	.03	.08*	.04	-.03	.00	.10**	.65**	.69**		
12. Likelihood To Switch	.04	.03	.02	-.03	-.02	.02	.01	-.24**	-.53**	-.53**	-.52**	
Mean	1567.44	855.41	19.48	3.32	5.09	21.13	9.65	.86	21.57	21.02	21.61	14.29
Standard deviation	656.61	1636.08	41.11	1.85	1.18	21.57	11.03	.34	5.19	5.45	5.51	8.33

Table 2: Differences in Means by Entrepreneur-Bank Manager Gender ^a

Entrepreneur-Bank Manger Gender	Trust	Satisfaction with Credit	Likelihood to Switch	Bank Knowledge of Firm
Female-Female ^b (n = 87)	4.79 (1.22)	20.87 (5.68)	10.95 (7.41)	20.93 (5.12)
Male-Female or Female-Male ^b (n = 305)	4.82 (1.14)	21.68 (5.61)	11.22 (6.64)	21.31 (5.27)
Male-Male ^b (n = 304)	4.89 (1.22)	22.11 (5.52)	11.44 (6.62)	21.77 (5.32)
Total (n =696)	4.84 (1.18)	21.77 (5.59)	11.28 (6.72)	21.46 (5.29)

^a The standard deviation is provided in parentheses beside each cell mean.

^b Means are adjusted for covariates.

Table 3: Significant Results by Hypotheses

	DV	Homophily (a)	Status Expectations (b)
H1	Trust	no	yes
H2	Credit Satisfaction	no	yes
H3	Firm Knowledge	no	yes
H4	Bank Switching	no	no

≈ SUMMARY ≈

MIMETIC BEHAVIOR IN ALLIANCE STRATEGIES WITHIN BIOTECH INITIAL PUBLIC OFFERINGS

Theodore A. Khoury, Oregon State University, USA

Principal Topic

Entrepreneurial firms face high levels of uncertainty in their strategic decisions, and must look to other actors in their environment on how to proceed (Meyer and Rowan, 1977; Pfeffer and Salancik, 1978). Isomorphism has been proposed as a strategy for firm survival in uncertain conditions (DiMaggio and Powell, 1983), where conforming can earn legitimacy (Deephouse, 1996; Oliver, 1991), but what strategy templates are worthy of mimicry? Further, there lacks a systematic understanding of how the mimetic behavior of firms matters with increasing age and how this behavior is, in turn, rewarded in entrepreneurial settings. I consider mimicry at IPO, since the IPO process offers a feedback system based on its public disclosures of strategies. Thus, I propose a variation on the concept of maximization to state that being consistent with a legitimized norm of an alliance strategy varies with firm age. Separately, I propose that the degree of isomorphism between a focal firm's alliances versus precedent firms' strategies affects their IPO proceeds. Thus, there exists an alliance template that is legitimated by IPO firms and their constituents over time, and this template informs the alliance strategies observed in subsequent IPO firms.

Method

I collect data on biotechnology IPO firms that trade on U.S.-based exchanges that are identified by Recombinant Capital Group's classification, similar to previous work (Deeds et al., 2004; Gulati and Higgins, 2003). This results in 274 IPO firms engaged in human therapeutic product markets within the period of 1980 -2006 (inclusive). A two-stage Heckman selection procedure is used to analyze the models.

Results & Implications

Three IPO-relevant contributions emerge from the preliminary findings. The first contributes to an understanding of firm strategic behavior. In terms of alliance strategies, I find that younger firms tend to be more isomorphic to what has been established in precedent IPOs in the year prior. Second, when theorizing the existence of a quadratic relationship between firm age and the degree of isomorphism to alliance strategies at IPO, I find an inverted 'U' signature. In terms of the performance implications for looking like norm, more resources are provided to those who seek a better-than-average number of alliances before their IPO, regardless of alliance type.

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≈ SUMMARY ≈

EXIT ROUTES: WHAT ARE YOUR OPTIONS?

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Principal Topic

There comes a time when owner-managers of small firms choose, or are forced, to retire. This decision gives rise to a succession problem. This predicament can be resolved through family succession; by selling the firm to an insider or outsider; or the owner-manager can either sell or dispose of the businesses' assets. Closure of these viable businesses represent business transfer failures which have consequences for the contribution of these small firms to employment and output in the regions in which they are located.

Little is known on what determines the owner-manager's choice of end-game. Previous research has primarily examined intergenerational succession in family businesses (Bennedsen *et al.*, 2006; Burkart *et al.* 2003). Attributes of alternative succession routes of small firms have only received scant attention in the past (Zajec *et al.*, 2006; Howarth *et al.* 2004). In this paper, we explore firm (e.g. the firms attractiveness) and market (e.g. pool of buyers) specific characteristics on the entrepreneur's expectations for its end-game strategy.

Method

Evidence was collected on the entrepreneur's expected exit strategy in telephone interviews with entrepreneurs in Ireland, conducted between October 2008 and February 2009. This sample of firms provides a good representation of the relevant populations of small firms in Ireland. Almost all sectors by SIC are represented in the sample from agriculture to domestic services. The regional representation of the sample is also extensive. Additional variables were obtained from secondary sources on the number and characteristics of the potential pool of buyers in the regions in which these entrepreneurs operated their business. Variables on the attractiveness of the region were also included.

Results and Implications

This paper presents novel evidence on the impact of key variables on entrepreneurial expectations for its exit strategy. We find evidence that the age of the firm, the size of the firm, the pool of potential buyers, the location of the firm, the motives of the entrepreneur, whether the entrepreneur has an exit plan, the level of family involvement and the type of the business influence the entrepreneurs expectations for its' end-game. The evidence suggests that specific support mechanisms for business transfers should be targeted to address regional disadvantages to ensure the longevity of established small businesses.

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≈ SUMMARY ≈

**RESOURCE COMPLEMENTARITIES, TRADE-OFFS,
AND UNDERCAPITALIZATION IN TECHNOLOGY-
BASED VENTURES: AN EMPIRICAL ANALYSIS***David M. Townsend, North Carolina State University, USA**Lowell W. Busenitz, The University of Oklahoma, USA***Principal Topic**

Undercapitalization in early-stage ventures is one of the most challenging obstacles to success facing entrepreneurial startups (Holtz-Eakin, Joulfaian, & Rosen, 1994). Limited research has probed this area and it is often *atheoretical* with key concepts not rigorously defined (Thornhill & Amit, 2004). In this study we propose a definition of undercapitalization as the failure of young ventures to procure enough capital to fund the organization's strategic priorities, and theoretically ground the definition by extending recent work on the payments perspective in resource-based theory (e.g., Lippman and Rumelt, 2003). According to this perspective, the relative capitalization of an organization reflects the value of its underlying resources (Lippman & Rumelt, 2003). As such, we suggest that the amount of capital raised by these ventures relative to the intended strategies the firm seeks to implement, reflects the underlying value of the firm's resource base. Therefore, undercapitalization may be reflective of weaknesses and/or trade-offs in a firm's core set of resources (e.g., Zingales, 2000).

Methods

To test the research model, we developed a database of technology-based ventures from the archival records of a state-wide agency organized to assist technology ventures in navigating the start-up process. Based on the availability of certain critical data and the specific measurement strategies for key variables, our final sample consisted of 79 ventures started between 1994 and 2006, and spanned 39 unique 6-digit NAICS sectors. Hypotheses were tested using hierarchical log-normal survival analysis and two-limit tobit regression.

Results and Implications

Based on these analyses, three specific contributions are made to resource-based theory and the early-stage capitalization literature: First, both a theoretical rationale for and a measure of undercapitalization are developed, and the significant, inverse relationship between undercapitalization and firm survival is confirmed; Second, this study demonstrates how trade-offs among key resources increase a firm's risk of undercapitalization; Three, these results (particularly on the importance of trade-offs) illustrate the importance of considering the effects of individual resources embedded in a system of resources (e.g., payments perspective). This is in contrast to the heterogeneous resource approach in resource-based theory of attributing firm-level performance outcomes to the effects of individual resources (e.g., Barney, 1991; Peteraf, 1993).

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≈ SUMMARY ≈

BOOTSTRAPPING STRATEGIES AND ENTREPRENEURIAL GROWTH: A LONGITUDINAL STUDY

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Principal Topic

Research in entrepreneurial finance generally assumes that growth-oriented ventures lacking internal funds have to attract external finance or alternatively have to keep their growth ambitions in check. An often ignored alternative is that entrepreneurs resort to financial bootstrapping, defined as more or less creative techniques to reduce the need for more external finance (Ebben & Johnson, 2006; Winborg & Landström, 2001).

The value of bootstrapping for growth has been subject to much debate. Some scholars view bootstrap strategies as desirable strategies. Bootstrap finance does neither require a business plan nor collateral (Van Auken, 2005) and allows entrepreneurs to test strategies without pressure from external investors (Bhide, 1992). Others, however, view bootstrap strategies as second-best strategies, only to consider when insufficient external finance is available. Bootstrap strategies, especially those involving the use of social contacts without formal commitments, may have a high opportunity cost, given the uncertainty and possibility of opportunistic behavior (Starr & MacMillan, 1990). Moreover, a reduction of the operating asset base by actively implementing bootstrap strategies may constrain venture growth (Harrison et al., 2004). Given these opposing views, we pose the following question: how does the use of bootstrap strategies impact startup growth?

Method

The sample includes 637 Flemish firms founded one to two years before September 2003 and employing less than 50 people (29.4% of the population). Combining both questionnaire and yearly financial statement data it is examined how bootstrap strategies measured at startup influence growth. The focus is on absolute growth in employment, total assets and value added from 2004 to 2006.

Results and Implications

Results indicate that most bootstrap strategies have no impact on growth. Bootstrap strategies that have an impact, however, are almost always enhancing startup growth. The use of interim personnel, joint premises and the early collection of money from customers, all have a positive impact on growth. While the most common theoretical assumptions about the nature of resources and resource environments offer little understanding of how some ventures prosper in resource scarce environments (Baker & Nelson, 2005), this research addresses the question how ventures may grow despite difficulties in attracting external financial resources.

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≈ INTERACTIVE PAPER ≈

**IS IT A LEMON OR A CHERRY? MARKOV MODELING OF
ENTREPRENEURIAL GROWTH AND PROFITABILITY**

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Principal Topic

In both the academic literature and popular media, firm growth – especially high growth - is considered a sign of entrepreneurial success. While the existing literature considers firm growth a desirable goal research results on the relationship between growth and profitability is inconclusive. This desirability of growth for young ventures is challenged by Davidsson et al (2008). Their study shows that a high profitability- low growth firm is more likely to make the transition to high profitability – high growth than a firm that starts off with low profitability. Our study expands on the work of Davidsson et al. (2008). Our study is limited to a narrow empirical context – life science ventures in Finland.

Method

We use a 2x2 matrix where each firm is positioned as either above or below the LS sector average on growth and profitability; low-low (poor), high-low (growth), low-high (profit), high-high (star). Using Markov chain analysis financial data of 90 small privately held Finnish Biotech firms over three years (2004-2006) was analyzed to estimate the transition *probabilities* between the states over consecutive time periods. Growth is measured as growth in sales, profitability as EBIT. The data consisted of 12 different firm categories, with different strategic orientation ranging from drug development firms to service companies.

Results and Implications

Our results concur with those of Davidson et al (2008). The transition probabilities indicate a clustering in two main categories: {star, profit} and {growth, poor}. The probability for a firm in the former category to remain there is over 70%. Whereas a firm in the latter category will remain there has a probability of 56-60%. In fact, a firm focusing on profitability will remain profitable or switch to a star with probability exceeding 80%. A growth-firm has a lower probability to switch into a profit or star than has a poor firm. This evidence suggests that emphasizing growth may be more destructive for a low-profit firm than a more balanced strategy. The strategic orientation of the firm did not impact the results.

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∞ INTERACTIVE PAPER ∞

BEYOND CREDIBILITY: THE ROLE OF STORIES IN ENTREPRENEURIAL RESOURCE ACQUISITION

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Principal Topic

Entrepreneurial stories are useful resource acquisition tools (Martens, Jennings & Jennings, 2007). Current literature, however, only partially articulates the mechanisms by which stories affect investors' decisions. Stories have typically been portrayed as instruments to demonstrate the credibility of the venture idea and the entrepreneurial team itself. We argue that stories have some non-rational functions as well. Our idea is that stories invoke additional motivations that may make the investment attractive. Furthermore, we believe that stories also invoke in investors positive affect that renders them more likely to positively assess the investment opportunity; we infer that this assessment is often experienced by investors as "gut feel" (Zacharakis & Shepherd, 2007). In short, we propose that investor decision making is much more than a cognitively rational process, and we seek to examine how stories help create impressions that translate into investment decisions.

Method

To investigate how investors make decisions, we propose to conduct both a field study and an experiment. Interviews with investors will help us to create realistic instruments for our experiment as well as to collect some of the experimental data. We will also conduct experiments with business students in order to allow us to have a large enough sample to test nuances of our theory. We proposed that stories work, in part, by evoking motives in addition to economic self-interest. In order to examine this claim, we created two sets of stories, one set that contains evidence of satisfying "other-regarding" motives, and one that does not. We also argue that the vividness of images in the stories themselves matter to how deeply the listener responds to the stories. Therefore, we create a 2X2 experiment in which the investor responds to other-regarding stories (with and without vivid imagery), and to stories lacking appeals other-regarding motives (with and without vivid imagery).

Results and Implications

If our predictions are supported, the implication is that entrepreneurs should consider how their pitches affect their ability to obtain needed resources. The strength of different elements of our predictions should provide guidance to where effort should be placed and would suggest that this entire area of work deserves further research attention.

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THE IMPACT OF PERCEIVED ENTREPRENEURIAL PASSION ON ANGEL INVESTING



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ABSTRACT

In this paper we examine the relationship between the passion an entrepreneur displays, the passion angels perceive, and the impact on angels' interest and funding of ventures. Our qualitative study results indicate that angels do use displayed passion as a factor in their investment decisions and specifically focus on the enthusiasm, preparedness, and commitment entrepreneurs demonstrate. Results from our quantitative study suggest that the importance of different types of displayed passion varies depending on the stage of the funding process examined, and that all three types of displayed passion have a relationship with perceived passion and evaluations of funding potential, although the nature of these relationships is complex.

INTRODUCTION

Entrepreneurs need financial resources to grow their ventures, and often such resources come from outside investors, such as venture capitalists, angel investors, or friends and family. Entrepreneurs of fast growth firms who anticipate quick and aggressive growth often turn to angel investors for financing. Angels, who are often wealthy individuals with experience building a business, provide early stage financing for start-up ventures. Angel investors have provided seed capital for notable U.S. businesses such as Bell Telephone in 1874, Ford Motor Company in 1903, and Apple Computer in 1977 (e.g., Van Osnabrugge & Robinson, 2000). Although it is hard to estimate the exact size of angel investment due to its highly fragmented nature, in 2007 it is estimated that angels invested a total of \$26 billion in 57,120 entrepreneurs (e.g., Sohl, 2008.). Angels tend to invest in very early stages of the funding process, before new ventures typically can attract venture capital financing. Therefore, angel capital plays an important role in the entrepreneurial process.

Prior research suggests that angels use various criteria for determining whether or not to invest in a start-up, including enthusiasm of the entrepreneur, trustworthiness of the entrepreneur, exit route, revenue potential, domain expertise of the entrepreneur, growth potential of the market, and barriers for entry (eg. Van Osnabrugge, 1998, Sudek, 2006). One investment criteria receiving increasing attention is entrepreneurial passion. Chen, Yao, and Kotha (2009) argue that "passion is often critical to convince the targeted individuals to invest their money, time, and effort in the new venture." Passion may provide a strong indication of how committed the entrepreneur is to putting in the time and effort needed to make the company a success (c.f. Vallerand, et al., 2003). Passion may be associated with drive, tenacity, initiative, and willingness to work long hours (Bierly et al., 2000; Bird, 1989), and may help entrepreneurs find creative solutions to problems, persist despite obstacles, and experience a flow-like state of absorption (Cardon et al., 2009).

While scholars have recently focused on passion as experienced by entrepreneurs (e.g. Klauken, Patzelt, & Shepherd, 2008; Cardon et al, 2009), others suggest that displayed passion is perhaps

just as important (e.g. Cardon, 2008). This is because some people display emotions they do not feel (e.g. Rafaeli & Sutton, 1987; Dasborough & Ashkanasy, 2002), and some are less expressive in displaying felt emotions (e.g., Kring, Smith, & Neale, 1994). We use the term “displayed passion” to refer to the emotion that is expressed or displayed by the entrepreneur. Entrepreneurs may be more persuasive when they demonstrate high levels of positive emotion (Baron, 2008), may appear more confident, and may receive more favorable decisions from investors (Chen, et al., 2009).

When entrepreneurs display passion, such as through providing animated venture pitches or presentations, potential investors make assessments concerning the level of perceived passion, or the amount of passion they perceive the entrepreneur to have. This is distinct from displayed passion, because the emotion an entrepreneur is trying to communicate through their display may not be perceived by the investor, or the investor may perceive that the displayed emotion is not genuine and thus will not perceive the entrepreneur to have passion. We use the term “perceived passion” to refer to the extent to which others perceive the entrepreneur to be passionate about their venture.

Scholars suggest that both angels and VCs rate perceived passion as an important investment criterion (e.g., MacMillan et al., 1987; Carter & Van Auken, 1992), however angels may view perceived passion as even more important than VCs (Carter & Van Auken, 1992; Sudek, 2006; Van Osnabrugge, 1998) due to their investments typically occurring at earlier stages of a company’s life. It may also be more relevant to angel investors because they base a lot of their investment decision on the entrepreneur themselves (Sudek, 2006), in addition to the business opportunity.

Very little is known about the extent to which either displayed and/or perceived passion plays a role in angel investment decisions. Thus, the focus of this study is on the relationship between an entrepreneur’s displayed passion, the angels’ perceived passion and how far the entrepreneur gets through the angel investment process. Angels have many decision points in considering investing in a business and firms fall out of the process due to unfavorable decisions at each step. For example, in our dataset, of the 1266 entrepreneurs who applied to the angel investor organization at the time of our study, 152 were invited to make presentations, and to date only 30 have been funded by angels in this group. While there may be several reasons why angels decide not to fund a venture or to move it to the next stage in the funding process, we focus on the extent to which displayed and perceived passion play a role in these decisions. Our specific research questions are; 1) Do angel investors consider the passion of the entrepreneur when making their funding decisions? If so, how do they conceive of passion? How do they evaluate it?; and 2) What impact does passion have on the actual investment? How far can passion take an entrepreneur towards acquiring the financial resources s/he wants from angels?

ANGEL INVESTING

Investors make their decisions to invest in startups based on the attributes of the entrepreneur, the management team, and the business opportunity. Previous research has looked at VC and the angel investment decisions (e.g., Tyebjee & Bruno, 1984; MacMillan, Siegel, & Subbanarasimha, 1985; MacMillan, Zemann, & Subbanarasimha, 1987; Carter and Van Auken, 1992; Van Osnabrugge, 1998; Haar, Starr, and Macmillan, 1988; Sudek, 2006). These studies show that entrepreneurial commitment, passion, trustworthiness, domain expertise, and track record are the most important entrepreneurial characteristics. In addition, these studies showed that

revenue potential, market growth potential, barriers for entry, and exit potential are the most important criteria when evaluating characteristics of the opportunity.

The funding decision process used by VCs and angels typically consists of an initial screening of the opportunity, a screening presentation, due diligence, funding, and post investment involvement (e.g., Tyebjee & Bruno, 1984; Sudek, 2006). The initial screening phase typically filters out business opportunities that do not fit the VC or angel group. This may consist of a brief meeting with the entrepreneur, or this might be done via business plan or application review by the angel group. The screening phase consists of a presentation by the entrepreneur, followed by a question and answer period. This phase typically lasts between 30 and 45 minutes. If there is enough interest from the screening, the deal proceeds to due diligence. The due diligence phase consists of multiple meetings with entrepreneur and investors to review the business plan in detail. If it is determined the deal is still worthy of investing, a funding phase includes the final deal terms negotiation and actual investment. After the investment is made both VC and angels are involved with the company in the post investment phase.

Although entrepreneurs go through a similar funding decision process with both angels and VCs (Sudek, 2006), angels differ from VCs in several important areas. Angels tend to invest in very early stages of the funding process, before new ventures can attract venture capital financing (Freear & Wetzel, 1990). Angel investors typically include private individuals that invest their own money, whereas VCs invest funds raised from institutional investors (Van Osnabrugge, 2000). Angels perform less due diligence than VCs and invest more opportunistically, rely more on instincts, and do not calculate internal rates of return (IRR) (e.g., Timmons, 1990; Baty, 1991; Mason & Harrison, 1996; Van Osnabrugge & Robinson, 2000). Angels and VCs also differ in their entrepreneurial experience and expected involvement (e.g., Van Osnabrugge & Robinson, 2000). In general, Angel investors have more operating experience and are much more involved with the companies in which they invest than VCs. In addition, angels are more often involved in day-to-day operations (e.g., Benjamin & Margulis, 2000). Often, Angels will work part-time with periods of full-time commitment to help entrepreneurs through challenging issues (e.g., Van Osnabrugge & Robinson, 2000). For these reasons, the angel investment often becomes more personal for the investor, and is distinct from VC investment. Because of these differences we seek to understand how entrepreneurial passion may play a role in the funding decisions of angel investors, a question not yet addressed in the literature.

ENTREPRENEURIAL PASSION, DISPLAYED PASSION AND PERCEIVED PASSION

Entrepreneurial passion involves an “intense affective state that bears cognitive and behavioral manifestations of high personal value” (Chen, Yao, & Kotha, 2009: 199). It involves intense and positive feelings that entrepreneurs experience when they are engaged in key activities associated with roles (such as founder) that are critical to the self-identity of the entrepreneur (Cardon et al., 2009; Hoang & Gimeno, in press). The two key aspects of entrepreneurial passion seem to be that 1) it involves positive and intense feelings, and 2) the object of these feelings is profoundly personally meaningful to the entrepreneur. It can be difficult for outsiders to determine the personal meaning of activities or events to an entrepreneur, so the observable aspect of passion is the intensity of the positive feelings that an entrepreneur displays.

While entrepreneurs can certainly display authentic emotions to others such as employees (e.g. Cardon, 2008) or potential investors (Chen, et al., 2009), scholars determined long ago that individuals can use emotional labor to display emotions they do not feel or hide emotions they do feel in order to secure more positive outcomes for themselves (Rafaeli and Sutton, 1987) or their organizations (Dashborough and Ashkanasy, 2002). The entire field of emotional intelligence is based on the idea that individuals can control their own emotions, pick up on the emotions of others, and deliberately try to influence the emotions of other people (Cross and Travaglione, 2003). Thus it is critical for us to differentiate between the passion or more general positive affect experienced by entrepreneurs that other scholars have looked at (Cardon et al., 2009; Baum, Locke, and Smith, 2001; Baron, 2008), the passion entrepreneurs choose to display, and passion as perceived by others such as angel investors.

The passion an entrepreneur displays is important because it can lead investors to be more confident in the entrepreneur, particularly when the product or environment is ambiguous and uncertain (Zacharakis & Shepherd, 2001). High levels of displayed positive affect can help entrepreneurs expand their social networks and be more persuasive, which combined can increase their social and financial capital (Baron, 2008). Displayed passion can also lead to emotional contagion, where others cannot help but get caught up in the excitement the entrepreneur displays (Cardon, 2008). This would lead to a suggestion that displayed passion, especially enthusiasm which is most readily associated with the theoretical definition of passion as an affect, will lead to greater investment by angels. More formally,

H1: Greater enthusiasm (displayed affective passion) will be associated with greater evaluations of funding potential.

In addition, different aspects of how an entrepreneur displays passion might be important, including affective, cognitive, and behavioral aspects. Chen, Yao, and Kotha (2009) define passion as an intense affective state that is accompanied by cognitive and behavioral manifestations of high personal value. They talk about affective passion, which when displayed is akin to enthusiasm, and suggest that the affective experience of passion tends to be accompanied by cognitive arousal (I can't stop thinking about my business) and behaviors to act on that passion (Chen et al., 2009). In particular they argue that in addition to enthusiasm, investors will pay attention to the cognitive preparedness of an entrepreneur that is likely associated with passion. We agree that investors may well consider how prepared an entrepreneur is for a presentation and assess how much thinking they have done about their business; their preparedness. In fact, Chen, Yao, and Kotha (2009) found that for student business plan presentations, business plan judges (i.e. bankers, VCs, and individuals from financial companies) paid more attention to preparedness than to the displayed enthusiasm of student presenters. The content of the business plan itself was more important than the manner in which the pitch was delivered. Consistent with their findings and the theoretical arguments above, we propose that,

H2: Greater preparedness (displayed cognitive passion) will be associated with greater evaluations of funding potential.

Investors may also consider how committed an entrepreneur is to the business in terms of their behaviors. The entrepreneur's commitment and determination are critical when looking for successful entrepreneurs (e.g., Timmons & Spinelli 2004). As Benjamin and Margulis (2000: 95) articulated, investors pay great attention to passionately committed entrepreneurs. For example,

whether or not the entrepreneur has committed their own money to the venture may be important, as well as whether the entrepreneur still maintains another job or only works for the company seeking investment. These behavioral manifestations may be associated with the amount of passion an entrepreneur experiences, and therefore are a part of the passion they may display to others. From an investment perspective, when an entrepreneur has invested their own money angels feel they have “skin in the game.” This signals to the angels that they are more committed to a successful outcome. Sudek (2006) reported that in a qualitative study of angel investors discussed an entrepreneur who appeared passionate and committed based on investing his own money, one who showed high energy and enthusiasm that impressed the angels. In addition, the passionate entrepreneur had made reasonable money in past careers and had put up most of his money, including mortgaging his house, to start the company. The passion and perceived commitment of this entrepreneur garnered excitement from the investors.

H3: Greater commitment (displayed behavioral passion) will be associated with greater evaluations of funding potential.

However, if the passion displayed is perceived by angels as momentary or not genuine, it will likely not have a major impact on angel investing. Angel investors typically screen many companies and have developed a sense of when the presenter is genuinely passionate about their product or company and when not. Similarly, Elsbach and Kramer (2003) found that when unknown screenwriters pitched ideas for shows to studio producers, the producers categorized the presenters based on their level of passion in order to assess their creative potential, including the ability to adapt and innovate, versus presenters that had an interesting story but lacked this creative potential. This categorization determined whether or not the script would be successful at that studio. We believe angel investors have a similar skill at reading between the lines to determine their own assessment of the perceived passion of the entrepreneur. They may also rely more on their assessment of the sincerity of the entrepreneur’s displayed passion (Chen, Yao, and Kotha, 2009; Ferris, Treadway, Perrewe, Brouer, Douglas, & Lux, 2007) in making their funding decisions.

In addition, temporary emotions, such as those elicited through contagion processes, tend to diminish once the stimuli (such as the immediate presence of the passionate entrepreneur) is removed (Bechara, Dimasio, and Dimasio, 2003). This leads us to believe that some aspects of displayed passion, such as preparedness and commitment, may be more important than displayed enthusiasm at later stages of the funding process. Overall, we suggest that while all three aspects of displayed passion will influence the extent of progress an entrepreneur makes in the funding process, a key mediating variable may be the level of perceived passion on the part of the angel investor.

H4: The relationship between a) enthusiasm, b) preparedness, and c) commitment and greater evaluations of funding potential will be mediated by the level of passion perceived by angel investors.

METHODS

To test our hypotheses we conducted two studies, one qualitative and one quantitative. In the first we qualitatively assessed our first research question, how angel investors think about passion and whether they think it is relevant to the investment decision. In the second study we examined

our second research question, the impact of the perceived passion of entrepreneurs on the funding process, and tested our hypotheses using a sample of 60 entrepreneurs and 53 angels.

Study 1

In study 1, data were gathered from multiple US angel investment groups to determine what angel investors think about perceived entrepreneurial passion. These groups sometimes invest as a group, but typically each angel decides whether or not to independently invest. In the fall of 2008, angels were asked to take an online survey that included measures of 1) the extent to which they include perceived passion as a criterion when they make investment decisions; 2) why passion is or isn't important when evaluating an entrepreneur; 3) how they define perceived passion; and 4) the specific behaviors or attitudes they look for in entrepreneurs seeking funding.

This qualitative study was necessary to validate and modify the scale that has been used in prior research to assess perceived passion (Chen et al., 2009), for several reasons. First, the prior scale was developed to assess passion in student presentations, which might be quite different than presentations given by practicing entrepreneurs. Second, the prior scale was used by judges (i.e. bankers, VCs, and individuals from financial companies) to assess student presentations, and research has shown that angel investing is quite different than VC investing (e.g., Van Osnabrugge & Robinson, 2000), and may also differ from typical loan decisions from banks. For example, because angels do not have to answer to other partners in a firm they may have less rigorous and objective evaluations of ventures (e.g., Van Osnabrugge & Robinson, 2000), and are thus perhaps more easily persuaded by a passionate entrepreneur. Finally, the scale developed by Chen and colleagues has only been used in one prior study, and therefore validation of the scale in other contexts is important.

Study 1 results. 1,336 angels were asked to participate in this study, and 150 angels completed the survey, yielding a response rate of 11%. The average rating of how important passion is to their investment decisions was 4.53 on a 5 point scale. Definitions of passion included comments such as "passion is the emotional attachment to the business that carries you through the hard times. It is often the intense, driving feeling or conviction that this can work, will work, and must work."

In response to the question of why passion is important, angels responded with comments such as "it reflects the entrepreneur's level of commitment to and energy for the endeavor being considered." "Without passion it won't last long." "Without passion, the normal speed bumps can be terminal." "Passion keeps people going in the face of obstacles and early failures." "It contributes to momentum and has an infectious quality that brings in talent and money."

However, other angels were more skeptical of using passion as an investment criterion, making comments such as the following: "No amount of passion can make a pig fly." "Passion is important, but more of a necessary than sufficient condition for considering an investment." "Numbers speak for themselves and the idea should make sense on its own. No one person can sell an idea just with passion." "Too much passion is dangerous because it equates to tunnel vision." "Passion is just one part of the equation: skill, knowledge, intelligence, eloquence, etc." also matter. "it is just one element of the recipe. For example, it would never be more important to me than intelligence but intelligence is insufficient without passion."

In order to develop a new scale for measuring displayed passion, three independent coders analyzed two questions the angels responded to: What specific behavior or attitudes would

represent an entrepreneur with a high (low) level of passion? The responses fell into three categories, which were consistent with the affective, cognitive, and behavioral passion distinction made by Chen and colleagues (2009). However, the specific items contained in each category differed from those presented previously. Displayed affective passion included factors related to how much enthusiasm and excitement the entrepreneur displayed in their presentation to the angels. Specific items identified included “tone of voice,” “eye contact and intensity of verbalization,” energetic and enthusiastic presentation of business/ideas,” “high energy and a positive attitude.” Displayed cognitive passion reflected preparedness, or the extent to which the entrepreneur appeared knowledgeable and focused mentally on their venture. Specific comments made by the angels included the following: “deep and thorough knowledge of his business model,” “to display extensive knowledge of the key issues.” “knowing their field, product and/or idea cold, and “has thought about objections and has clearly defined answers.”

Displayed behavioral passion items reflected the amount of personal commitment the entrepreneur has demonstrated to their business including how much personal financial investment they have made. Sample comments from the angels include “committing significant time and resources to the project,” “willing to put his own money at risk,” “commitment of time, career, and money,” and “personal sacrifice, commitment to the business, long hours (years in some cases) developing the company business.” Based on angel responses to these open-ended questions we created three scales for use in Study 2: displayed affective passion (enthusiasm), displayed cognitive passion (preparedness), and displayed behavioral passion (commitment). Specific items for each scale are indicated in Figure 1.

Study 2

In study 2, we used the displayed passion scale developed in study 1, and examined the relationship between displayed passion, angel assessments of perceived passion and how far the entrepreneur got in the funding process.

We used 60 videotaped screening presentations entrepreneurs made to one of the largest US angel investment groups, the Teach Coast Angels group. As of February 2009, this group had made investments in over 150 companies totaling over \$99 million (TCA, 2009). TCA has approximately 300 angels across five chapters in California. Angel participants in this study were part of the Orange County chapter of TCA. In the normal TCA funding process, entrepreneurs fill out an online application and are then pre-screened by 3-5 angels. If the angels determine the entrepreneur should go further, they give a full screening presentation. These presentations are typically made to 10-20 angels.

Videos were collected at screenings made to the Orange County chapter of TCA between July 2006 and March of 2009. In each video, the presenting entrepreneur made a 15 minute presentation following by 15 minutes of Q&A. The full 30 minutes were coded for this study. Each coder responded to the video in terms of scales described below to assess the displayed passion (enthusiasm, preparedness, and commitment) of the presenter. Coding of videos was completed in two separate steps. In the first step, five researchers coded 10 presentations. The overall inter-rater reliability for the 10 presentations was .896. This gave us confidence that the coding was consistent and that we could proceed to step two, where the remaining 50 videos were assessed by three of the five original coders. The inter-rater reliability for these 50 videos was .872. One company was

dropped from the analysis due to the determination it was an outlier due to a negative Cronbach's alpha among coders.. The resulting sample included 59 video—taped entrepreneurs.

Measures of displayed passion. The displayed passion scale developed in study 1 contains three types of displayed passion – displayed enthusiasm (affective passion), displayed preparedness (cognitive passion), displayed commitment (behavioral passion). Reliability for two of the three displayed passion scales were high. The Cronbach's alpha of .937 for displayed enthusiasm and .844 for displayed preparedness are comparable to Chen, et al. (2009) alphas for similar scales of .94 and .90, respectively. In addition, we measured displayed commitment but only achieved a Cronbach's alpha of .444 for this three item measure. The correlations among the three scales were low (ranging from -.033 to .366), indicating that while they are correlated, they are not redundant scales.

Measures of perceived passion. When each screening presentation was initially made, angel investors assessed the overall passion and enthusiasm demonstrated by the entrepreneur at the time of their presentation. The passion item was "CEO is very passionate about the company" and the enthusiasm item was "CEO is very enthusiastic." This measure of perceived passion was done at the screening stage of the angel funding decision process.

Measure of evaluation of funding potential. Angels evaluate the funding potential of a new venture at various stages of the funding decision process, creating multiple points where an entrepreneur can fail to proceed to the next stage of the funding decision process. Two dependent variables were utilized in this study, interest at the screening stage and investment at the funding stage. Interest represents the evaluation angels make at the end of the screening stage: whether the angel expresses interest in the new venture as an investment which we coded as 1 = interest and 0 = no interest. The second dependent variable, measured at the funding stage, indicates whether the angel invested in the new venture. A dichotomous variable was created with 1 indicating an angel invested in a new venture and 0 indicating no investment.

Control variables include the strength of the opportunity and the amount of funding sought. Strength of the opportunity was determined by averaging the responses of angels attending the focal screening. Angels used a 5 point agree-disagree scale to rate the strength of the opportunity using six items, such as "the business model is strong", "the market has a large growth potential", etc. The dollar amount of funding sought was standardized to make it more comparable to the other variables.

Study 2 results. Table 1 provides means, standard deviations and correlations for variables used in the study. Fairly low correlations among the independent variables indicate multicollinearity is not an issue. In addition, our diagnostic tests indicate that the data do not violate assumptions of linearity, normality, homoskedasticity, and independence. We tested our hypotheses using hierarchical regression analyses to regress each of the dependent variables on blocks of predictor variables. Table 2 provides the logistic regression results for both dependent variables. Models 1-3 provide the results predicting interest in funding the new venture at the screening stage and models 4-6 show results for investment in the new venture at the funding stage. We controlled for strength of opportunity which was significant in all models and amount of funding sought which was not significant in any of the models (Table 2, models 1 and 4).

Hypothesis 1 argues that displayed enthusiasm will be positively associated with progress through the funding process. We did not find support for this hypothesis at either the screening stage or the funding stage (Table 2, models 2 and 5). The results indicate that displayed enthusiasm may be negatively related to interest at the screening stage but not related to whether angels invest at the funding stage ($b = -.294, p < .05$; $b = -.597, p > .05$, respectively).

Hypothesis 2 proposes that displayed preparedness will be positively associated with progress through the funding process. Support for this hypothesis was found at the funding stage but not at the screening stage ($b = .316, p > .05$; $b = 9.986, p < .05$, respectively).

Results regarding hypothesis 3 are similar to the results regarding hypothesis 1. We did not find support for the positive association of displayed commitment with either interest at the screening stage or investment at the funding stage (Table 2, models 2 and 5). The results indicate that displayed commitment may be negatively related to interest at the screening stage and not related to investment at the funding stage ($b = -.392, p < .01$; $b = 3.152, p > .05$, respectively).

Hypothesis 4 suggests that perceived passion mediates the relationships between displayed passion (enthusiasm, preparedness, and commitment) and funding progress. Baron and Kenny (1986) provide a framework using regression to test for mediation. Variable M is considered a mediator if the following criteria are met: 1) X significantly predicts Y, 2) X significantly predicts M, and 3) M significantly predicts Y when controlling for X (Baron & Kenny, 1986; Preacher & Hayes, 2004). Following this framework, perceived passion does not appear to mediate the relationships between types of displayed passion and progress in the funding process due to one or more of these three criteria not being met (Tables 2, models 3 and 6; Table 3, model 2). However, researchers argue the importance of directly testing the significance of indirect effects to overcome the shortcomings inherent in the Baron and Kenny method (i.e. Holmbeck, 2002; MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002; Preacher & Hayes, 2004).

Evidence of mediation exists if the indirect effect of X on Y when M is present differs from the direct effect of X on Y (Preacher & Hayes, 2004). Statistically testing if these two effects differ is more robust than conducting a series of regression analyses (MacKinnon et al., 2002; Preacher & Hayes, 2004). The Sobel test provides a more direct test of an indirect effect but assumes normal distribution of errors (Preacher & Hayes, 2004). A more conservative approach is not to assume normal distributions and use a bootstrap test (Lockwood & MacKinnon, 1998). Preacher and Hayes (2004) provide the framework and necessary SPSS syntax to test for significance with the Sobel test and a bootstrapping test.

Table 4 shows the results of the Preacher and Hayes (2004) Sobel and bootstrap test using the unstandardized path coefficients. The Sobel test and the bootstrap indicate perceived passion has a mediating effect on the relationships between the three types of displayed passion and interest at the screening stage but not investment at the funding stage. Perceived passion appears to mediate the relationship between displayed enthusiasm and interest as determined by the Sobel test ($z = 4.73, p < .01$), as well as the bootstrap test which indicates the indirect effect is different from zero with 99% confidence. In other words, although displayed enthusiasm by itself does not lead to or prevent angel interest at the screening stage ($b = -.121, p > .05$), there is a part of displayed enthusiasm that is positively related to perceived passion ($b = .264, p < .01$) and is positively related to interest at the screening stage ($b = .735, p < .01$). The part that is not related to perceived passion is in fact negatively related to interest at the screening stage ($b = -.320, p < .01$).

With regards to displayed preparedness, the results indicate that displayed preparedness does have an indirect effect on interest, with the effect occurring through perceived passion. Although, the positive relationship between displayed preparedness and interest is not statistically significant ($b = .284, p > .05$), the relationship is smaller after controlling for perceived passion ($b = .083, p > .05$). The bootstrap output shows that the indirect effect is different from zero with 99% confidence and the Sobel test also indicates a statistically significant indirect effect exists ($z = 3.26, p < .01$).

Finally, the mediating effect of perceived passion on the relationship between displayed commitment and interest at the screening stage is similar to when examining displayed enthusiasm with the exception of a statistically significant negative relationship between displayed commitment and angel interest at the screening stage ($b = -.363, p < .01$). However, there is a part of displayed commitment that is positively related to perceived passion ($b = .156, p < .01$) and is positively related to interest at the screening stage ($b = .728, p < .01$). The part that is not related to perceived passion is negatively related to interest at the screening stage ($b = -.496, p < .01$). Therefore, we find support for hypothesis 4 when examining interest at the screening stage but not investment at the funding stage.

DISCUSSION AND IMPLICATIONS

Theoretical developments have argued that passion is a critical component of entrepreneurship. This paper adds to the literature by providing an empirical assessment of the extent to which these theoretical arguments hold true for angel investment decisions. This should help both angels and entrepreneurs seeking their funding to better understand the dynamics of these investment decisions. It also is one of the first empirical studies of the role of passion in entrepreneurship, and the first to examine the impact of displayed passion on angel investor decision-making.

Research implications and areas for future research

As expected, displayed enthusiasm (affective passion) and displayed commitment (behavioral passion) appear to lead to more perceived passion, as assessed by angel investors. However, these two types of displayed passion were not expected to be negatively associated with interest at the screening stage or investment at the funding stage. It appears that the relationship between displayed passion and evaluations of funding potential angels make at both the screening and investment stage of the funding process may be more complex than originally thought. Both displayed enthusiasm and displayed commitment have aspects that lead to increased perceptions of passion and also interest at the screening stage, but also have aspects that lead to decreased interest at the screening stage. One possible explanation for these results could be related to literature regarding individuals displaying emotions they do not feel in order to secure more positive outcomes for themselves (Rafaeli and Sutton, 1987) or their organizations (Dashborough and Ashkanasy, 2002). Angels may be weary of being influenced in this manner and therefore are suspicious of some aspects of displayed passion. Future research can conduct a more fine-grained examination of exactly what aspects of displayed enthusiasm and commitment are positively associated with interest at the screening stage of the funding process, and which aspects have a negative impact on interest.

The fact that perceived passion only had a mediating effect when predicting interest at the screening stage of the funding process and not at the investment stage of the funding process

suggests that displayed enthusiasm (affective passion) and displayed commitment (behavioral passion) will only get you only so far in the funding process. A strong opportunity appears to be always important (as indicated in its statistical significance in all models), whereas the type of displayed passion that matters changes as an entrepreneur progresses through the funding process. This could be a result of temporary emotions elicited through the contagion process diminishing over time (Bechara, et al., 2003). In the weeks or months between the presentation and the investment decision, the passion the entrepreneur was able to convey to the angel, as well as the angels recollection of displayed passion likely diminishes. However, displayed preparedness (cognitive passion) does not seem to diminish over time. Although not directly related to either perceived passion or interest at the screening stage, displayed preparedness is positively associated with investment at the funding stage. Displayed preparedness may have a more lasting impact than the other two types of displayed passion. This result is consistent with the findings of Chen Yao, and Kotha (2009) who found that in evaluations of business plan presentations raters also focused more on preparedness than on affective passion of the presenters. However, while those authors propose three aspects of passion (affective, cognitive – preparedness, and behavioral – commitment), they tested only the first two of these aspects, while we tested all three.

While we focused on the mediating effect of perceived passion on the relationship between displayed passion and important outcomes, there is a need for future research to continue to explore how experienced passion differs from displayed passion and perceived passion in the entrepreneurship context. Our somewhat surprising results concerning enthusiasm and commitment may be due to angels sensing the entrepreneur is putting on an act and not displaying authentic emotions. Therefore we need to use recently developed measures of the extent to which entrepreneur really feel or experience passion (Cardon, 2008), as well as what this passion is focused on (Cardon et al, 2009) in order to truly understand the nuanced relationships between passion that is felt, displayed, and perceived, and how these factors influence angel funding decisions. It may also be relevant to look at other characteristics of the entrepreneur (i.e. personality, social skills, etc.) that might impact the level of displayed passion and perceived passion. The amount of passion perceived by others likely is impacted by characteristics of the entrepreneurs displaying such passion, as well as their skills such as social perception skills. We hope that this study encourages future research to explore these types of relationships.

Limitations

There are several limitations of this study that need to be noted. First, our measure of displayed commitment (behavioral passion) had a low Cronbach's alpha. We had only a three item measure that reflected different possible manifestations of behavioral passion, and future research is needed to examine what additional or alternative items could be used.

Second, since most new ventures at the screening stage of the funding process do not ultimately receive funding, the number of cases at the funding stage was substantially smaller than at the screening stage. 59 new ventures were screened by between 7 and 21 angels for a total of 860 observations. Of the 59 new ventures in the sample that reached the screening stage, 9 received funding, resulting in 109 observations involving both displayed passion data and data regarding whether the angel invested. Most angels choose not to invest most of the time. This results in a fairly low number of cases involving angels' evaluations of the investment criteria who subsequently invested in the new venture. Only ten of the 109 observations involve angels who ulti-

mately invested. This small sample size may explain the lack of support for some of the hypotheses at the investment stage of the funding process.

Practical implications

The results suggest that entrepreneurs seeking funding from angel investors need to have a good business idea and need to be able to display to potential investors that they are prepared, meaning they have thought through the big picture and impact of their product or service and are able to convey confidence and answer questions competently. In addition, their ability to convey authentic enthusiasm and commitment to angels appears to be important in terms of increasing angels' initial interest in the venture. However, the relationships among the three aspects of displayed passion, angels' perceptions of perceived passion, and actual funding appear complex and warrant further practical and academic study.

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Figure 1: Displayed Passion Scales Based on Qualitative Responses

Enthusiasm (displayed affective passion)

The CEO/presenter moved around a lot
 The presenter showed animated facial expressions
 The presenter talked with varied tone and pitch*
 The presenter had energetic body movements*
 The presenter had rich body language*
 The presenter used a lot of gestures*
 The presenter's face lit up when he/she talked*

Preparedness (displayed cognitive passion)

The presenter appeared focused and not distracted
 The presenter explained big picture - did not get lost in too many details
 The presenter was able to explain the impact of the product/service
 The presenter appeared curious and interested in solving problems
 The presenter was able to defend viewpoint while still appearing open
 The presentation was thoughtful and in-depth*
 The presentation content had substance*
 The presentation was coherent and logical*
 The presenter articulated the relationship between his/her business plan and the broader context*
 The presenter cited facts to support his/her arguments*

Commitment (displayed behavioral passion)

The presenter appears willing to do whatever it takes
 The presenter has developed strong social networks based on the quality of management team and advisors
 The presenter stated he/she uses the product/service

*item is also in the Chen, Yao, and Kotha (2009) measure.

Table 1: Descriptive Statistics and Correlations

	Mean	s.d.	n	1	2	3	4	5	6	7	8
1. Invested	.090	.290	109	1.000							
2. Interest	.410	.493	846	.261**	1.000						
3. Perceived Passion	4.076	.829	860	.179	.242**	1.000					
4. Strength of Opportunity	3.212	.643	860	.313**	.329**	.414**	1.000				
5. Funds Sought (std)	.000	1.00	833	.170	.037	.019	.170**	1.000			
6. Displayed Enthusiasm	3.210	.649	860	-.063	-.039	.206**	.002	-.005	1.000		
7. Displayed Preparedness	3.760	.302	860	.283**	.042	.126**	.094**	-.009	.366**	1.000	
8. Displayed Commitment	2.896	.606	860	-.026	-.105**	.097**	-.060	-.046	-.033	.099**	1.000

* p < .05; ** p < .01

Table 2: Results of Logistic Regression Analysis

	Screening Stage: Interest			Funding Stage: Invested		
	1	2	3	4	5	6
Control Variables:						
Strength of Opportunity	1.247**	1.240**	.981**	2.114**	2.189**	1.757*
Funds Sought	.041	-.049	-.033	.860	1.536	1.667
Independent Variables:						
Displayed Enthusiasm		-.294*	-.457**		-.597	-.628
Displayed Preparedness		.316	.319		9.986*	10.479*
Displayed Commitment		-.392**	-.494**		3.152	3.348
Mediator Variable:						
Perceived Passion			.574**			.681
Chi-Square	99.417**	113.459**	137.744**	13.931**	24.301**	25.136**
Change Chi-Square	99.417**	14.042**	24.285**	13.931**	10.369*	.835
Pseudo R-square						
Cox & Snell	.114	.129	.155	.120	.200	.206
Nagelkerke	.154	.174	.208	.262	.436	.449

* p < .05; ** p < .01

Table 3: Results of Multiple Regression Analysis for Perceived Passion

	1	2
Control Variables:		
Strength of Opportunity	.546**	.554**
Funds Sought	-.044	-.039
Independent Variables:		
Displayed Enthusiasm		.269**
Displayed Preparedness		-.012
Displayed Commitment		.175**
R-squared	.174**	.232**
Adjusted R-squared	.172	.228
Change R-squared	.174**	.058**

Standardized regression coefficients are displayed in the table.

* p < .05; ** p < .01

Table 4: Mediation Results

	Displayed Enthusiasm	Displayed Preparedness	Displayed Commitment
DV: Interest			
b (YX)	-.121	.284	-.363**
b (MX)	.264**	.343**	.156**
b (YM.X)	.735**	.669**	.728**
b (YX.M)	-.320**	.083	-.496**
Sobel Test	.194**	.229**	.114**
Bootstrap	.194**	.229**	.114**
DV: Invested			
b (YX)	-.362	7.051*	-.190
b (MX)	.245*	-.224	-.238
b (YM.X)	1.183	1.352*	1.079
b (YX.M)	-.5608	.067**	-.045
Sobel Test	.290	-.302	-.257
Bootstrap	.290	-.302	-.257

* p < .05; ** p < .01

WHAT DRIVES INFORMAL INVESTING? AN INSTITUTIONAL PERSPECTIVE



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ABSTRACT

Drawing from institutional theory, we examine macro-level drivers of countries' incidence of informal investment activity. Informal investment should increase to the extent that countries demonstrate (1) greater availability of opportunities, (2) better regulatory protection of opportunities, and (3) higher levels of generalized trust. Furthermore, the level of generalized trust should play a moderating role, such that it amplifies the effect of the availability of opportunities and suppresses the influence of the protection of opportunities in predicting the incidence of informal investment activity. On the basis of data from different cross-national data sources—the Global Entrepreneurship Monitor, the Heritage Foundation, and the World Values Survey—we find support for these hypotheses. This study is among the first to explain cross-country differences in informal investment activities.

INTRODUCTION

The mobilization of financial resources toward the exploitation of opportunities is a key issue confronting new businesses (Jackson and Mishra 2007; Shane and Venkataraman 2000). Because of the financial constraints and limited personal wealth of many of their founders, new businesses often demand large infusions of outside investment to engage in their central activities (Caputo and Dolinsky 1998; Duxbury, Haines, and Riding 1996; Maula, Autio, and Arenius 2005; O'Gorman and Terjesen 2006; Szerb et al. 2007). Yet access to external financing is not without challenges. New businesses typically lack reliable performance data or collateral, which makes it difficult to secure financing from banks and other sources of intermediated finance (Berger and Udell 1998), at least without additional costs such as fees or high collateral requirements (Evans and Jovanovic 1989). Although many new businesses receive financing from the founders' own resources, access to informal investments from family, friends, or strangers offers an important alternative (Berger and Udell 1998; Harrison, Mason, and Girling 2004; Maula, Autio, and Arenius 2005; Szerb et al. 2007). Thus, people's willingness to invest personal funds in others' new business endeavors may be critical for stimulating a country's entrepreneurial base (Peterson and Shulman 1987). We define informal investments as those investments made by family, friends, or strangers (O'Gorman and Terjesen 2006; Robinson and Cottrell 2007); business angel money represents only a small slice of the total pie of informal investments (Mason and Harrison 2008).

Yet research also shows that people's willingness to provide personal funds to new businesses varies from country to country (Bygrave 2007; Bygrave et al. 2003). Recent evidence from the Global Entrepreneurship Monitor suggests that the incidence of informal investment activity as a percentage of gross domestic product (GDP) among a sample of 42 countries ranges between 0.1 and 13 percent (Bygrave 2007). Understanding cross-country differences in informal investment

activity is important not only because of the aforementioned limits in owners' personal funds and their access to bank financing but also because a country's entrepreneurial sector relies to a far greater extent on informal rather than formal venture capital (Bygrave 2007; Landstrom 1998; Mason and Harrison 2008; Saetre 2003; Wright et al. 1998). Although extant literature sporadically notes the importance of macro-level environmental conditions in determining such informal investment activity—including appropriate tax incentives (Mason and Harrison 2008), supportive infrastructures (O'Gorman and Terjesen 2006), and social capital (Kwon and Arenius 2009)—it mostly focuses on micro-level factors, such as individual skills, perceptions of opportunities, and attitudes (Maula, Autio, and Arenius 2005; Szerb et al. 2007), or the specific cases of business angels (e.g., Mason and Harrison 2000, 2002; Duxbury, Haines, and Riding 2007) or formal venture capital (Armour and Cumming 2006; Black and Gilson 1998; Jeng and Wells 2000).

To address this gap, we use institutional theory as a conceptual lens to explain cross-country variations in informal investment activity. A basic premise of institutional theory is that social actors confront both formal institutional arrangements (e.g., regulations or rules) and informal ones (e.g., values and norms). These arrangements in turn may shape the economic activities in which actors engage (Campbell 2004; DiMaggio and Powell 1983; Nelson 1993; North 1990). Similarly, we propose that cross-country variations in the incidence of informal investment activity may be explained by differences in countries' formal opportunity structures and the informal relationships among their residents. We aim to answer the following research question: *How do formal and informal characteristics of a country's institutional environment influence the incidence of informal investment activity?* To answer this question, we examine the macro-level drivers of informal investment activity using a novel data set that covers 32 countries during the 2003–2007 period and that integrates data from different cross-national data sources, namely, the Global Entrepreneurship Monitor, the Heritage Foundation, and the World Values Survey.

The following section outlines our theoretical framework and develops the hypotheses regarding variations in countries' informal investment activity. We then discuss our data sources and the variables used in our analyses. After we present and discuss the results, we offer some concluding comments.

THEORY AND HYPOTHESES

Despite a growing body of research into informal investments (Maula, Autio, and Arenius 2005; O'Gorman and Terjesen 2006; Robinson and Cottrell 2007; Szerb et al. 2007), limited attention has been given to how a country's institutional context might explain cross-country differences in these investments. The institutional context defines alternative courses of action open to economic actors (North 1990; Scott 1995) and dictates the risks and rewards for different activities (Meyer and Rowan 1977). In the context of new business creation, a country's institutional environment defines, creates, or constrains new business opportunities and thus influences the level and nature of entrepreneurial activity within its borders (Aldrich 1990; Gnyawali and Fogel 1994; Hwang and Powell 2005; Manolova, Eunnii, and Gyoshev 2008).

To compare the incidence of informal investment activity across countries, we acknowledge the role of both formal and informal institutions, following arguments that institutions pertain to the “formal and informal rules, monitoring and enforcement mechanisms, and systems of meaning that define the context within which individuals [...] operate and interact with each other” (Campbell 2004: 1). Formal institutions are more proximate and directly shape the nature of eco-

conomic behavior (North 1990), as exemplified by the availability of new business opportunities (Gnyawali and Fogel, 1994) or the extent to which these opportunities are protected by regulatory arrangements (McMullen, Bagby, and Palich 2008). Informal institutions are more remote, in that they function as “background” and influence economic behavior indirectly rather than directly (North 1990; Whitley 1999), as exemplified by the dominant conventions about how social actors should relate to one another (Fukuyama 1995; North, 1990). We draw on this literature and present a number of hypotheses to explain why countries may differ with respect to the incidence of informal investment activity. Specifically, we consider the role played by opportunities for new business creation within a country’s borders, in terms of both availability and protection, and the level of generalized trust governing the relationships among a country’s residents.

Availability of Opportunities

An important facet of a country’s institutional environment is the extent to which it provides fertile ground for entrepreneurial opportunities (Gnyawali and Fogel 1994; Hwang and Powell 2005) and how this provision in turn may fuel the demand to fund opportunities. Literature on national business systems similarly documents that countries differ in the inputs they allocate to the creation of knowledge and innovation, as well as their institutional arrangements, which can help transform those inputs into viable entrepreneurial opportunities (Almeida and Kogut 1999; Whitley 1999).

We hypothesize that countries marked by a greater availability of opportunities exhibit a higher incidence of informal investment activity. The abundance of opportunities within a country’s borders can signal a positive economic climate to potential informal investors and increase the confidence that funding such new opportunities will lead to favorable outcomes or a more enjoyable investment process (Maula, Autio, and Arenius 2005). Furthermore, to the extent that opportunities for new business creation are abundantly present in a country, the challenge associated with matching the demand for and supply of entrepreneurial finance should decrease (O’Gorman and Terjesen 2006; Szerb et al. 2007). In contrast, a lack of investment opportunities may pose a challenge to informal investment activity, as exemplified by claims from informal investors that they would invest more if they had access to a wider range of high-quality opportunities (Mason and Harrison, 2002). Therefore, we hypothesize:

Hypothesis 1: There is a positive relationship between the availability of a country’s opportunities and its incidence of informal investment activity.

Regulatory Protection of Opportunities

The mere existence of opportunities, however, does not guarantee that people can profitably exploit them; the regulatory environment in which such opportunities arise is equally important (McMullen, Bagby, and Palich 2008). The regulatory protection of opportunities should enhance the incidence of informal investment activity, because it increases the odds that funds provided by informal investments will not be misallocated (Knack and Keefer 1997; Shleifer and Vishny 1997) and prevents infringements on the benefits of opportunity exploitation (Knack and Keefer 1997; Shleifer and Vishny 1997; Trevino 1996). When property rights are well respected, the illegal use of new businesses’ intellectual capital by others is unlikely, and thus, the potential returns to informal investors’ financial commitments are higher. The positive relationship between the regulatory protection of opportunities and the incidence of informal investment activity also receives support from empirical research that shows economic actors invest lower proportions of

their profits in countries with weaker property rights (Johnson, McMillan, and Woodruff 2002). Further, Baumol's (1990) seminal work on the role of the institutional context in explaining entrepreneurship indicates that investments in new businesses are constrained where there is a lack of property rights or strong enforceability of contracts is absent. In short, informal investment activity should be higher in countries that provide better regulatory protection for the exploitation of opportunities.

Hypothesis 2: There is a positive relationship between a country's regulatory protection of opportunities and its incidence of informal investment activity.

Generalized Trust

Macro-level studies of trust emphasize that countries differ with respect to how much their actors trust one another (Kluckhohn and Strodtbeck 1961; Knack and Keefer 1997). High-trust countries have a positive view of human nature, in that economic actors are more likely to believe in others' benevolent behavior, whereas in low-trust countries, business relationships are managed with formal contracts and other deterrence tools (Dakhli and De Clercq 2005; Knack and Keefer 1997; Kwon and Arenius 2009). We argue that a country's level of generalized trust should relate positively to its incidence of informal investment activity. Generalized trust reduces the uncertainty surrounding an investment target and hence the transaction costs involved in screening potential investments and monitoring investments ex-post (Chiles and McMackin 1996). Furthermore, in high-trust countries, people interact and participate more frequently in joint activities (Coleman 1990; Putnam 2000), which facilitates the diffusion of information about new business opportunities and thus the likelihood of informal investing (Kwon and Arenius 2009). Also, informal investors typically make investments through personal networks (Bygrave 2007; Maula, Autio, and Arenius 2005), which arguably are marked by higher levels of trust (Dakhli and De Clercq 2004). Finally, through trust-based relationships, potential investors get the chance to know the entrepreneur personally and may thus feel more comfortable in sharing personal resources with them (Kwon and Arenius 2009; Maula, Autio, and Arenius 2005; Szerb et al. 2007). In contrast, a lack of generalized trust may act as a barrier to informal investing. Hence:

Hypothesis 3: There is positive relationship between a country's level of generalized trust and its incidence of informal investment activity.

We further hypothesize that high levels of generalized trust should amplify the relationship between the availability of opportunities and the incidence of informal investment activity. High generalized trust increases the expectation among informal investors that they can derive economic benefits from exploiting opportunities and that the recipients of informal funding will not allocate that funding in inappropriate ways (Knack and Keefer 1997). Bygrave (2007) indicates that informal investors are often drawn to investment opportunities offered by people with whom they are somehow familiar and thus in whom they have at least a minimum level of trust. Furthermore, opportunities vary in the extent to which they are embedded in trust-based relationships (Companys and McMullen 2006), and the extent to which opportunities are financially supported by informal investors is higher when the recipients are unlikely to misuse the funds for personal reasons (Fukuyama 1995). Finally, the positive effect of the availability of opportunities on the incidence of informal investment activity should be enhanced to the extent that information can flow freely within social structures, which is greater with higher levels of trust (Dakhli and De Clercq 2005). Because generalized trust facilitates the free flow of information across potential

investors and new businesses (Kwon and Arenius 2009), it is more likely that investors gain insights into the merits of entrepreneurial opportunities in countries marked by higher levels of trust, which increases their willingness to fund such opportunities. Hence:

Hypothesis 4: The positive relationship between the availability of a country's opportunities and its incidence of informal investment activity is moderated by the level of generalized trust, such that the relationship is stronger for higher levels of generalized trust.

We also conjecture that the positive relationship between the regulatory protection of opportunities and the incidence of informal investment activity improves in environments marked by lower levels of generalized trust. That is, we expect a substitution effect between the regulatory protection of opportunities and generalized trust, in contrast to the complementary effect implied in Hypothesis 4. Extant literature suggests that regulatory protection through contracts and the level of trust can substitute for each other to explain the formation of exchange relationships (Ring and Van de Ven 1994; Zucker 1986). Similarly, the role of environmental stability in promoting economic exchanges is more important when actors cannot rely on trust-based ties when they enter such exchanges (Pfeffer and Salancik 1978; Powell 1990). Thus, in countries marked by low generalized trust, the importance of strong regulatory protection of opportunities—that is, the presence and enforceability of laws that protect private property rights—should be more instrumental for informal investment activity. Conversely, when there is a general belief that people can be trusted, the presence of an appropriate regulatory framework for opportunity protection may be less necessary to facilitate entrepreneurship-related activities (Batjargal 2003; Peng 2003). In countries that rely more on trust-based relationships, better regulatory protections of opportunities should play a less important role in shaping people's willingness to invest personal funds in new businesses. Hence:

Hypothesis 5: The positive relationship between a country's regulatory protection of entrepreneurial opportunities and its incidence of informal investment activity is moderated by the level of generalized trust, such that the relationship is stronger for lower levels of generalized trust.

RESEARCH METHOD

Data Collection

Our sample consists of 32 countries, for which we created a database with data available from (1) the 2003–2007 Adult Population Survey and Expert Questionnaire of the Global Entrepreneurship Monitor (GEM) developed by Babson College and London Business School, (2) a component of the 2005 Index of Economic Freedom developed by the Heritage Foundation, and (3) the 2005 Fifth Wave of the World Values Survey (WVS) developed by the University of Michigan and the Inter-university Consortium for Political and Social Research. The countries included in the sample are Argentina, Australia, Brazil, Chile, China, Columbia, Finland, France, Germany, India, Indonesia, Italy, Japan, Jordan, Malaysia, Mexico, the Netherlands, New Zealand, Peru, Poland, Romania, Russia, Serbia-Montenegro, Slovenia, South Africa, Spain, Sweden, Switzerland, Thailand, Turkey, the United Kingdom, and the United States.

Dependent Variable

Data regarding the incidence of informal investing come from GEM's *Adult Population Survey*. In each country, private market survey firms conduct this survey with a representative weighted sample of at least 2,000 adults annually (aged 18 to 64 years). The telephone (or occasionally face-to-face) interviews rely on a standardized questionnaire, translated from English into a country's native language(s). The GEM's *Adult Population Survey* assesses national levels of informal investing activity by asking respondents whether they have provided funds for new businesses in the past three years, excluding stocks and funds. This index therefore measures, in a given year, the percentage of a country's population that has engaged in informal investing. We test the reliability of the measure by calculating the correlation between countries' prevalence rates of informal investing across the different years under study (2003–2007). The correlation coefficients vary between .644 and .902 and are all significant at $p < .001$.

Independent Variables

Availability of Opportunities. Data about a country's availability of opportunities come from a different GEM data source, the *Expert Questionnaire*, which measures macro-level factors deemed relevant to entrepreneurship, using standardized questions and validated measurement scales (Reynolds et al. 2005). The country experts responding to the survey represent a substantial range of backgrounds and knowledge with regard to entrepreneurship-related issues, and the multi-item constructs in the survey exhibit acceptable reliability characteristics (Reynolds et al. 2005). We calculate the annual average of the scores (for each year during 2003–2007) of five questions, measured on a five-point Likert scale, that assess the presence of good opportunities for new businesses ($\alpha = .95$). To validate this measure, we calculate its correlation with a question from GEM's *Adult Population Survey* that assesses the percentage of a country's adult population who "believes there are good start-up opportunities available in the next six months," and we obtain a positive correlation of .324 ($p < .01$).

Regulatory Protection of Opportunities. Because property rights are a critical source of regulatory protection for entrepreneurial opportunities (Bowen and De Clercq 2008; McMullen, Bagby, and Palich 2008), we measure this aspect of a country's institutional environment using one of the dimensions of the 2005 Index of Economic Freedom, as reported by Heritage Foundation, "Property Rights." The dimension measures the degree to which a country's laws protect private property rights and its government enforces those laws (Beach and O'Driscoll 2003). Countries earn scores ranging between 0 and 100; the more certain the legal protection of property, the higher is the country's score. To validate this measure, we calculate its correlation with a question included in GEM's *Expert Questionnaire* that assesses "the efficient enforcement of intellectual property legislation." We find a strong positive correlation of .765 ($p < .001$).

Generalized Trust. Data about generalized trust are drawn from the *World Values Survey* (WVS), a worldwide investigation of countries' socio-cultural and political landscapes (Inglehardt and Welzel 2005). Our study uses data from the Fifth Wave, administered in 2005. The data collection is based on national probability samples, obtained through stratified multistage random probability sampling, to ensure representative national samples (Inglehardt and Welzel 2005). We measure a country's level of generalized trust according to six questions that ask respondents, on four-point Likert scales, to what extent they trust several categories of people, such as family, neighbors, people they know personally, or people they meet for the first time ($\alpha = .90$).

Control Variables

To account for alternative explanations of cross-country differences in informal investment activity, we include several control variables (averaged over 2003–2007) drawn from the World Bank's World Development Indicators database. First, we control for *income per capita*, measured as a country's GDP per capita, expressed in U.S. dollars at purchasing power parity exchange rates. Second, we control for a country's *GDP growth*, which reflects growth in domestic output. These two control variables are often included in country-level studies of entrepreneurship (e.g., Carree 2002; Wong, Ho, and Autio, 2005). Third, we control for a country's *domestic credit provided by banking sector* (as a percentage of GDP), because such credit arguably decreases the demand for informal investing. Fourth, we control for a country's *gross domestic savings* (as a percentage of GDP); aggregate saving rates may reflect people's willingness or capability to invest personal funds in new businesses.

Data Analysis

To test our hypotheses, we collapse our panel data set into a single cross-section of 32 countries and average the GEM-based data over the 2003–2007 period. We pooled the GEM data as this increases the stability of the associated measures (see Kwon and Arenius 2009). Further, because data from the GEM *Expert Questionnaire* are not available for all countries in all years, averaging them over the five-year period enables us to maximize the number of countries included in the sample. In addition, the WVS data on generalized trust (i.e., during the period captured by the GEM data) are available only for one year in the period, 2005.

The GEM *Adult Population Survey* captures the number of respondents within a country that have provided funds for new businesses in comparison with the total number of respondents, so we use grouped data Logit modeling, a technique common to economics literature (e.g., Garbacz and Thompson 2002; O'Brien 1999) and recently adopted in international entrepreneurship research (Bowen and De Clercq 2008). This method replicates individual-level observations within a country on the basis of the country's total number of respondents (Greene 2004). For each country, the method determines the proportion of positive responses (i.e., the undertaking of informal investing) and total number of respondents to create a data set of 0–1 responses. As a hypothetical example, for a country with 100 respondents and a .20 proportion of positive responses, the procedure would use 20 observations that take a value of 1 for the dependent variable and 80 observations with a value of 0 for the dependent variable, and the values of the independent and control variables replicate across the constructed observations (Greene 2004). The technique rests on the critical insight that the creation of replicated observations for estimation purposes does not bias subsequent statistical inferences; thus, the test for coefficient significance in grouped data Logit modeling is based on a z-statistic, not a t-statistic, and does not depend on the degrees of freedom or number of observations (Bowen and De Clercq 2008; Greene 2004).

To test the hypotheses, we create several models: Model 1 includes only the control variables, Model 2 includes the three predictor variables (to test Hypotheses 1–3), and Models 3–4 each include one of the interaction terms (to test Hypotheses 4–5). To assess the interaction effects, we follow the procedure suggested by Aiken and West (1991); we form interaction terms by multiplying the mean-centered values of the interacting variables, then enter these terms in separate regression equations. This approach minimizes the possibility of multicollinearity.

RESULTS

In Table 1, we provide the summary statistics and bivariate correlations for all variables. Similar to prior studies using grouped data Logit modeling (e.g., Bowen and De Clercq 2008), these correlations are solely illustrative; the actual hypotheses tests are based on the replication of data points for each of the countries (Greene 2004). In Table 2, we offer the results of the estimation for each of the four Logit models. We find overall support for the thesis that the hypothesized macro-level variables, with respect to opportunities and generalized trust, influence the incidence of informal investment activity, because the joint addition of the three predictor variables in Model 2 provides a chi-square statistic that is significantly higher than the one in Model 1, in which we include only the control variables. Similarly, our addition of individual interaction terms in Models 3–4 leads to significantly higher chi-square statistics than those achieved with Model 2.

Model 2 reveals that both the availability of opportunities ($p < .001$) and the regulatory protection of opportunities ($p < .05$) relate positively to the incidence of informal investment activity. Thus, we find support for Hypotheses 1 and 2. Furthermore, the level of generalized trust is positively related to the incidence of informal investment activity ($p < .001$), in strong support of Hypothesis 3. In turn, the sign of the interaction between the availability of opportunities and generalized trust is positive and significant ($p < .05$), in support of Hypothesis 4. Finally, we find strong support for Hypothesis 5: The relationship between the regulatory protection of opportunities and the prevalence rate of informal investment activity is weaker ($p < .01$) at higher levels of generalized trust.

DISCUSSION AND CONCLUSION

Increasing attention is being devoted to cross-country differences in entrepreneurs' ability to obtain funding for their businesses. Although such research typically focuses on formal venture capital (Armour and Cumming 2006; Black and Gilson 1998; Jeng and Wells 2000; Wright, Pruthi, and Lockett, 2005), it is becoming clear that in many countries, formal venture capital is a highly restricted source of funding for new businesses (Bygrave 2003; Bygrave et al. 2007). It is also debatable whether the findings from formal venture capital studies transfer directly to the context of informal investments. Accordingly, policy attention is shifting toward an emphasis on the development of informal investment markets (O'Gorman and Terjesen 2006; Szerb et al. 2007). Somewhat surprisingly though, research into the macro-drivers of informal investment markets remains virtually absent, and this gap represents the main motivation for this study.

Using a novel dataset of 32 countries drawn from different cross-national data sources, we apply institutional theory and consider both formal aspects of countries' institutional environment (i.e., level and regulatory protection of new business opportunities) and an important informal dimension (i.e., extent to which a country's residents trust one another) to predict informal investment activity. Our findings indicate that informal investment activity increases in countries with a higher availability of opportunities, better regulatory protection of opportunities, and higher levels of generalized trust. The level of generalized trust also plays a moderating role, in which it amplifies the effect of the availability of opportunities but suppresses the effect of the protection of opportunities in predicting the incidence of informal investment activity.

These findings contribute to existing literature in several ways. First, though prior research acknowledges that availability of opportunities is important for understanding informal invest-

ments (Maula, Autio, and Arenius 2005; Szerb et al. 2007), cross-country research examining how countries' opportunity structures might shape the market of informal investment is nonexistent. This study finds empirical support for the thesis that the level of new business opportunities at the macro-level is an important driver of the demand for informal investing. In addition, we provide empirical evidence for the beneficial role of the protection of such opportunities for stimulating informal investment activity and thus add to prior research examining the importance of legal drivers of formal venture capital markets (Armour and Cumming 2006). Countries where regulatory protection is higher are more likely to see their new business activities funded by informal investors, possibly because of the lesser fear that third parties will expropriate their investment opportunities (McMullen, Bagby, and Palich 2008).

Second, our finding with respect to the positive effect of generalized trust on the incidence of informal investment activity responds to the call for more attention to the role of social factors in explaining cross-country studies of entrepreneurial finance (Wright, Pruthi, and Lockett 2005). Although our data do not permit us to explore the specific means by which generalized trust influences countries' incidence of informal investment activity, we speculate that such trust provides aspiring investors with preferential access to information about new business opportunities that is not readily available otherwise (Kwon and Arenius 2009). Further, generalized trust can diminish the uncertainty surrounding new business undertakings and reduce the ex-ante costs of screening and ex-post costs of monitoring (Chiles and McMackin 1996).

Third, the beneficial effects of the level and regulatory protection of opportunities on the incidence of informal investing activity is moderated by generalized trust in *opposite* ways, such that there is a complementary effect between the level of opportunities and generalized trust but a substitution effect between their regulatory protection and generalized trust. Generalized trust thus plays an instrumental role in leveraging new business opportunities into informal investment activity. An abundance of good opportunities within a country's borders is particularly useful for promoting informal investment activity when trust-based relationships allow for high-quality information exchange between potential investors and investment targets (Coleman 1990; Kwon and Arenius 2009; Putnam 2000), which gives those investors a better understanding of and confidence in how new business opportunities might be exploited (De Clercq and Arenius 2006). In contrast, the relationship between regulatory protection of opportunities and the incidence of informal investing is weaker at higher levels of generalized trust. That is, in countries with weaker intellectual property regimes, people appear to rely more heavily on trust-based relationships with others when they make informal investments. This finding aligns with parallel arguments developed at the micro-level, whereby high levels of trust substitute for the poor regulatory protection of contracts (Ring and Van de Ven 1994; Zucker 1986).

We acknowledge that our findings are subject to some limitations that suggest avenues for additional research. First, measures of countries' institutional aspects are open to debate. We have attempted to address this issue by validating our measures with data from various sources. Second, generalized trust captures only one aspect of a country's social capital, and additional research should explore which of various possible dimensions of social capital (e.g., access to unknown information, brokerage of information across structural holes, trust building and reciprocity) most prominently influences informal investment activity.

The findings of this study have significant practical implications. For new businesses, this study suggests that entrepreneurs may be able to convince informal investors to support their

ventures more easily if they can present them with good opportunities and appear trustworthy. Thus, new businesses should enhance their images or reputations among potential investors by building strong interpersonal relationships with them. For policymakers, our findings point to different levers that might be used to promote informal investments within country borders. Extant research indicates that countries with a short history of regulatory protection mechanisms may exhibit higher barriers to regulatory transitions (i.e., political and cultural) and a higher resistance to change (Baumol 1990; Bowen and De Clercq 2008). These traits suggest conditions that are less than favorable for investments in new business activity. Our study helps address this challenge by pointing to the need for a targeted approach to stimulate and sustain informal investment activity, which may differ from the case of formal venture capital.

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Table 1: Variable Means, Standard Deviations, and Correlations ^a

	1	2	3	4	5	6	7	8
1. Prevalence rate of informal investing								
2. Availability of opportunities	.504**							
3. Regulatory protection of opportunities	-.325	.022						
4. Generalized trust	.156	.055	.278					
5. GDP per capita (constant 2000 US\$)	-.441*	-.135	.790**	.089				
6. GDP growth (annual %)	.600**	.279	-.750**	.037	-.742**			
7. Domestic credit provided by banking sector (% of GDP)	-.291	.028	.453*	-.229	.673**	-.419*		
8. Gross domestic savings (% of GDP)	-.079	-.062	-.222	-.375*	-.173	.267	-.051	
Mean	5.084	3.317	60.97	2.749	13,206	4.470	113.740	23.764
Standard deviation	4.775	.321	23.573	.305	12,014	2.507	83.150	8.750

^a n = 32 (i.e., number of countries).

* $p < 0.05$; ** $p < 0.01$.

**Table 2: Grouped Logit Results Predicting Informal Investment Prevalence Rate ^{a,b}
(N = 32 countries)**

	Model 1	Model 2	Model 3	Model 4
GDP per capita (constant 2000 US\$)	-.681***	-.595***	-.579***	-.497***
GDP growth (annual %)	.357***	.168	.161***	.151***
Domestic credit provided by banking sector (% of GDP)	-.221***	-.314***	-.342***	-.333***
Gross domestic savings (% of GDP)	-.082***	.105**	.120***	.100***
H1: Availability of opportunities		.401***	.371***	.413***
H2: Regulatory protection of opportunities		.106*	.113**	.069
H3: Generalized trust		.314***	.299***	.287***
H4: Availability of opportunities × Generalized trust			.068*	
H5: Regulatory protection of opportunities × Generalized trust				-.085**
Log-Likelihood	-16,938	-14,806	-14,802	-14,801
Model Chi-Square statistic (df)	1,032.16 (4)	1,305.64 (7)	1,346.75 (8)	1,363.38 (8)
Chi-Square difference (df)		273.48*** (3)	41.11*** (1)	57.74** (1)

^a Probability that an individual has made an informal investment.

^b Coefficient significance based on value of a z-statistic.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

THE ROLE OF PREDICTION IN NEW VENTURE INVESTING



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ABSTRACT

Early stage investors openly discount/ignore the predictions that entrepreneurs show in their business plans as they pitch to investors. At the same time, many predictions about the venture continue to anchor investor evaluations. However, investors' use of predictive and non-predictive information varies based on their own approach to dealing with uncertainty, their own entrepreneurial experience, and the steps in the evaluation process (i.e. screening, due diligence, and funding). Evaluating data from more than 2,700 individual investor evaluations of 150 new ventures, we find that investors with more entrepreneurial experience are more effectual in how they approach the development of new ventures. We also find that investors grade their area of emphasis more stringently, i.e. those who weight predictive information grade it "tougher." Overall, investors emphasize predictive information more than they might suppose, especially early in the selection process, but once a venture has moved through the funding process to due diligence and investment, non-predictive information is the key factor.

INTRODUCTION

New ventures face an interesting chicken and egg problem. They need to demonstrate their high potential in order to attract capital, yet often require that capital in order to demonstrate their potential. This is neither a new problem nor particularly insightful, but it does help one understand the desire of a great many people to identify the selection criteria and principles of investors willing to make these early stage investments.

Many studies on how formal venture capital (VC) investors select their ventures have been conducted, and the number of studies on the selection efforts of informal venture capital (angel) investors is growing. Checklists of potential factors are created and tested, with important items such as the potential of the venture's market, the talent of its management team, the competitive environment for its offering, the margins created from its price and cost, the various components of experience held by the team members, the completeness of the management team, demonstrated revenue or cash flows, and so on. For obvious reasons, investors prefer deals with lots of market potential, led by experts in the field who have prior entrepreneurial success, leadership experience, and with customers lined up waiting to buy their product.

The key is prioritizing this list, precisely because of the chicken and egg problem. If an entrepreneur only has the resources to deliver on a few of those items, which ones are most likely to lead to the goal of attracting more resources? What sequence is incrementally more valuable? For example, am I better off working on insightful market research in order to demonstrate the market potential, or am I better off completing the product or service so that the investor is confident our claims are real and attractive? Or am I better off focusing on winning over great management team

members than on winning a good beta customer? These are genuinely important questions for resource constrained entrepreneurs.

As a balance is sought, puffery often comes into play. Market projections consistently show cash losses for the present time, but a tremendous increase in cash flow a mere 5 years from now. The management team is consistently of a very high caliber – a rare combination of brilliant talent yet responsible and coachable people. And so on. This is of course understandable, and in a sufficient number of cases is actually true enough that a world class organization results, leading to the creation of new markets and creating tremendous wealth for everyone involved. The optimism is an important part of the entrepreneurs' motivation.

As a result investors obviously discount this optimism with the lessons of experience. Even the best investors are wrong more often than they are right when it comes to selecting great new ventures in which to invest (Wiltbank, Read, Dew, & Sarasvathy, 2009). And so the predictions and claims of the entrepreneurs are received with suspicion, and a gut feel at times trumps the very best efforts of talented entrepreneurs to demonstrate the upside of their venture. But the entrepreneurs' predictions may anchor the evaluation of the venture more than one might think, influencing perceptions about exit opportunities, customer adoption, market size, competitive moves, and future valuation.

In this paper we contribute theoretical insight and empirical evidence to the discussion of the criteria by which investors select new ventures. The issue of prioritization of criteria is critical, as mentioned above. We will argue that the theory of effectuation provides a key distinction around the types of criteria involved and when in the selection process they are used. We hope this can connect the literature on venture investment selection criteria to the theoretical perspective of entrepreneurial expertise embodied in the theory of effectuation. As the single largest segment of angel investors consists of "cashed out" entrepreneurs (Wiltbank, 2005), this provides an interesting setting in which to evaluate how they apply their entrepreneurial experience to the task of venture investing.

THE SELECTION OF NEW VENTURES

Venture investors select startups based on a suite of factors that have a material influence on the evaluation of the entrepreneur, the management team, and the business opportunity. A significant amount of work has looked into the investment decisions of formal and informal venture capital investors. The important factors from this work include domain expertise; entrepreneurial experience; the commitment, passion, and trustworthiness of the leadership; the market growth and revenue potential of the opportunity; the competitive position of the venture; and its prospects for an attractive exit (e.g., Tyebjee & Bruno, 1984; MacMillan, Siegel, & Subba Narasimha, 1985; MacMillan, Zemann, & Subba Narasimha, 1987; Carter & Van Auken, 1992; Haar, Starr, & MacMillan, 1988; Dileep, Miller, & Bowman, 1992; Van Osnabrugge, 1998; Jensen, 2002; Sudek, 2006).

The evaluation of startups for investment decisions can vary by stage, and investors are quite deliberate about the stage of opportunities in which they invest (Gupta & Sapienza, 1992). At earlier stages in the life of a venture, the challenge of evaluating the business model, the actual market opportunity, and the potential for growth can be significantly more challenging (Triantis, 2001). This is one reason why at the earliest stages of development, entrepreneurs often struggle to attract

formal VC investors, providing an opportunity for significant growth in the investment activity of informal venture investors, or angels (Freear & Wetzel, 1990; Wiltbank, 2005). Angel investors, as opposed to formal VCs, can economically do smaller rounds of investment and bring significantly more entrepreneurial expertise to the needs of earlier stage investment opportunities (Mason & Harrison, 1996; Van Osnabrugge & Robinson, 2000; Wiltbank et al., 2009).

Deciding whether to invest in a startup typically involves a process consisting of an initial screening of the opportunity, a more formal analysis of the investment opportunity, in depth due diligence, negotiation of terms and funding, and post investment involvement (Tyejee & Bruno, 1984; Sudek, 2006). The initial screening phase is aimed to filter out “non-starters” where the business simply does not fit the broad interest of the investors, i.e. a real estate opportunity may simply not be of interest to an investor looking to be involved in a hardware and software opportunities, or where the stage of the opportunity is simply too late or too early for a particular investor. After some initial screening, a more formal presentation is made to additional investors in a longer format with additional questions, more detail, and probing and discussion around the nuances of the opportunity and the team. If there is a high level of interest among the investors, due diligence – investigating many details and testing the assumptions and assertions of the opportunity – takes place, with negotiation of valuation and terms upfront or along the way (Fried & Hisrich, 1994). That process may or may not come to a positive conclusion, at which point the investment decision is made.

DISTINCTIONS AROUND PREDICTION

In the literature on investment criteria, many theories are involved, looking at the fit with the evaluation criteria using ideas from agency theory, contracting, information asymmetry, and moral hazards. In this paper, we attempt to make sense of the criteria more holistically, rather than connecting one individual criterion as a screen to deal with a specific theoretical risk. Rather than evaluating the commitment of the entrepreneur in different ways that enable the assessment of agency risk, we explore the distinguishing role of predictive vs. non-predictive information around all of the criteria involved in the assessment of an opportunity. This approach has the potential to inform the prioritization of actions by entrepreneurs as they develop their opportunity.

Sarasvathy (2001) makes a distinction between causal and effectual approaches in the way people make decisions in uncertain situations. Causation represents an approach that involves goal setting, determining the causal factors that can lead to the accomplishment of that goal, and making decisions about resource acquisition, capability development, and courses of action that organize those causal factors based on their commitment to reaching the goal. Effectual approaches, by contrast, begin from means rather than goals, where the means of the decision maker guide decisions about courses of action, leading to resource acquisition and capability development in a more emergent manner. Clear goals emerge over time as a result of rather than as a cause of the decision process. The success of a causal approach is largely dependent on the accuracy of the predictions about which goals will maximize value and which resources and capabilities most effectively lead to accomplishing those goals. The success of an effectual approach does not rely on prediction, but on the creative use of means and the process of persuasion and discovery that connects them to additional resources and capabilities that are valued by others. The literature on strategic decision making hinges significantly on this distinction regarding the use of prediction to overcome uncertainty and efforts to significantly control how that uncertainty is resolved (Wiltbank, Dew, Read, & Sarasvathy, 2006).

This effectual approach is used extensively, though not exclusively, by expert entrepreneurs (Sarasvathy, Simon, & Lave, 1998; Dew, Read, Sarasvathy, & Wiltbank, 2009; Read, Dew, Sarasvathy, Song, & Wiltbank, 2009). In these protocol studies, entrepreneurs with more experience consistently prefer to avoid relying on predictions as the basis for decision making in uncertain situations. Instead, they prioritize their ability to actually influence how the future will evolve. As we hope to evaluate the use of prediction in evaluating venture investment opportunities, the entrepreneurial experience of the investor is likely to play an important role.

H1: Early stage venture investors with more entrepreneurial experience will rely less on predictive information.

H1B: Early stage venture investors with more entrepreneurial experience will rely more on information that shows their ability to influence their relevant environment.

This preference for one type of information over another is only relevant, of course, to the extent that it changes the way venture investors evaluate opportunities. To the extent that investors believe predictive factors (such as how fast the market is growing, what kind of market share the venture can hold, potential exit valuations, technology trends, etc.) will be better indicators of the future potential of a venture, they are likely to be very particular about the evaluation of those factors. That is, if predictive information forms the real basis of their investment preferences, they will tend to be more demanding on those factors, to “grade tougher.” Conversely, investors who prefer to avoid predictive information are likely not to care very much about the predictive statements of the entrepreneurs, but instead be very demanding in their evaluation of factors that demonstrate the entrepreneurs’ ability to influence/control their relevant environment of suppliers, buyers, partners, and so forth.

H2: Early stage venture investors will be more demanding in their evaluation of the criteria that reflect their preference to rely on or to avoid predictive information.

Whether they are used or not, a great amount of time and effort is spent creating predictions for new ventures. Some entrepreneurs do it to inform their strategic choices, and many entrepreneurs reluctantly do it as part of the standard process of most venture investors, regardless of the extent to which they prioritize these predictive statements. Even angel investors, who gather less of this type of information, have largely adopted the core ideas from the due diligence practices of VCs, which are extensively predictive (Wiltbank et al., 2009). As a result, it is likely that this information is put to use in some way or another, in spite of the fact that many investors state that they openly and dramatically discount, and even scoff at, the predictions of entrepreneurs about their new ventures. If the information was not used in the evaluation of ventures, its use would likely have trailed away over time, but the opposite has in fact happened. Sudek (2006) suggests that the predictive information presented by entrepreneurs is likely to influence investors’ evaluations about the potential for a startup.

H3: The evaluation of predictive information will positively influence the recommendations and decisions regarding ventures proceeding through the funding process.

METHODOLOGY

We utilize a one-of-a-kind data set that captures the concurrent evaluation of 150 new ventures that presented to a group of angel investors over the course of two years. This method avoids retrospective bias, and cumulates over time in a way that enables us to control for biases of individual angel investors, and avoids any single rater biases as at least seven investors evaluate each venture.

The study involved members of the Tech Coast Angels (TCA) organization, one of the largest angel groups in the U.S., founded in 1997. As of January 2009, TCA had invested approximately \$100 million in more than 150 companies. The group has approximately 280 angel investor members and consists of five chapters throughout Southern California. The results reported in this study are based on the evaluations from the members of one of those chapters. TCA typically provides funding in the range of \$250,000 to \$1,000,000 per venture. Investments are not made as a fund; rather, each angel investor makes an independent decision about whether to invest in a particular venture or not. The typical minimum investment per angel is \$25,000.

The group has developed a formal process that flows from fielding new venture investment opportunities through to investment and post-investment monitoring. Entrepreneurs start with an online application, which leads to a “pre-screening.” This involves an informal meeting with three to five angels to determine if the company should go to a full screening meeting. A screening consists of a 15-minute PowerPoint presentation, 15 minutes of Q&A, and 5–10 minutes of private discussion among the angels (with the entrepreneur out of the room). The evaluation data in this study were collected in these screenings, then subsequently by tracking due diligence and investment funding progress, from July 2006 through September 2008. Every company that was screened by the Orange County chapter is included in this data set and all of the evaluation data were tracked concurrently as the entrepreneur worked with TCA to explore the possibility of funding; there are no retrospective data on the ventures.

Participants in this study consisted of 63 investors evaluating 150 new ventures. The mean age of the entrepreneurs was 45 years, and the investors and entrepreneurs were overwhelmingly male – approximately 95%. Of the entrepreneurs, 73% had started companies prior to the one they were presenting at the screening. They had worked for the company they were presenting for a mean of 2.3 years, and had been working in startups for a mean of 11.2 years.

Information was collected from TCA members through paper surveys that were collected at the screening and in an online survey. The instrument used for assessing attributes of new ventures at the screening was developed by Sudek (2007), relying heavily on previous investment criteria instruments (e.g., MacMillan et al., 1985; MacMillan et al., 1987; Sudek, 2006; Tyebjee & Bruno, 1984). The instrument can be found in Appendix 1. The Screening Evaluation Instrument was distributed to TCA members prior to the start of each screening. The angels were reminded to fill out the survey after the PowerPoint presentation, after the Q&A portion, and after the private discussion. Many of the angels attended multiple screenings and thus rated multiple companies. The number of surveys completed per company ranged from a low of 7 to a high of 22, with a mean of 16 angels evaluating each company.

Additionally, background information was gathered on the angel investors regarding their entrepreneurial experience, as well as their emphasis on prediction and control in new venture

decision making. This instrument is identical to the one that Wiltbank et al. (2009) detailed in their paper on the use of prediction and control in angel investing. Complete background and preference data were gathered from 44 of the 63 investors (70%). Descriptively, all of them had college degrees, and 73% held graduate degrees. Half of the investors had started a company that had grown to have at least five employees, and survived at least 3 years, but typically their experience was well beyond this, with a mean of 13.8 years of entrepreneurial experience.

Dependent Variables. We utilized several dependent variables to capture the angel investors' assessments of the venture at steps throughout the venture process. In the screening meeting the key outcome is a decision of whether or not to go into full due diligence on the venture. We captured each investor's rating on the item "I feel this company should go to due diligence" in a 5 point Likert scale immediately after the presentation by the entrepreneur (DD1: Due Diligence 1), and then again after the Q&A session with the entrepreneur (DD2) and then after the private discussion without the entrepreneur (DD3).

In addition to these Likert scale ratings from the screening meetings, we tracked the progress of ventures through the due diligence process, up to the ultimate funding decisions made by the angel investor members of TCA. Specifically, we created a variable named Due Diligence Progress (DDP), which is a 4 state variable. The value of 0 means that the venture did not make it into due diligence, the value of 1 means that the venture made it into due diligence but then was ruled out as a result of the due diligence, the value of 2 means that the due diligence process was positive but the investors and entrepreneurs didn't come to agreement on value/terms, etc., the value of 3 means the venture was funded. Finally, we tracked the ultimate funding decisions relating to each venture, with 0 meaning the venture did not receive funding, and 1 meaning that it did receive funding from TCA members, as shown in Table 1.

Independent Variables. The independent variables consisted of three categories: venture evaluations, investor background, and investor prediction and control emphasis. The items and their descriptive information are detailed in Table 2.

Venture evaluation data consist of the scores for each evaluation criterion captured concurrent to the evaluation of each investment opportunity, detailed in Appendix 1. For the purposes of this paper, we explored the theoretical dimension of prediction vs. non-predictive items. Predictive items are those that require forward-looking assessment of potential, where informed opinions of the best guess of what could happen with this venture are based on objective factors. The key is that they are forward looking. The non-predictive control items are those that are not anchored on forward-looking assessments, but instead reflect the subjective and objective assessment of past and present information. Empirically this distinction was quite clear, with two factors emerging from the data, one for predictive and the other for control information. The items are identified with their factor in Appendix 1. Analyses of the constructs revealed Cronbach's alpha score for the predictive items of .79 and .81 for the control items. It is worth noting that the CEO detailed assessment items (see Appendix 1) were very highly correlated with one another, leading us to collapse them into one item we named CEO Mean, which is the mean of these CEO items.

The investors' background information and their emphasis on prediction and control were captured in an instrument detailed in Appendix 2. The scenario in that instrument is identical to the instrument utilized in a published paper on angel investing and strategic decision making (Wiltbank et al., 2009), and has been tested and validated with 1,000 entrepreneurs, 200 angel

investors, and 100 venture capital investors as one method for assessing their personal emphasis on prediction or control – causation or effectuation – in their approach to developing new ventures (Sarasvathy, 2001; Wiltbank et al., 2006). Each item represents a different interest in using predictive information to position for future expectations and different interests in trying to influence how the future is created. The overall flow of the data can be captured as follows:

Background of the angel investor

- ↳ Each investor's emphasis on prediction and control
 - ↳ Investor evaluations of each venture investment opportunity
 - ↳ The progress of each venture through due diligence
 - ↳ The investment of TCA funding, or not, for each new venture

RESULTS

Our primary analysis consists of Ordinary Least Squares regression using the evaluation data from 150 different new ventures that proceeded entirely through the process with a major angel investor over 2 years. At least 12 investors evaluated each venture. The main units of analysis are the investor evaluation, subsequent recommendation regarding the venture, and then the progress of that venture through due diligence to funding. The results of these analyses are reported in Table 3.

We find evidence that the experience – entrepreneurial and investing – of these investors is significantly related to their use of predictive and control oriented information. Their emphasis on one or the other influences evaluation of each venture, and is associated with a tendency to use more prediction in their decision making, especially earlier in the evaluation process.

H1 states that early stage venture investors with more entrepreneurial experience will rely less on predictive information, instead (H1B) relying on non-predictive control items, those relating to the ability of the venture to influence the creation of its environment. Table 3 shows evidence that supports these hypotheses. Investors with entrepreneurial expertise demonstrate a significantly stronger control emphasis ($B = 0.39, p < 0.001$) in their approach to venture creation (Appendix 2; Wiltbank et al., 2009), while at the same time demonstrating a tendency to reduce their emphasis prediction ($B = -0.07, p < 0.001$), thus supporting H1 and H1B.

H2 argues that differences in the emphasis on prediction and control will influence the way that investors tend to evaluate new ventures. When an early stage venture investor emphasizes prediction, they will be more demanding in their evaluation of that type of information and, conversely, when they emphasize non-predictive control they will be more demanding in their evaluation of that type of information since their emphasis is the primary component of their recommendations and decisions. In the 3rd and 4th columns of Table 3, one can see that where investors demonstrate control emphasis in their approach to venture development, they evaluate control information significantly lower ($B = -0.10, p < 0.001$) than investors who emphasize prediction, who actually show a significantly positive tendency ($B = 0.12, p < 0.001$) in their evaluation of control factors. And the opposite is also true, in the evaluation of predictive information

related to a new venture, investors who emphasize prediction systematically evaluate predictive information lower ($B = -0.08$, $p < 0.001$) than investors who emphasize control.

H3 argues that in spite of investors' tendency to discount predictions made by entrepreneurs, assessments of predictive information significantly influence the evaluation of ventures as they proceed through the investment evaluation process. Table 3 shows that the evaluation of predictive information presented by entrepreneurs significantly ($p < 0.001$) and positively ($B = 0.52$) influences DD1, which is the initial recommendation of whether the venture should pass to due diligence. The evaluation of non-predictive control factors also influences DD1 significantly, but at only one-third the effect size ($B = 0.17$). Interestingly, while the evaluation of both predictive and control factors significantly influences recommendations and decisions about the venture, the relationship of predictive information with the dependent variables diminishes as the venture proceeds through the process. It goes from three times larger, to two times larger at DD3 (the recommendation to go to due diligence after the presentation, Q&A, and private discussion around a particular venture) and then inverts to about one half the effect size as the evaluation of control information in the relationship to how a venture proceeds through due diligence, and then one-third the effect size in relationship to whether a venture is funded or not. This supports H3, particularly earlier in the process, but suggests that investor evaluation changes as a venture proceeds to due diligence and actual funding.

IMPLICATIONS

The predictions of entrepreneurs do influence the evaluation of their ventures, especially early on in the process of investor evaluation. Prioritizing and positioning actions in a way that adds to the credibility of those predictions would appear to play an important part in allowing a venture to move successfully through the initial screening efforts of angel investors. As entrepreneurs move forward with potential investors, however, we observed that less importance is placed on those predictions, and the focus turns to non-predictive factors around execution and the ability to deliver and influence the market in which the venture is operating. Building a good team, improving traction with customers, and other steps that demonstrate the ability to hit milestones appear to be incrementally more important. Knowing how a particular investor approaches venture development – his or her relative emphasis on prediction and control – can then inform an entrepreneur's prioritization of different strategic moves as well as the positioning of moves already made, in terms of justifying predictions or demonstrating an ability to control how the uncertainty surrounding the venture opportunity is resolved.

From the perspective of the theory of effectuation, the experience of angel investors plays a role in the criteria on which they tend to focus. Angel investors with a more extensive entrepreneurial background are less likely to value the predictions put forward by entrepreneurs, and instead focus on the non-predictive components of the leadership, their relationships, and their ability to influence the market in which they play. Related to this focus, they evaluate these non-predictive factors more stringently than angel investors with less entrepreneurial experience. This is consistent with effectuation, where expert entrepreneurs demonstrate a preference to avoid predictive information and emphasize non-predictive control; in this case, applying that expertise to new venture decisions from the role of angel investor (Wiltbank et al., 2006).

Interestingly, angel investors with more investing experience have a significantly different emphasis, weighting predictive information about the venture more intensely and underweight-

ing non-predictive factors regarding the team of entrepreneurs. Related to this focus, they evaluate the predictive factors more stringently, a reversal of the relative emphasis of more entrepreneurial angel investors with less angel investing experience. Interesting research will likely be done that looks into how and why this difference develops. While this is merely supposition, the role of the investor and the norms associated with making good investment decisions seems to involve significantly more prediction than decision-making approaches associated with entrepreneurs generally. Thus, angel investors' role taking and normative environment may change the way they view opportunity and decision making in highly uncertain settings.

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Table 1: Dependent Variable List and Descriptive Information

Variable	Mean	Std Dev	Item
DD1	3.49	1.07	I feel this company should go to due diligence [after presentation only, Prior to Q&A]
DD2	3.32	1.17	I feel this company should go to due diligence [after presentation and open Q&A]
DD3	3.02	1.29	I feel this company should go to due diligence [after private discussion]
DDP2	1.49	1.15	4 category variable tracking due diligence progress: 0 = no due diligence, 1 = failed quickly in due diligence, 2 = good due diligence, no agreement, 3 = good due diligence & funded.
Funded	.22	.42	Binary variable tracking the ultimate funding of a venture, 0 = no 1 = yes

*the DD1/DD2/DD3 variables are measured on a 5 point Likert scale

Table 2: Independent Variable List and Descriptives

Variable	Mean	Std Dev	Item
InvEntre	.60	.49	Investor had successfully started and run a venture as an entrepreneur
InvAngel	12.1	13.8	Number of investments the angel investor had made prior to the evaluation
Prediction Emphasis	17.9	1.6	Investor's preference for predictive approaches to new ventures (Appendix 2)
Control Emphasis	14.1	1.5	Investor's preference for control approaches to new ventures (max of 20)
EvalPrediction	16.1	3.5	Investor's evaluation of a venture's predictive elements (Appendix 1) (max of 25)
EvalControl	14.3	2.9	Investor's evaluation of a venture's control elements (max of 20)

Table 3: Regression Analyses

Dependent Variable	Control Emphasis		Prediction Emphasis		Eval Control		Eval Prediction		DD1		DD3		DDP2		Funded	
	std beta	sig														
Constant	13.45	0.00	17.68	0.00	6.79	0.00	8.55	0.00	-2.16	0.00	-3.41	0.00	0.10	0.50	-4.07	0.00
Inv Entre	0.39	0.00	-0.07	0.00	0.01	0.67	-0.10	0.00								
Inv Angel	-0.08	0.00	0.30	0.00	-0.13	0.00	0.01	0.64								
Eval Prediction					0.51	0.00			0.52	0.00	0.42	0.00	0.09	0.00	0.05	0.05
Eval Control							0.53	0.00	0.17	0.00	0.21	0.00	0.16	0.00	0.17	0.00
Prediction Emphasis					0.12	0.00	-0.08	0.00								
Control Emphasis					-0.10	0.00	0.05	0.04								
	N = 1938 Adj R2 = .15		N = 1938 Adj R2 = .10		N = 1901 Adj R2 = .315		N = 1901 Adj R2 = .292		N = 2283 Adj R2 = .455		N = 2383 Adj R2 = .409		N = 2109 Adj R2 = .046		N = 2156 Adj R2 = .040	

All models report results of OLS Regression.

While DDP2 and funded are categorical, they are distributed such that the results are essentially identical between OLS and multinomial or binary logistic regression.

Appendix 1: Screening Evaluation Instrument

Score the following items as it relates to moving the company to due diligence

D=Disagree, PD=Partially Disagree, N=Neutral, PA=Partially Agree, A=Agree

1.00	Wait until PowerPoint Presentation is complete but before Q&A to score	D	PD	N	PA	A
1.01	I feel this company should go to due diligence (if I had to decide now)	1	2	3	4	5
2.00	Wait until Q&A is finished but before lunch discussion to score	D	PD	N	PA	A
2.01	PREDICTIVE The market has a large growth potential	1	2	3	4	5
2.02	PREDICTIVE The company revenue potential is large	1	2	3	4	5
2.03	PREDICTIVE The business model is strong	1	2	3	4	5
2.04	PREDICTIVE Company has reasonable barriers of entry against competitors entering market	1	2	3	4	5
2.06	CONTROL The management team appears strong	1	2	3	4	5
2.07	*CONTROL The CEO/presenter is passionate about the company	1	2	3	4	5
2.08	The domain expertise of the CEO/presenter is strong	1	2	3	4	5
2.09	The CEO/presenter appears honest	1	2	3	4	5
2.10	The CEO/presenter is very enthusiastic	1	2	3	4	5
2.11	The CEO/presenter appears coachable	1	2	3	4	5
2.12	The CEO/presenter appears trustworthy	1	2	3	4	5
2.13	CONTROL The CEO/presenter has a proven track record	1	2	3	4	5
2.14	PREDICTIVE The company appears to have a reasonable exit plan	1	2	3	4	5
2.15	CONTROL The company has strong advisors/directors	1	2	3	4	5
2.17	I feel this company should go to due diligence (if I had to make a choice now)	1	2	3	4	5
3.00	Wait until after private discussion to score	D	PD	N	PA	A
3.01	I feel this company should go to due diligence	1	2	3	4	5
3.02	Interest in investing 0 = no interest, 1 = some interest, 2 = interested, 3 = very interested	0	1	2	3	

*The CEO assessment items collapse into 1 item for the CEO, and this item is a component in the Non-Predictive Control Factor.

Appendix 2: Angel Background and Prediction and Control Instrument

1. Have you ever started a company with a minimum of 5 employees and stayed in business for at least 3 years?
2. How many years have you worked as an entrepreneur (enter 0 if you have no entrepreneurial experience)?
3. How many companies have you been part of the founding team?
4. How many boards have you been on of startup companies?
5. Highest level of education completed? (Did not complete High School, High School, Bachelors, Master, PhD)

Entrepreneurial Situation

We would like to understand how you like to deal with the challenges of entrepreneurship. Please use your imagination to put yourself in the context of the entrepreneur in this scenario:

During your 12-year tenure as an engineer at a major computer manufacturer, you work on your own time to invent a computer device that recognizes and responds to eye movements. You imagine it might make a great alternative to the computer mouse. You can make it rest on the user's head much like headphones and set it up so that point-and-click navigation is accomplished with even the most minor head and eye movements. You are convinced there is a huge potential for change in the way things are currently done. But when you attempt to interest your current company in licensing the idea from you, they are uninterested. There are no firms currently offering anything close to this and you possess all the technical skills to create the product effectively and efficiently. You quit your job to further develop this idea.

As you assemble information, you will:

Disagree Neutral Agree

- | | | | | | |
|---|---|---|---|---|--|
| 1 | 2 | 3 | 4 | 5 | Talk with people you know to enlist their support in making this become a reality. |
| 1 | 2 | 3 | 4 | 5 | Study expert predictions of where the market is heading. |

As you develop a marketing approach, you will:

- | | | | | | |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | Forecast which segments will be most valuable and focus on them. |
| 1 | 2 | 3 | 4 | 5 | Focus on customer segments you can reach through your existing relationships. |

Predictions of trends and demand in this market are:

- | | | | | | |
|---|---|---|---|---|--|
| 1 | 2 | 3 | 4 | 5 | Useful to create forecasts of what your business might accomplish. |
| 1 | 2 | 3 | 4 | 5 | Misleading as they do not incorporate the impact of your firm. |

As you learn about the expectations other people have for this industry, you:

- | | | | | | |
|---|---|---|---|---|--|
| 1 | 2 | 3 | 4 | 5 | Discount their projections, as they have not accounted for the impact of your venture. |
| 1 | 2 | 3 | 4 | 5 | Form updated predictions of likely outcomes for the business. |

≈ SUMMARY ≈

ANGEL RETURNS: A CASE OF PSYCHIC INCOME?

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Principal Topic

This paper provides data that indicates that Angel investors, generally wealthy individuals investing alone or in an informal group, have accepted lower returns on their investments than have Venture Capital firms (VCs) investing in similar seed/early stage investments. The hypothesis of this paper is that Angels seek, and receive, non-economic returns to make up the shortfall in financial returns.

Method

This paper uses findings from Wiltbank and Broeker (2007) and data provided by the National Venture Capital Association website (“NVCA”) as the basis for the comparison of Angel and VC realized returns. A study by Scott Shane (2005) for the Federal Reserve provides information about why angels invest and is used as a source of the discussion non-economic returns.

Results and Implications

Both Wiltbank and Boeker (2007) and the NVCA website provide return data in terms of exit multiples. An exit multiple of less than 1x means that the deal returned less than the amount of capital invested. Wiltbank and Boeker find that over 50% of the exits reported by Angels had exit multiples of less than 1x while VCs reported approximately 26% of their early stage investments had losses of initial capital. Wiltbank and Boeker also provide an estimate of an IRR for the Angel transactions of 27%. The NVCA data shows that realized returns for VCs investing in early/seed stage investments during the same period is 38%. Despite realizing lower financial returns than their VC counterparts, Angels continue to be an important source of financing for start-up companies. The explanation for this apparent irrational behavior of angels, is that they must receive non-economic returns on their investment – psychic income. Venture capital firms are professional money managers with fiduciary responsibility for investing the funds committed to them by others. Therefore, the primary motivation for VCs is financial returns. The motivations of Angels, as reported in the Shane study (2005), include more than the achievement of financial returns. Other reasons for investing include the desire to create and grow companies, to make use of their expertise, and for personal enjoyment.

This paper proposes a model for estimating psychic income received by angels and proposes further areas of research into the behavior of angel investors.

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≈ SUMMARY ≈

ANGEL INVESTORS AND ENTREPRENEURS: DO THEY LIVE HAPPILY EVER AFTER?

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Principal Topic

Despite the importance of exit to both entrepreneurs and investors, little is known about what factors influence their intentions and motivations to voluntarily remain with or leave their businesses (DeTienne, 2008). With regard to external investors, previous exit studies have focused on investor preferences with regard to how (e.g. IPO, acquisition, trade sale) and when to exit, determinants of these exit preferences and the role of contracts in the exit decision (see, for instance, Mason and Harrison, 2002; Hellmann, 2006). None of them have looked into their intentions to exit though, nor approached this decision from a socio-psychological point of view. With regard to entrepreneurial exit, only recently have researchers begun to look into this crucial aspect of the entrepreneurial life cycle (DeTienne, 2008; Wincent et al., 2008). Therefore, building on and extending conflict theory, this paper studies the impact of perceived task and relationship conflicts as well as latent conflicts (as actual goal incompatibilities) between angel investors and entrepreneurs on their intentions to remain (invested) in the company.

Method

Data for this study were gathered in two locations: out of 107 (potentially) eligible Belgian companies, 28 participated and out of 805 (potentially) eligible Californian companies, 26 participated. Questionnaires were distributed to all entrepreneurial team members and angel investors who had a seat on the Board of Directors. Multigroup confirmatory factor analysis provided support for combining the Belgian and Californian samples into one larger sample, consisting of 54 teams and 137 individuals, of which 72 entrepreneurs and 65 angel investors. Hypotheses were tested using hierarchical linear modelling.

Results and Implications

The findings support the view that latent conflicts result in lower intentions to remain. As such, it should be considered equally important as perceived conflicts in that both have a significant, separate and unique impact on team members' morale. The results further provide support for perceived task conflict's negative effect on intent to remain, but not so for perceived relationship conflict. When the same model was run for individual-level satisfaction, the opposite results were found. This could point to deciding whether or not to stay in the team or company is more of a business decision for entrepreneurs and angel investors than an emotional one.

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≈ SUMMARY ≈

COMPLEMENTARITIES BETWEEN CANADIAN VENTURE CAPITAL FIRMS AND BUSINESS ANGELS

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Principal Topic

This study seeks to identify complementarities and conflicts among business angels, founders and VCs.

A key element of economic growth is the commercialization of innovation-oriented ventures. However, commercialization is often contingent access to finance. Informal (especially business angels) and formal (venture capital, VC) equity are two key sources of early stage financing and considerable research has been conducted on each. While, Mason and Harrison (2000) identified complementarities between angels and VCs, little has been documented about the relationships and interactions among founders, angels and VCs. Informal and institutional investors rely on one another to create an efficient market that supports the development of growing businesses and which enhances regional competitiveness. However, previous research appears mute with respect to the degree of cooperation and collegiality among three sets of stakeholders.

Anecdotal evidence suggests that some VC investors perceive business angels as problematic and disruptive - particularly regarding setting valuations - while others perceive angels as partners and colleagues. Likewise, anecdotal evidence suggests that some angels see VCs in a predatory light, while others welcome angel investors. The literature does not as yet appear to have documented potential conflicts or areas of cooperation between business angels and VCs. This paper will provide a broader analysis of the extent and nature of complementary relationships and conflicts among founders, angels and VCs.

Method

Qualitative data analysis is employed, drawing on case studies involving enterprises in the wireless sector. For each case, interviews were conducted with the founders, VCs and angels associated with the firms. These case studies are supplemented by additional interviews with angels and VCs who were not associated with the particular cases. N'Vivo software is used to code and analyze the qualitative data, providing insights on the frequency and types of interactions.

Results and Implications

The work contributes to our understanding of the relationships among business angels, founders and VCs in two ways. First, it presents empirical evidence about complementarities and conflicts. Second, it provides insights on how to facilitate constructive relationships among the investors and founders in order to create a more efficient means of commercializing early stage innovations.

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≈ SUMMARY ≈

**HOW ENTREPRENEURS SEDUCE BUSINESS ANGELS:
FINDING A BALANCE BETWEEN OVERSTATED
EXPECTATIONS AND UNDERSTATED ASPIRATIONS**

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Principal Topic

Entrepreneurship in general and technology-based entrepreneurship in particular is a process of experimentation and learning. Entrepreneurs start their venturing process by exploring a newly “theorized” opportunity in a highly uncertain situation with only limited knowledge on the technical and market aspects of their business. Given this high degree of uncertainty faced by new ventures, an entrepreneur faces a major dilemma when communicating his or her expectations on the future performance of the company to potential investors.

This paper develops and tests a set of hypotheses on how entrepreneurs’ projections of the future performance of their firm affect their attempts to raise external funding. First, building on the met expectations theory and the disconfirmed expectations theory of (customer) satisfaction, we expect those firms who avoid falling into the traps of inflated expectations and understated aspirations be best positioned to secure business angel funding. Second, recent research in communications and the models of persuasion has demonstrated that it is not only the content of the message that influences investors and financial analysts. It also matters how the message is conveyed. In this paper, we analyze the impact of cautiousness, innovativeness, communality and complexity of entrepreneurs’ written disclosures of information on their success in securing external funding.

Methods

We test our data on a unique dataset of 575 young firms having sought business angel funding in the New York area during the years 2005-2007. We have the access to their business plans, presentations, company profiles and financial information of these companies.

Results and Implications

This paper adds to our knowledge on how entrepreneurs promote their ventures when seeking external funding and how business angels make their investment decisions under great market and technical uncertainty. In particular, this study stresses the importance of managing expectations in the business angel entrepreneur relationship, a factor largely ignored in the prior literature. From the practical point of view, our study is likely to guide entrepreneurs relative to their language use in their voluntary disclosures of information to potential investors.

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∞ INTERACTIVE PAPER ∞

VALUATION PRACTICES OF INFORMAL VENTURE CAPITALISTS: BEYOND “INSTINCT” AND “INTUITION”

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Greg MacDonald, Sobey School of Business, Canada

Principal Topic

The valuation practices of informal venture capitalist have been described as “intuition” and “instinct” because the sources of information used and methods employed by business angels are largely unknown – even to the angels themselves (Paul, Whittam and Wyper, 2007). This paper explores the sources of information and valuation practices adopted by business angels.

Methodology

A grounded theory approach aims to identify unknown variables and processes (Charmaz, 2004). Using a tape-recorded verbal protocol, respondents talk “out loud” their thoughts while reviewing a provided investment scenario. Verbal prompts by the researcher helped explicate their observations. The initial sample are ten self-selected business angels attending a national conference. They invest independently, are members of business angel networks, and some are syndicated. They are habitual angels.

Results & Implications

A variety of variables and processes were established regarding valuation. A heuristic that involved asking for specific equity splits (30 percent) was a common theme. For example, 30 percent is a split that was widespread in California. Another indicated that the numbers, proformas and estimates were largely irrelevant because 30 percent equity was appropriate to signify the amount of responsibility due to the entrepreneur and the risk assumed by the angel. Yet another indicated that — even in the face of valuations that suggested otherwise — they would want 30 percent. Other valuation techniques such as discounting and future earnings projections were also cited. One, a former venture capitalist, worked with a specific multiple objective for the deals in his portfolio which were worked backwards to determine the equity split.

The implications of this research are threefold. 1) If entrepreneurs know that angels’ valuation techniques are rudimentary, they could begin negotiations with well-developed valuations to lure angels to their thinking. Alternatively, where 30 percent is a rule of thumb, entrepreneurs may want to adjust their “ask” to ensure they are getting good value. 2) Whereas some angels have slight knowledge regarding valuations, policy makers could make this a target for educational interventions or angel academies. 3) Finally, business angels should recognize this as a limitation that, if improved, could enhance their contracts and returns. More research, continuing to use an inductive and grounded approach with iterations built upon previous findings, will develop insights into angels’ reasoning and processes.

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∞ INTERACTIVE PAPER ∞

**‘MAKING A DIFFERENCE’: SMART MONEY, BUSINESS ANGELS
AND CRITICAL INCIDENTS IN BUSINESS DEVELOPMENT**

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Colin M. Mason, Strathclyde University, UK

Principal Topic

Research into the post-investment relationship between informal investors (business angels) and the businesses in which they invest concludes that investors make a contribution by acting as a sounding board/mentor for the entrepreneur and in strategy development and execution, and that this contribution is generally valued by the entrepreneur. However, there has been no research into the specific circumstances in which this contribution has been made, the processes and relationships involved in the delivery of and acting on that advice, and the direct evaluation of the impact of this contribution in specific situations.

Method

We adopt a critical incident analysis perspective to assess the value-added impact of hands-on investors. First, the nature of the critical incident itself is re-examined in the context of critical *periods* or *episodes* that are deeply grounded in and inextricably linked to a complex set of circumstances and actions. Second, we respond to the problems of retrospection and introspection in CIT research by adopting Vermersch’s explication data collection technique to manage the collection and use of retrospective data. Third, we reassess the criticality of “critical” as a contextually defined relational phenomenon which depends on the various actors involved, the interaction and the surrounding relationship infrastructure.

Results and Implications

There are three outcomes from this research. First, we provide detailed analyses of the value added contribution of informal investors grounded in specific incidents in the development of the business. Second, in combining case-based research and a dyadic research design with a critical incident theory approach, we provide an illustration of a methodological procedure that has great potential in the entrepreneurship domain. Third, in understanding in greater detail the nature of the contribution made by investors to entrepreneurial ventures, the processes through which that contribution is made and the impact of that contribution, we provide guidance for investors and entrepreneurs on the effective management of the investment relationship.

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∞ INTERACTIVE PAPER ∞

THE ROLE OF INVESTEE COMPANY MANAGERS IN BUSINESS ANGELS' POST-INVESTMENT INVOLVEMENT

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Principal Topic

It is widely acknowledged that Business Angels (BAs) conduct post-investment involvement in their investee companies. However, the role that the Managing Directors (MDs) of investee companies play in such involvement has not been explored in the BA discipline and has only been touched upon by very few Venture Capital (VC) researchers (e.g. Sapienza *et al.*, 1996). Most BA research assumes that investee managers simply accept all involvement (Wickham, 2006) and that BAs expect their contributions to be accepted (Busenitz *et al.*, 1997). However, one small strand of research in the VC discipline referred to the degree of investee managers' responsiveness, or receptivity, to investor involvement as an important determinant for investor-investee interactions (Barney *et al.*, 1994; 1996). The fact that VC researchers have identified the issue of responsiveness, and thus the possibility of non-responsiveness, gave rise to the underlying research which set out to explore the role that investee managers play in BAs' involvement.

Method

Four matched BA-MD dyads were purposefully selected to diverge according to the BAs' levels of involvement; the individual dyadic parties were repeatedly interviewed over a one-year period. Interview questions were loosely structured around topics relating to involvement and the dyadic interactions. Subsequently, verbatim transcripts were subjected to common approaches of qualitative data analysis (Eisenhardt, 1989; Miles and Huberman, 1994; Yin, 2003). This allowed for the identification of emerging themes relating to investee managers' role in BA involvement.

Results and Implications

This research identified various roles that investee managers can play in BA involvement. MDs' responsiveness suggests that MDs can be considered 'gatekeepers,' whose reactions to involvement are crucial for involvement to happen or to add value. This gatekeeper role also determines whether BA involvement creates resources within the investee company (e.g. organisational capital) or the MD himself/herself (e.g. human capital). Moreover, MDs' communication of their responsiveness (e.g. proactive and explicit vs. reactive and informal), MDs' ability to initiate involvement and the ways in which MDs react to queries from their investors (e.g. rational vs. emotional response) affect BA involvement. This research adds to the debate about whether BA involvement adds value and suggests that it is important to view involvement not as a purely investor-centred concept.

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BABSON COLLEGE IRENE M. MCCARTHY AWARD
FOR THE BEST PAPER ON THE TOPIC OF HIGH TECHNOLOGY

“THIS DEAL IS DEAD!”
A LONGITUDINAL STUDY OF VC DECISION MAKING



Jeffrey S. Petty, *University of Lausanne, Switzerland*
Marc Gruber, *Ecole Polytechnique Fédérale de Lausanne, Switzerland*

ABSTRACT

This paper offers several novel insights on the Venture Capital (VC) decision making process by investigating the criteria used to *reject* deals (as opposed to the commonly studied acceptance criteria), and the *dynamics* of the VC decision-making process over the *lifecycle of a fund*. The qualitative analysis is based on a comprehensive, longitudinal data set comprising 11 years of archival data from a European-based VC firm. During this time, the VC managed two funds, reviewed a total of 3,631 deals, and made 35 investments. Implications of our results for research and practice are outlined.

INTRODUCTION

Each year thousands of entrepreneurs submit their business proposals to VCs in the hope that they will receive the desired capital and access to a network that many believe will enable them to realize their commercial and financial objectives in new business creation. Given that VCs are highly selective in their funding decisions, it is not surprising that a fairly large number of studies seek to further our understanding of the main criteria that influence the VC investment decision (e.g., Wells, 1974; MacMillan et al. 1985, 1987; Hisrich and Jankowicz, 1990; Shepherd, 1999; Franke et al., 2008). These studies indicate that in their selection of deals, VCs emphasize various criteria such as the market growth and size, the innovativeness and competitive insulation of the product offering, and the expected rate of return of the venture project (Tyebee and Bruno, 1981; MacMillan et al., 1985). Research has also consistently shown that amongst the set of evaluation criteria, VCs tend to place the highest importance on criteria related to the management team (e.g., Wells, 1974; Zopounidis, 1994; Muzyka et al., 1996; Shepherd, 1999).

Yet, despite the progress that has been made in understanding VC decision making, a close examination of the extant literature reveals that prior studies have been curiously one-sided, as they focus on the criteria VCs apply when *accepting* deals and not when *rejecting* deal proposals. Given the complexity and uncertainty inherent in VC decision making and the lack of prior empirical evidence, it would be premature to assume that the criteria used to accept proposals, or significance of the same, will correspond to those criteria that VCs use to disqualify or reject a deal. Arguably, the emphasis on acceptance criteria has been encouraged by researchers' strong interest in better understanding the success of new ventures and not their failure, and also a lack of data on failed venture deals in VC decision making (Barry, 1994). However, when considering that about 97-99% of all submitted business proposals will get rejected by a VC (Hall, 1989), it is quite dissatisfying that we possess hardly any knowledge on deal rejection criteria.

However, there is yet another major shortcoming in extant research, as studies investigating VC decision-making criteria tend to be agnostic to firm-specific factors which are likely to influence the decision-making process and criteria over the lifetime of a VC fund. For example, VCs may have less time to engage in deal selection in later lifecycle stages of their fund, as they will spend more time on monitoring and assisting portfolio firms (Gorman and Sahlman, 1989). Once again, this lack of research incorporating firm-specific factors may be, in part, due to limited availability of data, but is also the result of the cross sectional nature of the majority of research on VC decision making.

Against this backdrop, the purpose of this paper is twofold. First, it seeks to increase our understanding of what VCs consider to be “knock-out criteria” (Franke et al., 2008) during the decision-making process, and secondly, it attempts to highlight firm-specific factors inherent to the decision-making process that are outside the realm of the entrepreneur’s influence, or even awareness, and to date have gone largely unidentified. To shed light on these key issues, we adopted an exploratory case study research design which is recommended for investigating phenomena that are subtle and/or hardly understood. Specifically, our qualitative analysis is based on a comprehensive, self-collected longitudinal data set spanning 11 years of archival data, which included a total of 3,631 deal proposals, from a European-based VC firm.

Next, we review prior studies on VC decision making and point out key open questions in this field of research. We then provide an overview of the research design used in this study and present our key findings. The paper concludes with some theoretical as well as practical implications of our results and we highlight areas for future research.

RESEARCH ON VC DECISION MAKING

The VC decision-making process and the criteria used to evaluate potential deals continue to interest researchers after more than forty years. While the early literature primarily sought to develop lists of factors deemed important by VCs (e.g., Hoban, 1976; Tyebjee and Bruno, 1984a; MacMillan et al., 1985, 1987; Khan, 1987), a second stream of research further differentiated the screening, evaluation and due diligence stages and developed models of the decision-making process (e.g., Wells, 1974; Hall, 1989; Fried and Hisrich, 1994). Most recently, the focus of the research agenda has returned to the decision-making criteria and has centered on the use of decision aids (Zacharakis and Meyer, 2000; Zacharakis and Shepherd, 2001, 2005) as well as a deeper understanding of how VCs judge the more subjective, albeit important, criteria associated with entrepreneurial teams (Franke et al., 2006, 2008). Table 1 provides an overview of prior research into VC decision making.

The decision-making criteria reported to be important in the evaluation process by VCs have consistently been the characteristics of (i) the company’s management team, (ii) the market, (iii) the product or service, and (iv) the venture’s financial potential (Riquelme and Rickards, 1992; Zacharakis and Meyer, 2000; Franke et al., 2008). Each of these broad categories of criteria have been further broken down into several more specific factors which have been used by the majority of researchers over the past forty years.

One defining characteristic of this stream of research is the preoccupation with the VC’s assessment of the *management team* (Muzyka et al., 1996). For example, Franke et al. (2008) applied conjoint analysis to arrive at a more detailed understanding of VCs’ evaluations of management

teams. They found that VCs prefer investing in teams in which all members have industry experience, which can draw on a mixed educational background in terms of engineering and management expertise, whose members have known each other for a longer time professionally, and are relatively more mature (aged 35 to 45). In terms of the venture's target *market*, the prior literature indicates that VCs tend to prefer market opportunities of considerable size and with high growth rates, as these market characteristics provide the conditions for strong revenue growth and high levels of value creation (e.g., Tyebjee and Bruno, 1981; Bachher and Guild, 1996). With regard to the venture's *product* offering, prior research shows that VCs apply evaluation criteria such as the innovativeness of the offering, its competitive advantage, some proprietary protection of the product, and the level of need a potential customer has for the offering (e.g., 'must-have' vs. 'nice-to-have' product) (e.g., Wells, 1974; Khan, 1987). Finally, in terms of the venture's *financial potential*, the extant literature highlights the importance of criteria such as the expected rate of return and the expected risk associated with these returns (MacMillan et al., 1985). While the financial potential of a venture is determined to a considerable extent by management-, market- and product-related characteristics, evaluation criteria pertaining to the financial prospects are nonetheless of major importance in the VC decision-making process, as a VC firm needs to assess whether the business proposal has the potential to generate the required minimum level of returns (Gompers and Lerner, 1999). For example, in return for financing an early-stage venture, VCs typically expect a "10 in 5", i.e., VCs look for a tenfold increase in investment value over a five-year time horizon, equaling an annual compound interest of 58% (Zider, 1998). While extant research provides a rich set of insights into VC decision making (cf. Table 1), there are several larger issues that remain unaddressed in the literature.

(1) Deal Acceptance Criteria vs. Deal Rejection Criteria. With very few exceptions (MacMillan et al., 1985; 1987; Bruno and Tyebjee, 1986) extant research has focused on identifying the most important decision criteria that VCs apply when *accepting* deal proposals (Hoffman, 1972; Wells, 1974; Khan, 1987; Hall, 1989; Fried and Hisrich, 1994; Muzyka et al., 1996). Notably, most existing studies implicitly assume that these criteria also reflect the reasons as to why business proposals get rejected. This is, however, a fairly bold assumption – the criteria considered important for deal acceptance may, or may not, be the same criteria that lead to deal rejection. Because VC decision making is characterized by an inordinate percentage of rejections (remember that VCs typically reject 97 - 99% of all submitted business proposals), it is key for research on VC decision making to develop a better understanding of the reasons for deal rejection. In turn, such knowledge could also help entrepreneurs in developing and formulating more compelling business cases, and VCs in improving their (limited) understanding of their own decision-making process (Zacharakis and Meyer, 1998).

(2) Firm-specific Factors influencing VC Decision Making. Current research provides insights into the criteria VCs use in their 'funding decisions'. This general perspective is at the same time a strength and a weakness, the former because of the (assumed) broad applicability of research insights, the latter because the generality of current findings also means a corresponding lack of specificity. Other scholars have made similar claims (Sandberg et al., 1988; Muzyka et al., 1996; Shepherd and Zacharakis, 1999), and have suggested various valuable ways of developing more specific insights. For example, Franke et al. (2008) provide fairly detailed results by focusing on the evaluation of the management team. However, one important critique – namely that the current literature on VC decision making is largely agnostic to VC-specific factors which are likely to influ-

ence the importance of particular decision-making criteria – has not been answered to date. For example, it seems that the *availability of time* that can be devoted to deal screening and selection may vary greatly throughout the life of a fund, because many VC firms are taking an active role in portfolio companies. In fact, empirical evidence indicates that VCs spend as much as 60% of their time on monitoring and assisting portfolio firms (Gorman and Sahlman, 1989). Hence, the actual procedures in use for deal evaluation may be quite different between the early period of a fund and the subsequent portfolio monitoring and management phase. One of the key reasons as to why we hardly possess any knowledge about the influence of these VC-specific factors in VC decision making is that practically all of the published studies are cross-sectional and focus on the VC decision-making process in and of itself. They thus fail to capture decision making at different lifecycle stages of a fund, or, in the event that the VC is managing multiple funds, across the life of a VC firm.

These observations served as departure points for the present study. Specifically, we set out to investigate three interrelated research questions that will allow us to arrive at a more complete understanding of the VC decision-making process:

1. What evaluation criteria are identified as important when *rejecting* a business proposal?
2. Are these criteria consistently cited over the entire *lifecycle* of a venture fund?
3. Which additional *firm-specific factors* influence the VC decision-making process?

DATA & METHOD

Deal rejection in VC decision-making and the dynamics of the VC decision-making process over the life of a venture fund are poorly understood research topics. To answer the research questions outlined above, we thus chose an exploratory research design (a historical case study) which is recommended for investigating phenomena that are subtle and/or hardly understood (Eisenhardt, 1989; Strauss and Corbin, 1998; Yin, 2003). Exploratory case study research designs have been usefully employed in a number of studies in entrepreneurship (e.g., Lichtenstein et al., 2006). In particular, this type of research design permits a thorough understanding of the phenomena in question, which is of great importance for developing new knowledge on complex and dynamic phenomena such as VC decision-making over the lifetime of a venture fund (Fried and Hisrich, 1988). As this study seeks to explore the factors affecting the VC decision-making process over the life of a fund, the use of archival data analysis is preferred over an interview approach because it allows for the collection and analysis of the different criteria and their respective frequencies over several time periods (in our case, a total of 11 years). This approach also provides access to the records showing what the subject of the study actually did or decided at the time of the event rather than asking them to recall a distant, often non-significant event, and thus helps enhance the validity of the data over that often associated with self-reported techniques (Hall and Hofer, 1993; Shepherd and Zacharakis, 1999).

Study Setting

This study uses archival data from a European VC firm, unknown to the researchers prior to the study, which has multiple offices in Europe. The firm is focused on investing in seed-, early- and late-stage companies from around the world within a specific high-tech, high growth industry. Despite its financial success and the ability to attract limited partners for more than one fund – a common occurrence in successful funds –, the firm remains relatively small, with fewer than ten

VCS, their support staff, and the original founders still active in the day-to-day operations of the firm. The team is comprised of people from four different countries with each of the VCs in the firm holding a graduate degree and at least five years of relevant industry experience. At the time of data collection the firm had made a total of 35 portfolio investments, some of which had received subsequent funding via both internal rounds and new financing rounds, across the two funds. The average acceptance rate of deals submitted to the firm over the entire period was 1%, which is consistent with the industry averages reported in many other studies. All of the investments had been syndicated with other VC firms based in Europe and/or North America and the firm under study had acted as both the lead and co-investor, the roles divided almost equally across the portfolios. In the following, we will use the term “firm” to describe the VC firm, whereas the terms “company”, “deal”, and “proposal” all apply to the entrepreneurial ventures evaluated by the VC.

Data Collection Procedure

The data collected spans an 11-year period and includes information on deals that were submitted to the firm during the life of two venture funds. Although the funds overlapped in time, the origination and screening phases of Fund II were not initiated until after the final investment in Fund I had been completed and officially announced to the limited partners. However, the same team of VCs was responsible for all of the activities related to both funds, so while the investment decision-making process had been completed in Fund I, they were still involved in the monitoring, assistance and cashing-out activities while managing the origination, screening and evaluation activities related to Fund II.

The data set was created by first reading emails and memos, both electronic and written, in the archived deal files as well as all of the entries in the firm’s deal flow data base (“action log”) which contained 7,284 passages of text. The primary source of data was the firm’s action log that the firm uses to track the progress, comments, and ultimate disposition of a potential deal throughout the evaluation process. Although the materials received from prospective companies varied considerably in detail and length (ranging from short introductory emails and one-page “teasers” to 176-page business plans) the VCs provided approximately the same amount of information regarding their initial assessment of each deal filed as “Dead”; the term “DEAD” as opposed to rejected was a term that the firm consistently used to categorize deals that had been reviewed and, based upon reasons started, were no longer active in the deal flow process. In total, the firm had received 3,631 deal proposals over the 11 years.

Data Analysis Procedure

The data was analyzed using qualitative methods (Locke, 2001; Roberts, 1997) which involved an interpretative approach to the documents containing text related to the VC’s views and decisions of the deals they had reviewed. Those comments representing the firm’s view or reasons, both explicit and implied, for categorizing the deals as “Dead” were collected along with information pertaining to the stage of the deal, the geographic region where the company was domiciled, the referral source of the deal, the date the deal was first received by the VC, and the date of the final disposition. While it was neither possible nor realistic to observe the firm over the life of a fund, typically ten years (Gorman and Sahlman, 1989), having access to all of the internal records and information related to each deal over the entire life of the VC firm facilitated the development of a “practical understanding” (Miles and Huberman, 1994, p. 8) of the firm’s deal screening and evaluation process as well as the evaluation criteria used by the firm.

Given that previous research on VC decision making had focused predominantly on positive investment decisions, the initial review of the data was not approached with an a priori list of specific criteria; however, an initial framework of broad categories, or preliminary codes, based upon the existing literature was developed. However, these categories only served as a basis for the iterative coding process which involved going back and forth between the data and the emergent categories, similar to the constant comparative method (Glaser and Strauss, 1967, Strauss and Corbin, 1998). The text was examined line by line and data specified categories (Locke, 2001, p. 67) were assigned. This open coding (Strauss and Corbin, 1998) process, and the creation of categories and the subsequent division, combination, or abolishment of the same, used throughout the initial coding procedure was maintained in successive readings of the text. The final coding scheme with the list of categories and codes is presented in Table 2.

Great care was taken in assuring the reliability of the coding. Once the hierarchical coding scheme was developed, a random sample of excerpts from the data set was coded by a second person not involved in the study, but who had been trained in the coding scheme. The interrater agreement between the two raters was checked by computing Cohen's Unweighted Kappa (Cohen, 1960). The value for Kappa ranges between 0 and 1, where $K = 0$ signifies no agreement between the raters and $K = 1$ indicates perfect agreement between the raters. Although there is no definitive value deemed as an acceptable level of reliability, a Cohen's Kappa above .80 is generally considered to demonstrate high interrater reliability (Landis and Koch, 1977). Having established a high level of reliability ($K = .91$), all of text in the data set was coded.

FINDINGS

Our qualitative, longitudinal exploration of the VC decision-making process uncovered several novel findings. We first report some of the more general results that provide background information on key characteristics of the decision-making process in the examined VC firm. We then focus on the criteria applied in deal rejection, and report how the fund lifecycle and other VC-specific factors influence the VC decision-making process.

The decision-making process observed in this VC firm largely resembles the process previously described in the literature in that all of the deals received by the firm are subjected to an initial screening with those deals considered potentially interesting being evaluated further and, finally, more extensive due diligence is carried out on the minority of deals that are deemed potentially viable based upon a number of factors. VCs at this firm estimated that about 20% of business proposals made it past the screening phase, and about 10% received a preliminary investment recommendation, that is, an internal document sent by the "sponsoring" individual to the investment committee. These numbers also correspond to those frequently reported in the literature on VC decision making (e.g., Roberts, 1991), suggesting the importance of research on the criteria used for deal rejection.

Given that almost all prior studies investigated the criteria leading to deal acceptance, we were particularly interested in better understanding the rejection of deal proposals by VCs.

Deal rejection criteria. The main categories of criteria identified by researchers as being important to VCs when accepting deal proposals for financing are also evident in the reasons stated for rejecting a deal. Several interesting results stand out in Figure 1, which provides an overview of the reasons for rejection organized by fund year. First, we see that the typically ref-

erenced reasons for deal acceptance (e.g. product, market, finance) also feature in the reasons for deal rejection. Second, analyzing the trend over time reveals that VC fund-related reasons gain in importance over the lifetime of a fund. Third, the one finding that at first appears counter to the majority of previous research is the frequency of comments related to the characteristics of the management team (n=93). The reasons stated (e.g., *“Lack of confidence in management”*, *“Lack of management team experience”*, *“Need of restructuring board and exchange CEO”*) by the VCs do reflect the criteria reported in previous studies. However, the frequencies are substantially lower than one might expect given the high importance attributed to the management team in previous research (Bruno and Tyebjee, 1985; Khan, 1986; Robinson, 1987; Wells, 1974). This seems to be a result of prior research being primarily interested in the factors related to deal acceptance, whereas our study captures the reasons for rejection that precede a VC’s final decision. The few cases in the dataset may simply represent those where the management team is an obvious disqualifier such as *“CEO does not have the best reputation”* and therefore is considered a knock-out criterion.

Lost opportunities in the deal flow. Perhaps one of the most unexpected and instructive findings regarding the deal flow is that although this VC firm, like most others, had only invested in roughly 1% of the deals reviewed, the remaining 99% classified as Dead had not all been rejected by the firm. Rather, a relatively large share of all received deal proposals – about 10% of the 3,631 deals – were classified as Dead because the VC firm no longer had the opportunity to pursue them. There were many reasons for these lost opportunities, but the majority of these cases were simply because the respective companies failed to respond to the request for additional data. Despite the VC’s efforts to receive more information and maintain a dialogue with these companies, a surprisingly large number (n=192, or 5%) *never responded* to the VC. The following quotes from the action log illustrate this point: *“No response to request for more detailed revised business plan.”*, *“DEAD no information received as requested”*, *“No response since sending out confidentiality agreement”*, *“Interesting but non-responsive company”*.

It is important to note that all of these deals had been sent to the VC firm unsolicited and the firm waited almost half a year, often sending additional requests in the interim, before categorizing the deal proposals as Dead. Without contacting these companies, it is not possible to know exactly why they failed to respond to the VC’s signal of potential interest, but judging from the comments regarding other deals that did not go forward, a few potential reasons for non-response could be (i) the requested information was unavailable or too difficult for the company to compile, (ii) the company received funding from another source, (iii) the company went bankrupt in the meantime, or (iv) that the company’s management had changed their mind regarding the raising of external funding in general.

The remaining 5% of the deals that were “lost” by the firm can be attributed to decisions made by the company with respect to VC funding in general or, in some cases, specifically related to the VC firm in the study: *“Dead Company decided to go with alternative VC deal.”*, *“Management not ready for VC.”*, *“Company unwilling to accept certain Term Sheet conditions.”* *“Company decided against a later closing due to oversubscription, therefore no slot available for us. Keep in contact for future rounds.”*, *“Finance discussions with unknown competitors. Company might come back. No response (after 3 months).”*

However, unlike the previous sub-group of lost opportunities that failed to respond during the initial screening and evaluation phase, this second sub-group of companies had progressed through the evaluation phase and was often in the due diligence process, or even in the final stage

of investment consideration. This distinction is important as it implies that the VC had already expressed a genuine interest in the deal. The VC had also expended a substantial investment of time and financial resources in their pursuit of these opportunities, most of which would be simply expensed and considered a sunk cost.

Open-door rejection. Throughout the data set there were comments that showed that “no” in the VC context is not always a definitive rejection. Although the overwhelming majority of deals rejected by the VC were given no indication of any potential future interest, there were comments in both the internal records and the letters of rejection to companies that provided evidence of the VC’s willingness to reconsider the deal at a later time. The reasons for this future potential included both company-specific issues as well as ones related to the VC firm or the specific VC fund. In instances when the VC firm saw potential promise in a deal, they not only told the company why the deal was being rejected, but also provided very specific feedback with respect to the firm’s interest, when the company should resubmit, and any necessary milestones to be achieved in order for the firm to pursue a subsequent evaluation. The VC’s log provides several interesting illustrations of this issue: *“Interesting concept but too early stage, . . . should come back in second round”*; *“Proof-of-concept in maybe about 9 months, company shall come back then.”* *“Too early but candidate for next fund”*; *“Does not really fit our portfolio at the time, but stay in touch”*. However, even though the firm had “left the door open” with many deals (n=146), there were only 22 instances where these companies submitted their proposals to the firm a second or third time; one of which was ultimately accepted as portfolio deal. This low response rate, much like the “no response” rate, may be due to a variety of factors not related to the VC firm’s comments or request and can only be captured through contacting the companies directly. This finding, while new to the literature, is not altogether remarkable when one considers the difficulty and time requirements associated with sourcing quality deal flow (Gifford, 1997), the potential need to identify complementary skills or products to help existing portfolio companies, and the value of access to information about emerging companies and or technologies.

We now discuss our findings from a longitudinal perspective. In addition to those firm-specific factors related to the general firm strategy and deal characteristics that have been identified in past research (Wells, 1974; Tyebjee and Bruno, 1984a, 1984b; Hall, 1989), there are also factors that appear to be a result of VC characteristics and, in particular, the lifecycle of the VC fund, and thus are only likely to be captured in longitudinal or ethnographic studies.

The effect of time. Although some of the findings reported above are directly related to process or timing issues, their potential impact on the decision-making process is not fully appreciated unless they are viewed collectively over the entire timeline of the firm (See Figure 1).

Several observations seem to be particularly noteworthy. First, we see that across the lifecycle of an investment fund, there is quite some fluctuation in the primary criteria applied to reject deals. This is an important finding, as it highlights the dynamics of the VC decision-making process over time. Second, we see an intriguing increase of the fund-related reasons over the years indicating that there are factors *within* the VC firm that become more important in decision making over time. Importantly, these types of reasons have been neglected in prior research on VC decision-making criteria, which can be seen as a major shortcoming because fund-related reasons are the primary rejection criteria in the final years of our observation period (Years 9, 10 and 11). We will look more closely at one key driving force for this result – portfolio composition – below. Third, we see a rise and fall of the market- and product-related reasons which may be attributable

to factors *outside* of the firm such as increased interest in a particular industry or market that fuels entrepreneurial activity and a subsequent increase in the submission of lower quality business proposals. Fourth, we now see in a more detailed manner that evaluation criteria related to the management team feature least prominently in deal rejection. Although the logged rejection criteria are also a function of the VC's deal flow, this result is nonetheless puzzling. Most notably, as noted above this results runs counter to one's intuition, because one would expect that team-related criteria feature much more prominently given that the management team has consistently been ranked as the most important evaluation criterion when it comes to deal acceptance.

VC management time. Although the number is quite small ($n=66$), there were times when the firm simply did not have the management capacity within the team to adequately pursue a potential deal, even when the deal was acknowledged to be potentially viable. The firm noted in its action log: *"Interesting but time constraints due to other due diligence."*, *"Too busy with other projects."*, *"Rejected due to high activity on other deals at this time."*, *"Were too occupied with four own closings to participate."*, *"Not at the moment due to our Deal Flow."*

Resubmissions over time. Prior research suggests that once a deal is rejected by a VC, there is no chance that this particular VC will review the deal again, let alone provide funding for it. While we already noted that there were 146 open door rejections, our longitudinal data allows us to track whether rejected deal proposals that did not receive an invitation to resubmit actually were submitted to the VC firm again after some time. Table 3 indicates the number of times the VC firm had received a deal. Two observations are particularly interesting: First, we see that there were an astoundingly high number of 438 proposals that were submitted to the firm *more* than once. Only 22 of these deal proposals had been invited for resubmission as per the VC firm's feedback (see section on "Open door rejection"). Second, the VC firm invested in approximately the same share of these resubmitted deals as in the original deals (1% in the second submission attempt, and 2% in the third submission attempt), despite having already rejected the deals once; the one exception being the successful fourth submission (7% acceptance rate) but that is due to the deal being one of only 14 proposals sent four times.

CONCLUSIONS

This study is based upon the actions and decisions of VCs operating within their normal context and therefore captures what was actually done at the time of the real decision rather than what is reported in response to a survey or interview about past deals. This difference alone may explain why, despite the fact that many of the criteria cited as the reasons for the Dead deals are consistent with those identified in previous research, the operational demands on the VC management team's time and the profile of portfolio companies within the fund appear to impact the decisions made by the VCs more so than in previous studies.

When viewed from the perspective of rejection, the impact of firm-specific, *VC-specific factors* appears to be more pronounced than previously considered, and the conceptualization of VC decision making appears to be more *dynamic* when one considers the effects of time. Also, in order to develop a more comprehensive understanding of VC decision making, more attention should be given to these Dead deals. VCs are assumed by many to be expert decision makers and VC firms are commonly judged by the performance of their portfolios, which only represents one percent of the deals reviewed, with little to no consideration for the other 99% that were not selected. That said,

this study reveals that not all dead deals are the result of rejection by the VC, so researchers should be wary when collecting and interpreting data related to deal acceptance/rejection rates.

Based upon this research the most important, yet basic, advice to entrepreneurs is to maintain communication with the VC if they have expressed interest in the deal. It is all too easy for a VC to tell a company that their proposal does not meet the needs of the firm, so when a VC takes the time to request information or provide feedback and encourages someone to come back, it is a sign that your deal is still being considered. Along similar lines, it seems that VCs should reevaluate their practices regarding the deals they have rejected. Because the market for quality deals is highly competitive, VCs should seek to strengthen their relationships with companies they believe are potential candidates for future funding. Entrepreneurs should also spend time learning about the firms they send their proposals to in order to tailor their documents to the current phase of the fund and/or requirements of each firm. Two firms with similar investment strategies may view the same proposal quite differently simply by virtue of the fact that they are focused on different criteria based upon the lifecycle phase each firm is in at the time. Finally, our findings also suggest that VC firms should evaluate their existing management capacity and develop strategies to accommodate for times when they experience increased deal flow, above average due diligence activity or number of deal closings.

While this study provides additional insights into the decision-making process, many questions still remain unanswered. For example, much research has been conducted on the evaluation of the entrepreneurial team and the relevance of this evaluation, but the biases similar to those reported in Franke et al. (2006) may very well influence the evaluation of factors related to the other key criteria, namely the product and industry. Additionally, how does the participation in syndicates bias the evaluation and selection process? Guler (2007) showed that reinvestment decisions are influenced by the politics of the industry so it is highly likely that this institutional process also influences initial investments as well.

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Table 1: VC decision making literature

Study	Method/Sample/Location	Research focus
Wells (1974)	Interviews/7 VCs in 10 VC firms/US	VC activities and the decision making process
Benoit (1975)	Survey, interviews/ 22 VC/France	Factors related to VC investment decisions
Hoban (1976)	Archival analysis, questionnaire/3 VCs firms/US	Identification of the variables that predict venture success
Tyebjee & Bruno (1984a)	Telephone survey, questionnaires/Study I - 46 VCs, Study II - 41 VC firms/US	Study I - VC evaluation process, Study II - Investment decision criteria
Khan (1986)	Questionnaire/36 VC firms/US	Entrepreneurial characteristics & successful venture outcome
MacMillan et al. (1987)	Questionnaire/67 VC firms/US	Classes of screening criteria, successful & unsuccessful ventures
Robinson (1987)	Mail survey/53 VC firms/US	VC firm strategies and strategic
Bygrave (1988)	Venture Economics/464 VC firms/US	VC co-investment networks
Rea (1989)	Mail survey/18 VC firms/US	Factors that affect VC-entrepreneur
Hisrich & Jankowicz (1990)	Interviews/5 VCs/Unknown	The role of VC intuition in investment decision making
Dixon (1991)	Interviews/30 VCs/UK	Factors considered when evaluating proposals
Riquelme & Rickards (1992)	Conjoint exp./Step 1-6 VCs, Step 2-7 VCs/Unknown	Applicability of conjoint measures, confirming and ranking of criteria used to evaluate deals
Hall & Hofer (1993)	Interviews/4VCs/US	Criteria used to make investment decisions
Muzyka et al. (1996)	Interviews, questionnaire/73	Factors used when evaluating deals,
Shepherd (1999)	Conjoint exp./66 VCs/Australia	VC assessment of new venture survival
Zacharakis & Meyer (2000)	Conjoint exp./53 VCs/US	Decision aids in VC decision making, assessment of a venture's success
Zacharakis & Shepherd (2001)	Conjoint exp./53 VCs/US	VC overconfidence in investment decision making
Shepherd et al. (2003)	Questionnaire/66 VCs/Australia	The impact of VC experience on decision making
Dimov et al. (2007)	VentureXpert/108 VC firms/US	VC firm characteristics and investment selection
Franke et al. (2008)	Conjoint exp./51 VCs/Europe	VC evaluation of start-up teams

Table 2: Coding scheme

100 Product (General)	500 VC-Specific (General)
110 Strategy/model	510 Firm investment criteria
120 Perception/View	511 Out of firm focus - Product
121 No USP or differentiation	512 Out of firm focus - Stage
122 Not convincing/compelling	513 Out of firm focus - Size
123 Need proof of concept	514 Out of firm focus - Geography
124 Single product	515 Not viewed as a VC deal
125 Too basic	520 Fund/Portfolio related
126 Complexity	521 Competes with portfolio
130 IP related issues	522 Not appropriate at this time
200 Market (General)	523 Too early for fund
210 Existence and/or clarity of market	524 No funds remaining for region
220 Character	525 No time due to fund activities
221 Too small or niche	530 External expert view
222 Too crowded or competitive	540 Deal structure
223 Too fragmented	541 Need lead investor
224 Too large or mature	542 Oversubscribed
230 Acceptance (potential) of prod/svc	543 Existing investor intent
240 Regulation	544 Lack of existing VCs
300 Financial (General)	550 Rejected/No opportunity
310 Exit	551 No response
320 Revenue/return potential	552 Cosed by other VC
330 Use of proceeds	553 Not invited to participate
340 Valuation	554 Terms rejected
400 TMT (General)	555 Decided against VCs
410 Inexperience	556 Closed before fund
420 Reputation	600 Other
430 Lack of confidence	610 Dead but door left open
440 Key-man issue	700 No reason stated
450 No/incomplete management	800 OPEN (Still in deal review process)
	900 INVEST

Figure 1: Summary of deals reviewed and frequency of “Dead” reasons per year

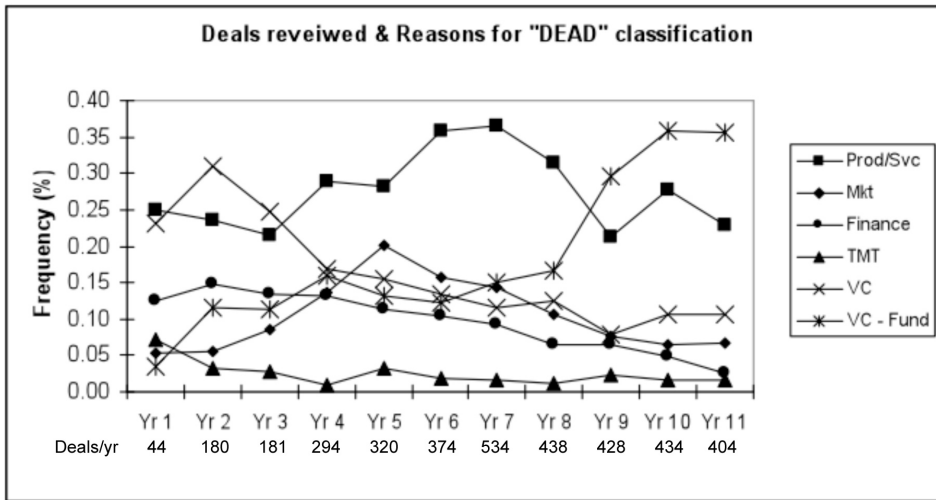


Table 3: Deals reviewed, grouped by submission attempt

	First submission	Second submission	Third submission	Fourth submission	Firm Totals
Deals reviewed	3,091	438	88	14	3,631
Investments	29	3	2	1	35
Resubmit rate		0.14	0.2	0.16	
Investment rate	0.01	0.01	0.02	0.07	

≈ SUMMARY ≈

DRIVERS OF SPATIAL PROXIMITY IN VENTURE CAPITAL FINANCE

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Principal Topic

The aim of our paper is to extend the understanding of patterns in spatial proximity in venture capital finance. We investigate how the likelihood of spatial proximity relates to different characteristics of the new venture, the venture capitalist and the financing round.

Method

We use a dataset of 944 dyads of German new ventures and venture capitalists which have closed a financing round between January 2002 and March 2007. We use ordinal logit regressions to depict patterns in the geographic dispersion of these dyads. It is the first study to use the minimum travel time including travel by car and/or plane to realistically estimate spatial proximity.

Results and Implications

An important finding of our study is that consecutive rounds of financing in our sample show significantly closer spatial proximity than first rounds of financing. This gives a hint that spatial proximity may play an important role in the decision to realize a follow-up financing round. Other key findings are that younger ventures, ventures with lower amounts raised in a round as well as ventures in knowledge-intensive industries are likely to be located closer to their venture capitalist. This is in line with principal agency theory as these characteristics are an indicator for the level of informational problems. Furthermore, we find in line with social exchange theory that larger venture capitalists seem to have a larger network from which to benefit as they are found to realize more geographically dispersed deals.

Overall, our results indicate that spatial proximity in venture capital finance is shaped by a broad combination of characteristics of the new venture, the venture capitalist and the financing round. Our study leads to important implications for entrepreneurial teams, venture capitalists and policy makers as the results give indications for what type of venture capital deals spatial proximity seems to be particularly relevant and, hence, a vital, locally established venture capital market appears to be more important.

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≈ SUMMARY ≈

WHAT HAPPENS TO NEW FIRMS THAT TRY, BUT FAIL TO RAISE VENTURE CAPITAL? A UNIVERSITY SPINOUT PERSPECTIVE

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Principal Topic

This study builds theory on how the failure to raise venture capital affects the development of new firms. Our context is a unique type of new firms, university spinouts, which are formed to commercialize intellectual property developed within universities (Shane, 2004). Although university spinouts have provided a strong source of deal flow for venture capitalists (Franklin et al., 2007), most spinouts find it difficult to raise such funding (Binks et al., 2004).

Method

We used a theory building (Pentland, 1999), process (Pettigrew, 1997) and multiple case study approach (Yin, 2003). The sample consisted of six biotechnology spinouts from Imperial College London. Data collection took place over three years and utilized multiple sources of evidence (Yin, 2003). Data analysis and theory building involved coding; within-case analysis; cross-case analysis; and constructing theoretical propositions. The data was linked to two theoretical perspectives that explain the findings: escalation of commitment, which explains how organizations behave following a negative outcome from a course of action (Staw, 1976; Staw, 1981), and organizational learning (Argyris & Schön, 1978, 1996), defined as a process of detecting and correcting error, which allows the organization to continue with (single-loop learning), or modify its goals or objectives (double-loop learning).

Results and Implications

We present a typology of VC feedback into (i) inconsistent, (ii) consistent and workable and (iii) consistent and unworkable feedback. We find that when start-ups fail to raise venture capital, inconsistent VC feedback leads to a greater escalation of commitment to raising finance than consistent and workable VC feedback. We show that single-loop learning mediates the relationship between VC feedback and escalation of commitment. We also find that consistent and unworkable VC feedback increases the likelihood of an exit and that inhibited double-loop learning mediates the relationship between VC feedback and exit.

This study contributes to studies on failure in the entrepreneurship literature (Shane, 2008; McGrath, 1999), performance feedback models in organizational learning (e.g. Branzei et al., 2004; Lant & Hurley, 1999; Mezas et al., 2002), and research on VC feedback (Sapienza & Korsgaard, 1996; Shepherd & Zacharakis, 2002).³

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≈ SUMMARY ≈

THE INFLUENCE OF LOCAL AND MULTINATIONAL PRIVATE EQUITY FIRM EXPERIENCE ON THE EXIT OF INTERNATIONALLY FUNDED BUYOUTS

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Sophie Manigart, Ghent University, Belgium

Principal Topic

The private equity (PE) industry is more internationally oriented than ever before with a growing number of cross-border buyouts. This raises the question whether international investors differ from local ones and to which extent the origin of the PE firm influences the exit pattern of their PE backed companies.

In order to exit, PE firms have to signal the quality of the portfolio company including the value of their involvement during the buyout. However, the mechanisms and procedures that ensure PE firms' effective guidance and value adding in the domestic country are not automatically transferable towards non-domestic regions. For this reason, we expect non-domestic PE firms to face a liability of foreignness and to signal a lower quality. We expect this liability to be an important driver of the exit pattern. Exits towards new owners with higher needs for signals of quality such as listings and trade sales will be more challenging to achieve.

The goal of this study is twofold. First, differences between exits of domestically versus internationally funded buyouts are studied, both main and moderating effects of origin are examined. Second, this research will study to which extent PE firms' liabilities of foreignness are compensated through local and multinational PE firm experience.

Method

This paper uses a sample of exits of domestically and internationally financed buyouts in Continental Europe between 1999 and 2008. Deal characteristics were obtained from the Centre for Management Buyout Research. Additional data on PE firm characteristics were provided, originating from SDC Venture Xpert.

Results and Implications

Preliminary findings do indicate that internationally financed buyouts have a different exit pattern than domestic ones. In addition, the signaling value of reputation on exit type is stronger if the PE firm originates from a domestic region or if the cultural difference with the host country is low. Hence, these differences are an important example of the liability of foreignness faced by distant, non-domestic PE firms.

We believe that our research will have important managerial implications for PE firms and portfolio companies that aim for an optimal exit. We also believe that our findings will be relevant for policy makers. They will enrich the debate about the consequences of international equity transactions.

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≈ SUMMARY ≈

**VENTURE CAPITAL INVESTMENT AS CAPITAL MARKET
SIGNAL IN NEW VENTURES AT IPO: A COMPARATIVE
INVESTIGATION OF VENTURE CAPITALIST AND
INVESTMENT BANK REPUTATION EFFECTS**

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Principal Topic

This study quantifies and compares the relative importance of underwriters and VCs for underpricing in initial public offerings (IPOs). A critical aspect of IPO underpricing is the information asymmetry between current owners and potential investors. Existing theory argues that such information asymmetry can be reduced by signaling the value of a venture through means that are considered valid in the perception of IPO investors (e.g., Stuart, Hoang, and Hybels, 1999).

While signals based on the certification of IPOs by investment banks have received substantial attention and empirical analysis, research on the role of venture capitalists (VCs) in this process is only beginning to emerge. Furthermore, there is little research that compares the relative influence of investment banks in alleviating underpricing, to that of VCs.

Method

Based on a sample of 1,840 IPOs, which represent 19 years, 51 industries (at 2 digit SIC codes), 86 underwriters and 557 venture capital firms, we measure the proportions of the underpricing of venture backed IPOs that can be attributed to the VC, underwriter, industry and the year of the IPO by applying a variance decomposition analysis.

Results and Implications

With 23.64% the VC effect accounts for the largest portion of the variance in IPO underpricing, while the underwriter effect accounts for only 12.14%. The year effect accounts for 4.35% of the variance in IPO underpricing, and the industry effect accounts for 2.14%.

The results indicate that VCs are of larger importance in signaling quality than underwriters. This opens interesting new research avenues. Although underwriters are often seen as certifiers of quality, they themselves have only a limited ability to judge a start-up. VCs on the other hand can - through their long term involvement with the start-up - directly influence quality. The findings suggest that underwriter reputation is discounted by the market because of exiting information asymmetries between the VC and their star-ups and the underwriter.

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≈ SUMMARY ≈

WHEN VENTURE CAPITAL SYNDICATION GOES BAD: THE SOCIAL NETWORK CONSEQUENCES OF FAILED INVESTMENTS

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Principal Topic

Despite the high prevalence of VC syndication, there is still relatively little understanding of the dynamics of syndication relationships. In this paper, we examine whether and how investment outcomes affect the likelihood that syndicate partners will invest together again. Based on attribution and behavioral decision theories, we argue that syndicate partners draw inferences from their current investments about their ability to work together. On the whole, we expect that investment success will increase the likelihood of future co-investment, while failure will reduce this likelihood. But we also expect that the partners' prior investment experience will make the success and failure of the current investment more salient and asymmetrically so; they matter only if they serve to affirm the partners' perceptions of their competence or incompetence. Accordingly, we expect that current outcomes matter less when the partners have no prior experience. In addition, we expect that current success matters more in the context of prior success and less in the context of prior failure; similarly, current failure matters more in the context of prior failure and less in the context of prior success.

Method

From the *VentureXpert* database, we created a dataset of 925 first-round, early-stage investments that took place between 1980 and 2001, involved exactly two VC firms, and did not involve any additional investors in subsequent rounds. We traced and recorded the date and nature of the ultimate outcome of each investment. We also recorded whether and when the two VC firms invested together again, and derived their joint investment experience prior to the current investment. We organized the data into 1,506 duration spells and used a Cox model to estimate the hazard of future co-investment and test our hypotheses.

Results and Implications

We find that the likelihood of future co-investment (1) decreases with the failure of the current investment, (2) does not depend on the success of the current investment, and (3) increases with the prior co-investment experience of the partners. Moreover, current failure does not matter when the two partners have no prior joint experience. Finally, the current success decreases the likelihood of future co-investment when the partners have higher prevalence of failure in their prior experience. These results hold interesting theoretical and practical implications.

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≈ SUMMARY ≈

WHAT ARE VENTURE CAPITALISTS' STRATEGIC POSTURES?

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Principal Topic

The existing literature on VC strategy is scarce. The reasons for such dearth of research on VC strategy are seemingly that while VCs may occasionally comment on strategic issues (Gupta, 2005) and a few researchers have examined the subject (Robinson, 1987; King, 2008), we do not actually have a theory (or even a suitable taxonomy) explaining the differences in VC strategizing. Furthermore, we do not know whether more generic classifications of strategic types, for instance, Snow and Mile's (1968) identification of key strategic postures — prospectors, analyzers, defenders and reactors - or Porter's (1980) distinction between cost leadership, differentiation and focus as the three generic strategies and his emphasis on consistency (similar to “reactors,” inconsistent firms tend to get “stuck in the middle”) are applicable to VCs' strategizing.

Method

For the purposes of this study, we have analyzed over fifty VCs' interviews. Some of the interviews we conducted ourselves. Others were found in books and journals. We have employed the following methods for scrutinizing VCs' stories. First, we focused on VCs' discussions of their firms' investment philosophies and what makes them different from other VCs. Second, we examined VCs' comments on VC firm's internal governance and consensus building. Third, we investigated VCs' methods of portfolio building. Fourth, we studied VCs' approaches toward venture collaboration, that is, whether VCs induced portfolio company collaboration and mutual learning to achieve synergies through portfolio selection and venture networking or rather viewed each business as self-sufficient and did not urge venture collaboration.

Results and Implications

The suggested typology of VCs' strategic types could be useful for both VCs as they make their strategic choices and for entrepreneurs trying to find a good fit with a VC firm. Thus, VCs may compare the costs and benefits, merits and shortcomings of each strategic position and possibly emphasize (deemphasize) some previously overlooked (overemphasized) orientations. Entrepreneurs may try to decide whether they want to work with a VC firm that will give them more individual attention or rather manage the process of mutual collaboration in its network of portfolio companies; whether they want help from a principal, collaborator or specialist, or alternatively, prefer to receive assistance from a VC firm balancing these three roles.

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≈ SUMMARY ≈

ON THE VALUE OF THE AGENCY RELATIONSHIP BETWEEN PRESTIGIOUS VCS, UNDERWRITERS AND SHAREHOLDERS

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Principal Topic

VCs and underwriters play an important, but underexplored, role in IPOs. Ownership, length of board service, and number of VCs invested in the pre-IPO firm is negatively related to underpricing and VC involvement is “recognized by capital markets through lower underpricing for IPOs with better monitors” (Barry et al, 1990: 447).

Previous research raises a number of questions regarding the pre/post-IPO roles of VCs and investment bankers. The present study tests multiple agency perspectives to understand how different types of VCs and underwriters can undermine process outcomes. By examining the performance of firms accused of material mis-statement of operational facts and/or performance expectations, we discern differences between VCs and underwriters on the control issues of interest. This legal action sample is prima facie evidence of breakdown in monitoring and certification.

Method

We examine a sample of 246 IPOs (111 VC-backed, 135 non-VC-backed) sued by shareholders for material mis-statements in the issuing prospectus and other related charges. We extracted the sample from Thomson Financial’s SDC New Issues database which includes all firm-commitment new issues 1980-2002. Segment and accounting data (sales, assets) are retrieved from Compustat. We control for firm age (logged years), firm size (logged assets, sales prior to IPO), overhanging shares, initial filing width, firm age pre-IPO, institutional ownership, and high-technology industry. Preliminary results indicate that VC-backed IPOs exhibited larger underpricing than non-VC backed IPOs. Regressions show that highly desirable VC-backed firms are charged with more SEC offences, have more charges dismissed, and have smaller settlements.

Results/Implications

The incentive to match prestigious underwriters with a reputation for severe underpricing with prestigious venture-backed firms is substantial. Both VCs and underwriters gain: VCs certify the issuing firm and thereby attract a prestigious lead underwriter; underwriters receive benefits in underpricing the stock (as they are compensated by both issuer and investors). Both VCs and underwriters benefit in the agency relationship, especially as VCs switch to a shorter-term perspective during the IPO stage as they execute exit strategies and demonstrate strong returns for their investors. Moreover, as they continually seek to bring new/emerging ventures to market, maintaining a relationship with prestigious underwriters is crucial to their success.

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≈ SUMMARY ≈

**EQUITY TRAPS: NEAR EQUAL DISTRIBUTION OF CASH FLOW
INCENTIVES AMONG INVESTORS IN VENTURE CAPITAL
SYNDICATES AND THE PERFORMANCE OF START-UP AND VC FUNDS**

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Introduction

The most common method of allocation is equal distribution of resources, irrespective of the need or ability of the individuals in a group (Camerer and Thaler, 1995). Psychologists suggest that equal distribution requires the least cognitive effort and hence it is the starting point for allocation of resources in a group. Economists, on the other hand, point out that any distribution that ignores the relative ability of the actors is sub-optimal. In this project I study the relationship between the near equal and unequal distribution of incentives among investors in a Venture Capital (VC) syndicate. In nearly 13,000 rounds of syndicated deals from 1980 to 2004, I find that start-ups that receive more unequal investments are more likely to have a subsequent round of funding or an IPO or an M & A event.

Theory and Hypotheses

The models I draw on for the empirical analysis are the agency and moral hazard model explaining credit and financial intermediation (Holmstrom and Tirole, 1997). Wherein a large stake in a project by one informed investor leads to optimal allocation of due diligence and monitoring effort. Survey work on venture capital round distribution and provision of effort is also consistent with the arguments I make (De Clercq, Sapienza, Zaheer, 2007).

Hypothesis: There is a positive relationship between unequal distribution of round amount among VC firms in a round of financing and the performance of the portfolio company.

Method

The data for this analysis is from Thomson Financial's *Venture Economics* database. *Venture Economics* covers nearly 90% of all venture capital transactions in the US (Gompers and Lerner, 2001). Since performance data is not publicly disclosed the most common proxy for the performance of a VC firm is the proportion of investments that achieved a successful IPO or an M & A exit (Hochberg, Ljungqvist, Lu, 2007). I use an instrument variable approach to first estimate the endogenous variable of round distribution and then estimate the impact of round distribution on performance.

Implications for theory and practice

I find that the incentive distribution to the lead financial intermediary matters more when mentoring and monitoring needs of the start-up are the greatest. The results of this study suggest that VC partners share the investment based on the mentoring and monitoring needs of the start-up.

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≈ SUMMARY ≈

IS THERE AN OPTIMUM RATE OF INVESTMENT OF VENTURE CAPITAL? A STUDY OF 473 VENTURE BIOTECH COMPANIES

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Principal topic

By staging investment, venture capitalists strive to optimize their financial returns. Entrepreneurs on the other hand might prefer to get as much investment as early as possible so as to grow their companies as quickly as possible without running short of money and having to spend time negotiating for subsequent rounds of venture capital or, if the company falters, being abandoned by their venture capitalist. An investment agreement is a compromise between a VC's objectives and an entrepreneur's. In theory, there should be an optimum rate of investment in terms of how much is invested in each round and the time between rounds. But to our knowledge, the relationship has never been studied empirically.

Method

We gathered data on 473 U.S. biotechnology companies that raised first rounds of venture capital in 1993 through 1999 and subsequently went public or were acquired. For each company we have the date and amount of VC of each round, market capitalization at its IPO, or valuation when it was acquired. For public companies we have sales revenue, net income, net worth, number of employees, and market capitalization on a quarterly basis. We developed regression models to look for a relationship between performance and the rate of investment as measured by the amount invested and the time between rounds. We controlled for the age of the company when the first round of venture capital was invested, the date when the company received its first round, and the date when it went public or was acquired.

Results and Implications

For companies that had IPOs, the market capitalization correlated with the reputations of the VC firm and the investment bank, the time from the first venture capital round to the IPO, and the total amount of venture capital and the rate at which it was invested. But it did not correlate with the number of rounds. In contrast, for companies that were acquired, the acquisition valuation correlated only with the number of rounds of venture capital. When the IPO and acquisition data sets were merged, the harvest valuation correlated with the total amount of venture capital and the investment rate.

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≈ SUMMARY ≈

EUROPE'S FAMILY OFFICES, PRIVATE EQUITY AND VENTURE CAPITAL

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Principal Topic

Family Offices (FOs) have turned into significant contributors to private equity (PE) and venture capital (VC) funds. As pure private wealth, they are often not subject to government regulation, and exhibit long investment horizons, often spreading across generations. As such, they provide a unique perspective into long-term, unconstrained investment behaviours and portfolio allocations. This paper, based on extensive clinical analyses of the largest FOs in Europe, investigates the single family offices' investment behaviour when it relates to risky asset classes such as private equity and venture capital. Commissioned and jointly run with the European Venture Capital Association (EVCA), it is the first in-depth analysis of the investment behaviour, processes, structures and allocations of this investor group. We also develop a new typology of FOs. We show how aspects such as family history, the generational distance to the founder and the size of the clientele served by the FO affect the establishment and development of the FO, objectives, processes, structure and allocations to PE and VC. We also provide confirming evidence that European FOs do operate on a multi-generational time horizon, have broad networking abilities and the ability to move quickly in changing and difficult circumstances.

Method

The paper is based on in-depth clinical analyses conducted in 2007 of 12 of the largest (single) family offices in Europe, ranging in size from €0.5 billion to €2 billion of investable assets. The sample has been estimated by EVCA to represent about 50% of the depth of the market in Europe, and represents some of the largest, most sophisticated players.

Results and Implications

This paper documents the investment behaviour of the largest family offices in Europe, outlining robust patterns. Family offices tend to invest aggressively into PE and VC. Relatively young and smaller (in terms of clientele served) family offices are the most aggressive allocators to risky assets, but this tends to disappear with the natural generational spread of the family. Family offices tend to be smart, patient and often more entrepreneurial and risk-taking in their investment decisions, making them ideal private equity "customers" but the dynamics of the FO are important for GPs when attracting them to funds.

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≈ SUMMARY ≈

**CVC FROM THE START-UP PERSPECTIVE: A
QUALITY OR MIXED SIGNAL?**

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Principal Topic

Corporate venture capital (CVC) funding represents a significant part of the venture capital market (Chesbrough, 2002). CVC investments give the investing firm a window onto new technological developments, and CVCs benefit the most from these investments when they are strategic in nature, rather than purely financial (e.g., Dushnitsky & Lenox, 2006) and when the CVC has a high level of involvement with the start-up companies it invests in (Wadhu & Kotha, 2006). Interestingly, we know relatively little about the effect of these investments on the financial performance of the start-ups *receiving* them. For example, if the CVC firm benefits the most from having strategic motives associated with the start-ups it invests in, what does this mean to the start-up firm?

Theoretical Foundation

In this paper, we examine what effect CVC funding has on the receiving start-up company's financial performance, specifically in the IPO market. To do so, we draw on Rock's (1986) theory of information asymmetry to explain underpricing.

To assess the true value of a start-up that has CVC funding, an investor must understand the nature of the relationship between the start-up and its CVC investors. For example, will the start-up company have to give preferential treatment or access to its CVC investors? CVC investment in a start-up company means there is more information needed that is specific to each CVC investment in order to assess the value of the start-up company. Thus, the IPO will be underpriced to compensate for these information asymmetries. Accordingly, we hypothesize that CVC investments will be positively associated with underpricing.

Methods, Results, Implications

To test our hypotheses we combine data from multiple sources over the period of 1990-2006, yielding a sample of 1387 firms. Controlling for start-up firm age, size, underwriter quality and market conditions at the time of IPO, we find that CVC funding does significantly contribute to underpricing, consistent with theory that more information is necessary to understand the nature of this relationship. CVC funding, however, decreases underpricing when the CVC is the lead investor.

Through this study, we provide a window onto what the *start-up company* gains from CVC involvement, complementing the growing literature on what CVCs gain from these relationships.

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≈ SUMMARY ≈

**HOW DO PHILANTHROPIC VENTURE CAPITALISTS
CHOOSE THEIR PORTFOLIO COMPANIES?***Mariarosa Scarlata, ESADE – URL, Spain**Luisa Alemany, ESADE– URL, Spain***Principal Topic**

In recent years, philanthropic venture capital (PhVC) has developed as a new financing model for social entrepreneurship. First presented by Letts *et al.* in 1997, PhVC is the application of the venture capital (VC) strategies and techniques to the financing of social enterprises (SE). Like venture capitalists (VCs), PhVCs have developed specialized abilities in selecting entrepreneurial projects. However, while VCs select deals in terms of shareholder value maximization (Amit *et al.*, 1998), PhVCs engage in a partnership aiming at maximizing social impact. Because of the few PhVCs and the high engagement philosophy, a limited number of SE receive support after a tough selection process. Despite the growing interest in PhVC, no study has investigated its selection. Specifically, it is unclear: a) which variables are considered; b) their degree of importance; and c) the relationship with VC variables (Kaplan and Stromberg, 2000). Additionally, no research exists on whether different types of PhVCs consider different screening variables and the existence of differences in US and European selection process.

Method

A web-based survey sent to the US and European PhVC population in October 2008 is used. To this respect, 34 US PhVCs and 40 European PhVCs were identified through the US and European Associations (NVCA and EVPA) and other reports. Results are analyzed on a descriptive statistical level and through cluster analysis.

Results and Implications

PhVCs originate and select deals like traditional VCs. However, they also adopt different deal origination criteria, i.e., incubation and direct creation of an organization if a suitable one is not found. Furthermore, selection variables such as “deal terms” and “technology” are not considered to be as important as in the case of venture capital. This research makes several contributions. On an academic level it is the first exploratory study on selection issues, and it aims at building theory on the topic at hand. On a professional level, it provides social entrepreneurs with a guideline when applying for PhVC funds. It also clarifies whether PhVCs behave like VCs in the screening process. The implication of this finding could be of importance as, if this is the case, VCs could transfer their expertise to the social sector.

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≈ SUMMARY ≈

VENTURE RISK AND VC INVESTMENT: THE MODERATING ROLE OF LEAD FOUNDER LEADERSHIP STYLE

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Principal Topic

Conventional wisdom states that if a venture capitalist must choose between a grade A business idea with a grade B founder or a grade B business idea with a grade A founder, then the VC will invest in the second venture. In this study, we examine how a lead founder's leadership style moderates venture risk to influence VC investment.

Transactional leadership entails an exchange relationship between the leader and the follower, whereby the follower is rewarded for completing tasks within specified quality and timeliness parameters. On the other hand, transformational leadership encompasses a more charismatic and inspirational relationship between the leader and follower that incites the follower to exceed expectations. In a young, high-tech venture operating in turbulent environments where specific expectations are virtually impossible to define, transformational leadership is especially important to firm performance. Since venture capitalists specialize in identifying firms with high expected future performance, we hypothesize that a venture's lead founder's leadership style influences VCs' initial investment decisions as well as post-investment performance.

Method

The sample is composed of 257 ventures that sought funding from six VC firms. Venture risk was assessed from each submitted business plan using the Risk Diagnosing Methodology. Lead founder leadership style was determined prior to the VC investment decision using a survey based on the Multifactor Leadership Questionnaire. VC investment decisions and post-investment performance were gathered from VC records. Control variables address industry and economic context, as well as differences among the VC firms.

Results and Implications

The empirical results challenge traditional views. Coupling transformational lead founders with high risk increases, not decreases, a new venture's ability to obtain funding from VCs. On the other hand, transactional lead founders can reduce the effects of risk on the new venture's ability to raise VC funding.

We contribute to the entrepreneurial literature by demonstrating how venture managements' soft characteristics influence VC investment. We also extend the leadership literature by responding to calls to explore the boundary conditions of transformational and transactional leadership styles.

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∞ INTERACTIVE PAPER ∞

WHAT ARE THE CAUSES OF CEOs' DISSATISFACTION WITH VENTURE CAPITALISTS' ASSISTANCE?

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Principal Topic

Prior research has established the existence of numerous disagreements and conflicts in the VC-entrepreneur relationship (Sapienza, 1989; 1992; Gomez-Mejia et al., 1990; Ehrlich et al., 1994) that may be spurred by both parties' opportunistic behavior negatively influencing perception of procedural justice (Sapienza and Korsgaard, 1996; Busenitz et al., 1998) and venture profitability (Higashide and Birley, 2002). Previous studies have not investigated, though, how disagreements between VCs and CEOs and may affect CEOs' behavioral intentions. This question is of great consequence since many ventures prefer to avoid VC financing as too expensive and risky (Amit et al., 1990). Therefore, VCs would be interested to know how CEOs might act in reaction to their perceived conflicts with VCs while CEOs certainly would like to find out how their peers react to perceived conflicts with VCs.

Method

A random sample totaling 104 CEOs of ventures financed by VCs was obtained through a survey posted on the university's website. We measured CEOs' perception of cognitive and affective conflicts and their behavioral intention to switch to other types of VCs or change own behavior in response. The data were analyzed via structural equation modeling (SEM).

Results and Implications

While prior research has emphasized the destructive aspects of affective conflicts in the area of venturing (Ensley et al., 2002; Higashide & Burley, 2002) we conclude that affective conflicts have a silver lining. They raise the tension to the point when decision makers are forced to overcome the lingering inertia and take a stand. Curiously, the adjustment of behavioral intentions in response to affective conflicts and the associated emotional crises may go in two different directions. Some decision makers decide to look for other VC partners. However, decision makers may also make a resolution to adjust their own behavior: work harder on avoiding conflicts and resolving conflicts when they arise, and essentially, be more proactive in building collaboration. This is why affective conflicts may not be utterly dysfunctional and counterproductive and could actually play a liberating role. They allow decision makers to muster courage and seek change and renewal – by actively looking for a better match as well as changing one's own behavior.

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∞ INTERACTIVE PAPER ∞

THE RELATIVE PERFORMANCE OF VENTURE CAPITAL BACKED AND NON-VENTURE CAPITAL BACKED FIRMS

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Knut Reistad, NTNU, Norway

Principal topic

The relative VC portfolio firm performance is to a large extent an unexplored field of research. Previous research covers the performance of venture capital backed firms that have gone through an IPO. Only a few studies explicitly covers operating performance of the VC backed firms. These studies do not explain how VC financed firms perform the first years after the VC funding event itself. Generally the results show that VC firms tend to grow faster in size than comparable firms, but little or no research has been done on other performance dimensions.

This empirical study investigates the performance of VC backed firms across multiple dimensions of performance using parallel indicators for each performance dimension. The performance dimensions examined in this paper is related to growth, efficiency and profitability.

Method

The study is based on a matched pairs research design of venture capital backed and non-venture capital backed firms. The sample is based on 40 portfolio companies which were held by VC funds in 2004 and 40 similar companies not having received such funding. The matching variables was; industry, sales level, year established, number of employees and geography. In most cases several potential matches were identified. It is important to emphasise that matching was based on data collected the year before the VC investment event in order to not be disturbed by effects caused by the infused capital

Results and implications

The results of this study show that surviving VC backed firms experience higher growth in size compared to surviving non-VC financed firms. However this comes at the cost of weaker performance related to profitability and efficiency. A more interesting finding is that the VC backed firms have significantly higher value of their total assets compared to similar non VC-backed firms in the year before the investment event. This could mean that the managers of those firms that later receive VC funding are more aggressive and more willing to seek external funding from other sources like friends and family, industrial players, government support programmes and private investors. It could also imply that these entrepreneurs are better at creating valuable resources and tying these to the firm.

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ANTECEDENTS OF PLANNING IN SMALL AND ENTREPRENEURIAL VENTURES: STRATEGIC IMPLICATIONS FOR NASCENT ENTREPRENEURS



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ABSTRACT

Scholars have investigated the relationship between strategic planning and venture performance for more than three decades, yet the antecedents of planning remain relatively obscure. The research presented here considers the relationships between several antecedents and planning suggested by previous research. Specifically, we assess relationships among five key variables: decision making style, problem solving style, perception of environmental uncertainty, venture type (entrepreneurial versus small business venture), and planning formality. A post-hoc analysis of specific meta-cognitive variables is conducted to expand our understanding of these antecedental relationships. Our results indicate significant relationships between problem solving style, perception of environmental uncertainty, venture type and planning formality. Implications for future theory and research are discussed.

INTRODUCTION

Scholars have investigated the relationship between strategic planning and venture performance for more than three decades (Miller & Cardinal, 1994). A review of this extant research suggests that there is relatively widespread agreement among theorists that planning, whether formal or emergent in nature, generally has a positive influence on a venture's performance (Ackelsberg & Arlow, 1985; Aram & Cowen, 1990; Floyd & Wooldridge, 1997; Hopkins & Hopkins, 1997; Miller et al., 1994; Robinson, Pearce II, Vozikis, & Mescon, 1984; Wooldridge & Floyd, 1990). This relationship may be particularly acute for nascent ventures given the substantive impact of decisions made early in the developmental process. For example, Brodsky (1995) has observed that many entrepreneurs fail not because their business is undercapitalized, but rather because they misuse the capital they have raised. In short, a lack of planning compromises the discipline and flexibility necessary to avoiding resource misallocations which ultimately threaten venture survival (Bhide, 1992).

While the consequences of planning have been widely studied, the antecedents of planning remain relatively obscure (Harris & Ogbonna, 2006) and less than fully explored. Given that understanding planning may be an important means to avoiding the liabilities associated with new venture creation (Freeman, Carroll, & Hannan, 1983), research that provides a greater understanding of the initiation of planning is important to both theorists and practitioners alike. Accordingly, our study seeks to provide an initial step in this line of investigation by focusing explicitly on two questions meant to enhance our understanding of the initiation of planning in small and entrepreneurial firms. First, what are the cognitive antecedents of formal and informal planning? Specifically, what relationship, if any, exists between nascent entrepreneur's decision making style,

problem solving style and perception of uncertainty and the planning process? Second, is there a difference between small ventures and entrepreneurial ventures with regard to the planning process itself? Both of these questions are central to furthering our understanding the antecedents and ultimately the consequences of planning in small and entrepreneurial ventures.

In addition to the development of formal hypotheses stemming from these research questions, we further propose conducting a post-hoc analysis to further explore several additional metacognitive antecedents distinguishing between necessity and opportunity entrepreneurs. Mitchell, Busenitz, Bird, Gaglio, McMullen, Morse, & Smith (2007) note that metacognition refers to “thinking about thinking” (Jost, Kruglanski, & Nelson, 1998) and is defined to be “the ability to reflect upon, understand, and control one’s learning” (Schraw & Dennison, 1994, p. 460). We explore four variables within this context: The perception that one’s skills and abilities will help them start their venture; preference for a clear and structured mode of life; preference for certainty when entering a new situation; and perception of self as decisive. While no specific hypotheses are offered for these variables, the role of each in affecting formalization of business planning is explored, specifically to better understand the antecedents of planning from a pre-planning perspective. In the next section, we review theory and previous research on each of these aspects to develop the central hypotheses of this investigation. We then describe the methods we have used for data collection and analysis. The paper concludes with a presentation of the results of our analysis, followed by an interpretation of the results and a discussion of their implications for future research.

LITERATURE REVIEW

Despite continued debate among some scholars (Miller et al., 1994), a synthesis of more than two decades of research suggests that theorists from a wide range of perspectives seem to broadly agree that planning generally has a positive influence on a venture’s performance (Ackelsberg et al., 1985; Aram et al., 1990; Floyd et al., 1997; Hopkins et al., 1997; Robinson et al., 1984; Wooldridge et al., 1990). Accordingly, entrepreneurship researchers and educators have argued for more systematic planning on the part of small businesses (Baker, Addams, & Davis, 1993). Such prescriptive arguments may be particularly relevant for firms in the nascent, pre-operational stage of development where resource acquisition-related problems have frequently been observed during these formative years of ventures (Alpander, Carter, & Forsgren, 1990). In short, the evidence suggests that the likelihood resource related issues can be anticipated and offset increases with degree of attention dedicated to planning.

If planning is an important mechanism in the successful creation of new ventures in the sense that increases the likelihood of avoiding the liabilities associated with newness (Freeman et al., 1983), then it is important for research to provide a greater understanding the planning processes entrepreneurs employ (Hill & Levenhagen, 1995). Yet we know little about the planning processes of nascent entrepreneurs, at least in part, because the explicit study of nascent entrepreneurial activity has lagged in comparison to other organizational research domains (Aldrich, 1999; Reynolds, 2000). Accordingly, more research is needed to describe and enhance our understanding nascent entrepreneurs’ planning activities (Delmar & Shane, 2003).

Researchers have argued that cognitive theory offers us multiple mechanisms, both theory-driven and empirically-robust, that can help to build a deeper, richer understanding of how individuals learn to see, assess and act on information in the creation of new ventures (Baron, 2004).

Despite this potential, Sarasvathy (2001) has noted that studies to date have focused largely on cognitive constructs that represent the 'surface' layer of entrepreneurial thinking, such as intent (Krueger Jr. & Brazeal, 1994). As a result, little is known about how basic distinctions in modes of thought, or 'deeper' cognitive influences, might ultimately help us to understand nascent entrepreneurial activities such as planning (Baron & Ward, 2004).

One exception to this trend is research which has focused on the importance of understanding a person's preferred way of processing and evaluating information in the process of engaging in entrepreneurial activity (Allinson, Chell, & Hayes, 2000). Entrepreneurs confront uncertainty in the sense that economic information rarely presents itself in a complete and objective, or self-evident, form. Faced with uncertainty, they seek to generate additional information, at least in part, by integrating it with action as they craft strategies for new ventures (Bhide, 1994). More specifically, they engage in a process of systematically unearthing the implicit, and potentially dangerous, assumptions by experimenting with incremental problem solving and decision making before freezing strategies that may prove to be fatally flawed (McGrath & MacMillan, 1995). Accordingly, our study seeks to deepen this line of inquiry by investigating the relationships between nascent entrepreneur's decision making style, problem solving style, perception of uncertainty and the planning process.

Carland, Hoy, Boulton, & Carland (1984) identified a venture typology suggesting that, although there is an overlap, entrepreneurial firms and small business firms are very different in that the two clearly have different objectives. Specifically, entrepreneurial ventures are key on growth over time, whereas small business firms seek to remain small for their organizational lifetimes. Although small ventures may grow over time, they are principally established to further personal goals while serving simultaneously as a source of income substitution. Given the potential for a differential impact of contextual issues to differentially impact entrepreneurial processes such as planning (Ucbasaran, Westhead, & Wright, 2001), we also seek to examine if there is a difference between small ventures and entrepreneurial ventures with regard to the planning process itself.

HYPOTHESIS DEVELOPMENT

Past studies have suggested that decision making plays a central role in the entrepreneurial process (Baron et al., 2004). As founders are central influences during in early stages of venture development (Stevenson & Gumpert, 1985), entrepreneurs' decisions play an integral role in determining important shaping activities such as, determining what types of opportunities to pursue (Davidsson & Honig, 2003), what types of resources to acquired to assist with venture launch and development (Eisemann & Andrews, 1981), and to what degree, if at all, formal planning is initiated in order to facilitate the implementation of these decisions by gaining the support of resource providers (Harris et al., 2006).

Given the positive relationship observed between formal planning and venture performance (Miller et al., 1994), it seems important to further explore the nature of decision making as it relates to initiation of formal planning. While there is some research which has suggested that the tendency to be overly optimistic is quite pronounced in the collective sense among individuals who engage in entrepreneurial endeavors (Cooper, Dunkelberg, & Woo, 1988), perhaps because they might be disproportionately prone to relying on intuition (Allinson et al., 2000), there is also evidence to suggest that individual entrepreneurs differ in terms of how they prefer to process and evaluate information and experience. For example, research based on cognitive theory has sug-

gested that stylistic differences can best be described among entrepreneurs as manifesting into one of two decision making styles: those who prefer to reason more adaptively versus those who prefer reason more (Dollinger & Danis, 1998). This work suggests that individuals develop cognitive styles as a result of interacting with their environments early life, and once developed, these styles remain a stable component of the thought process that fundamentally influences an individual's decisions (Kirton, 1976).

Building on this line of reasoning, we believe that possessing an adaptive decision making style will be more positively related to formal businesses planning among nascent entrepreneurs, at least in part, because it will be associated with the preference to employ analytic, deductive, rigorous, constrained and critical reasoning methods as a means of avoiding missteps in advance of implementation efforts (Allinson et al., 2000).

Hypothesis 1: Nascent entrepreneurs preferring to make adaptive decisions will pursue more formal business planning than nascent entrepreneurs preferring to make innovative decisions.

Research has also suggested that problem solving is a key factor linked to the initiation of planning. Simon (1960) differentiated between programmed and non-programmed decisions. The need for programmed decisions is a result of confronting situations where problems that are routine, or repetitive in nature, whereas the need for non-programmed decisions is a result of confronting situations where problems are unstructured in nature. As nascent ventures become operational, they are constantly susceptible to liabilities associated with newness (Freeman et al., 1983) and nearly every decision an entrepreneur makes is a consequence of solving a problem (Ford & Matthews, 2000). Specifically, founding entrepreneurs are constantly forced to solve problems related to accessing capital, obtaining sales, hiring talent and managing venture growth (Dodge, Fullerton, & Robbins, 1994; Franklin & Goodwin, 1983).

While it has been suggested that entrepreneurs are persons who prefer to “think on their feet” by relying on intuition (Allinson et al., 2000), to date the basic distinction between preferring to solve problems through analysis versus intuition has not been considered in detail in the field of entrepreneurial cognition (Baron et al., 2004). During these early stages the nascent operational environment is frequently ill structured in nature, it is important for entrepreneurs to not only have a strong *desire* to persist, but also to believe that persisting with the launch of a venture is *feasible* (Krueger Jr. et al., 1994). Therefore, from a feasibility perspective, it may be the degree of perception that the entrepreneurs has (Chan, 1996) between his/her problem solving style and the context of new venture creation is related to the degree of formal planning activity in which he/she initiates. Similarly, we would expect that having a preference for being calculating and decisive in approaching problems would also be directly related to the degree of formal planning activity.

Hypothesis 2: A perceived match between problem solving style and the new venture context will be positively related to formal business planning.

Hypothesis 3: Nascent entrepreneurs having a calculating approach to solving problems will pursue more formal business planning than nascent entrepreneurs having an innovative approach.

Hypothesis 4: The tendency to delay decisions to collect information in new ventures will be negatively related to formal business planning.

Bhide (1994) has suggested that entrepreneurs will not engage in extensive planning because they often choose to operate in environments that are fairly uncertain, making attempts at formal planning difficult. Similarly, McGrath and MacMillan (1995) have argued that planning is different in new, as opposed to conventional ventures, precisely because new ventures confront more unknowns than existing organizations. For example, in small and entrepreneurial ventures future results often cannot be extrapolated from a well-understood base of information of past performance. Given such impediments, entrepreneurs are likely to seek additional information when faced with uncertainty, at least in part, by integrating planning with incremental actions as they craft strategies for new ventures (Bhide, 1994).

Thus, it seems more likely that entrepreneurs will engage in a less formal, more 'discovery-driven' (McGrath et al., 1995) or logically incremental (Quinn, 1980) approach to planning, whereby entrepreneurs first articulate what they don't know and then experiment with incremental actions to test initial plans and create new sources of information for subsequent plan revisions. Although based on the non-nascent (i.e., ongoing) venture context, there is some empirical evidence that supports this line of reasoning (Matthews & Scott, 1995).

Hypothesis 5: Perceived environmental uncertainty will be negatively related to planning formality.

In their review of the strategic planning literature, Robinson and Pearce (1984) suggested that small business ventures generally do not plan as a result of lacking the necessary time and staff to engage in the strategic planning process. Given that small business ventures are principally established to further personal goals while serving as a source of income substitution (Carland, Hoy, Boulton, & Carland, 1984), it also seems reasonable to suggest that such ventures are likely to require fewer external resources than their entrepreneurial venture counterparts to attain and maintain venture-environment alignment (Ansoff, 1991). By contrast, entrepreneurial ventures are more likely to key on growth over time (Carland et al., 1984), which will often require external capital and resources to support innovative activities. Evidence from the strategic planning literature suggests that capital assets tend to require long periods of consistent use to produce adequate returns on investment. Thus, formal planning would seem to be more critical because the long-term success requires that an integrated and coordinated scheme be developed in order to coordinate subsequent successful implementation efforts.

Hypothesis 6: Nascent entrepreneurial ventures will pursue more formal business planning than nascent small business ventures.

METHOD

Data and Sample

Archival data are obtained from the Entrepreneurship Research Consortium/ Panel Study of Entrepreneurial Dynamics (ERC/PSED). The sample identification procedure began with a telephone screening in which 64,622 respondents were initially contacted. Respondents were asked, "are you, alone or with others, now trying to start a new business?" Eight hundred and thirty one respondents answered this question in the affirmative and were classified as nascent entrepreneurs. Four hundred and thirty one respondents answered this screening question in the negative and were classified as members of the non-nascent comparison group. A follow up telephone phone interview was conducted to confirm that the individual a) expected to be an owner of the new

firm, b) had been active in trying to start the new firm in the past 12 months, c) was still involved in the start-up or gestation phase and not yet operational (i.e., collecting revenues from output sales). The criteria of full/part ownership, currently active in start-up, and gestation (not yet operating) phase of venture was used to 'qualify' the respondent for categorization as a nascent entrepreneur in this study, and resulted in an overall sample size of 830.

Measures

Business plan formalization. Item 111 of the phone survey asks, "A business plan usually outlines the markets to be served, the products or services to be provided, the resources required -- including money -- and the expected growth and profits for a new business. Has a business plan been prepared?" Respondents replied with a "yes" (coded as 1) or "no" (coded as 2). Those respondents who answered "yes" were then asked item 114, "What is the current form -- unwritten or in your head (1), informally written (2), formally prepared (3), both 1 and 2 (4) something else." This item was recoded into (1) unwritten/in head (intuitive); (2) informally written; and (3) formally prepared; respondents choosing "both 1 and 2" or "Something else" are dropped from this analysis.

Venture type. Item 322 of the phone survey asked, "Which of the following two statements best describes your preference for the future size of this business: 1) I want the business to be as large as possible, or 2) I want a size I can manage myself or with a few key employees? If nascent entrepreneurs answered, "I want a size I can manage myself or with a few key employees" we classified ventures as a small business venture (SBV) and coded these responses as zero (0). If nascent entrepreneurs answered, "I want the business to be as large as possible," we classified this type of venture as an entrepreneurial business venture (EBV) and coded these responses as one (1). This reverse coding of responses was employed to be consistent with the notion that larger businesses reflect higher growth.

Decision making style. Developed explicitly as a proxy of the original Kirton Adaptation-Innovation Inventory to be used for the PSED research effort, item 327 of the phone survey asks, "If someone asked you which kind of person you are, would you say that you preferred 'doing things better' or 'doing things differently?'" Respondents reporting a preference for 'doing things better' are coded as having an "adaptive" decision making style (0) and respondents reporting a preference for 'doing things differently' are coded as having an "innovative" decision making style (1). A subsequent analysis of the time it took interviewees to respond to this item indicated sufficient understanding by respondents.

Problem solving style. In order to consider the relationship to planning more fully, we employ three measures of problem solving style. Consistent with the notion that entrepreneurial activity occurs at the nexus of the individual and situation (Shane & Eckhardt, 2003), the first measure represents the perceived match between the respondent's problem solving style and the types of problems encountered in starting a new venture. Specifically, item 328 of the phone survey asks, "How well does your preferred style of problem solving match the types of problems encountered in starting a new business? Would you say your style is -- often a good match (1), sometimes a good match (2), sometimes a poor match (3), or often a poor match (4)?" This item is recoded into (0) poor match and (1) good match.

The second measure we employ represents the individual's preferred approach to solving problems. Item QJ1 asks, "When making important decisions, about business, work, or other aspects

of your life, which of these would you consider your problem solving to be -- (1) most of the time it is calculating and analytical; (2) most of the time it is intuitive, relying on my gut feelings; (3) or it tends to vary, depending on the situation?" In order to enhance the interpretability of this item, it is recoded into (1) most of the time it is calculating and analytical; (2) it tends to vary, depending on the situation; or (3) most of the time it is intuitive, relying on my gut feelings.

Our final measure of problem solving represents an individual's tendency toward action during the process of solving problems. Within the mail survey, a series of statements are presented to respondents with this instruction that such statements could be used to describe most people. Respondents are asked, "How accurately would they describe you?" Item QL1r specifically asks, "When confronted with a difficult problem I tend to delay a decision so I can collect more information -- completely untrue (1), mostly untrue (2), it depends (3), mostly true (4), or completely true (5)?" In order to foster comparison with the calculating-intuitive dimension of problem solving style (i.e., our second problem solving measure), this item is recoded into (1) untrue; (2) it depends; and (3) true. We treated these three problem solving styles as independent variables in the tests of the hypotheses in this study.

Perception of Environmental Uncertainty. The mail survey contains eleven items that focused on Milliken's (1987) concept of "state uncertainty," or the uncertainty that occurs when the entrepreneur is uncertain about "how components of the environment might be changing [such as] an inability to predict the future behavior of a key competitor...or inability to predict whether Congress will deregulate one's industry" (p. 136). These items ask entrepreneurs to indicate the certainty they felt about their firm's ability to accomplish certain things. The directions presented to respondents state, "Considering the economic and community context for the new firm, how certain are you that the new business will be able to accomplish each of the following?" The entrepreneur rates each uncertainty item using a five-point Likert scale ranging from very low (1) to very high (5); a category of "does not apply" was also provided. Consistent with prior literature on environmental uncertainty, we reverse code the eleven items in order to facilitate a direct interpretation for the purposes of this study.

This measure of perceived environmental uncertainty is unidimensional in terms of state uncertainty but multi-dimensional in terms of the sources of uncertainty. The eleven items in the survey encompassed seven *a priori* environmental sectors (customers, suppliers, distributors, competitors, government, technology, and financial markets), chosen based on those receiving support in the extant literature (Duncan, 1972; Jauch, Osborn, & Glueck, 1980; Matthews et al., 1995). A factor analysis performed by Matthews and Human (2000) found that the eleven items loaded on three factors that the researchers labeled as financial, competitive, and operational uncertainty. These three types of uncertainty and the items within each factor are consistent with Milliken's (1987) notion of state uncertainty in which managers find it difficult to grasp how key components in the environment may be changing. Accordingly, these three factors were treated as independent variables in the tests of the hypotheses in this study.

ANALYSIS AND RESULTS

We first conducted a correlation analysis in order to examine the associations between the proposed antecedents and the initiation of formal planning among nascent entrepreneurs. Table 1 reports means, standard deviations, and zero-order correlations among the variables included in our study. Several of the correlations show preliminary support for our hypotheses. Specifically,

the univariate analyses reported in Table 1 show that having a calculating problem solving style ($r = .102, p < .10$) and not having a tendency to delay decisions to collect more information ($r = .136, p < .05$) were directly associated with formal planning, whereas perceiving operational uncertainty was inversely associated with formal planning ($r = -.159, p < .05$). In addition, the pursuit of an entrepreneurial venture was directly and highly associated with formal planning ($r = .145, p < .01$).

Because a limitation of zero-order correlation analysis rests in the potential for over-estimating the strength and direction of the association among variables (Stevens, 2002), we also tested the relationships hypothesized in this study by employing multiple linear regression analysis. Prior to our regression analysis we examined of the variance inflation factors to be sure our results would not be adversely impacted by the presence of multicollinearity among the proposed independent variables. This examination revealed that multicollinearity was not a significant problem.

Table 2 presents the results of our multiple linear regression analysis and documents both standardized regression coefficients (beta) and significance statistics. The F-statistic indicated that the overall regression model was highly significant ($F = 3.32, p < .01$). Consistent with the correlation analysis, the regression results offered no support for hypothesis one. Decision making style was not related to the formality business planning ($\beta = -.005, p > .10$). That is, having neither a calculating nor innovative decision making style bears relationship to the formality of planning among nascent entrepreneurs.

With respect to problem solving style, the regression results offered no support for hypothesis two, but did offer marginal support for hypothesis three and strong support for hypothesis four. Perceiving a match between one's problem solving style and the new venture context was not related to the formality of business planning ($\beta = .012$) among nascent entrepreneurs. However, the formality of business planning was marginally related to having a calculating approach to solving problems ($\beta = .042, p < .10$), and strongly and inversely related to the tendency to delay decisions in order to collect information ($\beta = -.065, p < .01$).

Hypothesis five was only marginally confirmed. Perceiving financial uncertainty ($\beta = -.015$) and competitive uncertainty ($\beta = .019$) were not related to formal planning, and perceiving operational uncertainty ($\beta = -.054, p < .05$) was significantly and inversely related to formal planning. This appears to suggest that nascent entrepreneurs do not perceive uncertainty in a unidimensional way and that the internal aspect bears a negative relationship to the initiation of formal planning.

Lastly, the regression results in Table 2 offer strong support for hypothesis six, suggesting that nascent entrepreneurial ventures pursue formal planning to a greater degree than small business ventures ($\beta = .098, p < .01$).

Post-hoc Data Analysis

Among the nascent entrepreneurs within the PSED data set, about fifty percent of respondents state they completed some form of business planning, thirty percent stated they had yet to complete a plan, and twenty percent stated that a plan was not relevant to the start-up. Given this pattern of planning prevalence, our goal is to better understand how meta-cognitive factors (e.g., whether the perception that one's skills and abilities will help them start their venture; preference for a clear and structured mode of life; preference for certainty when entering a new situation;

and perception of self as decisive) along different motivational contexts (necessity vs opportunity) influence business planning.

One objective of our research is to better understand how external factors influence entrance into the start-up process. Specifically, within the context of the PSED II survey information was sought concerning if the action was voluntary, reflecting a desire to pursue a new business opportunity, or a reaction to the absence of suitable work options, reflecting a necessity to participate in the economy (Reynolds & Curtin, 2008). The item, "Are you involved in this new business to take advantage of a business opportunity or because you had no better choices for work?" has been widely used in international surveys of nascent entrepreneurs as an objective measure of contextual motivation. Furthermore, some respondents answered a combination of both when queried on this question, thus a third category arises to encompass these individuals. Overall, analysis of the respondents indicates that most active nascent entrepreneurs can be considered volunteers pursuing business opportunities. Only about one in seven are driven into start-ups because of a lack of other options. Despite the conceptually distinct differences for undertaking action, necessity and opportunity motivated entrepreneurs are equally likely to succeed. Post-hoc exploratory data analysis finds that both contextual motivation and business planning are dependent constructs ($X^2 = 24.8$, $df=8$; $p=.002$) (see Table 3). Thus, the context for entering into the start-up processes is related to the form of planning undertaken.

Similarly, another objective of our study is to understand how personal dimensions related to entrepreneurial cognitions also influence entrance into the start-up process. Accordingly, Mitchell, Busenitz, Lant, McDougall, Morse, & Smith (2002) define entrepreneurial cognitions as: the knowledge structures that people use to make assessments, judgments, or decisions involving opportunity evaluation, venture creation, and growth. Moreover, Mitchell, Busenitz, Bird, Gaglio, McMullen, Morse, & Smith (2007) note that meta-cognition refers to "thinking about thinking" (Jost, Kruglanski, & Nelson, 1998) and is defined to be "the ability to reflect upon, understand, and control one's learning" (Schraw & Dennison, 1994, p. 460). The personal dimensions of interest that we investigate are whether the perception that one's skills and abilities will help them start their venture; preference for a clear and structured mode of life; preference for certainty when entering a new situation; and perception of self as decisive.

Furthermore, multinomial logistic regression is employed to assess whether the personal dimensions that capture meta-cognitive features of the nascent entrepreneur and contextual motivation are significant factors that influence degree of planning. Multinomial logistic regression is useful for this assessment because of the ability to be able to classify subjects based on values of a set of predictor variables. This type of regression is similar to logistic regression, but it general because the dependent variable is not restricted to two categories. Our findings applying multinomial logistic regression show that the model including contextual motivation (opportunity, necessity, or combination) and personal meta-cognitive dimensions (perception that one's skills and abilities will help them start their venture; preference for a clear and structured mode of life; preference for certainty when entering a new situation; and perception of self as decisive) are statistically significant ($X^2 = 92.03$, $df=24$; $p<.0001$) factors that influence planning formality. Specifically, if we are to examine the different levels of planning formality, with formalized plan as the referent group, we identify differences among the meta-cognitive and contextual factors that influence planning formality (see Table 4).

For instance, among individuals who state they have a plan but it is not formalized, we see that contextual motivation by meta-cognitive antecedents (interaction) are not significant, yet the main effects of meta-cognitive antecedents to planning are significant. Accordingly, among individuals who claim to have an “unwritten plan in their head” the meta-cognitive dimension of skills to start a new business ($p=.031$) and “preferring uncertainty of new situations” ($p=.005$) will more likely fall in the referent group (formal plan) versus the comparison group (informal plan). In addition, those who “consider themselves as indecisive” ($p<.0001$) will more likely fall in the comparison group than the referent group. Moreover, for individuals with informally written plans both “uncertainty of new situations” ($p=.002$) and “consider themselves as indecisive” ($p=.003$) are significant meta-cognitive antecedents to planning. However, those who “prefer uncertainty” and those who “describe themselves as indecisive” will more likely fall in the referent group (formal planning).

Conversely, for individuals who have yet to write any form of plan, we find that meta-cognitive antecedents by contextual motivation (opportunity vs necessity) (interaction) are significant factors, particularly among necessity entrepreneurs. For example, necessity entrepreneurs ($p=.011$) are four times more likely to fall in this comparison group (yet to write a plan) relative to the referent group of having a formalized plan. Moreover, when examining the meta-cognitive antecedents we find that “structured mode of life” ($p=.028$), and “describe self as indecisive” ($p<.0001$) will more likely not have a business plan, but plan to complete one in the future, than having a formalized business plan. Yet, respondents who “prefer uncertainty of new situations” ($p=.033$) will more likely fall in the referent group (formalized business plan).

Finally, for individuals who state a business plan is not relevant (comparison group), we find that meta-cognitive antecedents by contextual motivation (interaction) are again significant factors influencing degree of planning formality in the referent group (formal plan). Necessity entrepreneurs are again four times as likely to believe a business plan is not relevant for the start-up than having a formalized business plan. Furthermore, individuals who believe they have “skills to start a new business” ($p=.041$) and “enjoy uncertainty of new situations” ($p=.679$) will more likely fall in the referent group. Conversely, those who “describe themselves as indecisive” ($p=.001$) will be more likely to fall in the comparison group and consider a business plan not relevant.

DISCUSSION

Previous work has extensively examined the consequences of formal planning, yet the antecedents of planning remain relatively obscure (Harris et al., 2006) and less than fully explored. In this research, we have sought to make a contribution to the literature by drawing on previous research from the decision making and problem solving literatures to suggest some potential cognitive factors that may relate to, and therefore enhance our understanding nascent entrepreneurs' planning activities. In the research presented here, we found support for a number of the proposed antecedent relationships, including problem solving style, perceived uncertainty, and venture type.

Previous research has suggested that entrepreneurs have a tendency to be overly optimistic decision makers (Cooper et al., 1988), perhaps in part because they might be disproportionately prone to relying on intuition when processing and evaluating information (Allinson et al., 2000). Interestingly, our results did not support this position. On the contrary, while our findings suggest that a preference for making decisions may indeed exist, it favors a style that can be characterized as adaptive instead of innovative. More important to the focus of our research and contrary to

what we hypothesized, we found no statistically significant relationship between preferred decision making style and formal planning among nascent entrepreneurs.

Interestingly, we found evidence which suggests that although perceiving a match between one's problem solving style and the environment did not bear a relationship to formal planning, there was a significant relationship between problem solving style and the planning activities of nascent entrepreneurs. Specifically, entrepreneurs who formally planned reported a tendency toward being calculating but not willing to delay decisions to collect additional information. This is an interesting finding in light of previous research suggesting that relying on intuition may, in part, result in forms of overconfidence among entrepreneurs (Allinson et al., 2000). On the contrary, our study suggests that the bias towards action is calculative and therefore enhances the formality of planning, which as an activity has generally been shown to enhance subsequent venture performance (Miller et al., 1994). This finding suggests that exploring how problem solving tendencies influence planning processes may be a potentially fruitful avenue for future research.

Consistent with previous research (e.g., Matthews et al., 1995), we found that as the perception of uncertainty increases planning formality goes down. However, the effects of operational uncertainty were particularly pronounced. This finding suggests that one potentially fruitful area for future research may include considering whether or not entrepreneurs evaluate the effects of internal and external sources of uncertainty differently, and how, if at all, such a difference might influence the formality of the planning process.

Finally, while prior research as shown that both entrepreneurial business ventures and small business ventures can benefit from formal planning, clearly each differs with regard to the amount of formal planning. Specifically, entrepreneurial business ventures tend to engage in more formal planning than small business ventures. This suggests that future research could investigate differences in the antecedents across types of ventures, and how such differences ultimately impact the planning process. Given prior evidence for a positive planning-performance connection, additional work is important to enhance our current understanding further and to generate a foundation for providing prescriptive guidance.

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Table 1: Means, Standard Deviations and Correlations (n = 830)

Variable	Mean	s.d	1	2	3	4	5	6	7	8
1. Business plan formalization	2.17	.53								
2. Decision making style (0=Adaptive, 1= Innovative)	.33	.46	-.024							
3. Perceived prob. solving style-new venture match	.96	.19	.036	-.131***						
4. Problem solving style (1=calc. → 3=intuitive)	1.98	.43	-.102*	.121***	-.106**					
5. Tendency to delay decisions to collect more information	2.53	.53	-.136**	-.003	-.051	-.020				
6. Financial uncertainty	1.97	.43	-.054	.048	-.152**	.072	.097			
7. Competitive uncertainty	1.15	.22	.051	-.018	-.033	.006	.054	.218**		
8. Operational uncertainty	1.29	.35	-.159**	-.001	.018	.049	-.031	.268***	.446***	
9. Venture type (0=sbv, 1=ebv)	.22	.41	.145***	-.023	.030	-.121***	-.101**	.026	-.053	-.109**

p<.01

p<.05

p<.10

Table 2: Regression Analysis Predicting Business Plan Formality

Variables	Standardized Beta Coefficients
Decision making style (0=Adaptive, 1= Innovative)	-.005
Perceived prob. solving style-new venture match	.012
Problem solving style (1=calc. → 3=intuitive)	-.042*
Tendency to delay decisions to collect more information	-.065***
Financial uncertainty	-.015
Competitive uncertainty	.019
Operational uncertainty	-.054**
Venture type (0=sbv, 1=ebv)	.098***
R ²	
	-1 SD
	+1 SD
Adjusted R ²	.024
F	.015
	3.32***

*** p<.01

** p<.05

* p<.10

Table 3: Cross-tabulation of Business Planning and Contextual Motivation

Contextual Motivation		Business Plan			Not yet, but will in the		Total
		Unwritten in head	Informally Written	Formally prepared	future.	Not relevant	
Take advantage of opportunity	Count	86	243	156	288	186	959
	% within Contextual Motivation	9.00%	25.30%	16.30%	30.00%	19.40%	100.00%
	% within Business Plan	72.90%	85.60%	88.60%	81.80%	79.50%	82.40%
No better options for work	% of Total	7.40%	20.90%	13.40%	24.70%	16.00%	82.40%
	Count	25	29	9	52	39	154
	% within Contextual Motivation	16.20%	18.80%	5.80%	33.80%	25.30%	100.00%
Combination of both	% within Business Plan	21.20%	10.20%	5.10%	14.80%	16.70%	13.20%
	% of Total	2.10%	2.50%	0.80%	4.50%	3.40%	13.20%
	Count	7	12	11	12	9	51
Total	% within Contextual Motivation	13.70%	23.50%	21.60%	23.50%	17.60%	100.00%
	% within Business Plan	5.90%	4.20%	6.30%	3.40%	3.80%	4.40%
	% of Total	0.60%	1.00%	0.90%	1.00%	0.80%	4.40%
	Count	118	284	176	352	234	1164
	% within Contextual Motivation	10.10%	24.40%	15.10%	30.20%	20.10%	100.00%
	% within Business Plan	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
	% of Total	10.10%	24.40%	15.10%	30.20%	20.10%	100.00%
Chi-Square Tests							
	Value	df	Asymp. Sig. (2-sided)				
Pearson Chi-Square	24.795a	8	0.002				
Likelihood Ratio	26.467	8	0.001				
Linear-by-Linear Association	0.095	1	0.757				
N of Valid Cases	1164						
a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.17.							

Table 4: Parameter Estimates for Multinomial Logistic Regression

Business Plan		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
								Lower Bound	Upper Bound
Unwritten in head	Intercept	0.889	1.212	0.538	1	0.463			
	Skills help start new business	-0.432	0.201	4.641	1	0.031*	0.649	0.438	0.962
	Structured mode of life	0.207	0.121	2.922	1	0.087	1.23	0.97	1.56
	Prefer uncertainty of new situations	-0.293	0.104	7.859	1	0.005**	0.746	0.608	0.916
	Describe self as indecisive	0.455	0.127	12.826	1	.000***	1.576	1.229	2.021
	Opportunity	-0.278	0.517	0.289	1	0.591	0.757	0.275	2.085
	Necessity	1.18	0.636	3.445	1	0.063	3.255	0.936	11.32
	Combination	0b			0				
Informally Written	Intercept	0.719	1.06	0.46	1	0.497			
	Skills help start new business	-0.083	0.177	0.221	1	0.638	0.92	0.651	1.301
	Structured mode of life	0.024	0.089	0.074	1	0.786	1.024	0.861	1.219
	Prefer uncertainty of new situations	-0.263	0.084	9.721	1	0.002***	0.768	0.651	0.907
	Describe self as indecisive	0.334	0.112	8.925	1	0.003**	1.396	1.122	1.738
	Opportunity	0.243	0.438	0.307	1	0.58	1.275	0.54	3.01
	Necessity	0.908	0.575	2.497	1	0.114	2.481	0.804	7.654
	Combination	0b			0				
Not yet, but will in the future.	Intercept	0.191	1.027	0.034	1	0.853			
	Skills help start new business	-0.198	0.17	1.358	1	0.244	0.82	0.588	1.145
	Structured mode of life	0.19	0.086	4.835	1	0.028*	1.209	1.021	1.431
	Prefer uncertainty of new situations	-0.172	0.08	4.571	1	0.033*	0.842	0.719	0.986
	Describe self as indecisive	0.392	0.108	13.214	1	.000***	1.48	1.198	1.828
	Opportunity	0.415	0.439	0.895	1	0.344	1.515	0.641	3.584
	Necessity	1.422	0.562	6.395	1	0.011**	4.145	1.377	12.476
	Combination	0b			0				
Not relevant	Intercept	2.175	1.084	4.023	1	0.045*			
	Skills help start new business	-0.362	0.178	4.161	1	0.041*	0.696	0.491	0.986
	Structured mode of life	-0.033	0.096	0.12	1	0.729	0.967	0.801	1.168
	Prefer uncertainty of new situations	-0.387	0.09	18.402	1	.000***	0.679	0.569	0.81
	Describe self as indecisive	0.379	0.115	10.794	1	0.001***	1.461	1.165	1.831
	Opportunity	0.264	0.477	0.306	1	0.58	1.302	0.511	3.319
	Necessity	1.476	0.598	6.095	1	0.014**	4.373	1.355	14.111
	Combination	0b			0				
a. The reference category is: Formally prepared.									
b. This parameter is set to zero because it is redundant.									

≈ SUMMARY ≈

IT'S NOT ONLY ABOUT WHAT YOU WANT, BUT ALSO HOW MUCH YOU WANT IT: DEVELOPING A NEW THEORETICAL PERSPECTIVE ON ENTREPRENEURIAL MOTIVATION

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Principal Topic

Relatively few articles in the entrepreneurship literature discuss motivation despite claims that it may play an important if not critical role in new venture formation and ultimate success (Herron & Sapienza, 1992; Markman & Baron, 2003; Markman, Baron, & Balkin, 2005; Shane et al., 2003). Much of the research to date has focused on the motives that lead entrepreneurs to start new ventures (e.g., Kuratko et al., 1997; Naffziger et al., 1994; Robichaud, McGraw, & Roger, 2001). Though this research has important implications, motivation is not just limited to the motives that lead individuals to start ventures (*what*) but should also consider the intensity of that motivation (*how much*).

Method

In this study, we make a major theoretical contribution by extending Self-Determination Theory (SDT) (Deci & Ryan, 1985) to entrepreneurship in order to gain insights into entrepreneur motivation. To date, expectancy theory (ET) (Vroom, 1964) has been used to study entrepreneurial motivation; however, ET examines motivation largely from a managerial point of view and as such, concentrates on the development of systems to motivate employees. In contrast, SDT views entrepreneurial motivation as an “internal” process which is demonstrated by the strong connection that entrepreneurs frequently have with their ventures, sometimes resulting in personal, financial, and social difficulties. Recent research (He, 2007) suggests that, consistent with SDT, entrepreneurs internalize and identify with their venture, which has a direct influence on their motivation. For this reason, SDT appears to be especially well suited to the study of entrepreneurial motivation.

Results and Implications

In this paper, we develop an SDT-based framework in order to better understand and capture the relationship that an entrepreneur has with his/her venture. In so doing, we extend the current motivational research to also consider an entrepreneur's level of motivation toward the venture itself which recent scholarship suggests has a major impact on venture success and longevity (Markman & Baron, 2003; Markman, Baron, & Balkin, 2005).

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≈ SUMMARY ≈

THE EFFECTS OF REAL VS. VIRTUAL BUSINESS PLANNING AS LEARNING PROCESS

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Principal Topic

Entrepreneurship is broadly taught nowadays and courses' content varies widely. However, teaching the production of a business plan (BP) remains one of the more popular curricula formats. Research identifies the development of a BP as being the most important course feature of entrepreneurship programs. It is commonly considered that a new venture should start with a carefully written BP. However, there is very few discussion about how business planning is taught nor empirical evidence on the effectiveness of BP as a pedagogical method. A formally written plan can be regarded as a practical way of experiencing the entrepreneurial process and building a firm.

Method

In spite of both the extent and diffusion of entrepreneurship education, it is surprising the lack of research evaluating the impact of various contents on postcourse outcomes. Research findings suggest that practical programs which provide real-world experience seem particularly useful in enhancing intentionality. Here, we are conducting an empirical study which explores the difference between mentoring the production of BPs for projects in real-life context and writing a BP in an academic setting, examining whether writing a BP in real vs. virtual setting will have different effects on the individuals in terms of their learning, we conduct a quasi-experiment through a longitudinal field study. Questionnaires have been given to two cohorts composed respectively by 300 and 100 participants with similar background. Both programs are compulsory and respect the same structure. The main difference between them is that one case is based on coaching individuals and teaching them BP for virtual 'academic' projects while the other one is focusing on BP for real-life nascent ventures.

Results and Implications

We are testing the following propositions (1) Does writing a formal BP make a difference in impacting the participants in their entrepreneurial learning? (2) Does a real-life BP achieve greater success in terms of learning than one which is based on virtual projects? (3). Is 'virtual but personal' BP a more impacting method than 'real-life but someone else' projects in the sense that the former requires more commitment from the learner and the latter involves more constraints where the learner plays a role of a coach rather than entrepreneur him/herself?

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≈ SUMMARY ≈

**START-UP ACTIVITIES AND NEW VENTURE FORMATION
AMONG U.S. NASCENT ENTREPRENEURS**

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Principal Topic

The factors that impact the successful establishment of a new firm are widely deemed important, yet poorly understood. Specifically, among *nascent* entrepreneurs, there is considerable evidence that it is what founders actually “do” that is most influential in affecting outcome status during the emergence period (Aldrich, 1999; Katz & Gartner, 1988, Shane & Delmar, 2002, Reynolds, 2007; Reynolds & Curtin, 2008). In an effort to further extend these findings we are conducting an empirical study, which will explore if differences exist among the various forms of start-up teams (sole proprietor, spouse team, family team, or non-family team), venture type (innovator versus reproducer firm) (Aldrich & Ruef, 2006) and the degree and class of which start-up activities are engaged in by nascent entrepreneurs, along with their respective impact on outcome status. This assessment will explore three questions-- Are there differences in the degree and classes of start-up activities engaged in by type of venture (innovator vs. reproducer) and/or start-up team structure? How does time from conception (first initial start-up action) influence the degree of engagement and class of engagement by venture type and start-up team structure? And subsequently, how does this impact the ventures likelihood of survival?

Method

The sample for this analysis is from the Panel Study of Entrepreneurial Dynamics II (PSEDII), a detailed longitudinal survey with information on a cohort 1,214 individuals that were identified while they were in the process of starting new business. Data is analyzed applying a mix of descriptive and multivariate statistical techniques.

Results and Implications

This research finds that both type of start-up venture and team structure are factors that influence the degree and class of start-up activities engaged in. Moreover, the data also provides evidence that differences do exist in the survival functions of nascent start-ups by team structure. In sum, this assessment will make an important contribution to the field of entrepreneurship by more thoroughly investigating how team structure and venture type influence engagement levels among classes of start-up activities, and in turn inform nascent entrepreneurs on how to successfully navigate the emergence process.

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≈ SUMMARY ≈

POSITIVE PSYCHOLOGICAL CAPITAL AND GROWTH ASPIRATIONS OF ENTREPRENEURS

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Principal Topic

Risk, ambiguity and change have been traditionally associated with and seen as essential part of entrepreneurship in its many forms (e.g. Landström 2005; Chiles, Bluedorn & Gupta 2007). While rapid changes and uncertainty, to name a few, may be beneficial for businesses pursuing growth and serve as a “hotbed for entrepreneurship” (Landström 2005, 66), they can nevertheless be experienced as highly taxing and stress provoking on the individual level. Both traditional economic capital, human capital and social capital are needed in a successful venture. However as the complexity and uncertainty grows in the entrepreneurial context, a new form of capital, namely positive psychological capital (self-efficacy, optimism, hope and resilience) may be needed to create real competitive edge. Our purpose was to study whether positive psychological capital can explain the growth aspirations of entrepreneurs. The key proposition is that although all stages in the entrepreneurial process can be experienced as involving high levels of change, ambiguity and risk, these factors are especially pronounced when growth is pursued.

Method

A survey data of 407 Finnish entrepreneurs were collected for the analyses. In the survey the positive psychological capital of the entrepreneurs was measured as their self-efficacy, optimism, hope and resilience on a scale from 0 to 100. The growth aspirations of the entrepreneurs were investigated with binary choice models. The models allow controlling for wide variety of other factors that may influence growth aspirations. They include information on the personal characteristics of the entrepreneurs as well as on their household and residence location.

Results and Implications

Our paper makes two significant contributions. First, the results make it possible to participate on the general level in the debate between rational (Shane 2003) and effectual (Sarasvathy 2008) logic. Second, the empirical analysis identifies and explains the role of positive psychological capital among entrepreneurs. Although self-efficacy, optimism, hope and resilience are important elements for all entrepreneurs, self-efficacy and hope seem of essence for those pursuing growth actively. Our findings add to and extend the general discussion on the role of positive emotional states in growth entrepreneurship.

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≈ SUMMARY ≈

HOW ENTREPRENEURSHIP IS EXPERIENCED: THE AFFECTIVE NATURE OF NEW VENTURE CREATION

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Principal Topic

The experiential nature of entrepreneurship is receiving increased scholarly attention. Kreft and Sobel (2005) characterize venture creation as a trial and error experience, while Sarasvathy (2004) suggests the ability to effectuate outcomes is rooted in ongoing experiences. Politis (2005) argues that entrepreneurial learning results from the manner in which experiences are processed. Shepherd (2008) describes impending venture failure as a grieving experience. Schindehutte and Morris (2003) examine “peak experiences” of entrepreneurs. While entrepreneurship would seem inherently experiential, we know surprisingly little about what it is like to be “in the moment” as a venture takes form. This research argues that entrepreneurial experiences are fundamentally affective in nature, and attempts to uncover their underlying dimensionality.

Method

A two-stage research process began with identifying characteristics of the venture creation experience as anecdotally captured in the literature. Content analysis was conducted to elicit terms used to describe the experience from: articles on venture creation in major journals over five years; leading entrepreneurship textbooks; and c) 650 interviews of entrepreneurs. This stage produced 49 experience descriptors. A survey was then conducted with a random sample of 600 ventures in their fifth year. Entrepreneurs indicated the extent to which each descriptor captured their experiences. Results were factor analyzed using a methodology developed by Mano and Oliver (1993) with consumer experiences. Composite measures were computed from the resulting dimensions and multidimensional scaling (MDS) was used to capture patterns in the entrepreneur’s experiences.

Results and Implications

Three affective dimensions were identified: “stress,” “empower,” and “empty.” The MDS analysis produced a solution where the positioning of the dimensions corresponds to positive-negative valence. Differences on the dimensions were noted between lifestyle and growth ventures. The findings reinforce a situated view of entrepreneurial action (Berglund 2007), where the many events that occur as a venture unfolds are experienced differently by different actors. The realities of experiencing can be far removed from the more recognizable patterns upon which behavioral researchers dwell, or the situational sampling driving much of the research. An experiential perspective suggests that the entrepreneur is created as the venture evolves. Hence, the nature of the experience itself may drive the kind of entrepreneur and venture that emerges.

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≈ SUMMARY ≈

PERCEPTIONS OF LEGITIMACY IN THE DECISION TO EXPLOIT: A PLANNED BEHAVIOR FRAMEWORK

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Principal Topic

Legitimacy is a critical resource for the survival and growth of new ventures (Aldrich & Fiol, 1994; Stinchcombe, 1965). Although scholars link legitimacy with venture success, we know little about the extent to which perceptions of legitimacy affect the decision to exploit an entrepreneurial opportunity. Drawing upon Ajzen's (1991) theory of planned behavior (TPB), this study provides a theoretical examination of the linkage between attitudes about actions necessary for legitimacy attainment, normative beliefs about the actions, and perceived behavioral control, and the *intention* to act.

Method

Venture formation decisions involve uncertainty and risk, and the influence of both on the decision to act is prominent in social psychology (Ross & Nisbett, 1991) and in behavioral decision-making (Kahneman et al., 1982). Scholars posit that both conditions are detrimental to entrepreneurial action because evaluative processes block or delay actions that lead to missed opportunities (Shane & Venkataraman, 2000). Thus, explaining this evaluation, which occurs after recognition but prior to the decision to act, is essential to entrepreneurship theory (McMullen & Shepherd, 2006).

Legitimacy researchers have identified a number of ad-hoc activities that provide a means for ventures to gain access to necessary resources needed to survive and grow (Zimmerman & Zeitz, 2002). This study examines the extent to which perceptions about legitimacy attainment are predictive of an entrepreneur's decision to exploit an opportunity.

Entrepreneurial intentions capture the motivating factors that influence action (Bird, 1988; Krueger et al. 2000). TPB holds that normative beliefs about an action and the confidence individuals perceive in their ability to perform the action influences the intention to act. Because venture creation begins with intent and because entrepreneurs typically do not control the resources required to profit from knowledge of the opportunity, we argue that differences in perceptions about the ease or difficulty to achieve a desired threshold of legitimacy affect the decision to exploit recognized venture creation opportunities.

Results and Implications

The significance of this research is two-fold. First, we introduce new boundary conditions in the decision to exploit. Second, we develop a theoretical framework to explain the extent to which perceptions about the legitimacy attainment affect entrepreneurial intent and the decision to act.

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≈ SUMMARY ≈

THE ENTREPRENEUR-ACTIVISTS: CHALLENGING UNSUSTAINABLE BUSINESS PRACTICES

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Principal Topic

The resolution of social and environmental concerns in an economy over time can be partially attributed to entrepreneurial action (Dean & McMullen, 2007). However, emergent entrepreneurial ventures that present new ways to tackle these issues are likely to face institutionalised organizational fields and a potentially hostile reception from incumbents, making it difficult to gain legitimacy and survive (Aldrich & Fiol, 1994). To successfully drive change, entrepreneurs need to address the “contradictory values, assumptions and goals” they face in practice (Egri & Herman, 2000). This study proposes to extend insights into sustainable entrepreneurship by focusing on the attitudes and actions of entrepreneurs engaged in this landscape. In particular, why do these individuals choose entrepreneurship as way to bring change? How might they leverage their position to challenge unsustainable business practices?

Method

Exploratory, semi-structured interviews with entrepreneurs who employ terms such as “sustainable”, “green”, or “ethical” to describe their ventures were conducted. Four entrepreneurs who articulated a vision to tackle what they see as unsustainable practices by existing business were selected to be case studies for this research. They encompass the “transparently observable process of interest” (Eisenhardt, 1989). Further interviews were conducted with these entrepreneurs and representative employees, clients, suppliers, and competitors, and additional documents were collected. The analysis followed a process of constant comparison (Glaser & Strauss, 1967; Eisenhardt, 1989) combined with revisiting existing theories in line with “back and forth” inductive theory building (Van Maanen et al. 2007).

Results and Implications

The entrepreneurs studied express disillusionment with the world of mainstream business and pursue reformist agendas (Egri & Pinfield, 1996) by establishing for-profit ventures. The entrepreneurs seek to communicate a principled but non-preachy message. In doing so, these entrepreneur-activists create a space for various stakeholders to engage in “civilized rebellion” against less sustainable alternatives.

The findings reveal insights into how some entrepreneurs set about negotiating a role for themselves as an activist capable of transforming business practices for greater sustainability. This supports and expands the concept of “sustainable entrepreneurship”: beyond the pursuit of opportunities arising from market failures, motivated entrepreneurial actors are driving change by demonstrating the feasibility of concurrently making a difference and a profit.

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≈ SUMMARY ≈

ROLE OF ENTREPRENEURIAL ORIENTATION IN OVERCOMING THE COMPETENCY TRAP OF ABSORPTIVE CAPACITY

Vinit Parida, Luleå University of Technology, Sweden

Principal Topic

Absorptive capacity (ACAP) is a firm's ability to acquire, assimilate, transfer and exploit knowledge to introduce innovative products and thereby sustain competitive advantage. A firm must not only interact with the environment to acquire and transfer knowledge, but also needs to assimilate and exploit it through internal routines and processes for transmission. However, such recurring internal processes of knowledge transformation can lead to path dependence (Cohen and Levinthal, 1990). Path dependence creates lock-in effects for knowledge acquisition, transfer, assimilation, and exploitation capabilities. Thus, while the role of ACAP is widely acknowledged as a key capability leading to a firm's innovation, the very capability is susceptible to "competency traps". Levinthal (1992) explains firms can respond such competency traps by proactively altering routines and structures. More importantly, competency traps may also be addressed by introducing innovative routines and structures within the firm (Authene-Gima, 2005). To address how firms may proactively introduce innovative means to acquire and exploit external knowledge, the moderating role of entrepreneurial orientation (EO) is proposed as it explains the extent to which firms innovate, take risks and act proactively (Lumpkin and Dess, 1996).

Method

This study is based on a survey involving around 1500 technology-based Swedish SMEs, which resulted in 103 usable replies. These firms were selected for the following reasons: operate in a dynamic environment and represent the high growth oriented industrial sector. Our key measurements were based on well established scales: EO (Lumpkin and Dess, 2001), ACAP (Jansen et al, 2005), and innovative performance (Laursen and Salter, 2006), and were pre-tested using SMEs managers in similar industries as the targeted survey population. Factor and regression analysis were used for data analysis.

Results and Implications

Previous studies on ACAP have mainly focused on how firms absorb knowledge and there is a limited explanation on the probability for lock-in effects. This study shows that ACAP has a U-shaped relation to innovative performance, which supports the notion of "competency traps". Moreover, EO plays a moderating role in overcoming this barrier and highlights the need for entrepreneurial activities. Thus, this study provides an alternative explanation to the understanding how SMEs may be able to renew routines and processes in the face of environmental changes.

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≈ SUMMARY ≈

TOO MUCH OF A GOOD THING? NON-LINEAR EFFECTS OF ENTREPRENEURIAL ORIENTATION ON VENTURE PERFORMANCE

Vinit Parida, Luleå University of Technology, Sweden

Principal Topic

Entrepreneurial Orientation (EO) explains the strategy making processes of firms that are engaged in entrepreneurial activities. Such entrepreneurial activities have shown to contribute towards firm performance (Zara and Covin, 1995; Lumpkin and Dess, 1996; 2001). While much of the literature shows universal benefits of EO, this study proposes that EO may have very different strategic and resource dynamics for smaller firms (<50 employees). This can be true for small firms as the entrepreneurial strategies require considerable financial resources to be successful, thus at a higher level of EO, the gains may not surpass costs from EO at the same rate. Hence, it may be useful to explore particular internal and external factors that may moderate the relationship between EO and performance (Lumpkin and Dess, 2001). The key factor investigated in this study are firm capability, namely, network capability i.e. *firm's ability to develop and utilize inter-organization relations* (Walter et al. 2006) and information and communication technology (ICT) capability i.e. *firm's ability to effectively utilize ICT to manage information within firm* (Tippins and Sohi, 2003) Therefore, this study focuses on the following questions (a) is the relationship between EO and performance linear for small firms? (b) do network and ICT capability reduce the challenges associated with higher level EO for small firms?

Method

This study is based on a survey involving 1500 small technological firms in Sweden, which resulted in 291 usable replies (21% response rate). Our key measurements were based on well established scales in the literature and the questionnaire was pre-tested using small firm managers in similar industries as the targeted. Factor and regression analysis were used for data analysis.

Results and Implications

Results show that small firms have inverted U-shaped (non-linear) relation between EO and performance. However, this effect can be reduced through network and ICT capability, which emphasizes the importance of external networks and ability to internally manage external knowledge *via* ICT. The findings have implications for broader entrepreneurship literature on small firms, as to how they may leverage their resources for gaining better performance. More importantly, the study challenges the widely held assumption that EO has a linear effect on performance irrespective of firm size and environment.

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≈ SUMMARY ≈

STAYING ON THE PATH TO LAUNCH: FACTORS THAT ENCOURAGE VENTURE ADVOCATE BEHAVIORS

M. Kim Saxton, IU Kelley School, USA

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Principal Topic

Would-be founders struggle with scarce resources and a lack of legitimacy. Entrepreneurs rarely have the time, human capital, physical, financial capital and strategic resources required to turn ideas into commercialized products by developing and launching an emerging enterprise. Why, when and how entrepreneurs overcome these barriers to successfully exploit opportunities are some of the central questions in entrepreneurship research (Acs & Audretsch, 2003). The focus of this paper is on the “how” question - specifically how founders obtain assistance from the local venture community in the developmental stages of “emerging” enterprises.

We label the assistance that these venture community members provide “Venture Advocate Behaviors” (VABs). We define VABs as voluntary behaviors members of the venture community engage in to help a founder in the emergent or early stages of his/her venture. Like Organizational Citizenship Behaviors in the corporate context (Organ, 1988), VABs lubricate the wheels of the venture community and are essential for its healthy functioning.

Method

Our general research question is: *What factors are related to willingness to engage in VABs?*

Our sample includes three years of venture presentations (founder “pitches”) at two entrepreneurial organizations. In each year and organization, we formed a research panel of members of the venture community. These members evaluated between 1 and 15 venture presentations over time. After evaluating the venture’s characteristics, presentation quality and passion, and the venture’s likelihood of success, panel members assessed their willingness to help the founder move his or her venture forward—i.e. engage in VABs for that specific emerging enterprise.

Results and Implications

First, we find that there are two categories of VABs – direct VABs (e.g. working for or investing in) and indirect VABs (e.g. advising, talking about and networking). Further, as expectancy theory would suggest, more tangible venture characteristics such as the venture’s product/market potential and the quality of its presentation are positively related to direct VABs. Moreover, the advocate’s assessment of the venture’s likelihood of success partially mediates the relationship between venture characteristics and direct VABs. Other less concrete venture characteristics like the quality of the top management team and ability to defend its market position as well as presentation passion are positively related to indirect VABs.

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≈ SUMMARY ≈

**ENTREPRENEURIAL INTENTIONS IN THE
WORKING-AGE POPULATION: THE MODERATING ROLE OF
AGE AND MEDIATING EFFECT OF LABOR MARKET MOBILITY
AND PREVIOUS ORGANIZATIONAL AFFILIATION**

Erno T. Tornikoski, EM LYON Business School, France

Teemu Kautonen, University of Vaasa, Finland

Frédéric Delmar, EM LYON Business School, France

Principal Topic

This study explores how the determinants of entrepreneurial intentions vary with age of the respondent in the context of the working-age adult population in Finland. The theoretical foundation of this analysis is based on Ajzen's (1991) Theory of Planned Behavior (TPB). The TPB is based on the idea that intentions have three conceptually independent antecedents: attitude toward the behavior, subjective norm, and perceived behavioral control (Ajzen, 1991). The relative importance of the three antecedents is likely to vary from one population and from one context to another. Because previous studies have mostly relied on student populations, our knowledge about the relative importance of the three antecedents remains very limited in the context of general population. In summary, we argue that both the relative importance of the antecedents of the TPB vary with age. We investigate (i) whether the level of entrepreneurial intentions varies as a function of age, and (ii) whether the relative importance of the three antecedents of intentions varies as a function of age.

Method

The data used in this study was collected in the provinces of Western Finland in November and December 2006. A postal questionnaire was used to collect data from random sample of 5,600 individuals. We received 1,301 usable responses, resulting in a response rate of 23.2 %. We adapted the main variables of the TPB model from Kolvereid (1996). In our analysis we used OLS regression and SEM.

Results and Implications

We find empirical support that age moderates the relationship of perceived behavioral control on intentions. Perceived behavioral control is in its turn affected by the quality of human capital. By explaining the formation of entrepreneurial intentions across different age groups and the general population as a whole, the paper generates valuable information to guide such entrepreneurship policy initiatives that aim particularly at increasing the level of entrepreneurial activity at different ages. Different age groups use different queues to form intentions.

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≈ SUMMARY ≈

**THE MOTIVATIONS OF AND PROBLEMS FACED BY
ENTREPRENEURS: A COMPARATIVE STUDY OF ENTREPRENEURS
IN VENEZUELA, VIETNAM, TURKEY, NIGERIA AND THE USA**

Monica A. Zimmerman, West Chester University of Pennsylvania, USA

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Principal Topic

One frequently studied dimension of entrepreneurship research is the motivation of entrepreneurs, i.e., what motivates individuals to engage in entrepreneurship (Yalcin & Kapu, 2008). A number of factors have been found to motivate entrepreneurs including factors internal and external to the entrepreneur (e.g., Delmar & Wiklund, 2008; Hornsby & Nafziger, 1997; Kuratko et al., 2007; Robichaud, McGraw, & Roger, 2001). In addition to the factors that motivate entrepreneurs, another frequently studied dimension of entrepreneurship research is the problems faced by entrepreneurs (Chu, Benzing, & McGee, 2007). While many of the motivations of and problems faced by entrepreneurs are common across countries and regions, there are some differences (e.g., McMullen, Bagby, & Palich, 2008), which may be related to the political and economic factors of the country (Yalcin & Kapu, 2008).

Method

In this study we examined the motivations of entrepreneurs and the problems they face across four countries: Venezuela, Vietnam, Turkey, and Nigeria. The data were collected from entrepreneurs operating in both developed and developing nations through interviews conducted by educators located in each of the countries under investigation.

Results and Implications

While we found a number of similarities among the entrepreneurs studied, there were some noteworthy differences. Gender composition, average age of the entrepreneur and average of the firm were similar across countries. Level of education differed. In examining the factors that motivate entrepreneurs we found the desire to be one's own boss was most important in both Nigeria and Vietnam, but only moderately important to entrepreneurs in Turkey and rated very low in importance by entrepreneurs in Venezuela. Given the "entrepreneur profile" frequently referenced, we were surprised to find so much variation across countries. In examining the problems facing entrepreneurs, Vietnam and Nigeria rated "unreliable and undependable employees" as the most important problem. Venezuela rated electricity as the top concern, while Turkey rated the complexity of the tax structure as the most pressing problem. More variation in the problems existed than we anticipated.

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∞ INTERACTIVE PAPER ∞

RECOVERING FROM FIRM FAILURE: EVIDENCE FROM SEVEN CASES

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Principal Topic

According to the experiential learning theory, individuals learn from past experiences (Kolb, 1984; Boyatzis & Kolb, 1995), and entrepreneurs also learn from failure (Minniti & Bygrave, 2001). Failure can be extremely important, because it reduces entrepreneurs' confidence in actions that have been successful earlier, and forces them to continue the search for alternative options. It also evokes negative emotions, which if prolonged restrain the recovery process and hinder learning (Shepherd, 2003). Earlier research has suggested that the time needed for recovery is influenced at least by the financial and emotional costs of the business closure and by anticipatory grieving (Shepherd et al., 2007), coping self-efficacy (Benight & Bandura, 2004), emotional intelligence (Shepherd, 2007) and more specifically, by emotion regulation and self-leadership capabilities of the entrepreneur (Gross, 2002).

Method

We interviewed seven failed entrepreneurs about their experiences of firm closure. The themes of the interviews were introduced in a way that enabled the interviewees to freely bring out any aspects of the theme they considered important. In analyzing the case material we are following the recommendations of Eisenhardt (1989). First the cases were analyzed separately allowing the unique patterns of each case to emerge. Then we compared the case evidence and searched for cross-case patterns.

Results and Implications

The study gives support to several propositions suggested earlier. The empirical data of this study confirms that entrepreneurs engage in anticipatory grieving. The interviews highlight the relief that closure of the business brought. The entrepreneurs had been thinking about the closure as a possibility and they had also worried about the situation for longer periods, some even for years. Postponing the closure because of the responsibility for the employees imply that the entrepreneurs try to balance the financial and emotional costs of firm closure. Also evidence on the use of emotion regulation can be found among the entrepreneurs interviewed; the entrepreneurs were able to identify situations in which they had performed successfully. Since many of the entrepreneurs report valuing the experience and especially the knowledge they gathered during their entrepreneurial time, they have been able to process the experience and also learn from it which can be regarded as indication of recovery. Furthermore, several of the entrepreneurs have already started or they still are interested in starting a new venture, their entrepreneurial self-efficacy has indeed recovered from the business closure.

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∞ INTERACTIVE PAPER ∞
TRUST IN VIRTUAL ENTREPRENEURS

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Principal Topic

More than ever, entrepreneurs face shortages of financial and human capital, and increasingly, entrepreneurs are turning to virtual communities to build networks and help acquire these resources (Nowak & Grantham, 2000). Utilizing virtual ties within and between organizations is instrumental to the growth and survival of new ventures (Matlay & Westhead, 2007; Morse, Fowler, & Lawrence, 2007). Trust is an essential requirement to building networks (Smith & Lohrke, 2008) and, arguably, trustworthiness is even more important in a virtual environment (Paul & McDaniel, 2004). In this investigation, we examine the influence of trustworthiness on the entrepreneur's ability to gain resources necessary to grow the organization through virtual channels. Further, given that much of earlier research on trust in virtual settings has highlighted the importance of communication and exchange processes to promote trust (e.g., Jarvenpaa & Leidner, 1999) we examine the role of communication and exchanges on building trust in a virtual setting.

Method

We investigate these questions in a unique context that offers a natural laboratory for the study of virtual entrepreneurship: online games. We used a real-time strategy game in which players have to join alliances or organizations to compete with other organizations and eventually win the game. Certain players emerge as leaders ("founders"), recruit members and garner resources to form organizations of up to 60 members. Our sample comprised 71 virtual organizations. We obtained the data from a survey sent to the founder, a survey sent to members, and from log files of the online game server. The surveys provided measures of the quality of communication with the founder, the quality of exchanges between members, and the trustworthiness of the founder. Log-data was used to determine growth and acquisition of resources.

Results and Implications

The findings indicated that the quality of communication and the quality of exchanges were positively related to the perceived trustworthiness of the leader. Founder trustworthiness, in turn, was positively related to growth. Our results inform on the development of trustworthiness and its importance for the founding and growing of organizations, particularly in virtual contexts.

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∞ INTERACTIVE PAPER ∞

THE SECRETS OF SUCCESS: THE ROLE OF IDEA SHARING IN EARLY STAGE ENTREPRENEURSHIP

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Principal Topic

It is common thinking among entrepreneurs that they should not share too much information about their ideas for companies in the early stages of the venture (Arrow, 1971; Gans & Stern, 2003). However, in order to grow from a mere idea to a viable business, many entrepreneurs must be able to articulate their ideas about opportunities to attract external developmental resources (Roberts, 1991). These resources might include early employees, investors, and lead customers. Therefore, the ability of an entrepreneur to effectively share information about his or her venture is a potentially critical capability in the earliest stages of entrepreneurship. Yet, there is little research that examines how capabilities in the sharing of ideas affect performance in the earliest stages of entrepreneurship. Most research on the sharing of ideas has focused on either the economics of information sharing or product development outcomes in established firms. The economic research explores how different information strategies affect economic appropriateness. Other research predominately focuses on product development outcomes rather than early entrepreneurial objectives. This paper specifically explores how capabilities in information sharing affect early entrepreneurial outcomes.

Method

To examine the role of information sharing and entrepreneurship success, we utilize data from the MIT \$100K entrepreneurship competition, one of the oldest business plan competitions in the world. The competition hosts an “Elevator Pitch Contest” (EPC) where contestants deliver 60 second pitches to seek out team members and practice for the \$100K, while vying for the EPC’s monetary prize of \$5K. The content of these pitches, then, becomes critical for the decision-making criteria used by the judges to determine if the entrepreneurs and/or the ideas merit award money. Therefore, the entrepreneurs had to determine which information to share and how to share it.

Results and Implications

We use content analysis on the pitches and cross-reference this with the judges’ scores to determine the elements and trends of effective content. This study offers an empirical snapshot of what entrepreneurs try to accomplish by sharing information at the nascent stages of an idea while providing insight into how pitches are crafted. The findings also identify what information should be shared given different early stage objectives. Through our analyses we develop a comprehensive typology of the information entrepreneurs decide to share, believe they should share, and what they gain as a result of sharing certain types of information.

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≈ INTERACTIVE PAPER ≈

**ENTREPRENEURSHIP AS AN IDENTITY BRIDGE:
RESPONSES TO DISCONTINUOUS LIFE EVENTS**

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Principal Topic

Entrepreneurship confers a sense of control and meaning uniquely positioned to address the fear and hopelessness often associated with a discontinuous life event – a situation that fundamentally challenges a valued and closely held conceptualization of identity. We investigate this proposition in the context of an entrepreneurship training program, and a sample of soldiers and marines disabled by war. We consider how and why entrepreneurship can represent a mechanism through which individuals can internalize a *new* conception of self, in response to an event that shatters one's fundamental assumptions of identity.

Method

We employ a multiple-case study design based on replication; analysis across cases serves to identify emerging conceptual insights (Brown & Eisenhardt, 1997). Each participant in this study was forcibly retired from military service [involuntary work role-transition] as a result of their disability. Semi-structured protocols direct interviews conducted with each subject 14-months after completing an entrepreneurship training program. This setting and sample are appropriate because 1) each participant faced overwhelming trauma, 2) identity change is important and ongoing given that the routines, symbols, and artifacts, associated with military culture have powerful impacts on the identity of individual, and 3) each expressed aspirations for entrepreneurship. Our sample includes two groups representing contrasting outcomes with regard to identity change (Yin, 2003).

Results and Implications

Based on similarities and differences [within and across cases], data reveals insights into the motivations for entrepreneurship as a vocational path. We find that the traumatic loss both removed obstacles to the new vocational identity (pull), and revealed obstacles that channeled (push) identity motivations. We find a 'push' toward entrepreneurship as a function of physical limitations that are perceived as 'closing the door' to some employment vocations. More interestingly, our data suggests a second type of push motivation that manifests itself as a perceived limit on traditional employment rooted in trauma, coping with trauma, and ongoing identity change. The extended period of dependence on others and lack of control is manifest as a desire for autonomy and control with regard to future vocation options; closing the door on some vocational opportunities in the same way that physical limitations do, and pushing individuals toward entrepreneurship as a vocation.

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≈ INTERACTIVE PAPER ≈

DETERMINANTS OF JOB SATISFACTION ACROSS THE EU-15: A COMPARISON OF SELF-EMPLOYED AND PAID EMPLOYEES

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Principal Topic

Entrepreneurship as an occupational choice has been the subject of analysis in various theoretical and empirical studies. Recent studies emphasize that job satisfaction is an important determinant of the choice between self- and wage-employment (Taylor, 1996; Blanchflower, 2000, 2004). A consistent finding from previous studies is that self-employed have higher levels of job satisfaction than employees. However, such studies failed to take account of the fact that job satisfaction is a heterogeneous phenomenon. Different people can mean different things when they evaluate the extent of satisfaction with their job (Muñoz de Bustillo-Llorente and Fernández-Macías, 2005; Bianchi, 2008). Therefore it is difficult to assess what job satisfaction captures and how it can be influenced by policy makers. In this study we try to take an initial step in overcoming this problem by making a distinction between two types of job satisfaction, i.e. job satisfaction with the type of work and job satisfaction with job security.

Method

We first compare self-reported levels of job satisfaction in terms of type of work and job security among self-employed and paid employees. Next, we also investigate the determinants of the two types of job satisfaction both for self-employed and employees. We draw on a unique dataset, the European Community Household Panel, covering the EU-15 countries for the period 1994-2001.

Results and Implications

We find that self-employed are more satisfied than employees with the type of work and less satisfied in terms of job security. These findings may suggest that perceptions of the type of work may positively influence entry into self-employment, and that the reverse holds for perceptions about job security. The results also provide insight into the determinants of the two types of job satisfaction for both self-employed and employees. Overall, the findings illustrate that to understand what job satisfaction captures it is important to distinguish between several aspects of job satisfaction.

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∞ INTERACTIVE PAPER ∞

SELF-EMPLOYMENT ENTRY AMONG GRADUATES – THE ROLE OF HUMAN CAPITAL IN EMPLOYMENT CHOICE DECISIONS

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Principal Topic

Understanding the choice for self-employment has received increased attention in entrepreneurship research (Bates 1995, Delmar & Davidsson 2000, Katz 1992, Kolvereid 1996, Kolvereid & Isaksen 2006). Human capital is argued to play an important role in the identification of entrepreneurial opportunities (Shane 2000, Ucbasaran et al. 2003, Davidsson & Honig 2003), the choice to enter self-employment (Bates 1995), as well as for venture success and survival (Bates 1990, Bosma et al., 2004; Ucbasaran et al., 2008). Considered as a specific entrepreneurial resource (Baron, Frese, & Baum, 2007) it comprises multiple dimensions, including education and work experience (Cooper et al. 1994), cognitive characteristics (Alvarez & Busenitz 2001), specific market and industry know-how (Cooper et al. 1994), competencies (Chandler & Jansen 1992), parental role models / family background (Greene & Brown 1997), gender (Cooper et al. 1994), and age (Bates 1995, Aldrich 1999). The distinction in general (i.e. education, gender and age) and specific human capital (i.e. managerial abilities, technical abilities, entrepreneurial experience) can add valuable insights (Ucbasaran et al. 2003, 2008).

Graduates differ in their human capital settings. Different fields of study, level of work experience, and several personal characteristics and skills influence human capital. Which graduates are most likely to start a new venture? Which combination of human capital is favorable for choice to become self-employed? What determines the involvement of graduates in entrepreneurial activities immediately after their studies?

Method

The sample comprises data of 4.573 alumni graduated in 2003/2004 from universities in Germany. The data provides insight in early career paths of graduates and allows comparisons between 29 different fields of study. Human capital is measured with a broad set of items and split in general and specific human capital components.

Results and Implications

First, our results can provide insight into the question whether human capital in general and which dimension in detail can be used as determinants of self-employment entry among graduates. Second, potential human capital combinations that favor graduates' early self-employment decisions are identified. Third, we can contribute to the research in the field of entrepreneurship education by providing insight into special education and training needs of specific graduate groups.

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≈ INTERACTIVE PAPER ≈

**ORGANIZATIONAL EMERGENCE AND EXTERNAL ASSISTANCE:
A TEST OF THEORY OF GUIDED PREPARATION**

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Principal Topic

In this study, we examine the importance of guided preparation to organizational emergence. The Theory of Guided Preparation (TGP) assumes that while knowledge is the most important advantage an entrepreneur can have, an entrepreneur rarely has perfect knowledge (Chrisman, 1999). Therefore, *guided preparation*, which occurs when an outside expert assists an entrepreneur's efforts, is often critical to the success of a new/small organization as it facilitates the development of specialized and complementary knowledge. In support of TGP, recent empirical evidence suggests that guided preparation is important to the growth and survival of new organizations; however, no research to date has explored TGP in the context of emerging organizations. We therefore frame our study by posing the following research question: To what extent does guided preparation contribute to organizational emergence?

Method

We test our model using data from the PSED II, a dataset of 1214 randomly selected adults from the U.S. involved in the process of starting a business. We measured emergence as whether or not the nascent organization had received income from the sale of goods or services. We measured guided preparation as whether or not the entrepreneur had received assistance from outsiders with prior industry and/or start-up experience. Lastly, in order to control for effects that might otherwise influence a nascent entrepreneur's ability to create a successful firm, we controlled for the age, race, gender, marital status, and educational attainment of the entrepreneur. Due to the nature of the dependent variable, we analyzed the data using binary logistic regression.

Results

Our results suggest that entrepreneurs receiving assistance from individuals with prior industry and start-up experience were more likely to emerge than those who did not. From an academic perspective, we believe our findings may contribute to the collective understanding of the role that external knowledge plays in the process by which new organizations are created. For practitioners, we believe our results may encourage nascent entrepreneurs to restrict the relationships they develop and leverage in order to augment their limited knowledge base to those with expertise in the industrial and/or entrepreneurial context.

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NATIONAL FEDERATION OF INDEPENDENT BUSINESS
(NFIB) AWARD FOR EXCELLENCE IN RESEARCH ON
THE GENERAL TOPIC OF ENTREPRENEURSHIP

**ENTREPRENEUR IMPROVISATIONAL BEHAVIOR
AND NEW VENTURE PERFORMANCE: A
SOCIAL COGNITIVE PERSPECTIVE**



Keith M. Hmieleski, Texas Christian University, USA

ABSTRACT

The current study uses a national (United States) random sample of 201 lead entrepreneurs to examine the interactive effects of entrepreneurs' improvisational behavior with key individual (i.e., optimism) and environmental (i.e., industry dynamism) variables on firm performance (i.e., lagged measures of revenue and employment growth). Results indicate that these factors moderate the effects of entrepreneurs' improvisational behavior; in fact, a three-way interaction between improvisational behavior, optimism, and environmental dynamism was observed with respect to firm performance. Consistent with predictions, in dynamic environments, the effects of entrepreneurs' improvisational behavior on firm performance were positive when combined with moderate optimism, but non-significant when combined with high optimism. In stable environments, the effects of improvisational behavior were relatively weak, and were not moderated by optimism. Overall, results suggest that improvisational behavior can be an effective form of entrepreneurial action within rapidly and unpredictably shifting environments, but only when coupled with realistic levels of optimism.

INTRODUCTION

Recent work has established improvisation as a key form of entrepreneurial behavior (Baker, Miner, & Easley 2003; Baker, 2007). It is clear that new ventures almost always begin with a goal or vision of some form, implying some degree of advanced planning (Baum, Locke, & Kirkpatrick, 1998; Shane & Venkataraman, 2000). Inevitably, however, environmental conditions, resource constraints and cognitive limitations almost always prevent entrepreneurs from executing their plans as initially intended (Hmieleski & Baron, 2008). This implies that entrepreneurs must be able to effectively deviate from their plans in order to adapt to their environmental conditions, which in many cases are changing both quickly and unpredictably (Baron, 1998). Therefore, the ability to extemporaneously create and execute new plans on the fly would seem to be an important form of behavior for entrepreneurs to be able to effectively perform. Research by Baker and colleagues (2003) affirms this view by demonstrating that new venture founders are often forced to make decisions extemporaneously, using only the resources available to them in the moment. This fact should not be mistaken as implying that improvisational behavior necessarily results in positive outcomes for entrepreneurs or the new ventures that they lead. As has been noted by many authors, improvisation is not inherently good or bad (Crossan, Cunha, Vera, & Cunha, 2005; Crossan & Sorrenti, 1997; Vera & Crossan, 2004; 2005). Therefore, what variables might moderate the relationship of entrepreneurs' improvisational behavior with the performance of their firms?

This is a crucial question because, even though it has been argued that the ability of entrepreneurs to develop and execute novel strategic decisions “on the fly” is key to the success of new ventures, few studies have investigated boundary conditions in which such types of behavior may be effective. Further, studies that have considered such relationships have failed to evaluate the joint effects of both individual and environmental characteristics on the outcomes of entrepreneurs’ improvisational behavior (e.g., Hmieleski & Corbett, 2008).

Social cognitive theory (SCT: Bandura, 1986) provides a useful theoretical framework for understanding such effects. Specifically, SCT suggests that the effects of individual behavior (such as improvisation) are often determined by their interaction with important dispositional and environmental factors (Wood & Bandura, 1989). As such, the theory blends behavioral, dispositional, and environmental perspectives, thus providing a more comprehensive framework for examining human action and its outcomes than could be gained by focusing on any of these levels and classes of variables independently. In this regard, SCT provides a useful framework for undertaking the task of identifying the mechanisms through which individual behavior ultimately influence firm-level performance—a task that has been identified as crucial in recent years by many researchers (e.g., Baron, 2007; Wright, Hmieleski, Siegel, & Ensley, 2007). Further, the basic proposals of SCT are consistent with the multi-level perspective highlighted by Hitt, Beamish, Jackson, and Mathieu (2007). This perspective suggests that in order to fully understand complex organizational processes (including new venture development), it is essential to examine variables operating at different levels of analysis (e.g., individual, group, subunits, organizations, interorganizational, and environmental). The current study adopts this perspective by examining the joint effects of two individual variables (i.e., improvisational behavior and dispositional optimism), and a key environmental variable (i.e., dynamism).

Resting firmly both on SCT and a multi-level perspective, it is argued that the dispositional characteristics of entrepreneurs and the decision-making context in which they lead their firms will interact with their behavior to affect performance. More specifically, it is suggested that dispositional optimism is a key individual characteristic and that dynamism is a key environmental variable interacting to create contingencies regarding the effectiveness of entrepreneurs’ improvisational behavior. It is proposed that entrepreneurs with high levels of dispositional optimism will be relatively ineffective at improvising when leading their new ventures within dynamic industry environments, because they will have a tendency to overestimate the probability of obtaining positive outcomes from their attempts to extemporaneously develop and enact novel plans in accordance with the unpredictable changes taking place around them. In contrast, entrepreneurs with moderate levels of dispositional optimism are expected to be more effective improvisers within dynamic environments, acting more strategically and not overextending themselves and their firms. Within stable industry environments, where overconfidence is less likely to occur, dispositional optimism is expected to have a more positive effect on the relationship of entrepreneurs’ improvisational behavior with the performance of their new ventures.

The current study is designed to make several contributions. First, the empirical literature examining the effects of improvisational behavior has been primarily conducted within work teams. While such samples have produced meaningful results regarding outcomes such as innovation (e.g., Eisenhardt & Tabrizi, 1995; Garud & Karnoe, 2003; Vera & Crossan, 2005), speed to market of new products (e.g., Akgun & Lynn, 2002), and organizational change processes (Brown & Eisenhardt, 1997; Cunha & Cunha, 2003; Orlikowski, 1996), they do not provide information pertaining to the strategic decision behavior of top management. Thus, they do not relate directly

to lead entrepreneurs, who are often required to make rapid ad hoc decisions without consulting other top management team members and while under more stressful conditions than new product development teams working in large, established organizations. Lead entrepreneurs are the ultimate source of accountability for the success or failure of their firms. Most have invested a great deal of financial and emotional resources, and have multiple-stakeholders depending on them (e.g., their families, employees, investors, suppliers, and customers). When improvising strategic decisions, such individuals are truly performing without a safety net. Thus, the present research will provide new evidence concerning factors that influence the effectiveness of such behavior and should meaningfully contribute to our understanding of the new venture development process.

Second, in examining the effects of improvisational behavior, a perspective suggested both by SCT and by the emerging multi-level perspective in management research is adopted (Barden & Mitchell, 2007; Hitt et al., 2007). Specifically, the current research addresses the fact that the effects of individual-level variables occur primarily through interactions with key environmental factors. Failure to adopt such an approach has long been a criticism of prior research in the fields of organizational behavior (House, Shane, & Herold, 1996), strategic management (Henderson, Miller, & Hambrick 2006), and entrepreneurship (Shaver and Scott 1991). In response to such critiques, the current study employs social cognitive theory, which emphasizes the reciprocal relationships between dispositional, behavioral, and environmental variables, as the basis for deriving predictions concerning the mechanisms through which improvisational behavior influences the performance of key organizational decision-makers (in this case, lead founders of new ventures).

Third, following the spirit of Hambrick's (2007) assertion that organizational researchers must balance theoretical with practical implications, this study also addresses an issue considered to be of great importance: How best to coach or train entrepreneurs so that they recognize both their proclivity to engage in improvisational behavior and optimistic nature, and are maximally able to convert these combined tendencies into personal strengths that help them to found, lead, and grow their new businesses. Such findings are likely to contribute to the literature on how entrepreneurs learn. As Chelariu, Johnston, and Young (2002) note, "Central to improvisation is learning, as improvisation requires continuous evaluation of activity and outcomes and modification as needed." Further, Crossan and Sorrenti (1997) suggest that individuals can "learn and build expertise by improvising." Thus, the current research is expected to shed light on why some entrepreneurs learn better than others—by examining contingencies that are likely to effect the extent to which entrepreneurs are able to rapidly process information and formulate novel strategic decisions that lead to increased firm performance.

THEORETICAL DEVELOPMENT AND HYPOTHESES

Entrepreneur Improvisational Behavior

Improvisational behavior is defined as the deliberate extemporaneous composition and execution of novel action (Moorman & Miner, 1998). An individual can engage in an improvisational episode at any given moment. The cause may be the presentation of a problem, an opportunity for which the actor has no acceptable pre-composed solution, or simply the desire to try something new and spontaneous (Vera & Crossan, 2005). Further, as Baker and colleagues (2003) suggest, improvisation can be utilized to see how current resources can be used to either meet pre-existing goals (i.e., causation) or to explore what outcomes are possible (i.e., effectuation). Thus, improvisation should not be confused with a lack of planning or characterized as a

form of irrational behavior (Chelariu et al., 2002). On the contrary, Cunha and Cunha (2003: 170) clarify that, "Improvisation is an instance of teleological change in the sense that it is necessarily grounded on pre-conceived plans—implicit or explicit—that aim at a future state which is different from the present." These implicit or explicit plans are often referred to in the improvisation literature as the *template* (otherwise referred to as a referent or the head, see Bastien and Hostager, 1988; Hatch, 1999; Miner et al., 2001; Pressing, 1984) and represents the point from which deviation is realized (Kamoche, Cunha, and Cunha 2003). The template provides a "minimal structure" and reduces the cognitive load of the improviser by acting as a guiding framework from which to rapidly recombine elements into novel action. As Kamoche and Cunha (2001: 750) indicate, "... you cannot improvise on nothing." For example, imagine that while pitching a business idea to a panel of potential investors, an entrepreneur realizes that she has not identified the most appropriate target market for her product. In the midst of the presentation, she shifts her description to a new target market that had not been previously considered by her, but one that—in this moment of insight—she realizes is far more suitable. This would represent an improvisational act. The previously identified target market is the template from which departure took place and the concept of a target market provided a minimal structure to guide reformulation of a novel solution.

Few empirical studies on entrepreneurs' improvisational behavior have been published to date. These studies—along with research on related constructs—have, however, begun to build a meaningful knowledgebase on this topic. One of the first studies on the improvisational behavior of entrepreneurs was conducted by Baker and colleagues (2003), and demonstrated the centrality of improvisational behavior to the entrepreneurial process. These authors examined the nascent activities of 25 firms in the computer training and air pollution industries, 21 business-to-business software firms and 22 faculty startups through interviews with their founders and employees and the collection of public documents. Data concerning the background and goals of the participants and the history of the firms' activity from inception up to the present were collected and analyzed. None of the firms in the study followed a formation process that was entirely volitional, strategically planned or linear. Instead, the authors describe the nascent stages of organizing as more typical of the following:

"Founders spent the short time between leaving jobs and starting firms fulfilling obligations to their employer, looking for office space, buying or borrowing equipment, telling people about the business and starting to recruit employees. In no case did a founder describe a primary focus on a plan or market analysis or even thinking through the new firm's overall design or strategy. Founders just started moving toward creating their businesses, improvising their way to entrepreneurship."

The results of Baker et al. (2003) provide clear evidence that improvisational action is commonplace within the entrepreneurial process and often an integral part of the strategic decision-making process. Their findings also demonstrate that improvisation can create both beneficial and harmful effects—highlighting that it should be used strategically and not haphazardly.

A study of 430 college students by Hmieleski and Corbett (2006) found the proclivity to engage in improvisational behavior to be a significant predictor of entrepreneurial intentions, above and beyond measures of personality, motivation, cognitive style, and social models. To this end, these researchers suggest that individuals might seek out careers in entrepreneurship, in part, as a pathway to leverage their improvisational tendencies. This evidence in conjunction with the findings of Baker et al. (2003) suggests that both the dispositional makeup of entrepreneurs and

the demands of the new venture context might jointly explain the prevalence of improvisational behavior in the entrepreneurial process.

Baker and Nelson (2005) studied an activity closely related to improvisation, bricolage—making do by applying combinations of the resources at hand to new problems and opportunities. The primary difference between these two forms of action is that in bricolage composition can precede execution, whereas for improvisation composition and execution occur extemporaneously. These researchers conducted an intensive qualitative study of 28 small businesses and identified four patterns of bricolage. First, *non-bricolage* firms were described as those that participated in little bricolage and, in fact, often avoided bricolage. Second, *parallel bricolage* firms participated in early and continued use of bricolage on multiple, simultaneous projects. Third, *selective bricolage* firms temporarily used bricolage in some parts of the business in order to free resources for other parts, and more broadly during difficult or transition periods. Fourth, *serial bricolage* firms engaged in early and continued use of bricolage in a series of connected projects. The results of the study found parallel bricolage to be associated with little or no business growth, while selective and serial bricolage were found to support and, in some cases, drive growth. These findings further support the notion that improvisational-type behaviors can be leveraged as a strength when applied strategically and can become a weakness when wielded without caution.

A recent study by Hmieleski and Corbett (2008) of 159 new ventures examined the moderating effects of business founders' entrepreneurial self-efficacy on the relationship of their improvisational behavior with the performance of their firms and with their individual work satisfaction. Their findings demonstrate that entrepreneurial self-efficacy positively enhances the relationship of entrepreneurs' improvisational behavior with the performance of their firms, but negatively influence the relationship of entrepreneurs' improvisational behavior with their work satisfaction. These results suggest that entrepreneurs high in entrepreneurial self-efficacy may be effective at leveraging improvisation to drive growth, but tend to overextend their cognitive and emotional capacities while so doing. The authors speculate that such growth may not be sustainable in the long run. These findings are consistent with those of Baker and Nelson (2005) suggesting that improvisational-type behaviors are likely to be most effective when applied conservatively—so as not to overextend the personal resources of the entrepreneur or those of his/her firm.

In the following section, the joint moderating effect of dispositional optimism and environmental dynamism on the relationship of entrepreneurs' improvisational behavior with the performance of their firms is considered. As stated previously and congruent with extant literature (Vera & Crossan, 2005), no direct relationship of improvisational behavior with firm performance is anticipated.

The Joint Moderating Effects of Dispositional Optimism and Environmental Dynamism

Previous research indicates that entrepreneurs are generally high in optimism (Busenitz & Barney 1997; Cooper, Woo, & Dunkelberg 1988; Simon, Houghton, & Aquino 1999)—the tendency to expect positive outcomes even when such expectations are not rationally justified (Carver & Scheier, 2003). For example, a recent study by Hmieleski and Baron (2009) found entrepreneurs to range only from moderate to very high in dispositional optimism. De Meza and Southey (1996) account for the occurrence of this phenomenon of entrepreneurs tending to be higher than the general population in optimism by arguing that many individuals starting new businesses have little evidence upon which to base their beliefs about the likelihood of failure or success, and that

this creates a situation ripe for attracting persons with unrealistic optimism into entrepreneurship. This line of reasoning is consistent with literature demonstrating that highly optimistic individuals are confident of achieving successful outcomes independent of being able to visualize the path that will get them there—simply believing that everything will work out favorably in the end (Scheier, Carver, & Bridges, 2001).

This situation has serious implications for the judgment and decision making of entrepreneurs and hence their ability to effectively improvise. Specifically, highly optimistic individuals tend to hold unrealistic expectations, discount negative information, and mentally reconstruct experiences so as to avoid contradictions (Geers & Lassiter, 2002). In contrast, individuals who are moderate in optimism tend to possess a more balanced view and see the world less through rose-colored glasses (Spencer & Norem, 1996). Instead, they are more sensitive to negative information and less likely to gloss over discrepancies (Spirrison & Gordy, 1993), less easily persuaded by positive information (Geers, Handley, & McLarney, 2003), less likely to have an attentional bias in favor of positive stimuli (Segerstrom, 2001), and hold more realistic expectations when engaging in high risk situations than those higher in optimism (Gibson & Sanbonmatsu, 2004). For these reasons, research findings suggest, overall, that high levels of optimism often results in overconfidence and excessive risk taking. Considering the consistency of such findings in extant literature, it seems likely that highly optimistic entrepreneurs may be prone to make less than optimal strategic decisions, as compared to those who are moderately optimistic, and particularly when improvising—since individuals' dispositional characteristics tend to most significantly influence behavior when forced to act quickly.

Also relevant to entrepreneurs, positive expectations often lead to goal conflict, in that optimists tend to see new opportunities everywhere they look (Segerstrom & Solberg Nes, 2006). This can generate significant problems for individuals who cannot easily decide which goals to pursue, and therefore tend to become seriously overextended as they seek to exploit more opportunities than is realistically feasible. This could potentially lead to what Baker and Nelson (2005) refer to as parallel bricolage—thus, in a similar vein, highly optimistic entrepreneurs may be forced to use improvisation haphazardly, to keep up with the wide range of unrelated opportunities that they have committed their firms to exploiting. In contrast, moderate optimists tend to be more realistic in their choice and pursuit of opportunities. This is important because entrepreneurs must be able to decide which goals they can realistically accomplish early in the development of their new ventures in order to maximize the potential for survival and long-term success (McMullen & Shepherd, 2006). These individuals are more likely to engage in what Baker and Nelson (2005) refer to as selective or serial bricolage. Similarly, moderate optimists would be seemingly more likely to use improvisation conservatively, as a strategic tool to capitalize on fast moving opportunities—but only when they are congruent with the firm's mission.

These relationships are likely to become more exaggerated when coupled with high levels of environmental dynamism. Dynamic environments are characterized by unpredictable and rapid change, which increases uncertainty for individuals and firms operating within them (Dess & Beard, 1984). It has been suggested that environmental dynamism forms a fertile context in which entrepreneurial opportunities arise (Hayek, 1945; Kirzner, 1997; Shane & Venkataraman, 2000). Such environments, however, also present major challenges. Due to high levels of uncertainty and the large amount of financial capital (and associated risk) needed to compete (Aldrich, 2000), entrepreneurs leading their firms in dynamic environments often face unusually heavy information processing burdens (Chandler, Honig, & Wiklund, 2005). As a result, they may also tend to

experience high levels of distress and anxiety (Markman, Baron, & Balkin, 2005). Optimism can help to reduce such effects (Luthans & Youssef, 2004), but can also lead to overconfidence or other cognitive errors (Hayward et al., 2006) and hence, can negatively affect judgment and decision-making (McKenzie, 1997), especially within dynamic environments (Klayman, Gonzalez-Vallejo, & Barlas, 1999). Therefore, it is suggested that highly optimistic entrepreneurs will be particularly poor at improvising strategic decisions in dynamic, as opposed to stable, industry environments, because their attention will lack the focus needed to respond quickly and effectively to emerging opportunities. Further, their discounting of negative information could be particularly damaging if it prevents them recognizing and recombining key elements in their environment to develop and put into action novel strategic changes that are necessary to respond effectively to competitors. Further, due to their tendency to focus on self-confirming information, highly optimistic entrepreneurs might not be effective at recognizing “when” improvisation is most necessary. In support of this line of reasoning, optimism has been found to be negatively related to situational awareness, such that highly optimistic persons tend to be fairly ineffective at perceiving the elements within their environment, comprehending their meaning, and projecting their status into the near-term future (Eid, Matthews, Meland, & Johnsen, 2005). Considering the importance of rapidly identifying and integrating key information when improvising strategic decisions in fast-changing environments (Eisenhardt, 1989), highly optimistic entrepreneurs would appear to be at a particular disadvantage when extemporaneously composing and executing novel strategic decisions in dynamic, as opposed to stable, industry environments. On the basis of this reasoning and again, consistent with the social cognitive perspective, the following hypothesis is offered:

H1: In dynamic industry environments, the effects of CEO's improvisational behavior on firm performance will be more positive for those who are moderate, rather than high, in dispositional optimism.

In stable environments, where decision options are more certain due to higher levels of transparency and predictability, overconfidence is less likely to occur (Klayman et al., 1999). In fact, in such a context, underconfidence is sometimes experienced (Soll, 1996). In such an environment, effective improvisational behavior is likely to require less deviation from prior plans. Thus, it is expected that entrepreneurs who regularly engage in improvisational behavior and are high in dispositional optimism will be relatively effective because the environment is more likely to be in alignment with their past experience (than in dynamic environments), thus reducing the need to recognize and recombine as wide a range of potential decision options in order to effective solution. As such, they should be able to draw on their optimism to move forward to recombine familiar elements in new ways so as to make quick decisions with less negative consequences, because there will be less uncertainty in making judgments concerning whether following a new course of action will be effective in stable, as compared to dynamic, environments. This reasoning suggests the following hypothesis:

H2: In stable industry environments, the effects of CEO's improvisational behavior on firm performance will be more positive for those who are high, rather than moderate, in dispositional optimism.

METHODOLOGY

Sample and Procedure

A national random sample of 1,000 new ventures was drawn from Dun and Bradstreet for use in the current study. Dun and Bradstreet compiles what is considered to be the most exhaustive database of young firms founded in the United States (Kalleberg Marsden, Aldrich & Cassell, 1990). The vast majority of new ventures within the United States must file for a DUNS number with Dun and Bradstreet in order to create a business credit record, which is a primary way that companies evaluate whether to do business with each other (e.g., whether to sell, lend money, partner, or lease equipment to a company). Dun and Bradstreet provided the names and address of the firms and their top management team leader (i.e., chief executive officer), who in each case was also a founder of the firm.

A packet containing the survey, along with a cover letter and pre-paid business reply envelope was sent to the participants—who were each founder and chief executive officer of their firms. In total, 185 of the mailings were returned as non-deliverable and 207 completed surveys were received. The number of non-deliverable survey mailings was not surprising considering that Dun and Bradstreet reports that 20 percents of the firms that they track change addresses each year. Six cases were removed due to incomplete performance data. This resulted in a total usable response rate of 24.8 percent, which is in alignment with those produced by other studies using similar samples of top management (e.g., Hmieleski & Ensley, 2007; Waldman, Ramirez, House, & Puranam, 2001). Non-response bias was examined using *t* tests on gender of top management team leader, firm age, revenue, number of employees, and firm growth. In each case the results were non-significant.

Demographic questions at the end of the administered survey confirmed that each respondent was a founder and the top management team leader of his/her firm. These participants included 163 males and 38 females, with an average age of 52 years. The highest educational degree earned by participants included high school ($n = 37$), associates ($n = 18$), bachelors ($n = 80$), masters ($n = 47$), and doctoral ($n = 19$). The mean age of the firms studied was 5.74 years, which is in alignment with literature arguing that startups tend to be in a critical developmental stage during their first six years of existence and may be considered new ventures during this period (Shrader, Oviatt, & McDougall, 2000). Further, this is a particularly relevant time period in the development of the firm within which to consider objective performance outcomes such as revenue and employment growth, whereas earlier on in the firm's development such factors may be less relevant.

Finally, the sample is broad in scope, with participants' current businesses being located in 40 different states and with primary operations in 114 different industries (as classified by 4-digit Standard Industrial Classification codes). Further, no more than 4 firms were from the same state and no more than 3 firms were from the same industry. Thus, the sample is not biased by industry or geographic location.

Measures

Improvisational behavior. A 12-item scale adapted from the work of Hmieleski and Corbett (2006) was used to measure the degree to which individuals display improvisational behavior at their job. Participants rated the extent to which they agreed that each item was descriptive of their job-related behavior using a seven-point Likert-type scale ranging from (1) Strongly disagree to

(7) Strongly agree. The following are some example items: “I improvise solutions to problems,” “I find new uses for existing methods or equipment,” and “I deviate from plans in order to take advantage of opportunities in the moment.” High scores indicate a proclivity to partake in improvisational behavior at work. This scale produced a Cronbach’s coefficient alpha of 0.86 in the current study, with a 95% confidence interval of 0.83 to 0.89.

Optimism. Optimism was measured using Scheier, Carver, and Bridges’ (1994) Life Orientation Test-Revised (LOT-R). The instrument is comprised of 6 items requiring respondents to indicate the extent of their agreement with each item. Example items include “In uncertain times, I usually expect the best” and “Overall, I expect more good things to happen to me than bad.” A 7-point Likert-type scale anchored by (1) Strongly disagree and (7) Strongly agree was used. The responses were summed to form an overall score of optimism versus pessimism. Thus, high scores indicate a generalized feeling of optimism toward the future, whereas low scores indicate a more pessimistic outlook. To investigate the test–retest reliability of the LOT–R, Scheier and colleagues (1994) examined scores for four different groups of individuals who completed the scale at various time intervals. The test–retest intervals were 4 months, 12 months, 24 months, and 28 months. The test–retest correlations were 0.68, 0.60, 0.56, and 0.79, respectively. Therefore, as expected by a dispositional measure, the LOT–R appears to be fairly stable across time. Finally, the measure produced a Cronbach’s coefficient alpha of 0.80 in the current study, with a 95% confidence interval of 0.76 to 0.84.

Environmental dynamism. The industry level rate of unpredicted change was measured as the standard errors of four regression slopes following the work of Dess and Beard (1984), Keats and Hitt (1988), Sharfman and Dean (1991), and Castrogiovanni (2002). In each case the independent variable was time. The dependent variables were industry revenues, number of industry establishments, number of industry employees, and research and development intensity. Industry revenue has been used as a measure of uncertainty in prior studies (e.g., Keats & Hitt, 1988; Sharfman & Dean, 1991), and number of employees is a common measure of change for use in research involving new businesses. The number of establishments has been used by Aldrich (1979) as the basis for understanding industry size and the extent of industry change. Finally, industry wide research and development intensity is a variable that captures the speed of technological evolution of the industry (Dess & Beard, 1984; Castrogiovanni, 2002).

Data on industry revenues, industry establishment, and industry employment totals were acquired through the U.S. Bureau of the Census. Research and development intensity data were acquired from the U.S. Patent Office. Following Sharfman and Dean (1991), time was regressed against these variables for the most recent 10-year period. An index of the standard errors of the regression slopes divided by their respective means was used the indicator of unpredicted change for each of the four variables. These figures were then standardized and summed to create an overall index of environmental dynamism. To evaluate the extent to which the four variables loaded onto a single dimension, a single-factor confirmatory analysis was conducted using AMOS 6.0. The chi-square for the model was non-significant ($\chi^2 = 2.35, p = 0.13$) and results from absolute fit (GFI = 0.986; standardized RMR = 0.042) and relative fit (CFI = .979) indices each demonstrated good fit. The standardized factor loadings ranged from 0.68 to 0.86. Further supporting the reliability of the measure, the overall index produced a Cronbach’s coefficient alpha of 0.69, with a 95% confidence interval of 0.66 to 0.72.

Firm performance. Growth is often cited as the most important performance indicator of success for entrepreneurs (Brush & Vanderwerf, 1992). Consistent with this perspective, two different objective measures of growth were used: revenue growth and employment growth. Revenue and employment totals were obtained from Dun and Bradstreet at two different points in time, during the year in which the survey was administered and again two years afterward. Growth for each variable was calculated as the lagged percentage change over this two year period. An overall index of firm performance was formed by standardizing and then summing revenue and employment growth. This allowed for a more parsimonious presentation of the results. Considering the high correlation between revenue and employment growth ($r = 0.71, p < 0.01$) in conjunction with the fact that similar results were observed when testing the hypotheses using these variable as separate performance indicators, this approach seemed warranted. Recent studies have confirmed the accuracy of Dun and Bradstreet firm performance data and have used similar methods to calculate firm growth (Baum et al., 2001, Baum & Locke, 2004).

Control variables. Firm level control variables included the age of the firm, and revenue and employment totals for the year in which the survey data were collected. Data for each of these variables were acquired from Dun and Bradstreet. In order to reduce the threat of multicollinearity, revenue and employment totals for the year in which the survey data were collected were standardized and summed to create a variable labeled "firm size." Individual control variables included the sex (male = 0, female = 1), age (years old), and entrepreneurial experience (number of new ventures founded). These data were collected as demographic items at the end of the administered survey.

Statistical Procedures

Moderated hierarchical regression analysis was utilized as the main statistical procedure for examining the interaction of improvisational behavior x optimism x environmental dynamism on firm performance. Firm age, firm size, age of entrepreneur, sex of entrepreneur, and startup experience of entrepreneur were entered into step 1; improvisational behavior, optimism, and environmental dynamism were entered into step 2; the two-way interactions of improvisational behavior x optimism, improvisational behavior x environmental dynamism, and optimism x environmental dynamism were entered into step 3; and the three-way interaction of improvisational behavior x optimism x environmental dynamism was entered into step 4. In addition, the three-way interaction was graphed and the difference between the slopes was tested following procedures set forth by Dawson and Richter (2006).

RESULTS

Table 1 provides the means, standard deviations, and bi-variate correlations for all of the variables measured in the study. The results of the hierarchical moderated regression model for firm performance are displayed in Table 2. The three-way interaction of improvisational behavior x optimism x dynamism is illustrated in Figure 1. The results of slope difference tests for the 3-way interaction are shown in Table 3.

The results of the hierarchical regression analysis (see Table 2) indicate that the interaction between improvisational behavior, optimism, and environmental dynamism is significant for firm performance ($\beta = -0.15, p < 0.05$). The full model accounted for approximately 21 percent of the variance in firm performance. This suggests general support for the proposed model. The results will now be discussed in relation to the individual hypotheses.

Hypothesis 1 stated that in dynamic industry environments, the effects of improvisational behavior on firm performance will be more positive for entrepreneurs who are moderate, rather than high, in dispositional optimism. As shown by Figure 1, results offered support for this prediction. Slope 3 was found to be significantly more positive than slope 1 ($t = 2.04, p < 0.05$). This finding indicates that in dynamic environments the effects of improvisational behavior are greater (more positive) for firms led by entrepreneurs who are moderate in dispositional optimism than for those led by entrepreneurs who are high in dispositional optimism. Therefore, the results provide support for Hypothesis 1.

Hypothesis 2 stated that in stable industry environments, the effects of improvisational behavior on firm performance will be more positive for entrepreneurs who are high, rather than moderate, in dispositional optimism. As shown in Figure 1, results failed to offer support for this prediction. Although the direction of the slopes is in alignment with predictions, the difference between slope 4 and slope 2 was not significant ($t = 0.51, p = 0.61$). This suggests that within stable environments the effects of improvisational behavior are not moderated by optimism. In fact, improvisational behavior appears to have no relationship with firm performance in stable environments. Therefore, the results fail to offer support for hypothesis 2.

Overall, the functions illustrated in Figure 1 indicate that the effects of improvisational behavior and optimism are greater in dynamic than in stable environments. This is consistent with literature suggesting that the behavior and characteristics of entrepreneurs are more strongly linked to the performance for those who are leading their firms in dynamic, rather than stable, industry environments (Hmieleski & Baron, 2008).

DISCUSSION

The results of the present study suggest that (1) in *dynamic* environments, improvisational behavior exerts positive effects on performance for firms led by moderately optimistic entrepreneurs, but shares no relationship with performance for firms led by entrepreneurs who are highly optimistic; (2) in *stable* environments, the effects of improvisational behavior on firm performance are less pronounced and not moderated by dispositional optimism—presumably because there is a decreased potential for overconfidence to operate, as compared to dynamic environments. Thus, consistent with the findings of past research (e.g., Hmieleski & Corbett, 2008) firm performance is indeed significantly influenced by entrepreneurs' improvisational behavior, but the strength and form of such effects is moderated both by entrepreneurs' level of optimism and industry conditions (stable versus dynamic environments). These results will now be considered in terms of recent discussions and findings concerning the potential effects of entrepreneurs' improvisational behavior on the performance of their firms.

The Differential Effects of Entrepreneur Improvisational Behavior on Firm Performance

As consistently demonstrated in prior research (Baker et al., 2003; Crossan, Cunha, Vera, & Cunha, 2005; Crossan & Sorrenti, 1997; Vera & Crossan, 2004; 2005) and further supported by the results of the current study, improvisational behavior does not seem to have a significant direct relationship with performance. Following an approach grounded in social cognitive theory, however, an attempt was made to uncover important dispositional and environmental variables that might moderate the relationship between the improvisational behavior of entrepreneurs and the performances of the new ventures that they work to develop and grow. Optimism was examined

as a dispositional variable for two reasons. First, it is arguably the one individual characteristic that most strongly differentiates entrepreneurs from other individuals (Hmieleski & Baron, 2009). This is to say that entrepreneurs tend to be considerably higher in optimism than the general population. Second, optimism has been consistently shown to have serious negative consequences on judgment and decision making—perhaps as much as any other dispositional variable. Thus, there are strong grounds to assume that optimism plays a meaningful role in determining the degree to which the improvisational behavior of entrepreneurs exerts positive versus negative effects on the performance of the firms they lead.

The potential moderating effects of environmental dynamism were examined for four primary reasons. First, dynamism has been argued to create a context in which entrepreneurial opportunities are most prevalent and/or easily created. Thus, dynamic environments should foster entrepreneurial action. Second, the speed at which change takes place within dynamic environments requires rapid and novel decision making by entrepreneurs who desire to exploit specific, yet fluid, opportunities. This creates a situation where improvisational behavior may be necessary in order to compete effectively. Third, dispositions tend to be most relevant when uncertainty is high and individuals must make fast ad hoc decisions—such as is commonly the case within dynamic environments. Under stable conditions, appropriate actions tend to be apparent and dispositions tend to exert less influence on the decision making process. This suggests that the effects of entrepreneurs' dispositional optimism on the effects of their improvisational behavior should be magnified in dynamic environments. Finally, dynamic environments characterize the conditions in which overconfident decision making is likely to be most common. This is because the unpredictable nature of dynamic environments makes it nearly impossible to form accurate probability estimates regarding the likelihood for achieving specific outcomes for any particular strategic behavior. Thus, dynamic environments are likely to produce a great deal of variability in terms of the outcomes of improvised strategic decisions (e.g., larger gains and losses).

The findings of the current study confirmed predictions that optimism and environmental dynamism do indeed exert joint moderating effects in the effectiveness of entrepreneurs' improvisational behavior. The observed results suggest that improvisational behavior might lead to overconfidence within dynamic environmental conditions, especially when displayed by highly optimistic entrepreneurs. However, it also seems that entrepreneurs who are more moderate in their optimism, and more apt to recognize both the dangers and opportunities that exist within dynamic environments, are able to use improvisation as a mechanism for capitalizing on the rapid changes taking place within their industry in order to fuel growth for their new ventures. The results pose a perplexing issue—which might help to partly explain the high incidence of failure for new ventures, especially those which are launched in dynamic industries: High optimism and a tendency to engage in improvisational behavior are characteristics that are commonly seen in entrepreneurs who are likely to be drawn toward starting new ventures in dynamic, as opposed to stable, industries. This configuration of characteristics is also the combination that is most likely to lead to overconfidence and failure within dynamic industries. This highlights the need for entrepreneurs, especially those operating (or aspiring to operate) in dynamic industries, to be trained to appropriately self-regulate their behavior in alignment with their environment, such that they learn to recognize when their personal strengths (e.g., optimism) can create blind spots and become personal weaknesses.

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Table 1: Descriptive Statistics and Variable Correlations

Variable	Mean	SD	r								
			1	2	3	4	5	6	7	8	
1. Firm age	5.74	2.43									
2. Firm size	0.00	1.81	-0.08								
3. Age (of entrepreneur)	51.83	9.12	0.07	0.14*							
4. Sex (male = 0, female = 1)	0.19	0.40	0.00	-0.12	-0.20**						
5. Entrepreneurial experience	0.95	1.34	-0.08	0.00	0.22**	-0.12					
6. Improvisational behavior	5.68	0.75	-0.08	-0.07	-0.08	0.11	0.20**				
7. Optimism	5.87	0.90	-0.09	-0.10	0.16*	0.12	0.21**	0.35**			
8. Dynamism	16.56	11.19	-0.04	0.10	0.12	-0.04	0.05	-0.02	0.02		
9. Firm performance	0.00	1.85	0.04	0.09	0.10	-0.01	0.07	0.05	-0.21**	0.07	

$n = 201$; * $p < 0.05$; ** $p < 0.01$

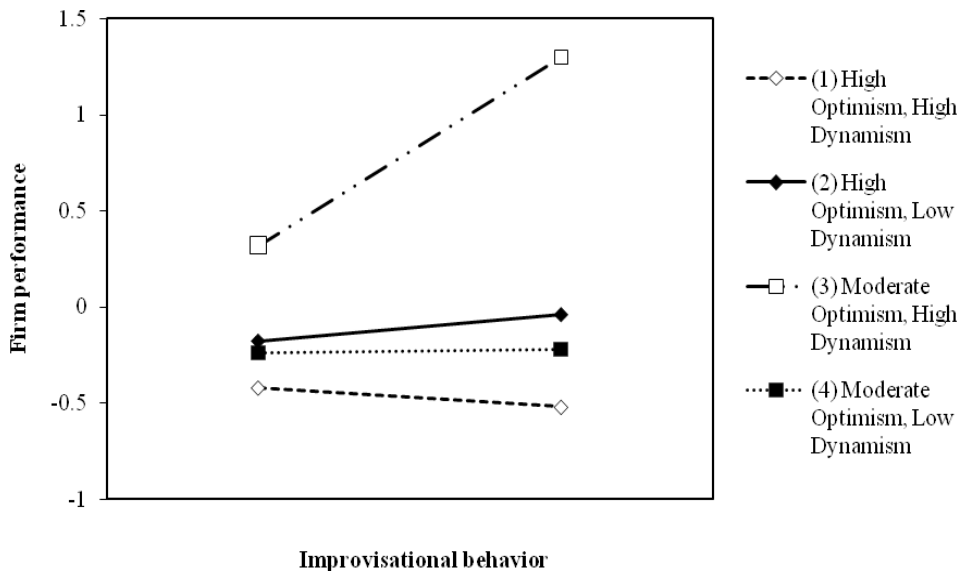
Table 2: Hierarchical Regression Model of Firm Performance

Variable	Firm performance			
	Model 1	Model 2	Model 3	Model 4
	β	β	β	β
<i>Firm control variables</i>				
Firm age	0.05	0.04	0.06	0.07
Firm size	0.00	0.00	-0.01	-0.01
<i>Individual control variables</i>				
Age	0.05	0.11	0.08	0.08
Sex	0.00	0.04	0.09	0.09
Entrepreneurial experience	0.06	0.09	0.13	0.12
<i>Main effects</i>				
Improvisational behavior (I)		0.14	0.10	0.13
Optimism (O)		-0.30**	-0.29**	-0.29**
Dynamism (D)		0.09	0.14*	0.17*
<i>Two-way interactions</i>				
I x O			-0.07	-0.12
I x D			0.07	0.09
O x D			-0.32**	-0.35**
<i>Three-way interaction</i>				
I x O x D				-0.15*
F-Ratio	0.44	2.42*	4.00**	4.06**
R ²	0.01	0.09	0.19	0.21
Adjusted R ²	0.00	0.05	0.14	0.16

$n = 201$; * $p < 0.05$; ** $p < 0.01$

Table 3: Slope Difference Tests

Pair of slopes	t-value for slope difference	p-value for slope difference
(1) and (2)	0.71	0.48
(1) and (3)	2.04	0.04
(1) and (4)	0.14	0.89
(2) and (3)	1.60	0.11
(2) and (4)	0.51	0.61
(3) and (4)	2.22	0.03

Figure 1: Interactive Effects of Improvisational Behavior, Dispositional Optimism, and Environmental Dynamism on Firm Performance

START-UP INTENTIONS AND BEHAVIOR OF NECESSITY-BASED ENTREPRENEURS: A LONGITUDINAL STUDY



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ABSTRACT

In this study, we extend prior research by exploring the transition from nascent entrepreneur intentions to established entrepreneur behavior, whether entrepreneurial attitudes are inherent in nascent entrepreneurs, to what extent it is possible to develop entrepreneurial attitudes in non-entrepreneurs, and the use of values *and* attitudes to discriminate between entrepreneurs and non-entrepreneurs. The study is longitudinal with 4.5 years between Baseline (T_1) and End-of-Study (T_3). The research involved two groups: nascent necessity-based entrepreneurs (experimental group) and non-entrepreneurs (control group) who were exposed to an intensive one year entrepreneurship training program intervention (T_1 - T_2). Measurements were taken at T_1 , T_2 , and T_3 . Differences in values and entrepreneurial attitudes between the groups are examined.

INTRODUCTION

Over the last 50 years, numerous studies have tried to differentiate entrepreneurs from non-entrepreneurs based on both personal and demographic characteristics (e.g., McClelland, 1961; McClelland, Atkinson, Clark, & Lowell, 1953; Brockhaus, 1975; Brockhaus & Horwitz, 1986). Though many of these individual studies produced significant results, as a body of research they produced conflicting results that were often hard to decipher (cf., Gartner, 1988). Over the past two decades, several studies examined the attitudes of entrepreneurs in an attempt to distinguish entrepreneurs from non entrepreneurs.

Attitudes are generally thought of as a predisposition to respond in a favorable or unfavorable manner with respect to the attitude object (Ajzen, 1982). Though there are differing viewpoints, attitude can be conceptualized as a tripartite construct containing affective, cognitive, and conative components. (see, Eagly & Chaiken, 1993). Studies that examined entrepreneurial attitudes, e.g., Robinson, Stimpson, Heufner, & Hunt (1991) and McCline, Bhat, & Baj (2000), find that entrepreneurs exhibit attitudes different than non-entrepreneurs.

Previous research, especially in marketing, identifies that personal values play an important role in attitude formation (see Kropp, Lavack & Silvera, 2005). Rokeach, (1973, p. 5) conceptualized values as “enduring beliefs that a particular mode of behavior or end-state of existence is preferable to opposite modes of behavior or end-state.” Personal values are desirable and stable end-states (Kahle, 1983) are developed through personal heritage and life experiences (Kahle, Poulos, & Sukhdial., 1988). Schwartz & Bilsky (1987) viewed values as cognitive representations of universal human requirements, including social interaction requirements and social institutional demands on the individual.

Using structural equation modeling, Homer & Kahle (1988) identified an important relationship between values, attitudes, and behaviors. Values shape attitudes which, in turn, shape behavior. As higher order social cognitions, values play an important role in shaping attitudes. Our attitudes, in turn, drive our intentions and, ultimately, our behavior (Ajzen 1982, 1985; Fishbein & Ajzen 1975). McCline et al. (2000) developed a multidimensional measure of entrepreneurial attitude that includes a dimension that measures attitude toward opportunity recognition. It follows the tripartite construct of attitudes where the cognitive component captures thoughts and beliefs about the entrepreneurial opportunity; the affective component captures the positive or negative feelings toward the opportunity; and the conative component captures the behavioral intentions and predispositions to behave in a certain way toward the opportunity (McCline et al., 2000).

In this research, we build upon previous studies by focusing on linking the relationships among values, entrepreneurial attitudes including behavioral intentions, and the start-up behavior of nascent entrepreneurs over time. Exhibit 1 provides an overview of the Conceptual Model addressed in this research.

CONCEPTUAL MODEL

The term “entrepreneur” has been applied to the founder of a new business or to a person who started a new business where there was none before (Gartner 1985). Gartner (1985) presents a conceptual framework for describing new venture creation that integrates four major perspectives in entrepreneurship: The characteristics of the individual starting the venture, the organization they create, the environment surrounding the new venture, and the process by which the new venture is created. Our focus is on the individuals who start businesses; in particular, their values and entrepreneurial attitudes especially those related to opportunity recognition.

Values

Values are core to our functioning and are said to be the most significant construct in social sciences (Rokeach 1973). Values act as core motivations for basic psychological needs (Rokeach 1973) and represent conceptions of desirable influences on the way that individuals select behavior and evaluate their worlds (Schwartz & Bilsky 1987). Individuals use their values to help rationalize and guide their beliefs, attitudes, and behaviors (Rokeach 1973). Values are considered to be shaped largely by pre-adult socialisation and have been viewed as situationally invariant (Schwartz, 1992). Kropp et al. (2005) identified 30 studies in marketing where values shape attitudes and behavior including brand choice, gift-giving, shopping, consumption of organic foods, and numerous other consumer behaviors. We believe that entrepreneurs may have different value sets than non-entrepreneurs and that values have explanatory power in shaping entrepreneurial attitudes.

A review of the marketing and business literature conducted by the authors of this paper identify that three value schemes dominate the literature: those by Rokeach (1973), Kahle (1983), and Schwartz & Bilsky (1987) or variants on these approaches. The most common approach over the past two decades is the List of Values (LOV) because of its parsimony and well-established psychometric properties (Kahle, 1983). LOV has nine values divided into a three-dimensional structure: internal values, external values, and interpersonal values. Internal values are validated internally and do not require the real or imagined presence of an “other” (Kropp et al., 2005). The internal values are self-fulfillment, self-respect, and sense of accomplishment. External values

include sense of belonging, being-well respected, warm relationships with others, and security. External values generally require the judgments, opinions, or presence of others (Kahle 1983). Interpersonal values (fun and enjoyment in life and excitement) are interactional and combine aspects of internal and external values (Kahle 1983).

Previous research in entrepreneurship identifies that entrepreneurs are internally grounded – they believe in themselves (Kropp & Lindsay, 2001). As such, we believe that entrepreneurs will be driven by higher order internal values and less by external or interpersonal values. Non-entrepreneurs, on the other hand, come from a variety of backgrounds and experiences and have a variety of motivations. As such, they are likely to demonstrate the full spectrum of internal values levels (from low to high) depending on the environmental influences they were exposed to in their formative values years as well as that which is inherited from prior family generations. Therefore,

H1: Internal values of entrepreneurs are higher than non entrepreneurs.

Social capital is important to entrepreneurs (Timmons & Spinelli, 2009). They need to know who to contact if they need someone with the answer to a problem they are experiencing. As such, it can be expected that entrepreneurs (and nascent entrepreneurs) will demonstrate high levels of external values since these are associated with being able to relate with others. Non entrepreneurs, on the other hand, will demonstrate the full range of external values from low to high depending on their formative year experiences, etc. Therefore,

H2: External values of entrepreneurs are higher than non entrepreneurs.

Interpersonal values include fun and enjoyment in life and a sense of excitement. Even though interpersonal values combine some aspects of internal and external values, they are distinct from each of the other two sets of values. In addition, what constitutes fun and enjoyment and excitement are a function of definition and context. Since both entrepreneurs and non entrepreneurs can experience interpersonal values in different ways, we hypothesize that there are no differences between the two groups. Therefore,

H3: There are no differences in interpersonal values between entrepreneurs and non-entrepreneurs.

Entrepreneurial Attitude

Robinson et al. (1991) developed a multidimensional entrepreneurial attitude orientation (EAO) scale to measure four dimensions of entrepreneurial attitude: achievement in business, which refers to the start-up and growth of a business; innovation in business, which involves perceiving and acting in new and innovative ways; perceived personal control of business outcomes; and perceived self-esteem in business. Though pioneering in its efforts, McCline et al. (2000) felt that the EAO scale was missing two important components, risk taking and opportunity recognition. Although their attempt to develop a risk-taking scale was not successful, they achieved success with their opportunity recognition scale. McCline et al. (2000) called the new entrepreneurial attitude scale “entrepreneurial opportunity recognition” (EOR).

The EOR scale uses the tripartite construct of attitudes where the cognitive component captures thoughts and beliefs about the entrepreneurial opportunity, the affective component captures

the positive or negative feelings toward the opportunity, and the conative component captures the behavioral intentions and predispositions to behave in a certain way toward the opportunity (McCline et al., 2000). Sample items in the Likert-like EOR scale include: “At my job, I have helped identify new ways of performing the things we must do”, “I like talking to people to find out how I can provide better services”, and “I enjoy finding new ways my organization can better meet the needs of the customers” (McCline et al., 2000, p. 93).

As opportunity recognition is key to entrepreneurship, we focus on the EOR component in this study. Given the nature of the items contained in the EOR, it is likely that entrepreneurs will have stronger attitudes towards EOR than non entrepreneurs. In addition, since values shape attitudes and entrepreneurs will have stronger internal and external values than non entrepreneurs, entrepreneurs will exhibit a direct positive relationship between these values and entrepreneurial attitudes toward opportunity recognition. Therefore,

H4: Entrepreneurs have a stronger entrepreneurial attitude than non entrepreneurs.

H5: There is a direct positive relationship between internal values and entrepreneurial attitude.

H6: There is a direct positive relationship between external values and entrepreneurial attitude.

Models based upon the theories of reasoned action (Fishbein & Ajzen 1975) and planned behavior (Ajzen 1985) use attitude as indirect behavior prerequisites to perform particular behaviours. Performance of a behavior is determined by the strength of the person’s intention, a part of the tripartite component of attitude, to perform that behavior. Intention is viewed as a function of the person’s attitude toward performing the behavior (Ajzen 1985). In this research, entrepreneurial attitude is measured in terms of the individual’s attitude toward opportunity recognition (McCline et al., 2000). We believe that the greater the entrepreneurial attitude, the greater the probability of venture start-up. Therefore,

H7: There is a direct positive relationship between entrepreneurial attitude and venture start-up.

RESEARCH METHOD

By design, we examine the values, attitudes and behaviors of individuals who are similar except in their intentions to start a business. The individuals in our study (described in detail below) were chronically unemployed with relatively few job prospects. They enrolled in a comprehensive training and mentoring program to enhance their entrepreneurial capabilities.

The study is longitudinal, with 4.5 years between Baseline (T_1) – the commencement of the program – and the End-of-Study (T_3). The research design involved two groups: nascent necessity-based entrepreneurs who intended starting businesses (experimental group) and non-entrepreneurs who had no venture start-up intentions (control group). Both the nascent and non-entrepreneurs were exposed to an intensive one year-long entrepreneurship training and mentoring program intervention that commenced at T_1 and finished at T_2 . Between T_2 and T_3 , the nascent entrepreneurs worked on starting their ventures while the non-entrepreneurs searched for jobs.

At Baseline (T_1), there were 329 necessity-based nascent entrepreneurs and 107 non-entrepreneurs. The entrepreneur group was 61% female and 39% male; ages ranged from 18 to 39 years with 91% less than 30 years of age. The non-entrepreneur group was 59% female and 41% male; ages ranged from 19 to 42 years with 91% less than 30 years of age. At T_3 (End-of-Study), there were 287 of the original nascent entrepreneur and 106 of the original non-entrepreneur survey respondents. The T_3 entrepreneur group was 59% female and 41% male and ages ranged from 18 to 39 years with 91% less than 30 years of age. There were no significant demographic changes at T_3 as compared to T_1 in the non-entrepreneur group.

Repeated measures were taken at the start of the program (T_1), at the end of the year-long training and mentoring intervention (T_2), and 3.5 years after the training and mentoring intervention concluded (T_3) to assess to what extent the intervention effects lasted over the research period. In addition at T_3 , semi-structured interviews were held with 15 members of the non-entrepreneur group and 33 members of the entrepreneur group. Structural equation modelling and independent-samples t-tests were used to explain venture start-up intentions and venture start-up behavior. Validated scales were used to measure the underlying variables. In all cases, scale reliabilities were above 0.70 meeting Nunnally's (1978) reliability standards.

Participants

The majority of participants were unemployed at the time the study began. No social security or unemployment benefits are payable to the unemployed in South Africa. As such, if an individual is unemployed, there are only a few options to survive. These include seeking assistance from family members and friends, begging, stealing, and/or setting up a business. The entrepreneur participants used in this research can be regarded as "necessity based" as they were predominantly unemployed who were motivated to start businesses out of necessity.

Participants in the research were recruited through a range of newspaper advertisements placed in the mainstream and local community newspapers promoting the project. In addition, community centers were approached to help recruit individuals in their local communities who were looking to start up businesses. Word-of-mouth through family members and friends attracted additional potential applicants who did not see the newspaper advertisements or who were not members of local community groups. Information sessions were held for interested parties.

Participants were advised that they would be helped to start businesses through an intensive program of daily lectures on a range of topics including entrepreneurship, marketing, finance, and legal issues as well as topics such as personal grooming, personal motivation, and problem solving. In addition they would receive hands-on mentoring from a group of experienced business consultants during the latter half of the program. Those who were accepted on the program received a weekly stipend for the year's duration. The possibility of receiving money to be on the program was a significant incentive for potential participants to apply. As such, personal interviews were conducted with each applicant to determine which applicants were serious about starting businesses. As a result of this process, of the more than 1,000 individuals that applied to participate on the program, 436 individuals were deemed eligible to participate. All stated that they intended starting businesses – although some appeared to be more serious than others.

After the interview process to determine participant "bona fides", and before the program started, participants were given a confidential questionnaire to complete. This included questions about participant demographics and validated scales that focused on personal values and entre-

preneurial attitude. The questionnaire also contained questions that asked whether the participant really intended starting a business in the near future. After the intense screening process applied to applicants, we expected all participants to answer this question in the affirmative. However, this was not the case. There were 329 participants who answered that they intended to start businesses and there were 107 participants who said that they did not intend to start businesses in the foreseeable future. Presumably, this latter group was motivated by the training stipend that they would receive as well as the skills and knowledge they would acquire that may be relevant to them in the future even though they had no intention of starting a business.

Measures

Validated scales were used to measure personal values and entrepreneurial attitudes. All scales were successfully piloted in the target population prior to the commencement of the study.

Personal values were measured using the List of Values or “LOV” (Kahle 1983; Kahle, Beatty, & Homer 1986). The instrument comprises nine questions and uses a Likert-type scale (1 = Important to Me and 9 = Extremely Important to Me). Examples of LOV items include “Sense of Belonging (to be accepted needed by friends, family, and community)”, “Excitement (to experience stimulation and thrills)”, and “Self-Respect (to be proud of myself and confident of who I am)”.

Entrepreneurial attitude was measured using the scale developed by McCline et al. (2000) that focused on attitude toward opportunity recognition. They identified the EOR scale to be more parsimonious in predicting entrepreneurial attitudes and differentiating entrepreneurs from non-entrepreneurs than Robinson et al.’s (1991) scale although they acknowledge that the EOR scale could be used advantageously in conjunction with Robinson et al.’s (1991) EAO achievement and perceived personal control subscales. For parsimony, this research uses only the EOR scale. EOR measures use a 10-point Likert-type scale (1 = Strongly Disagree and 10 = Strongly Agree). Examples of scale questions include “I like talking to people to find out how I can provide better services.” and “I believe I can identify what a customer needs to make them satisfied”.

RESULTS

Exhibit 2 provides the means and standard deviations for the two groups at T_1 , T_2 , and T_3 .

Structural Equation Modeling: We used structural equation modeling using AMOS Version 7.0 (Arbuckle, 2006) in the primary analysis of the data. Exhibits 3.1 and 3.2 provide the full structural model for the two groups at T_1 , T_2 , and T_3 . Since there were no significant within-group differences among entrepreneur values measures and non-entrepreneur values measures over the 4.5 year period, for parsimony, T_1 values were used for each group in the analysis (the results were similar using T_2 and T_3 values for both groups).

With both groups, the χ^2 statistic for the structural model was not significant indicating that there was no significant difference between the sample variance/covariance matrix and the model implied variance/covariance matrix. Hence, the data fitted the model well and the model was confirmed. Further fit indices also supported the fit between the sample and the model. With both group structural models, the Goodness of Fit Indices and Adjusted Goodness of Fit Indices were greater than 0.950, the Root Mean Square Error of Approximation was less than 0.05, and the Tucker Lewis Index was approximately 1.0. These indices, which are within the recommended cutoff limits, provide additional support to the χ^2 statistic that the data fits the model.

Given the data sets for both groups fit the structural model, the following observations can be made about the results. At T_1 in Group 1 (nascent entrepreneurs), the dependent variable, entrepreneurial attitude, accounted for 42% of the variance ($R^2 = 0.42$). Both internal and external values were significant at the 0.01 level ($\beta_{\text{Internal values}} = 0.51$ and $\beta_{\text{External values}} = 0.24$). Interpersonal values were not significant ($\beta_{\text{Interpersonal values}} = 0.03$). At T_2 and T_3 in Group 1, entrepreneurial attitude accounted for 91% and 99% of the variance respectively. At T_3 in Group 1, 162 participants indicated that they had started businesses since commencing the program and 125 had not but said that they still had intentions and were working toward establishing their businesses. A major obstacle to business startup repeatedly cited by participants was a lack of access to early stage finance.

In Group 2 (non-entrepreneurs) at T_1 , the dependent variable, entrepreneurial attitude accounted for only 10% of the variance ($R^2 = 0.10$). Both internal and external values were not significant ($\beta_{\text{Internal values}} = 0.19$ and $\beta_{\text{External values}} = 0.14$). Fun and excitement was significant and negative at the 0.05 level ($\beta_{\text{Interpersonal values}} = -0.33$). At T_2 and T_3 in Group 2 (non entrepreneurs), entrepreneurial attitude accounted for 91% and 90% of the variance respectively. At T_3 , none of the non entrepreneurs had started businesses but 52% said that they had found employment and an additional 6% had enrolled in an educational program of some form (including University degree studies).

Independent-samples t-tests: At T_1 , T_2 , and T_3 independent-samples t-tests were undertaken to compare the mean scores of the internal, external, and interpersonal values and entrepreneurial attitude constructs for the two groups. Exhibit 4 summarises the results. Levene's test for equality of variances indicates that the variation of scores for the two groups is the same for external and interpersonal values (significance > 0.05) but differ for the internal values and all entrepreneurial attitude constructs (significance < 0.05). Thus, equal variances are not assumed for these latter constructs. In any event, there are significant differences between the two groups with regard to the external values ($p < 0.05$), internal values ($p < 0.01$), and the entrepreneurial attitude constructs at T_1 and T_3 ($p < 0.01$) but not at T_2 . There were no significant differences between the two groups for the interpersonal values construct.

Hypotheses: Confirmation/rejection of the hypotheses was as follows: H1 hypothesizes that internal values of nascent entrepreneurs are higher than non entrepreneurs and is confirmed. H2 hypothesizes that external values of entrepreneurs are higher than non entrepreneurs and is confirmed. H3 hypothesizes that there are no differences in interpersonal values between entrepreneurs and non-entrepreneurs and is confirmed. H4 hypothesizes that entrepreneurs have a greater entrepreneurial attitude than non entrepreneurs. This hypothesis is partially supported; it was confirmed at T_1 and T_3 but not at T_2 . H5 hypothesizes that entrepreneurs will exhibit a direct positive relationship between internal values and entrepreneurial attitude and is confirmed. H6 hypothesizes that entrepreneurs will exhibit a direct positive relationship between external values and entrepreneurial attitude and is confirmed. H7 hypothesizes that entrepreneurs will exhibit a direct positive relationship between entrepreneurial attitude and venture start-up and is partially confirmed in that over 50% of the nascent entrepreneurs had started businesses and the remainder all said that they had intentions of starting once they resolved the financing issue.

DISCUSSION

The results build upon and extend prior values and entrepreneurial attitude research. *First*, as personal values of individuals are higher-order social cognitions and are relatively stable, we expected little or no change in values over the period. This was validated as there was no significant change in internal, external, and interpersonal values for both the control and experimental groups over the duration of the research project.

Second, the entrepreneur group demonstrates higher internal and external values than the non-entrepreneurs. Nascent entrepreneurs/entrepreneurs were primarily driven by internal values – a belief in themselves and, to a lesser extent, by their external values – their ability to relate to others. Their external values were significantly related to entrepreneurial attitude but less so than their internal values. Ability to network and interact with others to help solve problems in moving the business forward is extremely important. Thus, external values are important to necessity entrepreneurs – but appear to be less so than internal values.

Third, two values sets – internal and external – appear core to shaping necessity entrepreneur attitudes. Interpersonal values, however, did not differ between the two groups. A possible explanation is that interpersonal values are equally important to both groups.

Fourth, prior research (Robinson et al., 1991; McCline et al., 2000) demonstrates that entrepreneurial attitudes are a way of differentiating between existing entrepreneurs and non-entrepreneurs where the entrepreneurs are opportunity-focused - setting up businesses because they want to, not because they necessarily have to. The results of this study extend prior research by examining necessity-based nascent entrepreneurs who intend starting businesses for survival purposes. In this regard, the entrepreneurial attitude construct was useful in successfully differentiating between necessity-based nascent entrepreneurs and non-entrepreneurs at T_1 and T_3 .

Fifth, this research extends prior research by demonstrating that nascent entrepreneurs start with an entrepreneurial attitude which is then reinforced with entrepreneurial experience. The studies by Robinson et al. (1991) and McCline et al. (2000) were unable to determine whether entrepreneurial attitudes existed prior to business startup (or whether these attitudes developed later as a result of the entrepreneurial experience) because they focused on existing entrepreneurs. By tracking entrepreneurs as they moved from nascence to practicing, we are able to answer this question.

Sixth, the use of entrepreneurial attitude to discriminate between entrepreneurs and non-entrepreneurs was ineffective at T_2 . After both groups attended the entrepreneurship training program, the non-entrepreneurs actually scored higher on this construct than the nascent entrepreneurs. This result demonstrates that attitudes can change over time in attending events such as training programs. Taking measurements immediately after such events may produce results that are spurious in the long term. Thus, measuring attitudes at a moment in time may be tenuous as this represents a measurement “photograph” where the reality may change after the measurement has been undertaken. For this reason, repeated measures of entrepreneurial attitude over time may be more conducive to producing more stable and reliable results.

Seventh, in addition, values are more unwavering than attitudes and are less susceptible to change. Since they are related to attitudes, they provide the basis for more stable estimates of

behavior. Entrepreneurs demonstrated a relationship between internal and external values and entrepreneurial attitude. Thus, perhaps a more stable approach to differentiating entrepreneurs from non-entrepreneurs is to use values *and* repeated entrepreneurial attitude measures.

Eighth, it would seem that low levels of internal and external values may *not* be conducive to venture start-up. Those with low internal and external values levels may not be the appropriate type of person to establish a business successfully. Thus, if there is a need to ensure that scarce resources are used wisely when allocating funding to entrepreneurial training programs that are designed to improve the skills, knowledge, attitudes, and behaviors of “would-be” necessity entrepreneurs, it may be prudent to screen applicants on the basis of their personal values favoring those that rate higher on the internal and external values scales.

Ninth, notwithstanding that the nascent entrepreneurs’ entrepreneurial attitudes improved the most from the training and mentoring, the non-entrepreneurs’ entrepreneurial attitudes also improved – though less so. The entrepreneur group demonstrated an entrepreneurial attitude prior to the commencement of the intervention at T_1 , a significantly greater entrepreneurial attitude at the end of the intervention (T_2), and a reduced entrepreneurial attitude at T_3 – but significantly greater than at T_1 . The non-entrepreneur control group demonstrated no significant entrepreneurial attitude prior to the commencement of the intervention at T_1 , a significantly strong entrepreneurial attitude at the end of the intervention (T_2), and a significantly reduced entrepreneurial attitude at T_3 compared to T_2 – but slightly greater than at T_1 . We attribute the increases in entrepreneurial attitude in both groups to the one year training and mentoring program. The implication is that entrepreneurial attitude may be underdeveloped in necessity-based entrepreneurs (and non-entrepreneurs) and may be enhanced to various degrees by targeted educational programs.

Tenth, in the longer term, from a practical perspective, it appears that the entrepreneurship training was not wasted on the non-entrepreneurs. Although it is difficult to determine cause and effect, all of the 15 non-entrepreneurs interviewed stated that the program instilled confidence in them which motivated them to search for and find jobs and/or continue with further studies. To this end, it appears that a sustained entrepreneurship educational program may benefit even non-entrepreneurs in that it could provide potential employees who may become intrapreneurs for their employers (or even entrepreneurs) in the future

Limitations and Future Research Directions

There were at least three limitations associated with this research that future studies should attempt to address. First, by design, we limited the research to Johannesburg, South Africa – a developing region. As such, the results are not necessarily generalizable to other countries. Future longitudinal values-entrepreneurial attitude research needs to occur in a range of countries – both developing and developed. Second, this research focused on necessity entrepreneurs. There is a need for future studies to longitudinally investigate the values-entrepreneurial attitude relationship in opportunity-focused entrepreneurs. Third, the sample was not randomly selected from the population which raises the possibility of sample bias. We attempted to overcome this problem with widespread promotion of the program and the provision of a stipend to make it attractive for people to apply; however, it is possible that there were nascent entrepreneurs in the target population who did not participate in the program and who may have values and/or entrepreneurial attitude profiles different than the sample used in this research.

SUMMARY

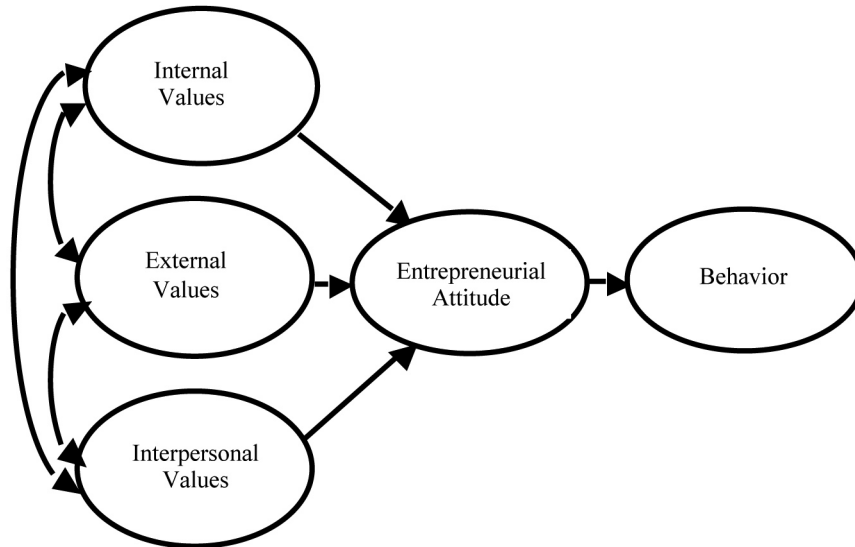
This research builds upon previous research to identify a stable approach to differentiating nascent necessity entrepreneurs from non-entrepreneurs. Previous research has identified entrepreneurial attitudes to be effective in discriminating between existing (opportunity-focused) entrepreneurs and non-entrepreneurs. Although in this research, entrepreneurial attitude was successful in discriminating between necessity entrepreneurs and non-entrepreneurs on two of the three occasions that measures were taken, it failed to do so on a third measurement occasion immediately after both groups were exposed to an entrepreneurship training program. Values, however, were stable across the duration of the 4.5 year study with internal and external values significantly associated with the entrepreneurial attitudes of the entrepreneur group members. Thus, we believe that both personal values and repeated measures of entrepreneurial attitudes suitably spaced over time can be useful in distinguishing necessity entrepreneurs from non entrepreneurs.

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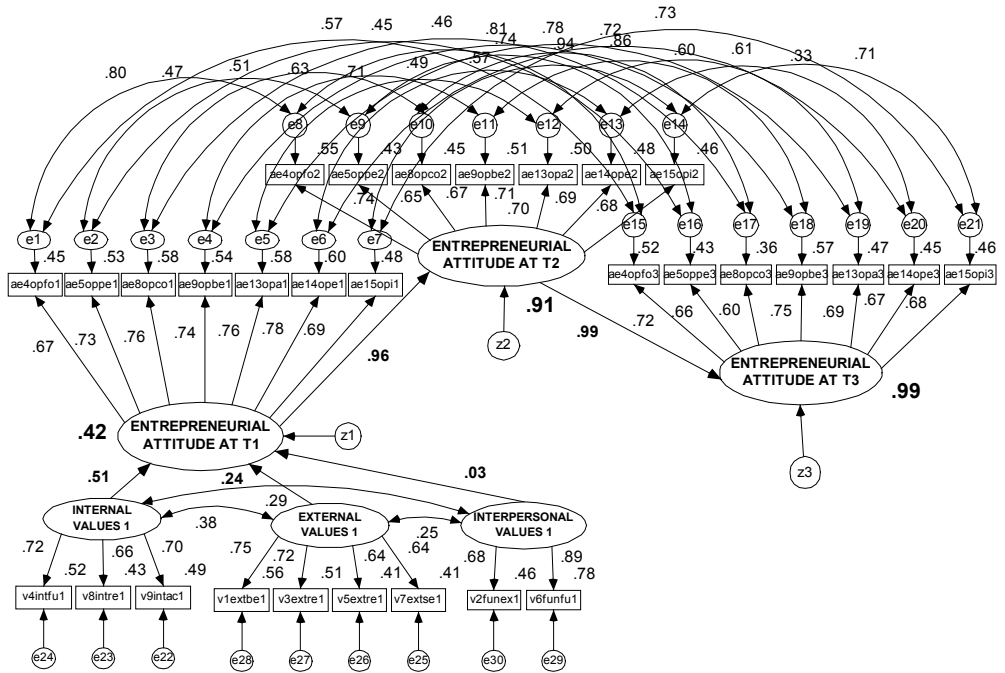
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Exhibit 1: Conceptual Model**Exhibit 2: Means and Standard Deviations at T₁, T₂, and T₃**

Construct	Group	N	Mean	Std. Deviation
Internal Values	Entrepreneurs	287	6.02	1.44
	Non-Entrepreneurs	106	4.53	1.72
External Values	Entrepreneurs	287	5.58	1.37
	Non-Entrepreneurs	106	5.25	1.56
Interpersonal Values	Entrepreneurs	287	5.52	1.49
	Non-Entrepreneurs	106	5.43	1.64
Entrepreneurial Attitude - T ₁	Entrepreneurs	287	5.74	1.44
	Non-Entrepreneurs	106	4.59	1.67
Entrepreneurial Attitude - T ₂	Entrepreneurs	287	6.59	1.22
	Non-Entrepreneurs	106	6.71	1.37
Entrepreneurial Attitude - T ₃	Entrepreneurs	287	5.83	1.20
	Non-Entrepreneurs	106	4.72	1.48

Exhibit 3.1: Nascent Entrepreneurs/Entrepreneurs Structural Model T₁ to T₃



Structural Model
VALUES & ENTREPRENEURIAL ATTITUDE T1 - T3

Exhibit 3.2: Non-Entrepreneurs Structural Model T₁ to T₃

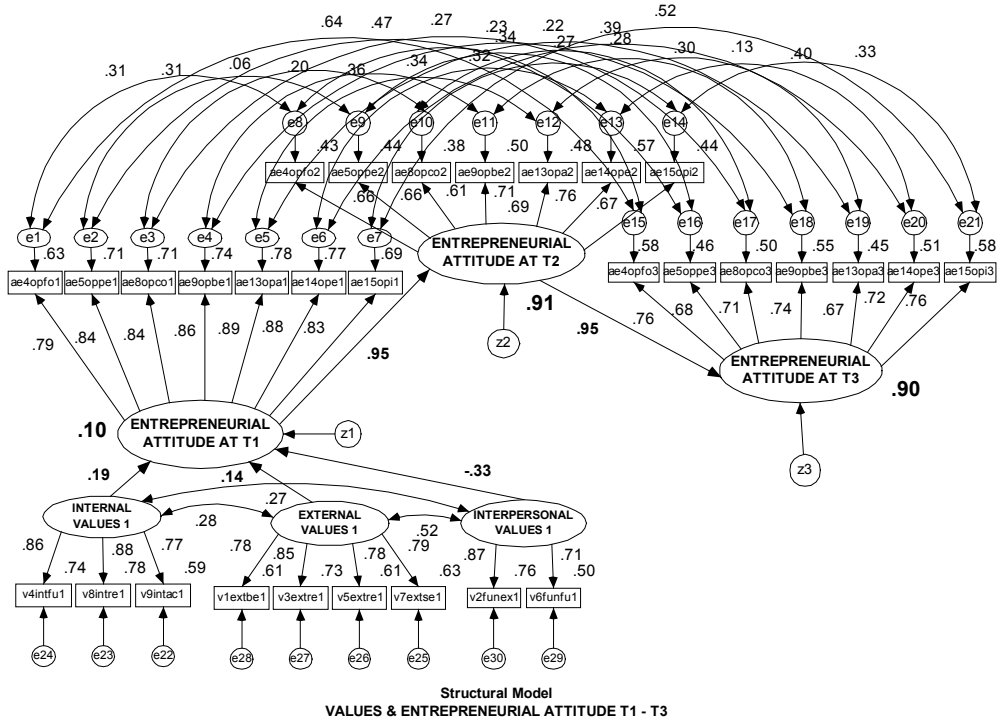


Exhibit 4: Independent-samples t-test Results at T₁, T₂, and T₃

Construct	Variance Assumption	Levene's Test for Equality of Variances		t-test for Equality of Means													
		F		Sig.		t		df		Sig. (2-tailed)		Mean Diff		SE Diff		95% Confidence Interval of the Difference	
		Lower	Upper	Upper	Lower	Lower	Upper	Upper	Lower	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Internal Values	Equal variances assumed	5.931	.015	8.609	391	.000	1.489	.173	1.149	1.829							
	Equal variances not assumed			7.940	162.525	.000	1.489	.188	1.119	1.859							
External Values	Equal variances assumed	2.953	.087	2.030	391	.043	.328	.162	.010	.646							
	Equal variances not assumed			1.907	167.462	.058	.328	.172	-.012	.668							
Interpersonal Values	Equal variances assumed	.868	.352	.519	391	.604	.090	.174	-.252	.433							
	Equal variances not assumed			.496	172.647	.620	.090	.182	-.269	.450							
Entrepreneurial Attitude – T ₁	Equal variances assumed	5.153	.024	6.721	391	.000	1.151	.171	.815	1.488							
	Equal variances not assumed			6.281	166.063	.000	1.151	.183	.789	1.513							
Entrepreneurial Attitude – T ₂	Equal variances assumed	3.874	.050	-.854	391	.393	-.122	.144	-.405	.160							
	Equal variances not assumed			-.812	170.897	.418	-.123	.151	-.421	.176							
Entrepreneurial Attitude – T ₃	Equal variances assumed	9.471	.002	7.667	391	.000	1.115	.145	.829	1.400							
	Equal variances not assumed			6.962	158.553	.000	1.115	.160	.798	1.431							

THE POST-HISTORY OF ENTREPRENEURS: IMPACT OF BUSINESS OWNERSHIP EXPERIENCE ON CAREERS AND WAGES



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ABSTRACT

This study uses detailed longitudinal matched employer-employee data to examine the impact of entrepreneurial experience on job assignments, careers, and wages. The results suggest that there are significant differences in career mobility between former business owners and individuals who were always wage employees. While former business owners are, on average, paid less than other workers in the same hierarchical level, they enter firms at higher job levels and progress faster up the hierarchy, earning a labor market premium for entrepreneurial experience. The worker-firm match plays a significant role in generating this result, which contradicts previous empirical works on the subject.

INTRODUCTION

A considerable amount of theoretical and empirical work in economics focuses on individual choices between wage employment and entrepreneurship (or business ownership). Seminal work by Lucas (1978) and Jovanovic (1982) provide the basis for a significant stream of literature linking entrepreneurial ability to firm size dynamics, and the evolution of markets. Another literature stream examines the role played by pecuniary and non-pecuniary rewards in the occupational choice between self-employment and wage employment (see, for instance, Rees and Shah, 1986; and Taylor, 1996).

Conversely, only a few recent studies examine how well individuals who forsake business ownership and return to wage employment fare in the labor market. Research comparing earnings of former business owners who have become wage employees with those of others of similar age and educational background who did not experience self-employment over their careers provides mixed results and generally fails to account systematically both for the matching between worker and firm characteristics, and the specifics of career dynamics within firms.

The present study uses longitudinal matched employer-employee data that include detailed information about individuals' backgrounds, job assignments, and career progress within firms to examine the impact of business ownership experience on job assignments, careers and wages.

The following section provides the background for this study and surveys the empirical literature examining wage incomes and the labor market performance of former business owners. The third section describes the data used in the present study. Section four presents empirical evidence on the role played by business ownership experience in the internal economics of the

firm with regard to careers, while section five focuses on wages. Section six concludes by proposing an explanation for the main empirical results.

For the purpose of this study, a broad definition of entrepreneur is used, which deliberately overlaps with that of business owner, not delving into a conceptual distinction between those terms. The same applies for the definition of entrepreneurship, which must be understood in a broad economic sense. The terms 'entrepreneur' and 'business owner' will be used interchangeably in the present work as including those individuals who report themselves as business owners, regardless of whether they have full or partial ownership, and have started, acquired or inherited the business.

BACKGROUND

Business Ownership Experience and Theories of Job Assignment, Wage, and Promotion Dynamics

While entrepreneurship's links with risk/uncertainty and innovation have lately taken the spotlight, entrepreneurial activities have also been connected with coordination and supervision tasks at least since the work of Say (1803/1971). For Marshall (1890/1930), within the firm, the owner/entrepreneur bears all the responsibility and exercises all control. He directs production, and he is both the manager and employer. Kaldor (1934) stresses that, in addition to uncertainty-bearing, the "entrepreneurial function" includes supervision and coordination. Supervision is necessary in the case of cooperative production in order to ensure that contracts already entered into should, in fact, be carried out. Coordination, on the other hand, is that part which determines what sort of contracts should be entered into.

It may be argued therefore that the exercise of business ownership should provide former entrepreneurs with experience in organizing, supervising and coordinating activities in firms. This experience may be valued by hiring firms as a positive signal when hiring and promoting to the higher levels of their hierarchy.

Assignment models of the distribution of earnings across firms and industries begin with Tinbergen (1951) and Roy (1951). Sattinger (1993) reviews models explaining the distribution of earnings as a result of the market economy's solution to the problem of assigning workers to jobs. Such models arise from a variety of related issues, including occupational choice; self-selection bias; human capital and skill prices; wage differentials and the organization of hierarchies.

Human capital theory (Becker, 1962; 1964/1975) states that individuals can acquire abilities through education and on-the-job training. These positively impact individual productivity and, consequently, earnings. While some forms of human capital are general and should impact individual productivity in a wide range of jobs, others are specialized (Topel, 1991; Becker and Murphy, 1992), and are associated with specific industries, firms, or tasks. The assignment of workers to jobs in the economy should then occur as a result of the knowledge firms and workers have of the output from each specific worker-job match. However, such knowledge is usually imperfect (Spence, 1975).

One mechanism for job assignment is learning. While workers acquire general human capital through schooling and firm- and task-specific human capital through experience and on-the-job training, firms learn about workers' true abilities and productivity through observation. Workers

may be sorted into jobs through mechanisms of screening and signaling (Stiglitz, 1975; Spence, 1973), or a matching process of workers to jobs occurs over time (Jovanovic, 1979; 1984).

Baker et al. (1994a) provide evidence that firms use the job assignments of workers as a signal of ability (see also Waldman, 1984; Bernhardt, 1995). It can then be argued that firms should seek those with organization and supervisory/coordination experience when filling up vacancies in managerial levels of the hierarchy which typically require these abilities. If business ownership is perceived as providing such abilities, then it is possible that entrepreneurial experience may be interpreted as a signal in the employment of supervisors/managers.

The assignment of workers to jobs across firms and industries is also influenced by the scale of operations of firms. More resources, in the form of capital, labor, and supervising and coordinating responsibility, are allocated to workers with greater supervisory/coordination abilities, since these resources will have a greater effect on output when allocated to those workers. This means that workers with greater specific human capital associated with the organization and oversight of resources will be assigned more resources to administer and, through these resources, will have a greater impact on a firm's output. For a fixed number of such workers, the larger the scale of operations of the firm, the larger will be the amount of resources allocated to them and the larger their impact on output (Mayer, 1960; Williamson 1967; Rosen, 1981; Spurr, 1987).

Human capital and signaling theories hold that wages in firms reward experience acquired in the labor market due to the accumulation of skills (Mincer 1974; Becker, 1964/1975) and its signaling value (Spence, 1973). Individuals can acquire specific skills through on-the-job training, thus increasing their productivity. Under perfect information, or with efficient screening/signaling, the pecuniary value of labor market experience should translate into higher earnings (Mincer 1974) because experienced and educated workers are expected to be more productive and are consequently rewarded with higher earnings. If entrepreneurial experience provides individuals with specific skills in supervisory/coordination tasks, such experience may allow them to have a significant impact on firm productivity as wage employees.

Gibbons and Waldman (1999) provide a general framework integrating job assignment, human-capital acquisition, and learning capturing several empirical findings concerning wage and promotion dynamics inside firms. In particular, their model provides a rationale for some important features of the internal economics of the firm (Baker et al., 1994a; 1994b): first, job assignments (i.e. hierarchical levels) are a stronger determinant of wage levels than human capital or any other observed characteristic of workers; second, there is a significant overlap between wages in adjacent hierarchical levels; and third, wage increases are serially correlated, and promotions are associated with large wage increases, but wage increases at promotion are small relative to the difference between average wages across levels of the job ladder.

In an extension to their model, Gibbons and Waldman (2006), show that the existence of task-specific human capital allows for the explanation of another characteristic of the internal economics of the firm: the existence of cohort effects. The basic explanation for the cohort effect (Gibbons and Waldman, 2004; 2006) is that human capital accumulation is task-specific and its effect on productivity diminishes the further up a worker climbs in the job ladder. Some of a worker's acquired human capital goes unused when a worker is promoted and is assigned a new set of tasks. Hence, workers entering into lower levels in the job ladder accumulate human capital that is specific to the execution of tasks performed in those lower levels – being unlikely to acquire

human capital specific to the supervisory/coordination activities required at higher levels. This means that their career progress will be slower than that of individuals who possess such human capital.

Business Ownership Experience and Wage Earnings

Empirical work on the impact of business ownership experience on careers in firms is, to our knowledge, non-existent. Some recent work has examined the impact of such experience on individuals' wages, while other studies have compared earnings in self-employment with those in paid employment. In general these studies argue that business ownership experience should exert a negative influence on earnings, as wage employees benefit from on-the-job training while former business owners do not (Williams, 2000). Business owners may not acquire the kind of firm-specific or industry-specific human capital that represents a positive signal in wage employment. No reference is made to the role played by task-specific human capital.

In their path-breaking study, Evans and Leighton (1989) find no clear evidence that the return to experience in business ownership is different than the return to experience in wage work. When examining the possibility of a labor market 'stigma' for individuals with previous self-employment experience, Hamilton (2000) finds that a brief experience as a business owner yields a positive effect on subsequent wages as an employee, but that such effect wears away when long spells of entrepreneurial experience are considered.

Only recently empirical analyses have paid attention primarily to the effects of entrepreneurial experience on individuals' earnings after they exit business ownership and switch into wage employment. Typically, empirical works on this subject find effects of business ownership experience on future employment earnings that are of small magnitude and weakly significant.

Generally, even when positive, the effect of self-employment experience on future wages is found to be smaller than the effect of past experience as a wage employee. Sometimes it is even negative (Williams, 2000; Bruce and Schuetze, 2004; Hyytinen and Rouvinen, 2008). However, these studies fail to account for the characteristics of the companies employing the former business owners. In particular, no evidence of where in the job assignment structure of firms do former business owners end up is provided.

In general, the empirical evidence concerning the wage returns to business ownership experience is mixed and suffers from important limitations. In particular, firm-specific determinants of wages are rarely considered due to data unavailability, leading to possible bias in the results. Moreover, the studies do not address features of the internal economics of firms such as job assignments and promotions, thus providing an incomplete picture of the role played by business ownership experience on wage and career dynamics. The present study contributes to the literature by addressing these issues.

DATA

This study uses the *Quadros de Pessoal* (QP) micro-data, a longitudinal matched employer-employee data set including extensive information on the mobility of Portuguese workers and business owners gathered yearly by the Portuguese Ministry of Labor from all private establishments with at least one wage-earner. The survey collects detailed information on each individual employee and it also collects basic information about the firm for the period 1986-2003.

Sample

Our sample comprises all young male individuals present in 1995 who appear as employees in at least one year from 1986 to 2003. We trace backwards the individuals' experiences in the labor market between 1986 and 1995, including their complete work history in their current firms, and then observe hourly wages and other variables over the period 1995-2003. The analysis is restricted to males, who account for 61 percent of all individuals present in the data set in 1995 who were aged between 16 and 25 in 1986, corresponding to 40 percent of the original sample. By excluding individuals over 25 years old, the analysis focuses on young individuals who have finished their formal education and have already entered the labor market. Furthermore, it mitigates the issue of initial conditions arising from comparing individuals with very dissimilar work experiences and ages.

Former Business Owners and Wage Employees

Table 1 presents the descriptive statistics for the complete sample, comparing former business owners with those individuals who were always wage employees. Generally, former business owners are better educated on average than individuals who were always on wage employment. Focusing exclusively on the higher level of education, only a very small percentage of individuals have this degree (3.2 percent) and the proportion of former business owners with tertiary education is twice the same proportion for individuals who were always wage employees (6.4 percent vs. 3.2 percent). Finally, average experience in wage employment of former business owners is higher than for individuals who were never business owners, but former business owners are, on average, older than wage employees. The majority of former business owners find employment in smaller firms when compared with wage employees.

EVIDENCE ON JOB ASSIGNMENTS

The distribution of hierarchical levels is different for former business owners than wage employees (descriptive tables are available upon request). A striking feature of the data is that the allocation of ex-business owners to top hierarchical levels is exceptionally high when compared with that of individuals who were always wage employees, especially ex-business owners are particularly concentrated in the top three hierarchical levels. These may be considered the 'managerial' levels, i.e. the ones where organizing, supervisory and coordinating tasks are likely to represent the majority of requirements. The same pattern of job assignment is present across firm size; however, the differences in the top levels between former business owners and wage employees are more obvious in micro and small firms.

It is important to check whether a relationship between the hierarchical level and worker tenure within the firm is identifiable. Results (not reported here but available from the author upon request) show that for the higher hierarchical levels – from highly-skilled professionals to top managers – the proportions at time of entry of former business owners are higher than those of individuals who were always wage employees. As years of tenure increase, we observe the expected movement up the hierarchy for both types of workers, but former business owners are promoted more frequently than the workers who were never business owners.

Entry

We begin by analyzing the job assignment at entry through the estimation of a (pooled) probit in order to determine if the differences observed between the two types of workers – with

and without business ownership experience – are reflected in the estimates on past experience, controlling for the remaining individual attributes and the characteristics of the firm.

Table 2 presents the estimation results for job assignment at entry. The linear effect of business ownership experience on the probability of assignment to the top three hierarchical levels (13.2 percent) is considerably higher than the corresponding effect of wage employee experience (1.5 percent). The partial effect is more pronounced for medium firms. For larger firms, the magnitude of the coefficients of business ownership experience and wage employee experience is almost the same. The quadratic term does not change this relative magnitude. These results strongly suggest that business ownership experience is more valued at the moment of hiring than prior wage work experience, regardless of the hiring firm's size.

Promotions

In the previous section it became clear that former business owners are more likely to be assigned to higher levels in the firms' hierarchies at the time of hiring than wage employees of comparable characteristics. In this context, one plausible question arises: once entering a firm, do former business owners progress faster up the hierarchy? Results (not reported here but available upon request) show that former business owners spend less time at each hierarchical level than individuals who were always wage employees, except for micro and small firms, for the intermediary manager level. It can also be said that, for former business owners, the larger the firm, the shorter the time spent in the same hierarchical level. While for small- and micro-firms the differences are insignificant, in large firms, former business owners take less time to move from intermediary to top manager. These pattern fits into the concept of promotion 'fast tracks' in larger firms: those individuals who are promoted sooner are more likely to be promoted sooner again (Baker et al., 1994a; Ariga et al., 1999; and Seltzer and Merrett, 2000).

It is important to check whether the pattern of promotions identified above is particularly significant for the top three hierarchical levels (where supervisory/coordination abilities are likely to be of greater importance). **Table 3** presents probit estimates for the probability of being promoted to the top-three hierarchical levels (supervisors, intermediate and top managers) from non-managerial levels. The estimations provide evidence of the differences observed between the partial effect of past experience as former business owner and as wage employee. The dependent binary variable is equal to one if the worker is promoted from non-managerial/supervisory hierarchical levels to the top three levels, and zero otherwise. The estimation results show that one year of past business ownership experience holds a higher effect on the probability of being promoted to the top levels of the hierarchy than one year of past experience as wage employee. As firm size increases, the probability of a former business owner being promoted to a managerial position decreases, but is always superior to the probability of a wage employee being promoted to a managerial position.

EVIDENCE ON EARNINGS

Individual earnings are compared using hourly wages (while in wage employment) over the period 1995-2003 as the variable of interest. We investigate whether experience as a business owner (including the necessary skills to start a business and the skills acquired during business ownership) has a significant impact on the individuals' labor market earnings while wage employees. Years of experience as a business owner and as a wage employee are included as explanatory

variables. The coefficients of experience are used to determine the value of the two types of human capital. Other explanatory variables include individual characteristics (education and tenure); hiring firm characteristics (size, industry, and region); and also the hierarchical levels.

Empirical Specification

We specify a panel data model of wage determination as

$$\log(w_{ijt}) = x_{ijt}\beta + z_{ijt}\delta + v_{ijt} \quad (1)$$

where i indexes individual, j indexes firm, and t indexes time period; w_{ijt} is the hourly wage received by individual i in period t when employed in firm j ; x_{ij} is a vector of individual characteristics including education (three dummy variables), tenure (and its squared term), years of accumulated experience as a business owner (and its squared term), and years of accumulated experience as a wage-worker (and its squared term); z_{ij} is a vector of characteristics of the firm employing individual i , including size, industry, administrative region, and also hierarchical levels; and v_{ijt} is the error term.

Equation (1) can be estimated by a fixed effects model as

$$\log(w_{ijt}) = x_{ijt}\beta + z_{ijt}\delta + \alpha_i + \gamma_j + u_{ijt} \quad (2)$$

Earnings at Entry

This section introduces wage equations at the moment of entry. Only workers with one year of tenure are included in the regressions. The advantage of estimating wages at entry is that the results are not affected by tenure, but only by the worker-firm match at the moment of hiring.

Table 4 displays the results for the estimation of wage equations at the hiring year. The statistically significant variables associated with the accumulation of human capital have a positive effect on entry wages. Moreover, experience as business owner and experience as employee show decreasing returns, as the coefficients on the quadratic terms are generally negative. Considering both individual and firm characteristics at the moment of entry, employers seem to value business ownership less than wage employment experience, thus penalizing entrepreneurial experience with a lower wage premium. Ex-entrepreneurs see their wage increased by about 2.3 percent for every additional year of entrepreneurial experience, while every additional year of previous experience as an employee increases wages by 4.7 percent, though the negative quadratic term is higher.

When information about hierarchical levels is added, the linear coefficient of experience as an entrepreneur becomes negative, but not significant. However, we know that ex-entrepreneurs have a higher probability of being assigned to higher hierarchical levels at entry. The evidence seems to show that individuals with entrepreneurial experience capture higher earnings at entry not by a direct reward to that same experience, but rather by being hired to higher places in the hierarchy.

Rewards to Business Ownership Experience

In order to understand the effect of business ownership experience on wages, this section presents wage equations for the period 1995-2003 for all individuals (without any restriction on tenure). **Table 5** presents wage regressions comparing the explanatory power of human capital variables and level dummy variables. With this specification we capture the average effects of the

regressors. Column 1 presents a pooled OLS estimation and as with a typical wage regression, the variables associated with the accumulation of human capital have a positive, statistically significant effect on wages. Moreover, tenure, experience as business owner, and experience as employee show decreasing returns, as the coefficients of the quadratic terms are negative.

The regression in column 2 includes also information about employees' hierarchical levels. In this regression, wages decrease by 2.3 percent for every additional year of previous experience as business owner. There is an increase of about 1.6 percent for every additional year of previous experience as an employee. These results show that the increase in wage associated with one more year of experience as a business owner is less than would be achieved if that additional year was spent in wage employment. Therefore, at first glance, evidence seems to confirm the idea that past experience as a business owner may be associated with a penalty, or a stigma of failure. This would, however, be at odds with the results concerning entry levels and promotions.

Rewards Accounting for Worker-firm Fixed Effects

The focus of this section is on fixed effects estimation, given the panel of individuals and firms, which allows us to account for individual and firm unobserved heterogeneity, as presented in equation (2). **Table 6** shows results for the estimation of wage equations with the worker-firm fixed effects specification. In this regression, the identification of the coefficients is only possible by the variation of the individual characteristics under consideration within a spell in a specific firm. Focusing on the results of column 2, employers seem to value entrepreneurial experience higher than wage employment experience, thus rewarding ex-entrepreneurs with a wage premium. This is an important result, since previous studies of this topic in the literature (who have found generally opposite effects) have taken into account variables concerning tenure and human capital indicators, but left out firm-level variables and, therefore, the specific worker-firm match.

CONCLUDING REMARKS

This study examines the effect of business ownership experience on careers and earnings in firms, compared with wage employment experience. We look at the moment of entry and at career and wage progression within firms for individuals who were business owners for at least one year and for individuals who are never business owners. The results suggest that there are significant differences in career mobility between former business owners and individuals who were always wage employees. Former business owners have a greater probability of entering a firm at a high job level than other individuals and progress faster up the job ladder. Moreover, while the direct effect of business ownership experience on wages does not seem to be higher than the effect of wage employment experience, former business owners capture a wage premium through better career prospects, as they are more concentrated at the top of the hierarchy and hold lower tenure in between promotions. This suggests that even if former business owners may receive lower wages than individuals occupying the same hierarchical position who have no entrepreneurial experience, the labor market rewards former business owners with higher hierarchical positions, leading to an overall earnings premium.

One explanation for these results is that ex-business owners may possess a kind of task-specific human capital (Gibbons and Waldman, 2004; 2006). In particular, entrepreneurial experience may allow individuals to accumulate greater experience in organizing, supervising, coordinating and planning activities. Firms may use entrepreneurial experience as an outside signal about the work-

ers' ability (Waldman, 1984; Bernhardt, 1995) to perform in higher hierarchical levels, and thus hire former business owners to higher level jobs. The higher the job level a worker is assigned to, the more likely he is to acquire more supervisory/coordination ability. If this ability is an important requirement for career progress, then ex-business owners, being more likely to have initially been assigned to a higher job level, should also progress faster up the job ladder. This effect is akin to the cohort effect highlighted by Gibbons and Waldman (2006).

Results also suggest that human capital and imperfect information play the main role in generating a labor market premium for entrepreneurial experience. The fact that former business owners possess an observable characteristic that leads them to be hired to higher job levels (regardless of firm size, although the effect is stronger in small firms) provides them with an important advantage which is amplified by the fact that such assignment increases the amount of task-specific human capital required to progress up the job ladder. Even though wages increase with firm size (a common result in the literature), most former business owners are hired by micro and small firms, suggesting that scale of operations is not a central determinant of the labor market premium awarded to former business owners.

Further work is necessary to address some unanswered questions. One issue regards success in entrepreneurship. This research does not distinguish between ex-entrepreneurs who closed their business due to lack of financial viability, and those who sold or closed successful businesses. Results suggest that the acquisition of the kind of task-specific human capital (or other observable characteristic) required by firms does not seem to depend on entrepreneurial success. However, performance in wage employment may differ between successful and unsuccessful ex-entrepreneurs. Also, we have seen that micro and small firms hire the majority of ex-entrepreneurs. This suggests that large and medium firms may value entrepreneurial experience less when compared with, for instance, general human capital acquired in formal education. An obvious development would be to examine which manufacturing and service sectors hire the majority of ex-entrepreneurs, and whether ex-entrepreneurs are hired by firms in the same sectors where they developed their entrepreneurial activity. Such work would shed light on the interaction between entrepreneurial experience and industry-specific experience as sources of human capital.

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Table 1: Descriptive statistics, 1995-2003

Variables	All workers	Former business owners	Wage employees
Wage per hour (logarithm)	1.389 [0.546]	1.439 [0.606]	1.388 [0.545]
Age	30.176 [5.336]	33.073 [4.459]	30.138 [5.336]
Tenure	7.021 [5.108]	5.913 [5.750]	7.035 [5.111]
9-years education	0.166 [0.372]	0.187 [0.390]	0.166 [0.372]
Secondary education	0.167 [0.373]	0.191 [0.393]	0.166 [0.372]
College education	0.032 [0.177]	0.064 [0.244]	0.032 [0.176]
Experience as business owner	1.032 [0.380]	3.495 [2.269]	-- --
Experience as employee	12.134 [6.318]	13.074 [6.488]	12.122 [6.315]
Firm size (logarithm)	4.205 [2.226]	3.164 [1.871]	4.218 [2.227]
N	2,414,623	30,904	2,383,719

Notes: Standard deviation between brackets underneath the mean. Hourly wage is calculated by dividing the sum of base wage with regular payments by the number of monthly paid hours, deflated using the *Consumer Price Index*. Tenure, experience as business owner, and potential experience as employee are measured in years. 9-years of education, secondary education, and college education are defined as dummy variables.

Table 2: Probit for job assignment at entry (marginal effects)

Variables	All firms	Micro and small firms	Medium firms	Large firms
	(1)	(2)	(3)	(4)
9-years education	0.0643*** [0.0022]	0.0701*** [0.0029]	0.0639*** [0.0042]	0.0278*** [0.0053]
Secondary education	0.1963*** [0.0033]	0.1968*** [0.0044]	0.2151*** [0.0063]	0.1383*** [0.0073]
College education	0.7956*** [0.0038]	0.7707*** [0.0061]	0.8311*** [0.0055]	0.7724*** [0.0114]
Experience as business owner	0.1315*** [0.0031]	0.1497*** [0.0037]	0.0285*** [0.0043]	0.0146** [0.0065]
Experience as business owner ² x 10 ⁻²	-0.7982*** [0.0416]	-0.9139*** [0.0486]	-0.1057** [0.0516]	-0.0379 [0.0678]
Experience as employee	0.0148*** [0.0004]	0.0138*** [0.0005]	0.0150*** [0.0007]	0.0146*** [0.0010]
Experience as employee ² x 10 ⁻²	-0.0184*** [0.0011]	-0.0193*** [0.0015]	-0.0132*** [0.0020]	-0.0128*** [0.0028]
Firm size (log)	-0.0077*** [0.0003]	-0.0206*** [0.0008]	0.0026* [0.0016]	-0.0143*** [0.0020]
Year dummies	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes
Region dummies				
Yes				Yes
Yes				
Yes				
Observations	322,132	198,585	86,128	37,416
Wald χ -squared	31408.50	18851.10	10457.21	4629.46
Pseudo R-squared	0.244	0.282	0.231	0.213

Notes: Dependent binary variable equals one if the worker is assigned to one of the top three hierarchical levels, and zero otherwise, at the moment of hiring. Experience as business owner, and experience as employee are measured in years. 9-years of education, secondary education, and college education are defined as dummy variables. Industry dummies are defined for in two-letter ISIC classification. Firm size is divided into three classes: micro and small firms (less than 50 employees); medium firms (between 50 and 499 employees); large firms (more than or equal to 500 employees). Standard errors are in brackets. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Table 3: Probit for promotion (marginal effects)

Variables	All firms	Micro and small firms	Medium firms	Large firms
	(1)	(2)	(3)	(4)
Tenure	0.0012*** [0.0001]	0.0007*** [0.0001]	0.0013*** [0.0001]	0.0024*** [0.0002]
Tenure ² x 10 ⁻²	-0.0017*** [0.0004]	-0.0003 [0.0004]	-0.0020*** [0.0007]	-0.0064*** [0.0010]
9-years education	0.0168*** [0.0005]	0.0152*** [0.0007]	0.0177*** [0.0010]	0.0165*** [0.0011]
Secondary education	0.0428*** [0.0008]	0.0365*** [0.0011]	0.0459*** [0.0015]	0.0417*** [0.0017]
College education	0.2352*** [0.0055]	0.2449*** [0.0101]	0.2956*** [0.0103]	0.1798*** [0.0093]
Experience as business owner	0.0185*** [0.0006]	0.0179*** [0.0006]	0.0056*** [0.0016]	0.0070** [0.0028]
Experience as business owner ² x 10 ⁻²	-0.1070*** [0.0082]	-0.1063*** [0.0082]	-0.0461* [0.0250]	-0.0674 [0.0471]
Experience as employee	0.0009*** [0.0001]	0.0009*** [0.0001]	0.0008*** [0.0001]	0.0003* [0.0002]
Experience as employee ² x 10 ⁻²	0.0000 [0.0002]	-0.0011*** [0.0003]	0.0009* [0.0005]	0.0048*** [0.0007]
Firm size (log)	0.0001 [0.0001]	0.0018*** [0.0002]	-0.0012*** [0.0003]	-0.0017*** [0.0003]
Year dummies	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes
Region dummies	Yes	Yes	Yes	Yes
Observations	1,418,933	729,745	426,565	262,549
Wald χ^2 -squared	22819.08	12885.67	7877.73	4167.22
Pseudo R-squared	0.085	0.113	0.084	0.068

Notes: Dependent binary variable is equal to one if the worker is promoted from non-supervision hierarchical level to supervision hierarchical level, and zero otherwise. Tenure, experience as business owner, and experience as employee are measured in years. 9-years of education, secondary education, and college education are defined as dummy variables. Industry dummies are defined for in two-letter ISIC classification. Firm size is divided into three classes: micro and small firms (less than 50 employees); medium firms (between 50 and 499 employees); large firms (more than or equal to 500 employees). Standard errors are in brackets. * Significant at 10%; ** significant at 5%; *** significant at 1%.

Table 4: Wage equations at entry – pooled OLS

Variables	(1)	(2)
9-years education	0.1286*** [0.0022]	0.0752*** [0.0020]
Secondary education	0.3565*** [0.0031]	0.1948*** [0.0028]
College education	1.1500*** [0.0071]	0.5197*** [0.0076]
Experience as business owner	0.0225*** [0.0040]	-0.0042 [0.0034]
Experience as business owner ² x 10 ⁻²	-0.0587 [0.0486]	0.0091 [0.0393]
Experience as employee	0.0467*** [0.0006]	0.0269*** [0.0005]
Experience as employee ² x 10 ⁻²	-0.0872*** [0.0017]	-0.0531*** [0.0015]
Firm size (log)	0.0436*** [0.0005]	0.0497*** [0.0004]
Hierarchical level		
2: non-skilled professionals		0.0134*** [0.0025]
3: semi-skilled professionals		0.1042*** [0.0026]
4: skilled professionals		0.2215*** [0.0022]
5: higher-skilled professionals		0.5016*** [0.0049]
6: supervisors and team leaders		0.5101*** [0.0060]
7: intermediary managers		0.7548*** [0.0073]
8: top managers		0.9877*** [0.0084]
Intercept	0.2295*** [0.0077]	0.3495*** [0.0071]
Year dummies	Yes	Yes
Industry dummies	Yes	Yes
Region dummies	Yes	Yes
Observations	295,408	287,772
F test	2404.73	3418.18
R-squared	0.375	0.490

Notes: Dependent variable is the logarithm of hourly wage in the year of hiring. Experience as business owner, and experience as employee are measured in years. 9-years of education, secondary education, and college education are defined as dummy variables. Industry dummies are defined for in two-letter ISIC classification. Apprentices (level 1) are the comparison group in the hierarchical level dummies. Robust standard errors are in brackets. Significant at 10%; ** significant at 5%; *** significant at 1%.

Table 5: Wage equations – pooled OLS, 1995-2003

Variables	(1)	(2)
Tenure	0.0319*** [0.0002]	0.0186*** [0.0002]
Tenure ² x 10 ⁻²	-0.0475*** [0.0012]	-0.0274*** [0.0011]
9-years education	0.1754*** [0.0014]	0.1137*** [0.0012]
Secondary education	0.4059*** [0.0019]	0.2435*** [0.0016]
College education	1.1403*** [0.0037]	0.5421*** [0.0035]
Experience as business owner	0.0311*** [0.0029]	-0.0226*** [0.0026]
Experience as business owner ² x 10 ⁻²	-0.0888** [0.0367]	0.1925*** [0.0315]
Experience as employee	0.0254*** [0.0003]	0.0162*** [0.0002]
Experience as employee ² x 10 ⁻²	-0.0205*** [0.0010]	-0.0194*** [0.0008]
Firm size (log)	0.0589*** [0.0003]	0.0572*** [0.0002]
Hierarchical level		
2: non-skilled professionals		0.0028* [0.0015]
3: semi-skilled professionals		0.1055*** [0.0014]
4: skilled professionals		0.2088*** [0.0013]
5: higher-skilled professionals		0.4643*** [0.0023]
6: supervisors and team leaders		0.4733*** [0.0025]
7: intermediary managers		0.7282*** [0.0033]
8: top managers		0.9741*** [0.0038]
Intercept	0.2933*** [0.0045]	0.3739*** [0.0039]
Year dummies	Yes	Yes
Industry dummies	Yes	Yes
Region dummies	Yes	Yes
Observations	2,414,602	2,366,191
F test	14158.56	19659.73
R-squared	0.514	0.613

Notes: Dependent variable is the logarithm of hourly wage. Experience as business owner, and experience as employee are measured in years. 9-years of education, secondary education, and college education are defined as dummy variables. Industry dummies are defined for in two-letter ISIC classification. Apprentices (level 1) are the comparison group in the hierarchical level dummies. Robust standard errors are in brackets. Significant at 10%; ** significant at 5%; *** significant at 1%.

Table 6: Wage equations – worker-firm fixed effects, 1995-2003

Variables	(1)	(2)
Tenure	0.0155*** [0.0028]	0.0117*** [0.0027]
Tenure ² x 10 ⁻²	-0.0473*** [0.0010]	-0.0409*** [0.0010]
9-years education	-0.0011 [0.0019]	-0.0016 [0.0019]
Secondary education	0.0017 [0.0029]	0.0017 [0.0029]
College education	0.0394*** [0.0049]	0.0350*** [0.0049]
Experience as business owner	0.0405*** [0.0116]	0.0325*** [0.0123]
Experience as business owner ² x 10 ⁻²	-0.0648 [0.2608]	0.0986 [0.3044]
Experience as employee	-0.0046*** [0.0005]	-0.0043*** [0.0005]
Experience as employee ² x 10 ⁻²	0.0164*** [0.0013]	0.0145*** [0.0014]
Firm size (log)	0.0359*** [0.0009]	0.0336*** [0.0009]
Hierarchical level		
2: non-skilled professionals		0.0432*** [0.0018]
3: semi-skilled professionals		0.0696*** [0.0015]
4: skilled professionals		0.0957*** [0.0014]
5: higher-skilled professionals		0.1336*** [0.0019]
6: supervisors and team leaders		0.1718*** [0.0022]
7: intermediary managers		0.1756*** [0.0024]
8: top managers		0.2198*** [0.0030]
Intercept	1.0824*** [0.0129]	1.0173*** [0.0122]
Year dummies	Yes	Yes
Industry dummies	Yes	Yes
Region dummies	Yes	Yes
Observations (number of worker-firm)	2,414,602 (757,081)	2,366,191 (748,257)
F test	4141.88	3790.7
R-squared	0.210	0.219

Notes: Dependent variable is the logarithm of hourly wage. Experience as business owner, and experience as employee are measured in years. 9-years of education, secondary education, and college education are defined as dummy variables. Industry dummies are defined for in two-letter ISIC classification. Apprentices (level 1) are the comparison group in the hierarchical level dummies. Robust standard errors are in brackets. Significant at 10%; ** significant at 5%; *** significant at 1%.

ENTREPRENEURS' KNOWLEDGE ABOUT FINANCING ALTERNATIVES: IMPACT OF HUMAN AND SOCIAL CAPITAL



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ABSTRACT

This paper examines how entrepreneurs' human and social capital influence their knowledge of finance alternatives. For this purpose, we use survey data from 125 Belgian start-ups. Results demonstrate that entrepreneurs with an education in the field of business and entrepreneurs with experience in accounting or finance have a broader knowledge of finance alternatives. This is especially the case for the less commonly used finance alternatives. Having indirect ties to people with knowledge of finance also enhances the total knowledge of finance alternatives. However, more generic human capital, such as prior entrepreneurial experience and direct ties have no impact on entrepreneurs' knowledge of finance alternatives. Overall, this study demonstrates how not only supply side factors, but also demand side factors are constraining entrepreneurs in their search for finance.

INTRODUCTION

Finance is one of the necessary resources required for entrepreneurial ventures to form and subsequently develop (Gilbert et al., 2006). Finance decisions are hence key decisions made by entrepreneurs, which bear significant implications for the operations, risk of failure, performance and future growth potential of ventures (Michaelas et al., 1999; Cassar, 2004). Traditional finance theory resorts to the framework of perfect capital markets (Modigliani and Miller, 1958). This framework assumes that information is free and directly available to all entrepreneurs, which allows entrepreneurs to make comprehensive finance decisions with wealth maximization as their ultimate goal (Brealey and Myers, 2000). Moreover, in this perspective, the supply and demand for finance are in equilibrium, which implies that all value-creating projects will find sufficient finance. Contrary to this image portrayed in traditional finance theory, entrepreneurial ventures are often confronted with finance constraints and are not able to raise sufficient outside finance necessary to conduct all their value-creating investment projects (Himmelberg and Petersen, 1994; Hubbard, 1998). As a result, the growth of entrepreneurial ventures is often restricted by internal finance (Carpenter and Petersen, 2002).

Scholars studying finance constraints within entrepreneurial ventures have largely stressed *supply*-side arguments, thereby putting the decision-making process of investors in the foreground. Within this perspective, it is generally assumed that investors will be wary to finance ventures that face high levels of information asymmetries, as information asymmetries are precursors of agency problems. Hence, young ventures, which are thought to face high information asymmetries, due to their lack of a track record, are especially prone to finance constraints (Berger and Udell, 1998). The same argument applies to technology-based ventures, which need to conduct significant investments in intangible research and development projects that carry high levels of information asymmetries (Himmelberg and Petersen, 1994).

Next to information asymmetries and associated agency problems, scholars have focused on the role of transaction costs in explaining why investors may refrain from investing in entrepreneurial ventures (Berger and Udell, 1998; Cassar, 2004). A significant fraction of transaction costs are fixed, which creates economies of scale in issue size (Wald, 1999). This further limits the finance options that are available to small ventures. The scale required to issue equity or bonds on public capital markets, for example, excludes smaller ventures from this type of finance (Berger and Udell, 1998). Transaction costs also partially explain why venture capital investors are more reluctant to invest in start-ups, as typically smaller amounts are invested at start-up. The high search and selection costs faced by venture capital investors make small investments uneconomical (Lockett et al., 2002).

Research on *demand*-side arguments, which puts the decision-making process of entrepreneurs in the foreground, is more limited, but growing rapidly. Entrepreneurs are the driving force of important decisions and entrepreneurial characteristics may hence play an important role in explaining finance decisions (Cassar, 2004). Prior research demonstrates how many entrepreneurs have other goals besides value maximization. Entrepreneurs are often unwilling, for example, to raise outside equity because of fear of losing independence and control over their ventures (Manigart and Struyf, 1997; Sapienza et al., 2003). Moreover, the limited risk tolerance of entrepreneurs may preclude them from raising outside debt finance.

This article focuses on another entrepreneurial characteristic that may restrain the finance alternatives considered by entrepreneurs, namely their knowledge of these finance alternatives. Traditional finance theories implicitly assume that all entrepreneurs are fully aware of the existence of all potential finance alternatives and their respective advantages and disadvantages. However, recent studies indicate that entrepreneurs may also face finance constraints due to the existence of a *knowledge gap*. Van Auken (2001) showed that entrepreneurs of small technology-based ventures are likely to consider only a limited set of finance alternatives, due to their limited understanding of particular finance alternatives. The goal of this study is to expand this stream of research by explaining why some entrepreneurs have a higher knowledge of finance alternatives than others. More specifically, the impact of entrepreneurs' human and social capital on their knowledge of finance alternatives is explored. We propose and show that higher levels of specific human and social capital, i.e. more experience in finance or accounting, business education and knowledgeable social networks, lead to a deeper knowledge of finance alternatives. This might at least partially explain why entrepreneurs with high levels of human capital have less binding capital constraints when starting new businesses (Astebro and Bernhardt, 2005).

In the following section, we develop the theoretical arguments and hypotheses on the impact of human and social capital on an entrepreneur's knowledge of finance alternatives. Next, we discuss the empirical strategy used to test the hypotheses and describe in detail the data and variables employed in this study. Thereafter, we present our research findings, followed by concluding remarks and avenues for future research.

THEORETICAL DEVELOPMENT

While entrepreneurs are key decision makers shaping the entrepreneurial strategy within their ventures, the literature exploring the relationship between entrepreneurial characteristics and finance strategies in entrepreneurial ventures is only emerging. In this paper, we explore the role of entrepreneurs' human and social capital on their knowledge of finance alternatives.

Prior research demonstrates how human capital influences the ease by which entrepreneurs are able to overcome finance constraints through two distinct processes. First, human capital is positively related with the wealth of entrepreneurs. Hence, entrepreneurs with more human capital can use more of their personal funds to mitigate the finance constraints experienced by their ventures (Holtz-Eakin et al., 1994; Lindh and Ohlsson, 1996). Second, the human capital of entrepreneurs serves as a quality signal. Investors are more likely to contribute finance to start-ups that have information signals indicating high-quality resources and capabilities (Hallen, 2008). Taking both effects together, Astebro and Bernhardt (2005) found that ventures established by entrepreneurs with higher human capital generally have less binding capital constraints.

We argue that the human capital of entrepreneurs may not only be associated with their personal wealth and quality signals, but also with their knowledge of finance alternatives. Financial theory typically assumes that entrepreneurs are fully aware of all finance alternatives and their characteristics. An alternative information asymmetry problem, besides the one experienced by investors, is that not all entrepreneurs have an equally broad understanding of the finance options that are available. This indicates the existence of a *knowledge gap* (Gibson, 1992). Hence, entrepreneurs will be unaware of particular finance alternatives, which will limit the set of finance options considered by entrepreneurs (Van Auken, 2001). This may lead to suboptimal finance decisions and ultimately to finance constraints.

We propose that entrepreneurs with higher levels of human capital will experience a lower knowledge gap compared to their peers with lower levels of human capital. Human capital is typically represented by both education and previous experience (Colombo and Grilli, 2005). Entrepreneurs with higher levels of education have a higher probability of having studied business finance. Moreover, given their greater learning skills, they may also have a higher ability of learning about finance alternatives after their formal education. Hence, we expect a positive association between the level of education of entrepreneurs and their knowledge of finance alternatives. Furthermore, entrepreneurs with prior experience may also have a greater knowledge of finance alternatives. Entrepreneurs with prior start-up experience, for example, may have negotiated with different types of financiers to fund these start-ups. This leads to our first hypothesis:

H1: Entrepreneurs with higher levels of generic human capital have a greater knowledge of finance alternatives.

Researchers have stressed that not all human capital is equally important, however. Specific human capital is more valuable than generic human capital (Colombo and Grilli (2005). In the context of knowledge of finance alternatives, it is likely that entrepreneurs with a business education have higher knowledge compared to entrepreneurs with higher non-business education or compared to entrepreneurs with less education. Further, entrepreneurs with previous experience in accounting or finance are more likely to have a broader and deeper knowledge of finance alternatives. This leads to our second hypothesis:

H2: Entrepreneurs with higher levels of context specific human capital have a greater knowledge of finance alternatives.

Next to human capital, entrepreneurs can also learn about finance alternatives through their social networks. Direct ties provide an advantage to entrepreneurs who seek to obtain resources from investors through access to private information (Podolny, 1994). Prior research argues that

direct ties between entrepreneurs and investors allow potential investors to improve their selection (Shane and Cable, 2002). We claim that knowledgeable direct ties, established before start-up, may also reduce information problems experienced by entrepreneurs, as they enable information transfer to entrepreneurs about potential finance alternatives and investor characteristics. For example, entrepreneurs that have close relationships with bankers are able to discuss their specific financial needs with these ties, allowing them to gain a deeper understanding of finance alternatives. Direct ties are hence not only relevant for suppliers of finance, but they also reduce information asymmetries on the demand side of the market. This leads to our third hypothesis:

H3: Entrepreneurs with knowledgeable direct ties have a greater knowledge of finance alternatives.

Information is not only transferred through direct ties, but also through indirect ties. Indirect ties provide access to more information, at a higher speed and at a lower cost compared to direct ties (Burt, 1997; Nahapiet and Ghoshal, 1998). This explains why indirect ties reduce information asymmetries for potential investors and increase the likelihood that investors will contribute finance (Shane and Cable, 2002). We expect the same processes to reduce information asymmetries for entrepreneurs as well. Hence, the knowledge gap faced by entrepreneurs who can rely on more knowledgeable indirect ties is likely to be lower compared to their peers that lack these indirect ties. This leads to the final hypothesis:

H4: Entrepreneurs with knowledgeable indirect ties have a greater knowledge of finance alternatives.

RESEARCH METHOD

Data collection strategy

A random sample of 450 Flemish ventures founded between April 2008 and September 2008 was selected from the records of business incorporation as provided by the Flemish government. Given the homogeneous sample frame, non measured variance in terms of geographical location and age is reduced. Moreover, we limit survivorship and recollection biases by sampling ventures close to the period of formation (Cassar, 2004).

A questionnaire was developed and pre-tested in the autumn of 2008. Between mid November 2008 and mid January 2009, we telephoned all ventures in order to identify whether or not they fulfilled the conditions of our research. As the focus of the research is on real start-ups, ventures that were not independent and previously existing companies that continued under a new form were excluded. This resulted in a sample of 288 independent Flemish start-ups, which were mailed the questionnaire. Several possibilities to complete and return the questionnaires were offered, including e-mail, fax, post, and web-survey. After a first mailing, 68 usable questionnaires were received. A second mailing was sent to non-respondents three weeks after the first mailing. After further telephone and e-mail follow-ups, a total of 125 usable questionnaires were returned. This results in a response rate of 43%. The majority of respondents (84%) completed the questionnaire using the web-survey.

The questionnaire was organized in three main sections. The first section collected information about the venture (name, current function of the respondent, venture origin, number of founders, whether formal financial planning was conducted at start-up or not). The second

section asked respondents to what degree they are familiar with finance alternatives (e.g. loans, supplier credit, leasing, venture capital, factoring and bonds among other finance alternatives). The third section of the questionnaire asked respondents to list their prior experience, education and ties with finance experts.

Variables

Table 1 gives an overview of the dependent, independent and control variables used in the multivariate analyses.

Dependent variables. A list of finance alternatives was composed based on the finance sources listed by Van Auken (2001), bootstrap finance strategies listed by Winborg and Landström (2001) and government programs specific for the Flemish region. The knowledge of the respondent with respect to the different finance alternatives was measured on a 6-point Likert scale, with 1=very limited knowledge to 5=very extensive knowledge, and 0 indicated the respondent was unaware of the existence of a particular finance alternative. The Likert scales were subsequently centered so that negative values represent below average knowledge of a finance alternative and positive values represent above average knowledge of finance alternatives.

A factor analysis was undertaken in order to identify groups of finance alternatives. Table 2 shows the results of the factor analysis. The Kaiser-Meyer-Olkin measure is 0.876 and Bartlett's Test 0.000, implying that a factor analysis is meaningful. Only factors with an eigenvalue larger than 1 are considered for further analysis. This procedure yields four factors, capturing 70 percent of the total variance after varimax rotation. The factors are broadly consistent with those identified by Van Auken (2001). Factor 1 captures the knowledge of the most commonly used finance alternatives, factor 2 captures the knowledge of advanced finance alternatives for the start-up phase, factor 3 captures the knowledge of advanced finance alternatives for the growth phase and factor 4 captures the knowledge of bootstrap finance methods. These four factors, together with the total knowledge of all finance alternatives, are used as dependent variables in the multivariate analyses.

Independent variables. The key independent variables are correlates of the human and social capital of the founding entrepreneur. Following Colombo and Grilli (2005), a distinction is made between specific and generic human capital. Following variables proxy for specific human capital: business education (dummy variable equal to 1 if the entrepreneur has a degree in business and 0 otherwise) and number of years of work experience of the entrepreneur in accountancy or finance. Following variables proxy for generic human capital: higher education (dummy variable equal to 1 if the entrepreneur has a university-level or equivalent degree and 0 otherwise), number of years of work experience of the entrepreneur in the same industry, number of years of work experience of the entrepreneur in other industries, management experience (dummy variable equal to 1 if an entrepreneur previously held a management position in a company employing more than 100 people and zero otherwise), self-employment experience (dummy variable equal to 1 if entrepreneur has prior self-employment experience and 0 otherwise), start-up experience (dummy variable equal to 1 if entrepreneur has prior start-up experience and 0 otherwise).

The social capital variables are measured with multi-item five-point Likert scales ranging from 1=strongly disagree to 5=strongly agree. Each scale is calculated by adding together the values for the items that composed the scale and dividing by the number of items. The items are taken from Shane and Cable (2002) and adapted to our setting. The direct tie scale is composed of three questions about direct ties between the entrepreneur and finance experts. A finance expert is each

individual with correct and reliable information about finance alternatives. The items are: “Prior to the company’s start-up, I had a professional relationship with at least one finance expert”; “Prior to the company’s start-up, at least one finance expert was someone with whom I had engaged in informal social activity (e.g., playing tennis, going to the movies)”; “Prior to the company’s start-up, at least one finance expert was a personal friend” (Cronbach’s alpha = 0.74). The indirect tie scale is composed of three questions on indirect ties between the entrepreneur and finance experts. The items are: “Someone whom I trust to discuss important confidential matters knew at least one finance expert”; “A third party whose judgement I trust can bring me in contact with a finance expert”; “Through my network of contacts, I could obtain information from a finance expert” (Cronbach’s alpha = 0.78).

Control variables. As entrepreneurs with high growth ambitions may have better prepared their start-up and hence have acquired a better knowledge of finance alternatives, the expected growth rate is included as a control. This is measured as the target number of employees (in full time equivalents) and the natural logarithm of target sales as envisioned by the entrepreneur 5 years after start-up. The average employment target equals approximately 5 employees, with a maximum of 90 employees. In order to further control for preparation, a dummy variable whether or not the entrepreneur performed formal financial planning before start-up is included. In addition, the percentage of shares retained by the entrepreneurial team is controlled for. If other shareholders are involved in the company, then the knowledge base is likely to be broader. In order to account for the initial size of the company, the natural logarithm of the level of start-up capital is included. Finally, we control for industry effects. The industry dummy variable equals 1 if a venture operates within ‘wholesale and retail’ or ‘professional, scientific and technical activities’ and zero otherwise. Almost 60% of the start-ups are active in wholesale, retail trade and professional, scientific and technical activities. The other industries represent less than 10% of the sample. The correlations between the independent variables are not sufficiently large so as not to cause collinearity problems in multivariate regressions. A correlation matrix is not reported due to space limitations, but is available from the authors upon request.

RESULTS

The total knowledge about finance alternatives, the knowledge of common finance alternatives, advanced finance alternatives for the start-up phase, advanced finance alternatives for the growth phase and bootstrap finance methods are analyzed separately. Non-parametric Mann-Whitney tests (available from the authors upon request) show that entrepreneurs with previous experience in accounting or finance have a significantly ($p < 0.01$) higher total knowledge and a higher advanced knowledge of finance alternatives for the start-up and the growth phase. They do not have a higher knowledge of bootstrap finance techniques. Other types of experience do not lead to higher knowledge. Entrepreneurs with either higher education or education in the field of business have a significantly ($p < 0.01$) higher total knowledge and higher knowledge of all four factors. Entrepreneurs with direct ties to finance experts have a significantly ($p < 0.05$) higher total knowledge and a higher knowledge of bootstrap finance and of advanced methods to finance the start-up or growth phase, but not of common finance alternatives. Bivariate analyses show no significant differences between entrepreneurs with and without indirect ties to financial experts.

The multivariate relationships between the independent and dependent variables are analyzed with Tobit regressions. The Tobit specification was utilized because the dependent variables examined were censored. Table 3 presents the results of the multivariate Tobit regressions. Panel A

reports the models with the total knowledge of finance as dependent variable, Panel B reports the models with the knowledge of commonly used finance methods as dependent variable, panel C reports the models with the knowledge of advanced start-up finance methods, panel D reports the models with the knowledge of advanced growth finance methods and panel E reports the models with the knowledge of bootstrap finance as dependent variable. Four models are reported in each panel. Model (1) includes the control variables; the human capital variables are included in model (2); model (3) expands model (1) with social capital variables and model (4) is the full model, including control variables, human capital and social capital variables. While the control variable for method of data collection was included in all models, this variable was never significant and is not reported for the sake of brevity.

The Mc Fadden's pseudo R^2 in all panels shows that adding the independent variables improves the fit of the models; the full models have the highest fit. Hence, human and social capital variables are important in explaining an entrepreneur's knowledge of finance alternatives. The models explaining the total knowledge of finance alternatives have the highest explanatory power, while the models explaining the knowledge of advanced start-up finance alternatives have the lowest explanatory power. These are also the alternatives that are the least known by entrepreneurs. As the significance and the sign of the coefficients are consistent in the four models within a panel, the discussion of the results will focus on the full model (4).

The coefficients of the control variables show that entrepreneurs with higher growth aspirations, as measured by their targeted number of employees and sales in five years time, have a significantly higher knowledge of overall finance alternatives (Panel A), which is mainly driven by their higher knowledge of bootstrap finance techniques (Panel E; $p < 0.01$) and of common finance techniques (Panel B; $p < 0.05$). Interestingly, entrepreneurs with higher growth aspirations do not have a higher knowledge of finance alternatives that are especially important for high growth companies, i.e. advanced finance methods for start-ups and for growth companies. A higher level of start-up capital is not associated with a higher knowledge of finance alternatives. Entrepreneurial teams, retaining higher percentages of the shares of their companies at start-up, have a significantly higher knowledge of bootstrap finance techniques ($p < 0.01$).

Adding the human capital variables improves the fit of the models more than adding the social capital variables. Education and experience are hence the most important drivers of an entrepreneur's knowledge of finance alternatives. Entrepreneurs with higher education do not have a higher knowledge of finance alternatives in general, but they have a higher knowledge of advanced finance alternatives for growth companies ($p < 0.05$). Specific business education leads to significantly higher knowledge of all finance alternatives ($p < 0.01$). More specifically, business education leads to a higher knowledge of commonly used finance alternatives ($p < 0.01$), of advanced finance alternatives for growth companies ($p < 0.01$) and of bootstrap finance techniques ($p < 0.05$), but not of advanced finance alternatives for start-ups.

Previous experience has a more mixed impact on the knowledge of finance alternatives. Experience in accounting or finance has a significant and positive impact on all dependent variables. Further, experience in other industries has a positive impact on the total knowledge of finance alternatives ($p < 0.05$), of commonly used finance alternatives ($p < 0.01$) and on advanced finance alternatives for growth companies ($p < 0.05$). Experience in the same industry has a significantly positive impact on the knowledge of advanced finance alternatives for growth companies ($p < 0.01$). Unexpectedly, entrepreneurs with previous start-up experience have a lower knowledge

of commonly used finance alternatives ($p < 0.05$). Experience as a self-employed leads to a significantly higher knowledge of advanced start-up finance techniques ($p < 0.05$). Overall management experience has no impact on an entrepreneur's knowledge of finance alternatives.

The results are broadly consistent with the predictions of hypotheses 1 and 2. More human capital leads to a higher knowledge of finance alternatives, but the impact of human capital depends on its specificity. More specific human capital, i.e. a business education or experience in accounting or finance, has a stronger positive impact on financial knowledge than more generic human capital. Generic human capital cannot be ignored, however, as higher (non-business) education and industry experience, either in the same or in another industry, are positively associated with the knowledge of some forms of finance.

The effect of entrepreneurs' social capital is weaker than the effect of their human capital. An entrepreneur having direct ties with finance experts has no effect on the entrepreneur's knowledge of finance alternatives at start-up, except for the commonly used finance alternatives ($p < 0.05$). Indirect ties with finance experts enhance an entrepreneur's total knowledge of finance alternatives ($p < 0.05$), but they have no statistically significant impact on the knowledge of specific finance techniques. The support for hypotheses 3 and 4 is hence weak.

DISCUSSION AND CONCLUSION

While it is widely acknowledged that financial resource acquisition is a key process in the start-up and growth of new businesses, our understanding of this process is largely rooted in economic theories emphasizing wealth maximization as an overarching goal, rational behavior of all actors involved and information asymmetries. Theories building on the existence of information asymmetries typically assume that (potential) investors are informationally constrained, which influences their selection and post-investment processes: investors select the ventures in which they invest. This paper highlights a second information asymmetry problem, namely the fact that entrepreneurs do not have full information of finance alternatives. This knowledge gap leads entrepreneurs to select these finance alternatives they are familiar with, potentially leading to suboptimal finance structures.

The main contribution of this paper lies in the finding that entrepreneurs with higher levels of specific human and social capital have lower knowledge gaps. Especially specific human capital, i.e. a business education or previous experience in accounting or finance, increases an entrepreneur's knowledge of finance alternatives. Generic human capital in the form of higher education or general experience has a more modest, but also positive impact. The impact of an entrepreneur's social capital at start-up is more limited, albeit positive. Overall, we contribute to a further socializing of the finance acquisition process in entrepreneurial ventures, by demonstrating the key role of entrepreneurial characteristics on finance decisions in start-ups.

We have shown that entrepreneurs' knowledge of finance alternatives in general is rather limited. Even the knowledge of commonly used finance methods and of widely applicable bootstrap finance methods is limited. More complex finance options, specifically targeted towards growth oriented ventures, are even less understood. The knowledge of finance methods targeted at start-ups is the least understood category. Moreover, the lack of knowledge on specific government measures for start-ups is worrying, as these are specifically targeted towards the entrepreneurs

represented in the sample. These findings are broadly consistent with Van Auken (2001) for US entrepreneurs.

A methodological strength of this study is the fact that all social and human capital variables are measured at start-up, hence eliminating survival and recall biases. It would be interesting to add a longitudinal dimension to the current research. This would allow understanding how the initial knowledge gap influences subsequent finance and growth processes. Is the knowledge gap of an entrepreneur at start-up a major hindrance in the development of the start-up, or is the entrepreneur able to overcome this liability through subsequent learning and experience? These are important avenues for future research.

The study suggests implications for policy makers and for entrepreneurs. The role of business education is highlighted. Strengthening life-long education for entrepreneurs on business in general and on financial matters in particular is warranted. Further, when new policy initiatives are developed, frequent and clear communication with the target group and their advisors is key. This study suggests that well-designed initiatives often fail to capture the attention of their target group.

Entrepreneurs should understand that finance is a key resource for their business; failure to understand the finance alternatives and their characteristics may seriously hamper the development of their ventures. Most entrepreneurs, however, have a limited knowledge of finance options, even if they have a broad business experience. They may enhance their understanding thereof through training. Further, they should understand that links to financial experts are valuable in reducing the knowledge gap. If they do not have direct links yet, they should actively seek to establish them. If they have links to experts, they should activate them and tap their knowledge.

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Table 1: Descriptive Statistics

	Abbreviation	N	Min	Max	Mean	Std. Dev.
DEPENDENT VARIABLES						
Total knowledge about finance alternatives	Total	125	-1.37	0.68	-0.47	0.40
Knowledge of common finance alternatives	Common	125	-1.42	1.00	-0.10	0.52
Knowledge of advanced finance alternatives for the start-up phase	Start-up	125	-1.50	1.00	-1.21	0.40
Knowledge of advanced finance alternatives for the growth phase	Growth	125	-1.50	0.70	-0.67	0.57
Knowledge of bootstrap finance methods	Bootstrap	125	-1.00	1.00	-0.07	0.41
CONTROL VARIABLES						
Targeted number of employees after 5 years	N°Empl	112	0	90	4.96	12.62
Ln (targeted sales after 5 years)	Sales	93	5.53	17.62	12.91	2.07
Financial planning (dummy)	FinPlan	124	0	1	0.93	
Percentage of shares retained by the entrepreneurial team	Share%	121	0	100	94.97	17.65
Ln (level of start-up capital)	StartCap	110	0.00	17.13	9.86	2.99
Method of data collection (dummy)	DataColl	125	0	1	0.84	
Industry (dummy)	Industry	121	0	1	0.60	
INDEPENDENT VARIABLES						
<i>HUMAN CAPITAL</i>						
Higher education (dummy)	HighEdu	121	0	1	0.72	
Business education (dummy)	BusiEdu	121	0	1	0.37	
Number of years of work experience gained by founders in the same industry	ExpSameInd	121	0	40	8.88	7.81
Number of years of work experience gained by founders in other industries	ExpOtherInd	121	0	20	6.46	6.74
Number of years of work experience gained by founders in the domain of accountancy or finance	ExpAcc&Finn	121	0	40	1.36	4.90
Founder with a prior management position in a large or medium company (i.e., number of employees greater than 100) (dummy)	MgtExp	121	0	1	0.21	
Founder with a previous self-employment experience (dummy)	ExpSelf-Empl	121	0	1	0.37	
Founder with previous start up experience (dummy)	ExpStart-up	121	0	1	0.31	
<i>SOCIAL CAPITAL</i>						
Direct ties	DirTies	120	-1	1	0.37	0.46
Indirect ties	IndirTies	121	-1	1	0.26	0.53

Table 2: Rotated Orthogonal Factor Analysis for Knowledge of Finance Alternatives

Knowledge of finance alternatives	Factor			
	1	2	3	4
<i>Common finance alternatives</i>				
Loans	0.874	0.153	0.206	0.028
Credit lines	0.811	0.162	0.196	0.106
Supplier's credit	0.693	0.337	0.369	0.166
Leasing	0.690	0.351	0.107	0.104
Customer's credit	0.597	0.341	0.447	0.180
Friends and Family financing	0.592	0.254	0.289	0.072
<i>Advanced finance alternatives for the start-up phase</i>				
IWT-subsidy	0.169	0.805	-0.009	-0.020
Vinnof	-0.079	0.803	0.128	0.157
ARKimedes	0.124	0.789	0.028	0.212
Business Angels	0.311	0.515	0.232	0.441
<i>Advanced finance alternatives for the growth phase</i>				
Public Stock	0.176	0.215	0.859	0.076
Private stock	0.194	0.223	0.810	0.116
Bonds	0.294	0.058	0.753	0.143
Factoring	0.388	0.286	0.598	0.208
Venture capital	0.432	0.185	0.586	0.411
<i>Bootstrap finance methods</i>				
Joint utilization	0.070	0.189	0.004	0.808
Minimization accounts receivable	0.358	0.125	0.092	0.778
Minimization capital invested in inventory	0.339	0.180	0.089	0.755
Delaying payments	0.516	0.242	0.154	0.630
Eigenvalue:	8.813	2.060	1.331	1.153
Percent variance explained	46.385	57.227	64.234	70.303

Table 3: Multivariate Tobit Regression Models

	Total				Common				Start-up				Growth				Bootstrap			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Constant	-2.490 ***	-2.483 ***	-2.219 ***	-2.199 ***	-2.266 ***	-2.339 ***	-1.671 *	-1.706 **	-3.278 **	-3.054 **	-2.811 *	-2.687 *	-2.346 **	-2.533 ***	-2.380 ***	-2.264 **	-2.790 ***	-2.799 ***	-2.554 ***	-2.566 ***
<i>Control variables</i>																				
N°Empl	0.008 *	0.008 *	0.007 *	0.007 *	0.005	0.005	0.004	0.004	0.011	0.009	0.011	0.009	0.010 †	0.008	0.008	0.006	0.009 *	0.010 **	0.009 *	0.009 **
Sales	0.048 *	0.044 *	0.048 *	0.044 *	0.076 **	0.075 **	0.061 *	0.058 *	0.041	0.031	0.033	0.019	0.051	0.040	0.069 †	0.049 †	0.073 **	0.069 **	0.071 **	0.069 **
FinPlan	0.146	0.146	0.262 †	0.269 †	0.110	0.064	0.121	0.103	-0.091	0.044	-0.102	-0.023	0.162	0.117	0.476 *	0.375 †	0.171	0.165	0.253	0.273 †
Share%	0.010 *	0.010 **	0.007 †	0.007 †	0.007	0.008	0.003	0.003	0.014	0.011	0.010	0.008	0.007	0.007	0.004	0.002	0.015 **	0.016 ***	0.013 **	0.013 **
StartCap	0.012	-0.001	0.005	-0.011	0.043 *	0.023	0.037 †	0.015	-0.003	-0.035	-0.006	-0.032	0.012	-0.009	-0.001	-0.027	0.012	0.001	0.006	-0.008
Industry	0.096	0.050	0.032	-0.037	0.025	-0.067	-0.031	-0.171 †	0.130	0.053	0.105	0.037	0.080	-0.033	-0.024	-0.163	0.020	-0.025	-0.027	-0.094
<i>Dependent variables</i>																				
<i>Human Capital</i>																				
HighEdu	0.070		0.058		0.036		0.059		0.281			0.299		0.282 *		0.258 *		0.013		0.008
BasicEdu	0.187 *		0.199 **		0.268 *		0.304 **		0.236			0.222		0.479 ***		0.507 **		0.153 †		0.176 *
ExpSameInd	0.001		0.003		0.005		0.010		0.000			0.003		0.023 **		0.025 **		-0.004		-0.002
ExpOtherInd	0.006		0.010 *		0.015 *		0.018 **		0.001			0.001		0.011		0.018 *		0.007		0.011 †
ExpAcce&Fin	0.015 *		0.015 *		0.032 **		0.036 **		0.025 †			0.024 †		0.028 **		0.030 **		0.013 †		0.013 †
MgtExp	0.018		0.000		-0.031		-0.021		0.017			0.063 †		0.043		-0.033		0.072		0.042
ExpSelfEmpl	0.148		0.115		0.079		0.023		0.553 *		0.505 *	0.505 *		0.080		0.041		0.176		0.149
ExpStart-up	-0.152		-0.187 †		-0.257 †		-0.269 *		-0.339			-0.286		-0.067		-0.154		-0.191		-0.226 †
Social Capital																				
DirTies	-0.014		0.057		0.157		0.293 *		-0.074			0.017		-0.193		0.105		0.073		0.112
IndrTies	0.233 *		0.203 *		0.159		0.134		0.271			0.171		0.387 *		0.219		0.104		0.098
McFadden's Pseudo- R ²	0.328	0.583	0.470	0.787	0.178	0.370	0.230	0.487	0.040	0.131	0.056	0.145	0.071	0.312	0.130	0.393	0.312	0.442	0.346	0.502

Significance levels: ***<0.001, **<0.01, *<0.05, †<0.1

ENTREPRENEURIAL BRICOLAGE: TOWARDS SYSTEMATIC EMPIRICAL TESTING



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ABSTRACT

The behavioral theory of “entrepreneurial bricolage” attempts to understand what entrepreneurs do when faced with resource constraints. Most research about bricolage, defined as “making do by applying combinations of the resources at hand to new problems and opportunities” (Baker & Nelson 2005: 333), has been qualitative and inductive (Garud & Karnoe, 2003). Although this has created a small body of rich descriptions and interesting insights, little deductive theory has been developed and the relationship between bricolage and firm performance has not been systematically tested. In particular, prior research has suggested bricolage can have both beneficial and harmful effects. Ciborra’s (1996) study of Olivetti suggested that bricolage helped Olivetti to adapt, but simultaneously constrained firm effectiveness. Baker & Nelson (2005) suggested that bricolage may be harmful at very high levels, but more helpful if used judiciously. Other research suggests that firm innovativeness may play an important role in shaping the outcomes of bricolage (Anderson 2008). In this paper, we theorize and provide preliminary test of the bricolage-performance relationship and how it is affected by firm innovativeness.

INTRODUCTION

Most entrepreneurs face substantial resource constraints (Shepherd et al., 2000). As Aldrich (1999:41) noted ruefully, most firms in creation... “can’t always get what they want, and certainly don’t always get what they need.” The modal firm is created with inadequate financial, social, temporal and other resource buffers (Wiklund, Baker & Shepherd, 2009; Bruderl, Prisendorfer & Ziegler, 1992; Bourgeois & Eisenhardt, 1988). Bricolage behaviors have been identified as a way that some entrepreneurs “make do” by applying combinations of the resources at hand to new challenges (Baker & Nelson 2005). Successful bricolage behaviors may assist in the development of firms that are better able to manage market uncertainties, survive and perhaps even flourish despite resource constraints.

The relationship between bricolage and performance, however, is far from straightforward. In particular, prior research indicates that bricolage can have both beneficial and harmful effects. Ciborra’s (1996) study of Olivetti suggested that bricolage helped Olivetti to adapt, but simultaneously constrained firm effectiveness. Garud and Karnoe’s (2003) study of the emergence of the Danish wind turbine industry showed that firms benefitted in several ways from reliance on bricolage rather than “breakthrough” strategies. Hatton’s (1989) studies of bricolage by Australian school teachers documented primarily negative outcomes for students. Baker & Nelson (2005) suggested that bricolage may be harmful at very high levels, but more helpful if used judiciously. Prior case research in bricolage has predominantly been tested in high innovative contexts (e.g. Ali

& Bailur, 2007; Ciborra, 2002) with mixed results. Little is known, however, about how innovativeness affects the relationship between bricolage and firm performance.

The paper is structured as follows. We first develop hypothesis concerning the bricolage-performance relationship and the contingent effect of innovativeness. We then test our hypotheses using data from the Comprehensive Australian Study of Entrepreneurial Emergence (CAUSEE) project (Davidsson, Steffens, Gordon, & Reynolds, 2008), including 625 nascent (pre-operational) firms and 561 young firms that are operational but less than four years old. In our tests, we make use of the new Davidsson-Baker survey measure of bricolage behavior. We conclude by discussing the theoretical implications of our findings.

Bricolage and Performance

Entrepreneurs often attempt to overcome resource constraints by engaging in resource-seeking behaviors, for example by engaging in sometimes time-consuming processes of trying to attract new investments into their firms (Brush, Greene & Hart, 2001). They may also respond to resource constraints by deciding that now is not a good time to pursue a new opportunity. Such time consuming delays may be particularly common among nascent entrepreneurs, who, because they don't face the pressures of day-to-day operations may find it easier to wait for a "better time" or to control more resources before acting. In bricolage, however, "making do" includes a bias for action (Baker & Nelson, 2005; Stark, 1989), suggesting that entrepreneurs construct and pursue opportunities without potentially delaying attempts to pursue the "right" resources for the challenge. Therefore, we hypothesize that:

H1: Bricolage has a positive effect on making progress in the emerging stage of firm creation.

Used as a stop-gap tactic, as a way of getting by temporarily, or as a form of inexpensive "forward looking probe" (Brown & Eisenhardt, 1997), bricolage may be a useful way to make do when the only other choice is to wait or do nothing. However, to the extent that solutions built through bricolage tend to be imperfect, and to the extent that customers for products and services built through bricolage may tend themselves to be resource constrained and relatively undemanding, firms that engage in high levels of bricolage may find it difficult to learn to meet the higher quality and performance demands of other less resource constrained and demanding customers. As Baker & Nelson (2005) suggest, firms that engage non-selectively in bricolage may find it difficult to grow. We extend this logic to argue that to the extent that entrepreneurs engage in very high levels of bricolage, they may find it difficult to move beyond the "good enough" solutions they offer initially in order to appeal to a larger group of customers. Therefore, we hypothesize:

H2: Bricolage has a negative effect on performance once the firm is up-and-running.

Bricolage and Innovation

The literature on radical innovation suggests that such innovations may emerge from complex combinations of existing resources (Green & Welsh, 2003; Olson, Walker & Ruekert, 1995; Schoonhoven, Eisenhardt, & Lyman, 1990) and require skills and capabilities across varied domains (Swink, Sandvig & Mabert, 2003). In the absence of severe resource and skills constraints and if firms adopt very high standards for what is "good enough," bricolage behaviors might be one mechanism of radical innovation. Levi-Strauss (1967) and others have suggested that bricolage can occasionally produce highly innovative outcomes.

Indeed, because bricolage involves the creation of novel solutions to problems and opportunities, the products of bricolage are typically innovations in the sense of an innovation as simply the introduction of something new and potentially useful (Gopalakrishnan & Damanpour, 1994). The prior literature suggests, however, that innovations produced through bricolage (as through most innovation processes) are typically relatively mundane. Even the most valuable innovations documented as outcomes of bricolage – such as the wind turbines described in Garud and Karnoe (2003) – are often not “breakthroughs” or radical departures, but are instead more likely to be largely incremental, or even stopgaps. For example, the bricolage that famously saved the lives of three Apollo 13 astronauts was not then adopted as an engineered solution to the original problem (Rerup, 2001).

Under more typical conditions, we expect entrepreneurs engaged in bricolage to be doing so in the face of substantial resource constraints and to be focused on doing work that is “good enough.” Because of this, we expect that attempts to produce radical innovations through bricolage under resource constraints may be unlikely to succeed but also likely to undermine some of the advantages that may otherwise accrue from entrepreneurs’ selective engagement in bricolage. In particular, the attempt to produce radical innovations from combinations of the resources at hand, including reliance on self-taught and amateur skills that are typical of bricolage, is likely to be a slow going process of trial and error experimentation and very gradual accumulation of skills. The combination of bricolage and the attempt to engage in high levels of innovation may therefore result in a slow pace of progress. We therefore hypothesize:

H3 Firms (both emerging and those firms that have recently been established) that combine bricolage behaviors with high innovativeness will attain lower firm performance.

METHOD

Sample and Data

The main sample

The data for this research was drawn from the CAUSEE project, a 4-year longitudinal study studying firm emergence (Davidsson, Steffens, Gordon, & Reynolds, 2008) administered through telephone surveys. This study builds on the general empirical approach, some contents and lessons learned from the Panel Study of Entrepreneurial Dynamics (PSED) studies in the US (Gartner, Shaver, Carter, & Reynolds, 2004; Reynolds & Curtin, 2008).

In the CAUSEE main study, 28,383 adults (with equal male/female representation) from randomly selected households completed a screening interview for eligibility. Like the PSED, in order to qualify for inclusion as nascent and young firm in the survey, the respondent first had to answer affirmatively to at least one of the following questions:

1. Are you, alone or with others, currently trying to start a new business, including any self-employment or selling any goods or services to others?
2. Are you, alone or with others, currently trying to start a new business or a new venture for your employer, an effort that is part of your normal work?
3. Are you, alone or with others currently the owner of a business you help manage, including self-employment or selling any goods or services to others?

The nascent respondents to be eligible also had to confirm that:

- They were (or intended to be) owners or part owners of the nascent firm.
- They had undertaken some tangible “start-up behavior” e.g looking for equipment or a location organizing a start-up team within the last 12 months.

If respondents did not answer affirmatively to the above questions they were deemed under qualified and did not continue to the full survey. Further, if nascent confirmed that revenues had exceeded expenses for six of the past 12 months they were deemed overqualified and screened as a young firm.

Young firm respondents also had to confirm that:

- They were owners or part owners of the young firm.
- They confirmed that they started “trading in the market doing the type of business you are currently doing” in 2004 or later.

This process yielded 977 Nascent Firms (3.4%) and 1,011 Young Firms (3.6%). These were directed to the full length interview (40-60 minutes) either directly following the screener or later by appointment. The full length interviews were completed by 594 NF and 514 YF cases (representing response rates of 60.8% and 50.8% of eligible cases identified in the screener) that are used in our analyses.

As CAUSEE is a 4 year longitudinal survey it enables us to study nascent and firm development as it happens. This paper however analyses data from the first of these four years, and owing to this, may be considered cross-sectional in nature. Additional longitudinal analysis is expected in future research to evaluate bricolage processes and firm performance over time: the first year data was used here for initial tests of bricolage and performance using both nascent and young firms to illustrate firms at the different stages of development.

Measuring Bricolage

We used a newly developed bricolage instrument and scale to measure bricolage. As a new instrument, this required extensive development based on prior grounded research and the multidimensional Baker and Nelson (2005) definition. Its development followed standard protocols for scale development (Brown, Davidsson & Wiklund, 2001; DeVellis, 2003).

One key challenge was the need to design the construct to enable its applicability across multiple industries and its use in heterogeneous firms and stages of firm growth. We began by writing a large number of items based on the literature. We then reduced the number of items through a variety of processes, including review by other scholars familiar with the entrepreneurship and bricolage literatures and by two rounds of pilot testing using a questionnaire. After extensive pre-testing and screening 9 items were developed to tap each element of the Baker and Nelson's (2005: 333) definition of the bricolage: “making do by applying combinations of the resources at hand to new problems and opportunities.” In the questions we used a response scale where 1 means “never” and 5 means “always” (rather than levels of agreement) in order to reflect the behavioral nature of the phenomenon.

In choosing, developing and adapting the new bricolage measure, we considered the appropriateness of it being either a reflective measure or formative measure (MacKenzie, Podsakoff, &

Jarvis, 2005). During this evaluation, we performed a Cronbach alpha on the bricolage measures. If we were to proceed with reflective modeling, the results revealed Cronbach alphas that were above Nunnally's recommended level for consistency ($\alpha = .823$). However, further assessment and consideration of bricolage, discussion with scholars, and the use of decision criteria by Mackenzie et al. (2005) indicated that we should treat the measure as formative and also resulted in dropping one item as inconsistent with the Baker and Nelson (2005) definition. Unlike reflective measures, formative models do not assume that the measures are all caused by a single underlying construct: it assumes that the measures all have an impact on (or cause) a single construct. Our final instrument consists of 8 items.

Innovation Measure

Twelve questions were developed for the innovation measure. We use a 4 item scale which is an elaboration of the scale developed by Dahlqvist (2007) to measure the innovativeness of the venture idea. This scale identifies four categories of the venture idea newness: (1) new to the world, (2) new to the market (3) ideas substantially improved and or (4) imitative venture ideas. These categories are then defined through four classifications of venture ideas; (1) product, (2) method of production, (3) method of promotion and (4) type target market/customer. A continuous variable was computed for these responses and summated to develop the overall newness measure used in this research. This newness measure has a theoretical range of 0 to 12. The actual range in the data is 0 to 12 with a mean value of 3.88.

Performance Measures

Early performance assessment in nascent and young firms is difficult (Davidsson 2008). For the nascent firms we follow recent nascent entrepreneurship literature that measures performance through speed of making progress (Liao and Welsch 2003), calculated through the number of gestation activities completed. The firm outcome variable of prior 12 month sales is used in this research for newly established young firms. To reduce skewness in the sales response, the data was categorised into 4 classes after removing outliers.

Controls

We use three categories of control variables. The first category aims to capture the overall level of resources – time and money - that have been invested in the firm. Specific variables include amount of loans accessed by firm (log), time since the first business activity commenced, if the business is being run as a parallel firm i.e. running more than one firm at the same time.

The second group of control variables aims to capture some of the heterogeneity concerning the ability the firm has to acquire and develop resources. We include three measures of the human capital of the start-up team: education (number of owners with a university degree); industry experience (number of years); management experience (number of years).

The third group of variables account for various characteristics. These include: team (versus solo dummy); spouse and other type of team (dummy); service (versus product dummy) and industry controls.

Results

Table 1 and 2 reports the result of the regression analysis that models bricolage in relationship to firm performance. Hypothesis 1 proposed bricolage has a positive effect on performance in the emerging stage of firm creation. The results indicate that bricolage has a statistically significant positive relationship ($p < 0.05$) to number of relevant gestation activities completed in the emerging stage of firm creation. Hypothesis 2 stated bricolage has a negative effect on performance once the firm is up-and-running owing to difficulty in meeting quality and performance market demands through potentially imperfect bricolage offerings. The results show bricolage has a significant negative relationship ($p < 0.05$) to sales, confirming hypothesis 2. Both Hypothesis 1 and Hypothesis 2 were therefore supported.

Hypothesis 3 proposed firms (both emerging and those firms that have recently been established) that combine bricolage behaviors with high innovation will attain lower firm performance. Table 3 provides the results for the moderated regression. Hypothesis 3 was not supported in nascent firms: innovativeness did not significantly moderate the bricolage- performance relationship. However, there was a significant negative moderation effect of innovativeness on the relationship between bricolage and venture performance ($\beta = -0.011$, $p < 0.05$) in young firms thereby confirming, in part, Hypothesis 3. Figure 2A illustrates this relationship. Sales have been assigned into 4 equal categories after removing outliers. Thus the effect of bricolage on venture performance (sales) becomes significantly stronger if firms make limited use of innovativeness.

Following Venkataraman's (1989) expanded perspective on fit and co-alignment and recent work by Edelman, Brush and Manolova (2005), did preliminary tests of mediating effects of innovativeness on the bricolage-performance relationship was tested in nascent firms. Mediation tests specify the existence of a significant intervening mechanism (e.g., innovativeness) between an antecedent variable (e.g., bricolage) and the consequent variable (e.g., firm performance).

As such, the mediator variable (e.g., innovativeness) accounts for a proportion of the relationship between the predictor and the criterion variables. Figure 1 provides a schematic representation of the mediated "bricolage \rightarrow newness \rightarrow performance" model.

Fig. 1 The "bricolage \rightarrow newness \rightarrow performance" model. (a) The model is of an indirect model, in that the antecedent variable Z (i.e., bricolage) has a direct relationship with the dependent variable Y (i.e., performance) as well as an indirect relationship with the dependent variable Y (i.e., performance) through the intervening variable X (i.e., Newness/Innovativeness). (b) The model can be written as a set of equations where $Y = a_0 + a_1Z + a_2X + e$; and $X = b_0 + b_1Z + e$.

Following recommendations in Baron and Kenny (1986) we ran separate regression models to test the relationships between bricolage and newness, newness and firm performance and bricolage and performance. Our preliminary tests found that innovativeness has a partial mediating effect on the interaction between bricolage and nascent firm performance.

DISCUSSION

In this paper, we developed testable hypotheses from prior descriptive and inductive research on the behavior theory of entrepreneurial bricolage, and tested them using a new survey measure of bricolage and samples of nascent and young firms. As hypothesized, the main effect of bricolage on nascent firm performance was positive. Bricolage led to the completion of a higher number of

gestation activities completed for nascent firms. Also as hypothesized, bricolage appears to lead to lower reported sales for new firms. Contrary to our theory, innovativeness did not have a moderating effect on the impact of bricolage in nascent firms; innovativeness did, however, moderate the bricolage-performance relationship in young firms.

In general, our results are supportive of the general theoretical thrust of prior theory about bricolage, which we take to suggest that because most new organizations are resource-constrained in important ways, resourceful behaviors – including bricolage – are likely to play a key role in shaping entrepreneurial outcomes, *for better or for worse*. Importantly, our results support the theme from prior research that entrepreneurial bricolage is neither all good nor all bad. To the extent that bricolage in the face of resource constraints is very common, we believe that understanding patterns and results of bricolage is a central theoretical and research frontier for entrepreneurship. Our unexpected finding that innovativeness may mediate some of the effects of bricolage in nascent firms opens up additional important theoretical questions about bricolage and innovative behaviors.

At the most general level, the body of work on bricolage, ours included, suggests that within poorly understood bounds, what entrepreneurial firms do with the resources at hand may matter at least as much as what those resources are. Stated somewhat more strongly: resources are what entrepreneurs make of them. This research complements and also challenges the commonplace models of near resource-determinism that have dominated organizational research about entrepreneurship.

CONCLUSION

We believe that ours are the first systematic empirical tests evaluating bricolage and firm performance and the results underline the interconnectedness of innovativeness and bricolage on nascent firm performance. Although our results have important implications for the further development of bricolage theory, we stress that these results represent only tentative first steps in providing a greater understanding of bricolage and its influence in venture creation and firm performance. As we continue our longitudinal study of bricolage, and also begin to examine our subsample of “high potential” firms, we will be able to develop and test much more nuanced theories of the interplay of bricolage behaviours, processes and outcomes. Future research should also examine a more comprehensive range of outcomes including other elements of firm performance and other theoretically relevant contingencies such as, for example, the role of environmental dynamism. Finally, the new measure of bricolage we have introduced provides an important tool for our own and other researchers’ continued investigations of entrepreneurial bricolage.

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Table 1: Regression Analysis Results

Dependent Variable	Gestation Activities Complete				DV: Sales (12 months) n= 341			
	Model 1		Model 2		Model 1		Model 2	
	Coeff	St error	Coeff	St error	Coeff	St error	Coeff	St error
<i>Level of Resources Controls</i>								
YearsActive	0.025	0.046	0.027	0.046	-0.002	0.017	-0.011	0.016
Team /Solo (Dummy)	-0.118†	0.818	-0.112†	0.815	0.048	0.202	0.047	0.202
Spouse Team	0.129*	0.869	0.122*	0.866	0.073	0.208	0.086	0.208
Log_Loans	0.289***	0.166	0.292***	0.165	0.238***	0.030	0.238***	0.029
Services/Products Dummy	-0.048	0.689	-0.049	0.687	-0.020	0.160	-0.029	0.160
<i>Resource Heterogeneity Controls</i>								
Serial Entrepreneur	0.103*	0.691	0.095†	0.690	-0.008	0.131	0.006	0.131
Single/Parallel Entrep.	0.044	0.745	0.048	0.742	0.022	0.159	0.028	0.158
Education Level	0.049	0.214	0.047	0.213	0.093	0.048	0.091	0.048
Industry Exp	0.075	0.019	0.073	0.018	0.281***	0.004	0.291***	0.004
General Manage.Exp	0.000	0.019	-0.008	0.019	-0.185*	0.004	-0.190	0.004
<i>Industry Controls</i>								
Retail	-0.058	0.989	-0.057	0.985	-0.124*	0.264	-0.113 †	0.264
Hospitality	-0.126**	1.479	-0.124**	1.474	-0.017	0.373	-0.021	0.371
Consumer_Services	0.030	1.007	0.026	1.004	-0.114 †	0.213	-0.104 †	0.213
Health, Education Social Services	0.028	1.010	0.029	1.006	-0.072	0.222	-0.068	0.222
Manufacturing	-0.100*	1.242	-0.102*	1.237	-0.044	0.298	-0.044	0.297
Construction	-0.023	1.289	-0.026	1.284	0.097	0.188	0.096	0.187
Agriculture	-0.050	1.472	-0.058	1.470	-0.097 †	0.303	-0.094 †	0.302
Mining	-0.036	3.823	-0.030	3.814	0.091 †	0.630	0.094 †	0.627
Transportation	-0.017	2.300	-0.017	2.291	0.013	0.423	0.013	0.421
Utilities	0.033	4.655	0.024	4.654	0.001	0.487	0.010	0.486
Communication	-0.013	1.407	-0.017	1.402	-0.014	0.323	-0.004	0.323
Real_Estate	-0.053	2.718	-0.060	2.714	0.051	0.702	0.053	0.699
Finance_Insurance	-0.021	2.156	-0.018	2.148	-0.026	0.372	-0.022	0.371
<i>Direct Effect</i>								
Bricolage			0.097*	0.453			-0.105*	0.093
F		3.374		3.476		3.302		3.350
Change F				0.009				0.048
R2		0.134		0.143		0.207		0.217
Δ R2				0.009				0.010

Control entries represent standardized regression coefficients. * P<0.05, **P<0.01, ***P<0.001, †P0.10 (two-tailed), with directional hypothesis entry (one tailed).

Table 2: Moderation Results

Dependent Variable	DV: Gestation Activities Complete n= 525				DV: Sales (12 months) n= 341			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
<i>Level of Resources Controls</i>								
YearsActive	0.025	0.027	0.021	0.020	-0.002	-0.011	-0.011	-0.012
Team /Solo (Dummy)	-0.118†	-0.112†	-0.121*	-0.130*	0.048	0.047	0.050	0.045
Spouse Team	0.129*	0.122*	0.132*	0.138*	0.073	0.086	0.083	0.086
Log_ Loans	0.289***	0.292***	0.294***	0.294***	0.238***	0.238***	0.238***	0.231***
Services/Products Dummy	-0.048	-0.049	-0.033	-0.032	-0.020	-0.029	-0.031	-0.039
<i>Resource Heterogeneity Controls</i>								
Serial Entrepreneur	0.044	0.048	0.055	0.056	0.022	0.028	0.029	0.027
Single/Parallel Entrep.	0.103*	0.095†	0.083	0.078	-0.008	0.006	0.008	0.007
Education Level	0.049	0.047	0.049	0.048	0.093	0.091	0.092	0.084
Industry Exp	0.075	0.073	0.069	0.073	0.281***	0.291***	0.288***	0.289***
General Manage.Exp	0.000	-0.008	0.006	0.008	-0.185*	-0.190*	-0.189*	-0.191*
<i>Industry Controls</i>								
Retail	-0.058	-0.057	-0.048	-0.047	-0.124*	-0.113†	-0.114†	-0.117†
Hospitality	-0.126**	-0.124**	-0.116*	-0.115*	-0.017	-0.021	-0.022	-0.024
Consumer_Services	0.030	0.026	0.024	0.026	-0.114†	-0.104†	-0.104†	-0.105†
Health, Education Social Services	0.028	0.029	0.027	0.028	-0.072	-0.068	-0.069	-0.070
Manufacturing	-0.100*	-0.102*	-0.095*	-0.095*	-0.044	-0.044	-0.043	-0.053
Construction	-0.023	-0.026	-0.022	-0.021	0.097†	0.096†	0.095†	0.094†
Agriculture	-0.050	-0.058	-0.050	-0.045	-0.097†	-0.094†	-0.096†	-0.099†
Mining	-0.036	-0.030	-0.024	-0.020	0.091	0.094	0.093	0.095
Transportation	-0.017	-0.017	-0.013	-0.015	0.013	0.013	0.012	0.011
Utilities	0.033	0.024	0.025	0.024	0.001	0.010	0.010	0.010
Communication	-0.013	-0.017	-0.021	-0.019	-0.014	-0.004	-0.002	0.002
Real_Estate	-0.053	-0.060	-0.054	-0.054	0.051	0.053	0.055	0.054
Finance_Insurance	-0.021	-0.018	-0.013	-0.010	-0.026	-0.022	-0.023	-0.029
<i>Direct Effect</i>								
Bricolage	0.025	0.097*	0.086*	0.083*		-0.105*	-0.102*	-0.173**
Innovativeness			0.090*	0.094*			-0.015	-0.008
<i>Moderating Effect</i>								
Bricolage x Innovativeness				-0.040				-0.111*
F	3.374***	3.476***	3.529***	3.426***	3.302***	3.350***	3.208***	3.207***
Change F		0.100	0.053	0.103		0.048	0.142	0.001
R2	0.134	0.143	0.150	0.152	0.207	0.217	0.217	0.225
Δ R2		0.009	0.007	0.002		0.010	0.000	0.008

Control entries represent standardized regression coefficients. * P<0.05, **P<0.01, ***P<0.001, †P0.10 (two-tailed), with directional hypothesis entries (one tailed).

Figure 1: The “bricolage→newness→performance” model

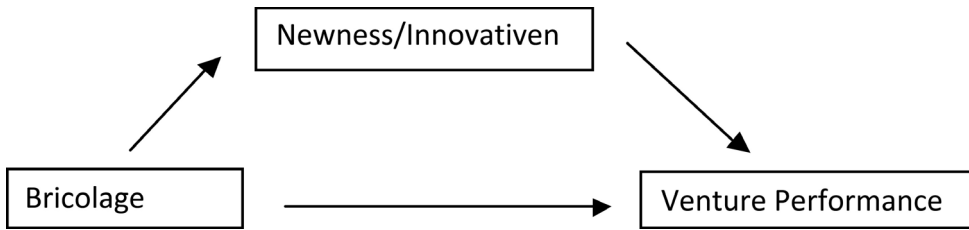
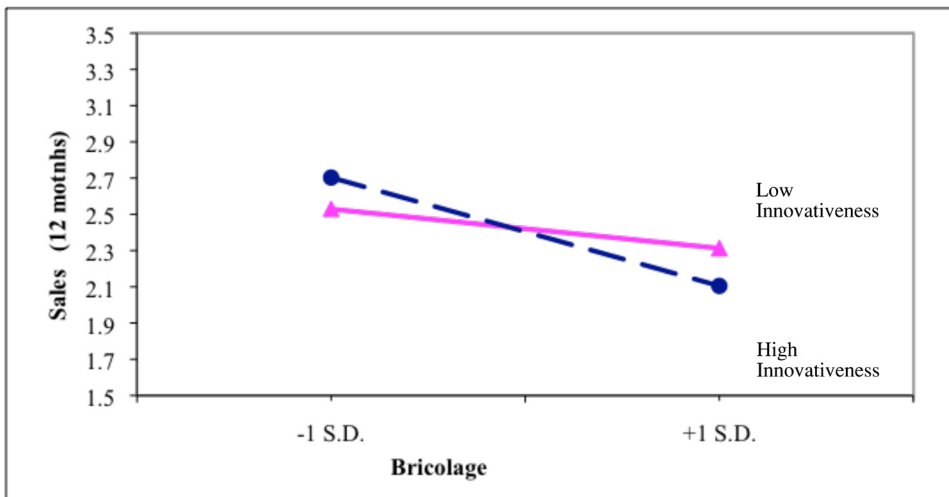


Figure 2A: Moderation Innovativeness: Bricolage and 12 Month Sales (Young Firm)



*Sales scale minimised to illustrate moderating effect

Table 3: Mediation Results: Nascent Firms

	Model 1	Model 2	Model 3	Model 4
	Bric-New	New-Perform	Bric-Perform	Bric/New-Perform
<i>Level of Resources Controls</i>				
YearsActive	0.074†	0.019	0.027	0.021
Team /Solo (Dummy)	0.107†	-0.128*	-0.112†	-0.121*
Spouse Team	-0.115*	0.137*	0.122*	0.132*
Log_Loans	-0.023	0.293***	0.292***	0.294***
Services/Products Dummy	-0.180***	-0.029	-0.049	-0.033
<i>Resource Heterogeneity Controls</i>				
Serial Entrepreneur	0.135†	0.090†	0.095†	0.083
Single/Parallel Entrep.	-0.077	0.053	0.048	0.055
Education Level	-0.018	0.048	0.047	0.049
Industry Exp	0.038	0.072	0.073	0.069
General Manage.Exp	-0.151*	0.013	-0.008	0.006
<i>Industry Controls</i>				
Retail	-0.099†	-0.047	-0.057	-0.048
Hospitality	-0.086†	-0.127*	-0.124*	-0.116
Consumer_Services	0.030	0.027	0.026	0.024
Health, Education Social Services	0.016	0.027	0.029	0.027
Manufacturing	-0.078	-0.092	-0.102*	-0.095*
Construction	-0.042	-0.020	-0.026	-0.022
Agriculture	-0.094†	-0.042	-0.058	-0.050
Mining	-0.070	-0.029	-0.030	-0.024
Transportation	-0.045	-0.014	-0.017	-0.013
Utilities	-0.005	0.032	0.024	0.025
Communication	0.044	-0.018	-0.017	-0.021
Real_Estate	-0.069	-0.046	-0.060	-0.054
Finance_Insurance	-0.049	-0.016	-0.018	-0.013
<i>Direct Effects</i>				
Bricolage	0.115**		0.097*	0.086*
Innovation/Newness		0.099*		0.090*
F	2.376***	3.551***	3.476***	3.529***
F value Change				0.053
Ad				
R2	0.059	0.105	0.102	0.108
Δ R2				0.006

Control entries represent standardized regression coefficients. * P<0.05, **P<0.01, ***P<0.001, †P0.10 (two-tailed), with directional hypothesis entries (one tailed).

Appendix 1: CAUSEE Bricolage Measures

Q1 OK, does the following represent how you never, rarely, sometimes, often, or always go about doing things for your start-up? Firstly, ... **READ STATEMENT**

	Never	Rarely	Sometimes	Often	Always	DK	Refused
We are confident of our ability to find workable solutions to new challenges by using our existing resources	1	2	3	4	5	9	8
We gladly take on a broader range of challenges than others with our resources would be able to.	1	2	3	4	5	9	8
We use any existing resource that seems useful to responding to a new problem or opportunity	1	2	3	4	5	9	8
We deal with new challenges by applying a combination of our existing resources and other resources inexpensively available to us	1	2	3	4	5	9	8
When dealing with new problems or opportunities we take action by assuming that we will find a workable solution	1	2	3	4	5	9	8
By combining our existing resources, we take on a surprising variety of new challenges	1	2	3	4	5	9	8
When we face new challenges we put together workable solutions from our existing resources	1	2	3	4	5	9	8
We combine resources to accomplish new challenges that the resources weren't originally intended to accomplish	1	2	3	4	5	9	8

≈ SUMMARY ≈

EXPLORING THE CHARACTER OF ENTREPRENEUR-LEADERS: THE TWO FACES OF POWER

Ayman El Tarabishy, The George Washington University, USA

Marshall Sashkin, The George Washington University, USA

George Solomon, The George Washington University, USA

Principal Topic

Entrepreneurs are characterized by a strong need for personal achievement. This often leads them to try to do everything themselves. One result is burnout; another may be the alienation of other organization members. CEOs of organizations they must “empower” others if their firms are to be successful. This study examines the power need of entrepreneurial CEOs and how it is directed. In particular we focus on “personalized power”—the use of power to attain entrepreneurs’ personal goals—and “pro-social power” or sharing power to empower others to achieve common goals.

Power directed solely toward personal gain is usually dysfunctional for an organization, while pro-social power is commonly associated with positive outcomes. We assessed the power and achievement needs of CEOs of entrepreneurial firms to test hypotheses about how these needs interact with entrepreneurial orientation (EO) of the organization to affect performance outcomes. For a purposive sample of 29 small, relatively young firms in the information technology field located in the mid-Atlantic region we tested the mediating effect of EO.

Results and Implications

Regression results showed that achievement and power needs are significantly related to one or another of the six performance indicators measured. Regression of the three needs onto EO showed all were significantly related. We could, then, determine whether EO mediates their effects on performance (Baron & Kenney, 1986). Regression of the appropriate needs along with EO onto the performance measures showed that in every case EO mediated, fully or partially, the effects of CEOs’ character (as assessed by need for achievement and power) onto performance. Achievement need was mediated by EO onto increase in market share, size, profit, and capitalization. Need for personalized power was mediated onto measures of overall performance and number of new products developed. Lower need scores related to higher performance scores.

These results show that entrepreneurial CEOs’ need for power is as important for success as their need for achievement. In particular, we see it is not simply, as one might have suspected, the use of empowerment as a positive aspect of leadership that leads to effective organizational performance. Much more important is avoiding the use of power to satisfy personal self-aggrandizing, even narcissistic desires. Further research needs are discussed.

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≈ SUMMARY ≈

UNDERSTANDING THE ENTREPRENEUR: AN INDEX OF ENTREPRENEURIAL SUCCESS

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Principal Topic

A perplexing issue in entrepreneurship studies is what leads to successful entrepreneurship and determining the characteristics of successful entrepreneurs. Based upon a multidimensional model of the entrepreneurial firm, we obtain a quantitative index of success. These results improve our understanding of the entrepreneurial process and can be used to formulate public policies to increase the success rate for startups, thereby enhancing the dynamic efficiency of a market economy.

Method

The entrepreneurial firm is embedded in a probabilistic specification of the production process in which owners and total costs are transformed into revenue and revenue growth. Owner hours represent the extent to which owners are committed to the startup; total cost is a measure of the resources utilized; revenue captures the current success of the enterprise; while revenue growth is an indicator of future success. The evaluation of firm success is based upon dominance: a more successful firm is able to attain the same or more revenue and revenue growth with the same or less total cost and owner hours. The index is generated using the order- m frontier approach introduced by Daraio and Simar. The data are from the Kauffman Foundation Firm Survey for the years 2005 and 2006. The sample consists of 2864 firms that started business in 2004.

Results and Implications

For all firms in the sample, the mean index value is 0.60, with a standard deviation of 0.33, suggesting that the average firm is 60 percent successful compared to other firms, given total cost and owner hours. There is substantial room for improvement in startup performance. Based upon a comparison of mean performance between groups: firms owned by U.S. citizens (0.59) tend to be less efficient than firms owned by non-citizens (0.62); native born owners (0.58) tend to be less efficient than non-native born owners (0.60). The ethnic breakdown is uniform with white owners, black owners, Asian owners, and Hispanic owners generating identical scores equal to 0.59. Firms that produce a product have a mean index value equal to 0.60; firms that produce a service have a mean index value equal to 0.59.

A nonparametric regression of the ratio of unconditional to conditional index values on first owner age and then owner work experience shows that the optimal owner age is 42 and the optimal work experience is 14 years.

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≈ SUMMARY ≈

WHY, HOW, WHAT FOR? MOTIVATIONS, ACTIONS AND EXPECTATIONS IN HABITUAL ENTREPRENEURSHIP

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Principal Topic

Is habitual entrepreneurship different? Answering this is important to the field, however there is little systematic evidence, thus far. We address this by examining the role experience plays at three possible points of difference: motivations, actions and expectations; and by comparing those currently in the process of starting a business with those who have recent success in business creation. Firstly, we assess the balance of opportunity versus necessity motivation, internally versus externally stimulated decision processes and future growth aspirations. Literature suggests novices are more likely motivated to nascency out of necessity, and favour a manageable business size, while habitual entrepreneurs are more likely motivated by internally stimulated or idea driven processes. Secondly, we examine actions undertaken by successful experienced founders during gestation, contrasting 'information collection' and 'opportunity definition'. Drawing on prior research we expect novices more likely to have enacted 'information search' while habitual entrepreneurs enact 'opportunity definition'. Thirdly, we examine perceptions of venture success, where findings on overconfidence suggest that habitual entrepreneurs expect a higher chance of success for their ventures, while inexperience leads novices to underestimate the difficulty of entrepreneurial survival.

Method

Empirical evidence to test these conjectures was drawn from a screened random sample of over 1100 Australian nascent and newly started business ventures. This information was collected during 2007/8 using a telephone survey.

Results and Implications

Why do habitual entrepreneurs keep coming back? Findings suggest that while the pursuit of opportunity is shared by novice and experienced entrepreneur alike, consideration of repeat entrepreneurship may be motivated by a desire for growth. While idea driven motivations might not delineate a distinction during nascency, it does seem to be a factor contributing to the success of young firms. This warrants further research. How do habitual entrepreneurs behave differently? It seems they act to clearly define market opportunities as a matter of priority during venture gestation. What effect does entrepreneurial experience have on future expectations? Clearly a sense of realism is drawn over the difficulties that might be faced, and accords more circumspect judgements of venture survival. This finding informs practitioners considering entrepreneurship for the first time.

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≈ SUMMARY ≈

**NEW VENTURE START-UP VERSUS BUSINESS TAKEOVER:
THE IMPACT OF ENTREPRENEURIAL HETEROGENEITY**

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Eddy Laveren, University of Antwerp, Belgium

Ann Jorissen, University of Antwerp, Belgium

Rudy Martens, University of Antwerp, Belgium

Principal Topic

The majority of entrepreneurship researchers usually studies entrepreneurship in terms of new venture creation (Amaral and Baptista, 2007), whereas it is just as important to ensure that existing ventures continue to exist and prosper. Since most baby boom entrepreneurs are reaching the retirement age in the coming years (Berck, 2006; Gale and Scholz, 1999), insights into the antecedents and consequences of entrepreneurial entry modes are absolutely necessary. However, the extant literature is almost exclusively focused on entry modes of multinationals' subsidiaries (Slangen and Hennart, 2008), whereas entry modes of individual entrepreneurs are mostly omitted (Parker and Van Praag, 2007).

As our focus is on entrepreneurs we respond to a research call in the literature and introduce the concept of entrepreneurial heterogeneity (novice and habitual entrepreneurs) (Westhead et al., 2005). Up till now, most entry mode studies are undertaken with a research population which consists of a mix of novice and habitual entrepreneurs whereby little attention has been paid to how that sample mix affects the findings (Westhead et al., 2005).

Method

A postal questionnaire to the principal owner-manager resulted in a sample of 433 ventures. Financial data were added using the Bel-First database. All data are analyzed using logistic regression models and two-stage Heckman procedure.

Results and Implications

We argue that it is crucial to distinguish both novice and habitual entrepreneurs if we wish to understand the antecedents and consequences of new ventures' entry mode. Through this research approach we make a threefold contribution. First we find evidence that the type of entrepreneur (novice/habitual) has an important impact on the entry mode choice. Second our results indicate that the extent to which demographic characteristics of the founder influence the entry mode depends very much on the type of entrepreneur. Finally, the findings reveal that the entry mode choice is not associated with performance differences in the short run. Our findings could have important implications for the public policy initiatives designed to encourage future entrepreneurs to consider the take-over of an existing venture as an alternative to the start-up of a new venture.

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≈ SUMMARY ≈

**DISPLAYS OF ENTREPRENEURIAL PASSION AND
EMPLOYEES' COMMITMENT TO NEW VENTURES***Anja Klaukien, Max Planck Institute of Economics, Germany**Nicola Breugst, Max Planck Institute of Economics, Germany***Principal Topic**

In leadership research, supervisors' affect was found to influence employees' performance (George, 1995). As in the entrepreneurial context passion plays a significant role (Smilor, 1997, Cardon et al., in press), we investigate the effect of entrepreneurs' displays of passion on the employees' commitment to work for their company. We draw on psychological literature (e.g., Sy et al., 2005) and suggest that employees' commitment, i.e. the identification and involvement with the firm (O'Reilly and Chatman, 1986), will increase when employees perceive high levels of passion displayed by entrepreneurs about inventing, founding, or developing their ventures (cf. Cardon et al., in press).

Furthermore, employees' commitment was shown to be positively influenced by goal similarity between supervisor and employee (Vancouver et al., 1994). We propose that the perception of financial and nonfinancial goals as being similar will also have a positive effect on the employees' commitment as well as a moderating effect on the relationship between perceived entrepreneurial passion and commitment.

Method

To test our hypotheses empirically, we designed a field experiment. In our conjoint-based experiment (Shepherd and Zacharakis, 1997) employees in German start-up firms are confronted with 16 profiles (which are replicated to test for reliability) describing hypothetical work environments based on different levels of entrepreneurs' displays of passion for inventing, founding, and growing a business, and different levels of financial and nonfinancial goal similarity between the entrepreneur and employees. We analyze participants' commitment in the different hypothetical situations by employing Hierarchical Linear Modeling (HLM) (Raudenbush et al., 2004).

Results and Implications

Our work contributes to previous research on entrepreneurial passion by answering a call for research on the effect of displays of entrepreneurial passion on employee behavior (Cardon, 2008). Second, we take into account a central phenomenon in social interaction and experimentally investigate the direct and moderating influence of perceived goal similarity between entrepreneur and employee. So far, work on entrepreneurial affect (including passion) has mainly been theoretical. We present one of the first empirical studies directly assessing the effect of entrepreneurs' displayed passion on their employees' commitment to the new venture and integrate similarity as a central variable in the leadership-employee relationship.

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≈ SUMMARY ≈

FEAR OF FAILURE AND OPPORTUNITY EXPLOITATION

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Principal Topic

Managing a company is stressful (Boyd and Gumpert, 1983). However, few studies have investigated the occurrence of stress among entrepreneurs (Wincent and Örtqvist, 2006). Especially its effect on entrepreneurial decision-making has so far been neglected. We analyze entrepreneurs' decision to exploit an opportunity (Choi and Shepherd, 2004) and investigate how job stress influences this decision. Since stress can cause hasty decision-making (Janis and Mann, 1977), we argue that entrepreneurs draw less on their knowledge of available resources when they experience stress, leading to a higher likelihood to exploit. However, individuals differ in their reaction to stress (Lazarus and Erikson, 1952) and stress can also decrease entrepreneurs' motivation to exploit. We suggest that the personality trait fear of failure moderates the relationship of experienced stress on entrepreneurs' exploitation decisions. We propose that fear of failure leads to a focus on possible negative outcomes (Elliot and Church, 1997) and additionally experienced stress can lead to a "flight-response" and a decreased likelihood to exploit.

Method

To test our hypotheses empirically, we designed a conjoint-based experiment (Shepherd and Zacharakis, 1997) in which 80 entrepreneurs were confronted with 8 profiles (which are replicated to test for reliability) that describe hypothetical opportunities. Subsequent to the evaluation task, participants were asked to rate how stressful their job is on a 9-item Job-Stress Scale (Parker and Decotiis 1983) and how fearful they are on a 41-item Fear-of-Failure Scale (Conroy 2001). For data evaluation we employ Hierarchical Linear Modeling (HLM) (Raudenbush, et al. 2004).

Results and Implications

Results provide significant support for the hypothesized interaction effects of job stress and fear of failure on the decision to exploit an opportunity. When fear of failure is low stress leads to a higher likelihood to exploit. When fear of failure is high, stress decreases the likelihood to exploit.

Our work contributes to previous research on entrepreneurial stress and entrepreneurial decision-making. Existing studies have highlighted the importance of entrepreneurial stress, but not explicitly linked it to entrepreneurial decision-making. Our study addresses this gap. Moreover, our study is the first to identify contingencies that moderate the effect of stress on entrepreneurial decision policies.

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≈ SUMMARY ≈

**ENTREPRENEURIAL HUMAN CAPITAL AND THE
INTERNAL ORGANIZATION OF THE FIRM**

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Principal Topic

This paper examines not only the role played by business owner characteristics in influencing the determination of employees' wages, but also the human capital characteristics of the employees being hired, as well as the hierarchical structure of the firm. We argue that, in young firms, the background and personal characteristics of the founders are also determinants of personnel policies, affecting the way hierarchies are structured and wages are set. Founders with higher levels of general and specific human capital are more likely to design firms focused on growth, and should hire better quality human capital.

Methods

This study uses a longitudinal matched employer-employee data from Portugal's private sector for 1995-2003. The sample is constituted by small firms with a sole owner who is also the firm top manager. In this way we guarantee that the business owner effectively controls the way the firm is managed, in particular the definition of the firm personnel policies. We start by assessing whether there is a match between the employer and the employees in what concerns their individual characteristics. Secondly, we determine how business owner human capital influences the design of the hierarchical structure of job assignments, as well as the formation of wages. Finally, we assess if the owner's human capital has also an influence on the determination of the firm promotion policy.

Results and Implications

Results suggest that business founders seek employees which have similar observable characteristics and there is evidence of stronger incentives and of a working internal labor market. Workers seem to be more protected from labor market fluctuations while progressing up the job ladder in firms where with higher levels of business owner general and specific human capital. Business owner education also has an effect on the internal organization of the firm, since a less compressed wage structure is associated with more educated business owners.

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≈ SUMMARY ≈

JOB CHARACTERISTICS THEORY: A COMPARATIVE STUDY OF NOVICE AND REPEAT ENTREPRENEURS

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Principal Topic

In the area of entrepreneurial behavior, recent findings show that job characteristics of entrepreneurs and non-founding top executives of small and mid-sized businesses significantly differ. While interesting, no research to date illustrates if there are differences among entrepreneurs who have started just one venture – novice entrepreneurs – or have previously started more than one venture – repeat entrepreneurs.

Prior start-up experience is a distinguishing factor between novice and repeat entrepreneurs. This experience has been shown to be a factor in how novice and repeat entrepreneurs recognize opportunities. It may also be a factor in how novice and repeat entrepreneurs perceive their work in terms of job characteristics and how these job characteristics influence individual-level outcomes. The organizational literature shows that different levels of job characteristics influence individual-level outcomes differently.

To date, the majority of empirical findings have failed to show differences in individual-level outcomes between novice and repeat entrepreneurs. Considering this failure, Job Characteristics Theory may explain how job characteristics influence novice and repeat entrepreneurs differently even if the outcome may be of similar magnitude. Thus, the purpose of the present study was to examine how job characteristics influence a fundamental measure of success for the individual entrepreneur - job satisfaction – for novice and repeat entrepreneurs.

Methods

Data were collected from 192 novice and 229 repeat entrepreneurs. The Job Characteristics Inventory and Minnesota Satisfaction Questionnaire were used to assess job characteristics and job satisfaction. Regression analysis was the principal method of data analysis. The Chow test was used to test for differences between the regression lines.

Results and Implications

Even though no significant mean difference was found for job satisfaction, the results show that job characteristics explain substantially more unique job satisfaction variance for novice entrepreneurs. The results show significant differences in how job characteristics regressed on job satisfaction, i.e., autonomy had a stronger association with job satisfaction for repeat entrepreneurs whereas feedback had a stronger association with job satisfaction for novice entrepreneurs. In combination these results provide strong support for the basic argument of Job Characteristics Theory: different kinds of work with inherently different levels of job characteristics influence job satisfaction differently. Specifically for entrepreneurship, the results show there are significant and important differences between novice and repeat entrepreneurs.

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≈ SUMMARY ≈

FOUNDING TEAM CAPABILITIES AND NEW SERVICE VENTURE PERFORMANCE: A CONCEPTUAL MODEL AND EMPIRICAL EVIDENCE

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Principal Topic

Past research shows that a variety of founding team characteristics, such as team size, average age, years of experience, etc. are positively correlated with new venture performance (Cooper and Bruno, 1977; Eisenhardt and Schoonhoven, 1990). However, these previous studies do not explain why teams with similar experience, age, etc. produce dramatically different results, and they do not explain how founding team characteristics impact new venture performance.

This study examines the impact of founding team on new service venture performance by applying upper echelons theory (Hambrick and Mason, 1984) from a resource-based perspective. From literature and our empirical grounding case studies, we identified three founding team capabilities – marketing capability, market-linking capability and design capability – as the key sources, and we also indentified two positional advantages - scalability and protectability - that a new service venture needs to create to achieve superior performance. We conducted an empirical study to test the theoretical model.

Method

Our initial sample included 1249 new service ventures indentified from the Dun & Bradstreet Corporation database. The data for this study were collected during the first two years of the venture's creation using mail surveys. The final sample consisted of 372 firms across three industries.

Results and Implications

Our results provide some very important insights into founding team assembly and new service venture performance. First, while both scalability and protectability positively affect venture performance, protectability has bigger impact on performance than scalability. Therefore, it is crucial for a new service venture to protect its offering by innovating or building complex assets. Second, while new service venture founding teams must be capable of designing and marketing their service offerings, our results show founding team market-linking capability, not design capability or marketing capability, is the most important factor for new service venture performance. Therefore, new venture founding teams must have the capabilities of creating and maintaining durable relationships with customers and channel members.

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≈ SUMMARY ≈

DOES PRENATAL TESTOSTERONE PREDICT ENTREPRENEURIAL SUCCESS? RELATIONSHIPS OF 2D:4D AND BUSINESS SUCCESS

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Principal Topic

Recently, researchers across different disciplines have taken increased interest in the study of digit ratio (2D:4D), a sexually dimorphic trait used as a marker of the prenatal influence of testosterone on the cerebral development (Manning, 2002). The field of 2D:4D research has generated a number of interesting findings suggesting that this area of research may be relevant to entrepreneurship. Previous studies found more masculine finger length ratios being positively associated with dominance (Neave et al., 2003), aggressiveness (Bailey & Hurd, 2004), assertiveness and competitiveness (Wilson, 1983), and risk-taking behaviour (Garbarino et al., 2008). Moreover, Weis et. al (2007) identified relationships between 2D:4D and interests in enterprising professions. Building on these findings, we assume a positive relationship between masculine finger length ratios and entrepreneurial success. We argue that a better fit between 2D:4D ratio and career choice increases venture performance. We further test interaction effects of 2D:4D and need for achievement on business success, assuming that need for achievement produces higher relationships with success the lower – and thus more masculine – the entrepreneurs' digit ratios.

Methods

Our study includes 101 male business owners from Germany. We used questionnaire and interview data, including three indicators of success: number of employees, employment growth, and an external evaluation of success. In order to measure 2D:4D we scanned business owners' ventral surfaces of both hands. Subsequently, two independent raters measured finger lengths at the basal crease of the digit proximal to the palm extending to the tip of the digit. Consistence between the raters was high. Need achievement was measured with three items taken from Hermans (1970).

Results and Implications

Our analyses of direct effects yielded no significant relationships between 2D:4D and success. However, we found interactions of 2D:4D and need for achievement on success indicated by number of employees and the external evaluation as well as a marginal effect on success measured as employment growth.

To our knowledge, the study is the first to systematically apply 2D:4D research to the field of entrepreneurship. Our research may inspire further investigation into the biological foundations of entrepreneurship.

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≈ SUMMARY ≈

PEEKING INTO THE SUBJECTIVE NATURE OF ENTREPRENEURIAL ACTIVITY: LIFE STORIES OF SUCCESSFUL ENTREPRENEURS

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Principal Topic

Entrepreneurs are social agents who have unique personality traits that enable them to discover and exploit new opportunities (Gartner, 1985; Shane and Venkataraman, 2000). While the current literature refers to entrepreneurs in heroic terms, attributing them with unique personality traits and capabilities (Lumpkin and Dess, 1996; Baron, 2004; Busenitz and Barney, 1997), these studies under-represent how entrepreneurs perceive their self identity as social agents and how they manage the emotional process that is associated with entrepreneurial activity (Goss, 2005; Baron, 2008). The aim of this study is to examine (1) how entrepreneurs perceive their self identity as social agents and how they construct their social role, and (2) how entrepreneurs relate to the emotional process associated with their activity.

Method

The study is based on in-depth interviews with 15 Israeli high-tech entrepreneurs. The aim of the study is to examine entrepreneurs' stories in order to gain an insight into the way entrepreneurs perceive their self identity and social role from the references they make to past, present and future actions (Rae and Carswell, 2000; Hytti, 2005; Gartner, 2006).

Results and Implications

It was found that entrepreneurs related to the discrepancies between their socially constructed characteristics (as having high abilities) and their own, perceived *self identity*. Entrepreneurs related to the dysfunctional aspects of their so called "heroic" traits and their impact on their personal life. In addition, entrepreneurs anticipated their decision to become entrepreneurs as a natural stage of their professional career development, rather than as relying on an extraordinary ability to see opportunities that others are unable to recognize. This finding suggests that entrepreneurs construct their *social role* carefully, seeking less risk than assumed. The findings expose the *emotional process* that is associated with the construction of entrepreneurs self identity and their social role.

The findings contribute to the literature by suggesting that the entrepreneurial activity can instead be seen as a combination of two parallel levels of construction: *social role construction* that reflects the way in which entrepreneurial activity is socially constructed and *self identity construction* that is influenced by entrepreneurs' emotions and subjective perceptions. At the *social construction* level, the entrepreneurial activity is explicitly constructed by "heroic" entrepreneurs, who are considered to have superior traits. At the *self construction* level, the entrepreneurial activity is associated with an implicit process that is influenced by entrepreneurs' perceived self identity, emotional state and psychological ownership (Pierce, et al., 2001).

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∞ INTERACTIVE PAPER ∞

LIFERS, DABLERS, AND HOBBYISTS: HOW DO THEY DIFFER FROM RECENT ENTREPRENEURS?

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Principal Topic

The Panel Study of Entrepreneurial Dynamics I (PSED I) was the first opportunity to collect nationally representative information on a rarely studied group: individuals that engage in business startup activities for many years without establishing operational businesses. For these individuals, entrepreneurship is a costly pursuit in which they expend effort and financial resources on ventures that fail to generate revenues.

Many factors motivate individuals to become entrepreneurs, including self-realization, financial success, recognition, roles, innovation, and independence. Individuals also vary on the level of intensity they have toward entrepreneurial activities, meaning the amount and duration of effort they are willing to devote toward business creation. Finally, entrepreneurs vary in the extent to which they expect favorable outcomes from their efforts to start a business. We examine the ways in which long-term nascent entrepreneurs differ from recent entrepreneurs on career reasons, entrepreneurial intensity, social skills, and expectancy characteristics. We then demonstrate how these differences help predict the status of startups in follow-up interviews.

Method

We use data from the Panel Study of Entrepreneurial Dynamics I and II (PSED I and PSED II). We devote considerable attention to the differences between these two datasets with regard to the career reasons, intensity, social skills and expectancy measures. We used weighted multivariate analyses to test our hypotheses.

Results and Implications

Our research findings demonstrate that those engaged in nascent entrepreneurial activities for more than five years prior to the first wave interview differed most notably in their reasons for starting businesses relative to recent nascent entrepreneurs. In addition, long-term nascent entrepreneurs were both less likely to establish new firms and discontinue their startup activities in follow-up interviews. In other words, long-term nascent entrepreneurs were more likely to remain nascent entrepreneurs than recent nascent entrepreneurs, who were more likely to establish businesses or discontinue entrepreneurship. Finally, our research analyses indicate that the differences in the social psychological factors between recent and long-term nascent entrepreneurs help predict which recent nascent entrepreneurs will remain nascent entrepreneurs for extended periods and which establish operational businesses.

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≈ INTERACTIVE PAPER ≈

ENTREPRENEURIAL AFFECT AND PERCEIVED STRESS: SELF-EFFICACY AND EXPERIENCE AS STRESS BUFFERS

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Principal Topic

Entrepreneurs are perceived to be stressed (Boyd & Gumpert, 1983) and over two-thirds of business owners reported running a business as more stressful than working for others (Bibby Financial Services, 2008). We take an affective perspective to understand entrepreneurial stress. Individuals often use their affect to evaluate how they feel about a situation (Schwarz & Clore, 1983). Due to affect-laden information, entrepreneurs experiencing positive affect may concurrently perceive that their ventures are progressing nicely and report less stress. In contrast those experiencing negative affect may also perceive problems leading to stress perceptions.

We hypothesize self-efficacy and entrepreneurial experience as stress buffers. High self-efficacy individuals tend to perceive that they have control over the situation, are resilient, and engage in self-aiding thoughts (Bandura, 1999). Thus, these individuals like challenging activities and persevere through difficulty. Experienced entrepreneurs may react less to adversity because they have developed start-up skills and strategies to resolve venture problems (Wiklund & Shepherd, 2008). They may also discover new opportunities, and if the current venture fails, start other businesses (Bates, 1995).

Method

We conducted a longitudinal within-individual study of 60 entrepreneurs and used an experience sampling methodology (ESM) to map fluctuations of their affect and stress. ESM is a method where individuals are surveyed multiple times over the duration of the study. Using this method, we obtained about 1,500 data points of momentary affect and stress. We also used a one-time survey to collect background information (including entrepreneurial experience), and self-efficacy scores. To reduce participant inconvenience, we used a cell phone based ESM system, where the survey was embedded in the participants' cell phone, and their responses sent to us via the short messaging system (SMS).

Results and Implications

Findings generally support our hypotheses of the affect-stress link as moderated by self-efficacy and entrepreneurial experience. The paper makes three contributions: First, it provides an empirical test of how affect and stress are linked. Second, and more importantly, it explains the mechanisms for stress buffering, that of self-efficacy and entrepreneurial experience. Third, we answer recent calls (e.g. Baron, 2008) to make affect a central part of entrepreneurship research.

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∞ INTERACTIVE PAPER ∞

CLEANTECH ENTREPRENEURS: ATTRIBUTES, INTENTIONS AND PERFORMANCE

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Principal Topic

The principal topic in this paper is to investigate the entrepreneurs behind the technical innovations that can be the solution to the world's environmental problems. Why are they so special? Or: Are they special? Or: Is there a difference between traditional entrepreneurs and cleantech entrepreneurs? Is it more than a technological difference?

The relationship between the "general" entrepreneur's characteristics and different performance measures (e.g. growth) has received substantial research attention over the years indicating a consensus that firm success and growth is more dependent on the entrepreneur himself than on any other factor. In this paper we take this research one step further and focus on the cleantech entrepreneur. Hence, the main purpose with the current research project is to test the linkage between entrepreneurial attitudes and performance in a cleantech setting.

Methods/Key Propositions

In order to examine entrepreneurial attitudes a survey has been conducted targeting a sample of small and medium-sized (SME) cleantech firms in Sweden. Entrepreneurial attributes was measured in the questionnaire with eleven different concepts (dependent variables): reason to start a business, growth intentions, need for achievement, internal locus of control, extroversion, self-reliance, number of partners, communication frequency and breadth, experience, education and altruism. Two key questions/propositions are tested in the study. The first is a general test of the linkage between entrepreneurial attributes and different independent variables, where growth and profitability being the most important. The second (major) question is the question if there is a difference between entrepreneurs in general and cleantech entrepreneurs.

Results and implications

One major conclusion of this research is that the difference between cleantech entrepreneurs (in entrepreneurial attributes) is to some extent larger than the differences between cleantech entrepreneurs and non-cleantech entrepreneurs. However, when separated into subgroups some interesting characteristics and differences are found. This illustrates some important contributions to policy makers trying to stimulate growth in the cleantech sector.

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≈ INTERACTIVE PAPER ≈

HOW JOB EMBEDDEDNESS INFLUENCES NEW BUSINESS CREATION OF EMPLOYEE

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Principal Topic

More and more employees leave their current employment and create new business. Why some people find new jobs in other organizations, while others choose to start their own ventures. This study attempts to analysis employees entrepreneurship decision from a perspective of job embeddedness.

Job embeddedness model established by Mitchell and Lee (2001) suggests that people leave their job based on three aspects which are influenced by elements both on the job and in the community: 1. The extent to which they are linked to other people and activities; 2. The extent to which they feel they fit in their organizations and communities; 3. What they would have to sacrifice if they left. These three dimensions are called link, fit, and sacrifice.

Meanwhile, numerous studies indicate that the work history and experience of the entrepreneur are crucial for entrepreneurial success (Bruno and Tyebjee, 1985; Hisrich and Peters, 2002; Ardichvili et al., 2003; Kim et al., 2006). It is suggested that work experience, social network, community environment, and opportunity cost embedded in job factors help employees recognize entrepreneurial opportunities, accesses to initial capital, transfer knowledge and accumulate managerial skills for new business.

Method

We identified 499 nascent entrepreneurs who has full-time work experience before from the survey data of the US Panel Study of Entrepreneurial Dynamics (PSED I) research program. The nascent entrepreneurs are divided into two groups—Same-industry group and New-industry group according to whether they had work experience in the industry which the employee intended to enter. Binary logistic regression and linear regression are used to test the hypotheses.

Results and Implications

Results suggest job embeddedness influences the probability of employee becoming an entrepreneur. Employees with high on-the-job embeddedness will be more likely to start up new ventures in the industry which they worked before. Moreover, Employee's on-the-job embeddedness has a positive association with the growth of new ventures.

In future, the theoretical structure proposed here can be extended by injecting the extent of job embeddedness and the mobility of job embeddedness.

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≈ INTERACTIVE PAPER ≈

PATHWAYS TO (ACADEMIC) ENTREPRENEURSHIP: ON THE ROLES OF PERSONALITY, EARLY ENTREPRENEURIAL COMPETENCE IN ADOLESCENCE, AND ACTION-CONTROL BELIEFS IN THE PREDICTION OF ENTREPRENEURIAL INTENTIONS AMONG SCIENTISTS

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Eva Schmitt-Rodermund, Friedrich Schiller University Jena, Germany

Rainer K. Silbereisen, Friedrich Schiller University Jena, Germany

Principal Topic

Promoting entrepreneurship may be vital for the success of today's societies, which face enormous economic and social challenges (Audretsch, 2007). Referring to this, both researchers in the field of social sciences (i.e., Schmitt-Rodermund & Vondracek, 2002) and politicians (i.e., European Commission, 2006) have suggested to consider early entrepreneurial competencies in childhood and adolescence. Indeed, according to a life-span perspective of human development in general (Baltes, Lindenberger, & Staudinger, 2006) and of vocational development (Vondracek, Lerner, & Schulenberg, 1986), an entrepreneurial career might be understood as a developmental outcome. However, such a life-span perspective has been broadly neglected in empirical entrepreneurship research. Furthermore, although the role of personality is a traditional topic in entrepreneurship research, there is a research need regarding possible mediators between the personality-entrepreneurship-relation (Rauch & Frese, 2007). The objective of the present study was, therefore, to investigate the relation between early entrepreneurial competence in adolescence and personality, and entrepreneurial outcomes in adulthood (entrepreneurial intentions, Krueger & Carsrud, 1993). We focussed on academic entrepreneurship (Shane, 2004), i.e., the commercialization of new research knowledge through a firm founding.

Method

The method chosen was an online survey with one measurement occasion to collect current and retrospective data. Measurements were developed according to established research. Data was collected from a random sample consisting of $N = 496$ scientists from research institutions in Germany. Reliability analyses revealed satisfactory internal consistencies of the measurements. Results derived from structural equation modeling.

Results and Implications

As expected, early entrepreneurial competence in adolescence (inventions, leadership, and selling behavior) predicted scientists' intention to found a firm. Moreover, scientists' entrepreneurial control beliefs (agent-means and agent-ends beliefs) mediated this relationship. Personality (Big Five profile) was also associated with entrepreneurial intentions. The data suggests that such broad traits might, to some extent, affect entrepreneurial outcomes in adulthood via early precursors and control beliefs. The findings contribute to our knowledge about entrepreneurial development over the life-span as well as to our understanding of starting points for the promotion of (academic) entrepreneurship.

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∞ INTERACTIVE PAPER ∞

PREDICTING LONG-TERM SURVIVAL CHANCES OF NEWLY FOUNDED BUSINESS VENTURES: BEARING UNCERTAINTY VERSUS MANAGING UNCERTAINTY

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Principal Topic

While there is consensus among scientists about the importance of business formation on economic development, failure rates of newly founded enterprises are high. Attempts to study the causes of business failure are predominantly based on the ecological approach. Unfortunately, most of these studies investigated closure rates and firm dissolution without distinguishing appropriately between “successful” closure and failure. Studies addressing individual-level predictors of long-term success and failure of business ventures are comparably rare. Moreover, most of them used a limited timeframe, making it impossible to detect long-term effects.

We distinguished between long term success and venture failure, the latter referring to venture closure because of financial problems, such as insolvency. Our model developed here draws on the concept of uncertainty to explain long term outcomes of new business ventures. Specifically, the amount of perceived uncertainty (human capital), the willingness to bear uncertainty (risk-propensity), and the way in which owners specify challenges and unknown issues to manage uncertainty successfully (business planning) help managing uncertainty successfully and produce positive long-term consequences.

Method

Our study relies on a sample of 201 small scale business start ups which were studied over a period of 12 years. Wave one was drawn in 1993/94 and consisted of 201 newly founded enterprises with at least one employee. Wave 2 was drawn in 1997 and consisted of 119 enterprises. In 2006, information about venture survival was collected from 189 enterprises of the original sample. We relied on interviews and questionnaires.

Findings and Implications

Our findings suggest that human capital and risk-propensity predict long term growth. Moreover, human capital and start-up planning predict negatively venture failure. Notably, the negative effects of our predictors on failure were not mediated by prior growth, a result that contradicts major economic theorizing. We rather found direct and long term effects of our predictors. These findings suggest a number of theoretical and practical implications. Entrepreneurship theory needs to address the question why early characteristics and activities produce such long term consequences. Moreover, since uncertain and dynamic environments provide opportunities to run an enterprise successfully, entrepreneurs should not avoid such situations but rather face them head on, risk and all.

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EXPLORING THE INFLUENCE OF TASK-SPECIFIC SELF-EFFICACY ON OPPORTUNITY RECOGNITION PERCEPTIONS AND BEHAVIORS



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ABSTRACT

This paper draws from social cognitive theory using the work of Chen et al. (1998), and Tierney and Farmer (2002) to empirically explore the impact of task-specific self-efficacy on opportunity recognition. The primary objective is to expand upon previous research by DeKoning (1999) and Ozgen (2003) exploring sociocognitive influences of opportunity recognition. Findings from the study indicate that entrepreneurial self-efficacy and creative self-efficacy have a positive relationship with opportunity recognition perceptions, and creative self-efficacy has a positive relationship with opportunity recognition behaviors. Creative self-efficacy was also found to be a more influential predictor of opportunity recognition perceptions and behaviors.

INTRODUCTION

A centralized theme in recent entrepreneurship literature has been the investigation of the *opportunity*. Notable entrepreneurship scholars argue that “opportunity” is the core essence of entrepreneurship, although previously overlooked by researchers (Davidsson, 2003; Shane 2000). Shane and Venkataraman (2000, p. 218) ignited a paradigm shift in entrepreneurship research by demarcating their definition of entrepreneurship as “the nexus of two phenomena: the presence of lucrative opportunities and the presence of enterprising individuals”. Shane and Venkataraman’s (2000) conceptual study thrust opportunity and the opportunity recognition process to the forefront of entrepreneurship research. Lumpkin, Hills and Shrader (2001, p. 5) define opportunity recognition as “perceiving a possibility to create new businesses, or significantly improving the position of an existing business” which results in new profit potential.

Despite the large stream of contributions made by entrepreneurship researchers, opportunity recognition has been characterized as being fragmented, with disparate, kaleidoscopic models (Davidsson, 2004; Park, 2005). In fact, the field of entrepreneurship is often characterized as lacking an organizing framework and at times, atheoretical. Over the past ten years, entrepreneurship researchers employed diverse theoretical approaches to advance our knowledge of opportunity recognition which include information flow, learning, cognitive, sociocognitive, and social networks (see Baron & Ensley, 2006; Corbett, 2002; DeKoning, 1999; Ozgen, 2003; Singh, 2000). While each theoretical framework has merit and diverging themes are common, very few scholars engage in further development of existing theoretical approaches.

Some researchers purport that promising areas for contributions to opportunity recognition research are studies utilizing social cognitive theory (Krueger, 2003; Markman & Baron, 2003; Shaver, 2003). Yet, there is surprisingly little extant empirical research exploring sociocognitive influences on opportunity recognition. Social cognitive theory stems from social psychology and posits that individuals have an ability to influence their own motivation and action through the

interaction of cognitive, emotional and other personal and environmental factors. The current research seeks to expand on existing cognitive approaches to opportunity recognition. Prominent studies explore self-efficacy's influence on new venture creation processes, such as entrepreneurial intentions and opportunity recognition (e.g. Boyd & Vozikis, 1994; DeKoning, 1999; Ozgen, 2003). This research applies similar logic through the lens of task-specific self-efficacy.

Bandura (1986) posited that individuals can believe that taking a course of action can produce an outcome, but may not act because they question whether or not they can actually execute what is required. This is critical for entrepreneurs who may dwell on personal deficiencies thereby limiting their cognitive growth. Research has shown that self-efficacy is task-specific (Bandura, 1986) and despite the fact that two tasks may be highly similar, self-efficacy on one task may not necessarily influence efficacy on the other (Krueger, 2003). In fact, Krueger (2003) suggests that there is a need to assess the relative impact between task-specific and general measures and changes in self-efficacy within deeper cognitive structures and levels of expertise for constructs such as opportunity recognition. Simply put, there is an inherent need to better understand the role of task-specific self-efficacy variables on opportunity recognition. To address this gap, the research proposes the following research question: based upon Bandura's social cognitive theory's conceptualization of self-efficacy, is there a relationship between task-specific self-efficacy factors and opportunity recognition perceptions and behaviors? As a secondary objective, the research also seeks to explore differences in the explanatory power of the proposed sociocognitive model as compared to previous cognitive models.

The research draws from the work of Bandura (1986), Chen et al. (1998), and Tierney and Farmer (2002) to empirically explore the impact of task-specific self-efficacy on opportunity recognition. The paper proceeds with an overview of self-efficacy and its sources, followed by a discussion of task-specific self-efficacy. The variables of interest (e.g. entrepreneurial and creative self-efficacy) are then introduced for hypotheses development. Subsequently, research methodology and results are presented, and the paper concludes with major findings and implications of the study.

SELF-EFFICACY AND ITS SOURCES

Bandura's (1986) work centers around the concept of self-referent thought. Bandura's primary contention is that the discrepancy between knowing what to do and acting upon that knowledge is controlled by self-referent thought processes, where the most influential self-referent thought is self-efficacy. Self-efficacy refers to an individual's belief in their ability to accomplish a goal or outcome (Bandura, 1997). Bandura's (1997) theory of self-efficacy essentially suggests that what people believe about their abilities will influence what they do and how they try to do it. This is particularly important in the case of entrepreneurs and entrepreneurship considering that entrepreneurial intentions and pursuits may be influenced by personal, contextual and cognitive factors such as self-efficacy (Boyd & Vozikis, 1994; Sequeira, 2004).

Self-efficacy is a powerful belief structure that can influence human decision-making and sense of competence. Perceived self-efficacy has long been a predictor of performance and action, with Bandura's (1997) definition of self-efficacy being one's belief in their ability to accomplish a goal. Self-efficacy reflects the power of an individual's belief and perceptions of their capabilities on execution of tasks, such as starting a business or recognizing a business opportunity. Entrepreneurship researchers denote self-efficacy's importance and the role it plays in uncover-

ing the essential skills needed at the beginning of and throughout the entrepreneurial process (Ardichvili et al., 2003; Ozgen, 2003). Self-efficacy is also stated to be highly correlated with intentions to start a new venture and explore new opportunities (Boyd & Vozikis, 1994).

Bandura (1986) lists four sources of information from which individuals can derive self-efficacy: the first is *enactive attainment* which is based on mastery experiences where repeated successes raise efficacy levels and repeated failures lower them. The strong sense of self-efficacy developed through repeated successes can then be generalized to other situations across a wide range of activities. The second source of efficacy is *vicarious experience* where seeing or visualizing similar others succeed can raise the self-perception of observers so that they too can master similar activities. The third source of self-efficacy is *verbal persuasion* where people are persuaded verbally that they possess the capabilities to master certain tasks. This technique is used frequently in the teacher-student setting. The fourth source of self-efficacy is *physiological state* where people become aroused through a fear of inadequacy. This causes visceral reactions that generate further fear which can either lessen or heighten perceived self-efficacy.

According to Acs and Audretsch (2003), in the entrepreneurial domain, self-efficacy replaces the perceived behavioral control that is a component of Azjen's (1991) theory of planned behavior. Behavior can sometimes be disjoined from actual capability. This is evident in Bandura's (1997) postulation that "people's level of motivation, affective states, and actions are based more on what they believe than on what is objectively true" (p. 2). Self-efficacy helps explain why some people, who are considered to be extremely talented, are often surpassed (in terms of success) by less talented individuals having higher levels of self-efficacy. Taken together, the source that is most likely to influence the variables of interest to this study is that of enactive attainment through mastery experiences. In the entrepreneurial domain, past successes involving the creation of innovative products or the completion of challenging entrepreneurial tasks can motivate entrepreneurs thereby increasing their confidence and self-beliefs. In an effort to better assess this phenomenon, I examine task-specific self-efficacy factors that previous entrepreneurship literature suggests may be causally linked to opportunity recognition (Ardichvili et al., 2003, Ozgen, 2003).

TASK-SPECIFIC SELF-EFFICACY AND OPPORTUNITY RECOGNITION

Self-efficacy theory is important to the study of opportunity recognition because it suggests that acquiring skills is simply not enough to change how individuals' think, but believing in those skills (perceived efficacy versus actual efficacy) is actually what can make the difference (Krueger, 2003). This implies that self-efficacy may effectively distinguish between who will be proficient at recognizing opportunities and who will not. Knowledge of self allows entrepreneurs to know their capabilities related to various tasks, one of which may be the ability to recognize opportunities. Opportunity recognition is an independent, iterative, nonlinear, complex process which is significantly influenced by self-efficacy (Ozgen, 2003). The present study aims to determine if this same assertion can be made for task-specific self-efficacy.

Task-specific self-efficacy is prevalent in both organizational (e.g. job self-efficacy, occupational self-efficacy, group self-efficacy) and entrepreneurship (e.g. entrepreneurial self-efficacy) literature. Researchers purport that task-specific self-efficacy is a better predictor of task performance and behavior than generalized self-efficacy (Scholz, Dona, Sud, & Schwarzer, 2002; Smith, Kass, Rotunda & Schneider, 2006). Previous studies found that task-specific and generalized self-efficacy are highly correlated (Chen, Gully, Whiteman, & Kilcullen, 2000; Scholz et al., 2002).

However, Bandura (1997) has argued that task-specific self-efficacy is more useful in predicting performance. Research by Scholz et al. (2002) supports this assertion, finding that task-specific self-efficacy is important for helping individuals rebound from specific failures and avoiding performance deficits in the future. Moreover, the creation of a task-specific self-efficacy model of opportunity recognition provides a natural new direction in social cognitive perspective of opportunity recognition.

Of particular interest to this research are entrepreneurial self-efficacy (Chen et al., 1998) and the more recently conceptualized creative self-efficacy (Tierney & Farmer, 2002). The variables were chosen because of their established theoretical and empirical importance to entrepreneurship. For example, creativity has historical precedence for influencing both entrepreneurship (Bonnafeous-Boucher & Radu, 2006; Schumpeter, 1934) and opportunity recognition (Lumpkin et al., 2001), but its sociocognitive successor, creative self-efficacy has yet to attain such accolades. More importantly, use of these two predictors may facilitate stronger empirical linkage of social cognitive theory to opportunity recognition behaviors and perceptions. Similarly, entrepreneurship researchers continue to provide empirical findings supporting the influence of entrepreneurial self-efficacy on entrepreneurial intentions and new venture creation (Chen et al., 1998; DeNoble, Jung, & Ehrlich, 1999, Sequeira, 2004). Along the continuum of new venture creation, opportunity recognition must occur. To commence model development, a conceptual discussion is advanced detailing relationships between entrepreneurial self-efficacy, creative self-efficacy and opportunity recognition.

Entrepreneurial Self-Efficacy: Relationship to Opportunity Recognition

Since its introduction to literature, entrepreneurial self-efficacy has played a prominent role in studies relating to entrepreneurial intentions, interest and new venture formation (Bird, 1988; Boyd & Vozikis, 1994; Chen et al., 1998; Sequeira, 2004). Entrepreneurial self-efficacy refers to a person's belief that he or she can successfully perform the various roles and tasks of entrepreneurship (Chen et al., 1998). The concept itself has evolved over the past twenty years into the present definitional status it enjoys today. Perhaps the most cited works concerning entrepreneurial self-efficacy are seminal conceptual papers by Bird (1988) and Boyd and Vozikis (1994).

Bird's (1988) model is built upon cognitive psychology and attempts to provide linkages of an individual's beliefs and their subsequent behavior. Using Fishbein and Azjen's (1975) framework linking beliefs and attitudes to intentions and behavior, Bird (1988) develops an Entrepreneurial Intentionality model using personal (e.g. prior experience as an entrepreneur, personality characteristics, abilities) and contextual factors (e.g. social, political factors of displacement, changes in markets, government deregulation) that separately influence rational analytic and intuitive holistic thinking which together structures intentionality.

In an extension to the contribution by Bird (1988), Boyd and Vozikis (1994) noting the need to modify Bird's original model, incorporate aspects of social psychology to the framework adding dimensions of perceived behavioral control as posited in Azjen's (1988) theory of planned behavior and beliefs. To achieve this they proposed adding the social cognitive variable of self-efficacy to add insight into the cognitive process by which entrepreneurial intentions are enacted. The authors suggest that individuals, through enactive mastery or repeated performance accomplishments, can strengthen their self-efficacy, particularly for task-specific constructs such as entrepreneurial self-efficacy. In Boyd and Vozikis' (1994) model, self-efficacy, along with attitudes and

perceptions are stated to be outcomes of the thought processes, which then impact intentions, leading to entrepreneurial action and behavior.

Boyd and Vozikis (1994, p. 70) then allude to the salience of this process to opportunity stating that "...a person will only initiate entrepreneurial actions when self-efficacy is high in relation to the perceived requirements of a specific opportunity." Interestingly, while researchers contend that entrepreneurial self-efficacy is an important antecedent of opportunity recognition (DeKoning, 1999; Park, 2005), scant empirical research exists assessing its impact on opportunity recognition. It is well established in the literature that opportunity recognition occurs prior to and post-firm founding (Lumpkin et al., 2001). However, much of the extant work examining entrepreneurial self-efficacy and its possible influence on opportunity recognition is conceptual in nature (Park, 2005). Research by Ozgen (2003) shows empirical evidence concerning the linkage between self-efficacy and opportunity recognition where a positive relationship was found.

A study by Chen et al. (1998) showed that beliefs in entrepreneurial competence can distinguish entrepreneurs from managers, as well as students with entrepreneurial intentions. In creating their construct for entrepreneurial self-efficacy, the authors argued that those high in self-efficacy will have a greater probability of exploiting opportunities because such activities demand confidence in one's ability to successfully execute a venture opportunity (Chen et al., 1998). Chen and colleagues (1998) developed a 22-item instrument of self-efficacy measuring key dimensions of entrepreneurial competency. The primary factors measured are marketing (e.g. ability to set marketing goals and expand business), innovation (e.g. new venturing and new ideas), management (e.g. planning, reducing risk and uncertainty), risk-taking (e.g. making decisions under uncertainty and risk), and financial control (e.g. ability to develop financial system and internal control).

Entrepreneurship researchers suggest that the instrument created by Chen et al. (1998) is psychometrically sound and demonstrates considerable validity (Krueger, 2003). Finally, in an interesting conceptual paper on thought leadership, self-efficacy and performance, Neck, Neck, Manz and Godwin (1999) proposed that utilizing certain cognitive strategies such as thought self-leadership (e.g. influencing oneself to establish self-direction and motivation needed to perform) is related to an entrepreneur's opportunity perceptions, self-efficacy perceptions and behavior. This discussion yields ample support for the viability of entrepreneurial self-efficacy as a determinant of opportunity recognition. Thus, it is posited:

H1a: Entrepreneurial self-efficacy will be positively related to opportunity recognition perceptions.

H1b: Entrepreneurial self-efficacy will be positively related to opportunity recognition behaviors.

Creative Self-Efficacy: Relationship to Opportunity Recognition

Creative self-efficacy measures an individual's confidence in their ability to achieve creative outcomes (Tierney & Farmer, 2002). Since creative self-efficacy is derived from creativity, assessing creativity's importance and linkage to opportunity recognition provides an appropriate starting point for the discussion. Creativity involves both thought and action (Bonnafous-Boucher & Radu, 2006). It is a salient sociocognitive variable frequently used in organizational (Amabile, 1988; Tierney & Farmer, 2002) and entrepreneurship literature (Bonnafous-Boucher & Radu,

2006; Lumpkin et al., 2001; Ucbasaran & Westhead, 2002; Wu, McMullen, Neubert & Yi, in press). Furthermore, creativity is purported to be a key success factor for venture startup (Amabile, 1997). Bandura (1986) stated that “creativity constitutes one of the higher forms of human expression” (p. 104). In his discussion of self-efficacy, Bandura posits that creative development is fueled by modeling which provides the cognitive and behavioral tools for innovation. Creativity is subsequently achieved through observational learning and modeling innovative others. Bonnafous-Boucher and Radu (2006) refer to creativity as the production of new ideas by an individual. In an early work, Shackle (1982) purported that opportunity recognition is a function of variation in people’s creativity or imagination.

Creativity is often cited as important to the opportunity recognition and identification processes (Bonnafous-Boucher & Radu, 2006; Hills et al., 1997; Lumpkin et al., 2001). Ray and Cardozo (1996) provided a definition of entrepreneurial creativity as “an ability to rapidly recognize the associations between problems and their purported solutions by identification of non-obvious associations and/or by reshaping or reforming available resources in a non-obvious way” (p. 12). Long and McMullan (1984) also point out that opportunity identification has been linked to creative thinking. Creativity and innovation are also stated to be central to the success of new ventures and in recognizing opportunities (Hills et al., 1997; Lumpkin et al., 2001). In order to recognize opportunities, entrepreneurs must proceed through a creative process that facilitates the creation of new products and processes that disrupt markets (Schumpeter, 1934; Park, 2005).

Tierney and Farmer’s (2002) work integrated the creativity research of Amabile (1988) and Bandura’s (1997) self-efficacy to build their creative self-efficacy construct. In their study of 584 manufacturing employees and 158 operations employees in a high-tech firm, Tierney and Farmer (2002) used confirmatory factor analysis and hierarchical regression and concluded that creative self-efficacy increases the creative performance and job self-efficacy of employees in organizations. Farmer, Tierney, and Kung-McIntyre (2003) considered creativity to be an antecedent of innovation, which according to Drucker (1985) represents an opportunity. To provide further support, Bonnafous-Boucher and Radu (2006) found creativity to be a positive influence on opportunity and new venture creation. Given the rated importance of creativity in the opportunity recognition process (Long & McMullan, 1984; Lumpkin et al., 2001) as well as recent findings of the positive influence of self-efficacy (Ozgen, 2003) on opportunity recognition, it can be conjectured that creative self-efficacy may have a positive influence on opportunity recognition perceptions and behaviors. In summarizing, there is general agreement within entrepreneurship literature touting creativity and self-efficacy as necessary prerequisites for opportunity recognition to occur (Lumpkin et al, 2001). Accordingly, it is argued that:

Hypothesis 2a: Creative self-efficacy will be positively related to opportunity recognition perceptions.

Hypothesis 2b: Creative self-efficacy will be positively related to opportunity recognition behaviors.

Figure 1 shows the proposed model of task-specific self-efficacy and opportunity recognition. Self-efficacy itself is excluded from the model to avoid potential multicollinearity between self-efficacy and task-specific efficacy variables.

METHOD

Sample and Data Collection

To test the study hypotheses, an online survey was distributed to a sample of 1321 entrepreneur members of three entrepreneurial support organizations located in the South Central region of the U.S. Data collection occurred between September 2008 and January 2009. Final sample size consisted of 232 entrepreneurs representing a usable response rate of 17.56%. Content and face validity of the survey was established a priori by allowing several entrepreneurial experts and academics to pretest and review the survey. No major issues were identified; however, several questions were rephrased based upon suggestions from entrepreneurs and experts.

Measures and Construct Validation

Dependent Variables. The outcome variables used in the study were opportunity recognition behaviors (OPPB) and opportunity recognition perceptions (OPPR). The scale for OPPB was adapted from Singh (2000) and consists of a five-item scale with ratings proceeding from '0' – '7', '8-10', or '11+' opportunities recognized or pursued in the last year. Items were coded as follows to facilitate data analysis: selections for '0' – '7' were coded as is while selections for '8-10' coded as '8,' and '11+' coded as '11'. The scale was summated using the mean score. Following a procedure similar to Singh (2000), logarithmic transformation was performed to achieve normality and obtain proper scaling for analysis. Example questions include "Last year, how many potential new venture opportunities did you recognize?" and "Last year, how many new venture opportunities did you pursue?"

OPPR is a ten-item scale adapted from Ucbasaran & Westhead (2002) which measures an entrepreneur's belief in his or her ability to perceive or be alert to business opportunities. The 7-point Likert scale ranged from 1 (Very Strongly Disagree) to 7 (Very Strongly Agree). Sample questions include "I have a special alertness or sensitivity toward opportunities." and "I consider myself to be opportunistic".

Independent Variables. Entrepreneurial Self-Efficacy (ESE) is a 22-item scale adapted from Chen et al. (1998) consisting of five components related to entrepreneurial competency including marketing, innovation, financial control, risk-taking and management. The scale is measured with a five-point Likert scale ranging from 1 (Completely Unsure) to 5 (Completely Sure). Creative self-efficacy (CSE) is a three-item scale adapted from Tierney and Farmer (2002) measured with a seven-point Likert scale range from 1 (Very Strongly Disagree) to 7 (Very Strongly Agree).

Control Variables. Control variables used in the study included: age, race, gender, education, years of business experience, firm age and company revenue. These variables were chosen based upon their use in previous opportunity recognition studies and potential for impacting study results (see Ozgen, 2003; Singh, 2000).

To assess the initial factor structure on the constructs, the researcher conducted exploratory factor analysis (EFA) using principal component analysis with varimax rotation on a pilot sample of entrepreneurs. An eight-factor solution emerged, consistent with previous research, whereby two variables (e.g. CSE, OPPR) were shown to be unidimensional, and two variables (e.g. ESE, OPPB) were multidimensional (see Chen et al., 1998; Ucbasaran & Wright, 2002). Five factors, marketing, innovation, financial control, risk-taking and management comprised ESE, and two

factors, alertness and developmental comprised OPPR. Since the alertness dimension represents opportunity recognition perceptions and advances research objectives, indicators relating to the developmental dimension were removed. The intent of the research is to use unidimensional constructs, therefore, a final rotation using generalized least squares (GLS) and varimax rotation provided a four factor solution. Reliability coefficients for constructs exceeded recommended levels for CSE and ESE ($\alpha = .79$; $\alpha = .90$), and OPPB and OPPR ($\alpha = .85$; $\alpha = .76$). Measure of sampling adequacy (MSA) was at an appropriate level of .676.

Following the EFA, confirmatory factor analysis (CFA) was conducted to verify the factor structure and dimensionality of constructs. The assessment began with 25 indicators, and upon conclusion of the CFA, 17 indicators remained on four constructs. Results indicated the four factors fit the model well ($\chi^2=168.360$, $p=.000$, $df=111$, goodness-of-fit index, $GFI=.922$, comparative fit index, $CFI=.965$, root-mean-square error of approximation, $RMSEA=.047$). No issues were found relating to cross-loadings indicating discriminant validity was achieved. Convergent validity may be demonstrated by indicator items loading strongly on a factor (e.g. $>.50$). Standardized loading estimates exceeded the .50 threshold and converged onto their respective factors. Another indicator of convergence is the variance extracted (VE). A VE of .5 or higher suggests adequate convergence (Hair, Black, Babin, Anderson, & Tatham, 2006). All study variables met this requirement for convergence. Construct reliability (CR) for each latent variable were acceptable (recommended values $\geq .70$): CSE (CR=.80), ESE (CR=.91), OPPR (CR=.79) and OPPB (CR=.79).

Procedures

A correlation analysis measured the relative strength of associations between variables. Hierarchical regression analysis was then performed to empirically assess the hypothesized relationships. Two models were tested for each outcome variable. The base model contained control variables, and the augmented model contained control variables plus independent variables. As a final step, the relative strength of the independent variables on dependent variables are reviewed followed by an examination of the explanatory power of the model.

RESULTS

Sample Characteristics

Study participants were diverse in terms of gender, race/ethnicity, industry and experience. The sample consisted of 62% males and 36% females. The largest groups represented in the sample included Black/African-Americans (63%), Latino/Hispanic (22%), South Asian (5%) and Asian (4%). The mean age of entrepreneurs was 48.26 years ($s.d.=9.97$) and mean firm age was 9.89 years ($s.d.=9.22$). On average, entrepreneurs in the study reported having 12.64 ($s.d.=8.99$) years of experience in their business industry prior to starting their ventures. The majority of entrepreneurs in the study were married (e.g. 71%), operated their businesses full-time (e.g. 92%), were college-educated, and primarily located in the southcentral (e.g. 52%), southwestern (e.g. 29%) and southeastern (e.g. 9%) regions of the country. Given that company revenue was ranked from 1 (less than \$100,000) to 8 (\$100,000,000 or more), entrepreneurs' average annual revenues fell in the range of \$500,000 - \$9,999,999 ($M=3.63$, $s.d. = 2.25$). Approximately 25% of entrepreneurs reported revenues of \$1,000,000 - \$9,999,999 and 27% reported revenues of less than \$100,000.

Correlation Analysis

Prior to performing hierarchical regression, the researcher sought to determine whether study variables were correlated. Correlation analysis indicated that predictors ESE and CSE were positively correlated ($r=.357, p<.01$) with one another and the criterion variables OPPR and OPPB. CSE in particular is strongly correlated with OPPR ($r=.641, p<.01$). Table 1 displays descriptive statistics, correlations and scale reliabilities.

Hierarchical Regression Analysis

Table 2 present the results of the hierarchical regression analysis for OPPR. Results show that the base model (e.g. Model 1) was significant ($R^2=.086; F_{(7,195)}=2.519, p=.017$), where significant control variables included gender ($B=-.131, p<.10$), age ($B=-.229, p<.01$), and company revenue ($B=.149, p<.05$). With the addition of CSE and ESE predictors, the augmented model (e.g. Model 2) indicated a good model fit ($R^2=.455; F_{(10,195)}=15.457; p=.000$) with a statistically significant improvement over Model 1 (Model 2: $\Delta R^2=.426, p=.000$). These findings demonstrate that control variables, CSE and ESE cumulatively explained 42.6% of the variance in OPPR, representing a 36.9% increase in R^2 .

Furthermore, in Model 2, CSE ($B=.568, p<.001$) and ESE ($B=.132, p<.05$) were significant predictors. Hypothesis 1a stated that entrepreneurial self-efficacy will be positively related to opportunity recognition perceptions, and Hypothesis 2a stated creative self-efficacy will be positively related to opportunity recognition perceptions. The coefficient for ESE ($B=.132$) was found to be positive and significant providing support for hypothesis 1a. Similarly, the coefficient for CSE ($B=.568$) was positive and significant in support of hypothesis 2a.

Table 3 presents the results of the hierarchical regression analysis for OPPB. Results show that the base model (e.g. Model 1) was not significant ($R^2=.047; F_{(7,195)}=1.316, p=.243$) which included only control variables. The addition of CSE and ESE predictors in the augmented model (e.g. Model 2) indicated a good model fit ($R^2=.098; F_{(10,195)}=2.002; p=.035$) with a statistically significant improvement over Model 1 (Model 2: $\Delta R^2=.049, p=.017$). These findings demonstrate that control variables, CSE and ESE cumulatively explain 9.8% of the variance in OPPB, representing a 5.1% increase in R^2 .

Additionally, in Model 2, years of business experience ($B=.141, p<.10$), race ($B=-.121, p<.10$), and CSE ($B=.183, p<.05$) were significant predictors. Hypothesis 1b stated that entrepreneurial self-efficacy will be positively related to opportunity recognition behaviors, and Hypothesis 2b stated creative self-efficacy will be positively related to opportunity recognition behaviors. The coefficient for CSE ($B=.183$) was found to be positive and significant providing support for hypothesis 2b. In contrast, the coefficient for ESE ($B=.074, p=.352$) was not significant. Hence, hypothesis 1b was not supported by the model. To summarize, empirical results found support for Hypotheses 1a, 2a, and 2b, while hypothesis 1b was not supported.

DISCUSSION AND CONCLUSION

The exploratory study yielded interesting results likely to spark new research conversations concerning sociocognitive theory, self-efficacy and opportunity recognition. In regards to task-specific self-efficacy, three conclusions can be made. First, results supported the existence of significant, positive relationships between ESE and OPPR, and CSE and OPPR. Second, a significant,

positive relationship was also found to exist between CSE and OPPB. Third, task-specific self-efficacy variables (in this case CSE and ESE) indeed positively influence opportunity recognition. These findings provide empirical support for the salience of sociocognitive theory, and specifically task-specific self-efficacy as a useful framework for predicting opportunity recognition. More importantly, findings indicate that CSE exhibits relatively more influence on opportunity recognition than ESE.

Standardized coefficients for CSE in each model demonstrate the variable's relative strength in impacting outcome variables. CSE was shown to be more influential than ESE. This finding is consistent with previous research assertions that creativity is essential to the opportunity recognition process (see Lumpkin et al., 2001). The study also suggests that higher levels of entrepreneurial self-efficacy can help influence or increase an entrepreneur's OPPR. Essentially, the more confident entrepreneurs are in their ability to perform the tasks relating to entrepreneurship and be creative, the more likely they are perceive confidence in their ability to recognize and pursue business opportunities. In revisiting the study's primary research question, it can be concluded that using Bandura's conceptualization of task-specific self-efficacy, significant positive relationships exist between ESE and CSE, and OPPR and OPPB.

Much debate exists over which cognitive theories provide greater explanatory power in the context of opportunity recognition. The research demonstrates that the proposed framework's explanatory power meets or exceeds the explanatory power of cognitive models presented in previous research. The ΔR^2 for OPPR and OPPB were .426 and .049 respectively. These results can be compared to those in studies by Corbett (2002) with an ΔR^2 of .031, and Ozgen (2003) with an ΔR^2 of .328 who also use cognitive approaches.

This study makes a first attempt to empirically assess relationships between task-specific efficacy variables and opportunity recognition. Preliminary results show that there is merit in the chosen conceptual model and relationships. The proposed study is important to entrepreneurship literature in multiple ways. First, it utilizes what is considered to be a key contributor of opportunity recognition (e.g. self-efficacy) to build a sociocognitive model of opportunity recognition using the constructs of creative and entrepreneurial self-efficacy, variables whose influence on the opportunity recognition is unknown. Second, the study builds on the foundations laid by DeKoning (1999) and later by Ozgen (2003) in their exploration of social cognitive theory's impact on opportunity recognition. Future researchers should consider incorporating new and existing sociocognitive variables (e.g. risk perceptions) into the model to facilitate development of a comprehensive sociocognitive model of opportunity recognition. Development of a more comprehensive model may yield better explanatory power than other unitheoretical or integrative approaches to opportunity recognition.

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Figure 1: Task-Specific Self-Efficacy Effects on Opportunity Recognition Perceptions and Behaviors

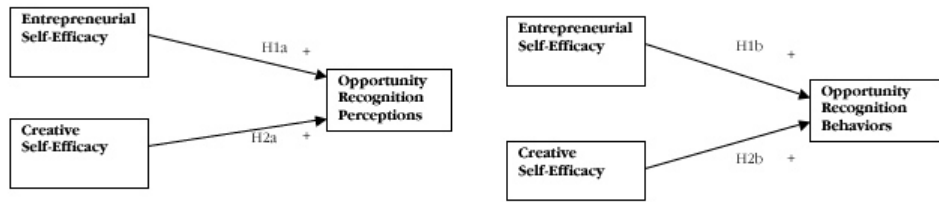


Table 1: Descriptive Statistics and Correlations among Variables

Factor	Mean	s.d..	1	2	3	4	5	6	7	8	9	10	11
1.BusExp	12.64	8.99											
2.Age	48.50	9.73	.303**										
3.GDR	1.37	.48	-.075	-.173*									
4.Race	2.07	1.16	.028	.012	.019								
5.Educ	5.40	1.48	.068	.122	-.054	.122							
6.FAGE	9.89	9.22	-.234**	.391*	-.156*	-.067	-.058						
7.REV	3.63	2.25	-.006	.220**	-.165*	-.103	.034	.307**					
8.ESE	3.94	.572	.077	-.069	-.090	.005	-.069	-.052	.098	(.88)			
9.CSE	5.62	.999	-.152*	-.138*	-.078	-.046	-.022	-.028	.102	.357**	(.81)		
10.OPPB	1.81	1.60	.210**	.004	-.139*	-.116	-.021	-.019	.107	.206**	.207**	(.72)	
11.OPPR	5.08	1.06	-.116	-.154*	-.129	-.015	.010	-.041	.119	.376**	.641**	.318**	(.77)
12.ET	.487	.501	.063	-.017	-.096	.020	.065	-.176**	-.014	.227**	.108	.086	.099

Note. N=232, diagonal for variables in parentheses show reliability coefficients.

*p<.05, **p<.01

Table 2: Results of Hierarchical Regression Analyses for Opportunity Recognition Perceptions

Variables	Opportunity Recognition Perceptions			
	Model 1		Model 2	
	B	S.E.	B	S.E.
Constant	1.570	.571	.600	.457
Business Experience	-.044	.010	-.024	.008
Gender	-.131 ⁺	.166	-.070	.130
Age	-.229 ^{**}	.010	-.099	.008
Race	-.004	.066	.007	.052
Education	.001	.052	.043	.041
Firm Age	-.036	.010	-.026	.008
Company Revenue	.149 [*]	.036	.061	.028
ESE			.132 [*]	.117
CSE			.568 ^{***}	.001
ET			-.034	.125
<i>F (model)</i>	2.52 [*]		15.46 ^{***}	
<i>R</i> ²	.086		.455	
ΔR^2 (adjusted <i>R</i> ²)			.426	

Note. Standardized regression coefficients are displayed in the Table.

N = 232; ⁺ *p* < .10. ^{*} *p* < .05. ^{**} *p* < .01, ^{***} *p* < .001.

Table 3: Results of Hierarchical Regression Analyses for Opportunity Recognition Behaviors

Variables	Opportunity Recognition Behaviors			
	Model 1		Model 2	
	B	S.E.	B	S.E.
Constant	.269	.166	.155	.167
Business Experience	.141 ⁺	.003	.145 ⁺	.003
Gender	-.098	.048	-.071	.048
Age	-.133	.003	-.088	.003
Race	-.121 ⁺	.019	-.119 ⁺	.019
Education	.003	.015	.019	.015
Firm Age	.051	.003	.063	.003
Company Revenue	.046	.010	.011	.010
ESE			.074	.043
CSE			.183 [*]	.000
ET			.029	.046
<i>F (model)</i>	1.316		2.002 [*]	
<i>R</i> ²	.047		.098	
ΔR^2 (adjusted <i>R</i> ²)			.049	

Note. Standardized regression coefficients are displayed in the Table.

N = 232; ⁺ *p* < .10. ^{*} *p* < .05. ^{**} *p* < .01, ^{***} *p* < .001.

ENTREPRENEURS AND PERCEPTIONS OF COMPOUND RISK: MODERATING EFFECTS OF EFFICACY AND CONTROL BELIEFS



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ABSTRACT

Based on the aggregated insights of the existing theories related to multiple sources of efficacy and locus of control, we introduce the theory of mixed control, a model of compound-risk perception. This theory considers outcome expectancies as being composed of expectancies regarding three distinct sources of risk (self, others, and chance). This reflects that entrepreneurship is a complex and dynamic activity, involving multiple sources of risk. Beliefs about the efficacy of these elements are weighted by the degree to which these elements are perceived to control the outcome. The interaction of efficacy and control beliefs is therefore at the core of our theory. Further, we discuss that risks are not only subjectively perceived but can be endogenous and depend on future decisions and actions of the entrepreneur.

INTRODUCTION

Entrepreneurship involves the establishment of new organizations and the development of new economic activities which are rife with risk and uncertainty. Those who engage in such activities have been considered as being willing to take on more risk and uncertainty than others. Empirical work, however, has demonstrated that entrepreneurs are not willing to take more risks than non-entrepreneurs (Busenitz & Barney, 1997; Miner & Raju, 2004; Palich & Bagby, 1995; Wu & Knott, 2006). Therefore, a corresponding difference in general risk propensity hypothesis is not supported by research findings. Alternatively, a difference in risk perception hypothesis has been suggested. In other words, even if entrepreneurs and non-entrepreneurs have similar risk preferences, entrepreneurs may perceive less risk by overestimating their chances for success (Baron, 1998). Differences in risk perception, or how an individual perceives patterns of odds and probabilities, has been of particular interest to economists dealing with economic decisions under risk and uncertainty (Bernardo & Welch, 2001; Felton, Gibson, & Sanbonmatsu, 2003; Puri & Robinson, 2007; Weber & Milliman, 1997; Wu & Knott, 2006) as well as management scholars examining entrepreneurial decision-making and entrepreneurs' positively-biased perceptions of their venture's risk (Baron, 1998, 2004; Busenitz & Barney, 1997; Forlani & Mullins, 2000; Keh, Foo, & Lim, 2002; Norton & Moore, 2006; Simon, Houghton, & Aquino, 2000).

Risk Perceptions, Self-Efficacy and Internal Locus of Control

The perception of risk and, thus, expectancies about the outcomes of an entrepreneurial activity, depend on various other expectancies, including the probabilistic estimates of outcomes and the controllability of outcome attainment (Sitkin & Pablo, 1992; Sitkin & Weingart, 1995). In particular, Miller (2007) describes how the outcomes of types of entrepreneurial processes (e.g., opportunity recognition, opportunity discovery and opportunity creation) are dependent on contingencies that can be unpredictable, unknowable, and uncontrollable. Bandura (1997) suggests

a simpler model based on social cognitive theory, in which outcome expectancies depend on two major elements that subsume Miller's three dimensions: self-efficacy, the belief of whether or not one is able to put required actions into practice, and locus of control, the belief of whether or not one's outcomes depend mainly on one's own actions or on factors not under one's control.

Empirical studies in the area of entrepreneurship provide initial justification for the inclusion of both self efficacy and locus of control in our model of risk perception. Regarding self-efficacy, Krueger and Dickson (1994) report that business executives that show greater self-efficacy will perceive opportunities and threats differently and will take more risks. Likewise, Simon, Houghton, and Aquino (2000) demonstrate for students and Keh et al. (2002) demonstrate for entrepreneurs that the evaluation of a business opportunity depends on control beliefs. While self-efficacy (Gatewood, Shaver, & Gartner, 1995; Gatewood, Shaver, Powers, & Gartner, 2002; Krueger & Dickson, 1994) and locus of control (Keh, et al., 2002; Simon, et al., 2000) have been investigated separately in entrepreneurship research, their joint effects have not. Further, other sources of efficacy and control have likewise received little or no attention.

From a Single to a Multi-Dimensional Model

Tversky and Kahneman (1992) list five empirical major phenomena that descriptive theories of decision making should deal with: framing effects, nonlinear preferences, source dependence, risk seeking, and loss aversion. It is interesting to note that of the five, only source dependence has not been incorporated into decision-making theories (compare, for example, Steel & König, 2006). Source dependency describes the fact that the evaluation of risk and uncertainty might depend on the source, which could be a through of a dice or a task that one has to solve based on the own competence. In fact, different combinations of sources of risk could explain why different people perceive the total risk differently. For example, entrepreneurship researchers including Busenitz and Barney (1997) and Janney & Dess (2006) have proposed that one reason why entrepreneurs and managers of large firms perceive risk differently is "that entrepreneurs face a different composition of risks than their non-entrepreneurial counterparts" (Janney & Dess, 2006: 387).

This empirical need to develop a more comprehensive model of risk perception that takes into account source dependency is demonstrated by research into the additional impact of efficacy beliefs regarding factors external to the individual (Gist & Mitchell, 1992; Wu & Knott, 2006), as well as efficacy beliefs regarding specific external factors including collective efficacy (DeTienne, Shepherd, & De Castro, 2008; Shepherd & Krueger, 2002) and belief in good luck (Day & Maltby, 2005). For example, in their study of banking market entry decisions, Wu and Knott (2006) are two of the first researchers to demonstrate that both one's own abilities and one's expectancies regarding external factors (in their case, market volatility) affect risk taking differently.

Similar to efficacy, external sources of control beliefs should also be addressed in a more comprehensive model of compound risk perception. The examples for efficacy beliefs mentioned in the paragraph above (i.e. internal vs. external and collective vs. luck) parallel Levenson's (1974, 1981) work on social activists, which proposes that external locus of control should distinguish between powerful others and chance. Further, Bandura's (1997) work on self-efficacy was strongly influenced by earlier work on control beliefs by Rotter (1966). Rotter (1966) discusses the role of beliefs about whether or not the reasons for success and failure are internal or external to a person, i.e. an internal or external locus of control. However, based on the analysis of socio-political activists (a form of social entrepreneur), Levenson (1974, 1981) and Levenson and Miller (1976) argue

that one needs to distinguish external drivers of outcomes with respect to chance and powerful others. This is a critical distinction, as powerful others can be influenced by social action but chance cannot. Therefore, coping with powerful others differs from coping with bad-luck.

The Theory of Mixed Control

In this paper, we follow Krueger's (2003) call for more theory-based research on entrepreneurial cognition and contribute by developing a model of compound-risk perception. Based on the aggregated insights of the existing theories related to multiple sources of efficacy and locus of control, we introduce the theory of mixed control, a theory developed by Urbig and Mosen (2009) that incorporates, both, efficacy beliefs and control beliefs to explain outcome expectancies and thus perceptions of risk. While both constructs have been anticipated in research on entrepreneurship, recent results reported in psychological research on the interaction of both constructs have not received attention by entrepreneurship research. Furthermore, self-efficacy has been frequently investigated in the entrepreneurial context, but beliefs regarding the efficacy of external factors of success are only beginning to receive attention from researchers.

The interaction of efficacy and control beliefs as well as a corresponding integration of beliefs regarding one's own efficacy and the efficacy of external factors is at the core of the theory of mixed control. This theory considers outcome expectancies as being composed of expectancies regarding three distinct sources of risk (self, others, and chance). Beliefs about the efficacy of these elements are weighted by the degree to which these elements are perceived to control the outcome. This reflects one important empirical observation that deviates from traditional decision theories: Entrepreneurship is a complex activity, involving multiple sources of risk. The second part of this paper deals with this multidimensionality. The paper concludes with a discussion of contributions of the theory of mixed control for more robust decision research.

Distinctions and Definitions

In this paper three distinctions are vital: unconditional versus conditional expectancies, preference versus perception, and single- versus multi-dimensional conceptualizations of sources of risk.

Expectancies regarding an event describe beliefs of the likelihood of the occurrence of an event. Unconditional expectancies are related to a single event or a set of independent events (e.g., $P[A]$ and $P[O]$). Both efficacy beliefs, the expectancy that a particular antecedent or source A will be helpful or useful (e.g., $e_A \approx P[A]$), positive outcome expectancy, the expectancy that a particular positive outcome O will occur (e.g., $\pi \approx P[O]$), and perceived risk, the expectancy that a particular positive outcome will not occur (i.e. $r = 1 - p$) are considered unconditional expectancies. For example, in the entrepreneurship literature, risk has been defined as the probability or likelihood of a downside loss or upside gain from the pursuit of an opportunity (compare, Janney & Dess, 2006). In contrast, when defining locus of control, Rotter (1966) refers to the conditional expectancy that an event (e.g., outcome O) happens given that another event (e.g., behavioral antecedent A) occurs. An event is considered to "control" another event if the occurrence of the first event affects the likelihood of the second event. We therefore refer to the expectancy that both events are linked by a causal relation (e.g., $c_A \approx P[O|A]$) as control beliefs. This is reflected later in this paper in our theory of mixed control and model of compound-risk perception, in which "unconditional" perceived risk ρ is one minus positive outcome expectancy π , which is the sum of the products of multiple source-dependent "unconditional" efficacy beliefs and "conditional" control beliefs:

$$\rho = 1 - \pi = 1 - \sum_A e_A c_A \quad (1)$$

The second distinction to be made is between preference and perception. Whereas perceived risk reflects the expectancy or probability of an outcome, risk preference reflects the shape of the utility function for a series of related risky choices (Weber & Milliman, 1997). Kahneman and Tversky (1979) emphasize this point by distinguishing overweighing reflecting a preference from overestimating reflecting a biased perception. Perceptions of risk and the sources of risk may not only affect the evaluation of businesses opportunities. Entrepreneurs may also have specific preferences regarding the both the level of risk they are willing to assume and the sources of that risk (Janney & Dess, 2006; Miller, 2007; Monsen, Patzelt, & Saxton, in press), which can moderate the impact of risk perceptions on decision making (Pablo, Sitkin, & Jemison, 1996). These can lead to counterintuitive results, which the core perception-only model in this paper does not address. For example, given that many entrepreneurs have a taste for variety (Astebro & Thompson, 2007), they may choose to take a risk in an area which they are low on efficacy, but do so with the confidence that they will quickly learn what they need to know. Furthermore, given that many entrepreneurs have a need for autonomy and control (Cromie, 1987; Kuratko, Hornsby, & Naffziger, 1997; Monsen, Saxton, & Patzelt, 2007), entrepreneurs may give more weight to control than non-entrepreneurs in evaluating opportunities. Before we address the role of risk preferences on decision-making, however, we need to better understand and have a better core model of how those risks are perceived, independent of preferences. Therefore, in this paper, we focus on risk perception and only consider the effects of control and efficacy beliefs on outcome expectancies.

The third distinction is between single- and multi-dimensional conceptualizations of sources of risk. Traditional research on self-efficacy and internal locus-of-control can be considered single-dimensional, in that it focuses on the individual self. However, entrepreneurial productivity (Parker, 2006) and persistence (DeTienne, et al., 2008) is affected by both entrepreneurial ability and market forces, thus, more dimensions should be considered. For example, Gist and Mitchell (1992) propose that self-efficacy is determined by both internal and external factors. Of particular interest for this paper, Gist and Mitchell propose that external factors can be attributed, factors “under the control of others” (1992: 196) and “luck-oriented factors” (1992: 197). Regarding dependence on others, recent research on entrepreneurship has identified collective efficacy as an important construct for explaining entrepreneurial intentions (Shepherd & Krueger, 2002) and persistence (DeTienne, et al., 2008). Furthermore, in a three-dimensional conceptualization of locus of control developed for research into social activists, Levenson (1974, 1981) introduces not only powerful others but also chance as an additional driver of outcomes (see also Bonnett & Furnham, 1991; Furnham, 1986). Closing the theoretical circle, Bandura (2001) outlines in a recent review article on social cognitive theory multiple sources of agency, including personal, proxy, collective, and fortune. All in all, this suggests that an individual’s perception of risk is not only driven by personal efficacy and control beliefs, but also by their beliefs of whether other people or chance rules the world and how these may help or hinder one’s success.

Roadmap for Paper

Given the multidisciplinary nature of entrepreneurship research and its connection with disciplines as distinct as psychological and economic research, our discussion will follow two parallel and intertwined paths. First, we briefly review the current theoretical and empirical literature on efficacy, control, and risk perception and develop in a step-by-step manner our theory of mixed control. In parallel, to make our theory more precise and testable, we develop a corresponding mathematical formulation of our compound-risk perception function.

STATIC THEORY OF MIXED CONTROL

The theory of mixed control considers risk perception as a process and perceived risk, i.e. outcome expectancies, as the dependent variable. The theory describes how people's overall perceived risk regarding desired or undesired outcomes are influenced by other more specific expectancies regarding the efficacy and control of three generic sources: self, others, and chance. Grounded in a review of the current theoretical and empirical literature on efficacy, control, and risk perception, we develop our theory of mixed control in a step-by-step manner. Beginning with established research on the independent effects of self-efficacy and internal locus-of-control on risk perception, we then apply recent ideas and research on the interaction of self-efficacy and control beliefs to extend our model. Next, we go beyond the single-dimension of the self and first add a general external source of efficacy, followed by a division between others and chance as independent external sources of control. At the close of section, we discuss how our compound-risk perception function can be used to augment current existing decision-making theories.

In parallel, in order to make our theory more precise and testable, we develop a corresponding mathematical formulation of our compound-risk perception function and theory of mixed control, it parallels the formalization by Urbig and Monsen (2009). Mathematical modeling is not uncommon in the field of entrepreneurship (Minniti & Bygrave, 2001; Parker, 2006) and provides a useful second language to precisely express the meaning of the text-based theory and to test its consistency and coherence (Lévesque, 2004). To begin, we consider the function $f(\cdot)$ that maps a set of independent variables onto positive outcome expectancy π and perceived risk $\rho = 1 - \pi$. If, for instance, positive outcome expectancy π depends positively on self-efficacy e_s we will write that the function $\pi=f(e_s)$ is characterized by $\delta f(e_s)/\delta e_s > 0$. While π represents the perceived expectancy of a specific outcome, the function f could be considered as the perceived production of risks associated with a specific outcome. We will exemplify the general mathematical model with a specific function $\pi=f(e_s)$, e.g. $\pi=e_s$.

Independent Effects of Self-Efficacy and Control Beliefs

To begin, typical models for including control beliefs and self-efficacy into entrepreneurship decision-making (Keh, et al., 2002; Simon, et al., 2000) and intentions (Wilson, Kickul, & Marlino, 2007; Zhao, Seibert, & Hills, 2005) models consider only self-efficacy, only control (Gatewood, et al., 2002; Krueger & Dickson, 1994), or an independent combination in form of the theory of planned behavior (Krueger, Reilly, & Carsrud, 2000). For example, in a recent revision of the theory of planned behavior, Ajzen (2002) defines the construct of perceived behavioral control as reflecting beliefs about self-efficacy and beliefs about controllability. This raises the question of whether self-efficacy or locus-of-control matters more in risk taking. Using three carefully designed economic experiments, Goodie and Young (2007) found that while both control and efficacy affect risk-taking behavior, perceptions of control played the more dominant role in risk-taking decisions. Therefore, we initially consider self-efficacy e_s and control beliefs c_s as independent drivers of risk perception $\rho=1-\pi$ and outcome expectancy π in our mathematical model as:

$$\pi=f(e_s, c_s) \text{ with}$$

$$(1) \delta f(e_s, c_s)/\delta e_s > 0 \text{ and } \delta f(e_s, c_s)/\delta c_s > 0$$

$$\text{Example: } \pi = c_s + e_s$$

(2)

Interaction of Self-Efficacy and Control Beliefs

Since self-efficacy and control beliefs appear to have very similar effects and are often correlated, some consider self-efficacy and locus-of-control to be reflective of the same univariate core construct (Judge, Erez, Bono, & Thoresen, 2003) or the same multivariate construct (Spreitzer, 1995; Thomas & Velthouse, 1990). However, researchers in the areas of job stress as well as general decision making have demonstrated that self-efficacy and locus of control are distinct constructs and can have not only additive but also interactive effects. In research on job stress, Schaubroeck and Merritt (1997) not only found an interaction effect between perceptions of control and self-efficacy, but also found that this interaction moderates the relationship of job demands and job stress, measured by blood pressure. Given that being an entrepreneur is stressful, ambiguous and uncertain (Monsen & Boss, 2009; Schindehutte, Morris, & Allen, 2006), we expect to see a similar interaction effect between beliefs of self-efficacy and control and the evaluation of risky opportunities (for example, Mullins & Forlani, 2005; Norton & Moore, 2006).

Sharpening this line of thought, we claim that the effect of self-efficacy on outcome expectancies and perceived risk is moderated by control beliefs (Bandura, 1997; Krueger, 2003). Bandura (1997) argues that the judgment about the likelihood of an outcome is based on two types of expectancies: self-efficacy beliefs describe the belief that one's effort will produce a required performance, while control beliefs describe the strength of the belief that the performance will cause a specific outcome. In Bandura's (1997) words: "Controllability affects the extent to which efficacy beliefs shape outcome expectancies" (Bandura, 1997: 23).

Bandura's (1997) idea that control beliefs affect the extent to which self-efficacy influence outcome expectancies can be generalized to the idea that control beliefs moderate the extent to which efficacy beliefs influence judgments of outcome probabilities and corresponding risk perceptions. The idea is that if outcomes cannot be controlled, i.e. external factor control the outcome, then beliefs about the efficacy of external factors, drive a person's risk perception. While management researchers have been talking conceptually about this moderating effect for some time (compare Gist, 1987; Gist & Mitchell, 1992), none to our knowledge have empirically tested this interaction hypothesis in the context of risk perception and entrepreneurial decision making. Krueger (2003: 114) similarly emphasizes that the "more internal the attribution of causality (e.g. skill or effort)" and the more "controllable" the situation, the stronger the impact of self-efficacy on initiating and persisting in entrepreneurial activity. In other words, a multiplicative model suggests that if one perceives zero self-efficacy (or zero internal locus-of-control), the outcome expectancy will be zero and the individual will perceive maximum risk, irrespective of the perceived internal locus-of-control (or self-efficacy).

Our mathematical model thus needs to be extended as follows. The general formalization now utilizes an additional level of derivatives and it requires that these derivatives are zero if the second variable is zero. An example of this is a simple multiplicative combination of self-efficacy and control beliefs. This model closely reflects the description provided by Bandura (1997).

$$\pi = f(e_s, c_s) \text{ with}$$

$$(1) \delta f(e_s, c_s) / \delta e_s \geq 0, \delta f(e_s, c_s) / \delta c_s \geq 0, \text{ and } \delta \delta f(e_s, c_s) / \delta c_s \delta e_s \geq 0$$

$$(2) \delta f(e_s, 0) / \delta e_s = 0, \delta f(0, c_s) / \delta c_s = 0$$

$$\text{Example: } \pi = c_s e_s$$

(3)

Adding External Sources of Efficacy and Control

Bandura's (1997) work on self-efficacy was strongly influenced by earlier work on control beliefs by Rotter (1966). Rotter (1966) discusses the role of beliefs about whether or not the reasons for success and failure are located within a person or outside a person, i.e. an internal or external locus of control. Rotter (1966) conceptualized locus of control as uni-dimensional, such that a low internal locus of control is equivalent to a high external locus of control:

$$c_e = 1 - c_s \leftrightarrow c_s + c_e = 1 \quad (4)$$

There is however a missing element: external efficacy beliefs that matter if one has an external locus of control. While Gist and Mitchel (1992) were one of the first to propose the need to consider both internal and external sources of efficacy, Judge, Locke, Durham (1997) are to our knowledge among the first to operationally define these external factors, labeling them 'external core evaluations'. However, Judge, Locke, Durham, & Kluger (1998), conclude that after controlling for core self-evaluations, which includes self-efficacy and internal locus-of-control, external core evaluations do not have a unique effect on job attitudes. In contrast, testing the effects of external efficacy beliefs on dispositional optimism, Urbig and Monsen (2009) found significant effects and report that external control beliefs moderate the influence of external efficacy beliefs.

The basic idea is that in such situations where external factors control one's outcomes, beliefs about external factors instead of beliefs about internal factors should determine one's outcome expectancies and perceived risk. This empirical need to develop a more comprehensive model of risk perception that takes into external sources is likewise demonstrated by research into the additional impact of efficacy beliefs regarding factors external to the individual (Wu & Knott, 2006). For example, in their study of market entry decisions for the US banking industry, Wu and Knott (2006) are two of the first researchers to demonstrate in the same study that both one's own abilities and one's expectancies regarding external factors (in their case, market volatility) affect risk taking.

For the mathematical formulation of our theory we thus have to add beliefs about the efficacy and control of external factors. We furthermore include that an increase in control beliefs regarding one factor, i.e. self or external, moderates the influence of the corresponding efficacy belief.

$$\pi = f(e_s, c_s, e_e, c_e) \text{ with}$$

$$(1) c_s + c_e = 1$$

$$(2) \delta f(e_s, c_s, e_s, c_s) / \delta e_x \geq 0, \text{ and } \delta \delta f(e_s, c_s, e_e, c_e) / \delta c_x \delta e_x \geq 0$$

$$(3) \delta f(e_s, c_s, e_s, c_s) / \delta e_x = 0 \text{ if } c_x = 0$$

$$\text{Example: } \pi = c_s e_s + c_e e_e \text{ with } c_s + c_e = 1 \quad (5)$$

This formula, where the outcome expectancy is a sum of efficacy beliefs which are weighted by the degree of control they have, can be transformed into the following form:

$$\text{Example: } \pi = (e_s + e_e) / 2 + (c_s - c_e)(e_s - e_e) / 2 \quad (6)$$

This formula demonstrates that the effect of differences in efficacy beliefs depends on the difference of internal (self) and external control beliefs. The first term, i.e. the average of self-

efficacy and external efficacy beliefs, reflects the positive direct effect of efficacy beliefs on outcome expectancies. The second term describes that the effect of efficacy beliefs on outcome expectancies and perceived risk is moderated by the difference in control beliefs.

Distinguishing Between Others and Chance as External Sources of Efficacy and Control

At this stage, where outcome expectancies are positively influenced by efficacy beliefs regarding internal as well as regarding external factors and where these effects are moderated by corresponding control beliefs, we have finished the developed of the basic version of the theory of mixed control. There is, however, one extension that is useful and necessary to remain consistent with existing literature, i.e. external factors need to be differentiated with respect to other people and chance. For example, Gist & Mitchell (1992: 193) discuss external factors such as “group interdependence” (others) and “distractions such as noise” (chance). Bandura (2001) similarly talks about multiple sources of agency, including personal, proxy, collective, and fortune. To distinguish between the efficacy (or expected helpfulness) of other people and the efficacy (or expected helpfulness) of good luck, we introduce the more precise terms: other efficacy and chance efficacy plus other control and chance control.

Not only has literature already suggested distinguishing efficacy beliefs with respect to other people and chance, but there is also an older stream of literature suggesting differentiating external control with respect to others and chance. Specifically, based on analyses of socio-political activists (a form of social entrepreneur), Levenson (1974, 1981) and Levenson and Miller (1976) argue that one needs to distinguish external drivers of outcomes with respect to chance (natural environment) and powerful others (social environment). This idea of distinguishing between powerful others and chance are later applied to the economic (Furnham, 1986) and entrepreneurship education context (Bonnett & Furnham, 1991). At the heart of this is a critical distinction is the idea that powerful others can be influenced by social action but chance cannot. Therefore, coping with dependency on powerful others differs substantially from coping with bad-luck. For example, the accumulation and leveraging of social capital is one strategy to address the former and the application of a real options approach is one strategy to address the latter (Janney & Dess, 2006).

Regarding other efficacy and other control, recent research on entrepreneurship has identified collective efficacy as an important construct for explaining entrepreneurial intentions (Shepherd & Krueger, 2002) and persistence (DeTienne, et al., 2008). Collective efficacy refers to beliefs about whether or not a group of people is able to implement required actions to succeed, and thus incorporates self-efficacy and efficacy beliefs regarding other people. In addition to collective efficacy as a source of agency, Bandura (1997, 2001) additionally talks about proxy control. Proxy control refers to the internalization of external control through social networking. Proxy control is therefore a socially mediated control, where a person convinces another person with influence to exert this influence to the benefit of the person out of direct control. In this paper we introduce the concept of other efficacy and control, which separates the self from the collective and respectfully refers to the likelihood that others will help the individual and degree of control others can exert regarding attainment of the desired outcome. For extra clarity, it should be noted that Bandura (1997, 2001) (see also, Fernández-Ballesteros, Díez-Nicolás, Caprara, Barbaranelli, & Bandura, 2002), as well as DeTienne et al (2008) and Krueger and Shepherd (2002), define collective-efficacy as a group’s shared belief in its capabilities to organize and execute required actions to produce a given level of attainment. In contrast, we consider an individual’s own beliefs and perceptions about the efficacy and control of others (compare, Schaubroeck, Lam, & Jia Lin, 2000).

Moving forward, external efficacy and control beliefs do not only comprise beliefs about other people but also beliefs about nature, fortune and chance. If not other people help, it might still be fate or luck that makes things happen. While literature on collective efficacy refers to the first, entrepreneurship literature and general psychology research has rarely and inconsistently investigated beliefs in good luck (Day & Maltby, 2005; see also the discussion in Urbig & Monsen, 2009), despite the important role good luck, fortune, and random chance always play both in entrepreneurship (Minniti & Bygrave, 2001) and in life (Bandura, 1982, 1998, 2001).

At first the term chance efficacy might sound strange, however, it has been used to describe beliefs of jazz artists in the popular press who practiced an artistic technique called aleatory or aleatoricism (Henahan, 1988: 36). Jazz has been used as a metaphor for improvisation and creativity in the management (Crossan, Cunha, Vera, & Cunha, 2005) and in the entrepreneurship literatures (Hmieleski & Corbett, 2008). Jazz is a particularly relevant metaphor for our theory of mixed control, as jazz combines individual (self) and group (other) skills and abilities with the chance of the moment (Crossan, et al., 2005: 140). Therefore, based on our review of research on sources of external efficacy and control beliefs, we conclude that it is appropriate to distinguish at least three dimensions of control: self, others, and chance. Our formal model is thus enhanced as follows:

$$\pi = f(e_s, c_s, e_o, c_o, e_c, c_c) \text{ with}$$

$$(1) c_s + c_o + c_c = 1$$

$$(2) \delta f(e_s, c_s, e_o, c_o, e_c, c_c) / \delta e_x \geq 0, \text{ and } \delta \delta f(e_s, c_s, e_o, c_o, e_c, c_c) / \delta c_x \delta e_x \geq 0$$

$$(3) \delta f(e_s, c_s, e_o, c_o, e_c, c_c) / \delta e_x = 0 \text{ if } c_x = 0$$

$$\text{Example: } \pi = c_s e_s + c_o e_o + c_c e_c \text{ with } c_s + c_o + c_c = 1 \quad (7)$$

Similar to the transformation from Equation 5 into 6, where only internal and external dimensions were considered, we can perform the same transformation for the three-dimensional version.

$$\text{Example: } \pi = (e_s + e_c) / 2 + (c_s - c_c)(e_s - e_c) / 2 + (c_o - c_c)(e_o - e_c) / 2$$

$$\text{with } e_c = (e_o + e_c) / 2 \text{ and } c_c = (c_o + c_c) \quad (8)$$

Comparing the two- with the three-dimensional example of the outcome expectancy function, only the third term is new. We thus have a formal representation where the different models, starting from self-only models, to inter-versus-external models, to three-dimensional models are nested into each other. One can thus use the three-dimensional model and explicitly test whether or not splitting of the external factors is statistically significant in a particular context or not.

An Alternative Full-Multiplicative or Production Function Model

Up to this point, we have simply added together the terms representing the three sources of risk perception (i.e., self, other, chance). One potential limitation of this functional form is that a zero-level expectancy regarding one source does not result in corresponding zero-level expectancy for the overall outcome. In other words, expectations associated with different sources are independent of one another, an assumption that could lead to positively-biased predictions of outcome expectancies and correspondingly negatively-biased predictions of perceived risk. An alternative, multiplicative variation of our TMC theory assumes that source-specific risks are not

independent. This implies that that a zero-level expectancy regarding one source results in corresponding zero-level expectancy for the overall outcome, independent of the other sources. A Cobb-Douglas-style function, a form commonly used in the economics literature to represent economic production and growth (Cobb & Douglas, 1928), can represent this variation of the model:

$$\pi = f(c_s, c_o, c_c, e_s, e_o, e_c) = e_s^{c_s} e_o^{c_o} e_c^{c_c} \quad (9)$$

Augmenting Current Decision-Making Theories

Our model of the joint effects of efficacy and control can be used not only to predict risk perception, but it can also be used to augment decision making models and theories which are based on subjective probabilities. These models include but are not limited to expected utility theory (Schoemaker, 1982), prospect theory (Kahneman & Tversky, 1979), security-potential/aspiration theory (Lopes, 1987; Lopes & Oden, 1999), and cumulative prospect theory (Tversky & Kahneman, 1992).

Expected utility theory, as reviewed by Schoemaker (1982), states that people maximize the sum of the utilities (as opposed to absolute monetary gains) associated with outcomes weighed by the probabilities of the occurrence of these outcomes. Later empirical work has revealed that people do not weight utilities with the exact probabilities, but that they attach a decision weight that is a monotonic but never the less a nonlinear function of probabilities, e.g. overweighing of small and underweighting of large probabilities (e.g., Prospect Theory by Kahneman & Tversky, 1979). While those early theories assumed that people hold precise beliefs about the probability of occurrence of an event, later theories relaxed this assumption and integrate uncertainty which implies that people do not need to have precise probability judgments, for example, Cumulative Prospect Theory (Tversky & Kahneman, 1992).

While recent empirical work suggests that the decision weights associated with various outcomes of a behavior may depend on whether or not one can influence the outcome (e.g., Heath & Tversky, 1991; Kilka & Weber, 2001), recent descriptive theories do not incorporate these findings. Building on the suggestion of Kilka and Weber (2001) that control beliefs and self-efficacy might influence the decision weighting in prospect theory, our production of perceived risk function based on the theory of mixed control provides a unified framework to explain how these beliefs interact. We thus provide a rationale for Goodie and Young (2007) finding that sometimes self-efficacy and sometimes control beliefs are more relevant. Furthermore, by replacing the single variable for subjective probability (risk or expectancy) in the respective model with our multivariate function for the risk perception, the yet unresolved issue of source dependence raised by Tversky and Kahneman (1992) and discussed earlier in this paper is resolved. Moreover, the issue of source dependence is resolved within the context of established decision making theories and without having to design and validate a risky new decision making theory.

The functional form of the subjectively perceived risk can for instance be embedded into Cumulative Prospect Theory (CPT) (Tversky & Kahneman, 1992) by replacing the argument of the probability weighing function with the risk production function suggested above. The source dependency is then combined with those characteristic captured by the CPT, e.g. the underweighting of small probabilities of extreme events. We believe that such models are a promising path for future research and will be better able to measure and predict entrepreneurs' risk-taking behavior in situations that are more complex and driven by multiple sources of risk (Mullins & Forlani,

2005; Norton & Moore, 2006; Simon, et al., 2000; Wu & Knott, 2006), instead of the simpler examples of single-risk-source situations, such as flipping coins or strategizing against opponents (Bernardo & Welch, 2001; Camerer & Lovallo, 1999; Forlani & Mullins, 2000)

CONCLUSIONS

As we have outlined in this paper, existing decision theories cannot account for the typical characteristics of entrepreneurial decisions (multiple sources of risk, partial control, and endogenous risk). Our Theory of Mixed Control and compound risk-perception framework make two key contributions. First, we explicitly combine efficacy and control beliefs into a formal model of risk perception and account for the moderating effect of control on the relationship between efficacy and expected outcomes. Second, we show that the three-dimensionality of self, others, and chance should not only be incorporated into control beliefs, but also into efficacy beliefs. Control beliefs describe the extent to which different sources of risk affect outcomes and efficacy beliefs describe the expectations associated with these sources. In summary, our framework can explain more heterogeneity in entrepreneurial behavior than previous models and can therefore be applied in research and practice to better understand, improve, and increase the entrepreneurial performance of individuals and organizations.

Beyond these two explicit contributions, our paper provides theoretical and empirical support for other model and theories of entrepreneurship. For example, our model complements the alertness model of opportunity recognition from Gaglio (1997) (see also, Gaglio & Katz, 2001), which proposes that entrepreneurs need to alert to opportunities, have necessary skills (i.e. efficacy), and be able to extract a gain (i.e. control). In the mythical example related by Brännback and Carsrud (2008: 69), this system includes not only the Thor, the entrepreneur or self, but also Jormungander, the government official or powerful other. Our model, however, would suggest that Brännback and Carsrud should also consider adding Loki, a mischievous Norse deity, and the Norns, the Norse demi-goddesses of destiny, to their Nordic tale of entrepreneurship.

There is, of course, room for future research. For example, Monsen and Urbig (2009) augment our static view with a dynamic perspective and explain how risk-perceptions can dynamically change over time and contexts, depending on the evolution of efficacy and control beliefs. That said, our theory of mixed control is only one among other building blocks of a theory of entrepreneurial decision-making. The question for antecedents of those control and efficacy beliefs that form the core of the theory of mixed control as well as the question how the perceived risk finally affects an entrepreneurial decision need to be addressed in much more detail. For instance, Harper (1998) argues that 4 factors within the institutional framework influence control beliefs: constitutional rules (political, legal, and economic system), operating rules (nature of economic policies), normative rules (cultural and social attitudes and norms), and characteristics of the family and educational environment during the development phase in an individual's life.

To empirically test the theory, adequate measures have to be developed. It is well-established that task-specific measures of self-efficacy (Bandura, 1997) and locus of control (Furnham, 1986; Spector, 1988) are more reliable than general measures in specific outcomes. Therefore, general measures of efficacy and control beliefs, such as, those used by Urbig (2008) and Urbig and Monsen (2009) in testing the theory of mixed control in a general context, need to be refined for more reliable use in the entrepreneurship context. In entrepreneurship research, there exist reliable measures of entrepreneurial efficacy beliefs (see, for example, Baum, Locke, & Smith, 2001; Chen, Greene, &

Gene Crick, 1998; De Noble, Jung, & Ehrlich, 1999; Forbes, 2005), however, a corresponding set of measures for entrepreneurial control beliefs has not yet attained a correspondingly broad degree of acceptance (see, for example, Bonnett & Furnham, 1991). Future research should therefore focus on the development and integrated testing of multi-dimensional efficacy and control belief measures that are more specific to the context and activities of entrepreneurship.

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THE PSYCHOLOGICAL OWNERSHIP OF ENTREPRENEURIAL ORGANIZATIONS: THEORETICAL AND MODEL DEVELOPMENT



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ABSTRACT

In entrepreneurship theory, ownership is most often associated with the amount of equity controlled by an individual entrepreneur. However, several scholars acknowledge that feelings of ownership often exist in the absence of objective control. As such, we explore emerging literature on psychological ownership to provide a theoretical basis for explaining how the psychological state of ownership can persist apart from the amount of equity an entrepreneur controls. Specifically, we show how key determinants of psychological ownership interact and relate to specific entrepreneurship processes, develop a theoretical model, and examine the contribution of this work back to the psychological ownership literature. Several empirical implications of our model and directions for future research are discussed as well.

INTRODUCTION

Prior studies on entrepreneurial ownership have generally considered ownership to be an equity-based notion referring to the percentage of equity a given stakeholder has in the firm. Several theoretical perspectives have been used to facilitate our understanding of the entrepreneurial process from an equity-based perspective. For example, agency theory (Jensen & Meckling, 1976) has been used to address the misalignment between entrepreneurs and hired managers. This perspective suggests that the best way to resolve the agency problem is to optimize both the compensation contract and the agent's equity ownership (Audretsch, Lehmann, & Plummer, 2009).

Transaction cost economics scholars focus on the efficient governance between the founder and other partners or stakeholders. Several scholars (e.g. Katila, Rosenberger & Eisenhardt, 2008) have examined this decision when the firm seeks capital; thereby entering into an equity relationship with either an equity investor or an acquiring firm. However, both of these perspectives focus solely on equity ownership without consideration to other avenues of ownership even though many scholars have noted that founders of firms often have a strong psychological tie to the venture in which they have created (Cardon, Zietsma, Saporito, Matherne, & Davis, 2005).

In order to better examine entrepreneurial ownership we use the emerging literature on psychological ownership to explain how ownership can exist apart from the equity controlled. We contribute not only to the entrepreneurship literature, but also back to the psychological ownership perspective because we propose that the causal determinants of psychological ownership (control, intimate knowledge, and self-investment) are complementary rather than additive. This has important implications because the synergistic effect between any two factors may result in

high levels of psychological ownership. In addition, high psychological ownership may exist in the absence of any one factor (i.e., control).

The purpose of this paper is to examine the key determinants of psychological ownership, their interaction, and to propose relationship between the entrepreneur's psychological ownership and governance alignment, between governance alignment and organizational outcomes, and the moderating effect of resource exchanges on governance alignment. To that end we discuss the extant literature, develop a theoretical model, and examine the contribution back to the psychological ownership literature. We then suggest implications for many of the empirical questions in our literature including the decision to pursue certain opportunities, strategic resource decisions, organizational design decisions, and entrepreneurial exit decisions.

PSYCHOLOGICAL OWNERSHIP AND CONTROL

Property Rights and Objective Control

Organizational economic theories tend to focus on "rational" explanations that are based on asymmetry of power between actors. According to agency theory, relations between principals and agents involve risk, as the parties may have different or conflicting goals that are considered 'agency costs' (i.e., moral hazard and opportunistic behavior—Jensen & Meckling, 1976). The entrepreneurs' risk results from the need to exchange company shares for outside resources (e.g., venture capital investments). Accordingly, the relationships between VCs and entrepreneurs are formally established through contractual arrangements that include stipulations and governance mechanisms to control opportunistic behavior (Amit, Glosten, & Muller, 1990; Ruhnka & Young, 1991; Amit, Brander, & Christoph, 1998). Hence, the involvement of VCs in their portfolio firms serves as an active control mechanism to ensure that entrepreneurs' behavior is aligned with their interests. Thus, VCs seek to secure a higher proportion of seats on the board to increase their control over strategic decision-making by entrepreneurs (Sapienza, Manigart, & Vermeir, 1996; Smith, 2005; Williams, Duncan, & Ginter, 2006), so as to ensure that entrepreneurs act according to their expectations (Floyd & Lane, 2000).

Despite the power asymmetry between the two, cooperation between VCs and entrepreneurs is based on each party's complementary assets and interdependent relations. The outcomes of these relations cannot be predefined, and the dynamics of the relations cannot be fully controlled. Thus, VC-entrepreneur relations are managed by two paradoxical mechanisms: hierarchy and cooperation. While the contractual covenants seek to control entrepreneurs' actions, formal contracts fail to efficiently monitor the entrepreneurs' work process, as they possess idiosyncratic and tacit knowledge. Therefore, entrepreneurs and VCs can gain most from cooperative activity which reinforces commitment to the venture management and success (Cable & Shane, 1997).

The transaction cost economic (TCE) approach posits that economic relations between actors in the market are driven by cost-effective considerations (Williamson, 1991). In contrast to agency theory, the TCE approach is aimed at explaining the rational considerations underlying transactions made between organizations. These considerations are influenced by the ability to which the parties can accurately assess associated transaction costs, and they rely on the extent to which complete information can be gathered and understood.

The TCE approach also assumes that the considerations underlying the economic exchange are influenced by particular assets that each party to the transaction holds. In other words, trans-

action costs are affected by the *asset specificity* of the actors, each of which possesses idiosyncratic assets that give them bargaining power over the other (Perrow 1986). Therefore, determination of the most effective control system requires consideration of the value of the unique assets each actor holds and exchanges. Although both VCs and entrepreneurs seek to minimize their transaction costs, transaction costs cannot be fully pre-assessed due to process and outcome uncertainties. Therefore, relations are managed through mutual interdependencies especially as entrepreneurs possess idiosyncratic assets and because they cannot be easily replaced.

In applying an agency or TCE perspectives to the context of entrepreneurial firms it seems that formal considerations cannot fully explain why entrepreneurs devote themselves to their venture especially given their lack of formal control rights (e.g., Wasserman, 2006). Yet, at the same time, these approaches emphasize that an entrepreneurs' high commitment, emotional involvement and identification are crucial for the ability of both parties to maximize gains (Cable & Shane, 1997).

The Phenomenological State of Ownership

Whereas economic theories of the firm generally equate legal ownership with formal control, Etzioni argues that "...property exists on two levels:" an formal, objective level and an informal, subjective level and so feelings of ownership are a "dual creation, part attitude, part object, part in the mind, part 'real'" (1991: 465-466). Building from this perspective, Pierce and colleagues propose a theory of psychological ownership built on a subjectivist view of ownership arising when "...individuals feel as though the target of ownership (material or immaterial in nature) or a piece of it is 'theirs'" and "...emerges because it satisfies certain human motives, some them genetic and others social in nature" (2001: 299-300; 2003). Based on this phenomenological state, Pierce and colleagues, among others, argue that individuals will exert their perceived rights to control, manage, dispose of, or countless other decisions derived from the perception that these objects are their own and therefore are extensions of themselves (Pierce et al., 2001; 2003; Reb & Connolly, 2007).

Motivational Factors in Psychological Ownership. According to Pierce and colleagues, the motives underlying the state of psychological ownership consist of efficacy and effectance, self-identity, and having a place (2001; 2003). By efficacy and effectance, Pierce and colleagues (2001; 2003) refer to need individuals have of favorably transforming their environment in order to produce desired outcomes. In entrepreneurial ventures, these desired outcomes could consist of wealth creation (Wasserman, 2008; Townsend & Busenitz, 2008), socio-economic change (Townsend & Hart, 2008), personal autonomy (Rauch & Frese 2007), or a broad array of other potential outcomes. A central paradox in entrepreneurship, however, is that entrepreneurs often must relinquish significant control rights in order to acquire critical resources necessary to accomplish these objectives (i.e., equity-based capital, technological inputs, human capital inputs, etc.—Wasserman, 2008). As implied above, when entrepreneurs relinquish some of their objective control over their ventures, economic theory suggests their relative feelings of ownership will subside as well. However, entrepreneurs, like other market actors, are more psychologically complex than traditional economic models often assume (cf. Akerlof & Shiller, 2009; Glimcher, Dorris, & Bayer, 2005), and, therefore, even when the entrepreneur sacrifices a portion of his or her objective control over a venture, the cognitive-affective state of psychological ownership can persist.

According to Pierce and colleagues, psychological ownership persists apart from objective control because it provides a mechanism for expressing one's self-identity. Specifically, "...people use ownership for the purpose of defining themselves, expressing their self-identity to others, and

ensuring the continuity of self across time” (Pierce et al., 2001: 300). The desire to create and establish one’s legacy likely explains why some founders maintain close ties with the organizations they created even when they no longer exert formal control (e.g., Bill Gates and Microsoft). In this sense, the organization reifies the founder’s perceived self-identity thereby motivating them to continue to work for positive organizational outcomes (cf. Avey, Avolio, Crossley, & Luthans, 2009).

Lastly, Pierce and colleagues (2001) suggest that in addition to efficacy/effectance and self-identity, psychological ownership also allows individuals to create a sense of belonging (or a home) in a venture. Among entrepreneurs such a sense of belonging allows individuals to anchor their values, ideals, personal ambitions to an organization thereby providing a platform for personal action. For example, Dan Bricklin, the co-creator of VisiCalc (the first electronic spreadsheet), suggests that belonging to an organization he created (even when he is not in formal control) provides him a platform for expressing his personal values and talents (Bricklin, 2001). Towards this point Bricklin notes “I am not the most senior person in the company but I can influence the company’s direction in ways that matter to me and make the company better” (Bricklin, 2001: 57). This sense of belonging then, as a core motivational factor underlying psychological ownership, explains why some entrepreneurs can remain deeply attached to their ventures even when they do not possess formal, objective control.

Causal Determinants of Psychological Ownership. Whereas efficacy/effectance, self-identity, and a sense of belonging serve the motivational base of psychological ownership, Pierce and colleagues argue that control, insider’s (intimate) knowledge, and self-investment are the causal determinants of psychological ownership (2001; 2003). Regarding control, as noted above, most established theories of the firm rely upon formal, legal (i.e., objective) control as the basis for the ownership of any object—material or immaterial (Audretsch, Lehmann, & Plummer, 2009). In similar fashion, Pierce and colleagues suggest that when individuals perceive they possess the ability to control an object, they will eventually come to see the object as an extension of themselves, and therefore, the psychological state of ownership towards that object will naturally increase (2001). This argument implies that the longer an entrepreneur controls an organization, the deeper the psychological attachment. However, when entrepreneurs are challenged to relinquish some of this control in order to facilitate resource exchanges with critical external constituencies, extant theory would suggest that an entrepreneur’s sense of ownership towards a venture would decrease proportionally and instigate the classic principal-agent problem in agency theory (Jensen & Meckling, 1976; Fama & Jensen, 1983).

In addition, the psychological attachment of an entrepreneur to his or her organization increases relative to the level of insider’s knowledge the entrepreneur possesses of the venture. Specifically, Pierce and colleagues argue that “the more information and the better the knowledge an individual has about an object, the deeper the relationship between the self and the object, and, hence, the stronger the feeling of ownership toward it” (2001: 301). Among entrepreneurs, this type of insider’s knowledge could consist of a deep knowledge of the venture’s specific opportunity set, core technology, relationships with external capital providers, among other factors. Essentially, insider’s knowledge reflects the tacit understanding built up by the entrepreneur through his or her involvement with the venture and exerts a distinct effect on psychological ownership apart from control (cf. Pierce et al., 2001; 2003).

The third factor causally linked with psychological ownership is self-investment. According to Pierce and colleagues, self-investment “...comes in many forms, including the investment of one’s time; ideas; skills; and physical, psychological, and intellectual energies” (2001: 302). Among entrepreneurial ventures, self-investment refers to the specific human capital investments entrepreneurs make into their ventures (Bates, 1990). Over time, as these specific investments accumulate, the venture becomes a stronger reflection of the entrepreneur’s self (i.e., goals, personality, leadership style, etc.—Wasserman, 2008). While the loss of control can mitigate some of the influence of the specific human capital investments the entrepreneur makes into the venture on firm-level characteristics, the specific decision to make these investments is likely independent from the relative control an entrepreneur has over a venture.

In sum, the psychological state of ownership emerges based on the influence of three factors: control, insider knowledge, and self-investment. As Pierce and colleagues suggest, however, although each factor positively increases psychological ownership the question remains as to whether these effects are simply additive or complementary (i.e., synergies and/or trade-offs exist among these factors—2001). In the following section, we argue that in the context of governance decisions in response to facilitating resource exchanges with critical external constituencies, these effects are complementary—that is, even when objective control is low, high insider’s knowledge and self-investment both increase the entrepreneur’s relative psychological ownership.

THE PSYCHOLOGICAL OWNERSHIP OF ENTREPRENEURIAL ORGANIZATIONS

Although the concept of psychological ownership is relatively new in the entrepreneur decision-making literature, we expect this construct to exert empirically detectable effects on different aspects of the entrepreneurship process including the decision to pursue certain potential opportunities, strategic resource decisions such as capital structure (i.e. debt vs. equity funding) and size of the founding team, organizational design decisions such as lifestyle versus high growth ventures, and entrepreneurial exit decisions. In Figure 1 illustrated below, we extend prior research on psychological ownership to demonstrate how psychological ownership affects the alignment of entrepreneurial and organizational goals during the process of new venture creation and development.

Psychological Ownership and Governance Alignment

In the governance literature, governance mechanisms (including bonding mechanisms, monitoring, and incentives) are used to reduce potential agency problems *a priori* between principals and agents (Williamson 1988). Owing to self-interest seeking, the goals of agents and principals must be aligned through governance mechanisms or else agents may engage in acts of opportunism which benefit themselves at the expense of principals. These mechanisms are intended to reduce information asymmetry between the two parties, discourage the agent from engaging in behaviors which might hurt the organization (such as excessive diversification or other unprofitable growth), and encourage the agent to engage in behaviors which are beneficial to the organization. For example, by developing contingent compensation schemes, the board of directors can effectively induce the agent to take appropriately risky actions to try and profitably grow the organization (Certo et al. 2003).

We argue, however, that psychological ownership impacts the governance in the organization and creates an inherent alignment of goals. Because psychological ownership involves an

investment of self into the organization, the entrepreneur with high psychological ownership is not verging on self-interested behavior which is destructive to the organization (or costly only to principals). Instead, the entrepreneur with high psychological ownership in the organization may act out of self interest but this activity also is consonant with the interests of the organization since the entrepreneur may view the organization as an extension of herself/himself. As such, high psychological ownership will reduce the necessity of governance to bluntly align goals. In essence, high psychological ownership lessens the need for intense governance. On the flip side of this argument, however, is the problem of declining psychological ownership. When psychological ownership declines in the entrepreneur, goal alignment will naturally decline and will be increasingly dependent on the established governance mechanisms.

Proposition One: There is a positive relationship between an entrepreneur's psychological ownership and governance alignment such that higher psychological ownership will increase the alignment between an entrepreneur's and organization's goals and weaker psychological ownership will reduce the alignment between the entrepreneur's and organization's goals.

Resource Exchanges and Governance Alignment

Entrepreneurial organizations typically face resource constraints as they seek to grow (Baker & Nelson 2005). For this reason, many entrepreneurs pursue external resources including capital or debt financing when possible. To this end, venture capital is often sought by ventures with high growth prospects when other capital is either depleted (such as that from family, friends, or business angels), or unavailable. While venture capital financing can be quite beneficial and VCs are known for providing strategic guidance, access to potential suppliers and customers, and ties to prominent underwriters (Megginson & Weiss 1991), there is a downside to this funding. More specifically, obtaining venture capital means that an entrepreneur must give up not only a sizeable portion of ownership but also control as VCs typically take seats on the board of directors and establish elaborate contractual safeguards to protect their interests (Sahlman, 1990). Indeed, VCs utilize staged financing to exert stronger control over their funded ventures and to reduce total exposure to ventures which are trending toward failure.

For the entrepreneur with high psychological ownership toward her/his venture, this ceding of control and ownership to others may be necessary for growth purposes or even survival. However, we view the need for VC funding (in particular) and other external resources as potentially problematic. In particular, as other individuals occupy the position of principal, there arises potentially competing interests in the organization. This situation can create problems for two reasons. First, as VCs begin to alter the governance mechanisms to exert greater control over the organization, this may generate feelings of protectiveness toward the organization particularly among the founders. Second, these feelings of protectiveness may ultimately fuel conflict between the entrepreneurial team and the VCs resulting in reduced confidence in cooperative relations (Shepherd & Zacharakis 2001). The net result here is that VCs may begin to increase the intensity of the governance (such as through increased monitoring) if they perceive weak goal alignment (Sapienza & Gupta 1994). So where high psychological ownership previously aided goal alignment, we believe that the need for external resources will actually lead to a weakening in the relationship.

Proposition Two: Resource exchanges moderate the relationship between psychological ownership and governance alignment such that entrepreneurs with a greater need to acquire resources from external constituencies will weaken the relationship between psychological

ownership and governance alignment while entrepreneurs with a lesser need to acquire resources from external constituencies will strengthen the governance alignment.

Governance Alignment and Organizational Outcomes

By utilizing a proper mix of governance mechanisms the board of directors seeks to create goal alignment between the principal and agent with the expectation that performance of the organization can be restored to pre-dilution levels (Jensen & Meckling 1976). The implicit assumption here is that when an entrepreneur dilutes her/his ownership (by selling ownership to raise additional capital) the result is poorer organizational performance unless the governance mechanisms are effective in aligning interests. However, because no governance system is completely effectual there will be so called residual costs or losses which theoretically represent the difference in organizational performance from where it would be if the entrepreneur were sole owner and its performance when the entrepreneur dilutes his/her ownership in the company.

The benefit from high psychological ownership is that these residual costs or losses may be much lower in the first place because effort by the entrepreneur will be properly guided toward benefitting the organization. Furthermore, it may reduce the need for intense governance mechanisms which would duplicate the effect of this psychological ownership. For example, executive compensation can be used to link pay with performance and thereby motivate executives to expend additional effort in growing the organization. Interestingly, however, executive compensation tends to be much lower in entrepreneurial organizations where founders are still running the business. Wasserman (2006) calls this the “founder’s discount” and attributes it to the presumed higher psychological ownership among founders (which obviates the need for higher compensation). So while organizational performance should be higher when goals are aligned, an added benefit of higher psychological ownership is that governance costs will be lower.

Proposition Three: There is a positive relationship between the governance alignment (between the entrepreneur and key stakeholders) and organizational outcomes such that higher levels of alignment reduce governance costs and increase organizational performance while lower levels of alignment increase governance costs and decrease organizational performance.

Organizational Outcomes and Psychological Ownership

In prior research, psychological ownership is frequently linked with higher financial performance and general organizational effectiveness (e.g., Wagner, Parker & Christiansen, 2003). In general, these outcomes are thought to develop because employees and managers engage in positive organizational behaviors (i.e., OCBs, etc.—Avey et al., 2009) derived from the strong bond of ownership they feel towards an organization. In addition, as we note above, this subjective state of ownership can evolve to the point where these individuals start to view the object of ownership as an extension of themselves (Pierce et al., 2001; 2003). For entrepreneurs, this means that they often come to view their venture as the public projection of their personality, goals, and/or identity (Wasserman, 2008). Organizational outcomes, therefore, are likely to be perceived by the entrepreneur as a reflection of their skills and abilities.

Whereas, then, positive organizational outcomes are likely to increase the attachment between an individual and the organization, prior research is largely silent on the effect of negative organizational outcomes on psychological ownership. Furthermore, for a broad set of reasons (i.e.,

personal autonomy; psychic income; etc.), Gimeno and colleagues (1997) report that some entrepreneurs are willing to endure less-than-optimal returns for years without closing their ventures suggesting that public status and/or identity concerns are trumped by other psychological factors. However, once organizational performance weakens to a point lower than the entrepreneur's performance threshold, the probability of closure increases dramatically (Gimeno et al., 1997). Together these observations suggest that poor organizational performance may not inversely impact an entrepreneur's attachment to a venture up to a certain point (in fact, mediocre performance may actually increase the subjective attachment as the entrepreneur makes a greater self-investment to try to turn the fortunes of the company around), but once performance dips below a certain threshold, extant theory would suggest that an entrepreneur's attachment to the venture likely decreases. Formally,

Proposition Four: There is a positive relationship between an organization's performance-based outcomes and psychological ownership such that ventures with outcomes above an entrepreneur's performance threshold will increase an entrepreneur's psychological ownership while ventures with performance-based outcomes lower than an entrepreneur's performance threshold will reduce an entrepreneur's psychological ownership.

PO Factor Complementarities (Trade-offs)

The central thesis of this paper argues that psychological ownership can persist apart from the objective control (i.e., equity ownership) an entrepreneur possesses over a particular venture. So, even when an entrepreneur is forced to sacrifice equity in exchange for critical resources from external constituencies, the subjective state of psychological ownership may still remain high. This occurs, we argue, because the three determinants of psychological ownership are complementary (rather than just additive), and, therefore, interact to produce the state of psychological ownership.

First, as noted above, greater insider knowledge increases the relative psychological ownership an entrepreneur feels towards his or her venture. Although control is important for the emergence of psychological ownership (e.g., Pierce, O'Driscoll, & Coghlan, 2004), in situations where the entrepreneur cedes some control of the venture to gain access to outside resources, our prediction is that psychological ownership will remain moderately high if the entrepreneur possesses substantial insider's knowledge of the venture's history and/or current operations. We base this argument on several factors. Earlier we defined insider's knowledge as the tacit knowledge an entrepreneur builds up over time regarding their venture. When sacrificing equity-based control for critical resources we expect psychological ownership to remain moderately high when entrepreneurs feel they are best able to leverage their insider's knowledge to make the most effective use of these external resources therefore weakening the inverse effect of low subjective control on governance alignment.

Second, the self-investment of the entrepreneur can also increase psychological ownership even when control is reduced. As we noted above, self-investment refers to the specific human capital investments entrepreneurs make into their organizations. Prior research also indicates these investments are positively associated with increased organizational performance/survival (Bates, 1990; Gimeno, Folta, Cooper, and Woo, 1997), opportunity identification (Shepherd & DeTienne, 2004; Ucbasaran, Westhead, & Wright, 2008), access to external resources (Cooper, Gimeno-Gascon, & Woo, 1994; Hsu, 2004) among other factors. Furthermore, to the extent entrepreneurs

link organizational outcomes with their self-identity and continue to make specific human capital investments, we expect this relationship to moderate the effect of low control. Specifically, the alignment between the entrepreneur's and organization's goals will remain moderately high even when control is low.

Wasserman (2008) presents some anecdotal evidence for these relationships when he notes that entrepreneurial founders often believe that they are the only individuals capable of successfully running their venture. Prior literature on entrepreneur decision-making suggests that entrepreneurs tend to overweight their individual importance to the future success of their ventures (Cooper, Woo, & Dunkleberg, 1988; Busenitz & Barney, 1997; Hayward, Shepherd, & Griffin, 2006). As such, given the perceived link between organizational outcomes and the entrepreneur's self-identity, entrepreneurs likely perceive the need to acquire external resources as a necessary step to facilitate organizational survival, but that organizational performance is still largely contingent upon their own efforts. Therefore, we do not expect the loss of control to reduce psychological ownership proportionally as long as the entrepreneur's insider's knowledge and/or self-investment remain high. Figures 2 and 3 included below illustrate these trade-offs.

Formally,

Proposition Five: Insider's knowledge moderates the relationship between the relative control an entrepreneur possesses over a venture and their sense of ownership toward the venture such that the entrepreneur's relative psychological ownership will increase when insider's knowledge is high even when their objective control is low and decrease when both factors are low.

Proposition Six: Self-investment moderates the relationship between the relative control an entrepreneur possesses over a venture and their sense of ownership toward the venture such that the entrepreneur's relative psychological ownership will increase when self-investment is high even when their objective control is low and decrease when both factors are low.

DIRECTIONS FOR FUTURE RESEARCH

Contribution to Theory

Psychological Ownership Theory. Although Pierce and colleagues (2001) propose a theoretical model in which control, intimate/insider's knowledge, and self-investment exert additive effects on psychological ownership, they acknowledge that these factors may also be complementary. In this paper, we argue that in the context of entrepreneur decision-making, these effects are complementary during the firm creation/development process. We base this argument on several key observations. First, although several prior empirical studies testing various facets of psychological ownership theory emphasize the role of control in causing psychological ownership (e.g., Pierce, O'Driscoll, & Coghlan, 2004), as Wasserman (2008) argues, entrepreneurs creating high-growth ventures often have to sacrifice control to gain access to external resources. Second, despite relinquishing substantial control over a venture, prior research indicates the entrepreneur's commitment to the venture remains high often remains high even after sacrificing an large equity stake (Wasserman, 2006; Arthurs, Hoskisson, Busenitz, & Johnson, 2008). Third, given the high level of commitment entrepreneurs display towards their ventures, alternative psychological factors (i.e., insider's knowledge and/or self-investment) appear to moderate the relationship between control and psychological ownership.

Reconceptualizing the effects of these psychological factors as complementary rather than additive makes several contributions to extant theory on psychological ownership. First, a synergistic joint effect between any two factors suggests that many of the positive consequences attributed to psychological ownership (i.e., commitment, extra role behaviors, etc.) can be observed at much lower levels of each individual variable. Stated differently, a smaller level of self-investment combined with a smaller level of control may induce higher levels of psychological ownership than a higher individual level of control. This effect is important given that the negative consequences of psychological ownership are often observed when the individual factors are observed at either extreme of the scale (e.g., Brown, Lawrence, & Robinson, 2005). Second, reconceptualizing the effects as complementary rather than additive allows for high levels of psychological ownership even in the absence of one factor. For example, received theory suggests that insider's knowledge tends to build up over time. As such, were we measuring an entrepreneur's level of psychological ownership immediately after the creation of a venture, the relative newness of the venture would cap the aggregated psychological ownership score on the moderately high end of the scale.¹ If, however, researchers conceptualize these scores as complementary, the various dimensions of psychological ownership jointly interact to minimize the individual effect of any one dimension which may be lower due to contextual constraints.

Governance Literature. Reconceptualizing the dimensions of psychological ownership as complementary rather than additive also offers several interesting revisions to extant theory on the use of various governance mechanisms intended to increase the alignment between the entrepreneur and the organization. Specifically, extant literature on the use of governance mechanisms in entrepreneurial ventures tends to over-emphasize the role of incentives (i.e., bonding mechanisms) to compensate for a lack of control in ventures. However, prior research indicates that incentives such as bonding mechanisms in entrepreneurial ventures may be an unnecessary expense among founder-controlled ventures given the potentially high levels of psychological ownership among founders (Arthurs, Busenitz, Townsend, & Liu, 2007). By conceptualizing entrepreneurs as more psychologically complex than received theory acknowledges, potentially new avenues of research into the effectiveness of various mechanisms intended to reduce agency costs may be developed.

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NOTES

1. Specifically, prior researchers often use 7-point Likert scales to measure the three dimensions of psychological ownership. So, if the scores for control and self-investment were both a seven, but the score for insider's knowledge was only a one (since the venture is so new), the aggregate PO score for the entrepreneur would be capped at 15/21—implying that the entrepreneur had a moderately high level of psychological ownership despite the fact that one two dimensions, the entrepreneur's score was at the extreme end of the scale.

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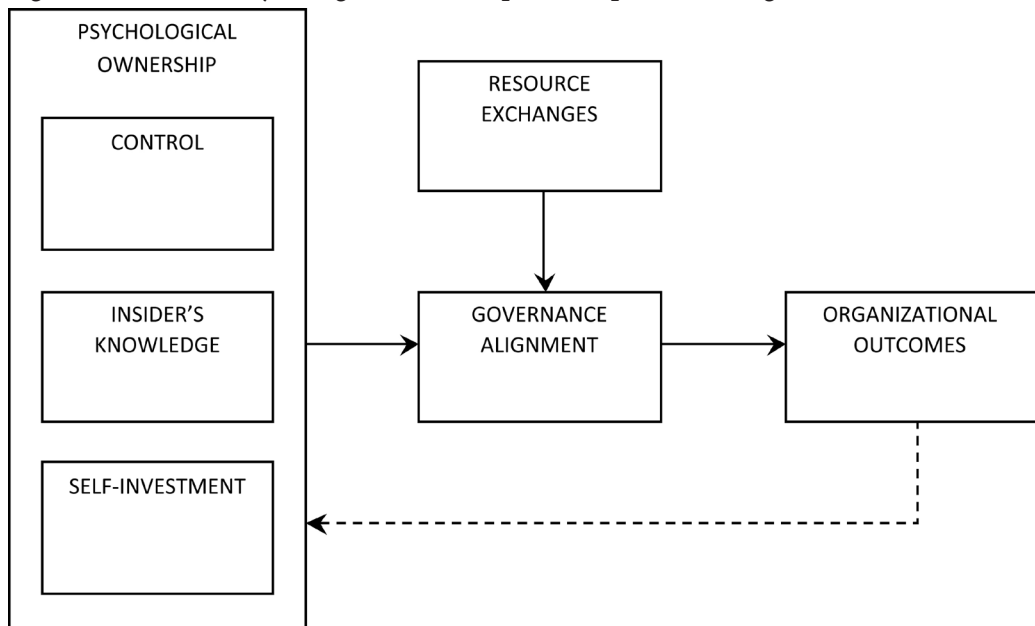
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Figure 1: A Model of Psychological Ownership of Entrepreneurial Organizations



Figures 2 & 3: Trade-Offs Among the Causal Determinants of Psychological Ownership on Governance Alignment

		INSIDER'S KNOWLEDGE	
		HIGH	LOW
CONTROL	HIGH	HIGH ALIGNMENT	MODERATE ALIGNMENT
	LOW	MODERATE ALIGNMENT	LOW ALIGNMENT

		SELF-INVESTMENT	
		HIGH	LOW
CONTROL	HIGH	HIGH ALIGNMENT	MODERATE ALIGNMENT
	LOW	MODERATE ALIGNMENT	LOW ALIGNMENT

≈ SUMMARY ≈

**TOWARDS AN ALTERNATIVE THEORY OF
ENTREPRENEURIAL SUCCESS: INTEGRATING
BRICOLAGE, EFFECTUATION AND IMPROVISATION**

Geoffrey R. Archer, Oregon State University, USA

Ted Baker, North Carolina State University, USA

Rene Mauer, RWTH Aachen University, Germany

Principal Topic

Contemporary theoretical perspectives in entrepreneurship suggest an idealized linear model of successful entrepreneurship in which advantage goes to those who discover lucrative opportunities (Kirzner, 1997; Shane and Venkataraman, 2000), adopt consistent goals and strategies to exploit them (Wiklund & Shepherd, 2005), marshal appropriate high quality resources and deploy these resources in a capable and disruptive manner (Schumpeter, 1934) to earn monopoly rents. Increasingly, however, empirical research suggests that much entrepreneurial activity and even successful entrepreneurship sometimes violate multiple aspects of this model (Carter, Gartner & Reynolds, 1996; Alvarez & Barney, 2006; Lichtenstein, et al., 2007). Against this backdrop, scholars have proposed several theoretical perspectives – including bricolage (Garud & Karnoe, 2003; Baker & Nelson, 2005), effectuation (Sarasvathy, 2001; Wiltbank et al., 2006) and improvisation (Miner, et al., 2001; Crossan et al., 2005) – that are useful in making sense of these discordant patterns. Despite several common themes and family resemblances among these perspectives, little work has clarified important distinctions among them or attempted an integrative framework. Both tasks are necessary in order to make progress toward an alternative theory of entrepreneurial success.

Method

Our approach is the comparative examination of seminal and recent published work on bricolage, effectuation and improvisation. We examined the common and distinctive elements of these three perspectives in juxtaposition to the popular *discovery, evaluation and exploitation* framework.

Results & Implications

The central themes we discovered and used to compare and contrast the three perspectives include: enacted definitions of success; variations in the role and nature of resources, opportunities, planning and design, the place of novelty, the role of teleology, and several important boundary conditions, including especially the role of entrepreneurial expertise and selectivity. A wide range of distinctions in metaphysical grounding – from normal science (bricolage and improvisation) to pragmatism (effectuation) – shape the research path forward in important ways. Overall, our work suggests that attempts to find common and contrasting themes among bricolage, effectuation and improvisation hold promise for clarifying the appropriate domains and usage of these perspectives. We have also found sufficiently strong overlaps and similar assumptions to support the beginnings of an alternative theory of entrepreneurial success.

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≈ SUMMARY ≈

EXPLORING THE PSYCHOLOGICAL HARDINESS OF ENTREPRENEURS

Reginald A. Bruce, University of Louisville, USA

Robert F. Sinclair, University of Louisville, USA

Principal Topic

Uncertainty and risk most often accompany the process of entrepreneurship. But, how do entrepreneurs learn to accept the inevitable failures, stumbling blocks, and stress associated with their new ventures? The reason appears to be that entrepreneurs are psychologically hardy individuals. Psychological hardiness is one's propensity to stand in defiance to challenges and to bounce back from failure. People high in hardiness have a strong sense of commitment to life and work, and are actively engaged in what's going on around them. They believe they can control or influence what happens, and they enjoy new situations and challenges. Also, they are internally motivated and create their own sense of purpose.

Using data collected from a representative sample of the general business population, a sample of individuals who have recently graduated from one of the largest undergraduate business programs focused on entrepreneurship in the country, this study establishes the value of psychological hardiness in entrepreneurship. This represents a substantial contribution to the field of entrepreneurship, through the exploration of the cognitive mechanism most likely to explain the entrepreneurial tendency to persist under conditions of uncertainty and the resilience to failure. The potential impact such a finding have on the selection and development of future entrepreneurs may be far reaching.

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≈ SUMMARY ≈

**THE SELF-REGULATORY FOUNDATIONS OF
ENTREPRENEURIAL AMBIDEXTERITY**

Peter T. Bryant, Macquarie University, Australia

Principal Topic

Entrepreneurs must exploit existing opportunities while continuing to explore and innovate. That is, they must be ambidextrous (O'Reilly III & Tushman, 2007). In this paper, I investigate the role of social cognitive self-regulation in entrepreneurial ambidexterity. I draw on Regulatory Focus Theory which describes two related self-regulatory orientations called promotion focus and prevention focus (Higgins, 1998). Promotion focus describes where growth and the need for advancement motivate people to seek gains. In contrast, prevention focus describes where security and the need for safety motivate people to avoid losses. A major finding of this study is that the interaction of both promotion focus and prevention focus appears to play a significant role in stimulating entrepreneurial ambidexterity.

Method

Data were gathered as part of a larger study into entrepreneurial decision-making. I selected 30 founder entrepreneurs representing a range of industries, growth stages and personal backgrounds, all based in Australia. I conducted semi-structured interviews with these 30 entrepreneurs about their decision making and used the same interview protocols throughout. All 30 participants also completed a survey known as the Regulatory Focus Questionnaire, which is a reliable measure of a person's chronic regulatory orientation. The resulting measures of promotion focus and prevention focus were added together to derive each person's overall self-regulatory strength. Following the principles of mixed methods analysis, results of the interview and survey analysis were then combined to identify patterns of ambidextrous thought and behaviour in relation to promotion focus, prevention focus and overall regulatory orientation.

Results and Implications

Results suggest that exploration-related thought and behavior are stronger when an entrepreneur possesses dominant promotion focus, while exploitation-related thought and behavior are stronger when the entrepreneur possesses dominant prevention focus. Further analysis of the data suggests that ambidextrous thought and behavior is strongest when overall regulatory orientation is also strong, that is, when an entrepreneur possesses strong promotion focus as well as strong prevention focus. Future research into these topics should increase understanding of ambidexterity among entrepreneurs, as well as the general mechanisms of their self-regulatory development. This may result in new educational and management techniques that can strengthen entrepreneurial ambidexterity, having practical implications for founder tenure and the management of firm growth.

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≈ SUMMARY ≈

DELIBERATE PRACTICES AND EXPERT PERFORMANCE IN ENTREPRENEURS-FICTION OR FACT?

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Ingrid Le Roux, University of Pretoria, South Africa

Principal Topic

At best, many venture start-ups contain accidental actions while theory suggests they are methodically scouted, planned and pursued. Baron & Henry at this conference in 2006, proposed deliberate practice research as an avenue to identify effortful, directed actions of relevance, associated with expert performance of entrepreneurs, similar to those found in successful sportsmen and medical specialists. If deliberate practices bring about expert performance associated with success for these individuals, the following question could be posed: Can such deliberate practices be identified clearly for entrepreneurs? If so, what are they? If deliberate practices can be identified then there would likely be a difference between novice and established entrepreneurs. Past research with regards to deliberate practice has been done in a laboratory setting and thus, should the concept be applicable to entrepreneurs, a range of more volatile external factors are at play. Despite these factors, it is deemed necessary to explore the applicability of the concept to entrepreneurs.

Method

This study explores deliberate practices of entrepreneurs through a triangulation of three approaches. In total 52 entrepreneurs have been interviewed. Firstly open interviews were conducted with experienced and established entrepreneurs identified through a reference and snowball identification process. Secondly a “post mortem” technique was applied with focus groups of novice entrepreneurs from a high tech incubator. Thirdly, based on the results, structured interviews were conducted with experienced entrepreneurs. A mix of survey and demographical information has been analysed using descriptive and qualitative techniques.

Results and Implications

Comparison of experienced and novice entrepreneurs show contrasting responses for: 1) Activity description length, 2) Richness of the description of activities, 3) Specificity of the activities and variables, 4) Focused versus generic content, 5) Insight of connectivity to results, 6) Differentiation between personality traits and entrepreneurial activities. Novice entrepreneurs predominantly identified personality traits rather than entrepreneurial activities that are denoted by verbs whereas experienced entrepreneurs only referred to one personality trait namely: innovativeness and further all activities listed were specific, detailed actions. These results create opportunity for alternative training focuses as well as the creation of a deliberate practice framework. These findings have important implications for entrepreneurship education and potentially for screening of venture “jockeys” by venture capitalists.

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≈ SUMMARY ≈

**FROM INTENT TO ENTREPRENEURIAL ACTION AMONG
MULTIDISCIPLINARY UNDERGRADUATE STUDENTS: THE
NEED TO SPREAD OUTSIDE THE BUSINESS SCHOOLS**

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Principal Topic

Based on an international literature review, this longitudinal study is conducted within the *Entrepreneurial Profile (EP)*, in which undergrads from 35 programs can enroll in courses, tutorials and coaching embedded within their curriculum (www.profilentrepreneurial.ulaval.ca). However, most empirical studies on students' entrepreneurial attitudes, intentions and self-efficacy have been performed in business and engineering. By differentiating between students' motivations to enroll, project ideas, entrepreneurial intent, vision and actions, we investigate the links behind these variables and interdisciplinary entrepreneurship education (Levenburg, 2003; Galloway & Keogh, 2006). *EP's* objectives extend from one to four years: attract, identify, express and nurture their entrepreneurial potential and competencies, enabling undergrads to experiment venturing in a *learning secure environment*.

Method and Results

Since 2004, 1085 undergrads from 55 programs were surveyed: 250 interviews produced 140 enrolments in ventures linked to their specialization. These potential entrepreneurs have been trained and coached by counselling and entrepreneurship educators, their endeavors being constantly monitored. Fifty in-depth interviews revealed the factors underlying their intent, motivation, constraints and solutions, moving from their initial intentions to formal action. Findings from content analysis and SPSS are consistent with our objectives: most students complete their *EP* before graduation, whilst less than 30% started their venture right away, as many choose to gain experience, find partners and financing.

Results and Implications

As this *meso-program* will continue its interdisciplinary expansion, the variables and gaps between intention and action remain numerous, several hundred respondents being needed before asserting any predictable model. However, fostering entrepreneurship among all disciplines, lighting up undergrads in their classrooms and bringing them into realistic endeavors looks like a promising breakthrough. Entrepreneurship education needs *not to be considered* as standardized: one size doesn't fit all and tailor-made implementations are needed at all levels (Hannon, 2005; Wilson, 2007). While their work load increase, most entrepreneurship educators must become entrepreneurs but the more we expand, the more we overleap the education system limits (Todorovic, 2005). University intrapreneurs *should not be seen as salaried employees* under standard supervision and appraisal. Developing and coaching entrepreneurs, fostering enterprise creations and wealth exceed most educators' duties. We must address these discrepancies before they hinder the sustainability of our pedagogical innovations.

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≈ SUMMARY ≈

APPROACHING THE AGORA – DETERMINANTS OF SCIENTISTS' INTENTION TO PURSUE ACADEMIC ENTREPRENEURSHIP

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Principal Topic

The economic impact of scientific research is receiving widespread attention (Dosi, 1988; Rosenberg & Nelson, 1994). New ventures started by scientists are the most direct or, at any rate, the most visible form of technology transfer and research commercialization (Shane, 2004). However, not much is known about the factors leading scientists to pursue academic entrepreneurship (Audretsch & Kayalar-Erdem, 2005). We attempt to fill this research gap by investigating *individual and contextual factors as well as their interplay in determining scientists' intention to start a firm upon own research*. According to entrepreneurship scholars (Bird, 1988; Krueger & Carsrud, 1993), intentions to engage in new firm formation can be seen as a critical antecedent of the decision to become an (academic) entrepreneur. Knowledge about the emergence of and influences on scientists' entrepreneurial intentions may, thus, be important for both future research on the commercialization of science and public policy aiming to stimulate academic entrepreneurship.

Method

We conducted a cross-sectional survey of faculty and research staff of German universities and non-university research organizations. We utilized an Internet-based questionnaire, which was designed following established guidelines. Survey data were collected from a random sample of 496 scientists. Data are analyzed using hierarchical linear regression models.

Results and Implications

We apply an *extended* version of Ajzen's (1991) "Theory of Planned Behavior" to determine entrepreneurial intentions among scientists. Our results show that scientists' intentions to engage in entrepreneurship are mainly determined by a strong entrepreneurial self-perception rather than, e.g., normative pressure from superiors or colleagues. Scientists' affective attitude toward entrepreneurship, perceptions of control over entrepreneurial behavior and entrepreneurial self-identity turned out to be the strongest predictors of the willingness to engage in research commercialization. Furthermore, tests of interaction effects provide insights that go well beyond existing knowledge about socialization processes and peer group effects in the context of academic entrepreneurship (Stuart & Ding, 2006). We find that proximity to entrepreneurial colleagues predicts scientists' entrepreneurial intentions only if these colleagues were indeed perceived as behaviorally relevant role models.

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≈ SUMMARY ≈

**THE VALUE-ADDED CONTRIBUTION OF
ENTREPRENEURSHIP COGNITION RESEARCH: A CRITICAL
REVIEW OF THREE DECADES OF RESEARCH**

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Jeffery S. McMullen, Indiana University, USA

Principal Topic

What has been the contribution of entrepreneurship research that adopted a cognitive perspective? To explore this question, we content-analyze a corpus of 156 entrepreneurship cognition articles published in peer-reviewed journals between 1976 and 2008.

Methodology

To generate a comprehensive sample of relevant articles, we conducted a series of searches in three reference databases: ABI Inform, Business Source Complete, and PsychInfo. For all three databases, we searched for articles that met the following criteria: (1) publication between 1976 and 2008; (2) publication in a peer-reviewed journal; (3) publication in a journal that is indexed in the Social-Science Citation Index; and (4) use of keywords relevant for “cognition” and “entrepreneurship”.

We analyze the corpus of articles along three axes. First, we investigate whether the publication of entrepreneurship cognition research is increasing, stabilizing, or decreasing, and whether it is limited to entrepreneurship-specific journals. Second, we inventory the independent and dependent variables of cognitive interest that entrepreneurship cognition articles have investigated, and assess the area’s degree of theoretical convergence upon specific (and potentially unique) variables. Third, we build on these observations to identify the areas where entrepreneurship cognition has made important value-added contributions, and analyze the form that such contributions have made from a cognitive standpoint.

Results and Implications

In terms of growth trajectory, our results show that dramatic increases in the number of entrepreneurship cognition articles per year have led to the appearance of more entrepreneurship cognition in journals of higher impact. At the level of the entire corpus, we find that entrepreneurship cognition research exhibits low levels of theoretical convergence on any particular variables. However, we observe that some groups of papers that share particular disciplinary anchors gravitate towards narrower sets of variables, while other groups of papers do not. These observations suggest that, even though the cognitive perspective has made important contributions to entrepreneurship research over the last three decades, there remains a number of theoretically relevant axes that have been poorly explored – and especially in empirical terms. We conclude by providing guidelines and recommendations for future research.

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≈ SUMMARY ≈

**THE ENTREPRENEURIAL MINDSET: NEW
ENDS, NEW MEANS, NEW SELVES**

Susan S. Harmeling, Howard University, USA

Principal Topic

The research project described in this paper is an inductive field study of The National Foundation for Teaching Entrepreneurship (“NFTE”), an entrepreneurship education program in inner-city high schools in the United States. The rationale for studying this organization was simple, and twofold. First, since there appears to be quite fervent interest in developing and fostering entrepreneurship in economically challenged environments (Busenitz, et. al, 2000, Peredo and Chrisman, 2006, Spicer, McDermott and Kogut, 2000), then perhaps it would be best to study entrepreneurship education programs not in traditional settings but rather in those more barren environments themselves.

Second, this research enterprise allowed us to examine an important theoretical issue as well. The very premise of entrepreneurship education—namely that you can teach entrepreneurial behavior and this will in turn have a positive effect on society-- is itself controversial. This project sheds light on that controversy, with theoretical support from Baumol (1990) and Gerschenkron (1962).

Method

This is a qualitative field study during which I interviewed and observed scores of stakeholders involved in the NFTE program. I integrate a case study approach and a grounded theory approach, drawing on the language associated with the case study to help delimit the social units on which I focus for data gathering, and drawing on grounded theory to provide the analytic logic and to describe the analytic process, the coding techniques, etc.

Results and Implications

This project explores the following two questions; first, can an entrepreneurial mindset or entrepreneurial behavior be taught? and second, what does the process of entrepreneurship education look like in a non-traditional setting? The findings resulted in a model of how students processed what they were learning and how the entrepreneurial mindset may be imparted through entrepreneurship education. Specifically, students iteratively absorbed the mindset of entrepreneurship as they discovered new ends, new means and “new selves” or new entrepreneurial identities. This model finds support in the writings of American pragmatist philosophers, most notably John Dewey and his *Experience and Education* (1938). It has the potential to inform not only important theoretical dilemmas, for example, questions around human agency left unanswered by institutional entrepreneurship, but also public policy questions as well. Specifically, entrepreneurship education as laid out in this project has the potential to reach those students being left behind by an increasingly ineffective American public school system (Gross, 1999).

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≈ SUMMARY ≈

THE ROLES OF ENTREPRENEURIAL ALERTNESS, PRIOR KNOWLEDGE AND SOCIAL NETWORKS IN THE PROCESS OF OPPORTUNITY RECOGNITION

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Donna J. Kelley, Babson College, USA

Chang-Yung Liu, I-Shou University, Taiwan

Principal Topic

Entrepreneurial alertness has been identified as a major factor in the process of opportunity recognition, but the components of alertness and the relationships between this and other factors are still ambiguous. Furthermore, limited empirical testing exists to validate the alertness construct (Mitchell et al., 2007; Tang, 2008). We attempt to reveal the critical role of alertness in the opportunity recognition process. This study defines entrepreneurial alertness as a kind of cognitive ability for perceiving and interpreting market information (Gaglio & Katz, 2001). We investigate the different types of prior knowledge (ways to serve markets, customer problems, markets, technology (Shane, 2000; Marvel & Lumpkin, 2007) and social sources of information (mentors, informal industry networks, participation in professional forums) (Ozgen & Baron, 2007) that are associated with entrepreneurial alertness (perception and interpretation ability) (Kirzner, 1979; Gaglio & Katz, 2001). Our findings suggest that entrepreneurial alertness is linked to the innovativeness of the opportunities recognized.

Method

Participants in the study were founders of Taiwanese start-ups registering with the Ministry of Economic Affairs between June, 2008 and November, 2008. We randomly mailed a structured questionnaire to 1,000 entrepreneurs in December, 2008 and 114 valid returns were obtained. We used hierarchical regression as the statistical technique to test the hypotheses.

Results and Implications

Results indicate that prior knowledge of customer problems and markets, and social sources of informal industry networks had positive effects on entrepreneurial alertness (perception and interpretation ability). Moreover, interpretation ability was positively associated with the innovativeness of the opportunities. In addition, we found that the relationships between prior knowledge of markets and opportunity recognition were partial mediated by interpretation ability. Our findings have implications for theory and for entrepreneurs. We suggest that entrepreneurial alertness may provide valuable conceptual tools for understanding the process of opportunity recognition. Some individuals are better able to recognize innovative opportunities than others because they have better ability to perceive and interpret information.

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≈ SUMMARY ≈

THE “SWITCH” HYPOTHESIS: ENTREPRENEUR'S INTUITIVE VS. ANALYTIC DECISION MAKING

*Tori Yu-wen Huang, Cass Business School, City University London, UK
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Principal Topic

How and why do entrepreneurs think differently from non-entrepreneurs? Research on entrepreneurial cognition tries to answer this question through examining the cognitive strategies entrepreneurs employ when making decisions for their ventures. This paper argues that one of the most effective and efficient cognitive strategies for entrepreneurs is to constantly “switch” between their intuition and logical analysis in coping with imperfect information in an environment of high complexity, ambiguity, and uncertainty. Taking a dual processing perspective, our key argument is based on that intuition and analysis are two parallel systems in the human brain that an individual can freely access. Due to the demand for high level processing in complex decision making, individuals with limited cognitive resources can only focus their attention on one strategy—intuitive or analytic—at a time. In the paper we discuss the different types of switch: spontaneous vs. planned, forced vs. voluntary, conscious vs. subconscious, and affect driven vs. rational choice. We also show how individual differences and task characteristics can come into play and influence the outcome of the switch, as well as situations in which the switch can help or harm decision making processes in terms of the speed and the quality of the decision.

Method

This study takes an experimental approach. To study the proposed relationships in a dynamic and realistic environment, we use an entrepreneurship PC game to simulate the entrepreneurial decision environment. The sample consists of 100 EMBA, MBA, MSc business school students who are identified as bearing knowledge and intention in entrepreneurship. Data are collected in the forms of concurrent verbalization of individual’s thinking process, recording of PC monitor output (“screencast”), simulation game statistics, and self-report questionnaires.

Results and Implications

The proposed integrative framework reconciles previous research on the use of intuition vs. analysis. We emphasize not only on using both intuition and analysis as a superior cognitive strategy in the entrepreneurial environment, but also how successful entrepreneurs constantly switch between them in their venture decision making. We discuss the specific implications of the switch strategy in terms of opportunity recognition, opportunity creation, and entrepreneurial management.

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≈ SUMMARY ≈

**ANGER, GUILT OR SHAME? A STUDY OF
EMOTIONAL RESPONSES TO FIRM FAILURE**

Anna S. Jenkins, Jönköping International Business School, Sweden

Ethel Brundin, Jönköping International Business School, Sweden

Principal Topic

A small and growing number of studies have started examining entrepreneurs' reactions to business failure, proposing that entrepreneurs experience grief when their businesses fail (Shepherd, 2003; Shepherd et al, 2008; Singh, 2007) and that grief in turn can influence learning and recovery. Grief is a made up of a number of emotions, for example, denial, anger, depression and individuals can vary in the intensity in which they experience these emotions (Hogan, Greenfield & Schmidt, 2001). Building on these insights, we explore the antecedents and consequences of entrepreneurs' emotional responses to the failure of their firms.

Method

In line with other studies which have explored entrepreneurs' responses to firm failure (Singh et al., 2007) we use an explorative case study approach. Semi-structured interviews were conducted with nine individuals who had owned and managed a firm which had gone bankrupt during the previous year and with two individuals who had experienced a firm bankruptcy approximately eight years earlier. This should be a sufficient number of cases in order to draw analytical conclusions (Eisenhardt, 1989; Yin, 1994).

Results and Implications

Based on the results from the case studies we develop a number of propositions which explain entrepreneurs' emotional responses to firm failure and their implications for re-entry intentions. We found that entrepreneurs' emotional responses are dominated by either a sense of *relief* or feelings of *grief*. Those entrepreneurs who felt relieved after the bankruptcy described the lead up to the bankruptcy as very stressful. The bankruptcy signalled an official end to this. Relief is often felt when it is thought that the worst is over (Roseman and Evdokas 2004). These entrepreneurs usually blamed external factors for the bankruptcy and in line with attribution theory felt anger. They had either started a new firm since the bankruptcy or had high intentions to do so. On the other hand, those entrepreneurs who felt grief after the bankruptcy described a feeling of loss and drew analogies to grief. In line with attribution theory they often cited internal factors as causes for the bankruptcy. Their re-entry intentions depended on how well they recovered from the experience.

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≈ SUMMARY ≈

WHO FAILS OVER AND OVER AGAIN AND WHO LEARNS FROM FAILURE?

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Principal Topic

The habitual entrepreneurship and entrepreneurial learning literatures assume that prior entrepreneurial experience (whether success or failure) leads to better performance in subsequent entrepreneurial endeavors because entrepreneurs learn from their experiences and implement their new knowledge (e.g., Politis, 2006). The empirical evidence, however, is inconclusive (Ucbasaran et. al, 2008). Little is known about what entrepreneurs learn from experience, which experiences lead to important learning outcomes and what influences the learning process. Cope (2003), for example, found that discontinues events can result in higher order or double loop learning. Shepherd proposes that grief experienced from firm failure can inhibit learning. Building on these insights we draw on attributional theory to help explain the antecedents and consequences of learning from firm failure.

Method

In line with other studies which have explored entrepreneurial learning (e.g. Cope, 2003) we use an explorative case study approach. Semi-structured interviews were conducted with nine individuals who had owned and managed a firm which had gone bankrupt during the previous year and with two individuals who had experienced a firm bankruptcy approximately eight years earlier. This should be a sufficient number of cases in order to draw analytical conclusions (Eisenhardt, 1989; Yin, 1994).

Results and Implications

Based on the results from the case studies we suggest a model to explain why some entrepreneurs do not seem to learn from their prior entrepreneurial experiences. We suggest that attributions for the failure influence motivation as well as learning and as a result, those that learn the least are the ones most motivated to re-enter. In other words, there is a negative selection of individuals who re-enter entrepreneurship. Those entrepreneurs who attributed the failure to their own actions described rich learning outcomes. Their motivations for re-entry were dependent on how well they coped with their grief. On the other hand, those entrepreneurs who attributed the failure to external factors, for example, it was the fault of their business partner, draw very few learning outcomes from the experience. They often had intentions to re-enter and in one cases had already done so.

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≈ SUMMARY ≈

OVERCONFIDENCE: A MATTER OF RISK PERCEPTION AND VENTURE CREATION

Anthony Robinson, University of Alabama, USA

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Principal Topic

Overconfidence is said to be prevalent among entrepreneurs and may have implications for existing and potential entrepreneurs. More specifically, overconfidence may affect new venture creations indirectly by affecting risk perceptions. For instance, there may be misperceptions concerning risks such as threats to new venture success. However, the perceived risks to new venture survival may not be obvious to the overconfident. In essence, the overconfident may not be less risk-averse but may perceive less risk in their entrepreneurial settings given their overconfident lens. Hence, we examine the following hypotheses.

Hypothesis 1: Overconfidence affects risk perceptions.

Hypothesis 2: Risk perceptions affect new venture creation.

We argue that overconfidence affects risks perceptions among potential entrepreneurs. The mechanism through which overconfidence has significant implications for entrepreneurship may involve the accuracy of risk perceptions. For instance, there may be misperceptions concerning risks such as threats to new venture success. However, the perceived risks to new venture survival may not be obvious to the overconfident and potential entrepreneurs. In essence, overconfident entrepreneurs may not be less risk-averse but may perceive less risk in their entrepreneurial settings given their overconfident lens.

Risk perceptions are directly influenced by one's overconfidence and directly affect one's intention to start anew venture. Overconfidence results in overestimation of event occurrences such as the successful creation of new ventures leading to increased new venture creation intentions. The systematic differences in the behaviors of the overconfident include the occurrence of logical errors similar to those that support decisions to start new ventures largely in part due to misperceptions. Although the prevailing research suggests that entrepreneurs are more overconfident than non-entrepreneurs, it may be that the overconfident decide to become entrepreneurs based upon less perceived risks associated with new venture creation.

Method

Data are collected from a sample of university students. The students are in upper level courses and are approaching decisions concerning their careers which include whether to become entrepreneurs. Data is collected through surveys to test hypotheses with regression analysis.

Results and Implications

The preliminary results of this exploratory study suggest that risk perceptions do influence new venture creation. However, early results offer less clear support for the impact of overconfidence on risk perceptions.

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≈ SUMMARY ≈

ENTREPRENEURIAL KNOWLEDGE IN THE EVALUATION OF VENTURE CREATION OPPORTUNITIES: THE EFFECT OF DIFFERENT KNOWLEDGE TYPES ON THE DECISION TO EXPLOIT

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Principal Topic

Explaining opportunity evaluation, which occurs after recognition but prior to the decision to act, is essential to entrepreneurship theory (McMullen & Shepherd, 2006). Herein, we extend theory to explain how different types of entrepreneurial knowledge affect the decision to exploit. Specifically, we describe how differences in procedural knowledge and domain knowledge affect the evaluation of recognized opportunities.

Theory/Conceptual Framework

Differences in knowledge affect judgments about recognized opportunities (Busenitz, 1996; Gaglio & Katz, 2001; Shane, 2000). Knowledge reduces uncertainty, enabling individuals to overcome doubt that blocks or delays entrepreneurial action. Whether action occurs depends on judgments formed during opportunity evaluation, which, in turn, depends on knowledge and the degree of uncertainty experienced in the decision of whether to act (Holcomb et al., 2009). We develop theory explaining the role of two knowledge forms on the decision to exploit: procedural and domain. Whereas *procedural knowledge* represents task-specific knowledge related to the venture creation process, *domain knowledge* represents knowledge formed around opportunity domains—market attributes such as customer needs, problems, and substitute products/services.

Applying these two dimensions, we develop a model containing four quadrants and characterize how these two knowledge forms affect the decision to act. The four quadrants include: newbie, domain-brain, explorer, and know-it-all. Newbies possess little to no procedural or domain knowledge and are least likely to act. Domain-brains possess high context knowledge but have little or no procedural experience, they are comfortable with the domain, but lack previous founder experience. Explorers are habitual or serial entrepreneurs that possess significant start-up experience in a variety of different settings, but lack domain knowledge in any one area. Finally, know-it-alls possess substantive domain knowledge and have experience establishing ventures in a variety of different market contexts.

Results and Implications

We introduce boundary conditions pertaining to cognitive structures and their effects on the decision to exploit. Our underlying theoretical framework conceptualizes entrepreneurial knowledge as a multi-dimensional construct in which different types of knowledge affect the likelihood of exploitation and value created from recognized opportunities. Our model dimensionalizes entrepreneurial knowledge into four quadrants and extends theory to explain the decision of entrepreneurs to exploit recognized opportunities.

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≈ SUMMARY ≈

**DETERMINING ENTREPRENEURIAL COMMITMENT
IN THE PRE-ENTREPRENEUR**

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Principal Topic

This research seeks to empirically support the premise that *entrepreneurial commitment*, the amount of effort and length of time a person is willing to persist if they choose to take entrepreneurial action, can be measured *a priori* through the cognitive mechanisms of *self-efficacy* (Bandura, 1986) and *entity-schema* (Dweck, 1999, 2000). Entrepreneurial commitment represents a key component in our ability to predict entrepreneurial outcome, which, according to Gartner (1989), is a crucial component to any cognitive view of the entrepreneur.

Using data collected from a representative sample of the general business population, a sample of individuals who have recently graduated from one of the largest undergraduate business programs focused on entrepreneurship in the country, this study establishes the validity of the entrepreneurial commitment concept. While predictive ability of the model can not be established without longitudinal data, inference of predictability is established through the use of multi-group analysis to support differentiation between individuals who have an entrepreneurship major or minor and those who do not.

This study represents a substantial contribution to the field of entrepreneurship, suggesting the ability to predict a key component of the entrepreneurial process—entrepreneurial commitment. It is expected that the ability to predict entrepreneurial commitment *a priori* will not only increase our knowledge of the emergence process, but yield valuable information on how to assist entrepreneurs in their preparations to start a business.

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≈ SUMMARY ≈

**A PLEA FOR INDIVIDUALLY ‘IRRATIONAL’ ENTREPRENEURSHIP:
HOW ENTREPRENEURIAL OVERCONFIDENCE AFFECTS
PAYOFFS OF AN ENTREPRENEURIAL POPULATION**

*Diemo Urbig, Max Planck Institute of Economics, Germany
Utz Weitzel, Utrecht University School of Economics, Netherlands*

Principal Topic

Although entrepreneurship is generally considered positive, it is unclear if policy should discourage unrealistically overconfident people from becoming entrepreneurs (e.g., Parker, 2007). Despite decreasing actual profits, biased behavior can trigger information externalities relevant to entrepreneurship (Shane and Venkataraman, 2000) and ultimately create advantages for populations with biased rather than unbiased members (Bernardo and Welch, 2001). Existing studies on information externalities focus on overconfidence in privately acquired information, but ignore the effects of being overly optimistic about one's competences and idiosyncratic risks, i.e. optimistic overconfidence. Despite the importance for entrepreneurship policies, analyses on the optimal magnitudes of such biases, their prevalence within populations, and their relations to market size, are largely absent in the literature.

Methods

Building on economic models of social learning focusing on effects of information externalities, this study provides a theory-based analysis using a quantitative model that comprises characteristics central to entrepreneurship. Observable entrepreneurial decisions and outcomes are considered as potential information externalities. An upper limit for the number of successful exploitations reproduces the ambivalent property of late decisions to be more informed, but running the risk of entering a saturated market (Lévesque and Shepherd, 2002). A theoretical analysis, supplemented by numerical analyses, investigates the effects of the model parameters.

Results and Implications

The analysis shows that a balanced combination of overconfidence in privately acquired information and optimistic overconfidence is often better for a population's welfare than unbiased entrepreneurship. Magnitudes of optimal biases depend on market size and idiosyncratic risks, both of which influence the benefits of information externalities. “De-biasing” might make potential entrepreneurs more rational in a narrow sense, but it is likely to reduce a population's expected profit. Implications for entrepreneurship policy are discussed.

David Hart starts his book on entrepreneurship policy (2003) by saying that we should not toss the entrepreneurship baby out with the dot-com bath water. Similarly, we can conclude that we should not toss the entrepreneurship baby out with the water of irrationality. Making potential entrepreneurs more rational should not be the default strategy for dealing with entrepreneurs' cognitive biases within entrepreneurship-oriented policy.

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≈ INTERACTIVE PAPER ≈

**INDIVIDUAL FACTORS INFLUENCING THE WAY
ENTREPRENEURS INTERPRET AN OPPORTUNITY**

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Bernard Surlemont, *Liege University, Belgium*

Principal Topic

Opportunity identification has always been considered as a central aspect of entrepreneurship (Gaglio, 2004, Kirzner, 1979; Shane and Venkataraman, 2000, Shane, 2003). However, there is no agreement among scholars on how to define and how to operationalize opportunity identification. In this paper, we focus on the process by which individuals interact with the opportunity identified to develop personal business concepts. Opportunities are vague ideas about potential *profit making* while business concepts are elaborated ideas corresponding to a personal opportunity. Business concepts are thus, subjective constructs resulting from individual interpretation of the opportunity identified. In an effort to document this process of opportunity interpretation, we are conducting an empirical study which explores mental processes underlying new business concepts elaboration. This analysis allows the identification of individual factors influencing opportunity interpretation rather than analyzing properties that prompt individuals to become entrepreneurs (Vankataraman 1997). In doing so, we are focusing on the nexus of the individuals and the opportunities.

Method

The aim of the study is to identify mental processes used by entrepreneurs to interpret opportunities. The explanatory nature of this inquiry suggests the use of a multi case study methodology. Interviews are conducted with potential entrepreneurs who are still in the process of new venture creation. This reduce methodological bias related to reported information once the opportunity has been validated through venture creation. Potential entrepreneurs following an entrepreneurship program are approached to understand the way they interpret the opportunity identified and how they construct business concepts.

Results and Implications

The interviews conducted show that opportunity interpretation is a conception process. Individuals formulate business concepts as a relationship between their personal aspirations and desires and the environment acceptance. Perception of individual resources plays a mediating role in this relationship.

The paper has two main contributions. First, it adds to the comprehension of one of the main and central questions to the domain of entrepreneurship: “how entrepreneurs interact with the entrepreneurial process to construct business concepts”? Second, it stresses the subjectivity of business concept development process and highlights individual factors influencing the way entrepreneurs interpret opportunities.

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∞ INTERACTIVE PAPER ∞

COGNITIVE BIASES AND THE ENTREPRENEURIAL START-UP PROCESS

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Principal Topic

Cognitive biases are frequently associated with entrepreneurs (e.g., Baron, 1998; Busenitz & Barney, 1997; Palich & Bagby, 1995). Yet, current research is not clear on the particular characteristics of cognitive biases and how (and when) these biases impact the opportunity search, discovery, and exploitation process. In this paper, we distinguish different groups of biases by developing a theoretical framework based on well-established behavioral decision-making literature (Kahneman & Tversky, 2000; Yzerbyt, Lories, & Dardenne, 1998). Using this framework, we integrate extant literature related to the entrepreneurial start-up process as it relates to this framework.

From our reading of the literature, a theoretical framework can be built to examine how these cognitive biases and the possible theoretical implications on entrepreneurs can be examined along four dimensions. Specifically, these four dimensions include: (1) Reference to mechanism or effect; (2) Bias on the level of the decision making knowledge vs. meta-cognitive biases; (3) Stability of biases; and (4) Effects of biases on entrepreneurial persistence versus flexibility.

Key Methods/Propositions

After carefully cataloging existing entrepreneurship literature which references cognitive biases, we have developed a theoretical framework that outlines our general propositions. Additionally, we have developed a discussion which describes the degree to which the behavior decision-making literature provides insight into the dimensionality of the biases, and their application to entrepreneurial decision-making.

Results and Implications

We feel that the development of our theoretical framework on cognitive biases and how they affect the entrepreneur as they progress through the new venture start-up process can serve several purposes. Existing literature has not consistently identified how cognitive biases relate to the entrepreneurial start-up process. Additionally, entrepreneurship research can benefit from such a framework, through the clarification of how and when cognitive biases affect entrepreneurial decision-making.

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≈ INTERACTIVE PAPER ≈

THE ROLE OF BURNOUT IN VENTURE FAILURE*Joseph E. Coombs, Texas A&M University, USA**Justin Webb, Texas A&M University, USA**Brian Swider, Texas A&M University, USA***Principal Topics**

“Organizational failure” is often viewed as the result of poor financial performance or the lack of fit between an organization and its environment. Little research, however, has investigated specific non-financial antecedents of firm failure. We propose that job burnout is a primary determinant of venture failure. Job burnout is a psychological syndrome that involves chronic emotional and interpersonal stressors at one’s job and the individual’s subsequent responses to the work, job, coworkers, clients, organization, and themselves. Our aim is to extend theory by proposing a relationship between burnout and venture failure.

Key Propositions

We propose that exhaustion and disengagement are antecedents to venture failure. Exhaustion is a result of intense physical, affective, and cognitive strain which may result from prolonged exposure to certain demands. Disengagement from work can be defined as distancing oneself from one’s work while experiencing negative attitudes toward the work object, content, or the work in general. Our theoretical model suggests a positive relationship between both exhaustion and disengagement from work and venture failure. In other words, we propose that ventures are more likely to fail when the entrepreneur has feelings of exhaustion or disengagement from their work. We also propose several variables that we expect to moderate these relationships. More specifically, we expect that financial performance moderates each of the relationships previously described such that exhaustion and disengagement from work are more closely associated with venture failure when financial performance is poor. We also expect that a poor fit between a firm and its environment will also enhance the stressors on entrepreneurs. Thus we propose that the fit between a venture and its environment would moderate each of the relationships previously described such that exhaustion and disengagement from work are more closely associated with venture failure when environmental fit is low.

Implications

For researchers, we believe this paper will make several important contributions to the burnout and entrepreneurship literatures. First, this research moves the discussion of venture failure from the firm level to the individual level. Second, theory is developed to relate entrepreneur burnout to venture failure. Lastly, firm performance and environmental fit are introduced as moderators of the relationships between burnout and venture failure. For entrepreneurs, this research provides a model that helps to clarify why ventures fail. This may lead to better strategies for recognizing and dealing with burnout.

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≈ INTERACTIVE PAPER ≈

NEED FOR COGNITION: AN INVESTIGATION OF THE USE OF BIASES IN ENTREPRENEURIAL DECISION MAKING

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Chris Reutzell, Utah State University, USA

Gaylen N. Chandler, Wichita State University, USA

Bryson White, Utah State University, USA

Principal Topic

Recently, research has focused attention on the cognitive processes of entrepreneurs. We examine the relationship between an individual's "need for cognition"—the need to understand and make sense of the experiential world—and the use of biases and heuristics in entrepreneurial decision-making. A significant number of studies examining cognitive mechanisms show that entrepreneurs may indeed think differently than others. The use of cognitive biases and heuristics may benefit entrepreneurs in making decisions to act more quickly and efficiently. Social psychology literature suggests that individuals who are high in the need for cognition may be less susceptible to a variety of decision-making biases. Hence, we seek to answer the following questions: (1) Is the need for cognition inversely related to the use of biases in entrepreneurial decision making? (2) Due to the high level of ambiguity in entrepreneurial situations, are individuals with a high need for cognition more or less likely to act entrepreneurially?

Method

A sample of 177 business school students was asked to participate in a survey administered using surveymonkey.com. Using scales widely cited in the literature, we measured the need for cognition, overconfidence bias, representativeness bias, framing bias, and entrepreneurial intentions. Regression and chi square analyses were used to analyze the hypothesized relationships.

Results and Implications

Individuals that have a high need for cognition were not affected by the framing bias. Contrary to our expectations, individuals who are high in the need for cognition are more likely to manifest overconfidence in their decision-making. In addition, those who have high need for cognition are more likely to have entrepreneurial intentions. This suggests that entrepreneurs may have a higher need for cognition. High NC individuals also seem to have a greater openness to experience (Tuten, 2001), which suggests that they may be more willing to start a new venture. Our obvious next step is to expand the sample beyond students and include both entrepreneurs and non-entrepreneurs.

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≈ INTERACTIVE PAPER ≈

**EMOTIONS, COGNITIONS AND THE
INDIVIDUAL-OPPORTUNITY-NEXUS**

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Principal Topic

The question why some individuals and not others exploit entrepreneurial opportunities is still not answered. There is consensus that the nature of opportunity plays a key part in the pre-entrepreneurial decision-making process (e. g. Lang-von Wins 2004, Phan et al. 2002) which contains the recognition, the evaluation and the exploitation of an entrepreneurial opportunity (Shane and Venkataraman 2000). Some researchers (e. g. Busenitz and Lau 1996, Mitchell et al. 2000) argue that the subjective, mental processes in individuals play a crucial role in the pre-entrepreneurial process and for the decision to exploit an opportunity. Therefore, this study seeks to explore individuals' different perceptions of entrepreneurial opportunities and the role of cognitive appraisals and affective states in this perception-shaping process in order to fill the gap of the 'Individual-Opportunity-Nexus' (Shane 2003).

Method

This study was constructed as a questionnaire experiment with a scenario technique commonly used within the field of entrepreneurship research (e. g. Burmeister and Schade 2007, Norton and Moore 2006) and in the field of psychological research on emotions (e. g. Sabini and Silver 2005, McGraw 1987). Participants were given an entrepreneurial scenario with four independent variables: profit margin (high vs. low), time to profit (long vs. short), prior investment (high vs. low), and probability of success (high vs. low). This resulted in a 2×2×2×2 fully crossed design with 16 different scenarios, each one distributed randomly. We received 578 responses under which we identified 185 employees, 183 students, and 159 entrepreneurs.

Results and Implications

Our findings indicate that the perceived situational characteristics profit margin and probability of success are more important in the entrepreneurial decision-making process than are the perceived time to profit and prior investment. Moreover primary appraisal can be regarded as a central variable of the evaluation and exploitation of an entrepreneurial opportunity, however, secondary appraisal is not. Entrepreneurial evaluation was found to be a direct antecedent of the individual tendency to exploit an opportunity. In addition to this, the negative affective state of anxiety was found to have direct negative effects on evaluation and exploitation and reduces the influence of evaluation on exploitation. On the other hand, the positive affective state of joy was found to have a direct positive effect and increases evaluation's influence on exploitation. Our results confirm that entrepreneurs are more metered by the fear of failure than they are attracted by the prospects of great success which is consistent with recent research that shows that a powerful negativity bias exists at a physiological level (Vaish et al. 2008).

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∞ INTERACTIVE PAPER ∞

**BUILD IT AND THEY'LL BE ENTREPRENEURIAL? ASSESSING THE
INFLUENCE OF UNIVERSITY INFRASTRUCTURE ON
FACULTY MEMBERS' ENTREPRENEURIAL INTENTIONS**

Terri Standish-Kuon, Rensselaer Polytechnic Institute, USA
Gina Colarelli O'Connor, Rensselaer Polytechnic Institute, USA
Mark P. Rice, Babson College, USA

Principal Topic

Regional economic development results from expert knowledge, highly educated people, and scientific discoveries, (Saxenian, 1994; Klofsten & Jones-Evans, 2000; Florida, 2002; Bok, 2003; Etzkowitz, 2003; Venkataraman, 2003). The importance of higher education institutions as sources of many of these key ingredients has led to studies of academic entrepreneurship from multiple perspectives (Owen-Smith, 2000; Powers, 2000; Siegel et al., 2003; Shane, 2004), yet relatively few studies of academic entrepreneurship or technology transfer consider the individual level of analysis (Rothaermel et al., 2007; Djokovic & Souitaris, 2008).

Building on the entrepreneurial cognition literature, we examine why some faculty researchers, and not others, exploit opportunities related to their scholarship. We evaluate the relative importance of different aspects of universities' commercialization infrastructure, as well as academic scholars' perceptions of institutional and school-level policies on their intentions and decisions to exploit potential commercial opportunities related to their scholarship. At a time when an increasing number of universities want to stimulate entrepreneurial activity among faculty, this examination of the impact of real and perceived environmental context on academic entrepreneurs' commercialization intentions and actions is timely.

Method

Using multivariate techniques, the study tests a model of entrepreneurial intentions with a sample of faculty affiliated with 21 universities and medical schools in a large northeastern state who have recognize an opportunity related to their research (n=399). The model includes an array of institutional characteristics that may promote or discourage entrepreneurial behavior. Additionally, we examine the moderating effect of a variety of individual characteristics.

Results and Implications

Preliminary findings suggest that faculty perceptions of institutional support for academic entrepreneurship are less important than the institution's actual infrastructure strength in predicting entrepreneurial intentions. This implies that universities seeking to shape faculty behavior can do so through investment in enabling programs, resources and physical infrastructure, rather than focusing on faculty perceptions of institutional policies. Results of this study could inform higher education leaders seeking to better understand manage the dynamics that lead faculty researchers to commercialize their ideas and discoveries.

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WHEN NICE GUYS FINISH FIRST: THE ROLE OF RECIPROCAL ALTRUISM FOR NETWORKING PERFORMANCE AND COMMITMENT



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ABSTRACT

This study suggests a model recognizing that firm performance in networking arrangements is codependent upon simultaneous consideration of firm behavior and network contingencies. Specifically, this study examines if and how network configuration influence how firms achieve and produce benefits (i.e., performance) from being altruistic, and in turn how firm level gains positively influence the in-group commitment, and as such may invoke relational rigidity or inertia. Using multilevel data from a population of Swedish strategic networks, results reveal significant cross-level moderating effects explaining variation in firm level performance. Results reveal that firms taking part in networking arrangements benefit more from being altruistic in networks which show high levels of altruism, and that firms with low levels of altruism are worse off in highly altruistic networks compared to what they are in less altruistic networks. Further these results also reveal how firms performing well as a consequence of succeeding reciprocal altruism develops higher tendencies to commit to their group and not select other partners in future cooperation. These results are argued to support the importance of reciprocal altruism in networking arrangements, and demonstrate the potential benefits in terms of performance and relate this phenomenon to lock-in effects in network arrangements.

INTRODUCTION

Inter-firm networking arrangements have become increasingly popular in theory and practice over the last few decades. In support of this positive trend, studies have illustrated that firms can gain performance advantageous and competitiveness from taking part in cooperative activities (Das & Teng, 1998, 2002). Still, much is to learn about the conditions and contingencies under which such benefits can be achieved, and also about the influences of gains from cooperative activities. The present study aims to contribute by acknowledging the importance of simultaneous consideration of firm behavior and the cooperative context to reveal effects of networking in terms of networking performance and in-group commitment toward future networking activities.

Cooperation can take on multiple forms. One commonly studied form is that of mutualism, where cooperating parties simultaneously benefit from the cooperative activities, and where the balance of rewards and costs can be immediately evaluated. Another common form of cooperation and also a common trend in explaining and understanding how firms gain from network participation is offered by social exchange logics, which suggests that: “social behavior is an exchange of goods [...] such as the symbols of approval or prestige. Persons that give much to others try to get much from them, and persons that get much from others are under pressure to give much to them. This process of influence tends to work out at equilibrium to a balance in the exchanges. For a person in an exchange, what he gives may be a cost to him, just as what he gets may be a reward, and his behavior changes less as the difference of the two, profit, tends to a maximum.”

(Homans, 1958, p. 606). As obvious from this quote, social exchange logics have a quite rational view where cooperation is assumed to be motivated by the potential returns a focal partner expect to bring from others (Blau, 1964). These forms are among the most commonly studied forms of cooperation in research on inter-firm cooperation, and do contribute much to our knowledge about individual and inter-firm networking.

A quite recent trend among firms is to subscribe to formal cooperation, such as strategic networks. These networks have been defined as “intentionally formed groups of small- and medium-sized profit-oriented companies in which the firms (1) are geographically proximate, (2) operate within the same industry, potentially sharing inputs and outputs, and (3) undertake direct interactions with each other for specific business outcomes” (Human and Provan, 1997, p. 372). The trend of joining formal network arrangements have been attributed to an increasing trend of globalization in competition, and a subsequent need among firms to be innovative. As such, a common motive for joining strategic networks is to pursue innovation-related projects including joint technological development and marketing activities (Human & Provan, 1997). While this form of networking arrangement is rather new, studies have found that about a third of the SME’s in for instance Denmark subscribes to this form of strategic networks (Hanna & Walsh, 2002). This trend to organize activities in network organizations has also flourished in the other countries of Scandinavia, the rest of Europe, and the United States (Human et al., 1997).

While both mutualism and social exchange logics plays central roles in such network arrangements, we here propose an alternative cooperative logic, which thus far has received limited attention in management literature -- reciprocal altruism. Reciprocal altruism is defined as a form of altruism where one party provides a benefit to another without expectations about immediate compensation (such as mutualism), but where the rewards of cooperating activities are temporally separated (Brosnan & Waal, 2003). In like with social exchange logics, reciprocal altruism is not unconditional. The conditions for performing altruistic acts, according to a reciprocal altruist logic, is that the cooperation should render in a surplus such that the gains to the beneficiary should substantially outweigh the costs to the benefactor. Also, another condition for performing an altruistic act is that the altruistic act should, if the situation later is reversed, be reciprocated by the original beneficiary.

The specific characteristics of formal networks, such as strategic networks, where firms cooperate on innovative projects makes it difficult, if at all possible, to apply only rational exchange logics such as those of mutualism and social exchange logics without recognizing cooperation based on more loosely give and take processes where expectancies on returns are not as rational. Although this cooperative form can be of promise for understanding the context of formal inter-firm networks better, there is today limited, if any, attention directed to this cooperative form in business and management. However, there is quite some studies which has investigated this phenomenon in for instance psychology, sociology and biology on samples of fish (Milinski, 1987), vampire bats (Wilkinson, 1986), primates (Packer, 1977) and other species. It is here argued that the phenomenon of reciprocal altruism can contribute but has yet to a large extent been overlooked in samples of firms engaged in inter-firm cooperation and networking.

As such, this study conceptualizes altruism at the firm-level and in respect to inter-firm relationships taking place in networks. Conceptualizing altruism as a meaningful multilevel construct is consistent with recent theoretical work, yet the extant literature has focused almost exclusively on the beneficiaries of altruism, and related citizenship behaviour, at the individual level (Schnake

& Dumler, 2003). Examining the joint interaction effect of firm-level and network-level altruism can reveal whether or not network performance and subsequent in-group commitment stems from reciprocal altruism (i.e., when firm-level and network-level altruism both are high) or from gains through more opportunistic cooperative alternatives (i.e., when firm-level altruism is low but network-level altruism is high).

The paper is organized as follows. First, we outline the research model and develop hypotheses that link reciprocal altruism to performance and indirectly to in-group commitment. Next, we discuss sampling, measurement and issues pertaining to our research methods. Third, we present our analytic procedures and the results of our empirical tests. The paper concludes with a discussion of our findings together with implications, limitations and directions for future research.

RESEARCH MODEL AND HYPOTHESES

The present study suggests a model recognizing that reciprocal altruism positively influences firm performance, such that the best prerequisites for performing well in a strategic network is when a firm is inclined to altruistic behavior and when simultaneously the norms for altruistic behavior in the strategic network are high. Thus, the model places performance as a consequence of the interaction of firm-level and network-level altruism. Further, the model acknowledges that performance gains from reciprocal altruism can invoke increased in-group commitment and reduce the tendencies to consider alternative networks, thereby leading to relational rigidity and inertia. As such, this study thus suggests that firms can gain from reciprocal altruism (from being more altruistic in environments which are characterized by altruism) and that such gains leads to increased in-group commitment. In that sense, profiting from altruism also contributes to relational rigidity and inertia as it fosters a system of give and take with a particular group of firms. The rationale for this model is outlined in the following sections, starting with direct relationships from firm- and network-level altruism and performance separately, followed by the interaction effect of firm- and network level altruism and performance, and ended by the mediating effect of performance on commitment.

Altruism and Performance

Numerous studies have placed altruism, as part of citizenship behavior, at the core of mechanisms explaining performance. Early studies focused on the individual effect of employees or individuals' altruism and its influence on individual and organizational outcomes respectively. A common denominator of these studies is that they questioned why individuals engage in altruistic behavior when it demarcates a cost for the contributor and a benefit only to the receptor. The simple answer to this question is often that what appears to be altruistic cooperation (i.e., a cost for the benefactor) includes expected rewards which are not related to a direct and contractual exchange. Stevens and Hauser (2004) argued that altruistic cooperators safeguard themselves by adopting conditional strategies for making sure selfish benefits. These strategies involve kin selection (i.e., interacting only with relatives), harassment or punishment (i.e., related to threats and sanctions), and reciprocal altruism (i.e., interacting only with those that have cooperated previously).

Treating others as you want to be treated yourself is therefore often suggested as a cooperative strategy which can gain positive performance outcomes also for the benefactor. Trivers (1971) suggested that altruistic acts often lead to reciprocated favors where each iterated reciprocated assistance render a net gain for the original benefactor, and hence contributes also to own performance from participating in networking activities. Empirical support for a positive effect between

altruism and performance is plentiful (see for instance Podsakoff & MacKenzie, 1994). To this background, there are reasons to believe that there is a positive relationship between a firm's altruistic behaviour and their performance, which the following hypothesis demonstrates:

Hypothesis 1. Firm-level altruism will be positively related to performance in inter-firm networking arrangements.

While performance in part hinges upon own efforts much also subscribes to contextual or situational effects (see for instance Jarillo, 1988). For firms taking part in inter-firm networking arrangements, perhaps the most immediate social context impacting firm performance is that of their network. Thus, the characteristics and cooperative behaviour of the network members can be expected to influence also the output of the individual firm. This contextual influence where higher-level factors shape the effects on a lower level is similar to "top-down" processes which are described in multilevel theory and research (Kozlowski & Klein, 2000).

Several studies advance logics which transferred to the context of this study would suggest that firms would gain more from being located in a network with relatively higher degrees of altruistic motives. For instance, Liebrand (1984) found individuals to show more restraint drawing from common resources when they had altruistic motives. As such, participants in a network with a higher degree of altruistic motives would likely experience less effect from social loafing, and from free-riding. As such, each firm has a potential to get more out of their invested time and efforts in the network. Further, it is also likely that a network with higher levels of altruistic tendencies creates more possibilities to pool resources and use bootstrapping techniques, especially considering that altruism has been shown to be one of the motives behind volunteering (Unger, 1991) and to display prosocial behaviour across situations and time (Oliner & Oliner, 1988). Therefore, the following hypotheses argue for a positive relationship between network-level altruism and performance from participating in networking activities.

Hypothesis 2. Network-level altruism will be positively related to firm performance in inter-firm networking arrangements.

The two former hypotheses have forwarded a logic arguing that altruistic behavior can be beneficial for the benefactor when the benefactor engages in such behavior or when the norms of altruistic behavior are high in the benefactors network. While these effects are likely influential in separate, we also argue that there is a moderating effect such that performance from networking activities is dependent on the joint consideration of firm-level and network-level altruism, such that the positive effect of being altruistic on performance will be even greater in a context where also others show a norm of reciprocating altruism.

The interaction of own tendencies and contextual norms of reciprocating altruism can be explained as a combination of altruistic rewarding and altruistic punishment. The former refers to the predisposition to reward others for engaging in desirable cooperative behavior, and the latter relates to the propensity to impose sanctions on others for violating desirable cooperative behavior. It has been observed that these forms of rewarding or punishing cooperative partners is strongly rooted in human behavior and carried out even when they do not produce any benefits for the punisher or rewarder (Fehr, Fischbacher, & Gächter, 2002; Gintis, 2000). As such, being altruistic in a network where norms of reciprocating altruism are high would likely lead to altruistic rewards, and thereby contribute to the performance from engaging in networking activities.

At the same time, displaying low tendencies to altruism would be worse for performance when the cooperative group displays a high norm of reciprocating altruism compared to when the norm of reciprocating altruism is low. These arguments provide the foundation for a relationship between reciprocal altruism and performance, which the following hypothesis reflects:

Hypothesis 3. Reciprocal altruism will be positively related to firm performance in inter-firm networking arrangements; such that the higher the averaged displayed level of altruism on the network level the more attenuated will be the direct association between the level of firm altruistic behavior in a strategic SME network and subsequent performance levels.

Performance and Commitment to the Cooperative Group

Thus far the hypothesized relationships reveal that altruism can benefit own performance depending on the fit between own and contextual behavioral norms. Besides influencing a benefactors own performance, we here also argue that benefiting from reciprocal altruism will influence a firms in-group commitment. In specific, we argue that reciprocal altruism which leads to increased performance levels will influence a focal firm's intention to remain as partner within the group and reduce its intentions of selecting partners outside of the network.

In-group commitment in inter-firm cooperative settings is likely depend on a function of ease and desirability of movement (originating from March & Simon, 1958). Students of the relationship of performance and turnover intentions (see for instance Jackofsky, 1984; Martin, Price, & Mueller, 1981) early proclaimed that high performance facilitates the ease of movement but at the same time reduces the desirability for movement. Therefore, it is likely that cooperation which renders performance for the focal firm will reduce the desirability for other cooperative arrangements and subsequently lead to lock-in effects where reciprocal contributions of altruism will guide future cooperative activities.

In inter-firm networking arrangements it is likely that firms who perform better as a result of reciprocal effects of altruistic behaviour exhibit increased levels of inertia. When performance is prescribed to working relationship arrangements the likelihood to withdraw from such arrangements are likely low, rather these arrangements continue a circle of altruistic exchanges as so specific for reciprocal altruism. In opposite, when performance levels are lower due to not working network arrangements it is possible that any firm engage in search activities for other arrangements which better responds to their inherent needs (compare Keller, 1984). This can be compared to the substantial literature which have supported that performance positively influences satisfaction, which in turn reduces turnover intentions and subsequent turnover (see for instance Petty, McGee, & Cavender, 1984; Steel & Ovalle, 1984). Thus, the proposed argument that desirability to turnover is reduced when performing well gives reason to hypothesize the following:

Hypothesis 4. Firm performance will be positively related to inertia in inter-firm networking arrangements.

RESEARCH METHOD

Sample

A model is proposed which places networking performance as a key mediating construct between reciprocal altruism (i.e., the interaction of firm- and network-level altruism) and net-

work commitment, where reciprocal altruism is hypothesized to lead to greater networking performance and subsequent commitment to participate in future network activities. In order to test this model a sample of networks and networking firms was needed.

To ensure a proper sample, the first step was to identify a population of networks suitable for testing the hypotheses and model. Prerequisites for reciprocal altruism include repeated opportunities for cooperative interaction and the ability to detect and act upon “cheaters” not reciprocating (Trivers, 1971). A suitable and common form of network constellation offering this cooperative form is that of strategic SME networks, defined as networks of “intentionally formed groups of small- and medium-sized profit-oriented companies in which the firms (1) are geographically proximate, (2) operate within the same industry, potentially sharing inputs and outputs, and (3) undertake direct interactions with each other for specific business outcomes” (Human et al., 1997, p. 372).

As such, in a first step, we began by procedures directed to identifying the population of strategic SME networks in Sweden. As these networks do not adhere to a formal organizational form, there was a shortcoming of public registers. The population was identified by telephone interviews with representatives from each of the regional county administrative boards, the industrial development centre (IUC), and also with representatives from the state-owned development company (ALMI Företagspartner) in Sweden. In total, about 50 interviews were performed with the aim of identifying a population and composing a register of Swedish strategic SME networks. All parties contributed and we managed to identify 53 strategic SME networks which followed the attributes accordingly to the definition provided by Human and Provan (1997, p. 372).

In a second step, we contacted a representative of each network in order to obtain membership registers and background information on the networks. We managed to obtain responses from all networks, meaning that we obtained membership organizations, contact information and some background data on each of the 53 networks. We also performed interviews with the network representatives with the aim of further identifying active strategic SME networks, with resulting high saturation indications were the interviews with network representatives led to no new identification of networks but to a confirmation of the networks presently included in our registers.

In a third step, we prepared a mail out survey for each of the membership organizations for the 53 strategic SME networks. After two follow-ups, we retrieved responses from 612 of the 1431 surveyed members (response rate: 43%). While some responses were indicative of a certain oversubscription of the sampling frame we withdrew responses where the surveyed organizations implied that they were not active members of the network. In final, we kept 141 responses for analyses and re-estimated the population size by subtracting responses of no membership. Overall we found responses to be fairly well distributed over the networks and we found that the response rate for each separate network to vary between 17% and 75%, with an average of 40%. In comparison, Sun, Aryee, and Law (2007) aggregated responses from a sample of one to four responses for each higher-level unit examined. Hence, the distribution in this study is therefore deemed acceptable for performing multi-level analyses.

Measures

The measure of altruism is adopted and contextualized from a three-item scale previously developed by MacKenzie, Podsakoff, and Fetter (1991). This short scale of measuring altruism

has shown previous evidence of reliability and validity (MacKenzie, Podsakoff, & Fetter, 1993). The items included reflects the benefactors activities in helping partner in the network although it has not been required, that the benefactor has been readily available to lend a helping hand to other members in the networks, and that the benefactor has willingly been giving of their time to help others in the network. The scale is measure using a seven degree Likert scale with responses ranging between 'strongly disagree' and 'strongly agree'.

The performance outcome measure was assessed by a three-item scale originally developed by Saxton (1997). This measure reflects overall satisfaction with performance from networking activities, the degree to which own goals have been actualized, and contributions made to own core competencies and competitive advantage. A seven degree Likert scale with responses ranging between 'strongly disagree' and 'strongly agree' was used to capture the items. This measure has been validated and has shown high reliability in previous literature (see for instance Kale, Dyer, & Singh, 2002).

Commitment is measured on a seven degree three-item Likert scale. The items are reversed scores of items related to propensity to leave the networks, based on scales developed and used by researchers on turnover (see for instance Rahim & Psenicka, 1996; Veloutsou & Panigyrakis, 2004). The scale is comprised of statements which the respondent has to consider a suitable response for the focal firm ranging between 'strongly disagree' and 'strongly agree'. The items relates to if the firm has a long term perspective on its membership in the network (i.e., will remain as a member in the network as long as possible) and if they have intentions to stop being associated to the network.

RESULTS

Before estimation and test of hypotheses we verified the factorial structure and necessary psychometric evidence of convergent and discriminant validity by multiple tests, including calculating and interpreting average variance extracted, and by exploratory and confirmatory factor analysis. The results of a simultaneous exploratory factor analysis of the two latent constructs (altruism, performance and commitment) indicated support for a three-factor model with three respective indicators, where no substantial cross-loadings were indicated and where all indicators showed a strong relation with its respective factors (i.e., $>.70$). Further, reliability statistics shows proof for consistency among measurement items (i.e., $\alpha >.80$) across all three factors.

Testing reciprocal altruism of networking organizations necessitates a multi-level approach to data analyses, as simultaneous consideration of firm- and network-level variance are modelled to influence firm-level outcomes. As such, hypotheses were tested by multilevel mixed-effects linear regression analyses in the software STATA. Following recommendations by Rabe-Hesketh and Skrondal (2005) and others we tested three models as reported in Table 1.

Model 1 reveals that the average performance across networks, reflected in the intercept term, is 4.31. The variance component corresponding to the random intercept is .16. Because this standard error does not exceed the estimate, there appears to be significant variation in network means. An estimation of the intraclass correlation coefficient reveals that roughly 8% of the variance is attributable to the network-level.

In order to explain some of the network-level variance in performance we incorporate a network level predictor, in form of mean altruism, into the model. Model 2 reveals that a one-unit increase in the average altruism score is associated with an expected increase in performance of .29. It should be noted that this estimate is significant. This implies that firms perform generally better the higher the levels of average altruism are in the examined networks, and as such gives support for Hypothesis 2.

Model 3 introduces the firm level altruism. Because it is possible that the effect of firm level altruism varies across networks, this slope is treated as random. In addition, we expect the network level altruism to interact with the firm level altruism, accounting for some of the variance in the slope. Results reveal that the intercept is 4.29, which here is the expected performance level in a strategic SME network where a firm exhibit average scores of altruism in a network exhibiting average levels of altruism.

Because there are interactions in the model, the marginal fixed effects of each variable now depend on the value of the other variable(s) involved in the interaction. The marginal effect of a one-unit change in firm level altruism on performance will depend on the average levels of altruism within the network to which the firm belongs. Here the simplest interpretation of the interaction coefficients is that the effect of firm-level altruism is significantly higher in networks with high levels of altruism. To further interpret this interaction effect we plot the interaction effect in Figure 1.

The general rule of thumb when comparing the AIC and BIC statistics, is that given multiple models fitted on the same data, the model exhibiting the lower values of the information criteria is considered to be the one to prefer. As evident, Table 1 reveals that the final model is preferable to the first two models.

At this stage we have established the first part of the proposed model (i.e., that reciprocal altruism influences firm level performance). However, it still remains to test the hypothesis that firm level performance can be placed as a mediator to network commitment. As such, we continue by a mediation test following recommendations and procedures as outlined by Baron and Kenny (1986). Table 2 presents the results of this test. The first model in the table corresponds to the third model as presented in Table 1. In order to evaluate the mediating function of performance we compare the first model with two models where network commitment is used as dependent variable (see Model 2 and 3). First, we establish that the majority of the independent variables are related also to network commitment when not controlling for the effects of firm-level performance (see Model 2), while these effects are reduced in strength when including the effect of performance which is substantial and significant in expected direction (see Model 3). As such, we do find some evidence that reciprocal altruism influence firm-level performance which in turn determines network commitment. This is in support of, at least partial, mediation and is in line with the hypothesized model and thus the arguments advanced in the present study.

DISCUSSION AND CONCLUSIONS

The present study has focused on adding to the research on inter-firm arrangements (i.e., strategic networks) in understanding under which circumstances such formal networks can be beneficial for participating firms. The results attenuates that the cooperative form of reciprocal altruism has predictive power over performance from taking part in networking activities and

subsequent commitment to the cooperative group, as comparable with relational inertia. In proposing and examining such a model there are several potential contributions to our contemporary knowledge about formal inter-firm arrangements.

The results of this study showed a positive relationship between being altruistic and gaining performance from participating in networking activities. Also, this study contributes by acknowledging that the contextual influence where altruism is played out is influential in determining the outcomes and influence on performance. Furthermore, results also revealed altruism to have significant cross-level moderating effects explaining variation in firm-level performance. These results implies that firms being altruistic in network arrangements will benefit more if also the network shows high norms of altruism such that there is a likelihood of reciprocation. Also, results imply that firms with low levels of altruism are worse off in highly altruistic networks compared to what they are in less altruistic networks. Therefore, this study lends support to the importance of reciprocal altruism, a concept which may have been overlooked in research on inter-firm networking arrangements. While there are obvious similarities between social exchange logics and reciprocal altruism, the differences in their rationality suggests for future studies to include both cooperative forms when examining how firms gain and contribute in network settings.

Another implication of the present study is related to the relationship between performance and commitment in inter-firm network arrangements. In previous studies, argued benefits of subscribing to strategic networks relates to the potential flexibility in combining resource pools with different actors depending upon the innovative project (Fukugawa, 2006; Lipparini & Sobrero, 1994). Hence, much of the literature on strategic networks advances members as actively changing partners for different projects. Yet, the results of this study demonstrates that momentarily performance from networking activities rather might increase a members commitment to its partners and reduce its activities in searching for other cooperative constellations. Hence, performance gains from networking can induce lock-in effects and be a source to relational rigidity.

Despite mentioned contributions, the study is not exempt from limitations. As it was cross-sectional in nature, it is difficult to claim causality in the relationships examined. While conceptual arguments exist for the proposed causality, future studies may benefit from longitudinal investigations to determine and validate such arguments. Another potential limitation of the present study pertains to the sample size which for this study was somewhat modest. The ratio of observations to indicators where well in line with recommendations (Bentler & Chou, 1987) and above suggested minimum levels for causal modeling (Bollen, 1989). Further, the responses are well distributed over the studied networks which support the multi-level design of the study. Still, uncertainty remains as related to the register used for sampling networks and network members. Because there were no readily available registers on networks and members, we had to rely on a series of interviews to map the population. As we experienced a saturation effect from the interviews, and since our approach of identifying networks and members were both careful and meticulous, we do believe there are no concerns for the validity of the study. However, as the registers of membership organizations showed proof for oversubscription, it is difficult to interpret accurate response rates for the study.

As the study has been performed in a very specific network setting and in one specific cultural context it should be noted that care should be taken before findings are generalized to other contexts and settings. Still, findings of extant studies support that the phenomenon under investigation (i.e., altruistic behavior) is dealt with in very similar ways across cultures and contexts (see

for instance Fiske, 1992). There is even empirical evidence from behavioral observation and brain imaging studies supporting that communal sharing and altruistic tendencies are dealt with similarly over different contexts and cultures (e.g., de Quervain et al., 2004; Sanfey, Rilling, Aronson, Nystrom, & Cohen, 2003).

In final, this study has demonstrated the use of a multilevel approach in examining inter-firm cooperation, and suggests for future studies to examine cross-level moderating effects and their influence on firm performance. A promising agenda for future studies is to map additional sets of factors which may exhibit a joint influence at individual, firm and/or network level over firm performance.

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Figure 1: Interaction of firm- and network-level altruism on performance

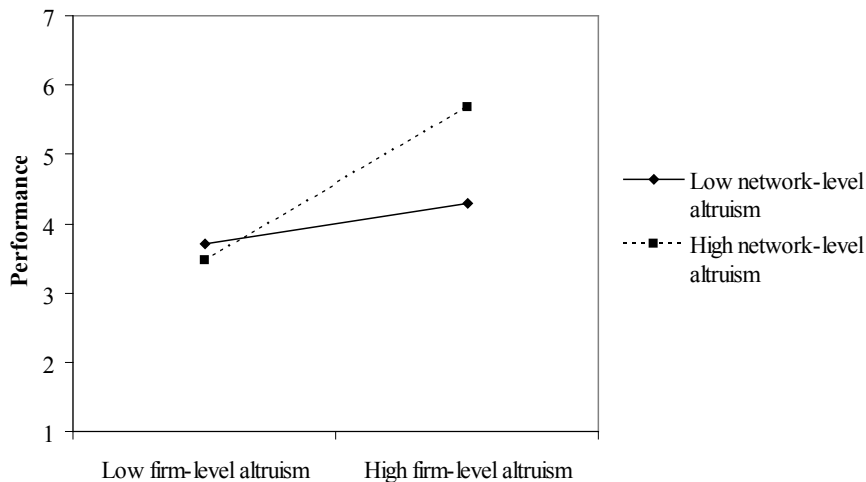


Table 1: Estimated Coefficients from Regression Analysis of Hypothesized Effects

Variable	Model 1		Model 2		Model 3	
	β	Std. Err.	β	Std. Err.	β	Std. Err.
<u>Fixed Effects</u>						
Intercept (γ_{00})	4.31 ***	.14	4.28 ***	.12	4.29 ***	.13
MEANALT (γ_{01})			.29 *	.12	.29 *	.12
CENTALT (γ_{02})					.70 ***	.15
MEANALT*CENTALT (γ_{03})					.40 **	.15
<u>Random Effects</u>						
Intercept	.16	.16	.08	.14	.30	.17
CENTALT					.20	.15
Cov(CENTALT, Intercept)					.13	.13
Residual	1.78	.24	1.78	.24	1.06	.17
<u>Model Fit Statistics</u>						
Deviance	492.73		489.60		451.80	
AIC	498.73		497.60		467.80	
BIC	507.57		509.40		491.40	

*p<0.05; **p<0.01; ***p<0.001

Table 2: Multiple regression analysis of hypothesized effects

Variables	Model 1: Performance		Model 2: Network commitment		Model 3: Network commitment	
	β	Std. Err.	β	Std. Err.	β	Std. Err.
<u>Fixed Effects</u>						
Intercept (γ_{00})	4.29 ***	.13	4.98 ***	.14	3.70 ***	.39
MEANALT (γ_{01})	.29 *	.12	.68 ***	.13	.60 ***	.13
CENTALT (γ_{02})	.70 ***	.15	.81 ***	.13	.59 ***	.14
MEANALT*CENTALT (γ_{03})	.40 **	.15	.09	.13	-.04	.14
PERF (γ_{04})	----	----	-----	----	.29 ***	.08
<u>Random Effects</u>						
Intercept	.30	.17	.31	.18	.41	.20
CENTALT	.20	.15	.09	.09	.14	.12
Cov(CENTALT, Intercept)	.13	.13	-.16	.11	-.20	.13
Residual	1.06	.17	1.23	.17	1.06	.16
<u>Model Fit Statistics</u>						
Deviance	451.80		461.40		453.03	
AIC	467.80		477.40		471.03	
BIC	491.40		500.99		497.57	

Standardized coefficients are shown.

*p<0.05; **p<0.01; ***p<0.001

≈ SUMMARY ≈

INNOVATIVE CHOICES AMONG SUCCESSFUL ENTREPRENEURS

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Principal Topic

Within the field of new ventures, the rhetoric has drifted to a state of conceptual confusion between entrepreneurship and innovation. Not all entrepreneurs are innovators, therefore, an emerging challenge in this field is to clarify the conceptual difference, the boundaries and the relationship between these two distinct constructs, by answering the following research questions. Do innovative choices matter for the success of entrepreneurs? What are the underlying causal factors that affect innovative choices of entrepreneurs? In this study, we argue that innovative new ventures are more likely to be successful. We found considerable variance in the degree of innovation and new entrant success. Innovativeness was measured using both the novelty and the types of innovation originated and adopted by entrepreneurs. We tested hypotheses incorporating social learning theory (vicarious acquisition of behaviors, Bandura, 1976) and the tournament model (Forbes, 1987) to predict the innovativeness of entrepreneurs. For vicarious learning, we used early learning experiences and for tournament theory we used early career successes.

Method

We sampled the “America’s Top 50 Restaurants” in *Gourmet Magazine* 2006 and 2001. Order of entry of newcomers to the list constituted a score for excellence and proxy for success. Then we searched archival sources (local newspapers, magazines and trade publications) for articles on these new entrants. The complete data sample of new entrants on the *Gourmet* lists consisted of 23 restaurants. They were coded on six constructs by two independent raters (with an inter-rater reliability of $r=.95$). The six constructs were: *innovation* (novelty), *innovation* (types), *tournament* (education), *tournament* (first job), *vicarious learning* (apprenticeships), and (previous) *awards* (a control variable).

Results and Implications

Using rank-order correlations, we found support for the hypothesis that innovative choices in terms of novelty and innovation types are significantly associated with the success of entrepreneurs (using as a proxy the order of entry in the ranking). We also found strong support for the hypothesis that vicarious learning is significantly associated with innovation among entrepreneurs but quite a distinct and separate concept. This result has important implications for future research on predicting why some entrepreneurs make innovative choices and some do not.

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≈ SUMMARY ≈

**LONGITUDINAL STUDY OF ENTREPRENEURIAL NETWORKS:
CHANGES IN NETWORK TIES AND RESOURCES**

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Katja Laitinen, Turku School of Economics, Pori Unit, Finland

Principal Topic

Broad agreement in both strategy and entrepreneurship exists about the importance of networks (Hite & Hesterly, 2001). Networks play a central role in successful firm emergence and growth (e.g., Maurer & Ebers, 2006). Network ties offer access to resources, e.g., customer ties provide knowledge resources (Yli-Renko, Autio & Sapienza 2001) and strategic engineering of network ties can help a new venture to secure financial resources (Uzzi & Gillespie 1999). These are only a few examples of researcher who report on the benefits of networks, and the network and social capital metaphor has arisen to one of the prominent metaphors for studying new and entrepreneurial organizations. However there is less research on how entrepreneurial networks change over time. In our paper we report on a longitudinal case study focusing on the changes in ties and resources accessed by the entrepreneurs.

Method

We have been following a team of ten entrepreneurs for two years. We have collected data on their individual-level networks twice: the first time in January 2008 when the firm was 1, 5 years of age and in September 2008. We have applied both the name-generator and resource generator approach to measure the composition of entrepreneurs' networks (Marin & Hampton 2006, Van Der Gaag & Snijders 2005, Marin 2004). In addition to the network data, the entrepreneurs have on regular basis recorded their stories about the firm developments, their own experiences as entrepreneurs and the success of the firm. We use these narratives to identify causes for network development.

Results and Implications

During the first round data collection the ten entrepreneurs named altogether 183 network partners. The average network consisted of 18.3 alters. According to our data, the entrepreneurial networks are mainly identity-based network. We also find that the entrepreneurial network has changed during the study. Both the alters and the accessed resources have changed. In our second round of data collection, the ten entrepreneurs named altogether 161 contacts, of which 36 were not mentioned during the first round of data collection. Our results show that the ties is changing from identity-based to more calculatively based connections as proposed by Hite & Hesterly (2001).

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≈ SUMMARY ≈

ENTREPRENEURIAL UNCERTAINTY: WHAT DO STAKEHOLDERS LOOK FOR?

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Principal Topic

When commercializing new products or services, entrepreneurs are attempting to build a stakeholder network of customers, suppliers, employees, financiers, etc. To persuade others to engage with them, entrepreneurs make a value proposition to each prospective stakeholder that promises more utility than the stakeholder's next best alternative. One of the challenges entrepreneurs face at this stage is addressing the uncertainty of those potential stakeholders regarding such issues as technological feasibility, product market demand, and rent distribution.

As entrepreneurs first engage with potential stakeholders they are sending cues that can influence stakeholders' perceptions regarding the uncertainty of the venture. Desirable stakeholders in this context are those who have the resources and ability to assist the firm in its efforts to create entrepreneurial rent. Desirable stakeholders also exhibit a tendency for fair or just treatment of their exchange partners.

This paper proposes that in the early stages of a venture entrepreneurs can reduce uncertainty for stakeholders – and raise the probability of attracting *desirable* stakeholders – by exhibiting behaviors associated fairness and justice. Actors base their reciprocal behaviors – both positive and negative – on their subjective perceptions of distributive, procedural and interactional justice. Thus, entrepreneurs can influence perceptions of fairness in early interactions with stakeholders. This paper extends the logic of reciprocity and fairness to the setting in which entrepreneurial firms are seeking to attract desirable stakeholders in order to commercialize innovations.

Method

- P1: Entrepreneurs can influence perceptions of fairness through the nature of their conduct in early interactions with stakeholders.
- P2: Potential stakeholders are more likely to engage with entrepreneurial firms if they perceive high levels of fairness.
- P3: The success of entrepreneurial ventures (i.e., growth, profitability) will be associated with the perceived levels of fairness among the firm's early stakeholders.

Results and Implications

Creating entrepreneurial rent requires the involvement of stakeholders. Securing stakeholders' involvement, however, presents a challenge for entrepreneurs due to the uncertainty that characterizes the early stages of a new venture. This paper develops a novel explanation of how entrepreneurs' actions influence – and are influenced by – potential stakeholders. The explanation builds on the most basic human norm of reciprocity. Provocative questions for future research on entrepreneurial behavior will be identified.

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≈ SUMMARY ≈

AN INFLUENCE OF THE NATIONAL ENTREPRENEURIAL ENVIRONMENT ON ENTREPRENEUR'S NETWORK ACTIVITIES

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Principal Topic

Most of research on entrepreneurial networks adhere to the inter-firm standpoints and focus on firm-level units of analysis. From this viewpoint, entrepreneurial network development is presented as an impersonal process inherent in a network (Johnsen & Ford, 2006; Hite & Hesterly, 2001). However, there is an essential difference between network as such and networking process (Wincent & Westerberg, 2005: 271). In fact, it is a person or a group of individuals that creates new business contacts or terminates them. Thus, when one investigates the issues of network building activities, the unit of analysis should be an individual entrepreneur or a founding team.

In addition, numerous studies show that national context has strong impacts on entrepreneurial networking (Minniti, 2008; Jansson, et al. 2007). However, these interdependencies are described quite vaguely saying that a contextual milieu affects entrepreneurial behavior and exchange relations between businesses. Also, findings from these studies lack concrete comparative examples that illustrate the exact differences in networking patterns of entrepreneurs from different national contexts.

This piece of research aims to explore how national entrepreneurial environment influences the process of establishing new business contacts purposefully undertaken by a team of new venture founders through the use of their formal and informal relations.

Method

The research is conducted as the multiple-case study of three Russian founding teams and four Finnish ones. In total, 20 semi-structured interviews were held with the members of these entrepreneurial teams. The cases were interpreted through applying comparative logic of examination and using elements of network analysis, namely graph displays and notations.

Results and Implications

Our study confirms the idea that national entrepreneurial environment has a strong impact on networking activities and business partnering of an individual entrepreneur. The comparison of Russian and Finnish founding teams indicates that this influence mainly refers to the ratio between formal and informal contacts in an entrepreneurial network and their value for business. Thus, our study suggests an important link between macro dynamics on the level of entrepreneurial environment, state innovation policy and business regulations, and micro dynamics on the level of a team of individual entrepreneurs and their networking activities.

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≈ SUMMARY ≈

**STRUCTURAL SOCIAL CAPITAL AND THE COST OF
RAISING RESOURCES FOR ENTREPRENEURS: THE
MODERATING ROLE OF SHARED IDENTITY**

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Principal Topic

Entrepreneurship research on social capital has largely focused on the benefits of social capital. Studies have for instance examined the way social capital is utilized by entrepreneurs to acquire resources such as information (Burt, 1997), knowledge (Yli-Renko, Autio and Sapienza, 2001), personnel (Fernandez, Castilla and Moore, 2000), human capital (Coleman, 1988) and finance (Uzzi, 1999). What is less examined are the costs and risks associated with social capital. The most that exists in literature is the acknowledgement that social capital has costs (Nahapiet and Ghoshal, 1998; Adler and Kwon, 2002). This paper addresses this gap by examining the aggregate cost of social capital incurred by an entrepreneur when acquiring resources from his/her network. We address the following main question: in what ways does shared identity affect an entrepreneur's effort to acquire resource from the network, particularly the quantity of resources raised, the diversity of resources raised and the aggregate cost of raising resources?

Method

We conducted interviews with 242 entrepreneurs belonging to different ethnic groups, including those of Asian origin, in Kampala, Uganda. We selected entrepreneurs from the garment making, and Information and Communication Technology industries. We used hierarchical multiple regression analysis to determine the relative contribution of different network characteristics to the quantity of resources raised, the diversity of resources raised and the aggregate cost of raising resources, as well as the conditions under which costs may outweigh resource benefits.

Results and Implications

The results show that network size positively contributes to quantity as well as diversity of resources raised while network composition has a negative relationship to quantity of resources raised. The results also show that network size enhances the aggregate cost of raising resources while having a greater proportion of kin who provide business inputs helps to lower the aggregate cost of raising resources from the network. This study proposes the reconfiguration of greater shared identity, network size and network composition in order to maximize the quantity and diversity of resources, while minimizing the aggregate cost of raising resources through the network. Such a combination may yield overall increased net resource benefits to entrepreneurs.

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≈ SUMMARY ≈

ADVICE TO NEW BUSINESS FOUNDERS: EFFECTS ON PERFORMANCE AND DIMINISHING MARGINAL RETURNS

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Hannes Ottósson, University of Southern Denmark, Denmark

Principal Topic

This paper investigates the association between the number of sources of advice entrepreneurs utilize and subsequent performance. Specifically, we explore diminishing returns to scale between the amount of advice received and performance.

The emerging theory of outsider assistance suggests that outsider assistance leads to creation of knowledge that positively influences performance. At some point in the learning process an entrepreneur will have obtained most of the relevant information, and obtaining advice beyond this point will have a detrimental effect on performance. Social network research present similar findings; a larger network is more likely to provide entrepreneurs with more information and more non-redundant information. An inverted U-shaped relationship between network size and performance has been suggested, resulting in an optimum level of resources that should be devoted to networking. The purpose of this research is to apply these propositions to a representative sample of new businesses in Norway.

Method

A random sample of 309 young business owners reported on advice received in 2002 and performance in 2004. Three dependent variables of business performance were applied; invested capital, sales turnover and employment. The independent variable is constructed by advice given by 12 different actors during the business gestation process.

Results and Implications

The advice variable is significantly positively associated with all three performance variables, while advice squared has a statistically significant negative effect. This suggests diminishing returns to scale. The optimum level of number of resources is between five and six for all three dependent variables. Thus, on average, there seems to be a positive effect of advice on performance up to approximately five different sources. The results indicate that utilizing more than six sources has a negative effect on performance.

Entrepreneurs should pay attention to the importance of advice and focus on the quality instead of quantity. Further information from more advisors may prove non-redundant and the cost of resources used to access this information may outweigh the benefits. Policymakers might consider changing the focus of advice services they initiate to better reflect the needs of entrepreneurs.

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≈ SUMMARY ≈

INTERGENERATIONAL TRANSFER OF SOCIAL CAPITAL IN TRANSNATIONAL ENTREPRENEURSHIP

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Principal Topic

Both the Sociology and entrepreneurship literatures have long recognised that “involvement and participation in groups can have positive consequences” for individuals (Portes, 1998). Similarly the international entrepreneurship literature has also concluded that patterned relationships generate social capital which helps enterprises overcome the liabilities of newness and foreignness (Chetty & Campbell-Hunt, 2003). Recently scholars have directed their attention towards the phenomenon of transnational enterprises and social capital (Wong and Ng, 2002). For example Light and Gold (2004) found that, such enterprise enjoyed “linguistic and social capital” in international commerce. Yet our understanding regarding transnational enterprises and social capital has largely centred on initial foreign market entry and post-internationalization activity.

However from a long-term continuity perspective, the value of such social capital can only be fully realized when it is effectively transferred and managed. Yet only a few studies have examined the transfer and management process (Steier, 2001; Carberra-Sueraz et al., 2001). This suggests a greater need to understand this process at not only the local but also at the transnational level. Accordingly, this research seeks to bridge this gap through exploring the dynamic process of post-internationalization social capital development among transnational family enterprises.

Methodology

Using a qualitative methodology (Yin, 1992), nine transnational family enterprises from Malaysia and Singapore were identified. Data collection was through a series of in depth interviews with both generations of entrepreneurs focusing on the key themes of how transnational ties are transferred between generations along with the issues arising from the process.

Results

Like Rusinovic (2008) and Levitt and Waters (2003) we also found that the transnational social capital of family enterprises represented a strategic resource for both generations. However, transferring such strategic resources between generations remained a complex process (Steier, 2001; Carberra-Sueraz et al., 2001). Four phases, introduction to routines, introductions to key family and non-family, working directly with transnational ties, reconfiguring and optimizing transnational ties, were identified during the process. Our research also revealed that successor socialization patterns and the willingness of founders to disengage from the enterprise affected transition between phases. Additionally, the reconfiguration of both the structure and content of existing ties tended to be a problematic process often fraught with generational conflict.

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≈ SUMMARY ≈

GROWTH DYNAMICS IN TECHNOLOGY-BASED SPIN-OFFS GRADUATING FROM PUBLIC INCUBATORS: ADDRESSING THE CHALLENGES OF INCREASING THE RATE OF GROWTH-ORIENTED FIRMS

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Didier Calcei, Groupe ESC Troyes, France

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Principal Topic

To sustain growth, many European countries have been rethinking their National Innovation Systems for decades. As the time has come for the assessment of these policies, more and more evidence is brought regarding the low level of gazelles created. The objective of this paper is to explore means of increasing the level of gazelles among New Technology-Based Firms (NTBFs) that graduated from the French public incubators. In other words, the challenge is to identify the main barriers to growth for such firms and then to suggest relevant recommendations to overcome these barriers. In fact, a recent survey conducted in June 2007 showed that from 1999 to 2006, 901 start-ups graduated from the public incubators out of 1050 projects. While their average number of employees is 5, only 4.2% of them have revenue of more than 1 million Euros.

Method

Data were collected from three sources: (i) a database comprising the 901 firms that graduated from the 29 French regional public incubators; (ii) Diane database for financial information and (iii) a phone survey conducted in 2009 with a sample of 100 CEOs of such companies randomly selected.

Results and Implications

The research identified some factors hindering the studied firms' growth inter alia: the lack of a kind of Small Business Act, access to and shortage of finance, the lack of some specific expertise in the public incubators and the overestimation of technology issues against marketing ones.

The paper draws research implications for practitioners/ policy makers and researchers regarding the way of improving the coaching of NTBFs' entrepreneurs and of increasing the number of gazelles. These potential implications are, among others, (i) the setting of growth houses as in Denmark - that is special infrastructures devoted to the development and the growth of start-ups; (ii) the rethinking and/or the customization of the training and managerial seminars offered to entrepreneurs by incubators, and (iii) the setting - in or outside the incubators - of various attractive and relevant events/activities that multiply networking opportunities for entrepreneurs.

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≈ SUMMARY ≈

ENTREPRENEUR NETWORK DEVELOPMENT THROUGH VENTURE EMERGENCE PROCESS AND EFFECTS ON OUTCOME

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Principal Topic

This longitudinal study provides an investigation of the development of size and composition of entrepreneurs' networks and explores its influence on outcome of the venture emergence process.

Entrepreneurship research has for many years examined the network dimension in the venture emergence process (Larson and Starr 1993), and the effects of networks on entrepreneurial outcome (Elfring and Hulsink 2003). However, the dynamics of the process have largely been ignored (Hoang and Antoncic 2003). This study expands previous entrepreneurship research, by using a longitudinal design and advancement in venture emergence as a process and outcome measure. It attempts to cover dynamics of the process by examining developments in the size of the *activated* network and the personal and professional network structure changes, through three phases of venture emergence.

Method

From a random screening of 10.000 respondents, 714 met the criteria for further inspection as entrepreneurs. Entrepreneurs were defined as individuals who intend to start a business within the next three years (395), individuals who are active in the process of starting a business (101), and individuals who are running a newly established business (218). The respondent's process is followed over a one-year period by means of 2 re-interviews, which creates the advancement variable. Respondents report what kind of advice they have received from a list of 18 different actors, which was used to apply the (1) network size, (2) professional network ratio, and (3) personal network ratio variables.

Results and Implications

Size of network significantly increases between the first two phases, but decreases between the two latter phases, which suggests that size of the *activated* network develops in an inverted U-shape through the venture emergence process. The ratio of professional network significantly increases through the process, while ratio of personal network declines, which supports former non-longitudinal research. Network size and the professional network seem to have a positive influence on outcome, while the personal network does not.

This study underlines the importance for entrepreneurs to grow their network and seek access to professional contacts. Treating the network dimension of venture emergence as a dynamic process might prove fruitful to increase our theoretical understanding of entrepreneurship.

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≈ SUMMARY ≈

DOING IT BY YOURSELF: ENTREPRENEURIAL FAILURE, DETERIORATION OF SOCIAL CAPITAL AND ENTREPRENEURIAL REENTRY

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Principal Topic

Social capital theory has received widespread application in the entrepreneurship literature and has provided insightful findings about the start-up ventures of nascent entrepreneurs. In particular, scholars have found that nascent entrepreneurs initially rely upon exchanges based on affective (goodwill) trust to create access to financial, intellectual and human capital for their start-ups but later, as the entrepreneur begins to expand his or her network in search of opportunities and additional resources, reliance on traditional market exchanges based only on cognitive based trust will become more prevalent. Although insightful, this research stream has given little attention to how or why the experience of failure influences and potentially differentiates the network choices of renascent entrepreneurs. In other words, what becomes of the social relationships that were embedded in the network exchanges of the failed venture of a renascent entrepreneur?

Method

A case study research design was used to inductively build a theoretical model of the relationships between business failure, social capital and reentry into entrepreneurship. Since the process of moving from a failed venture to reentry is usually lengthy, three cases were selected that provide insight into different stages of the failure and reentry process (Yin, 2003). Drawing on theories on trust, attribution, social categorization and self-regulation, three propositions for future empirical study are depicted in a staged model of cognitive and affective trust in the network exchanges of renascent entrepreneurs.

Result and Implications

The recurring themes in the data collected suggest that while the entrepreneurial networks of nascent entrepreneurs may initially be more reliant on exchanges based on affective (goodwill) trust, the lessons from failure encourage the proactive management of network ties and may promote less reliance on affective trust and more reliance on cognitive (economic) trust upon reentry to entrepreneurship. These findings suggest that if an entrepreneur attributes the failure of a start-up venture to a trust violation by a person generally considered in the literature to be a strong network tie (i.e., spouse, sibling, friend), he or she may deteriorate social capital by attributing the violation and the resulting distrust to other strong network ties in the same or similar social category and may forego reliance on their resources in the start-up of future ventures.

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≈ SUMMARY ≈

**NETWORK DYNAMICS IN EARLY-STAGE ENTREPRENEURSHIP:
A PANEL STUDY OF HOW ENTREPRENEURS' NETWORKS
CHANGE DURING EARLY VENTURE DEVELOPMENT**

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Jay J. Janney, University of Dayton, USA

Principal Topic

Scholars agree that entrepreneurs' networks are important during early venturing (Borgatti & Foster, 2003). Research suggests entrepreneurs' networks are associated with obtaining new information, identifying opportunities (Burt, 2004; Granovetter, 1973), and acquiring resources (Wu, Wang, Chen & Pan, 2008). Interestingly, while research has investigated antecedents to and consequences of engaging in network relationships, most research has focused on consequences (Hoang & Antoncic, 2003). Resultantly, a gap has emerged in our understanding of how entrepreneurs' networks develop and change over time. This is problematic because some scholars contend that changing resource needs during venture development necessitate a concomitant change in entrepreneurs' networks to allow access to newly-needed resources (Greve & Salaff, 2003; Hite & Hesterly, 2001). If entrepreneurs' networks need to evolve over time as resource requirements change, more research is needed studying their dynamics. To address this, we explore two questions – How does the size of an early-stage entrepreneur's network affect the subsequent structural (e.g., size) and content (e.g., knowledge heterogeneity) character of their network? How does the strength of an early-stage entrepreneur's network ties affect the subsequent structural (e.g., size and tie strength) and content (e.g., knowledge heterogeneity) character of their network?

Method

The PSED-I (Gartner, Shaver, Carter & Reynolds, 2004) nascent entrepreneur sample was the data source for this study. The average age of participants was 39.8 years old, 70% were males, and 65% were White. Multiple regression was used to analyze the data.

Results and Implications

Results suggest a positive relationship between the size of entrepreneurs' networks at time one and size at time two. A negative relationship was found between the number of weak ties at time one and strong ties at time two. With regard to content outcomes, a positive relationship was found between network size at time one and knowledge heterogeneity at time two. No relationships were found between weak ties at time one and knowledge heterogeneity or network size at time two. Overall, our findings suggest that during early venture development, changes in the structure and content of entrepreneurs' networks may systematically relate to prior characteristics of their networks.

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≈ SUMMARY ≈

**PROMOTING GROWTH ENTREPRENEURSHIP
THROUGH E-MENTORING**

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Irja Leppisaari, Central Ostrobothnia University of Applied Sciences, Finland

Principal Topic

Research shows that new innovative operational models promoting growth entrepreneurship created collaboratively by higher education institutions and entrepreneurial organisations are needed (Leppisaari & Tenhunen 2007; EU Green Paper 2003; MOE 2009; Collins, Smith & Hannon 2006). In the eMGE (eMentoring promoting Growth Entrepreneurship) project examined in this article, the aim has been to create a virtual learning environment, which through the application of research, education and coaching and the deployment of e-mentoring will strengthen entrepreneurs' intentions to grow. Experienced entrepreneurs, mentors, and those in the early stages of their career discussed issues relating to growth intentions online in the Blackboard learning platform. The research question being investigated is: How can e-mentoring strengthen growth entrepreneurship?

Method

One-to-one asynchronous online discussions between fourteen mentor pairs from fourteen broad-based businesses important to the region's wellbeing were held during October-December 2008. The research data consists of the online discussions, the collective discussion during the final seminar and observations of the project managers, also the researchers. In a discourse space for each pair there were 15 questions arranged under six themes, helping the mentor and entrepreneur to reflect together on challenges and opportunities relating to business growth. The project was implemented applying an educational goal-oriented action research approach and the data was analysed qualitatively.

Results and Implications

The eMGE project provided new entrepreneurial research knowledge on deploying e-mentoring for growth entrepreneurship for the use of higher education institutions, entrepreneurial organisations and educational research. It is evident that an online method independent of time and place in mentoring discussions can assist busy entrepreneurs to share experiences and knowledge in reciprocal learning. Actors committed to the process as part of their own work, with the model not requiring an unreasonable use of time or travel. Our research shows the eMGE model will, from the target group's perspective, be a relevant, timely and meaningful way to support business skills and growth entrepreneurship. Online mentoring discussions helped entrepreneurs to identify elements and challenges of growth entrepreneurship and plan the next steps towards growth. Identified development challenges include face-to-face orientation training for participants, commitment to regular online interaction and the development of tools to diversify communication modes in the mentoring process.

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∞ INTERACTIVE PAPER ∞

THE USE OF SOCIAL CAPITAL BY SOLO-ENTREPRENEURS AND ENTREPRENEURIAL TEAMS IN INNOVATIVE INDUSTRIES

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Principal Topic

Central questions in entrepreneurship research concern the characteristics of the venture creation process and the factors determining the faith of a start-up project or the success of a new venture. Among other factors discussed social capital seems to play a pivotal role. Social capital is often tested for in entrepreneurship studies; however especially our knowledge about the team-social capital relationship is sparse. Scholars suggest that a start-up team compared to a solo-entrepreneur can gain more easily access to resources through the social network of its members (Davidsson & Honig, 2003). On the other hand a start-up team can perform more activities in the start-up process on their own, because a team combines different skills from its members (Gartner, 1985). In this paper investigate to what extent teams and solo-entrepreneurs rely on social capital during the venture creation process. We are also interested in the effects of social capital on later venture performance.

Method

Our empirical analysis is based on a random sample of team-founded start-up firms established in innovative industries. **We conducted 456 face-to-face interviews with the solo-entrepreneur or the leading entrepreneur of the start-up team.** Data is analyzed using chi-squared-tests and negative binomial regression models.

Results and Implications

We find that new venture teams do not use significantly more social capital in the venture creation process than solo-entrepreneurs. The number of team members and the diversity of a team's knowledgebase have reverse effects on social capital, while the former increases and the latter decreases the probability to use social capital. We also find some evidence for changes in the network structure of new venture teams.

Solo-entrepreneurs and new venture teams differ concerning the effect of social capital on venture performance. We find that for solo-entrepreneurs especially help from weak ties has positive significant effects on employment. For team start-ups we don't find significant effects of social capital.

We believe that this paper will make two important. First, we disentangle social capital and team issues. Second, we apply a dynamic perspective by establishing a link between the venture creation phase and subsequent venture performance.

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≈ INTERACTIVE PAPER ≈

THE SOCIAL ENVIRONMENT AND ENTREPRENEURIAL INTENTIONS

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Johan Maes, Katholieke Universiteit Leuven, Belgium

Miguel Meuleman, Vlerick Leuven Gent Management School, Belgium

Luc Sels, Katholieke Universiteit Leuven, Belgium

Principal Topic

Using insights derived from Ajzen's (1991) Theory of Planned Behavior (TPB), researchers have shown that the two main factors affecting entrepreneurial intentions are perceived desirability and perceived feasibility (Krueger et al., 2000). The impact of a third factor – social environment – has received mixed evidence (Kolvereid and Isakson, 2006). To address this, we expand the social environment component using insights from social capital theory. More specifically, we distinguish between strong and weak ties in the social environment and argue that their effect on entrepreneurial intentions is mainly indirect (Miniard and Cohen, 1981). Building further on social capital theory, we note important distinctions in operational measures of the impact of the social environment. On the one hand, we follow the guidelines set out by Ajzen (2006) and measure the *cognitive* “perceived pressure” *social capital* of both strong and weak social ties. On the other hand, we follow the *structural* “available networks” *social capital* from both bonding and bridging ties. We hypothesize that whereas cognitive social capital will be more important to demonstrate the link to personal desirability, structural social capital demonstrates the link to perceived feasibility (Uphoff, 2000).

Method

To investigate these relationships, we conduct a large scale survey research on a sample of 423 students. We measure the central TPB-constructs with multi-item measures based on the work of previous authors: intentions (Van Gelderen et al., 2008), personal desirability (Krueger et al., 2000), social norms (Kolvereid and Isakson, 2006) and perceived feasibility (Kraft et al., 2005). We employ advanced structural equation modeling techniques to analyze the data (Ploywarth and Oswald, 2004).

Results/Implications

Our analyses confirm the indirect impact of both strong and weak ties on entrepreneurial intentions via personal desirability and perceived feasibility. Our results also indicate that these effects are contingent on the operational definition of social capital: whereas beliefs of social acceptance are important for strong ties, the actual presence of structural relationships is important for weak ties. These results clarify the effects of different operational definitions in studying the effects of strong and weak ties. Furthermore, these results add to the growing knowledge base with respect to entrepreneurial intentions.

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≈ INTERACTIVE PAPER ≈

THE ENTREPRENEUR, THE ORGANIZATION AND THE WORLD OUT THERE: A BIBLIOMETRIC REVIEW OF 1,239 PAPERS ON NETWORKS, SOCIAL CAPITAL, COOPERATION, INTER-ORGANIZATIONAL RELATIONS, AND ALLIANCES IN ENTREPRENEURSHIP

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Principal Topic

“Academy of Management Learning & Education” Vol. 8, No. 1 (2009) has been dedicated to citations, rankings, and their impact. This topic currently is one of the most discussed issues in the community of management researchers. In reference to Anne-Will Harzing I could have titled my paper: “Publish or perish – an examination of scholarly behavior in entrepreneurship research”. This paper analyzes citation patterns, clusters, and other bibliometrics of 1.239 papers dedicated to the research sub domain mentioned by this paper’s sub title. The aim of my research is to generate economics of overview on this fast emerging field and to deliver insights on our research behavior.

Method

A unique data base was created containing 1.239 academic research publications. All papers are dedicated to the same sub domain of entrepreneurship research (s. title). A citation matrix has been generated, containing binary coded information: Which article gives reference to which other articles? In addition, the database contains information from Google scholar, as an indicator for how often an article has been cited not just from within the scientific community (researchers active in that particular sub domain), but globally. Different from most other contemporary bibliometric research, the data base does not only include peer reviewed journal papers, but also articles placed in editorial books, working papers, books, and major conference proceeding, such like Frontiers and AoM.

Results and Implications

Not only rankings are established (Who is the most influential article resp. author, within the community and globally? Which journal has had the greatest impact on developing the field?), but also hypotheses are tested: Do publication patterns shift and concentrate on journals? Examining their scientific impact, are articles in editorial books underestimated, and journals overestimated? How do we make use of the online availability of most articles: Does our citation patterns follow McPhee’s Theory of Exposure, adding even more weight to blockbuster articles, or do we follow Anderson’s Long-Tail Theory by paying more attention to yet unrecognized but genius niche publications? Implications put empirical based criticism on the current “journal-mania”.

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≈ SUMMARY ≈

GENDER DIFFERENCES IN RATES OF BUSINESS EXIT: EVIDENCE FROM A LONGITUDINAL STUDY

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Sara Carter, Strathclyde University, Scotland, UK

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Principal Topic

Despite the relatively recent growth in the number of women-owned businesses, research has shown that women are both less likely to chose entrepreneurship and that their experience of business ownership differs substantially from that of men (Bird and Brush, 2002; Brush et al, 2006b). The dominant research (and policy) focus on the achievement of increased female business start-up and entry rates has constrained a more considered analysis of the comparative in-flows and out-flows of men and women. There is, however, an emerging concern that women may exhibit higher exit rates, and that these have yet to be investigated.

Evidence of a potentially higher exit rate among women business owners has emerged from two sources. First, statistics emerged over time in national self-employment datasets has revealed that disproportionately higher entry rates by women over the past twenty years have failed to result in the predicted increases in the overall female share of business ownership. Second, survey data have consistently demonstrated that newer businesses are more likely to be owned by women. Both sources indicate the possibility of comparative differences between men and women in business exit rates, but neither provides strong or conclusive evidence.

The aim of this paper is to explore the validity of concerns relating to comparative exit rates among men and women by analyzing data of male and female business owners. The study attempts to address two main research questions: 1) Are the differences in the rates of exit by male and female business owners? 2) Are the gender-based differences in the causes of business exit?

Method

This paper explores the comparative exit rates by women and men by using a data from the Norwegian business register provided by Statistics Norway. The samples include all female and male owned businesses established and registered in 2002. Exits rates are calculated for following year, divided by cause of exit. Differences by industry sector and business size are examined. Statistical analysis provides evidence of gender-based causes that underlie business exits.

Results and Implications

This study makes a novel contribution to the literature on female entrepreneurship by focusing on the hitherto unexplored issue of business exit. The findings indicate that there are gender differences in exit rates. Female business owners exit at a higher rate than male. There are even larger gender differences in causes of business exits. Factors such as industry sector and business size moderate the relation between gender and business exit.

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≈ SUMMARY ≈

**THE EFFECT OF GENDER STEREOTYPES ON EVALUATION
OF NEW ENTREPRENEURIAL VENTURES**

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Daniel M. Turban, University of Missouri, USA

Principal Topic

Gender stereotypes are widely-shared beliefs about characteristics attributed to men and women. These stereotypes are fairly common in our society and can exert a powerful influence on the way people think and behave. Workplace discrimination is believed to be an important consequence of gender stereotypes. Entrepreneurship researchers have argued that these stereotypes can affect people who want to become entrepreneurs as well as those whose support entrepreneurs need to survive and succeed. The present study examines the impact of gender stereotypes on new venture evaluations. Specifically, we study how stereotype activation, modern sexism, gender-type of venture, and respondent gender interact to influence evaluations of business plans.

Method

The data for this experimental study was collected from 678 undergraduate business students in an introductory management class through a web-based survey. We employed a 3 (venture type: male-typed, female-typed, gender neutral) x 4 (stereotype condition: control, implicit activation, explicit activation, nullified) x 2 (respondent gender: male, female) between-subjects factorial design. Participants were asked to read an entrepreneurship-related article which was the stereotype activation manipulation, examine a brief business plan for a new venture in a male-typed, female-typed, or gender-neutral industry, and provide an evaluation of the new venture proposal. The ventures were in industries chosen by a sample of business students as male-typed (machine tool manufacturing), female-typed (herbal cosmetics manufacturing), and gender-neutral (supplemental education). Modern sexism was measured as an individual difference variable.

Results and Implications

We believe the findings of our research advance extant knowledge in three important ways. First, entrepreneurship researchers have noted that new venture evaluations are often subjective and based on perceptions. Our research highlights the role of gender stereotypes in the evaluation of new ventures. Second, we examine the moderating role of modern sexism, a form of sexism that manifests itself in subtle, indirect, and rationalizable beliefs and behaviors about gender roles, in influencing differential evaluation of male- and female-typed ventures. Finally, we extend stereotype activation theory (SAT) by comparing men and women's evaluation of new ventures when presented with masculine stereotypes, stereotype nullification, and in normal "everyday" situation, providing a systemic examination of the role of stereotype activation in new venture evaluation.

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≈ SUMMARY ≈

WOMEN IN ENTREPRENEURS' SOCIAL NETWORKS

Kim Klyver, Stanford University, USA / University of Southern Denmark, Denmark

Principal Topic

This study investigates entrepreneurs' involvement of females in their social networks. It adds to previous research on social networks and gender by shifting the focus from the gender of 'ego' to the gender of 'alter'. Most gender research in entrepreneurship is trying to explore if and how women adapt different practice throughout the entrepreneurial process than their male counterparts, and if and how women are disadvantaged as entrepreneurs. One of the often mentioned differences between female and male entrepreneurs is their social networks.

A small body of literature focuses on differences in social networks between female and male entrepreneurs. Although the empirical results still are inadequate, some consistency has emerged. However, so far interests within entrepreneurial networks have mainly been on gender of ego, and not gender of alter. In this study, focus is on gender of alter, and specifically we are interested in what influences entrepreneurs' involvement of females in their networks. Building on homophily theory, social support theory, relational theory and the concept of emotional closeness, five hypotheses are developed.

Method

This study is based on a representative sample of 239 female and male entrepreneurs identified through the Danish Global Entrepreneurship Monitor (GEM). The name-generator approach is used to identify up to five members of the entrepreneur's social network. The returned and completed questionnaires identified together 957 instances of relationships between entrepreneurs and their alter. The relationship between entrepreneurs and their alter is the unit of analysis. Bi-variate and multi-variate statistics are used to test for involvement of women.

Results and Implications

It is found that female entrepreneurs are more likely than male entrepreneurs to involve females in their network substantiating previous research. In addition, it is found that involved females more often than involved men are family members and that involved females more often than involved men provide emotional support. Finally, it is found that female entrepreneurs compared to male entrepreneurs are less likely to involve female family member and more likely to receive emotional support from females. The study support the idea of females' networks being dependent on emotional closeness, meaning that females appreciate and prefer relationships to whom they are both closely and emotionally attached.

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≈ SUMMARY ≈

IMPACT OF SOCIO-CULTURAL VALUES AND TRADITIONS ON THE GROWTH OF WOMEN-OWNED ENTERPRISES IN PAKISTAN

Muhammad Azam Roomi, University of Bedfordshire, UK

Principal Topic

Internationally, research suggests numerous gender differences among business owners at personal, professional, and institutional levels (Young, 1997; Carter and Anderson, 2001; Brown et al., 2002; Brush and Hisrich, 2002; Orser and Riding, 2003). By implication, these differences become manifold in some Islamic societies where women are further discriminated against and subjugated due to socio-cultural values and traditions in the name of religion (Roomi and Harrison, 2008). The unequal status of women in Islamic societies is due in part to the connection of gender with various forms of exclusion. Religious prescriptions, cultural norms and actual practices related to a woman's status and role vary widely and are sometimes highly contradictory.

Method

Initial data was collected through 767 completed questionnaires from all over the country. The key factors influencing the growth of these enterprises were grouped into five categories i.e. entrepreneur's personal resources, entrepreneur's mobility, nature of business, human resource strategy, and informal networks. Multiple regression analysis was performed to test the hypotheses that these groups of factors influence the business growth independently and significantly. In addition to quantitative findings, an explicatory method was applied as well involving a process of analytic induction by face to face in depth interviews of 50 women entrepreneurs. The qualitative data collected was inductively analysed and interpreted in response to open-ended questions.

Results and Implications

In addition to mobilise scarce resources, most of the successful women entrepreneurs termed their ability to extract value from social networks as another important factor in the growth of their enterprises. This has negative implications for most of the Pakistani women entrepreneurs as their competition is systemically high (vis-à-vis men), their markets small, and their production assets limited; moreover, their access to networks of social capital is greatly impeded, specifically by the cultural norm of 'Pardah'(veil) and the notion of 'Izzat' (honour)—which in turn limits their access to other forms of capital. The research also finds that moral help of male family members, effective informal networking, technical or business training, management experience, and effective use of websites and other online selling tools are the key factors which have made a considerable difference in their growth / performance. One of the implications of the research could be a ground breaking guideline for business development agencies/organisations to have a greater understanding of the factors influencing the growth of women-owned enterprises in Pakistan. It also provides a comprehensive analysis of reasons why women in Pakistan are not achieving business celebrity in numbers proportionate to their start-up activity.

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≈ SUMMARY ≈

SOCIAL CAPITAL, HUMAN CAPITAL, AND THE GROWTH OF WOMEN-OWNED ENTREPRENEURIAL FIRMS

Muhammad Azam Roomi, University of Bedfordshire, UK

Principal Topic

Women's entrepreneurship is characterized by a number of constraints including family responsibility as well as lack of relevant resources. Literature illustrates that as compared to men, female entrepreneurs often enter self-employment under resourced in terms of financial, human and social capital (Schmidt & Parker, 2003). Neergaard et al. (2005) mention that women's social structure and the way they socialize have a major influence on the social capital endowments which they use in starting up their businesses, with women being less welcome than men in social networks. A number of authors (Brush et al., 2005; Minniti et al., 2005; Brush et al., 2004: 172) has mentioned the "lack of appropriate" social capital as one of the main hindrances to the faster growth of women-owned businesses. Whereas, Greene et al. (2003) and Minniti et al. (2005) have mentioned lack of human capital as one of the main reasons for the sluggish performance and slow growth of women-owned enterprises.

Method

To determine the impact of women entrepreneurs' social and human capital on the growth and ultimate success of their businesses, an online questionnaire was administered in the Greater London, the East of England and the South East of England regions. Initial data was collected through 517 on-line filled questionnaires followed by 40 face to face in depth interviews. Statistical analysis was performed to study the impact of social capital and human capital with three dependent variables, employment growth, revenue growth and profit growth. The inductive analysis of qualitative data helped in acquiring in-depth information about the effect of individual capabilities of entrepreneurs as well as social connections on the growth of their businesses.

Results and Implications

The analyses of the quantitative data and in-depth interviews suggested that building, maintaining and utilising social capital has a significant positive effect on compound employment growth and sales growth of women-owned enterprises. However, the data does not show a significant effect on compound profit growth. Though, the direct impact of human capital on growth of women owned enterprises is not much significant, medium level of human capital plays a mediating role in the relationship of social capital and their compound sales growth. One of the outcomes of the research could be a guideline for the government or other business development agencies/organisations to have a greater understanding of the growth patterns of women-owned enterprises in the UK, which can enable them to cater for the needs of developing specific human capital as well as providing a conducive environment for the development of opportunities for building human and social capital for existing or potential women entrepreneurs.

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∞ INTERACTIVE PAPER ∞

EXAMINING THE FEMININE NATURE OF VENTURE CREATION

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Principal topic

While Bird and Brush (2002) and Ahl (2004) assert that venture creation is not gender-neutral, there is little in the research literature about the influences of gender, or “the feminine voice” on enterprise development. Building upon Bem’s (1981) feminine/masculine nomenclature, a two-by-two grid of new venture organizations is presented. Continuums reflect feminine/masculine attributes and economic and social outcomes. Four typologies are defined: neo-classical, contemporary, social and feminist ventures.

Method

To reconstruct entrepreneurship within a feminine voice, the work then draws on 25 in-depth structured interviews with *for-women*, *by-women* business owners. Firms included goods producers, service providers and venture investors. Discourse analysis focused on opportunity recognition, leadership, organizational structure and lessons learned.

Results

In terms of opportunity recognition, respondents sought to:

- empower, inspire, support and utilize women’s talents (“help women step up to the plate and play a much, much bigger game”; “help women attain status economically”; “connect and inspire women”);
- respond to family need (“we needed clothing underneath her [hockey] equipment”);
- fulfill untapped markets (“30 and 40 percent of women in Canada are size 12 and up and yet 5 percent of the retail space addresses that market”; women in trades, DIY);
- build community (“women who have been successful but that have always been in the shadows of men decided we’re going to start our own company for us”);
- create work setting to suit personal and business needs;
- be in a geographic location (“I just fell in love, total love with the tundra and the people of the north, the Inuit people”);
- make money (“I was making a load-full of money”); and
- professionalize a service (“It would be an art form, it would be a profession”).

Organizational structure was variously described as virtual, flat, strategically aligned, collaborative, “collaborative individualism”, unstructured, and voluntary. Respondents described themselves across a continuum of absolutely feminist to post-structural feminist and absolutely non-feminist. Gender-related challenges included perceived lending inequities, power struggles, legitimacy, presumptions by other women; and being taken advantage of.

A variety of gender-explicit strategies were related.

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≈ INTERACTIVE PAPER ≈

**SOCIAL COMPETENCE OF WOMEN ENTREPRENEURS:
MODERATING THE EFFECT OF SOCIAL-, HUMAN-, AND
REPUTATIONAL CAPITAL ON ENTREPRENEURIAL SUCCESS**

Monica A. Zimmerman, West Chester University of Pennsylvania, USA

Crystal Xiangwen Jiang, Bryant University, USA

Principal Topic

Women entrepreneurs and the business(es) they own face many challenges. However relatively little research has addressed the performance correlates of these women and their businesses (Lerner & Almor, 2002; Jiang & Zimmerman Treichel, 2008). In this paper we use the resource based view (RBV) to address performance correlates of women entrepreneurs and their business(es). Three specific resources that appear to be especially important to entrepreneurs and their businesses are: *social-, reputational-, and human capital*. Research suggests that the RBV does not, however, fully explain how and why certain firms possess competitive advantage in rapid and unpredictable conditions (Eisenhardt & Martin, 2000) and how resources contribute to a firm's competitive advantage (e.g., Priem & Butler, 2001). Mahoney and Pandain (1992) argued that competitive advantage requires a distinctive competence, and one specific competence is *social competence* (Baron & Markman, 2003). While social competence is important to all entrepreneurs, it may be especially valuable to women entrepreneurs because of the importance of interpersonal skills and relationships to the success of women entrepreneurs (Aldrich, 1989; Brush, 1992; Gundry & Ben-Yoseph, 1998).

Method

We interviewed thirteen women entrepreneurs located in the Mid-Atlantic region of the USA. The group is made of a rather diverse group of women entrepreneurs from a variety of industries. We examined individual and firm level variables to test the moderating relationship of social competence on the capital--entrepreneurial success relationship.

Results and Implications

Our research suggests that social-, human- and reputational capital are positively related to the entrepreneurial success of women entrepreneurs and the business(es) they own. While social-, reputational-, and human capital were found to be positively related to entrepreneurial success, the relationship of the education component of human capital was not as strong as the experience component. Social competence was found to be positively related to entrepreneurial success and appears to moderate the capital – success relationship. As the number and prominence of women entrepreneurs grows, their impact on the economy also increases. A better understanding of women entrepreneurs and the businesses they own not only benefits the economy but also women entrepreneurs and women owned businesses.

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≈ SUMMARY ≈

**ENTREPRENEURIAL EFFORTS BY IMMIGRANTS:
A LONGITUDINAL STUDY FOR PORTUGAL**

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Joana Mendonça, Instituto Superior Técnico, Technical University of Lisbon, Portugal

Principal Topic

Recent studies examine the determinants of entrepreneurial efforts among immigrants (Borjas, 1986; Fairlie and Meyer, 1996; Lofstrom 2002). In general, studies point out that migrant status and ethnicity affect the individual propensity to start a new business (Levie, 2006) and that self-employment rates among immigrants are higher than those of natives (Yuengert, 1995). The literature shows that skills are important in the process of shaping the economic performance of immigrants (Borjas, 1999). In fact, higher levels of human capital are observed to increase entrepreneurship rates (Light and Rosenstein, 1995) and are positively related to business longevity and profits (Bates, 1994) among all ethnic and racial groups and categories. We use a human capital theoretical framework (Becker, 1975) to assess the importance of entrepreneurs' education and different types of previous occupational experience in explaining entrepreneurship among immigrants. Our goals are twofold: First, to understand if immigrants in Portugal exhibit higher entrepreneurship rates than those of native individuals. Second, to study the impact of human capital upon start-up of firms owned by immigrants, when compared with firms owned by native-born entrepreneurs.

Method

We employ longitudinal data for entrepreneurs and firms from the Portuguese economy for the years 2000-2006. The data source is the "Quadros de Pessoal" (QP) Micro Data set, with more than one million individual observations per year. The longitudinal employed-employee data include extensive information on the mobility of firms and business owners. We provide estimates from a logistic regression on the determinants of being an entrepreneur among various immigrant groups and native-born individuals. Particular focus is put into the role played by human capital and experience on the entrepreneurial process.

Results and Implications

This research has important implications for practitioners and policy makers. Practitioners should be aware of the important role played by their stock of human capital and how it can translate into better business performance and better occupational prospects in the labor market. Policy makers might be interested in a further understanding of the observed differences between native and minority groups in the population, so that the design of public policies may foster entrepreneurship as an inclusive socioeconomic phenomenon.

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≈ SUMMARY ≈

MINORITY ENTREPRENEURS AND PERFORMANCE: SHOULD PERCEPTIONS MATTER?

Grace Kim, Loyola College, USA

Principal Topic

Research on minority entrepreneurs suggests that perceptions are shaped by past outcomes. Minority entrepreneurs fear credit denial because of past rejection of financing. Financing gaps in turn contribute to unfavorable financial ratios for these enterprises primarily owned by minorities. They then fear failure because of poor business performance. Such performance in turn impairs their financing relationships. With these linkages, such perceptions may exacerbate the outcomes.

To reconcile negative perceptions of minority entrepreneurs with their growth in numbers, this study proposes that important differences exist among minority entrepreneurs themselves. Prior research compares the experiences of minority entrepreneurs to those of nonminority entrepreneurs. This study compares cohorts of successful entrepreneurs and unsuccessful entrepreneurs between these groups to resolve whether the negative perceptions are warranted and to determine their relationship to financing and performance outcomes. This method also addresses whether universal factors affect the outcomes for comparable minority and nonminority entrepreneurs.

Method

The empirical study employs a cross-section of U.S. small enterprises from the Kauffman Enterprise Survey. The survey provides a wide range of measures of entrepreneurial owner perceptions and performance. Robust univariate tests indicate differences between minority and nonminority entrepreneurs with respect to perceptions, financing, and performance. Multivariate regression analysis is applied to measure the effect of race and other factors on the enterprise's performance, from balance sheet measurements.

Results and Implications

Perceptions impact outcomes but are not necessarily self-fulfilling, according to initial findings. Cross-sectional evidence indicates that minority entrepreneurs have different perceptions about financing relationships and face different outcomes than nonminority entrepreneurs. Despite negative perceptions, successful minority borrowers have more favorable financing experiences than nonminority counterparts. Such successful minority entrepreneurs exhibit somewhat better business performance than similar nonminority entrepreneurs. Multivariate regression further finds that entrepreneur, enterprise, and employee characteristics are significant in their impact on the enterprise's performance.

This study integrates the relationship between entrepreneurial perceptions and outcomes. Negative perceptions may worsen the outcomes for unsuccessful minority entrepreneurs and dampen the outcomes for successful ones. The results indicate that researchers should treat minority entrepreneurs as a heterogeneous group in comparative studies of entrepreneurs. Given growth in minority self-employment, policymakers must account for the perception impact and differences among minority entrepreneurs to assess their experiences and the role of discrimination.

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≈ SUMMARY ≈

ABORIGINAL ENTREPRENEURSHIP AND ECONOMIC DEVELOPMENT FROM CANADA'S PROPOSED MACKENZIE GAS PIPELINE

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Leo-Paul Dana, University of Canterbury, New Zealand

Robert B. Anderson, University of Regina, Canada and University of Canterbury, New Zealand

Principal Topic

North American Indigenous groups and communities vary greatly in terms of willingness, readiness and approaches for entrepreneurship and economic development in the global economy (Wuttunee, 2004 & 2007; Cornell and Kalt, 1992 & 2003; Adamson and King, 2002; Peredo et al 2004; Anderson et al, 2007). This case study examined Indigenous perspectives of sustainable entrepreneurship and economic development in relation to the proposed \$16.2 billion 12,220-km Mackenzie Gas Pipeline which would connect the Mackenzie Delta to the Alberta Tar Sands. The route would cross traditional lands of four Northwest Territories (NWT) Indigenous groups: Inuvialuit, Gwich'in, Sahtu Dene & Deh Cho. Three had achieved self-government with ownership of lands and resources and funds for economic development; but with this came responsibility to protect the sustainability of their lands, resources, people, communities and environment. The fourth group was negotiating a land claim with the Canadian government.

Method

This case study is based on 32 structured interviews conducted in October 2006 with leaders in the NWT from Indigenous organizations, government, business, and communities. Additional information was gathered from public documents, media, and stakeholder websites. Visits to several NWT communities had allowed for participatory observation of the business and economic development, environment, geography and communities.

Results and Implications

Unlike in the 1970's, the Indigenous groups in the NWT were ready (levels of readiness varied). However, they would participate on their own terms. Both collective and individual approaches were described. Extensive consultation was occurring with the pipeline proponents and governments. Several Indigenous groups had joined together and taken a shareholder position in the pipeline project. Many partnerships had been established with non-Indigenous companies to derive benefit. They also had embarked on education and training to grow their own enterprises and their people's occupational skills. They had established regulations to enhance entrepreneurial participation and developed Indigenous business registries.

Indigenous entrepreneurship is an emerging field. This topic is relevant and timely as resources of many circumpolar regions are largely untapped and in the face of increasing world demand, more economic development projects are likely to occur.

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∞ INTERACTIVE PAPER ∞

**THE RISE AND FALL OF JOSEPH CASSEY: HOW ENVIRONMENTAL
MUNIFICENCE AND SOCIAL NETWORKS ENHANCE AND
CONSTRAIN MINORITY ENTREPRENEURSHIP**

Janine Black, Temple University, USA

TL Hill, Temple University, USA

Principal Topic

Using a narrative approach, we present the rich historical case of Joseph Cassey, a free black, immigrant, entrepreneur in post-Colonial Philadelphia. We use his story to explore the many dimensions of environmental munificence and the interactions of these dimensions with both changing social relations and the entrepreneurial process. Quaker and German colonist activism against slavery led to the “Act for the Gradual Abolition of Slavery” in 1780, ending the slave trade in Philadelphia. While white anti-slavery proponents may not have considered blacks to be equal to whites, the environment was supportive of free blacks’ efforts in business, religion, and education. This generally munificent environment enabled black entrepreneurs to flourish within specific economic niches, develop cross-race and class social networks, create significant wealth, and become active benefactors within the black community.

Indeed, few people were better positioned than two black entrepreneurs, hair dresser Joseph Cassey and sail-maker James Forten, to illustrate effective wealth creation strategies for entrepreneurs from disadvantaged groups. Initially, such entrepreneurs were enabled by the strong Quaker influence that created a benevolent environment for black enclave churches and businesses, as well as trade specialization, to find profitable niche trades that operated along social fault lines between races. However, when the social environment became less hospitable during the violent race riots of the 1830s and 1840s, neither business acumen nor carefully cultivated networks could salvage the businesses of such visible black entrepreneurs.

Method

We construct a historical narrative of Cassey’s entrepreneurial trajectory to find insight into the interplay between entrepreneurship and the evolving and contested social relations of race, immigration dynamics, occupational status, and shifting social network patterns. Our research is extracted from archives of deeds, mortgages, tax records, death and cemetery records, church records, and historical accounts.

Results and Implications

By honing in on the details of a particular entrepreneur in a perhaps simpler time, we are able to tease out the interactions between environment and entrepreneurial process that are otherwise obscured by the immense complexity of contemporary socioeconomic systems and propose a process theory of entrepreneurship-in-social-context.

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 INTERACTIVE PAPER 
SURVIVAL AND FINANCING OF BLACK OWNED START-UPS IN THE U.S.

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Principal Topic

In spite of an overall increase in minority self-employment, the difference between the percent of self-employed black and white Americans is still striking (11.6% vs 3.8% respectively). We examine whether the availability and types of financing are related to these observed differences, and whether the relative importance of financing methods changes when different stages of the entrepreneurial process are considered.

Our paper contributes to the existing literature by confirming that constraints in commercial financing are a likely cause of racial differences in business ownership. Differently from previous studies, our paper provides evidence based on a panel sample of startups rather than cross sectional data on established businesses and distinguishes between alternative forms of financing. Our paper also stresses the importance of human capital by adding owners' efforts and correct for endogeneity issues between financing options and probability of failure.

Methods

We use data from the Kaufman Foundation which include 2,399 startups that were interviewed in 2005, 2006 and 2007. We focus on single-owner startups and have information on commercial financing, non-commercial financing, race, age, education, years of experience, hours of work per week, and startups' distribution across industries and across regions.

The panel structure of our data allows us to use a survival model describing the relationship between startups' survival, financing, and other independent variables.

Specifically, $\theta(t, x_{it}) = \theta_0(t)e^{x_{it}\beta} z_i$ is the hazard function describing the relationship between startup survival (hazard rate) and time, and the set x_{it} of independent variables including financing resources.

Results

Our results suggest that, after controlling for the owners' socio-economic background and business information, race is not a statistically significant factor for startups' survival. Age and education, on the other hand, emerge as important. We also look at the effect of owners' efforts (as a measure of human capital) by including the number of hours the owner devotes weekly to the startup. We find consistent results across different models showing that more hours to be linked to lower probabilities of going out of business. Finally, our results suggest that the use of commercial financing is associated with lower odds of going out of business. Among the various alternative, trade credit and business credit cards emerge as the two most important methods of financing.

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≈ INTERACTIVE PAPER ≈

IMMIGRANT ENTREPRENEURSHIP AND INSTITUTIONAL CHANGE

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Principal Topic

The past decade or so has seen a considerable growth in the use of institutionalist approaches in the field of entrepreneurial studies (Minniti and Levesque, 2008). This led to the emergence of a growing number of studies examining the influence of institutions on entrepreneurship. However, to date, there has been precious little research into whether and how entrepreneurship can influence institutions (Philips and Tracey, 2007). This gap in knowledge can be understood in the context of widely held assumptions (at least until recently) about institutional stability and continuity.

Immigrants are well placed to change institutions by virtue of their pivotal social position that cuts across countries of destination and origin (Porters, 2008). Within this context, this paper sets out to explore the role of immigrant entrepreneurs in the process of institutional change. In doing so, the paper utilises insights from the small number of studies exploring the role of agency (defined broadly rather than entrepreneurship in particular) in influencing institutions. The majority of these studies emanate from sociology, and centre on the concept of Institutional Entrepreneurship (Battilana, 2006).

Method

The paper deciphers two cases of immigrant entrepreneurship in the same industrial setting in Greater Manchester, UK. These are: a Jewish entrepreneur (originating from Eastern Europe) in mid-19th century, and a Polish entrepreneur in the post-war era. Historical records, and published resources were used in order to reconstruct the role of the former case, alongside interview data obtained from community historians. Data for the second case were derived from published sources and ten interviews with the entrepreneur and key informants.

Results and Implications

It is shown in the paper that immigrant entrepreneurs can shape not only (immigrant) enclave but also central institutions in destination countries. However, there is diversity in the processes at work, influenced by the availability of other immigrant resources and the cultural distance between society of origin and destination.

The contribution of the paper is three-fold. Firstly, it re-dresses the balance of research on the interface between institutions and entrepreneurship. Secondly, it revisits the role of immigrant entrepreneurs, as embedded but active agents. Thirdly, it combines insights gained from three distinct bodies of knowledge: entrepreneurship, institutional entrepreneurship, and immigration studies.

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DO YOU CARE ABOUT ANYTHING ELSE OTHER THAN HOW MUCH YOU GET? A LOOK AT THE EMPLOYEE VALENCE FACTOR FOR NON-FINANCIAL AND FINANCIALLY UNCONVERTIBLE REWARDS IN ENTREPRENEURIAL AND NON ENTREPRENEURIAL FIRMS



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ABSTRACT

Social identity theory, job design theory, and motivation theories suggest a potential employee might attach significant value to non-financial and financially unconvertible rewards (NFFUR) while making a firm selection decision. Few studies have specifically attempted to measure if this valence factor is significant relative to financial and financially convertible rewards (FFCR). Salary, health benefits, retirement benefits, paid leave benefits, equity ownership and bonus and profit sharing plan comprised FFCR and job meaningfulness, climate for creativity, autonomy, work flexibility and tolerance for risk constituted NFFUR in this study. The results of our exploratory study with 92 employees in 10 healthcare related firms indicate: (1) employees attach significant and more value to NFFUR relative to FFCR, and (2) employees in entrepreneurial firms in general attach higher value to NFFUR than in non- entrepreneurial firms. While there is some suggestion that we can predict firm type on the basis of valence attached to rewards, it is not conclusive.

INTRODUCTION

The literature on ‘person–organization fit’ maintains that employees and employers both engage in selection processes to find a reasonable fit (Aldrich, 1999). The ASA (Attraction-Selection-Attrition) theory suggests organizations apply formal and informal strategies to select the employees who fit the organization’s environment (Schneider, Smith, Taylor & Fleenor, 1998). Organizational reward systems can effectively communicate the organization’s philosophy, values, and practices to potential employees (Rynes & Lawler, 1983). As such, organizational reward systems can act as powerful anchors for both parties in finding compatibility. The ‘motivational potential’ of characteristics of a work environment and job design – as non-financial rewards – was suggested by theorists as early as 1960s (Turner & Lawrence, 1965; Hackman & Oldham, 1975; Hackman & Oldham 1976). While financial rewards have gained a disproportionate share of attention, the motivational impact of financial rewards is inconclusive both theoretically and empirically (c.f. a metaanalysis by Jenkins, Mitra, Gupta & Shaw, 1998). Little wonder scholars have called for more examination of non-financial rewards (c.f. Lawler, 2000). The impact of early HR choices, e.g. recruiting & selection, on firm performance is deemed ‘critical’ for the firm’s long term survival (c.f., Cardon & Stevens, 2004). Ironically, it is not an adequately studied/addressed research area in the entrepreneurial context (Cardon & Stevens, 2004; Graham, Murray & Amuso, 2002). There have been consistent calls for research on the intersection of entrepreneurship and HR management which have met with limited success (e.g., Heneman, Tansky & Camp, 2000; Baron, 2003; Cardon & Stevens, 2004). In the context of these paradoxes and calls, the purposes of

this paper are: to assess the comparative valence employee attach to NFFUR and FFCR in general and to find if non-financial rewards are crucial in designing reward policies in entrepreneurial firms.

Organizational rewards consist of financial and financially convertible rewards (FFCR) as well as non-financial and financially unconvertible rewards (NFFUR) such as work autonomy – which some scholars call psychic rewards. Job design theorists assert that enriched job environments can provide the employees with sufficient psychic rewards such that financial or financially convertible rewards would be motivationally superfluous (Hackman & Oldham 1980). In a similar vein, social identity theory predicts that individuals are likely to associate with groups and organizations which offer them identity-congruence and they are likely to value this aspect more than financial incentives in their job choices (Graham et al, 2002). Empirically, some recent studies have shown that non-financial factors are associated with employee's job search and selection behaviors (Barber, Wesson, Roberson, and Taylor, 1999; Judge and Bretz, 1992). Scholars have appropriately called for the examination of total rewards – psychological rewards, growth opportunity rewards and financial rewards - for a better understanding of reward dynamics and their consequences in an entrepreneurial context (Cardon and Stevens, 2004; Graham et al, 2002; Heneman et al., 2002). However, a comparative examination of two types of rewards and their implications for reward systems in entrepreneurial firms have not yet been tested. While much of the traditional HR knowledge in large firms may be applicable to small or emergent ventures, evidence suggests that management of people in new ventures may fundamentally differ relative to established organizations (Barber et al., 1999; Kemelgor & Meek, 2008). For example, creativity, innovation, willingness to take risks, cooperation, interactive behavior, and tolerance for ambiguity are important behaviors in small and emerging firms (Balkin & Logan, 1988). Hence, designing the reward bundles that are commensurate with the motivations of potential employees they would like to hire is more of an imperative than an option for the entrepreneurial firms, to enhance their survival chances. To address these issues, we seek answers to the following four questions. (1) Do employees attach significant value to non financial and financially unconvertible rewards (NFFUR) while making firm selection decisions? (2) How does that valence factor compare with the value employees attach to FFCR? (3) Do the employees in entrepreneurial firms attach more value to NFFUR relative to the employees in non-entrepreneurial firms? (4) Does the level of valence factor an employee attaches to NFFUR predict what type of firm – entrepreneurial or non entrepreneurial – he will join?

The intended contributions of this paper are both incremental and novel. First, we are addressing the issue of comparative significance of NFFUR and FFCR as perceived by the employees more directly and more comprehensively than earlier academic studies. We build a theoretical case that identifies non-financial rewards, either as job characteristics or work environment, as more crucial for entrepreneurial firms than financial rewards to attract the right type of employees. To that end, we introduce a reward-anchored model of person-organization fit. Comparative examination of valence attached to non-financial rewards by the employees in entrepreneurial and non-entrepreneurial firms and the predictability of firm types on the basis of such valence constitute our novel contribution in the intersection of HRM and entrepreneurship.

LITERATURE REVIEW

The Conversation of Financial and Non-financial Rewards: General Organizational Context

The academic research interest on organizational rewards, although not directly stated as such, can be traced back to a number of theories emerging mostly between the 1960s and 1980s, e.g. Herzberg's two factor theory, Vroom's expectancy theory, Hackman and Oldham's job design theory, Locke & Latham's goal setting theory, Bandura's self-efficacy theory etc. which dealt with organizational rewards from different premises but mostly from the perspective of work motivation and performance. Our research focus is on non-financial and financially unconvertible rewards. We review relevant work which examines either NFFUR exclusively or NFFUR and FFCR on a comparative basis.

Some issues clearly emerge from this part of the literature review. First, there is a paucity of research that looks at a financial and non-financial rewards framework – the debate is overwhelmingly dominated by an intrinsic and extrinsic rewards framework. Although financial or financially convertible rewards are extrinsic rewards, non-financial and financially unconvertible rewards comprise both extrinsic (e.g. honor, tolerance for risk) and intrinsic (e.g. task identity) rewards and as such, constitute a separate debate. The work of Reif (1975) and Jurgensen (1978) are significant beginnings in terms of a comparative study of NFFUR and FFCR, however, they are highly constrained in terms of their scope and applicability. For example Jurgensen's rank order will not find if a person equally likes some rewards or dislikes them. As Jenkins et al (1998) noted, despite a considerable number of studies investigating financial rewards and performance the findings are inconclusive which necessitates a comparative perspective for rewards research. Finally, insights and evidence from past studies, like that of Judge and Bretz's (1992), suggest an investigation is needed on various organizational rewards that might influence potential job seekers' job choice decisions.

Applicability of Traditional Rewards System in Entrepreneurial Context

Balkin and Logan's (1988) conceptual paper addressed reward systems in an entrepreneurial context with the insights that reward systems in an entrepreneurial firm should motivate and create the environment for its employees to think, behave, and solve problems like an entrepreneur. In an empirical study, Heneman et al (2000) find quite a few disconnects/gaps between the current HRM literature in the context of SMEs and practitioners' (founder'/CEOs') perception of what is significant to them. Their finding suggests that one such major disconnect exists in the reward systems. Markman and Baron (2002), arguing that person-organization fit is more than KSA-job requirement fit, introduce a model of person-entrepreneurship fit. Graham, Murray and Amuso (2002) bring a socio-psychological perspective into the reward systems analysis in an entrepreneurial context. They assert that different type of reward strategies will attract individuals with different entrepreneurial identities. They propose employees with a higher level of entrepreneurial orientation will be attracted with higher levels of performance-based risk in the reward system and a higher level of ownership and flexibility in the firm's organizational rewards, while those with a lower entrepreneurial orientation will be attracted by reward systems that have limited risk as well as limited ownership opportunity along with a bureaucratic pay system. Asserting that personnel recruitment barriers and challenges of small firms are different from those of large firms Williamson, Cable and Aldrich (2002) isolate two fundamental liabilities small firms face relative to large firms – lower perception of organizational legitimacy in jobs seekers eyes and lower knowledge of these organizations.

With this review, we find five issues in rewards research within an entrepreneurial context. First, in general, the focus is on financial rewards but with many unanswered questions. For example, we do not know from these studies if incentive based pay systems are actually viewed as an attractive reward by the employees in entrepreneurial firms. Second, the reward systems in an entrepreneurship context have not been examined in a holistic framework including both financial and non-financial rewards. Third, the entrepreneurship rewards literature has focused more on the employer side of the equation despite the fact that what employees value would be equally or even more important for organizational goal achievement. Fourth, research on the intersection of HRM and entrepreneurship is in its very early stage with only a few conceptual papers and without much empirical work. Fifth, whether the so called best practices are applicable in an entrepreneurial context or a contingency based HRM is more effective forms an intriguing debate for entrepreneurship. Some studies reviewed above have made the initial contribution to enhance our understanding, but the need exists for more research with multiple treatments before we can settle the debate.

Clarification of Terminologies

By financial and financially convertible rewards (FFCR) we are referring to all the rewards that comprise what is commonly known as direct economic benefits (e.g. salary) or indirect economic benefits (e.g. retirement benefits) (c.f. Reif, 1975). By non-financial or financially unconvertible rewards (NFFUR) we are referring to the benefits which have a socio-psychological basis and on which economic value can't directly be placed. The NFFUR in our study are either a function of job design or the work environment. The term entrepreneurial firm has been interchangeably used with many other concepts in the literature – e.g. small firms, high growth firms, new firms, innovative firms etc. Acknowledging this, we measured the entrepreneurial qualification for the firm taking entrepreneurial orientation as a reasonable proxy - with risk-taking behavior, innovation and proactiveness as three dimensions (Miller, 1983; Covin & Slevin, 1989; Lumpkin & Dess, 1996) of entrepreneurial orientation. As such, in our scheme, a firm can be entrepreneurial irrespective of size, stage of life cycle and growth rate.

THEORY DEVELOPMENT

A Reward-anchored Model of Person-Organization Fit

Williamson et al (2002) suggest that small/entrepreneurial organizations need to consider job seekers' organizational knowledge and perception of legitimacy for attracting the right employees. Organizational rewards, while inevitably a sub-set of organizational knowledge, are one of the important factors for signaling and finding a person-organization fit. Since 'fit' is a two way process, the job seeker's knowledge of the organization and the organizational rewards have to be complemented with the employer's knowledge of the value job seekers attach to their organizational rewards. The reward-anchored model (figure 1) provides a representation of the phenomenon.

There are three dimensions of fit – need, value & identity, none of which, we argue, can be dispensed with for a meaningful fit to occur between an employee and an organization. These three dimensions of fit represent three fundamental reasons why employees and employers seek the union. The other party has the potential to serve some of their needs, the other party holds similar values to theirs and the other party shares their identity. The need satisfaction dimension of fit for the employees means they will satisfy their needs through financial rewards and non financial

rewards. The need satisfaction dimension for the organization means it will satisfy resource needs in the form of knowledge, skill, and abilities of the employees.

Values are considered to be fundamental, intrinsic, and an enduring sense of what is right or wrong (Rokeach, 1973). Sociological literature suggests that the association in a social unit occurs only when the individual and the social unit share certain minimum values (Lambe, Whittman & Speckman, 2001). Organizations, on the other hand, are considered social units with a life of their own (Aldrich, 1999). Organizations seek 'employee-generated-synergy' or what Welbourne and Andrews (1996) call *structural cohesion* which propels the company forward towards its goal (Aldrich, 1999). Without a value convergence or compatibility between the personal work values of the employees and organizational values of the firm, structural cohesion will be difficult, if not impossible. In their evidence of value compatibility Judge and Bretz (1992) argue that such firm values, however, should be known. To put this into our model's framework, these values should be reflected in organizational rewards to a reasonable extent and should be communicated during the recruitment and selection processes.

Why Do People Value Non Financial and Financially Unconvertible Rewards?

Despite the lack of a single theory specifically applicable to a NFFUR – FFCR framework, in one form or another, motivation theories, social identity theory and job design theory provide the essential support for this framework. According to Maslow's logic, human needs have a hierarchical existence, and generally in the following order – physical needs, safety needs (e.g. job security), social needs (e.g. emotional support of the co-workers), esteem needs (e.g. self respect) and self-actualization needs. Hence, in a Maslovian world, an employee who might seek to gratify esteem needs when his safety needs are not met will be an exception - not the norm. Among the selected rewards of this study, FFCR (with a plausible exception of equity ownership) is more associated with safety needs and NFFUR (with a possible exception of tolerance for risk) is more associated with esteem needs and self actualization needs. By logical extension, those who value NFFUR more than FFCR will constitute an exception in his scheme. Some studies on rewards suggest otherwise (c.f. Reif, 1975; Prewitt, 1999). More importantly, Maslow (1943) admits that certain individuals with high ideals and values are likely to be driven by the values and ideals more than their needs. Our contention here is: it is likely that an entrepreneur, or a common employee, seeking job meaningfulness more than job security is a regular occurrence more than an exception. Herzberg's (1968) two factor theory provides a better underlying framework. He explicitly mentions that financial rewards like salary and other benefits are the hygiene factors not the motivators. The job itself (meaningfulness), achievement, growth etc. (NFFUR) makes up the job motivation factors. Thus, according to the two factor theory NFFUR has a higher possibility of being the source of work motivation.

The job design theory of Hackman, Oldham & Lawler (c.f. Hackman & Oldham, 1976; Hackman & Oldham, 1975) identified 5 core dimensions of a job - job skill variety, task identity & task significance (3 combined as the job meaningfulness), job autonomy and feedback and predicted that they would directly affect the attitude and behavior at work. The first three will give rise to experienced job meaningfulness, autonomy would lead to experienced responsibility and feedback would lead to knowledge of results. High work motivation, satisfaction, performance and low absenteeism and turnover would result when these three critical psychological states are experienced (Hackman & Oldham, 1976). Since we are measuring the strength of these rewards

relative to other rewards in our study, we are dispensing with the mediating process of critical psychological states.

Besides the design of the task, for multiple reasons organizational climate¹ factors - work flexibility, tolerance for risk, and climate for creativity in this study - also would be significant motivators or rewards. It is likely that for many employees who are caught in multiple roles (worker, mother, wife etc.) and have to balance work and family, work flexibility will be a reward. Evidence has shown the impact of work flexibility on the employees and organizations (c.f. Dunham et al, 1987). On creativity, we start from the position of desirability of creative employees as a received wisdom although this is not an irrefutable position. The literature in organizational climate posits that the social environment impacts both the magnitude and frequency of creative behavior (c.f. Amabile, Conti, Coon, Lazenby & Herron, 1996). It's an unequivocal connection; a person who is driven by a creative need will perceive the creative climate of an organization as a reward. People also vary in their risk taking propensities: the entire literature of risk and concepts like risk-seeking and risk-aversion essentially reflect that variation. People who have higher safety needs might actively avoid risk and uncertainty. For such individuals, organizational climate where risk, and failure by the same logic, is tolerated will constitute an attractive reward in itself. Risk taking can be connected with other motivation, say the motivation to innovate. A risk or failure intolerant climate will be highly dissatisfying or frustrating to the people with high innovation motivation. On the other hand, ironically, even for the people who are relatively risk takers, a tolerant environment can work as a safety net and might inspire them to be more productive and motivated in their work. In general, a risk tolerant organizational climate is likely to be seen as a reward by prospective employees. Based upon the discussion in the preceding paragraphs, we can derive the following two hypotheses:

H1: The value employees attach to non-financial and financially unconvertible rewards, in terms of work flexibility, autonomy, climate for creativity, job meaningfulness, and tolerance for risk, will be significant in their perceived job selection decision.

H2: The value employees attach to non-financial and financially unconvertible rewards, in terms of work flexibility, autonomy, climate for creativity, job meaningfulness, and tolerance for risk, will be equal or greater than the financial or financially convertible rewards, in terms of salary, health benefits, profit sharing plan, retirement benefit, stock options and paid leave benefits.

The Differential Valence of NFFUR in Entrepreneurial and Non-Entrepreneurial Firms

Having hypothesized in the section above that employees attach significant value to non-financial and financially unconvertible rewards, and making the case for the select non-financial variables, we now discuss why employees in entrepreneurial firms are more likely to attach higher value to NFFUR. We offer two lines of argument.

First, although somewhat discounted for inconclusive evidence for distinguishing entrepreneurs from managers and in some cases even from the general populace, the individual differences in certain motivational characteristics - for example achievement need, self-efficacy need, autonomy need etc. - have been repeatedly studied and asserted by entrepreneurship scholars as the differentiating factors between entrepreneurs and non-entrepreneurs (c.f. Shane, Locke, & Collins, 2003). Subscribing to this school of thought, we argue that individuals do vary on entrepreneurial motives. Different human needs reflect different degrees of entrepreneurial motives.

For example, the need for creativity will be more associated with an entrepreneurial motive than the job security need. People with many needs that represent entrepreneurial tendencies will be entrepreneurs, those with some such needs are likely to be employees attracted to entrepreneurial firms, and those with few such needs will be more attracted to traditional firms. Besides the number, the strength of such needs also matter. Take, for example, three individuals and three well considered needs that reflect entrepreneurial motives - need for autonomy, need for achievement, and need for adventure. An individual-difference perspective would predict that a person high in all these needs is likely to be an entrepreneur. On the other hand, someone with high achievement need, low autonomy need and without an adventure need would be best helped as an employee in a traditional firm. But someone who has a high achievement need, high autonomy need but low adventure need is likely to join an entrepreneurial firm as an employee. Working as an employee, he will not be taking the risk supposedly an adventure seeking entrepreneur takes, but working in an entrepreneurial firm his autonomy need is likely to be satisfied (c.f. Lumpkin et al, 2009). We agree that certain financial rewards like equity ownership will also attract people in entrepreneurial firms and a certain mix of FFCR can be more effective than another mix of FFCR as scholars propose (e.g. Balkin & Logan, 1988; Graham et al 2002). That is not our point of disagreement. Overall, keeping everything else constant, we argue NFFUR will cater to the entrepreneurial needs of the employees better. As such, those who place a higher value in NFFUR are likely to be more attracted to entrepreneurial firms.

We argued earlier that in addition to needs, an employee considers identity and values when making a decision to associate with an organization. It is also reasonable to suggest that social identity and personal value aspects of individuals are less likely to be reflected in FFCR than in NFFUR. For example, salary is less likely to have an identity aspect than the climate for creativity. A climate for creativity will satisfy the need to be 'creative' as well as provide the identity of 'being creative' to the individual. Individuals might even give up or defer certain needs for the value compatibility and identity congruence. It will be shallow to assert that all the individuals who have a stronger sense of social identity and stricter sense of value will be necessarily motivated to entrepreneurial organizations. Nonetheless, it is plausible to say that, on average, a higher proportion of such individuals are likely to join entrepreneurial firms. The reason is: social identity will be more visible and distinguishable in entrepreneurial organizations than in non-entrepreneurial organizations which have highly formalized routines and standardized roles as population ecology literature suggests. On the other hand, from an organizational perspective, identity and value congruence will be more associated with entrepreneurial firms for they would need the *structural cohesion* more to deal with uncertainties. From the discussion above we derive the following two hypotheses:

H3: Valence attached to NFFUR by employees, in terms of work flexibility, autonomy, climate for creativity, job meaningfulness, and tolerance for risk, will be greater in entrepreneurial firms than in non-entrepreneurial firms.

H4: Valence attached to NFFUR by employees, in terms of work flexibility, autonomy, climate for creativity, job meaningfulness, and tolerance for risk will predict what type of firm, entrepreneurial or non-entrepreneurial, they are likely to join.

RESEARCH METHODOLOGY

Research Design/Data Collection/Sample Overview:

The populations of this study are the employees in the healthcare industry qualified as supervisors, lower level managers, mid level managers, professionals and technicians who can be realistically expected to have the latitude to make job selection choices on the basis of actual value they attach to NFFUR and FFCR. We excluded the CEOs, COO's, presidents, and vice presidents as well as lower level employees. However, one of the chief executives (founder, CEO, President) was surveyed in each organization to get the response for the dependent variable in one of our models, i.e., the entrepreneurial orientation of the organization, as they will be most qualified to answer the firm's entrepreneurial propensity rather than the other employees surveyed. Our sampling frame included the employee set we defined earlier in the 87 healthcare related firms of a southeastern metropolitan area of the US. We obtained our list of companies through a guide of health related businesses from the Chamber of Commerce of the metropolitan area. We created the sampling frame of the companies that were either manufacturers (drugs, medical equipment, medical accessories etc.) or healthcare IT service providers or other services providers to the healthcare industry. We employed systematic random sampling to establish the first connection and for screening purposes. Data were collected online and with hard copy collect-in-person modes.

At the time of this article submission, 10 companies have participated and our analysis consists of 92 respondents. We have called nearly 60% of the companies in the frame; we have many responses outstanding and the collection process is still in progress. We distributed a total of 142 surveys and received 94 surveys, 92 usable, with an effective response rate of 66%. The participation was totally voluntary and confidential. Except for the largest company, all other firms had less than 500 employees and less than \$50 million as their annual sales. Excluding the largest company, the sample's mean annual sales and mean number of employees were \$ 9.3 million and 75 employees. The overall average age of the firm was 22 years. The number of participants per company ranged from 2 to 22. Among the 92 respondents, both mean and median age was 43, mean and median tenure at the current employment was 5.87 and 5 years, and mean and median number of firms worked was 4.7 and 4 respectively. 48% of the respondents were professional, 19% reported 'other' category and 14% were division managers. All other titles represented less than 10%. The functional background of the respondents was comprised of HRM 24 %, IT 17.4 %, marketing/sales 15.1 %, 'other' category 27.9 % and the rest were represented at less than 10%. The other demographic make up was: 57.5 % male and 42.5% female; 67.8 % married and 32.2 % unmarried; 71.3% parents.

Scale Development & Measurement

Since more than 50% of the scales used in the survey questionnaire were specifically developed for this study, we employed a pilot test and followed some of the steps suggested by methodologists for scale development & validation, e.g, consulting three experts for determining face validity, content validity and clarity of our survey instrument (Worthington & Whittaker, 2006). A pilot test on a convenience sample of 44 professionals indicated that Cronbach's alpha ranged from 0.74 to 0.9 which meet the minimum required of .7 for exploratory research or basic research (Nunnally, 1978; Kaplan and Saccuzzo, 1982). We framed the items, in both the borrowed and developed scales, in terms of *'the value employees attached when they joined the current firm, the value they would attach if they were to join the current firm today, and the value they would attach if they were to join another firm today'*. All the items of our instrument consisted of examples to

enhance clarity. Following is a sample question: 'the value you attached to health benefits relative to other factors like *salary and work autonomy*'. We used a Likert type 7 point scale. We borrowed and adapted scales from Hackman and Oldham (1980) for autonomy and job meaningfulness, from Hill, Hawkins & Miller (1996) for work flexibility, from Dorenbosch, van Engen, & Verhagen (2005) and from Madjar, Oldham, & Pratt (2002) for climate for creativity, and from Miller (1983) and Covin and Slevin, (1989) for entrepreneurial orientation. We designed our own scale for tolerance for risk.

Cronbach's alpha for FFCR variables ranged from 0.9 (for health benefits) to 0.96 (for equity ownership). For the NFFUR variables, Cronbach's alpha ranged from 0.9 (rounded) for job meaningfulness to 0.94 for autonomy. The Cronbach's alpha for entrepreneurial orientation was 0.89. This internal consistency reliability for an exploratory study is considered quite sound (Nunnally, 1978; Kaplan and Saccuzzo, 1982). For NFFUR, principal component analysis with varimax rotation and Kaiser normalization resulted in a 5 factor solution and the items loaded to the components/constructs they were supposed to load. All the factors had an Eigen value > 1 and all the factors accounted for significant variance (from 6% to 43%) (Stevens, 2002) with a total 77% of the variation accounted for - without a problem of cross loadings.

Data Analysis

For H1 and H2, first we used a paired sample t-test to test the hypothesis that the mean value attached to NFFUR is greater than or equal to FFCR - at the 0.05 significance level. Next, we carried out paired sample t-tests at the individual variable (reward) level where all the possible NFFUR and FFCR combinations (30) were tested. Since the conclusion drawn from a large number of individual t-tests are likely to inflate type 1 error, Bonferroni adjustment for alpha level was done with criteria of significance at 0.001 (.05/30) level (Stevens, 2002). Finally, we obtained a rank order of the mean value attached to all 11 variables of interest. We then interpreted the results in the light of all three measures.

Hypothesis 3 was tested using two-group MANOVA. We dichotomized the entrepreneurial orientation variable to create two types/groups of firms - entrepreneurial firm and non-entrepreneurial firm - and assessed the differences on NFFUR variables among two types of firms. Although dichotomizing a continuous variable would mean some information loss, whenever dichotomizing makes better sense it is recommended by methodologists (c.f. Westfall, Hoffman, & Xia, 2007). We tested this hypothesis in two scenarios. First, we categorized the firms as entrepreneurial and non-entrepreneurial in a conventional way - splitting at the median value of observed continuous variable. In scenario two, we categorized the variable in the following basis: close to upper bound responses as entrepreneurial (if ≥ 5) and close to lower bound responses as non-entrepreneurial (if ≤ 3).

To test Hypothesis 4, that is to assess group membership prediction, by the NFFUR variables collectively, and individually, we employed hierarchical logistic regression (DeMaris, Teachman, & Morgan, 1990; Tansey, White, Long, & Smith, 1996). Age, gender and marital status were entered as the first block, FFCR variables were added in the second block and NFFUR variables were added in the full model.

Results & Interpretation

The rank order of mean valence attached by the employees to NFFUR and FFCR variables (Table 1) shows that out of total eleven variables salary is the most important factor and equity ownership is the least important factor in job choice attitudes. But the results show an interesting pattern in that except for the salary and tolerance for risk, more value is attached to NFFUR variables than to FFCR variables. The average valence attached to NFFUR is greater than the average valence attached to FFCR, at the significance level of 0.001, which corroborates the results of rank order. The paired sample t-tests with all possible combinations of NFFUR and FFCR variables yield the same picture. In 10 pairs, NFFUR variables were higher than FFCR variables at the 0.001 level. This result provides a robust support for Hypotheses 1 & 2 with some clear insights: (1) on average, employees attach more value to NFFUR relative to FFCR, (2) salary is generally the most valued reward among all the measured variables but not higher than all NFFUR on paired comparison, and (3) job meaningfulness is the most valued NFFUR which is valued higher than all the FFCR - except for salary and health benefits which are not significant either way.

The multivariate result of two-group MANOVA shows two different results under two scenarios. Under scenario-1, Wilk's lambda has p value > 0.05 , the overall effect size, i.e., the partial eta squared is small (.047), and the observed power of the test is small. But, the multivariate effect size in scenario-2 is fairly large as $0.165 > 0.14$ according to Cohen's (1977) well-regarded criteria and the test is significant at 0.05 level. The observed power is close to the desirable level of 0.8 (Stevens, 2002). Hence, the second scenario would suggest that there exists a significant difference in value attached to NFFUR in entrepreneurial and non-entrepreneurial firms, in general. We consider the evidence for hypothesis 3 reasonably strong. The assumptions of MANOVA are partially met and there are some explicable violations which are less likely to impact type 1 and type 2 errors, and our conclusion for that matter. Since an individualized link was sent on the online data collection and since hard copy questionnaires were distributed within envelopes, there is no plausible reason to believe that independence of observation might have been violated. Kolmogorov-Sminrov tests of normality of the 5 variables and Box test of equality of covariance matrix showed violations as well. Since our sample size for MANOVA is fairly large (76 & 92) and the groups in both scenarios are equal (one not exceeding 1.5 times of the other) the chances of both type I and type II error are slim (Stevens, 2002).

To test Hypothesis 4, we used firm categorization criteria of scenario-2 because unlike in MANOVA, in logistic regression there is no concern for violation of normality in variables and error terms, assumptions of linearity of relationship, and equality variance across predicted groups (Press and Wilson, 1978). While the result suggests that collectively both FFCR and NFFUR have predictive value for what firm an employee is likely to join, as suggested by the increased R^2 on consecutive models, looking at the individual level predictors, our hypothesis is only partially supported. (For a copy of these results, please contact the lead author.) As expected, salary and paid leave benefits are negative predictors. Someone who attaches one unit more value to salary is (1-.311) 69% less likely to join an entrepreneurial firm. The model fits the data very well according to the Hosmer-Lameshow chi-square test.

Methodological Soundness and Limitations

Following the suggestions of organizational methodologists (Aguinis, Pierce, Bosco, & Muslin, 2009; Scandura & Williams, 2000), we have tried some explicit measures to enhance the soundness of our design, reliability of measurements, as well as the pertinence of analytical tools used. We

employed two modes for data collection, online survey and hard copy in-person collection which is likely to reduce systematic measurement error and coverage error (Dillman, 2008). We employed many procedural techniques suggested by Podsacoff et al (2003) to reduce the common method bias. For instance, our response variable, that is the type of firm, entrepreneurial or non-entrepreneurial, defined in terms of entrepreneurial orientation, and our independent variables, NFFUR and FFCR, come from different sources – top management and employees respectively. This methodological separation of predictors and dependent variables greatly reduces the common method bias (Podsacoff et al, 2003; Schandura & Williams, 2000). Because there was no opportunity for self-selection and we employed a random sampling, sample selection bias is unlikely.

Our research design is retrospective for we surveyed the employees after the fact that they already made the decision to join the firm. As such, it is likely to suffer from the constraints of a retrospective design. Considered good enough for MANOVA, the sample size (N = 70) is a limitation for the logistic regression and the ratio is lower (5:1 ratio of observation/variable ratio) than suggested ratio (10: 1) (Peduzzi, Concato, Kemper, Holford, and Feinstein (1996). Hence, the power of the test might have suffered failing to detect the effect size and the generalizability potential might have been constrained (Mazen, Graf, Kellog, & Hemmasi, 1987).

DISCUSSION

Conclusion and Contribution

Despite the theoretical and empirical inconclusiveness of financial rewards on motivation and performance of employees (Jenkins et al, 1998), the examination of financial and non-financial rewards in a comparative frame of analysis is still warranted in the rewards literature. We picked the thread from two studies which were essentially making their case in terms of intrinsic vs. extrinsic rewards (Reif, 1975 ; Jurgensen, 1978) but dealt with financial and non-financial rewards. Although financial or financially convertible rewards are extrinsic rewards, non-financial and financially unconvertible rewards consist of both extrinsic (e.g. autonomy, tolerance for risk) and intrinsic (e.g. task identity) rewards. Hence, for a meaningful debate on ‘person-organization’ fit, this constitutes an important analytical frame. The findings from our study unequivocally suggest that. Strong support for our first two hypotheses provides the evidence (at the least for the employees in the middle level of labor pool) that non financial and financially unconvertible rewards are valued as much or more than financial rewards. With the exception of salary, in our select 11 rewards, the top five valued rewards are NFFUR. However, going beyond simple rank order, thirty matched pair analyses of individual rewards confirm the insights of Reif (1975). He concluded that the reward system that favors either extrinsic or intrinsic rewards would not lead to optimum utilization of human capital and knowing a particular composite of these rewards for a certain group or type of workers is key. With the financial and non-financial rewards frame of analysis, our study comes to the same conclusion.

Williamson et al (2002) suggested that job seekers’ knowledge of the organization and the organizational rewards is crucial in person-organization fit. However, it is equally critical that the employers have knowledge of the valence potential employees attach to organizational rewards. We built on Markman & Baron’s (2002) argument that person organization fit is more than KSA-job requirement fit. The central insight we extended is: organizational rewards should be designed and policies formulated to reflect three dimensions of fit – mutual financial and non-financial need gratification, identity congruence, and value compatibility. Since an employee, or a prospec-

tive employee, juggles her needs, values, and identity synchronously while making a decision to associate with a social unit, they can't be interpreted in isolation. We found evidence to our insight that the fit assessment between the potential employee and employers occurs on all three dimensions as revealed by the perceived valence of employees on NFFUR and FFCR.

The central concern of the researchers interested in the intersection of HRM and Entrepreneurship is the applicability of the HRM practices in entrepreneurial context, including the applicability of traditional reward systems and practices (Barber et al, 1999; Cardon and Stevens, 2004). The evidence from our study conforms to the fit based approach in organizational rewards. We found reasonably strong evidence that that employee's do differ in their valence attached to non-financial rewards in entrepreneurial and non-entrepreneurial firms. On the other hand, there is a plausible reason to believe that employees who attach a higher value to NFFUR are more attracted to entrepreneurial firms. Among financial rewards, those who attached higher value to salary and paid leave benefits were found to be more attracted towards non-entrepreneurial firms. On the contrary, although not statistically significant, there might be support for the incentive based variable pay system as suggested by Balkin and Logan (1988) and Graham et al (2002) in their theoretical papers. Those who attach higher value to equity ownership and bonus and profit sharing plans were found more likely to be attracted to entrepreneurial firms. Given the scenario, the practical implication of this research for entrepreneurial firms would be to find a right mix of financial and non-financial rewards. Some degree of conformity to established practices, mostly in terms of financial rewards, can help them access the labor pool. But more importantly, differentiating in terms of non-financial rewards and communicating such rewards might be the tool for attracting the right employees.

Theoretical Limitations and Further Research

First, we are aware that the job choice decisions or attitudes of an employed and an unemployed respondent might be different due to reservation wage differences (i.e., an unemployed is more likely to compromise or might have a more compromising attitude due to the absence of employment) (c.f. Rynes et al, 1983). Second, we are asking for the value attached by the employees as their attitude and not measuring their behavior directly for this is not a prospective study. Third, our study is not designed to differentiate explicit and implicit motives (Kehr, 2004); in this paper we are referring to explicit motives of employees which are directly related with the rewards and are the functions of conscious mind (as opposed to sub-conscious). Fourth, while the evidence for the expectancy hypothesis is inconclusive (c.f. Rynes & Lawler, 1983), we do not rule out that expectancy factor might be as important as the valence in job choice decisions. Finally, five variables/constructs we identified as representing the NFFUR category don't exhaust NFFUR. For example, like climate for creativity, opportunity for learning might be an effective non-financial reward and a discriminating function in predicting firm type selection. For its exploratory nature, precision with fewer variables was more desirable than inclusion. Studies with other potential NFFUR and the replication of this study in a different setting would be one step further.

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NOTES

1. By organizational climate we mean a relatively enduring quality of the internal environment of an organization that is experienced by its members and influences their behavior.

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APPENDIX

Figure 1: A Reward- anchored Model of Person Organization Fit

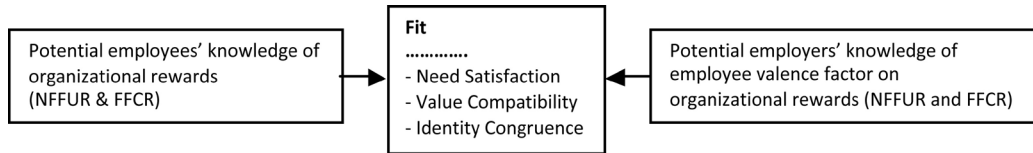


Table 1: Rank Order and Paired Sample t Tests on the Valence Difference

(N =92, In few cases missing data up to 3, Significance: *P < 0.005 **P < 0.001, Bonferroni correction)

Rank Order	Tested Pair	t	Sign.	Tested Pair	t	Sign.
1. Salary	NFFUR - FFCR	4.8	0.000**			
2. Job meaningfulness	Work F. – Health B.	1.2	0.243	Autonomy - Salary	-2.7	0.007
	Work F – Retirement B.	2	0.049	Autonomy - Bonus P. S.	5.0	0.000**
3. Work Flexibility	Work F. – Paid L. B.	3.1	0.003*	Autonomy - Equity O.	9.0	0.000**
	Work F. - Salary	-2.5	0.013	Creativity - Health B.	0.4	0.68
4. Autonomy	Work F - Bonus P. S.	4.9	0.000**	Creativity - Retirement B.	1.2	0.219
	Work F. – Equity O.	8.7	0.000**	Creativity - Paid L. B.	1.7	0.1
5. Climate for Creativity	Tolerance for R. - Health B.	-3.0	0.003*	Creativity - Salary	-3.2	0.002*
	Tolerance for R - Retirement B.	-2.1	0.038	Creativity - Bonus P. S.	4.7	0.000**
6. Health Benefit	Tolerance for R - Paid L. B.	-1.6	0.109	Creativity - Equity O.	8.8	0.000**
	Tolerance for R - Salary	-7.0	0.000**	Job M. - Health B.	2.2	0.027
7. Retirement Benefit	Tolerance for R - Bonus P. S.	0.9	0.372	Job M. - Retirement B.	3.4	0.001**
	Tolerance for R - Equity O.	5.0	0.000**	Job M - Paid L. B.	3.7	0.000**
8. Paid Leave Benefit	Autonomy - Health B.	0.9	0.356	Job M - Salary	-1.9	0.068
	Autonomy - Retirement B.	1.9	0.062	Job M - Bonus P. S.	6.7	0.000**
9. Tolerance for Risk	Autonomy - Paid L. B.	2.3	0.023	Job M - Equity O.	11.7	0.000**

≈ SUMMARY ≈

HOW DOES STRUCTURE DEVELOP IN NEW VENTURES?

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Principal Topic

Understanding how structure develops in new ventures is important because initial structures have long-lasting effects on the firm, including on its capabilities, growth, and innovativeness. In this paper, we investigate the mechanisms that help govern the development of structure (in terms of specialization, formalization, and centralization and organic versus mechanistic structures) in new ventures. The literature has tended to adopt one of two lenses to understand this – a life-cycle or a contingency theory approach. The life-cycle literature provides the argument that the development of structure is a direct function of the age and size of the firm. However, it says little about the type of structure (e.g. organic, mechanistic) that evolves. The contingency argument is that the nature of the external environment will dictate organizational structure type. For instance, Burns and Stalker (1961) find that firms with organic structures perform better in fast-changing markets while more formalized mechanistic structures are better suited for more predictable environments. However, this says little about how these structures come about, aside from noting that external pressures dictate this on the basis of fit. We contribute to the literature by examining the role of the founder in the development of structure, and in particular, his/her previous experience, human capital, and his/her founding ‘blueprint’.

Method

This study is based on survey data from approximately 120 small new ventures in the north-east USA, representing a number of industries. We control for a number of potential contingency factors and capture the key variables using multi-items validated in the literature.

Results and Implications

We show that the founder has an important impact on the development of structure in new firms. While the external environment, size, and age of the firm matter, the initial ‘blueprint’ of the founder and his/her previous experience also have a significant impact on both the time of development of structure but also the type of structure that the firms develop. As such, in line with upper echelons theory, we provide empirical evidence that demonstrates the importance of the founder to the development of new ventures. This has important implications for theory and practice.

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≈ SUMMARY ≈

**VENTURE GESTATION PROCESS AND FIRM
EMERGENCE: A CONFIGURATIONAL APPROACH**

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Qian Ye, University of Louisville, USA

Principal Topic

Venture gestation process remains an increasingly important area of inquiry in the field of entrepreneurship research. Using a configurational approach (i.e., Doty & Glick, 1994), this study is aimed to address the research question: what are the various configurations of nascent behaviors during the venture gestation process that lead to firm emergence? Because of its multi-dimensional nature, the configurational approach is particularly relevant to study venture creation process. It suggests that venture creation is best understood as clusters of interconnected behaviors, practices and context, rather than as various components that are loosely coupled. A configurational approach therefore takes a systematic and holistic view of the process, where patterns or profiles rather than individual independent variables are related to a process outcome such as organization emergence and first sales.

Method

This paper will use a set-theoretic method to examine various configurations of venture creation process and their effects on firm emergence (Fiss, 2007; Ragin, 1987, 2000). A set theoretic method conceptualizes cases as combinations of attributes and emphasizes that these very combinations lead to unique outcomes. Compared with the methods used by previous research, it has a number of significant advantages. Firstly, it assumes nonlinear relationships and complex causality which goes beyond traditional bivariate interaction effects. Secondly, it stresses equifinality which assumes that two or more configurations of venture gestation process can be equally effective in firm emergence. At the center of a set-theoretic approach lies Boolean algebra to determine what combination of various variables from venture gestation process result in firm emergence. The data for this study were obtained from the Panel Study of Entrepreneurial Dynamics (PSED).

Implications

From a theoretical standpoint, this study will demonstrate the effectiveness of using a set-theoretic approach to examine various configurations and their impact. In the entrepreneurship research, there is a clear need to move beyond simple contingency approach, as venture creation faces multiple contingencies such as the entrepreneurs, the opportunity, the context, the process and the outcome, with significant inter-dependence among these contingencies. Our paper contributes to theory building in this direction by providing a configurational view and a combinational approach which goes beyond the conventional correlational view. From a practical standpoint, this study will inform would-be entrepreneurs a holistic view of various paths leading to the success of firm emergence.

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≈ SUMMARY ≈

**ARE NEW VENTURES ILLEGITIMATE, DISREPUTABLE,
UNTRUSTWORTHY, OR ROUTINELESS: A LIABILITY
OF NEWNESS REVIEW AND RESEARCH AGENDA**

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Brian Nagy, Bradley University, USA
Barbara Bird, American University, USA
Eileen Fischer, York University, Canada
Rebecca Reuber, University of Toronto, Canada

Principal Topic

A new venture often faces daunting odds because it does not control all the requisite resources needed to run effectively. Thus, its survival will depend heavily on its founding team's abilities to convince external stakeholders to invest resources (Shepherd, Douglas, & Shanley, 2000). Internally, the team also may have difficulty running the venture efficiently until managerial roles are agreed upon and cooperation develops among team members. Collectively, these "liability of newness" (LoN) challenges must be successfully overcome to increase the probability of a new venture's success (Stinchcombe, 1965).

When studying LoN issues, researchers have generally employed, individually or collectively, four related literatures, including legitimacy (e.g., Zott & Huy, 2007), reputation (e.g., Fischer & Reuber, 2007), trust (e.g., Aldrich & Fiol, 1994), and organizational routines (e.g., Scott & Foo, 1999) as theoretical foundations. Although these literatures overlap, each has a central construct with distinct elements that distinguishes it from the others (Deephouse & Carter, 2005). Moreover, each central construct can be multifaceted (e.g., socio-political and cognitive legitimacy, e.g., Aldrich & Fiol, 1994) and multi-level (e.g., firm and industry-level reputations, e.g., Winn, Macdonald, & Zietsma, 2008).

As a result, researchers have also conceptualized LoN as a multifaceted, multi-level construct. To date, however, limited research has been devoted to fully examining LoN's complexity by examining both the overlaps and distinctions among the central constructs of legitimacy, reputation, trust, and organizational routines that undergird this research. Consequently, LoN remains a rather nebulous construct, suggesting the need for clarification. Moreover, LoN operationalizations in empirical research have tended to focus only on a relatively narrow range of what Stinchcombe (1965) originally proposed as a multifaceted construct. Finally, although the underlying constructs can overlap, at times they can suggest conflicting strategic paths for new ventures.

Implications

To help clarify the LoN construct, we examine these critical interrelated constructs and then review how extant entrepreneurship research has both conceptualized and operationalized LoN based on them. We conclude by proposing an adapted conceptualization of LoN and develop propositions related to key contingencies in LoN research.

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≈ SUMMARY ≈

**PROPERTIES OF EMERGING ORGANIZATIONS:
EMPIRICAL EVIDENCE FROM NORWAY**

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Principal Topics

The formation of an organization is a dynamic process in which activities such as obtaining resources, developing products, hiring employees, and seeking funds are undertaken at different times and in different orders (Gartner, 1985). Current research often builds on Katz and Gartner's (1988) well-regarded framework, which posits that four basic properties -- intentionality, boundary, resources and exchange -- are central to organizational emergence. Recently, Brush, Manolova and Edelman (2008) tested the framework in its entirety, finding that all four properties are necessary for firm survival. This research extends the work of Brush *et al.*, (2008) to the Norwegian context. We hypothesize that each of the four properties and the completeness of property accumulation will be positively associated with the likelihood to continue organizing, whereas temporal concentration will follow an inverted "U" relationship with the likelihood to continue.

Method

Data for the study came from a large representative sample of Norwegians 18 or older, stratified by county (n=203), who were surveyed three times over a four-year period (1996-1999) using a structured questionnaire and a telephone survey. To model the likelihood of continuing the organizing effort, we implemented discrete-time survival analysis, controlling for demographic and business characteristics.

Results and Implications

We find that in the Norwegian context intentionality, boundary, and exchange are all significantly associated with the likelihood to continue, while resources are not. Further, entrepreneurs in Norway who engage in a larger number of start-up activities are more likely to continue the organizing effort in the short term. On the other hand, examination of activity concentration shows that to a certain point, developing all properties simultaneously is beneficial, but above an optimum point, the organizing process will be unsuccessful. In a post-hoc test, we compare the Norwegian study to PSED (I) and find that the effects of property completeness and temporal dynamics are similar across the two national contexts, whereas the effects of individual start-up activities vary. Thus, our research extends the empirical analysis of a well-regarded framework to a new institutional context.

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≈ SUMMARY ≈

WHICH ENTREPRENEUR SHOULD OWN IT? EXTENDING AGENCY THEORY TO EXPLAIN OUTLET OWNERSHIP IN FRANCHISING

Alexa A. Perryman, Texas Christian University, USA

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Principal Topic

Franchising offers an important avenue for growth for some entrepreneurs and access to entrepreneurial business opportunities for others (Shane & Hoy, 1996). Franchising occurs when an entrepreneur (the franchisor) develops a branded product, process, or service and sells the right to use the brand, operating routines, and product specifications to another entrepreneur (the franchisee). Because the decision to franchise involves surrendering notable control over outlets bearing the franchisor's brand (Bradach, 1997), the question of why entrepreneurs opt for franchising over company-ownership has attracted sizable research attention (Combs, Michael, & Castrogiovanni, 2004). Previous research has relied on agency theory to explain which outlets an entrepreneur will franchise, but the theory does not explain two key phenomena: 1) allowing franchisees to own multiple outlets and 2) the use of franchised and company-owned outlets in the same geographic area, called dual distribution. We extend agency theory to explain these phenomena by incorporating insights from research depicting the two types of entrepreneurs, franchisors and franchisees, in a symbiotic relationship (e.g., Bradach, 1997; Kaufman & Eroglu, 1998).

Method

We tested our theoretical extension by investigating ownership patterns among single-outlet franchisees, multi-outlet franchisees, and franchisor owners using a sample of 3,673 outlets from 16 restaurant chains that use both company ownership and franchising in Florida. Geographic information software was used to calculate distance between outlets and headquarters. Logistic regression was used to analyze the data, with the dependent variable being outlet ownership type.

Results and Implications

By viewing the franchisor-entrepreneur's primary objective as market penetration, the most efficient way to achieve this goal is through multi-outlet franchising. New markets are seeded with single-outlet franchisee-entrepreneurs who have the potential to grow. However, if growth into multiple-outlet ownership does not occur in a timely fashion, company-ownership must be used. Therefore, the results highlight the role of multi-outlet franchisees, which function as a third type of entrepreneur capable of using the franchisor's business opportunity to build a "mini-chain." From the franchisor's vantage point, these like-minded entrepreneurs make it easier to conserve resources while penetrating whole markets and maintaining quality standards.

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∞ INTERACTIVE PAPER ∞

THE DETERMINANTS OF VENTURE PERFORMANCE IN A HIGHLY DYNAMIC SERVICE INDUSTRY

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Principal Topic

In this paper we seek to contribute to the development of an integrative framework on “critical success factors” by building and examining seven models of restaurants performance. Consistent with the fundamental paradigm of strategy according to which the firm must develop strengths that match the key factors in its industry, we seek to uncover the ‘key success factors’ in this highly dynamic industry. We examine the impact of the competitive strategy on the performance along two lines: first by testing the impact of strategy as an independent variable on performance; and second by examining the mediating relationship of strategy as it can intervene between the resource base of the firm and performance. In doing so, we offer an expanded definition of co-alignment, moving away from questions that examine fit as “when to questions that ask “why or how”.

Method

In accordance with the resource-based view (RBV) entrepreneurship can be viewed as a process of identification, acquisition and accumulation of resources to pursue business opportunities. Thus, the RBV sees companies as very different collection of physical and intangible assets and capabilities. Venture performance was measured along two dimensions: survival and success. Success was measured by a series of objective (profitability, sales growth) and subjective factors (achievement of personal objectives). We collected data through face-to-face interviews with 121 owner-managers of restaurants operating in the city of St. Gallen in Eastern Switzerland.

Results and Implications

Results indicate that reputation, a service-focused strategy, the entrepreneur’s knowledge, and family support have a positive influence on performance. The service culture and entrepreneur’s network have a positive impact on performance only if they are deployed together with an adequate strategy (i.e. with a focus on service, as opposed to a product “what’s on the plate” strategy). Like most service firms, the family of the entrepreneur is often actively involved in the business. However, the importance of family support diminishes as the firm matures. When testing for indirect influence of strategy as a moderator, we found that the entrepreneur’s network had a non linear, negative effect on performance. Entrepreneurship in the restaurant sector is thus inherently a networking activity.

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RESILIENCE IN ENTREPRENEURIAL TEAMS: DEVELOPING THE CAPACITY TO PULL THROUGH



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ABSTRACT

Resilience, or the capacity to rebound from adversity strengthened and more resourceful, is an important quality for entrepreneurial teams, yet we know little about how entrepreneurial teams can foster resilience. I develop and test hypotheses about the antecedents and mechanisms for resilience in entrepreneurial teams. I argue that communal schemas in entrepreneurial teams, which entail caring for team members' needs, foster resilience through the mechanisms of trust and creativity. Moreover, I hypothesize that contracting practices that make expectations explicit and activities transparent facilitate resilience through the mechanisms of role clarity and accountability. The hypotheses are tested in a survey of 122 entrepreneurial teams. Results support the proposed framework.

INTRODUCTION

Most new ventures are started by entrepreneurial teams (Ruef et al., 2003). Resilience, or the capacity to rebound from adversity strengthened and more resourceful (Sutcliffe & Vogus, 2003), is an important quality for entrepreneurial teams. The need to maintain positive adjustment under challenging conditions comes from the near certainty that they will face road blocks, failures, and disappointments. Promises of funding fall through, technological launches fail, competitors reach the market first, or progress takes more time and money than anticipated. These contingencies are even more likely to happen in today's vulnerable economy. Entrepreneurial teams have no slack resources and experience these near-disasters as stressful. In fact, resilience has been argued to be an appropriate measure of entrepreneurial performance in the early stages of a venture, when hard financial indicators are not available or appropriate (Cooper, 1991; Markman et al., 2005). This paper aims to contribute to our understanding of how entrepreneurial teams can develop this important capacity.

CHALLENGES OF RESILIENCE IN ENTREPRENEURIAL TEAMS

Several unique features of the entrepreneurial context render team resilience particularly important and challenging. First, compared to other work teams, they face significant uncertainty, ambiguity, and novelty. In a novel situation, individuals' existing schemas, or mental templates representing organized knowledge about particular domains (S. T. Fiske & Taylor, 1991), do not fit their present circumstances. As a result, individuals feel disoriented, as they are unable to define their situation or to establish meaningful relational or causal links between events (Weick, 1979). In entrepreneurship, this novelty has been associated with the liability of newness, or the heightened risk for failure faced by young firms on account of their lack of existing roles and working relationships (Stinchcombe, 1965). Entrepreneurs facing novelty are unclear about what is happening and why and must choose among multiple interpretations for unclear data. They may not know where to look for answers to their most pressing problems or even what questions to ask in

order to move their efforts forward (Amason, Shrader, & Tompson, 2006). As a result, any given setback is particularly difficult to recover from.

Second, the experience of founding a new company is highly emotional, which can make it challenging for teams to be resilient in responding to adversity. The ongoing uncertainty of entrepreneurship can spur frustration, stress, and anxiety, as well as excitement (Wilson, Centerbar, Gilbert, & Kermer, 2005). Entrepreneurship is emotionally intense because it entails dealing with unexpected and surprising events (Mandler, 1984). Positive emotions, such as pride and hope, can make entrepreneurs feel energized, enthusiastic, strong, and connected (Goss, 2005). But negative emotions also abound, as team members run into road blocks, failures, and disappointments. The dread and frustration that can result from such near-disasters often erode entrepreneurs' perception that they can cope with their situation, and thereby their resilience (Rindova & Petkova, 2007).

A third obstacle to resilience in entrepreneurial teams comes from the tendency in novel situations to regress to over-learned responses and role-based behavior, even if these are not appropriate in the current circumstances, resulting in behavior that is less flexible and more schema-driven (Snook, 2000). Yet resilient responses to entrepreneurial challenges require creative adaptation to challenges faced (Weick, 1993).

Finally, resilience is made difficult by the of lack roles, routines, and established patterns of behavior to guide entrepreneurial behavior (Stinchcombe, 1965). Without a social structure in place, adaptation to changing circumstances becomes particularly challenging. Team members may pursue alternative and even conflicting courses of action that undermine a fast, coordinated, and creative response to unexpected challenges.

REVIEW OF ANTECEDENTS OF TEAM RESILIENCE

Most studies of resilience have been conducted at the individual level (Masten & Reed, 2002). Group researchers have not directly investigated resilience per se. However, theorists have inferred that *accumulated knowledge* and *variety in group composition* increase resources and efficacy (Sutcliffe & Vogus, 2003). Yet these theorists do not take into account relational issues or unique context of novelty in entrepreneurship.

Studies of resilience in situations of novelty and uncertainty other than entrepreneurship, such as in response to unexpected disasters, suggest that resilience hinges on the team's ability to be *creative* in making use of their (limited) resources to overcome the challenges they face in new and useful ways (Weick, 1993). This research suggests that heterogeneity in team composition would increase resilience, as it increases the team's repertoire of possible actions for dealing with adversity (Sutcliffe & Vogus, 2003). Yet there is limited empirical evidence supporting the impact of team heterogeneity on creativity and resilience. In fact, heterogeneity can have negative implications for teams. Although it can increase the quality and quantity of perspectives and viewpoints on the team, it can also erode its relational fabric, as people generally get along better with people who are like them (van Knippenberg & Schippers, 2007). It remains unclear how entrepreneurial teams can foster creativity in light of their unique relational and task challenges.

Organizational consultants writing about resilience have suggested that the quality of relationships matters for organizational resilience. Drawing on case studies and research on the role of social support in individual resilience, they argued for the importance of *caring relationships* for

group and organizational resilience (e.g., Wilson & Ferch, 2005). Likewise case studies of organizations responding to the terrorists attacks of September 1, 2001 also support the importance of “relational reserves” in maintaining positive adjustment following a crisis (e.g., Gittel et al., 2006). Yet no systematic research has been conducted on the role of caring relationships in entrepreneurial resilience.

Another set of ideas from the study of organizing in the face of crisis suggests that certain form of structure facilitate resilience (Weick 1993). Structure stabilizes meaning by creating shared interpretive schemes. Structure also sets a framework of roles, rules, procedures, configured activities and authority relations. Case studies following the terrorists attacks of September 1, 2001 also support the importance of “generative structures of resourcefulness,” or plans that are flexible enough to improvise around (Beunza and Stark, 2003). Yet entrepreneurial teams are defined by their lack of structure (Stinchcombe, 1965), and it is unclear which kind of structures can facilitate resilience in entrepreneurial teams.

Below I draw on research from social psychology and inter-organizational contracting to develop hypotheses for how communal schemas and contracting practices facilitate resilience in entrepreneurial teams.

COMMUNAL SCHEMAS

Research on interpersonal relationships suggests that people apply specific relational schemas toward others and that these schemas influence the nature and development of relationships (Reis, Collins, & Berscheid, 2000). Relational schemas represent the type of relationship people desire from others that influence how they interpret experiences and make decisions in their relationships. They include a self-schema (how the person defines his or her self in the relationship), a parallel schema for the partner, and a script governing how the two parties are expected to interact (Baldwin, 1992). Relational schemas are important in understanding relationships because they shape expectations, thereby shaping each person’s own behavior as well as partners’ behavior and the nature of interactions. Because of the self-fulfilling nature of expectations in personal relationships, relational schemas are often mutual (Reis et al., 2000).

Relational schemas govern how benefits and resources are allocated among relationship partners (Clark & Mills, 1979; A. P. Fiske, 1992). For example, in the “equality matching schema,” benefit allocation is governed by egalitarianism and balance. In the “authority ranking schema,” benefits are allocated according to precedence, hierarchy, and status. In the “market pricing schema,” proportionality determines allocation according to a common scale of ratio values (such as money). And in the “communal schema,” giving is based on perceived need and is done to express a person’s commitment to the relationship (Clark & Mills, 1979; A. P. Fiske, 1992).

Which relational schema should team members adopt? Interdependence theory holds that the nature of interdependence in a relationship determines which kind of relational schema is most adaptive (Kelley et al., 2003). Entrepreneurial teams are characterized by a high degree of interdependence, uncertainty, shared interests, and expectations of working together over an extended period of time. They work best when members make significant investments of time, energy, and expertise in the relationship. Such relational situations generate high concern for relationship maintenance (Kelley et al., 2003). Also, because dependence often entails vulnerability, these situations may inspire motivated forms of cognition such as positive illusions and downward social

comparison. Specifically, interdependence theory predicts that in these situations people are likely to apply a communal relational schema. As Kelley et al. (2003: 380) write, "People should be driven to develop communal sharing rules in domain of their environment in which they are subject to the whims of fate." Anecdotal accounts of entrepreneurial teams suggest that in practice, entrepreneurs are aware of the existence of communal relations on the team. As Kaplan (1994: 19) notes of his experience co-founding a technology company, "Forming a new company is like starting a romantic relationship."

In communal relationships benefits are given to fulfill the other person's needs or to express concern. As Blau (1964: 6) writes, individuals in communal relationships "do favors for one another not in the expectation of receiving explicit repayments but to express their commitment to the interpersonal relation and sustain it by encouraging an increasing commitment on the part of the other." Communal schemas are engendered by a sense of belonging and mattering and by a commitment to being together through good times and bad, regardless the relationship's history (McMillan & Chavis, 1986). Thus, people can become communal even toward relative strangers.

Communal Schemas and Resilience

Communal schemas on the team are hypothesized to increase resilience through their effect on trust and creativity. With respect to trust, social cognition research suggests that thinking communally about another person means caring about his or her needs. Thus individuals with a communal schema are likely to be other-interested, rather than strictly self-interested. They tend to pay attention to others' needs (Clark, Mills, & Corcoran, 1989), help others address those needs (Clark, Ouellette, Powell, & Milberg, 1987), and feel fulfilled when supporting others (Williamson & Clark, 1989). These forms of social support lead others to perceive them as trustworthy (Whitener, Brodt, Korsgaard, & Werner, 1998). This trust enables taking risks in coping with adversity. Trust increases entrepreneurs' propensity to share information, which means that the team can mobilize its resources, such as time, effort, attention, and knowledge, more effectively in the face of adversity (McEvily, Perrone, & Zaheer, 2003). Trust also increases the likelihood that entrepreneurs respond favorably to each others' actions, reducing detrimental emotional conflict on the team (Dirks & Ferrin, 2001; Ensley, Pearson, & Amason, 2002).

Communal schemas are also hypothesized to increase resilience through their effect on creativity. Communal schemas increase positive affect on the team (Francis & Sandberg, 2000). This positive affect in the group, in turn, increases the group's creativity by broadening cognition and increasing the group's repertoire of ideas and possibilities (Amabile, Barsade, Mueller, & Staw, 2005; Fredrickson, 1998). Communal schemas also lead people to be more cohesive, thereby promoting constructive conflict and the consideration of multiple viewpoints, which also enhances creativity (Ensley et al., 2002).

CONTRACTING PRACTICES

Insights on the benefits of contracting practices in relationships come from research on inter-organizational alliances (e.g., Carson, Madhok, & Wu, 2006; Vlaar, Van den Bosch, & Volberda, 2006). Like entrepreneurial teams, they represent relationships that are neither hierarchy (i.e., the two firms are distinct entities rather than a single organization) nor market (i.e., the interaction between them is embedded rather than arm's length). Moreover, they share with entrepreneurial teams high mutual and joint interdependence, as well as uncertainty.

Contracting is a behavioral practice that entails codifying and enforcing inputs, outputs, and behaviors, thereby producing a testament of the process. The testament can be either written or verbal; what matters is that there is explicitness and transparency about expectations from the other party (see also Vlaar et al., 2006). Contracting practices provide direction for people about what they need to do, thereby replacing an organizationally-given structure (Sine, Mitsuhashi, & Kirsch, 2006). The power of contracting practices is not necessarily their legal enforceability, because most are actually too incomplete to constitute legal safeguards. Thus contracts are not inherently obliging. Rather, contracting practices are a dynamic mechanism for clarifying and elaborating objectives and responsibilities (Carson et al., 2006). They stimulate conversations that create shared meaning where there is none by focusing partner's attention on the same issues, forcing articulation of opinions, and instigating and maintaining interaction about how the company should be run (Vlaar et al., 2006). Contracting also creates rules or guidelines for action. Although these rules are dynamic and continuously modified, at any given moment they serve as templates for planning and accomplishing tasks (Desanctis & Poole, 1994).

Most entrepreneurial teams engage in some form of contracting when defining the ownership of the firm. In contrast to these *a priori* contracts, contracting *practices* are embedded in the day-to-day life of the team. For example, at the end of their weekly meetings, a team can put into writing what each person had agreed to do, along with a target date to do it by, thereby making explicit their goals and commitments and plans for achieving them, rather than agreeing in more general terms (or not conducting weekly meetings at all). These examples correspond to the task description aspect of contracting (Argyres, Bercovitz, & Mayer, 2007). A second practice of contracting, contingency planning, entails conversations about how partners will deal with problematic contingencies that might arise, such as changes in technology, competitor's actions, and unexpected delays (Argyres et al., 2007). Viewed from a practice perspective, contracting is an ongoing and adaptive activity. Practices are repeatedly performed knowledgeable situated activities (Orlikowski 2002; Jarzabkowski 2004). According to a practice lens, because contracting practices are knowledgeable and situated, entrepreneurs engage in them in adaptive and inventive ways to accomplish various ends (Orlikowski, 2000).

I hypothesize that contracting practices will also increase resilience in entrepreneurial teams through their effect on trust and creativity. Contracting practices will increase trust through increased belief by team members that others will do as expected (Rousseau et al., 1998). Moreover, contracting entails extensive interaction and communication by team members about the new ventures. The increased interpersonal knowledge that results from this contracting process will lead team members to see one another as more predictable, thereby enhancing trust (Gabarro, 1987).

Contracting practices increase creativity by providing a "minimal structure", a set of consensual guidelines and agreements that focus the activities of people around a common set of goals without limiting their discretion to best decide how to reach these goals (Kamoche & Cunha, 2001). Contracting practices increase clarity about how to manage the new venture and agreement about it between entrepreneurial team members. They serve as substitutes for precedent, providing clarity where there is none and protecting the team from detrimental mistakes and misalignments. This minimal structure gives people a sense of who to follow and how to act even in the face in the unknown (Weick, 1993). As Brown and Eisenhardt argue, "limited structure provides the overarching framework without which there are too many degrees of freedom." (1997: 16).

In sum, I hypothesize that communal schemas and contracting practices will increase resilience in entrepreneurial team, and that these effects will be mediated by trust and creativity.

METHOD

The proposed framework was tested in a mail survey of 122 young knowledge-based new ventures founded by teams.

Sample

Two sources provided the population for this study: the VentureXpert database and www.links.com. The first was a subset of firms listed by the VentureXpert database. VentureXpert is a comprehensive database of venture capital (VC) funded new ventures. The VentureXpert database is provided by Thomson Venture Economics and has been used extensively in earlier entrepreneurship research (e.g., Guler, 2007). The database enables searching by industry and lists contact information for executives, year of founding, industry, and amount of money invested in the startup. To generate the population for the survey, I created a database of VC-funded companies listed in VentureXpert that met the following criteria (1) they were U.S.-based, (2) they operated in high-technology industries (codes 1000 (information technology) and 4000 (medical/health/life sciences)), (3) were in the seed or startup investment stage (i.e., funding to develop the idea, conduct market and feasibility research, and start the business), and (4) were founded in 2004 or later. I use a three-year cutoff to ensure that the companies were indeed early in their development. Of the 1044 companies that met these criteria, contact information was available for 720.

The second source was www.links.com, a website listing information about Silicon Valley startups. From this source I obtained contact information for an additional 130 companies that met the above criteria. Thus the mailing included 850 companies. However, 210 companies were excluded from the sample because (1) the address was wrong and the surveys were returned, (2) the contact person was no longer there or did not receive the survey, or (3) the company did not meet the selection criteria. Thus the final set of companies contacted was 610.

Survey Design and Administration

Mail surveys are the most common form of data collection in entrepreneurship and small business research (Bartholomew & Smith, 2006). The survey used in this study was designed to assess the constructs of interest using multiple-item seven-point Likert-like scales, to be clear and concise, and to group similar items together to aid in comprehension. I also provided identifying labels for each set of items to direct the respondents' thinking about the items. Whenever possible, I used or modified existing scales that have been validated in previous literature (see description of measures below). I pretested the survey with an entrepreneur, a venture capitalist, and two non-entrepreneurs to ensure that the items are clear, the survey does not take too long (less than 20 minutes), and that the survey's language fits the context.

I sent the survey to the contact person listed in these databases (usually the founder or Chief Executive Officer). I employed several means to increase response rates, using Dillman's (2000) tailored design method. This method is based on creating respondent trust and perceptions of increased rewards and reduced costs for being a respondent.

Measures

To assess resilience I modified the two “commitment to resilience” items from the “Safety Organizing Survey” (Vogus & Sutcliffe, 2007). The items are (1) We talk about mistakes and ways to learn from them (2) When unexpected challenges occur, we discuss how we could have prevented them. In addition, I included modifications of the four items in the Brief Resilient Coping Scale (Sinclair & Wallston, 2004): (3) We look for creative ways to alter difficult situations, (4) Regardless of what happens to us, we can control our reaction to it, (5) We can grow in positive ways by dealing with difficult situations, (6) We actively look for ways to overcome the challenges we encounter.

To assess contracting practices, I modified Argyres, Bercovitz, and Mayer’s (2007) measure of contracts. Respondents indicated agreement with the following statements: (1) When we hold meetings, we specify explicitly the list of tasks each of us will accomplish, (2) When we hold meetings, we specify explicitly the criteria for task completion, (3) When we hold meetings, we specify explicitly the schedule for task completion.

To assess the extent of communal schemas of team members toward each other, the survey used the name-generator method, commonly used in network studies (Lin, 1999). Using initials, each participant was asked to list up to four people, using initials, who are part of the entrepreneurial team. I used the term “executive team” on the survey, following feedback from pre-testing and defined it as those who hold an equity stake and are actively involved in strategic decision making. After the list, the participant was asked to answer demographic questions about each of the team members listed as well as to describe the extent of his or her communal orientation toward that person. Communal schemas were assessed with a modification of the communal strength measure used by Mills et al. (2004).

The level of communal schemas was computed as follows. First, I averaged the six communal schema items as reported for each team member. Thus if a respondent had indicated that she had three team members, I obtained three values representing her average communal schema level toward each of the three team members. I then averaged the communal schemas value across all team members about whom the respondent had reported. Thus in the example, I averaged the communal schema level for the three team members to obtain a general communal schema score for the respondent.

Trust among the team was assessed using Langfred’s (2004) measure of trust. To assess creativity I used a version of Zhou and George’s (2001) creativity scale modified to the entrepreneurial team context.

Reliability Analysis

I used several means to assess the reliability of the scales, including Cronbach’s alpha, an exploratory factor analysis, and a confirmatory factor analysis. Cronbach’s alpha assumes a unidimensional factor structure. Exploratory factor analysis (EFA) was used to determine if this assumption is valid or if, in fact, a multi-dimensional factor structure is more appropriate. Due to sample size, it was impossible to conduct a confirmatory factor analysis (CFA) that includes all of the variables in the study. However, I used CFAs to assess discriminant validity, or the degree to which items measuring different variables actually differ, by conducting pairwise tests of theoretically related

constructs to assess whether a model representing two factors fit the data significantly better than a one-factor model. All of the constructs in the study exhibited high reliability.

FINDINGS

I received responses from 155 firms, representing a 25% response rate, which is close to the 27% average response rate for surveys in entrepreneurship (Bartholomew & Smith, 2006). 122 of the returned surveys met the selection criteria for the study and were used in the analysis.

The hypotheses were tested through a structural equation model using parceled variables. In this analysis, I collapsed indicators by averaging such that the model contained only two indicators per construct, which enables the model to converge, despite the small sample size, by reducing the number of parameters. According to Bagozzi and Edwards (1998), a structural equation model with parceled variables is appropriate in situations where constructs have high reliability, high correlations between the items that are averaged, and the averaged items load on a single factor. The exploratory and confirmatory factor analyses supported the validity of this approach.

Figure 1 presents the standardized coefficients (betas) for the proposed model. To determine the overall fit of the model, I used several goodness-of-fit indices: the chi-square test, the Mean Square Error of Approximation (RMSEA), the non-normed fit index (NNFI), the comparative fit index (CFI), and the Standardized root mean square residual (SRMR). While there are no hard-fast rules for assessing goodness of fit, scholars generally agree that a non-significant chi-square, RMSEA at .05 or lower, NNFI and CFI at .95 or higher, and an SRMR of .08 or lower indicate a good fit (Hu & Bentler, 1999). For the hypothesized model, the chi-square ($df=29$, $n=122$) is 69.394 ($p<.001$), the RMSEA is .107, the NNFI is .950, the CFI is .968, and the SRMR is .094. These findings indicate a poor fit for the proposed theoretical model.

Figure 2 presents a revised model in which creativity is the only moderation. For this revised model, the chi-square ($df=16$, $n=122$) is 24.75 (n.s.), the RMSEA is .067, the NNFI is .980, the CFI is .991, and the SRMR is .047. These findings suggest a good fit for the revised model.

DISCUSSION

The findings of this survey of entrepreneurial teams support the proposition that communal schemas and contracting practices facilitate resilience in entrepreneurial teams. The findings about communal schemas challenge prevalent portrayals of successful entrepreneurs that imply that they are individualistic and self-interested (e.g., McGrath et al., 1992). In contrast, I find that members of resilient entrepreneurial teams care about one another and value relationships for their own sake rather than only as a means to reach desired goals. The findings about contracting practices highlight the importance of dynamic contracting in highly uncertain situations.

The finding that *the combination* of the apparently paradoxical mechanisms of communal schemas and contracting practices positively impacts team resilience in new ventures challenges the prevalent dichotomy between the communal and economic/legalistic realms. It suggests that in highly uncertain and complex situations, such as entrepreneurial teams, both mechanisms are beneficial. This “both/and” perspective adds to existing literature on the benefits of paradox in managing complex situations. Paradox means the simultaneous presence of contradictory elements (Quinn & Cameron, 1988). When entrepreneurs are able to accommodate apparent oppo-

sites, they can benefit from paradoxical thinking. In established organizations, paradoxical thinking has been shown to enable people to “reframe their assumptions, learn from existing tensions, and develop a more complicated repertoire of understandings and behaviors that better reflects organizational intricacies (Lewis, 2000: 764).”

Resilience in the face of setbacks in new ventures appears to benefit from an approach that combines elements from the apparently disparate communal and economic/legal realms. Contracting practices may serve as a platform upon which entrepreneurs can leverage the benefits of communal schemas, and vice versa. Apparent opposites can be mutually reinforcing (Clegg, Vieira, & Cunha, 2002). Thus when enacted with communal schemas, contracting practices mean that entrepreneurs acknowledge the complexity of their situations. When communal schemas are enacted with contracting practices, this means that team members’ caring is not “blind”. Contracting is a practice that enables communal partners to hold “difficult” or “uncomfortable” discussions (Vlaar et al., 2006). As a result, their relationship is of a higher quality, as it is more robust to various contingencies, can support discussions of a broader range of issues, and is thus resilient in the face of setbacks (Dutton & Heaphy, 2003).

This study also shed light on the mechanism through which communal schemas and contracting practices affect resilience. Specifically, creativity appears to be a key mechanism through which communal schemas and contracting practices have their positive effects on resilience. Surprisingly, including trust as a mediator did not improve the fit of the data to the model, suggesting that trust, though important for teams, does not play a role in resilience. Future research should explore other mediators of the relationship between contracting practices and resilience in entrepreneurial teams.

Several limitations qualify the conclusions drawn from this study. First is the relatively small sample and relatively low response rate. Although both the sample size and response rate are typical for surveys of entrepreneurs (Bartholomew & Smith, 2006), they pose a problem for both statistical power and generalization. Especially in a study of resilience, understanding the reasons for non-response is important for the validity of the results.

A second limitation has to do with the operationalization of constructs. Although the hypotheses were at the team level, data were provided by only one team member. This issue is particularly problematic in the case of communal schemas. Future work should not only collect data on communal schemas from all team members, but also explore different operationalizations (average level of communal schemas, heterogeneity of communal schemas, lowest value, highest values, etc.) to better our understanding of the effects of communal schemas on entrepreneurial teams.

In sum, this study sheds significant explanatory light on the antecedents and mediators of resilience in entrepreneurial teams. It finds that the creativity that enables teams to adapt successfully in the face of unexpected setbacks can be created by adopting a communal approach toward team members, characterized by genuine caring, and by enacting contracting practices that increase explicitness and transparency in interactions about the day-to-day operation of the firm.

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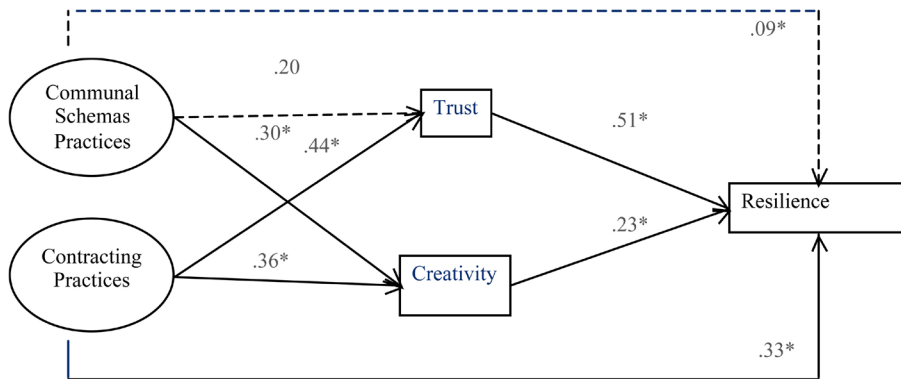
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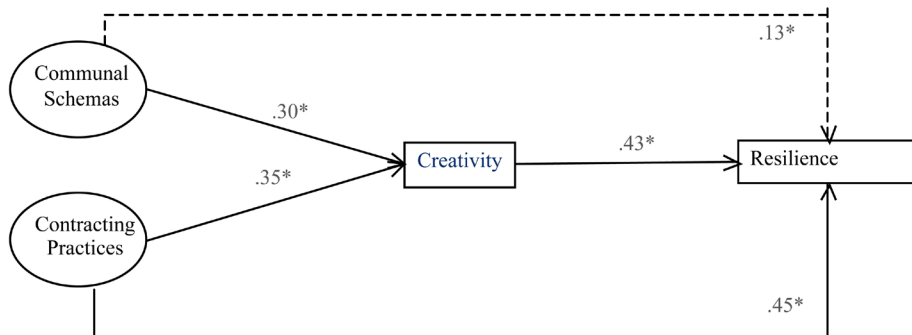
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Figure 1:



Note. * Significant at .05 level.

Figure 2: Revised Structural Equation Model



Note. * Significant at .05 level.

RESOURCE DRAIN OR PROCESS GAINS? TEAM STATUS CHARACTERISTICS AND GROUP FUNCTIONING AMONG STARTUP TEAMS



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ABSTRACT

We utilize small groups literature and status characteristics theory to explain the effectiveness of entrepreneurial startup teams. We hypothesized that teams containing members with high status characteristics, such as prior entrepreneurial experience, will have higher levels functioning because these individuals are better able to provide contributions unavailable to lower status individuals. Further, we hypothesized that teams with status diversity will be associated with lower levels of functioning because diversity will reduce collective efficacy, the belief in the team's ability to start a business (Bray, 2004). We tested our hypotheses using data from the PSED I and II, nationally representative samples of nascent entrepreneurs. We found that the presence of high achieved status characteristics led to an increase in *access* to important contributions within teams, but did not significantly increase the *helpfulness* of team members. We did not find consistent evidence that status diversity decreased team functioning. We found preliminary indications that role differentiation and authority structures, measures only available in the PSED II, provided important insight into how status characteristics affect group processes.

INTRODUCTION

Many entrepreneurs start businesses as members of teams (Ruef et al., 2003). Teams provide the potential for more resources such as human capital, time, money, and useful social contacts. However, teams do not always produce favorable outcomes. Team-based startups involve costs and risks that solitary startups do not, ranging from disagreements, scheduling difficulties, communication problems, managing trust among members, and difficulty staying on task (Baldwin et al., 1997, Caldwell & O'Reilly, 2003, Carron et al., 2004, Chansler et al., 2003, Chatman et al., 1998, Edmonson et al., 2001, Jehn & Mannix, 2001, Sinclair, 2003, Talauicar et al. 2005, Wheelan & Williams, 2003). In fact, laboratory studies show that tasks become more complicated in conditions of high interdependence because of the information sharing and communication required (Allen et al., 2003, Chatman et al., 1998). Teams must go through developmental phases, often characterized as "form-storm-norm-perform" (Tuckman & Jensen, 1977). Team members must be willing and able to invest the time required to move from the tumultuous storming stage of team development to the performing stage. We seek to better explain mechanisms that enhance or undermine group processes in team-based enterprises.

GROUP PROCESSES AND STATUS CHARACTERISTICS THEORY

To explain team-based entrepreneurial processes, we first consider the literature on small group processes. Small group processes illuminate the conditions under which teams are able to

effectively activate and utilize their shared resources (Faraj & Sproull, 2000). One condition that facilitates the activation of shared resources is trust (Adams et al., 2005, Aubert & Kelsey, 2003, Salanova et al., 2003). Without trust, team members may be reluctant to share ideas or contribute labor or money without the presence of written contracts (Francis & Sanderg, 2000). Low trust would therefore hamper the startup processes of a nascent team which would benefit from flexibility and informal agreements. In addition, small groups need effective communication to clarify the norms, values, and goals of their startups (Castka et al., 2001).

Among the numerous factors that might influence effective group processes are the status characteristics of group members. Status characteristics are observable characteristics that are differentially valued (Ridgeway, 1991). High-status characteristics tend to be associated with more abundant access to resources relative to low-status characteristics (Webster & Hyson, 1998). Status characteristics tend to be associated with behavioral expectations. As an example, members of a group might informally decide that the member with the most years of education should be the leader regardless of the relevance of the individual's degrees for the objectives of the group. Ascribed status characteristics refer to characteristics that cannot be changed and include gender, race, and age. Achieved status characteristics reflect education and experience.

Status characteristics would influence team processes in a multitude of ways. First, to the extent that high-status characteristics do possess greater access to resources, teams with members of high-status characteristics should generate higher levels of functioning than would teams with only low-status characteristics among members. That is, members with high status characteristics may be the only ones capable of providing resources to the startup because individuals with low status characteristics lack the human, social, or financial capital to do so. For example, numerous empirical studies have demonstrated significant effects of age, gender, race, educational and occupational status on the survivability and earnings of businesses, in part because the status characteristics influenced the resources available for entrepreneurs to mobilize (Bates, 1995; Budig, 2006; Carr, 1996; Cliff, 1998; Cliff et al., 2005; Loscocco et al., 1991, Loscocco & Leicht, 1993; Mosey & Wright, 2007; Robb, 2002). Therefore, we predict that

Hypothesis 1. Teams containing members with high-status characteristics will report higher levels of contributions than teams with members lacking high-status characteristics.

Second, status expectations have empirically demonstrated effects in small group processes. Individuals perceived as high status receive more deference from their group members. Gender and race have shown to have particularly pronounced effects, with women and minorities more likely to be interrupted, have their contributions ignored, and judged as less competent than men and Caucasians (de Gilder & Wilke, 1990; Foschi, 1996; Karakowsky et al., 2004; Okamoto & Smith-Lovin, 2001; Robinson & Smith-Lovin, 2001; Sell et al., 2004). Therefore, the contributions offered by low-status individuals to their teams may go unrecognized and under-utilized. Failing to recognize contributions made by individuals with low status characteristics would affect diverse groups rather than groups with greater similarity of status characteristics.

Third, individuals tend to demonstrate homophily, a preference for individuals like themselves (McPherson et al., 2000). Not only do individuals more often choose to associate with persons like themselves, they tend to have communication that is more effective and efficient due to their social similarity (Kanter, 1977). By contrast, diverse teams have more conflict and more difficulty making decisions, even though their decisions can be of higher quality than those made

by homogenous groups (Barsade & Ward, 2000; Chatman & Flynn, 2001; Clarysse & Moray, 2004; Cohen & Zhou, 1991; Devine et al., 1999; Eby & Dobbins, 1997; Hambrick et al., 1996; Foschi 1996; Jehn et al., 1999; Kilduff et al., 2000; Smith et al., 1994; Van der Vegt et al., 2006). Homogeneous teams tend to have greater cohesion, satisfaction, and commitment (Sanders & Nauta, 2004). Homogeneous teams use social similarity as a foundation for trust and thus often more freely exchange ideas and information.

Finally, teams with members of low status may produce lower levels of functioning because their presence decreases the collective efficacy of the team, the extent to which team members believe the group will achieve their intended goals (Bray, 2004). Both high- and low-status team members may reduce their efforts if they feel that the status diversity undermines the probability of entrepreneurial success. Van der Vegt et al. (2006) found that team members tended to have higher levels of group commitment when their members had high levels of status and contributed more to their teams. In other words, individuals may offer fewer contributions than they are capable providing in diverse teams if they do not trust their group members or doubt that their efforts will result in a successful business.

To summarize, the presence of low-status team members can have negative effects on team functioning in three different ways. First, team members with low-status characteristics may truly lack or perceive they lack resources to contribute. Second, the presence of low-status team members may reduce the collective efficacy of both low- and high-status team members, who will then be less willing to provide contributions. Third, the contributions of low-status members may be ignored by teams containing high-status team members. As a result, we hypothesize that:

Hypothesis 2. Teams with status diversity will report lower levels of contributions than teams with homogeneity with regard to status characteristics.

DATA, MEASURES, AND ANALYTIC STRATEGIES

To test our hypotheses, we use data from the first waves of the PSED I and PSED II, which are nationally representative samples of nascent entrepreneurs. Nascent entrepreneurs are individuals taking action towards starting businesses. The PSED I data collection for the first wave began in 1998 and ended in 2000 and the data for the first wave of the PSED II were collected between 2005 and 2006 (for a complete description, see Reynolds & Curtin, 2008). Although the PSED I contained a mail questionnaire, we only use data from the phone interview of wave 1 for both datasets. The PSED I collected data on 830 nascent entrepreneurs and 431 individuals not starting a business. We do not use the comparison group, which is only available in the PSED I, for our analyses. In addition, we exclude several observations to test our hypotheses. First, we exclude respondents for whom other organizations will own more than 50 percent of the business under consideration. This eliminates seven observations in PSED I and 16 observations in PSED II. In addition, we eliminate all solo entrepreneurs, those not starting businesses as a member of a team, from our analysis because they were not asked about the contributions provided. There are 411 respondents on teams in PSED I and 517 in PSED II. We also excluded respondents whose startups at any point before the interview had positive cash flow exceeding managerial expenses, even if their startup did not generative positive cash flow at the time of the interview. This removed 98 respondents from PSED II. Finally, we excluded respondents that had missing values for our variables to maintain consistency throughout the analysis. Our final N for PSEDII is 494 and 405 for PSED I. The PSED I and PSED II have weights that ensure the representativeness and external

validity of the sample. After we excluded observations and reached our final *N*s, we recentered the weights for all of our analyses so that the mean of the weights equaled one and the weighted *N* equaled the unweighted *N*.

Respondents were asked to provide information on up to five members of their team, including themselves. We analyze data on the first four members of respondents' teams. Team member one is always the respondent in PSED II, and is usually the respondent in PSED I. We restrict our analysis to the first four team members because the precision of the information available for the fifth team member is not consistent (please see Davis et al., Forthcoming). Fortunately, the vast majority of teams have four or fewer members and therefore we lose little specificity by focusing only on the four most important team members. We note our analysis assesses the influence of status characteristics on group processes from the perspective of only one group member, the respondent (see Davis and Aldrich, Forthcoming). Therefore, differences in perceptions with regard to status or levels of team functioning cannot be determined.

We control for factors that could likely influence contribution levels among teams. First, we control for whether a spouse relationship exists between two members of a team. Second, we control for the industry of the startup as an indicator of whether it is in the retail or service industries (1) or another industry (0). Third, we control for whether the startup has effort began five or more years before the date of the interview. Finally, we control for whether an institution (that is an organization rather than an individual) is a member on the startup team.

We tested several techniques of measuring our status characteristics and found the significance of the results was the same in most instances. Therefore, we decided to measure status characteristics in the way that provided the most straightforward interpretation of significant coefficients. To test the effects of status characteristics for Hypothesis 1, we simply measured whether or not respondents' teams contained at least one person of a particular status category. Each of these measures in an indicator variable with one (1) for teams with at least one member of a given status category and zero (0) otherwise. Testing whether a team had at least one person of a particular status category is justified because most teams in the PSED have only two persons, making a count measure unnecessary. To test the effects of status diversity, we used indicators whether teams contained diversity in age, gender, race/ethnicity, industry experience, startup experience, and professional occupation status.

For industry experience, we only measured whether a team had a member with at least one year of industry experience. We also ran our models using the raw count of experience years and the natural log of experience years. The results were very similar, but provide a less straightforward interpretation. We used the same technique for measuring whether a team had a member who had started a business before (1) or not. We measured occupational status as 1 if a team member's occupation was classified as professional, managerial, or technical and 0 otherwise. For age, we created an indicator variable measuring whether someone was in the anticipatory career stage (younger than 29) or not (Becker & Moen, 1999). Interestingly, although respondents were at least 18 years of age, non-respondent team members were as young as 15. The reason we chose this age group is because they tend to have the least amount of experience, financial capital, and social capital (Williams, 2004) and have been shown to produce less favorable entrepreneurial outcomes than other age categories. Therefore, this age group has the lowest status and we would predict that it would have significant negative effects on contributions relative to older age categories.

To measure the productivity of teams, we considered the extent to which team members provided six contributions to their members: introductions, information, training, access to financial resources, physical resources, and business services. In PSED I, respondents were also asked whether team members provided “personal services” such as caring for the homes or children of other members and “other services” and assistance, including ideas and creativity, emotional support, and labor. We maintained consistency by only considering the six resources contained in both datasets. We measured productivity in two ways. First we considered the extent to which a team had *access* to the six different contributions, a count variable ranging from 0 to 6. Second, we measured *helpfulness* of team members by averaging the number of contributions each team member provided, a continuous variable ranging from 0 to 6 (see Davis et al., Forthcoming)

Table 1, which displays the descriptive statistics used in our analysis, demonstrates the remarkable similarity of means and standard deviations for variables in the two datasets. The most notable difference is the smaller number of older startups in PSED II than in PSED I (mean of .08 rather than .31). The smaller mean can be explained by the differences in selection procedures in the PSEDII, in which more rigorous screening techniques were used (Reynolds & Curtin, 2008). In addition, racial and ethnic diversity is also more pronounced in PSED II than in PSED I (.26 versus .13, respectively). The PSED II indicators of race and ethnicity have more categories than those for PSED I and allow individuals to assign multiple racial and ethnic categories to themselves and their team members. Therefore, the change between PSED I and PSED II should be considered an artifact of measurement rather than a true change in the ethnic and racial diversity between the two data collection periods.

We use weighted least squares regression to test our hypotheses. Although the number of unique contributions is a count variable with a range of zero to six, suggesting that Poisson or negative binomial weighted regression would be more appropriate, we found the results identical in significance using both techniques and favored maximizing consistency and ease of interpretation. We used weighted least squares for average contributions per team because this variable is a continuous rather than count variable.

RESULTS

Hypothesis 1

As shown in Table 2, we found that the presence of high status characteristics better predicted *access* than *helpfulness* for both PSED I and PSED II. All of the achieved status characteristics: industry experience, startup experience, and occupational status, led to an increase in the predicted number of different contributions provided by the team. For industry experience, a team containing a member with at least one year or industry experience has access to .60 more unique contributions in PSED I and .74 more contributions in PSED II than a team without a member with industry experience. A team with a member with prior startup experience is associated with .46 unique contributions in PSED I and .35 more contributions in PSED II than a team without a member that has started a business before. A team with a member from the managerial, professional, or technical occupations is associated with an increase in .30 unique contributions in PSED I and .39 unique contributions in PSED II than a team without a member in such an occupation.

In the PSED I, we also found that teams containing men members reported more access to contributions than teams with only women. In fact, the coefficient for men member is the largest

coefficient, with men members associated with an increase in .76 in the predicted number of unique contributions provided by the team. Overall, we find strong support for hypothesis 1 that teams containing members with high *achieved* status provide access to more unique contributions than teams lacking high achieved status.

Our results considering the effects of the presence of high status characteristics on the average helpfulness of team member produced different results. The presence of a team member with at least one year of industry experience increased the predicted level of contributions by .57 in PSED I and by .54 in PSEDII. In addition, in PSED I, having a team member that had started a business before was associated with an increase in the predicted level of average contributions by .30. Overall, status characteristics better predict the level of access to contributions that teams have rather than the helpfulness of their members.

Hypothesis 2

As shown in Table 3, we found considerably different results for our analysis for hypothesis 2 than hypothesis 1. Not only did status characteristics less often significantly influence contribution levels, but the significant effects were sometimes contrary to our hypothesis. In the PSED I, gender diversity was associated with a decrease of .59 in the predicted value of average contributions ($p < .01$) and industry experience diversity was associated with a decrease in .23 in the predicted value of average contributions ($p < .05$), consistent with our expectations. These results may indicate that gender diversity and industry experience diversity lower trust or collective efficacy among startup teams, and thus decreasing individuals' willingness to provide lots of different resources to their teams. Gender diversity and industry experience diversity do not, interestingly, decrease the team's access to different types of contributions. However, occupational diversity was associated with an increase of .31 in the predicted number of unique contributions in the PSED I and industry experience diversity and industry experience diversity both increased the predicted value of access to unique contributions in PSED II, contrary to expectations. Our results do not suggest that diversity undermines entrepreneurial team group processes. Therefore, we reject hypothesis 2.

Roles and Authority

In the PSED II, respondents were asked more about team member roles and authority structure, in addition to each member's contributions. Respondents were asked which team member was in charge of the day to day operations and whether team members had different roles, including general manager, sales/marketing, human resources, finance/accounting, technical/research/scientific, and manufacturing/operations. We tested whether these variables had an effect on the contributions of team members. We constructed a measure of whether the team members shared responsibility for daily operations (1) or whether one member was in charge (0). In addition, we also constructed a measure of whether team members had differentiation of primary role (1) or were all classified as general managers (0). We ran our models both including and excluding these variables. Because the inclusion of these two measures did not affect the status characteristics' coefficients, we elected to present full, rather than nested, models. In the model testing hypothesis 1, teams that shared responsibility for daily operations were associated with an increase in .58 in the predicted average number of contributions provided per person, or the level of team *helpfulness* (Table 2). Shared responsibility did not significantly increase or decrease *access* to unique resources. In fact, the PSED II models containing the measures of authority and role specialization had the greatest fit of any model in the paper (refer to Tables 2 and 3). Teams with differentiated

roles did not have significantly different levels of contributions than teams with all members serving as general managers. Further research will help determine the influence that status characteristics have on role allocation and authority in startup teams. In particular, we seek to determine if role differentiation and authority moderate the relationships between status characteristics and team processes.

CONCLUSIONS

Taken together, our results suggest that status expectations may have more limited influence on the productivity of entrepreneurial startup teams relative to other types of teams. That is, *achieved* status characteristics influence whether particular individuals have *access* to resources that they may contribute, but status expectations do not undermine the collective efficacy of startup teams. That is, team members do not appear to withhold potential contributions they possess if their teams contain low-status team members. In addition, ascribed status characteristics appeared to have almost no effect on the contribution levels of startup teams. These results suggest that forming diverse teams can be a viable way for individuals who typically underperform in entrepreneurship to gain access to resources that they could not provide themselves in a solitary startup. They also suggest that, to the extent that teams contain status diversity, women and racial minorities experience fewer negative effects of status expectations than they do in other settings where their team members are chosen for them such as classroom teams, laboratory settings, and top management teams.

The PSED I and PSED II provide some of the richest data on teams outside of single-site studies. Collecting data on any teams, especially the startup teams of nascent entrepreneurs, is an incredibly challenging undertaking. However, startup teams continue to be an important part of entrepreneurship and therefore researchers need to continue addressing questions regarding how startup teams develop and function. Further research is needed to better understand how status, role differentiation, authority, and group processes influence one another. In particular, we will explore how status characteristics, roles, and authority designations influence the provision of particular types of startup contributions and how the effects of startup team status characteristics, structure, and processes on venture development, survival, and growth.

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Table 1: Descriptive Characteristics of Independent, Control, and Dependent Variable

	PSEDI			PSEDII		
	N	Mean	S.D.	N	Mean	S.D.
Majority	405	0.78	0.42	494	0.79	0.41
Male	405	0.93	0.26	494	0.93	0.25
Anticipatory Age	405	0.35	0.48	494	0.36	0.48
Industry Experience	405	0.84	0.37	494	0.85	0.36
Startup Experience	405	0.63	0.49	494	0.61	0.49
Professional Occupation	405	0.62	0.49	494	0.68	0.47
Racial Diversity	403	0.13	0.33	494	0.26	0.44
Gender Diversity	403	0.62	0.49	494	0.63	0.48
Age Diversity	403	0.47	0.5	494	0.44	0.5
Industry Experience Diversity	403	0.32	0.47	494	0.36	0.48
Startup Experience Diversity	403	0.38	0.49	494	0.36	0.48
Occupational Diversity	403	0.38	0.49	494	0.44	0.5
Older Startup	405	0.31	0.46	494	0.08	0.27
Retail or Service Industry	405	0.76	0.43	494	0.6	0.49
Spouse on Team	405	0.53	0.5	494	0.5	0.5
Institution on Team	405	0.02	0.13	494	0.05	0.22
Shared Authority	-			494	0.1	0.3
Role Differentiation	-			494	0.77	0.42
Access: Unique Contributions	405	4.46	1.4	494	4.26	1.42
Helpfulness: Average Contributions	405	3.36	1.29	494	3.2	1.29

Table 2: Weighted Least Squares Regression Analysis Testing Hypothesis 1

Team Status	Access				Helpfulness			
	Unique Contributions		Average Contributions		Unique Contributions		Average Contributions	
	PSEDI		PSEDI	PSEDI		PSEDI		PSEDI
Caucasian	0.16 (0.17)		0.27 (0.22)		-0.12 (0.16)		-0.06 (0.20)	
Man	0.76 (0.30)	*	0.5 (0.36)		0.29 (0.28)		0.25 (0.30)	
Anticipatory Age	-0.01 (0.16)		0.13 (0.17)		-0.22 (0.15)		0.01 (0.15)	
Industry Experience	0.6 (0.19)	***	0.74 (0.21)	***	0.57 (0.18)	***	0.54 (0.18)	**
Startup Experience	0.46 (0.15)	**	0.35 (0.16)	*	0.33 (0.14)	*	0.19 (0.15)	
Professional Occupation	0.3 (0.16)	+	0.39 (0.15)	*	0.06 (0.15)		0.22 (0.14)	
Older Startup	0.16 (0.15)		0.36 (0.23)		0.3 (0.15)	*	0.32 (0.19)	
Service or Retail Industry	-0.04 (0.17)		-0.04 (0.14)		-0.007 (0.16)		0.15 (0.13)	
Spouse on Team	-0.17 (0.15)		0.02 (0.15)		-0.15 (0.15)		0.16 (0.14)	
Institution on Team	-1.07 (0.58)	+	-0.74 (0.31)	*	-1.09 (0.32)	***	1.42 (0.21)	***
Shared Authority	-		0.23 (0.26)		-		0.58 (0.20)	**
Role Differentiation	-		0.001 (0.17)		-		-0.21 (0.16)	
Constant	2.75 (0.38)	***	2.42 (0.48)	***	2.55 (0.36)	***	2.28 (0.41)	***
F	5.11	***	5.57	***	4.38	***	11.62	***
DF	10,394		12,481		10,394		12,481	
R-squared	0.111		0.1322		0.0858		0.1510	
N	405		494		405		494	

+ = $p < .1$ * = $p < .05$ ** = $p < .01$ *** = $p < .001$ two-tailed tests
Robust standard errors in ().

Table 3: Weighted Least Squares Regression Analysis Testing Hypothesis 2

	Access				Helpfulness			
	Unique Contributions				Average Contributions			
Team Diversity	PSEDI	PSEDII		PSEDI	PSEDII			
Racial or Ethnic Diversity	0.15 (0.21)	-0.20 (0.18)		-0.10 (0.19)		-0.17 (0.16)		
Gender Diversity	-0.24 (0.23)	0.34 (0.24)		-0.59 (0.21)	**	0.19 (0.20)		
Age Diversity	0.22 (0.14)	0.12 (0.15)		-0.053 (0.13)		-0.08 (0.14)		
Industry Experience Diversity	0.11 (0.15)	0.36 (0.15)	*	-0.23 (0.14)	*	0.01 (0.13)		
Startup Experience Diversity	0.13 (0.14)	0.05 (0.16)		0.09 (0.13)		0.02 (0.14)		
Occupational Diversity	0.31 (0.14)	* 0.27 (0.15)	+	0.13 (0.13)		0.11 (0.13)		
Older Startup	0.31 (0.15)	* 0.4 (0.23)	+	0.38 (0.14)	**	0.39 (0.18)	*	
Retail or Service Industry	-0.13 (0.16)	-0.09 (0.15)		-0.03 (0.15)		0.15 (0.13)		
Spouse on Team	0.08 (0.23)	-0.20 (0.22)		0.32 (0.21)		0.02 (0.20)		
Institution on Team	-0.90 (0.54)	-0.79 (0.35)	*	-1.03 (0.49)	*	-1.48 (0.23)	***	
Shared Authority	-	0.33 (0.23)		-		0.62 (0.19)	***	
Role Differentiation	-	-0.14 (0.18)		-		-0.25 (0.16)		
Constant	4.27 (0.20)	*** 4 (0.25)	***	3.51 (0.18)	**	3.18 (0.23)	***	
F	1.97	* 3.12	**	2.82		7.99	***	
DF	10,392	12,481		10,392		12,481		
R-squared	0.0479	0.0796		0.0671		0.1161		
N	403	494		403		494		

+ = $p < .1$ * = $p < .05$ ** = $p < .01$ *** = $p < .001$ two-tailed tests
 Robust standard errors in ().

≈ SUMMARY ≈

**THE TIES THAT BIND: PERFORMANCE IMPLICATIONS
OF COHABITATION AND BLOOD RELATIONSHIPS
AMONG NEW VENTURE TEAM MEMBERS**

David L. Brannon, Syracuse University, USA

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Principal Topic

Recent research on nascent entrepreneurial teams reveals that more than half of all teams consist of members with family relationships. This empirical observation is important in itself and at odds with common assumptions about new venture team formation, but the implications of relying on family members for teams have not been examined. This is an important shortcoming in the literature because the nature of the relationships among entrepreneurial team members likely plays an important role.

We examine the relationships among nascent entrepreneurial team members and the effect on performance using social identity theory, which stresses that individuals categorize themselves and others into groups. Arguably, the family is one of the strongest in-group identifications. Thus, entrepreneurial teams with family members have strong ties that bind them together creating effective, cohesive teams, which would result in better performance. Our research avoids the common family/non-family dichotomy. Instead, we examine the proportion of a team consisting of family members, and adopt an inclusive view of families by considering blood relationships and cohabitations separately, arguing that these categories are substantially different.

Methods

A sample of 361 nascent entrepreneurial teams was surveyed 4 times over 5 years. Success bias was avoided by sampling these entrepreneurial teams from the general population. Blood relations and cohabitation among all team members was established. Our analysis tests the effect of family relationships on performance, examining non-linear as well as interaction effects.

Results and Implications

This research has important implications for entrepreneurship. We believe ours is the first study to examine the role of family relationships in nascent firms. This is an important contribution because over half of all new ventures are started by teams having family relations. The results indicate that the type of family relationship should be considered. Couples sharing a household are a major portion of nascent teams and have differing results than that of blood relatives. Second, traditional approaches to family businesses are hindered by a dated definition of a family. Our approach allows us to view family businesses in a more fine-grained and inclusive manner. Third, the research provides a theory driven, empirical test that illustrates the value of considering the impact of family relationships on nascent entrepreneurial ventures.

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≈ SUMMARY ≈

DISENTANGLING THE EFFECT OF VENTURE TEAM HETEROGENEITY ON VENTURE SUCCESS

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Principal Topic

There is a general consensus that high-tech start-ups are more often created by groups of people than by individuals (Francis & Sandberg 2000). Moreover, team started businesses account for a disproportionately larger number of fast-growing firms (Bird 1989). Despite its obvious importance to entrepreneurship research, a sizeable gap exists in the normative and empirical literature on the subject of start-up teams (Cooney 2005). As yet, our knowledge about the relationship between team heterogeneity and firm performance is sparse and inconsistent. Heterogeneous teams are regarded as more effective in solving complex, non-routine problems (Chowdhury 2005), while at the same time scholars suggest that homogeneity of venture teams may lead to better outcomes given that team members are more likely to share a common language and knowledge base (Jackson et al. 1991). We add to this burgeoning literature by focusing on the influence of four indicators of a team's *functional heterogeneity* on several measures of new venture performance.

Method

Our empirical analysis is based on a random sample of team-founded start-up firms established in innovative industries. We conducted 338 face-to-face interviews with the leading entrepreneur of each team. Data is analyzed using logistic and negative binomial regression models.

Results and Implications

Descriptive statistics hint at two conceptually different dimensions of team heterogeneity. Variety and diversity measure the breadth of a team's knowledge base, while dissimilarity and substitutability are indicators of the knowledge shared by team members. Empirical results suggest that firm performance in terms of both the number of employees after the first three years of operation and the number of filed patents are positively related to our measure of variety. A more diverse knowledge base seems to matter in the longer run. However, we find that the measures of variety and diversity are negatively correlated with firm survival and the probability to file a patent. In this respect, firms benefit from low degrees of dissimilarity and substitutability, providing evidence for the need of a "common language" within the team. Our study contributes to existing research in that we add to less individualistic oriented theories of the entrepreneurial process and we develop new promising measurement tools of heterogeneity.

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≈ SUMMARY ≈

**TACIT KNOWLEDGE TRANSFER AND TECHNOLOGY
COMMERCIALIZATION: THE CASE OF SCIENCE
BASED ENTREPRENEURIAL FIRMS**

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Principal Topic

Research shows that universities and research institutes have become increasingly involved in the creation of academic spin-offs (e.g. Wright et al., 2003). Little is however known about the performance of these academic spin-offs and what is driving this performance. By using an inductive case study design, this study aims to provide a better understanding of the determinants of academic spin-off performance.

Method

The cases used in this study all originated from one world-class research institute specializing in micro-electronics in Belgium, IMEC. We draw on nine cases of spin-offs which were established between 1991 and 2002 and have been exited by IMEC. Data was collected during several interviews with the founders at different stages during the spin-off's life and after the spin-off investment had been exited by IMEC.

Results and Implications

Three themes emerged from our inductive analysis of the cases. First, our analysis suggests that the main driver of success of failure for these academic spin-offs was innovation speed. While this finding is in line with previous research emphasizing the importance of innovation speed in high tech businesses and radical innovation (Langerak and Hultink, 2005; Schoonhoven et al., 1990), our results reveal some of the drivers of innovation speed; namely effective tacit knowledge transfer and the appropriate mix of people in the founding team.

Second, our analysis highlights the importance of effective tacit knowledge transfer for innovation speed. Even though in all cases, codified knowledge was transferred, either by license agreements or patent transfer, tacit knowledge transfer was variable. Our data reveals that successful tacit knowledge transfer is more likely if the original scientists who worked on the technology are also involved as founders in the new venture. Where an attempt was made to ensure tacit knowledge transfer through research contracts with the original researchers, we found that researchers showed little intrinsic motivation for the venture to the detriment of innovation speed and the eventual success of the venture.

Third, our findings indicate that in order to be successful, the cognitive distance between the commercial and technology people should be limited.

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≈ SUMMARY ≈

RESOURCES AND THE TEAM FORMATION PROCESS

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Principal Topic

In building a new venture management team, do entrepreneurs seek team members to fill specific roles on the team needed to exploit an opportunity? Or do they consider what opportunities they can create, given their current team? Research on new business creation has traditionally favored a “planning” approach in which entrepreneurs recognize business opportunities, identify their goals (possible effects), and then choose the most effective means to achieve their goals by acquiring resources and creating an organization (e.g. Bhawe, 1994). But others (e.g. Sarasvathy, 2001) have indicated that some entrepreneurs “effectuate”: that is, they focus primarily on the resources (means) under their control, and then go through a process of finding goals that can be accomplished with those resources. However, relatively little empirical research has addressed the conditions under which an entrepreneur will use planning and/or effectuation processes in the formation of his/her entrepreneurial team. In this study, we ask “what factors determine whether entrepreneurs follow planning or effectuation processes in forming their entrepreneurial teams?”

Method

We studied academic entrepreneurs in real time from nine top U.S. research universities. Our data came from open-ended interviews in which we asked 60 academic scientists to describe their activities and intentions as they related to the process of entrepreneurial team formation. Two researchers individually conducted in-depth analyses of interviews from nine of these scientists to generate a dictionary of words and phrases used to describe planning and effectuation processes, with a specific focus on the “basis for taking action” (goal-oriented versus means-oriented) dimension (Dew, Read, Sarasvathy & Wiltbank, 2008). Individual codings were then compared to finalize the list of words and phrases that were used to textually analyze the rest of the interviews to capture the goal-oriented versus means-oriented approaches to entrepreneurial team formation.

Results and Implications

Preliminary results indicate that there is variation among academic entrepreneurs in their approach to forming their entrepreneurial teams. While some entrepreneurs follow predominantly planning or effectual processes, other entrepreneurs use these processes in combination. Moreover, results reveal some sub-categories within goal-oriented versus means-oriented dimension of planning and effectuation approaches. Finally, an entrepreneur’s previous start-up experience, resource availability, surrounding formal institutions, and stage of the technology seem to be important factors shaping these processes.

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≈ SUMMARY ≈

ECONOMIC OUTCOMES OF FOUNDING-TEAM HUMAN CAPITAL AND INNOVATION STRATEGY IN NASCENT TECHNOLOGICAL VENTURES

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David A. Dubofsky, University of Louisville, USA

Principal Topic

We assess how nascent venture team (NVT) human capital and the selection of an innovation strategy affect nascent technology-based venture performance.

Method

We analyzed 1368 technology-based nascent ventures from the Kauffman Firm Survey (KFS), conducted by the Ewing Marion Kauffman Foundation over the period 2005-2007. This sample of firms included 421 nascent new venture teams (NNVT) consisting of two or more members. NVTs consist of owner-operators who help run the business and provide regular assistance or advice with day-today operations of the business. The performance measure consists of the nascent venture's total revenue in its third year of existence. Independent variables include technology innovation strategy and human capital of the nascent new venture team.

Results and Implications

Preliminary results suggest that aspects of the nascent new venture team relate to new venture performance. Prior research indicates that innovation can provide a competitive advantage to a firm (Maidique & Patch, 1982) so we extend this work by examining the effect of an innovation strategy in nascent new ventures. Our initial results suggest that NNVT human capital also matters for new venture performance. An innovation strategy may be costly and difficult to promote in nascent ventures but nascent ventures may have difficulty attracting new venture team members with high levels of human capital but these appear to matter for the nascent venture's subsequent economic performance.

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∞ INTERACTIVE PAPER ∞

**“NEVER GO INTO BUSINESS WITH FRIENDS”: WHEN ARE
PRIOR TIES BENEFICIAL FOR ENTREPRENEURS?**

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Principal Topic

Economic approaches to the question of how to reduce uncertainty in economic transactions, particularly with respect to economic partners' motives and one's own vulnerability to opportunism, have focused on the role of governance mechanisms, such as hierarchy and contracts, as safeguards against these sources of uncertainty. In contrast, economic sociologists have argued that when economic actors have embedded, rather than arms' length, relationships, built through a long history of exchanges and demonstrations of goodwill, the trust that is built reduces the need for such governance mechanisms. Contracts are deemed unnecessary and too rigid for uncertain environments. Moreover, contracts may undermine trust, thereby hurting the relational fabric between partners. The present research explores a third alternative, based on the practice perspective, of contracting as an ongoing practice in organizational life.

Method

Study 1 was a longitudinal qualitative study of 20 young knowledge-based startups founded by teams. Study 2 was a mail survey of 122 young knowledge-based new ventures founded by teams.

Results and Implications

Findings from the two studies suggest that contracting practices matter more for entrepreneurial team performance than either prior ties or a priori contracts. The results support the primacy of dynamic contracting processes for facilitating economic relationships in uncertain environments. Moreover, the results counteract the lay wisdom that contracting is unnecessary or hurtful among embedded actors.

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∞ INTERACTIVE PAPER ∞

INDIVIDUAL ENTREPRENEURIAL TEAM POTENTIAL AND SUCCESSFUL TEAM COMPOSITION

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Principal Topic

Entrepreneurial teams provide the venture with access to an array of valuable financial, social and human capital resources. Thus, the composition of start-up teams has been found to play a vital role in influencing the performance of new ventures. However, team composition research is mostly limited to the analysis of surface-level-diversity including demographic and functional aspects. Although one agrees on the relevance of the single entrepreneur not only in functional, but especially in personality terms, so far, there have not been any attempts to analyze deep-level diversity that involves personality traits in entrepreneurial teams.

In order to fill this gap the study addresses three issues: First, the positive impact of traits on venture success will be proven on a team level. Second, considering entrepreneurial traits that have been examined so far to be task related, the analysis includes team related traits with respect to team specific interactions. It is hypothesised that whereas a similarity fit of entrepreneurial task related traits, a rather complementary fit of team related traits is positively related to team success. Third, contingent upon this separation of traits, we assume that team related traits moderate the impact of task related traits at the team level on venture success positively.

Method

In order to examine the issues stated above data was collected from 119 student teams that competed in a computer based start-up simulation. Various measurements are used to aggregate individuals' traits on a team level (means, variances, faultlines). Team performance is measured by the accumulated shareholder value and planning success

Results and Implications

Overall, the study a) shows significant effects of deep-level-diversity on entrepreneurial team success, b) underlines the importance of new measurements and operationalizations of the aggregation of individual traits on a team level, and, thus c) contributes to the limited team composition research by giving an example of how to look at deep-level-diversity in entrepreneurial teams.

The results have a strong value for practioners. Firstly, venture capitalists can consider the team composition with respect for compatible traits and skills to predict probability of team success. Secondly, incubators and entrepreneurship centres can use the results in order to develop tools for professional team building. Thirdly, founders can keep in mind that it is likewise important to consider functional skills as well as personal traits when searching for co-founders.

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∞ INTERACTIVE PAPER ∞

MANAGERIAL DECISION-MAKING DISAGREEMENTS AND PERFORMANCE IN VC-BACKED FIRMS

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Principal Topic

In examining the impact of conflict on team performance, researchers have classified three types of conflict, affective conflict, task conflict, and procedural conflict. While early theorists focused on the negative effects of conflict (Brown, 1983; Hackman & Morris, 1975; Pondy, 1967; Wall & Callister, 1995), it has also long been argued that task conflict can be beneficial in that it forces people to consider different perspectives and confront issues (Coser, 1956; Deutsch, 1973; Walton, 1969). More recently, scholars have proposed that the three types of conflict cannot be viewed in isolation from each other and that the more important issue is the proportion of conflict that is either task related, affective, or procedural (Jehn & Chatman, 2000). Building on this work we developed three hypotheses regarding the relationship between proportional conflict among senior managers in entrepreneurial firms and subsequent firm performance:

H1: Proportional affective conflict will be negatively related to new venture performance

H2: Proportional task conflict will be positively associated with new venture performance

H3: Proportional procedural conflict will be negatively associated with new venture performance.

Method

240 firms currently or newly exited from Norwegian venture capital funds were surveyed in order to capture perceived procedural conflict, task conflict, and affective conflict. New venture performance was measured using sales growth, which was collected from the Norwegian national firm and accounting register. Complete data was available from 45 firms, for an effective response rate of 19%. The hypotheses were tested using correlation analysis.

Results and Implications

We found support for all three hypotheses, suggesting that it is important to consider all types of conflict together and not view them in isolation. This indicates that managers need to be aware of and manage not only the particular type of conflict in their group, but also the mix of various types of conflict. These results also suggest that managers may have more alternatives for improving results through the management of conflict in their teams. For example, rather than focusing simply on increasing task conflict, proportional task conflict can also be increased by decreasing affective or procedural conflict, increasing the executive's options to manage conflict in a positive manner.

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THE STEVENS INSTITUTE OF TECHNOLOGY
WESLEY J. HOWE AWARD FOR EXCELLENCE IN RESEARCH
ON THE TOPIC OF CORPORATE ENTREPRENEURSHIP

IS IPO THE DEATH OF INNOVATION?



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ABSTRACT

This study examines whether changes made in the composition of the board of directors at the time of a firm's initial public offering are related to changes in the firm's innovation activity. The dependent variable is the change in R&D intensity from the pre-IPO period to the post-IPO period. Using a sample of 93 biotechnology or semiconductor firms with an IPO during the years 1996 – 2005, we find that changes in R&D intensity are negatively related to changes in (a) board size, (b) the percentage of members who are venture capitalists, and (c) the percentage of members with a science education and positively related to the change in age diversity.

INTRODUCTION

Innovation has been called the “life blood of corporate survival and growth” (Zahra & Covin, 1994). As a key component of corporate entrepreneurship, it can promote firm growth (Zahra, 1993) and has been associated with improved profitability (Covin & Slevin, 1991). Additionally, innovation allows firms to acquire new capabilities which can help the organization adapt better to a changing environment (Stopford & Baden-Fuller, 1994). As a result, there has been a large amount of research focused on organizational processes and structures that facilitate successful innovation (e.g., Barringer & Bluedorn, 1999; Covin & Slevin, 1991; Guth & Ginsberg, 1990; Miller, 1983; Sathe, 2003) which has given us considerable insight into factors that enable firms to innovate.

One area that has received less attention in innovation research is the influence that corporate governance may have on the degree to which firms pursue innovation. Agency and managerial theorists have produced an extensive amount of research regarding the effects of board characteristics on firm performance and strategic decision making (e.g., Hitt, Hoskisson, Johnson, & Moesel, 1996), but these have largely focused on established firms and have produced mixed results. Due to the fact that firms typically undergo significant structural changes in their governance prior to an initial public offering, the time surrounding this event provides a unique opportunity to examine the effects of varying board composition and structure (Baker & Gompers, 2003). An important focus of decision-making for firms undergoing IPO is innovation activity since the growth potential of these firms is often assessed based on their pre-IPO years. Existing research has found that the increased emphasis on financial controls following the governance changes during an acquisition often results in decreased innovative activity for the acquired firm (Hitt et al., 1996). Firms undergoing an IPO could be subject to similar pressures to emphasize financial controls as their performance becomes subject to scrutiny by the market. However, the effect of governance changes at IPO on the firm's innovative activity remains an open question.

Firms undergoing an IPO suffer from a liability of market newness (Certo, 2003) due to the fact that investors have limited information and knowledge of the firm and its operations while it was a private entity. Firms preparing to undergo an IPO will often use their board of directors as a signal of quality to potential investors. However, the characteristics of the board and its individual members which increase the legitimacy of the firm to outside investors may be quite different from those which were responsible for guiding decision processes in the firm prior to the IPO.

While governance researches have relied heavily on agency theory in examining the effects of board composition and structure, a theoretical lens that has been used in the TMT literature is that of upper echelons theory (Hambrick & Mason, 1984), which suggests that the backgrounds and experience of managers will affect managerial perception of their environment and influence subsequent organizational strategies. In line with this reasoning, a study by Daellenbach and McCarthy (1999) suggested that CEO and TMT predisposition strongly affect a firm's commitment to innovation. Extending upper echelons theory to the board of directors as suggested by Finkelstein and Hambrick (1996), would suggest that board members' backgrounds and characteristics would affect their perceptions and evaluation of innovation activities in the firm, which in turn may influence the subsequent investment decisions the firm makes. As a result, the changes made in the board of directors at the time of IPO in order to address the liability of market newness may have unexpected consequences for the strategic direction of the firm. The purpose of this study is to examine how board changes made in the year prior to IPO affect innovation activity within the firm.

Innovation Decisions and the Board of Directors

Tushman and Nadler (1986) define innovation as the creation of a product, service or process which is new to the business unit. As noted by O'Sullivan (2000), innovation is a cumulative and uncertain process. While many studies of innovation use innovation outcomes such as the number of new products or services introduced or adopted (Bantel & Jackson, 1989), these outcomes can be influenced by a number of external factors. Investment in internal innovation is inherently risky (Baysinger, Kosnik, & Turk, 1991) and there is a high likelihood of failure (Finkelstein & Boyd, 1998). So, while a firm may pursue an aggressive strategy of developing innovative new products, services or processes, there is no guarantee that they will be successful.

While it can be argued that executives and corporate elites may influence the success of innovative pursuits within the firm through their selection of projects they choose to pursue, the existence of external factors which can influence the outcome of these decisions make it more difficult to determine the extent to which these actors are responsible for innovation in their firms. However, the degree to which the firm pursues innovation is a strategic decision that can be captured by examining the extent to which a firm allocates its resources toward this goal. Because, according to the American Law Institute, the role of the board of public companies is to hire and fire senior executives, set compensation, review, approve, and evaluate firm strategy, and to generally act as overseers of company business, the board of directors is legally liable for ensuring that shareholder's interests are protected and are therefore obligated to be involved in strategic decision making (Mizruchi, 1983). Given the importance of innovation to firm performance and strategy, it is likely that the board will review and provide input on the major decisions in this area. In addition, research has shown that the board's involvement in strategic decision making is particularly high for firms undergoing an initial public offering.

In spite of the multiple roles that boards play, studies of corporate governance have been predominantly guided by agency theory (Dalton, Daily, Ellstrand, & Johnson, 1998) and its focus on the monitoring role of the board. In this view, the inability of the manager to diversify their employment risk causes them to be more risk averse than shareholders would like (Jensen & Meckling, 1976). In addition, managers are assumed to be self-interested and outside directors serve the primary role of monitoring managerial behavior and decisions to ensure that they are in the interests of the owners (Fama & Jensen, 1983). This result of this line of reasoning is that board composition, in terms of director affiliation and board size, has become one of the most studied dimensions in board research (Finkelstein & Hambrick, 1996; Zahra & Pearce, 1989).

Unfortunately, the results of agency studies linking board composition to market performance and other strategic outcomes has failed to yield consistent results (Dalton et al., 1998; Tosi, Werner, Katz, & Gomez-Mejia, 2000). There are several possible explanations for this lack of support. First, researchers may be placing too much emphasis on the monitoring role of outside directors, to the exclusion of their other roles (Daily, Dalton, & Cannella, 2003). Second, studies have typically neglected characteristics of individual board members beyond their affiliation. By classifying directors only in terms of insiders and outsiders, both sub-groups are treated as being relatively homogeneous in terms of their abilities, experiences and preferences that may influence their choices on strategic matters (Carpenter, Pollock, & Leary, 2003). However, some researchers have contended that complex decisions are influenced by behavioral factors (Cyert & March, 1963) which must be considered. Hambrick and Mason (1984) argued more specifically in developing their upper echelons theory that individuals will differ in their values and cognitive biases which will act as a series of filters, ultimately affecting their strategic choices.

Within the upper echelons perspective, scholars have typically looked at two distinct lines of reasoning (Camelo-Ordaz, Hernandez-Lara, & Valle-Cabrera, 2005). The first of these focuses on how demographic variables such as age, education and tenure of top management teams (TMT) serve as surrogates for cognitive biases and values which affect their preferences and, ultimately, their choices (e.g., Bantel & Jackson, 1989; Finkelstein & Hambrick, 1996; Forbes & Milliken, 1999; Smith & Smith, 1994; Tihanyi, Ellstrand, Daily, & Dalton, 2000; Wiersema & Bantel, 1992). The second line of research has looked at the effects of TMT diversity in terms of demographic characteristics and its effects on organizational results (e.g., Bantel & Jackson, 1989; Knight et al., 1999; Wiersema & Bantel, 1992). This research typically focuses on how diversity within the decision making group affects the decision process.

As noted by Carpenter, Pollock and Leary (2003), agency theory studies have tended to neglect the characteristics of board members, which may influence their evaluation of the risk involved in various strategy choices as well as the impact it may have on the group's decision dynamics. Therefore, following the suggestion Jensen and Zajac (2004), we take a multi-theoretic approach in developing hypotheses for examining the influence of board structure and characteristics on innovation activity within the firm.

Board Composition and Innovation

When examining the effects of board size on organizational outcomes, researchers relied primarily on resource dependence theory (Dalton, Daily, Johnson, & Ellstrand, 1999), which suggests that directors provide important linkages to the external environment which facilitates the firm's access to critical resources (Pfeffer & Salancik, 1978). In this line of reasoning, larger boards will

theoretically have a positive relationship with firm performance as they provide the firm with access to more resources through larger and more diverse networks. This has led researchers to hypothesize a positive relationship between board size and firm performance (e.g., Goodstein, Gautam, & Boeker, 1994; Pfeffer & Salancik, 1978) and, in fact, a meta-analysis by Dalton, Daily, Johnson and Ellstrand (1999) supports this contention.

However, when considering the effects of board size on innovation intensity, we must consider the effects of group size on the decision making process. Unlike firm performance, the degree to which resources are allocated to a particular function in the organization reflects a strategic choice by the firm and we must consider not only the perspectives and resources that the directors bring to bear on the decision, but also the board's involvement in the decision as well as the dynamics of the group on the decision making process.

Evidence from the group dynamics literature indicates that larger groups have more difficulty with coordination (Gladstein, 1984; Hackman & Morris, 1975), had lower motivation (Herold, 1979) and participation (Gladstein, 1984), and are less cohesive (Shaw, 1981 as noted by Goodstein, Gautam, and Boeker, 1994). In addition, Judge and Zeithaml (1992) found that board size was negatively associated with board involvement in strategy. Other studies have indicated that large boards are not able to conduct effective discussions (Herman, 1981) and are ineffective in making strategic decisions (Kovner, 1985). Furthermore, Olson (1982) argues that large groups are more likely to develop factions leading to group conflict which will limit the ability of the group to reach consensus on decisions involving complexity and ambiguity, such as those of investing in innovation.

As the board size increases, there will likely be less agreement as to whether or not investment in innovation activities is the best use of the firm's financial resources, which may lead to delays in investment or a lack of investment on particular projects. These problems are expected to be worse based on the degree to which the board size changes. For this reason, we examine the percentage change in board size at IPO rather than the absolute change in size and hypothesize the following relationship:

H1: The relative change in board size at IPO will be negatively related to R&D intensity.

Agency theory arguments have been used to hypothesize that managers will forgo the long-term investments in research and development (R&D) that would be desired by shareholders in favor of short-term profitability that would benefit them personally. This is due to the fact that investments in R&D are generally a high risk, high returns strategy. Simply investing in R&D offers no guarantee that the firm will develop commercially successful products or processes that will enhance future profitability. However, that investment has an immediate negative impact on current profitability. Researchers have suggested that executives may resist investment in long-term R&D projects due to the high level of uncertainty involved and their inability to diversify their own personal risk (Baysinger et al., 1991). From this perspective, we would expect an increase in the percentage of outside directors to increase the investment in R&D as they pursued long-term strategies favored by the shareholders they represent.

In spite of the theoretical arguments, empirical evidence has failed to support this line of reasoning. In fact, some studies have found just the opposite – that there is a significant, but negative, relationship between the percentage of outsiders and the firm's R&D investments (Baysinger

et al., 1991; Hill & Snell, 1988). Similarly, the percentage of outside directors was found not to be significantly related to corporate entrepreneurship (Zahra, Neubaum, & Huse, 2000), despite agency predictions of a positive relationship. Meta-analyses examining the studies of the effects of board composition have also failed to yield significant support for agency theory based arguments linking board composition to firm performance (Dalton et al., 1998) or critical strategic decisions where a conflict of interest may be expected (Deutsch, 2005).

Other researchers have argued that insiders are more inclined to invest in R&D due to information asymmetry. For example, Baysinger and Hoskisson (1990) suggested that insiders have a better understanding of the firm's business and access to more detailed information regarding strategic decisions. It is suggested that outside directors are more likely to base their decisions on readily available financial information (Lorsch & MacIver, 1989). This is likely to be particularly true for new ventures undergoing an IPO. New ventures typically have higher organizational uncertainty (Arthurs, Hoskisson, Busenitz, & Johnson, 2008; Baysinger & Hoskisson, 1990; Zahra, 1996), so it may be difficult for new outside directors to fully appreciate the ability of the firm to successfully execute on higher risk R&D projects. As such, an increase in the percentage of outside directors making up the board at the time of IPO may result in increased resistance to supporting investment in innovation until they are more comfortable with the firm's ability to generate successful innovations from that investment.

Another factor of particular relevance in firms going through an IPO is that many of the inside directors are likely to have been involved with the founding and initial growth of the firm. Such intimate involvement with the firm may lead the inside directors to identify more personally with the firm and have more loyalty and commitment to it than would be expected for professional managers (Arthurs et al., 2008; Cardon, Zietsma, Saporito, Matherne, & Davis, 2005). The result of this attachment would be that inside directors may be more interested in the long-term success of the firm than is usually suggested by agency theory. The combination of inside director's psychological commitment to the firm as well as their greater knowledge of the firm's capabilities suggests the following hypothesis:

H2: An increase in the percentage of outside board members at IPO will decrease the R&D intensity of the firm.

Venture Capitalists and Innovation

While the designation of outside versus inside director affiliation is an important one with regards to the monitoring function of the board, many studies have typically neglected characteristics of individual board members beyond this affiliation. As noted earlier, in classifying directors only in terms of insiders and outsiders, both subgroups are being treated as relatively homogenous in terms of their abilities, experiences and preferences that may influence their choices on strategic matters (Carpenter et al., 2003), which ignores individual behavioral factors that may influence complex decisions such as investments in R&D (Cyert & March, 1963).

While board members are legally responsible to the firm's shareholders, venture capitalists may play a particularly unique role in the strategic decisions made by the firm following the IPO. Studies have consistently found that VC board members are actively involved with the formation and evaluation of the firm's strategy (Fried, Bruton, & Hisrich, 1998; Rosenstein, Bruno, Bygrave, & Taylor, 1993). However, unlike most outside board members, VC's typically represent single, large shareholders. This presents a conflict of interest in that their obligation to the limited part-

ners of the venture fund gives them a strong incentive to maximize short-run profits in order to facilitate a profitable exit, while their role as a director of a public company suggests that they should try to maximize long-term profits for the broader group of shareholders they represent (Lorsch, Zelleke, & Pick, 2001).

For pre-IPO firms, this conflict does not exist as the firm is not yet publicly held. Furthermore, the IPO price will reflect future expectations of earnings for the firm rather than current or past earnings. The VC's have an incentive to maximize the perceived future value of the firm in order to generate the largest price for the public offering and maximize their own profits. Once the firm goes public, the venture capitalists are likely to be more interested in short-term performance which will improve their chances of selling their stock at a premium on the open market. In fact, Lorsch, Zelleke, and Pick (2001) found that VC firms on average sold a third of their holdings within the first six months following the lockup period. This will be particularly true for VCs joining the board at the time of IPO. These are likely to be later round investors that have not participated in the gains achieved by the earlier investors and they will be interested in maximizing the gains for their venture fund. Therefore, we suggest that:

H3: An increase in the percentage of board members that are venture capitalists will be negatively related to changes in R&D intensity.

Educational Background

Another characteristic of board members that may influence their support of investment in innovation is their educational background. Upper echelons theory contends that, as a result of information overload and bounded rationality, decision-makers will only attend to certain portions of the task environment, The choice of the areas to which they direct their attention and the way in which they interpret that information will be affected by their individual cognitive bases and values (Hambrick & Mason, 1984). Previous research has shown that the selection of a particular area of study reflects an individual's personality and cognitive style (Wiersema & Bantel, 1992). The idea that the educational background of top management teams will influence their strategic decision making has received empirical support as well. Hitt and Tyler (1991) found that the educational background of executives influenced their evaluation of acquisition candidates. Wiersema and Bantel (1992) found that top management teams that had a higher percentage of members with degrees in science and engineering were more likely to initiate strategic change.

When examining how changes in the board of directors may influence the emphasis a firm places on innovation and investments in research and development, it seems logical to examine the impact of educational backgrounds in science or engineering fields. Research and development is a fundamental aspect of these academic disciplines. Individuals that pursue degrees in these areas are trained not only in conducting research, but also are likely to be more comfortable with the risk involved through familiarity with the process. Therefore, they would be expected to be more supportive of investments in this area and increasing the percentage of the board with an educational background in these fields would be expected to increase the emphasis placed on research and development. As such, we hypothesize the following relationship:

H4: An increase in the percentage of board members at IPO with educational backgrounds in science and engineering will be positively related to an increase in the R&D intensity of the firm following the IPO.

Age Diversity and Innovation

Researchers most often associate an executive's age with a person's propensity for risk-taking (Herrmann & Datta, 2005). Younger managers have been found to be more risk oriented (Wiersema & Bantel, 1992) and more receptive to change (Carlsson & Karlsson, 1970). The effects of executive age have consistently been found to be significantly related to a variety of organizational outcomes such as the degree of international diversification (Herrmann & Datta, 2005; Tihanyi et al., 2000), R&D spending (Barker III & Mueller, 2002), strategic change (Wiersema & Bantel, 1992), and firm growth rates (Child, 1974). In general, these studies consistently support the idea that older executives are more conservative and risk-averse.

These differences can be expected to lead to conflicts in the decision process. It has long been argued that certain types of conflict can be beneficial in that it forces people to consider different perspectives and confront issues (Coser, 1956; Deutsch, 1973). Such differing opinions expand the information available and provide a variety of information filters that lead to a wider view of the issue in question. This diversity of perspectives and the resulting debate may allow the firm to consider a wider range of innovation options and opportunities. Researchers have reasoned that exposure to opposing views provides additional information for the team members to process, allowing them to develop a more complete understanding of the problem and potential solutions (Pelled, Eisenhardt, & Xin, 1999). This line of reasoning has received some empirical support. For example, Olson, Parayitam, and Boa (2007) found that conflict positively influenced decision understanding, decision quality, and decision commitment in a study of 85 senior management teams in hospitals. Furthermore, a lack of conflict may result in "groupthink" (Janis, 1982), with managers overlooking important details and subsequently failing to recognize innovation opportunities. The result of these arguments is that we would expect an increase in the age diversity of the board to increase the R&D intensity of the firm following IPO.

H5: Changes in the age diversity of the board at IPO will be positively related to changes in R&D intensity.

METHODS

Data and Sample

The tests of hypotheses posed in this study require data about a firm's board structure and R&D expenditures for the years immediately prior to and immediately following a firm's initial public offering. Data were compiled using the VentureXpert database and the S-1 and 10-K filings available through the Edgar database of the Securities and Exchange Commission (SEC). The VentureXpert database was used to identify a sample of IPO's that met the selection criteria defined for the study. First, the study focuses on firms in the semiconductor and electronics industry or the biotechnology industry because these firms typically have sizeable R&D expenditures. Innovation is a basis for competition in these industries and is the principal reason that most of the IPO firms were founded. R&D spending can serve as an indicator of that innovative activity for these firms.

The second criterion for selecting the sample was the year of IPO. The year in which the IPO occurred is designated as Year 0. The computation of the dependent variable requires three years of financial performance data both preceding and following IPO (years t-3, t-2, t-1, t+1, t+2, and t+3). Three years of financial results are available for firms whose IPO dates occurred during 2005

or earlier. The earliest dates for which S-1 prospectus filings are available in the on-line Edgar database are for IPO's in 1996. Therefore, data availability defined the date range for this study as the ten-year period from 1996 to 2005. The third criterion required that the firms be involved in innovative activity as indicated by reported R&D spending on their income statements. A few of the IPO firms in the two target industries provide services to other firms in their industry but do no research of their own. These firms were not included in this study. A total of 162 IPO's fitting these criteria were identified. Data on the variables of interest were available for 93 firms, and these comprise the sample used in this analysis.

Dependent Variable

The dependent variable is defined as changes in a firm's level of innovation intensity between the pre-IPO period and the post-IPO period. An indicator of innovation intensity that is commonly accepted in innovation research is a firm's R&D intensity, or the level of R&D spending as a proportion of some measure of available resources such as the firm's total revenues, total spending, or total assets. For the purpose of this study, R&D intensity is computed as annual R&D expenditures divided by year-end total assets. The IPO firms that are the focus of this study are often quite young. Consequently, many have little to no revenue as well as limited expenditures for things other than R&D. Total Assets serves as a useful base for computing R&D intensity for IPO firms because it is typically a non-zero number.

The pre-IPO period was defined as the three years preceding the year of IPO (Year 0). Similarly, the post-IPO period was defined as the three years following the year of IPO. The R&D intensity for each period is computed as an average of the R&D intensity in each of the three years of the period. Then, the change in R&D intensity is the difference between the post-IPO value and the pre-IPO value.

Independent and Control Variables

Percentage change in board size. All variables that measure changes in characteristics of the board require distinguishing between members who were serving prior to the IPO and those who were added at the time of IPO. The prospectus identifies all board members serving at the time of the IPO and reports the date when each member joined the board. For the purpose of this study, members who joined the board during the twelve months prior to the IPO date are designated as new members and they are included only on the post-IPO board. Any member whose tenure is longer than twelve months prior to the IPO is included in both the pre-IPO and post-IPO boards. The twelve-month time frame was selected to define "new" members because board-level actions typically involve major strategic decisions with long-range implications. Therefore, for members who have served a year or less prior to the IPO date, it is primarily after the IPO that their influence will be seen in the strategic decisions and financial results of the firm. The percentage change in board size is computed as the percentage by which the number of board members increases from the pre-IPO period to the post-IPO period.

Change in the percentage of outside members. The prospectus identifies the current employer of each board member. Inside members of the board are those individuals who are also employees of the IPO firm. All other members are classified as outsiders. The percentage of the total number of members of the board who are classified as outsiders is computed for both the pre-IPO board and the post-IPO board. The change in the percentage of outside members is the difference between the pre-IPO percentage and the post-IPO percentage.

Change in the percentage of members who are venture capitalists. Individuals are designated as venture capitalists if (a) their employer is a venture capital firm or the private equity subsidiary of an investment bank or (b) they are individual, private investors. The percentage of the total number of members of the board who are classified as VC's is computed for both the pre-IPO board and the post-IPO board. The change in the percentage of VC members is the difference between the pre-IPO percentage and the post-IPO percentage.

Change in the percentage of members with science or engineering educational backgrounds. The coding for the educational background of a board member was based on that individual's undergraduate major field of study. The percentage of the total number of members whose undergraduate major was a field in the physical sciences or engineering was computed for both the pre-IPO board and the post-IPO board. The change in the percentage is the difference between the pre-IPO percentage and the post-IPO percentage.

Change in age diversity. Age diversity is operationalized for both the pre-IPO board and the post-IPO board as the coefficient of variation of board member age at the time of IPO. The coefficient of variation is a normalized measure that accounts for not only the standard deviation of the age of the members but also the mean age for the board. The change in age diversity is the difference between the pre-IPO age diversity measure and the post-IPO measure.

Additional variables are included in the analysis to control for possible alternative explanations for the hypothesized relationships. These variables and their theoretical linkages to other variables in the study are explained in the following paragraphs.

Firm age at IPO. Many different factors drive a firm's decision to undertake an IPO, and firms can make this decision at any of a number of points in time. Firms can vary widely in their ages at the time of IPO, and a firm's age could influence its ability to sustain or its interest in sustaining a high level of R&D activity. Older firms, for example, may be more stable in their R&D spending, while younger firms may shift more dramatically in their resource allocations between R&D and selling activities once a marketable product is identified. Compared with older firms, very young firms may be more reliant on the operating capital obtained from VC's, and consequently, the presence of and role of VC's on the board may vary depending on firm age.

Firm size. Just as firms can vary in age at IPO, they can vary in size. Size differences can affect R&D spending. For example, larger firms may be better positioned to assume the risks of uncertain payoffs that accompany innovative activity. Firm size is an important consideration in the context of IPO firms because size – especially when measured by total assets – is subject to change as a consequence of the IPO. Firm size is measured as total assets in the IPO year. Because skewness was detected in this measure, the log of total assets is used in the analysis.

Year of IPO. The market's receptivity to IPO's varies over time. This varying interest could influence the decisions that firms make when trying to align themselves to market expectations. Consequently, any significant relationships between board composition changes and R&D spending could occur not because of any influence of one on the other but because both decisions are dependent on the state of the public equity market when the firm enters. The IPO's included in this study cover the ten-year span between 1996 and 2005, a period containing years of both strong and weak IPO markets. Further, the IPO's in this study are not evenly distributed throughout the period. The distribution of the 93 IPO's in the sample is as follows: 1996 – 11 firms; 1997 – 23;

1998 – 2; 1999 – 4; 2000 – 37; 2001 – 3; 2002 – 1; 2003 – 4; 2004 – 5; 2005 – 3. To account for any influence of IPO year on the relationships of interest in this study, the year of the firm's IPO is included as a control variable. The IPO year is coded using a series of dummy variables with 1996 serving as the base year to which the other years are compared.

Industry. As noted earlier, the sample for this study was drawn from only two industries. These two industries – biotechnology and semiconductor – are similar in that both allocate considerable resources to R&D and rely heavily on innovation as a basis for competition. However, there may be fundamental differences between these industries in behaviors that are central to the hypothesized relationships in this study. Therefore, a variable that indicates the firm's industry is included in the analysis. This variable is coded as 1 if the firm is in the biotech industry and 0 if the firm is in the semiconductor industry.

RESULTS

The data were analyzed using OLS regression, and the analyses were performed using SPSS Statistics 17.0. A review of the correlations among the variables indicates that some correlations are significant. However, the highest correlation among the variables of interest in the hypotheses is only around 0.40. Additionally, the variance inflation factors (VIFs) conformed to the accepted guideline (3 or less) indicating that multicollinearity is not a concern with these data.

Table 1 presents the results of the regression analyses. Model 1 is the base model which includes only the control variables. Model 2 tests the hypothesized relationships. The negative coefficient associated with the percentage change in board size has a moderately significant p-value ($p < .10$). This result offers support for the negative linear relationship specified in Hypothesis 1. The coefficient for the change in the percentage of outside board members is not significant. Therefore, these data do not provide support for Hypothesis 2.

Hypothesis 3 predicted a negative linear relationship between the change in the percentage of VC members on the board and the change in R&D intensity. The negative and significant ($p < .05$) coefficient for the change in VC membership indicates that H3 is supported by these data. Hypothesis 4 predicted a positive linear relationship between change in the percentage of members having a science or engineering education and the change in R&D intensity. The coefficient for this variable is significant ($p < .05$) but it is negative, indicating that this variable is related to change in R&D intensity but in the opposite direction to that hypothesized. Finally, the positive and significant ($p < .05$) coefficient for the change in age diversity supports Hypothesis 5.

DISCUSSION AND CONCLUSION

This study contributes to the research stream that investigates the influence that characteristics of boards and of the individual board members have on the strategic decisions made by those boards of directors. The unique contribution of this study is that it considers how changes in board composition are related to changes in strategic decisions. The strategic decision investigated here is the spending level in support of innovation. Consistent with Hypothesis 1, the negative coefficient for the percentage change in board size suggests that R&D spending tends to decrease as board size increases. Since larger boards have more difficulty with coordination (Gladstein, 1984; Hackman & Morris, 1975), motivation (Herold, 1979) and participation (Gladstein, 1984), it may

be more difficult to get consensus on risky moves. R&D is considered to be a high-risk expenditure due to the uncertainty of the payoff.

Hypothesis 2 proposed that the change in the percentage of outsiders on the board would be negatively related to the change R&D intensity. The logic underlying this hypothesis is that outsiders will bring an external, market orientation and consider short-term financial performance more than insiders who tend to be focused on the projects going on internally and their long-term potential. Hypothesis 2 is not supported by the data. One explanation for this result is that outsiders serving on boards of IPO firms may have prior experience as managers or directors of IPO firms. This experience may increase their appreciation for the importance of the firm's R&D spending to the long-term strategy of the firm. The fact that the change in board size is significant (hypothesis 1) but the change in outsiders is not suggests that getting agreement among an increased number of board members for maintaining the level of pre-IPO spending may be the issue more than any influence of outsiders.

Hypothesis 3, which proposed that a change in the percentage of board members who are VC's will be negatively related to the change in R&D intensity, is supported by this analysis. This result indicates that, for example, an increase in the percentage of board members who are VC's is associated with a decrease in the firm's R&D intensity. This result is consistent with existing research demonstrating that, as firms become increasingly concerned with financial controls, innovation activity decreases (Hitt et al., 1996). IPO firms are facing market scrutiny for the first time, and VC's are key representatives of the investment market perspective. Additionally, VC's joining the board near the IPO date are likely to be late-stage financiers who tend to want a quick return on their investment and a quick exit. A firm that has obtained late-stage financing can perhaps show that the production of a marketable product and, correspondingly, sales and profits are imminent. Attention and the allocation of resources would naturally shift toward selling the new product, and the allocation to R&D could drop for these firms. Considered in conjunction with hypothesis 2, the results for hypothesis 3 suggest that it is not necessarily the addition of outsiders to the board that is associated with changes in R&D intensity but, instead, the perspective that those outsiders bring. Hypothesis 3 focuses on the perspective of VC's.

Hypothesis 4 examines the effects of the board member's educational background on R&D intensity. Although the coefficient for this variable is significant, the direction of the relationship is opposite to the hypothesized direction. This suggests that increasing the percentage of board members that have technical degrees actually decreases the firm's R&D intensity. It is possible that a board with a higher percentage of members with such degrees place proposed projects under more scrutiny and analysis. Particularly in a case where the percentage increases as this indicates the addition of new board members with such a background and these new members may feel the need to establish their position and value to the board by exercising their expert power in this area. However, these results bear further investigation.

Age, the focus of hypothesis 5, can also serve as an indicator of the perspective of a board member. The results indicate that a change in age diversity among the board members is positively associated with a change in R&D intensity. This result is consistent with research indicating that heterogeneity and opposing viewpoints is positively associated with a group's understanding of potential solutions to problems and to their commitment to decisions (Pelled, Eisenhardt, & Xin, 1999; Olson, Parayitam, and Boa, 2007). Age diversity is one dimension of heterogeneity among team members, and that heterogeneity can contribute to the group's being supportive of change

and new ideas. The perspectives of both young and old members of a board can facilitate the firm's expenditures for R&D. Younger members have a longer-term perspective on the investment time horizon and, as a result, may support riskier expenditures. Older members may also be supportive of expenditures for research because they have the experience to appreciate how long research takes to pay off, particularly members who have worked with IPO firms or innovative, research-intensive firms in the past.

The implications of this study include, first, that changes in board structure at IPO do appear to affect strategic decision-making in the firm. The potential effect of board structure characteristics should be considered in forming the board prior to going public. Second, board members' backgrounds and individual characteristics may influence key decisions such as investments in R&D. Because decisions such as R&D spending may have long-term implications, board members' characteristics and the decision-making dynamics of board structure changes are important considerations as firms prepare to go public.

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Table 1: OLS Regression Estimates ^a

Dependent Variable: Change in Innovation Intensity (R&D Expenditures/Total Assets for 3 years pre-IPO vs. 3 years post-IPO)	Model 1	Model 2
Step 1: Controls		
Log Firm Size (Total Assets at IPO Year)	.063	-.028
Firm Age at IPO (years)	.070	.112
Industry Dummy Code	.045	.239
Year_1997	-.098	-.021
Year_1998	-.001	.000
Year_1999	-.014	-.050
Year_2000	.018	.068
Year_2001	.004	.018
Year_2002	-.023	-.007
Year_2003	-.083	-.134
Year_2004	-.122	-.125
Year_2005	-.456***	-.478***
Step 2: Independent Variables		
H1: Percentage Change in Board Size		-.299*
H2: Change in Percent Outside Members		-.172
H3: Change in Percent VC Members		-.393**
H4: Change in Percent Members with Science or Engineering Educational Background		-.299*
H5: Change in Age Diversity		.262*
N	93	93
F for model	2.209*	2.896**
R-sq	.249	.396
Adjusted R-sq	.136	.259

^a Standardized regression coefficients are reported.

* p < .05 ** p < .01 *** p < .001

“DOING WELL BY DOING GOOD” – A STUDY OF ETHICAL AND SOCIALLY RESPONSIBLE PRACTICES AMONG ENTREPRENEURIAL VENTURES IN AN EMERGING ECONOMY



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ABSTRACT

The upsurge in ethical and social responsibility awareness in contemporary businesses has led to assumptions that the associated behaviours would enable competitive advantage to be attained as a firm distinguishes itself from its competitors through such practices. This paper reports on a study conducted on the prevalence of such practices among entrepreneurial ventures in an emerging economy (Malaysia), and the effect of such practices on both financial and non-financial performance. A sequential inter-method mixing design was employed in which during stage 1, a series of semi-structured interviews with ten Malaysian SME founder-owners were conducted. Stage 2 involved a survey in which a total of 212 usable questionnaires were received. The results of the first phase of the research (qualitative) found evidence that entrepreneurial ventures in Malaysia do generally engage in both ethical and socially responsible practices. The subsequent model testing using SEM however revealed that while ethical practices were positively associated with venture performance, socially responsible practices were not. This may indicate that while entrepreneurial ventures in emerging economies like Malaysia become quickly aware of the more serious consequences of not adopting ethical practices, the concern for social issues may still be lacking, i.e., in terms of motivations, they may be closer to the profitable end of the philanthropy vs. profitability spectrum. While the findings may be equivocal, we believe that the paper makes the following two significant contributions: (1) it provides an empirical test of the importance of ethical and socially responsible practices to entrepreneurial venture performance; and (2) it furthers understanding of how and why this may be different in an emerging economy context.

INTRODUCTION

In the last decade or so, there has been a significant rise in scrutiny on business ethics and social responsibility and this has attracted a great deal of debate pertaining to the prevalence of such practices in SMEs. However, in terms of research, most of the empirical work done to test the prevailing issues on ethics and social responsibility in the commercial landscape has so far concentrated on large firms, especially in the context of emerging economies (see for example, Amran, Lim, & Yahya, 2007; Zulkifli & Amran, 2006). Relatively little is known about SME founder-owners' attitudes concerning ethics and social responsibility, particularly regarding how they perceive the importance of ethics and social responsibility as components of business decisions. This knowledge is very important since, usually, entrepreneurs need to firstly recognise the importance of ethics and social responsibility components in their decision-making processes before they can actually apply them in business settings (Hunt & Vitell 1986).

The main debate is around the issue of whether entrepreneurial ventures that devote resources and efforts to try to improve the society and the world around them will suffer in terms of performance or whether these ventures which “do good” will also “do well” and thus be successful both financially and socially. For example, there have been differences expressed in the discussion surrounding the common dilemma of philanthropy vs. profitability faced by most entrepreneurs. The hallmark of philanthropic gestures is “giving without expecting anything in return” (Prathaban & Rahim, 2005). On the one hand, some argue that entrepreneurs are enticed to act ethically and in a socially responsible manner solely for material gain, and that “good ethics is good for business” (Zairi & Peter, 2002). On the other hand, others argue that there are other non-financial motivations and, as reasoned by Sarasvathy et al. (1998), entrepreneurs as firm owners bring personal values into business decisions and thus assume greater responsibility for the outcome. As such, they normally act in accordance with their moral beliefs and values.

The lack of consensus among researchers points to a need for further studies into why ethical and socially responsible practices in entrepreneurial ventures should be examined more closely. In addition, there are three other reasons why this research is important. Firstly, there is a large disparity in the number of studies of ethical and social responsibility between large, established firms and smaller entrepreneurial ventures. To date, research on ethics and social responsibility has been largely concentrated on large firms (Morris et al., 2002). Longenecker et al. (2006) notes that the size of firms is a significant differentiator for ethical issues whereby such issues identified in the larger firms do not reflect what is actually happening in smaller firms. Secondly, according to Gibb (2005), smaller entrepreneurial ventures often have strong interconnectedness with the local community in which they operate in and the conduct of ethical and socially responsible business is an important factor in creating a harmonious ‘business-customer’ relationship in the local community. Thirdly, while there is an increasing awareness about ethics and social responsibility in emerging economies, most of the research has been in developed economies.

This paper reports on a study conducted to further understand the prevalence of ethical and socially responsible practices among entrepreneurial ventures in an emerging economy, in this case Malaysia, and subsequently examine the effects of such practices on both financial and non-financial performance among these ventures. The study adopted an inter-method mixing design in 2 stages. Stage 1 involved semi-structured interviews, while Stage 2 involved a survey among Malaysian SME founder-owners were conducted. While the results of the interviews found evidence that entrepreneurial ventures in Malaysia do generally engage in both ethical and socially responsible practices, the subsequent model testing using Structural Equation Modelling (SEM) revealed that while ethical practices were positively associated with venture performance, socially responsible practices were not. This may indicate that while entrepreneurial ventures in emerging economies become quickly aware of the more serious consequences of not adopting ethical practices, the concern for social issues may still be lacking, i.e. in terms of motivations, they may be closer to the profitable end of the philanthropy vs. profitability spectrum.

While the findings may be equivocal, we believe that the paper makes two significant contributions. Firstly, it provides an empirical test of the importance of ethical and socially responsible practices to performance in entrepreneurial ventures. And secondly, it provides a further understanding of how and why this may be different in the context of emerging economies.

LITERATURE REVIEW

Ethical and Social Responsibility Issues in Malaysia

New times bring about new challenges to business practitioners. Emerging arguments about ethical practices (Ushedo & Ehiri, 2006) and socially responsible practices (Luken & Stares, 2005) suggest that the associated behaviours may be linked with good business practices. In the context of Malaysia, the call for businesses to adopt ethical and socially responsible agenda has been made explicit by the Malaysian government in its Vision 2020 strategic plan; especially in the pursuit of the following three of nine thrusts, that is, creating (1) a moral and ethical society; and (2) a fully caring culture; and (3) an economically just society.

The establishment of the National Integrity Plan (NIP) in 2004 that followed suit is another example of the Malaysian government's commitment to fuel economic growth through good values and noble practices. The aspiration is that enhancement of ethical and socially responsible practices would ultimately lead to the enhancement of the well-being of the community. In addition, the government is seen as a conduit to spur ethical and socially responsible practices among Malaysian firms through various support mechanism i.e., the increase of tax deductibility of corporate donations as well as the launch of CSR Perdana Menteri Award in 2007 to recognise firms' charitable contributions to the society (Amran, Ling, & Yahya, 2007). Importantly, given the ethnic and cultural mosaic of Malaysian society, practicing ethical and socially responsible acts are seen critical to build a strong ground for harmonious business dealings among the multiracial community namely the Malays, Chinese, and Indian.

In the context of large organisations in Malaysia, Zulkifli and Amran (2006) found a growing understanding of corporate social responsibility among Malaysian companies in their study that examined accountants' perceptions of corporate social responsibility practices. However, due to the lack of effort in reporting, these organisations remain the "unsung" heroes. Interestingly, while Malaysia is also recognised as the most active emerging economies in terms of corporate responsibility (Zulkifli & Amran, 2006), the issues of ethics and social responsibility among smaller businesses in Malaysia has yet to be explored given that the focus on such issues in Malaysia is often directed towards large firms rather than smaller firms.

Ethical and socially responsible practices have been claimed to benefit entrepreneurs financially in the long run, especially in emerging economies. According to Goll and Rasheed (2004), in fast-changing and unpredictable environments, socially responsible behaviours help organisations to gain support from various external stakeholder groups. Such behaviours provide them with some protection from the unpredictability they face. An organisation's image and reputation may be influenced by the 'good' practices it portrays to its customers and to the general public (Jones, 2000). Taken together, the benefits of ethical and socially responsible practices enable competitive advantage to be attained as a firm distinguishes itself from its competitors.

Beyond the commercial landscape, such practices demonstrated by entrepreneurs can be seen as a means to promote harmonious business and societal relationships, especially in the context of a multiracial country such as Malaysia. In particular, these good business practices could enhance trust, cooperation, and tolerance among the three diverse racial groups in the country. Ethical and socially responsible actions are intrinsically important because they could affect the emotional and interpersonal aspects of the work and life relationships and as such, deserve more research.

Ethical and Social Responsibility Practices in Entrepreneurial Ventures & Small Businesses

There is substantial discussion on the prevalence of such practices in the context of small business (Spence, 1999; Spence & Lozano, 2000; Quinn, 1997). With a view that ethical practices should be the guiding principle for all businesses, large or small, studies investigating ethics in smaller firms have started to gain momentum. In general, ethical practices within a commercial context make claims about “what ought to be done or what ought not to be done” in managing a business (Kuratko, Hornsby, & Naffziger, 1997). Vyakarnam et al. (1997) found that ethical issues experienced by smaller firms in the UK revolved around the issues of conflict of interest among the stakeholders, protection of knowledge and information, legal and moral obligation, and personal versus business decisions. In addition, using a dilemma-based approach, Spence and Rutherford (2001) identified four major dilemmas facing small business owners including profit maximisation, subsistence priority, enlightened self-interest, and social priority.

Closely related to ethical practices are social responsibility considerations. Fülöp et al. (2000) defined social responsibility as “the positive activities a company undertakes in the society in which it operates” and this includes responsibility towards customers, employees and the public. This concept follows the “Triple Bottom Line” philosophy which suggests that for a firm to be sustainable, it should incorporate not only economic, but social and environmental considerations in its decision making (Elkington, 1997). When the concept was first developed more than twenty years ago, organisations found it difficult to operationalise it in their business practices, as it required sacrifices to be made on the financial level. However, recently, organisations’ leaders have started to acknowledge the importance of being socially responsible in business affairs. For example, Fülöp et al. (2000) found that there is a growing commitment to social responsibility among smaller firms, which is comparable to that of larger firms. Specifically, they found that small firms have demonstrated willingness to make arrangements to meet the requirements of social responsibility especially to their customers, their employees, and the public.

Notwithstanding this, the issues of ethics and social responsibility in small entrepreneurial ventures may be, to some extent, different from their larger counterparts due to the nature and characteristics of these firms. Small entrepreneurial ventures are, by nature independent and self-managed (Spence & Lozano, 2000). Presumably, the key aspects of ethics would revolve around the personal values and beliefs of the owners themselves, rather than governed by the ethical codes of conduct in larger firms. “Multitasking” is another key criterion of small businesses (Spence, 1999). The variety of tasks facing founder-owners of entrepreneurial ventures may leave them with less time to consider ethics in their daily business management. In addition, Vyakarnam et al. (1997) note, “what constitute personal and business ethics are probably closer in situations where the owner is also the manager in a business.” (p.1627). Given these constraints facing founder-owners of entrepreneurial ventures, it is important to closely study the extent to which ethical and social responsibility considerations are applicable to them.

In line with the “doing well by doing good” credo, Vyakarnam, Bailey, Myers, and Burnett (1997) contend that ethical behaviours is one reason why firms are able to stay longer in business. Following this notion that “good ethics is good for business”, the study argues that ethical and socially responsible acts will have positive effects on business performance. On that basis, this study advanced a theoretical framework that links ethical and socially responsible practices with business success for further analysis (see Figure 1).

Based on this framework, the study advances 2 hypotheses as follows:

H1: The emphasis on ethical practices among entrepreneurial ventures will have a positive impact on their business success (i.e., satisfaction with financial, satisfaction with non-financial, and performance relative to competitors)

H2: The emphasis on socially responsible practices among entrepreneurial venture will have a positive impact on their business success (i.e., satisfaction with financial, satisfaction with non-financial, and performance relative to competitors)

METHOD

The present study is a part of a larger study that delved into the perception of entrepreneurs operating in SMEs in Malaysia with regards to good business practices and how these practices can be linked to their business success. This paper only reports the ethical and socially responsible practices among SME founder-owners. To understand such practices among entrepreneurial ventures, a sequential inter-method mixing design was adopted. A study combining both qualitative and quantitative approaches is useful not only in identifying issues specific to ethical and social responsibility in smaller firms, but also in enhancing the generalisability of findings, thus providing better support for theoretical advancement.

The first stage involved a series of semi-structured interviews with ten SME founder-owners of entrepreneurial ventures operating in Malaysia, from which the practices that reflected ethical and socially responsible behaviour were extracted following similar procedures established by Spence & Rutherford (2001). Given the limited studies of ethical and social responsibility practices in small firms, this study follows Spencer's (1999) suggestion that exploratory research that builds upon qualitative interviews is needed as this will allow researchers to delve into ethical and social responsibility issues that are of particular relevance to smaller firms. Moreover, according to Morse and Richards (2002), employing a qualitative approach is appropriate if "the purpose is to learn from the participants in a setting or process the way they experience it, the meaning they put on it, and how they interpret what they experience" (p. 28). In view of these suggestions, semi-structured interviews were first conducted on an individual, face-to face basis prior to a quantitative data collection involving a larger group of SME entrepreneurs.

Stage 2 involved a survey among SME founder-owners in entrepreneurial ventures operating in Malaysia. The questionnaire asked entrepreneurs to fill in their demographic and firm profile, as well as items pertaining to the importance of ethics and social responsibility considerations in handling their business. Items on ethics and social responsibility relevant in the context of SMEs were derived from the qualitative study and also adapted from Fülöp et al. (2000).

Sample

The definitions of SMEs provided by Small and Medium Industries Development Corporation (SMIDEC) Malaysia were used to identify appropriate businesses for inclusion in the study. Together, these definitions resulted in the following specifications for inclusion: (1) individuals who were actively participating in the management of the business; (2) businesses having less than 150 employees for the manufacturing sector and less than 50 employees for the service sector; and (3) businesses that are stand-alone firms i.e. not a franchise or part of a larger organisation.

For the preliminary interviews, ten entrepreneurs (five men and five women) volunteered to participate in the study. Given the limited studies of ethical and social responsibility practices in small firms, this study follows Spencer's (1999) suggestion that exploratory research that builds upon qualitative interviews is needed as this will allow researchers to explore ethical and social responsibility issues that are of particular relevance to smaller firms. In view of these suggestions, semi-structured interviews were conducted on an individual, face-to-face basis. In the interviews, respondents were asked to comment on various aspects of their approach to managing their businesses that they perceived to be important to the success of a business. The interviews did not highlight any issue pertaining to ethical practices and socially responsible behaviours to avoid "socially desired responses" (Spence & Rutherford, 2001). Instead, the study was presented to the participants as being about practices for small business owners in managing their business. Interviews were transcribed and behaviours that reflected ethical and social responsibility practices were extracted. The qualitative data generated provided a referencing item pool for the development of the survey instrument.

For the survey, the final sample of respondents in this study included 212 SME founder-owners. The demographic breakdown of respondents and profile of the respondents and firms are presented in Tables 1 and 2 respectively.

DATA ANALYSIS AND RESULTS: QUALITATIVE STUDY

Results of the Interviews

A content analysis of the interview data revealed themes associated with ethical and socially responsible practices. To facilitate the description of the findings, behaviours were regrouped into 'clusters'. As there is no *a priori* cluster that has been developed for ethical practices, behaviours reflecting ethics were aggregated, on a logical basis, to form clusters of ethical behaviours. In this case, it is debatable however, that one cluster is equally different to another cluster.

(i) Ethical Practices

Based on the interviews, a number of behaviours that were related to ethical practices in business dealings were identified. The comments obtained suggested that participants demonstrated the application of ethical rules and principles within a commercial context and considered them important in running a business. Generally, this was reflected in comments about "what ought to be done or what ought not to be done" or "what is right and good for humans" (Jones, 2000). As indicated in Table 3, seven specific behaviours were identified as being associated with ethical considerations in business and these were grouped into three clusters.

The importance of ethical practices in business is clearly elaborated by one of the respondents when she explained the way she runs her business. The entrepreneur stated that,

"It is a common practice in my business that during consultation sessions with the customers and potential dealers I will explain in detail the effects of each of the products and how the products could help solve the problems that customers have, and at the same time explain the side-effects of using the products. I would also disclose to my customers the potential hazards for those who have specific medical problems (translation)."

In short, participants clearly demonstrated concern for ethical business practices in managing their business. Behaviours revolving around maintaining honesty and integrity, being trustworthy, engaging in fair commercial practices, and taking responsibility as well as being accountable for one's own actions were seen as important by the respondents. This finding is seen as consistent with the statement made by Fülöp et al. (2000, p. 5) that "ethical business behaviour is becoming increasingly important and starting to arise in the global economy", even in smaller firms.

(ii) Socially Responsible Practices

Comments related to the social responsibility theme were extracted from the interviews. As indicated, social responsibility has been referred to as "the positive activities a company undertakes in the society in which it operates" including responsibility towards customers, employees, and the public (Fülöp et al., 2000). As indicated in Table 4, eight behaviors associated with the social responsibility domain were identified and these were grouped into three clusters.

The importance of socially responsible behaviour is made explicit by one of the respondent when he mentioned,

"In business it is not always about us...how much profit we want to achieve, how to improve our business, and how to get more customers. We have to consider people around us, the society. We should consider their welfare and how we can help them improve their well being (translation)."

Above all, participants expressed greater concern for the welfare of their employees. Interestingly, the participants pointed out that being socially responsible, especially towards customers, is beneficial for their business in the long run. While "serving others", a term referred to "working for others' benefit rather than your own" (Rushworth & Gillin, 2006) was described as the reason why some entrepreneurs were concerned about social responsibility, respondents indicated that acting in a socially responsible manner, especially towards customers, has economic advantages for the business in the long run. The associated behaviours are therefore seen as a mechanism for the firm to achieve competitive advantage.

DATA ANALYSIS AND RESULTS: QUANTITATIVE STUDY

Survey Procedure

Based on the identified themes and the measures identified in previous research, a scale measuring ethics and social responsibility in entrepreneurial ventures was developed. This second stage involved a survey using 44 items that asked about the overall business practices in the entrepreneurial ventures (however, this paper only reports a part of the business practices), with a 12-item scale specifically incorporated to measure ethical and socially responsible behaviours.

Statements relating to ethical and socially responsible practices derived from the interviews were incorporated in the survey (together with other 32 identified good business practices), which asked the participants to rate the extent to which the following practices are given emphasis in their businesses, such as emphasis on fair and open marketing practices, transparency in business dealings, commitment to offering products or services at reasonable prices, taking responsibility and accountability for their businesses' actions, forging relationship with charitable organisations, engagement in community activities, concern for the staff welfare, as well as efforts to create job

opportunities within the local community and others. Participants rated each item in terms of the importance they attached to the behaviour described for managing their own business using a 7-point Likert scale that allowed ratings from 1 (*not at all*) to 7 (*to a large extent*).

For business success, satisfaction with financial success including profitability, sales turnover, sales growth, and return on investment was assessed using items adopted from Chandler and Hanks (1993) who reported high overall internal consistency for their measure of .77. A 5-point Likert scale was used to describe this comparison with 1 representing *significantly lower* and 5 *significantly higher*. Evaluation of non-financial success took the form of ratings of overall owner's satisfaction, customer satisfaction, employee satisfaction, relationship with suppliers, business image, as well as balance between work and family life (Ahmad & Seet, 2006; Hoque, 2004). Hoque reported high internal consistency with a Cronbach's alpha value of .75. Participants evaluated their satisfaction with non-financial success in 6 areas on a 5-point Likert scale ranging from 1 (*not at all satisfied*) to 5 (*very satisfied*). Self-report of performance on "objective" financial indicators included estimates of the firm's performance relative to its competitors. This 3-item scale, which consists of sales growth, return on sales, and growth in market share, has reported a moderate internal reliability value of .53 (Chandler & Hanks, 1993). A 6-point Likert scale was used ranging from 1 (*decreasing*) to 5 (*increasing rapidly*).

A total of 212 usable questionnaires were received from the 1000 sent (21.2% response rate). Confirmatory factor analysis (CFA) was performed to examine the factorial validity of the factors and to assess the goodness of fit of the model (Byrne, 2001). The model was then tested using the structural equation modelling (SEM) procedure. Besides fit statistics, of particular interest is the path significance indicated by the standardised regression estimate (β) that assesses the effect of ethical and socially responsible practices on financial and non-financial success.

Results of the Survey

Confirmatory factor analysis (CFA) was performed to examine the factorial validity of the factors and to assess the goodness of fit of the model (Byrne, 2001). The model was then tested using the structural equation modelling (SEM) procedure. Besides fit statistics, of particular interest is the path significance indicated by the standardised regression estimate (β) that assesses the effect of ethical and socially responsible practices on financial and non-financial success. The central point in analysing structural models is the extent to which the hypothesised model "fits" or adequately describes the sample data (Byrne, 2001). A model fit can be evaluated by examining several goodness of fit indices which include: χ^2 , χ^2/df , GFI, TLI, CFI, and RMSEA. Besides fit statistics, of particular interest is the path significance indicated by the standardised regression estimate (β) that assesses the effect of one variable on another. The significance level was set at $p < .05$. Prior to testing the model, the psychometric properties and the goodness of fit of the constructs studied were undertaken.

Reliability and validity

As shown Figure 1, the measurement model for ethical and social responsibility practices returned Cronbach's (α) alpha values greater than .70 (Ethical = .75; Social Responsibility = .76). The composite reliabilities ($P\eta$) calculated were above the recommended value of .70 (Ethical = .78; Social Responsibility = .91). In addition, the composite reliability values of above .50 (Ethical = .54; Social Responsibility = .79) verified the convergent validity of the construct. Similarly, as depicted in Figure 2, all dimensions of the business success construct had strong internal consistency.

tenacy of $>.80$ (satisfaction with financial performance = $.92$; satisfaction with non- financial performance = $.89$; performance relative to competitors = $.93$). In addition, the composite reliability values were above $.70$ (satisfaction with financial performance = $.95$; satisfaction with non- financial performance = $.93$; performance relative to competitors = $.96$), providing further evidence of the reliability of the business success construct. The composite reliability values of above $.50$ (Satisfaction with financial performance = $.78$; Satisfaction with non- financial performance = $.68$; Performance relative to competitors = $.82$) also confirmed the convergent validity of the construct. Based on these indicators, it could therefore be assumed that these variables were reliable and that they could be valid to be utilised in the model testing.

Goodness of Fit

The goodness-of-fit indices generated for the measurement model for ethical, social responsibility, and business success constructs reflected a generally good fit of the model given the sample data (refer to Figures 2 and 3). The model for ethical and social responsibility yielded a good fit given the sample data with $\chi^2 = 111.18$, $p = .000$, $\chi^2 / df = 2.7$, GFI = $.91$, TLI = $.90$, CFI = $.92$, and RMSEA = $.081$. In addition, the measurement model for the business success construct also yielded a good fit given the sample data with $\chi^2 = 173.81$, $p = .000$, $\chi^2 / df = 2.95$, GFI = $.90$, TLI = $.92$, CFI = $.94$, and RMSEA = $.086$.

Model Testing

An analysis of the data using the structural equation modelling procedure, as depicted in Figure 4, showed a significant direct effect of ethical practices on business success ($\beta = .19$, $p < .05$). However, the effect of social responsibility on business success was non significant. The strongest effect of ethical practices was on satisfaction with financial performance ($\beta = .19^*.94 = .18$), followed by satisfaction with non-financial performance ($\beta = .19^*.70 = .13$), performance relative to competitors ($\beta = .19^*.69 = .13$). This model yielded good model fit of $\chi^2 = 430.18$, $p = .10$, $\chi^2 / df = 1.96$, GFI = $.99$, CFI = $.99$, TLI = $.97$ and RMSEA = $.067$.

DISCUSSION, LIMITATIONS AND CONCLUSION

The findings from the first phase of the research (qualitative) indicate that entrepreneurial ventures do generally engage in both ethical and socially responsible practices. However, for the subsequent model testing using SEM, the results were equivocal. While ethical practices were positively associated with venture performance, socially responsible practices were not. This may indicate that while entrepreneurial ventures in emerging economies like Malaysia become quickly aware of the more serious consequences of not adopting ethical practices, the concern for social issues may still be lacking among most entrepreneurial ventures. In other words, in terms of motivation, they may be closer to the profitable end of the philanthropy vs. profitability spectrum. Another possible explanation for the non-significant effect of social responsibility on business performance is that Malaysian entrepreneurs may perceive that the costs of engaging in socially responsible behaviours outweigh the benefits and that such behaviours have no relevance to business success; this, in turn, may have led to a lack of motivation to engage in such behaviours. However, it is important to remember that the data being referred to here describe those behaviours that participants think are linked to business success. It is possible that Malaysian respondents, while valuing social responsibility behaviours in general, do not see them as critical to the achievement of SME success.

The present study is not without its limitations. Self-report was used as the source of data for the measurement of predictor and outcome measures. Even though some argues for the possible bias of using such method, this approach was necessary because of difficulties associated with the independent assessment of each of these variables. Self-report is not uncommon in studies examining management behaviour, especially those involving entrepreneurs working in SMEs (Man, 2005). An avenue for future research is to look into the possibility of considering multiple informants by obtaining feedback from other stakeholders. Also future research should test the proposed model using a larger sample of small business owners to establish an informed understanding of the linkage among ethical practices, social responsibility, and small firms' competitive edge especially in emerging economies such as Malaysia.

In essence, while the findings may be equivocal, the study makes the following two significant contributions: it provides (1) an empirical test of the importance of ethical and socially responsible practices to performance in entrepreneurial ventures; and (2) a further understanding of how and why this may differ in emerging economy contexts. The identification of such "noble" practices (particularly, in the qualitative study) signals an important message regarding the prevalence of such practices, particularly in smaller firms. Also, in view of "good ethics is good for business", it is assumed that failure to adhere to such practices will have major implications on well-being of the business. The good example (in terms of the demonstration of ethical and socially responsible practices) set by the smaller firms may influence the broader trading environment to improve standards of behaviour and integrity in business and would also develop a healthier economy (Bishop, 1992), as they make up more than 80% of all establishments in most countries. In addition, ethical and socially responsible considerations are seen pivotal given that harmonious "business-business", "customer-business" and "community-business" relationships could bolster firm performance and perhaps to a larger extent, promote communal unity that is built upon trust, respect, and integrity.

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Figure 1: Theoretical Framework

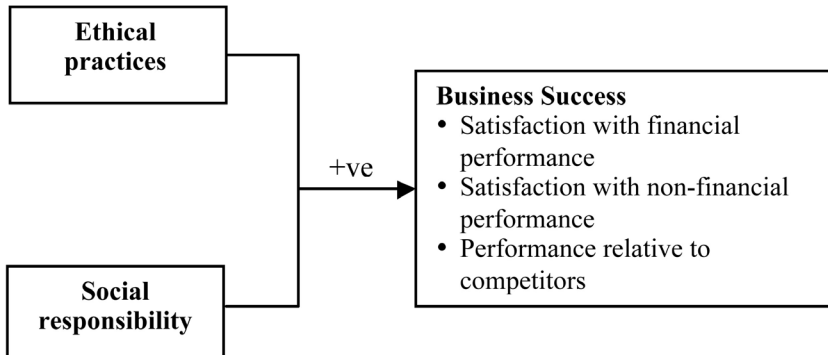


Table 1: Demographic Breakdown of Respondents

Demographic profile	Category	Respondents	%
Position in the company	Business owner	119	56.1
	Business partner	93	43.9
No. of years in the current company	2-5 years	92	43.4
	6-10 years	74	34.9
	11-20 years	37	17.5
	21 years and more	9	4.2
Current age	30 or under	41	19.4
	31-40	80	37.7
	41-50	59	27.8
	51 or above	33	14.4
Gender	Male	160	75.5
	Female	52	24.5
Race	Malay	147	69.3
	Chinese	46	21.7
	Indian	17	9.0
Educational Background	High School	66	31.1
	Certificate Level	28	13.2
	Diploma	41	19.3
	Bachelor degree	68	32.2
	Postgraduate degree	9	4.2

Table 2: Profile of Firms

Firm's profile	Category	Respondents	%
No of employees	Less than 50	150	70.8
	51-100	51	24.0
	101-150	11	5.2
Business area	Manufacturing	32	15.1
	Service	180	84.9
Firm's Location (Malaysia)	Perlis	4	1.9
	Kedah	50	23.6
	Penang	54	25.5
	Perak	18	8.5
	KL	25	11.8
	Selangor	29	13.7
	Melaka	6	2.8
	Johor	12	5.7
	Kelantan	2	0.9
	Terengganu	1	0.5
	Pahang	3	1.4
N. Sembilan	8	3.8	

Table 3: Ethical Practices

Cluster	Examples of behaviours
Concern for ethical business practices	<ul style="list-style-type: none"> • Handle business based on ethical standard and consideration • Engage in fair, open, and honest marketing practices • Be committed to offering products/services at fair prices
Maintain honesty and integrity	<ul style="list-style-type: none"> • Be honest and transparent in business dealings • Be trustworthy and keep promises
Take responsibility and be accountable	<ul style="list-style-type: none"> • Take responsibility and be accountable for own actions • Admit mistakes and inform the affected party that they have occurred

Table 4: Socially Responsible Practices

Cluster	Examples of behaviours
Responsibility towards society	<ul style="list-style-type: none"> • Engage in community activities • Concern for social welfare – “serving others” • Create job opportunities for local communities
Responsibility towards customers	<ul style="list-style-type: none"> • Provide extra services to people/customers • Give customers value for their money • Demonstrate the willingness to add value to customers well being
Responsibility towards business associates	<ul style="list-style-type: none"> • Cooperate with and help others in business • Share knowledge and resources with others

Figure 2: Measurement model for ethical and socially responsible practices

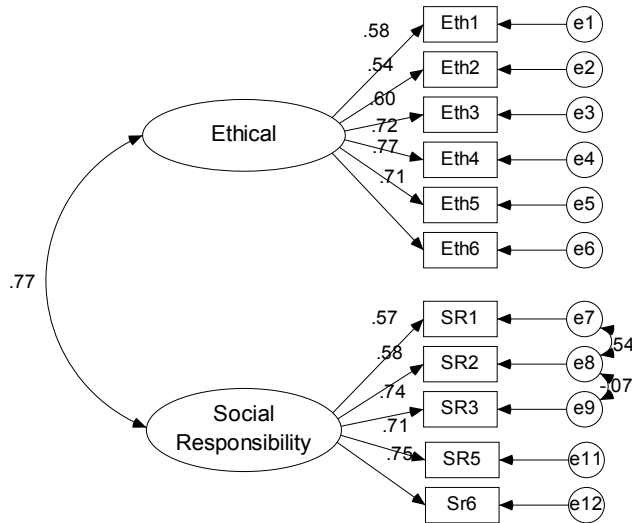


Figure 3: Measurement model for business success

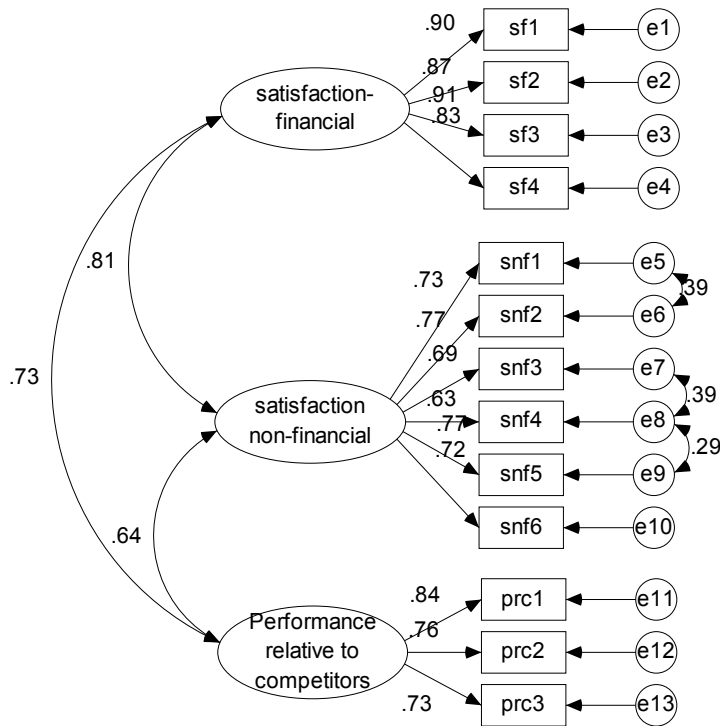
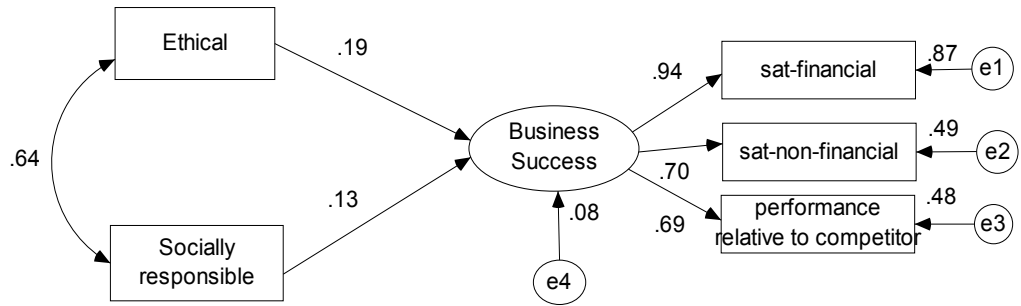


Figure 4: Structural equation modelling procedure

≈ SUMMARY ≈

THE ROLE OF AGENCY IN THE VC FIRMS' INVESTMENT DECISION MAKING

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Principal Topic

Agency theory, commonly used to explain the relationships embedded in the VC process (Arthurs & Busenitz, 2003; Sahlman, 1990; Sapienza & Gupta, 1994) assumes that agents have stable risk preferences and that agents are either risk-averse or neutral. Organizational risk taking literature, rooted in behavioral decision making research, lifts these restrictions and introduces the possibility of risk seeking behavior. However, agency-related variables continue to influence VCs' preference and as such play a role in VC's decision making.

In this paper, we propose and test a behavioral agency model of VC' risk taking in the context of VC firms' investment decision making. We contribute to the VC decision making literature as well as to organizational risk taking research by introducing new, theory-driven "framing" mechanisms of decision making - external governance (fundraising) and signaling (status among peers). In particular, we seek to answer the following set of questions: What is the relationship between a VC firm's past performance and their subsequent risk taking? Does the subsequent fundraising influence the riskiness of a VC firm's strategic choices? Does social status influence a VC firm's risk taking in light of its past performance?

Method

In order to examine the relationship between VC firms' investment decision making and a set of relevant contextual factors outlined above, we compile a comprehensive proprietary dataset which draws on three secondary databases (Capital IQ, Orbis and Private Equity Intelligence). This dataset bears on VC firm's performance, its fundraising and investment activity, its portfolio composition as well as key portfolio companies data. The final dataset will comprises 202 investment decisions done by 34 VC firms during 2004-2006.

We conceptualize our dependent variable - the risk taking as a multi-dimensional construct, measured by two variables - target's industry beta and the volatility of target's financial performance prior to the investment decision.

Results and Implications

The paper makes two important contributions. First, it specifies the circumstances under which some VCs make riskier investment decisions. Second, it attempts to resolve some of the theoretical controversy surrounding the relationship between performance and risk taking, namely whether good or bad performance leads to riskier or less risky investment decisions, respectively. Our preliminary results support prospect theory's predictions as to the negative relationship between performance and risk taking. Fundraising appears to accentuate this negative relationship. Social status, however, does not seem to play a role in risk taking.

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∞ INTERACTIVE PAPER ∞

DISTRACTIONS, MONITORING, AND AGENCY COSTS IN THE INITIAL PUBLIC OFFERING

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Tom Dalziel, University of Cincinnati, USA

Robert E. White, Purdue University, USA

Principal Topic

The initial public offering (IPO) represents an important transition in the life of an organization. Being publicly traded increases the scrutiny of the organization and requires greater transparency in many facets and this increases the governance burden. While the transition from being private to publicly traded naturally increases the governance burden, we contend that the IPO process itself represents a distraction for directors in the first place. In the build up toward the IPO it is common for organizations to upgrade their accounting and financial reporting systems, hire professional managers, and add new directors. The IPO process for each firm is different and can be prolonged. Importantly, when the process is overly long or onerous, the attention of directors may be focused away from the normal oversight of the organization. In this situation monitoring of the TMT will naturally suffer and so investors may worry about potential agency costs going forward. We therefore examine whether distractions in the IPO process negatively affect valuation.

Method

We first identified new ventures going through an IPO in the U.S. between 2001-2003. We next identified proxies for distractions for each respective IPO firm such as the length of time in the IPO process, and the number of updates to IPO information. We examined board structure of the firm and then examined whether greater distractions affected IPO valuation. Using OLS regression we found mixed support for our findings.

Results and Implications

While the IPO process is a unique event in the life of a firm, it can have a lasting effect on the organization. More specifically, when the IPO process requires greater attention from the board, or when the board is distracted, valuation of the IPO firm may be affected. On the other hand, when the IPO process is drawn out, this allows potential investors more time to form opinions of the venture and as a result, valuation tends to be higher. Given the mixed nature of our results, we believe it is important to examine whether longer-term performance and survival are affected by IPO events.

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≈ INTERACTIVE PAPER ≈

**A “BULLY” IN ITS OWN CHINA SHOP: THE IMPACT OF
ABUSIVE ENTREPRENEURIAL LEADERSHIP BEHAVIORS
ON EMPLOYEE TURNOVER AND FIRM PERFORMANCE**

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Principal Topic

Abusive supervision is a young but growing field of inquiry (Tepper 2007). Small and entrepreneurial businesses offer a unique context for studying this phenomenon. First, unlike CEOs of larger corporations, owner-founders often find themselves in management roles for which they have received little grooming or preparation. Without the years of training and mentoring that managers often receive as they progress in their levels of authority and responsibility, entrepreneurs may be more susceptible to an authoritarian, controlling leadership style to produce the desired results. Second, when abusive behavior does occur, these firms lack the oversight of a sophisticated corporate administrative or governance entity, and so the entrepreneur could run rampant over his or her underlings in an effort to “push” firm performance.

In this paper we look at how abusive supervision in particular industry classifications (e.g. service, retail, manufacturing, high tech) impacts turnover intentions and absenteeism of employees, sales growth and profitability. We predict that firms in which abusive supervisory behaviors occur frequently will experience higher levels of voluntary employee turnover and lower levels of firm performance.

Method

This study is a cross-sectional survey of owners-founders of small and medium-sized new firms five years old or less in a medium sized Midwestern city. Using existing measures of entrepreneur personality attributes (authoritarianism and control) (Tepper 2000; Heaven 1985), we test the effect of abusive entrepreneurial leadership on employee turnover, absenteeism, tenure, goals for growth, sales and profitability, and estimations of performance relative to peer companies.

Implications

High levels of ambiguity, conflict, and pressure typical in start-ups, create the context for abusive behaviors (Mikkelsen and Einarsen 2001). It is important for entrepreneurs to understand the consequences and costs of abusive leadership and what they can do to avoid behaviors which may reduce growth, damage firm reputation, diminish their ability to recruit and retain quality personnel and raise the cost of doing business. This study advances the field of entrepreneurship by empirically assessing the impact of abusive entrepreneurial behavior in new and more detailed ways that can be used to educate and assist entrepreneurs desiring better performance.

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∞ INTERACTIVE PAPER ∞

RESOURCE DEPENDENCY AND EXTERNAL BOARDS IN HIGH TECH START-UPS

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Principal Topic

This study examines the perceived contributions of external boards to the survival and success of high-tech start-ups from a resource dependency perspective. Existing research on the role of boards has nearly exclusively focused on large firms. What is less clear from the extant literature, however, is the extent to which external boards are actually valued by start-up teams. Our paper addresses the following research question: To what extent can the degree of resource poorness of high tech start-ups explain the contribution that boards make?

Methods/Key propositions

In order to address our research question, we use a database of 140 high tech start-ups with external boards in Flanders, Belgium. The primary data source is a structured questionnaire carried out through personal interviews with the CEO. The perceived value added by the external board was assessed by the CEO in terms of (1) enhancing company reputation, (2) establishing contacts with the external environment and (3) giving advice and counsel to executives.

Results and Implications

The results reveal that in general external boards are valued to a greater extent by ventures that are resource poor at founding, however, some of our findings were intriguing. While founding teams with a higher level of human capital in R&D benefited less from the external board's interventions, the results show that founding teams with a higher level of commercial human capital perceived greater value added by the external board. Further, we found that the extent to which high tech start-ups could access financial resources did not affect the perceived value added by the board. The results also show that the more diversified the founding team's human capital, the lower the perceived value added by the board. Our findings also suggest that high tech start-ups that dispose of fewer technological resources benefit more from the external board.

Overall, our findings suggest that resource dependency alone is not sufficient to explain the perceived role and contribution of external boards in these ventures. Ventures better endowed with certain resources valued the external board more than resource poor ventures. This suggests that there may be an issue of absorptive capacity.

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THE ROLE OF NEGATIVE FEEDBACK IN THE PROCESS OF OPPORTUNITY EXPLOITATION



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ABSTRACT

This study examines how negative feedback during opportunity exploitation influences the attributes and innovativeness of new products, and how these changes affect performance. In our study of 130 pre-venture clients from Small Business Development Centers, we find negative feedback positively affects the extent of product change, with additional influence when entrepreneurs are high in entrepreneurial self-efficacy. Idea ownership and the initial newness of the product do not increase the effect of negative feedback on product change. Additionally, the extent of attribute changes significantly increases the performance of the launched product. We find no support for negative feedback influencing the innovativeness of the product.

INTRODUCTION

Entrepreneurial exploitation involves developing new business ideas: developing new products or services, identifying new markets, or new ways of producing or delivering products or services (Carland, Hoy, Boulton & Carland, 1984). While innovative, “new to the world” products and services are often risky for customers and for the firm, there are potentially large pay-offs: unique benefits and solutions for customers and greater likelihood of product and financial success for the firm (Kleinschmidt & Cooper, 1991). Due to the potential benefits to firms and to general economic development, there is significant academic and practitioner interest in how to increase the number of successful new innovative business ideas (Ireland, Hitt & Sirmon, 2003).

Schumpeter’s (1942) theory of creative destruction provides the foundation for initial theory on innovation. Schumpeter believed that small businesses are in a position to develop more innovative products and services than larger, more well-established firms due to their flexibility and lack of bureaucratic barriers. However, there appears to be only partial support for this belief. “On a relative basis, small, entrepreneurial ventures are effective in *identifying* opportunities but are less successful in *developing* competitive advantages needed to appropriate value from those opportunities.” (Ireland, Hitt & Sirmon, 2003: 963; italics added). Generating profit from opportunities requires developing products that customers value as providing more utility than competitors’ products (a new “product” in this context is assumed to include new service products). Smaller firms often do not have the resources or expertise to conduct extremely thorough analyses during multiple stages of development. They do, however, have the ability to execute one particularly critical activity of that process, and that is to solicit feedback about their identified opportunity as they develop it into a marketable product. How entrepreneurs use feedback while developing their products may be an important component in determining the success of the resulting product.

Many organizations formalize feedback-seeking behavior as part of the new product development (NPD) process. In processes such as Stage-Gate®, seeking input from potential customers is an integral and continuous part of the process (Cooper 2001). The voice of the customer is heard

in the very early concept testing stage to help define the product, throughout development and customer testing to solicit feedback on prototypes or early versions of the finished product, to post-launch feedback on the commercialized product. The role of customer feedback is to improve and refine the product to best meet the needs of the customer, enhancing chances for customer acceptance and commercial success.

While customer feedback is clearly important, relevant feedback over the course of the NPD process can come from a number of important stakeholders, not just from customers. Suppliers have been identified as fruitful sources of ideas (von Hippel, 1988) as well as providing feedback about ideas to partners integrated in the NPD process (Ragatz, Handfield, & Petersen, 2002). Investors are interested in the outcome of the NPD process, and may insist on providing input and feedback during the development of new products. And, particularly for small or new businesses, family members may provide feedback, as well as other external parties, such as Small Business Development advisors (Ardichvili, Cardozo, & Ray, 2003)

Many entrepreneurial small businesses do not have formal methods for seeking and capturing feedback on innovative opportunities. Yet solicited and unsolicited feedback, both negative and positive, is apt to occur once a novel solution receives any exposure beyond that of its creator. In particular, novel product ideas typically generate negative feedback (Ford & Gioia, 2000). While positive feedback is apt to be reinforcing and not lead to change in the nature of the idea, product, or service, negative feedback has the potential to cause changes in the nature and attributes of the original product idea.

In summary, while NPD processes in large firms have been studied extensively, little is known about those processes in smaller firms. We hope to begin to address this gap by examining various aspects of negative feedback. We are interested in how negative feedback, from *all* stakeholders, affects opportunity exploitation in new ventures. Our research questions address both the extent to which negative feedback reduces the innovativeness of new business ideas, and the extent to which negative feedback influences changes in the resulting product. We examine individual characteristics that may moderate the effect of the negative feedback. We also examine the effect of reductions in innovativeness and degree of product change on subsequent performance of the new product.

THEORY AND HYPOTHESES

Product Development and Innovation

The NPD process is the series of activities that take place from opportunity identification and selection to a launched product. While the labels and number of steps or stages in this process can vary significantly from one company to the next and in some instances may not even constitute a formal process, the basic activities that characterize this process can be summarized as follows: (1) *Opportunity identification and selection*. This includes idea generation, initial screening of the ideas to the subset that merits continuation in the process. (2) *Concept generation and evaluation*. Elaborating on the idea to more fully flesh out the idea is the goal of this part of the process. Product attributes are considered as well as the feasibility of producing the product around those attributes. (3) *Development and testing*. The concept is developed to the state of an actual finished product, and evaluation occurs to test that product performs. (4) *Launch*. Offering the product for commercial sale. These steps create an iterative process where additional information is used

to refine and improve the original idea to a commercial product. Over the course of this process, the attributes of the product may be modified, trade-offs may need to be made among different attributes, or it may not be feasible or acceptable to offer the product in the manner in which it was originally conceptualized.

One important attribute of the new product is its innovativeness. Product innovativeness has often been operationalized as newness; the degree to which a product is different from existing products and practice (Garcia & Calantone, 2002; Szymanski, Kroff & Troy, 2007). Also related to innovativeness is “disruptiveness”: the degree of disruption the new product creates at different levels of analysis. These levels of analysis can be categorized as macro (how the attributes of the new product is new to the world, the market or industry), and micro (how the product is perceived by the firm or customer). Yet all of these conceptions of innovativeness share the common thread of the degree to which the product is different.

The literature recognizes several perspectives in evaluating the newness of a product namely that of the market (Atuahene-Gima, 1995), the firm (Danneels & Kleinschmidt, 2001, Gatignon & Xuereb, 1997).and the customer (Robertson, 1971; Robertson & Gatignon, 1986). Because we are studying the process of exploiting opportunities identified by individuals whose business state was identified as pre-venture, we concentrate on the market and customer perspectives. With respect to the market perspective, is the product perceived as new compared to competitive products? If there is no direct competition for the product, the product may be considered “new to the world”. With respect to the perspective of the customer, the question is whether the customer perceives the product as new. Products from a customer perspective may range from discontinuous innovations that require new learning to continuous innovations that require no new learning and are more easily adopted (Robertson, 1971). The fact that adopters can be classified as “early adopters” or “laggards” (Rogers, 2003) is an indication that not all customers have the same resources and propensity to adopt and will view the product as more or less new based on their own experience.

Negative Feedback

We expect negative feedback to cause alterations in the product, as customers, suppliers and others point out flaws during NPD processes that involve these stakeholders. In the sections that follow, we first describe how negative feedback fits into the general NPD process. Then we develop hypotheses relating negative feedback to changes in product attributes and relating negative feedback to reductions in the innovativeness of the product.

NPD processes that take customers’ views into account, at least during the initial part of the development process, can increase the diversity of ideas during concept development and design. Some customers, such as lead users, have proven to be a source of innovative ideas (von Hippel, 1988), and customers can also influence NPD teams through their interaction with the team. Teams that are exposed to customers’ needs and problems can motivate members to explore innovative alternatives (Kantor, 1988). In addition to understanding initial desires, customers’ involvement in concept testing during early stages of product development has been demonstrated to influence the success of NPD projects (Cooper, 2001). Over that last two decades, customer integration has become an accepted practice within NPD (Enkel, Perez-Freije & Gassmann, 2005). However, the work in this area has described the involvement of customers, but has not examined the valence of the feedback. The role specifically of *negative* feedback has only been addressed with respect to after a product has been launched into the market, and also only based on the customer as the source of

that negative feedback. For example, once the product has been launched, negative feedback can be used as input into development of new products (Fundin & Bergman, 2003). However, existing theory on the effect of outcome feedback on individuals can help inform this process.

Feedback to individuals about the outcome of their effort provides external information regarding their performance. Individuals can then judge, based on this feedback, whether or not their performance meets their expectations or goals, and determine whether or not to adjust either their goals or their actions (Earley, Northcroft, Lee & Lituchy, 1990). This outcome feedback does not help them determine what actions they need to change in order to improve (which process feedback would provide), but it does provide cues that may trigger information search and reflection on possible changes in implementation strategy (Ford & Gioia, 2000). Feedback also provides motivational effects, particularly when the tasks are under the control of the individual. When negative feedback is perceived to be informational (“This lever is hard to use”), rather than controlling (“You should change this lever or I won’t invest in your product”), the feedback is most likely interpreted as constructive and supportive (Zhou, 1998). Although negative feedback will not enhance intrinsic motivation as much as positive feedback, it will cause individuals to change their behavior if they believe themselves competent at doing so, and also believe they are the driving force behind the performance of the task (Zhou, 1998).

Integrating the expected actions of individuals based on receiving negative feedback into the process of creating a new product, we can see that once entrepreneurs receive negative feedback on an idea, they would likely consider that feedback carefully. Because they are proposing a *new* product, they are unlikely to be able to judge the performance and suitability of the product; they lack the context in which they can predict its acceptability. Any new product will contain product attributes not readily understood with respect to utility. Due to this uncertainty, entrepreneurs likely expect to change their product while fine-tuning the idea and developing the actual product, and negative feedback should give them information with respect to the attributes that should be changed.

Unfortunately, a side effect of these changes may reduce the innovativeness of the product. Negative feedback on the creativity of an idea undermines individuals’ feelings of self-determination and perceived competence, and lowers their creativity (Zhou, 1998). This reduction in certainty about a new idea and their ability to successfully launch an innovative product may trigger caution on the part of the entrepreneur and reduce the innovativeness of the final product. Thus, our hypotheses about the direct effects of negative feedback are as follows:

Hypothesis 1a: Negative feedback will positively influence the degree to which the attributes of the resulting product are changed.

Hypothesis 1b: Negative feedback will positively influence the reduction in the innovativeness of the resulting product.

Researchers have examined many contextual and individual variables that affect the actions taken based on feedback. For instance, Zhou (1998) found that feedback given in an informational style had a more positive effect on creativity and feedback given in a controlling style. Ford and Gioia (2000) found that negative feedback was associated with novel decisions, but that the effect of the feedback was mitigated by trust among the decision makers. Given that individual differences and context have been shown to affect how feedback is interpreted and used, we next

propose three moderating variables that we expect to affect the influence of negative feedback. All three are perceptual, in that they are beliefs held by the entrepreneur that might influence the weight placed on the negative feedback, and therefore the belief that the new product should be altered in some way. See Figure 1 for an illustration of the hypothesized relations.

Initial Innovativeness of the Product Idea

As mentioned above, the customer will perceive the innovativeness of an idea or product based on his or her own experience. The same can be said of the entrepreneur; the entrepreneur will judge a new product idea's relative innovativeness of an idea based on his or her own knowledge of similar or dissimilar products in the marketplace. Since "new to the world" products often require new learning on the part of the customer and the entrepreneur developing the product, many modifications in the product, the marketing of the product, and the firm's operations may be needed. Entrepreneurs may be more open to change if they believe the product represents a truly innovative idea (Christensen & Bower, 1996). There are no standards and past practices to follow or competitors to imitate with a "new to the world" product. Hence, negative feedback will provide particularly salient information about what should be changed in the product if the entrepreneur believes the initial idea was particularly innovative, and the entrepreneur is therefore more likely to make changes to the product. However, because this feedback will reflect what feedback givers already understand, that is, will reflect features with which the feedback givers have experience, the suggested changes will likely reduce the innovativeness of the product idea

Hypothesis 2a: The initial innovativeness of the original idea will moderate the effect of negative feedback on the degree of attribute change such that increased initial innovativeness will increase the effect of the negative feedback.

Hypothesis 2b: The initial innovativeness of the original idea will moderate the effect of negative feedback on the reduction of innovativeness such that increased initial innovativeness will increase the effect of negative feedback.

Ownership of the Idea

Psychological ownership of an idea is linked to feelings of possession, and influence one's attitudes and behaviors. Specifically, the psychology of possession literature demonstrates that psychological ownership influences attitudes toward an idea, such that one's evaluation of an idea will be more favorable towards an idea that he or she *owns* (Van Dyne & Pierce, 2004). Additionally, feeling ownership of an idea will reinforce the notion that the idea is an extension of the individual, and also increase a sense of responsibility towards that idea, demonstrated by protecting and controlling the idea (Van Dyne & Pierce, 2004). To the extent that the idea is an extension of the individual entrepreneur, that entrepreneur may be less likely to act on negative feedback about the product. Protecting the idea from change also protects the ego of the individual. Idea ownership, then, moderates the effect of negative feedback on product change and innovativeness, such that it will reduce the effect of negative feedback on product change, and it will therefore also reduce the effect of negative feedback on innovativeness. In other words, the product will not change as much, and hence, will maintain its degree of innovativeness.

Hypothesis 3a: Ownership of the original idea will moderate the effect of negative feedback on the degree of attribute change such that increased ownership will weaken the effect of the negative feedback.

Hypothesis 3b: Ownership of the original idea will moderate the effect of negative feedback on the reduction of innovativeness such that increased ownership will weaken the effect of negative feedback.

Entrepreneurial Self-Efficacy

In small entrepreneurial firms, negative feedback may influence the development of the product more, or less, due to the beliefs held by the entrepreneur. For example, an entrepreneur confident about his entrepreneurial abilities, that is, high in entrepreneurial self-efficacy (ESE), may act differently based on feedback received than an entrepreneur low in ESE. ESE measures the degree of certainty an entrepreneur has in his or her ability to perform tasks in multiple domains, including marketing, management, finance, innovation, and risk-taking (Forbes, 2005). Those high in ESE are confident in their ability to conduct market analyses and develop new markets, and are therefore likely to be cognizant of the importance of meeting customer needs. Those high in ESE are also confident in their ability to set and meet goals and objectives, which implies that they will attend to information about obstacles towards those goals. Given that negative feedback provides information to entrepreneurs about attributes not acceptable to various stakeholders, entrepreneurs high in ESE will be more likely to consider changing and be effective at changing their new product. However, one of the attributes of the product entrepreneurs with high ESE may be less likely to change is the product's innovativeness. As mentioned above, ESE reflects confidence in innovation and risk-taking as well as the functional skills areas of marketing and finance (Forbes, 2005). Because of their certainty in their ability in these areas, they would be less likely to reduce the innovativeness of the product based on the negative feedback they have received.

Hypothesis 4a: ESE will moderate the effect of negative feedback on the degree of attribute change such that increased ESE will increase the effect of the negative feedback.

Hypothesis 4b: ESE will moderate the effect of negative feedback on the reduction of innovativeness such that increased ESE will weaken the effect of negative feedback.

Influence on Performance

Our last set of relations examines influences on the performance of the new product. We look at the impact that the degree of product change and the reduction in innovativeness have on performance, expecting changes in product attributes to positively influence performance of the new product in terms of sales and market acceptance, but for reduction in innovativeness to be negatively related to performance.

An innovative product is less likely to have direct competition and it offers new attributes and benefits to customers yielding greater new product performance. Paradoxically, the innovative product disrupts customer consumption patterns and behavior significantly, and therefore may either slow adoption so that in the short run performance appears weak or the adoption never catches on with the majority of the market leading to poor new product performance. (Robertson, 1971; Kleinschmidt & Cooper, 1991; Veryzer, 1998; Rogers, 2003). However, if the product has been changed based on feedback from customers and others, those changes are likely to have made the product more acceptable to the market, thereby enhancing its prospects for success.

In a comprehensive review of the determinants of new product success and failure, Crawford (1977) and Cooper (2001) find that an absence of innovativeness (i.e., product benefits that are

unique to a given product and are perceived as meaningful by customers) is an important underlying explanation for new product failure. Therefore, we expect that reductions in innovativeness should lead to lowered success of the launched product.

Hypothesis 5a: The degree to which product attributes change during the NPD process will be positively related to the performance of the product.

Hypothesis 5b: The reduction of innovativeness during the NPD process will be negatively related to the performance of the product.

SAMPLE AND METHODS

Sample and Study Design

The sample for this study is based on Small Business Development Center (SBDC) clients in a Midwestern state who sought counseling in 2006 or 2007 and who were categorized as “pre-venture” by the SBDC counselors. These clients may have already owned a business, but they requested counseling for a business idea that was still in the gestation stage. Survey data were collected in summer 2008, via a web-based survey. Solicitation emails were sent to 2631 SBDC clients, with reminder emails sent to those who did not reply within two weeks, yielding 130 usable observations. Survey data were augmented by information collected by SBDC offices in their normal intake and standard follow-up processes. The response rate is lower than desired (response rate was 5%), but discussions with a regional SBDC director revealed that many small business owners may not have the high-speed internet connection required to take the web-based survey in a timely fashion, and may not have participated for that reason. However, based on analyses of the regions represented by clients and respondents, there was no non-response bias based on region (therefore, for example, urban versus rural respondents were not over-represented). Also, the respondents did not differ significantly from non-respondents based on the mean number of hours of counseling they received, nor on which year they received counseling (2006 versus 2007).

With respect to feedback, our respondents indicated that slightly over half (59%) of the feedback was solicited. The sources of negative feedback were distributed fairly evenly among customers, family, and advisors, with very little of the negative feedback coming from suppliers or investors.

Measures

Measures for the dependent variables were created for this study, based on reviews of previous measures of innovativeness and performance of new products. The *extent of product change* was based on attributes drawn from NPD literature, such as the ease of use, the distribution channel, the intended customers, the features, and other similar types of changes. The reliability of this measure was acceptable ($\alpha = .88$).

The *reduction in innovativeness* was based on an examination of innovation literature and choosing the items related to the newness of the product, reflecting newness to the world and newness to the market, as well as the extent to which it represented novel or unconventional methods of meeting customer needs. The ten item scale was asked twice, once with respect to the idea as it was originally conceived, and once based on the product when it was launched (both have reliability values above .90). We could have used the initial value as a control variable and the

launched value as the dependent variable when examining the relation between negative feedback and innovativeness, but because we were also interested in the relationship between the extent of change in innovativeness and performance we created *reduction in innovativeness* by subtracting the launched innovativeness value from the initial innovativeness value (a positive number represents a reduction in innovativeness).

The literature has measured commercial *performance* of a new product with perceptual measures (based on multiple items) on the degree to which the new product met its objectives relative to competition and expectations (Griffin & Page, 1996; Gatignon & Xueberg, 1997). Use of comparative measures is common in both NPD literature as well as in entrepreneurship literature (West, 1998) as both recognize the problems associated with using objective financial measures which are often unavailable or incomplete for new products. Performance in this study is a multi-dimensional variable constructed from two elements: perceived importance placed on particular new product objectives (e.g., market share) and outcomes on these same new product objectives. Outcomes for each objective were weighted by perceived importance on that objective to create a composite variable of overall new product performance. Composite measure of financial performance were based on Cooper and Kleinschmidt (1993) and weighted by the importance (Rochford & Wotruba, 1996)

Measures for the remaining model variables (the extent to which they agreed that the feedback was negative, idea ownership, and ESE) were all based on validated measures from previous studies, all with adequate reliability (all alpha values were above .8). The individual measures were standardized before creating the three interaction terms by multiplying negative feedback by each of the moderators: initial innovativeness, idea ownership, and ESE.

Control variables for the first two models include the number of hours of counseling the respondents received from the SBDC, the number of ideas they have launched previously (to control for previous experience), industry dynamism (since this might influence the acceptance of new products), and the initial innovativeness of the product idea (since the more innovative the product is, the more chance there is for reductions in innovativeness). When testing the impact of product changes and reduction of innovativeness on product performance, we also control for the comprehensiveness of the NPD process, since that has been shown previously to positively impact the performance of the resulting product.

Methods

We formally analyze regression equation outputs based on the sets of hypotheses. We created three sets of models, one for each of the dependent variables (degree of product change, reduction in innovativeness, and product performance). For the first two sets, we ran four regression models. The first model contained only control variables. We then tested the direct effect of negative feedback on the dependent variable (hypotheses 1a or 1b). Then we entered the remaining moderator variables, in order to distinguish the interaction effects in the final regression from possible direct effects. The final regression model containing the interaction variables allowed the test of hypotheses 2a, 3a, and 4a, or 2b, 3b, and 4b. The third set of regressions allows analysis of influences on product performance. The first model includes the control variables, and the final model tests the effect of product change (hypothesis 5a) and reduction of innovativeness (hypothesis 5b) on product performance. We evaluate the coefficients against three significance levels: $p \leq .01$; $p \leq .05$; $p \leq .10$.

We also conducted diagnostics on the regressions to look for evidence of multicollinearity. We examined Variance Inflation Factors to check for possible confounds to interpretation that may be caused by multicollinearity. All independent variables were below the suggested 10 cut-off level (Neter, Kutner, Nachtsheim, & Wasserman, 1996). In the next section, we describe the results of the regression analyses, followed by the final section, which discusses the implications of those results.

RESULTS

Influences on extent of product change

Hypothesis 1a posits the positive influence of negative feedback on the extent of product change. Hypotheses 2a, 3a, and 4a test the moderating effects of initial innovativeness, idea ownership and ESE on the relation described in hypothesis 1a. The results for these hypotheses are shown in Table 1. Four regression analyses were run. The first regression includes only the control variables, none of which were significant. The second regression analysis includes negative feedback to test Hypothesis 1a. Negative feedback is significantly and positively related to the extent of product change (0.27, $p \leq .01$), supporting Hypothesis 1a. Next, the moderators were entered into the regression to eliminate direct effects confounding the results of the interaction variables. None of the moderating variables (initial innovativeness, idea ownership, nor ESE) had a significant direct effect on negative feedback. Last, the interaction terms (negative feedback times each individual moderator) were entered into the model. Only hypothesis 4d is supported, that is, the interaction of ESE with negative feedback contributed positively to the extent of product attribute change.

Influences on reduction of innovativeness

Hypothesis 1b posits that negative feedback is positively related to a reduction of innovativeness in the product. Similar to the model described above, hypotheses 2b, 3b, and 4b test the moderating effects of initial innovativeness, idea ownership and ESE on the relation described in hypothesis 1b. The results for these hypotheses are shown in Table 1. Again, four regression analyses were run. The first regression includes only the control variables, and only the initial innovativeness of the product idea is significant (0.26, $p \leq .01$). The second regression analysis includes negative feedback, which is not statistically significant; therefore, Hypothesis 1b is not supported. None of the moderators or interaction terms was significant, as seen in the last two regressions. Therefore, hypotheses 2b, 3b, and 4b are also not supported.

Influences on product performance

Hypothesis 5a posits the positive influence of the extent of product change on product performance. Hypothesis 5b posits the negative influence of the reduction in innovativeness on product performance. The results for these hypotheses are shown in Table 1. Two regression analyses were run. The first regression includes only the control variables, two of which were significant. Industry dynamism is positive and significant (0.18, $p \leq .05$), and process completeness of the process is negative and significant (-0.13, $p \leq .01$). The second regression analysis includes the two independent variables; the extent of product change, and the reduction of innovativeness. The extent of product change is positively related to performance (0.28, $p \leq .05$), supporting hypothesis 5a. Reduction in innovativeness is not significantly related to performance, thus hypothesis 5b is not supported.

DISCUSSION

This study examines how negative feedback affects NPD in new ventures. Our research questions address both the extent to which negative feedback reduces the innovativeness of new business ideas, and the extent to which the feedback influences changes in the resulting product. We found that the extent to which respondents agreed that the feedback was negative was positively related to the extent to which attributes changed in the product when it was launched. We did not, however, find support for the effect of negative feedback on reducing the innovativeness of the product. This lack of support may, however, be due to the low variance in the change in innovativeness of the product during development. On a 7-point scale of innovativeness, the mean initial innovativeness is 4.29, and the mean launched product innovativeness is 4.11. The mean change is .18, with a standard deviation of .77. Therefore, most products changed little during the development process. Also, in a meta-analysis of published studies on the relationship between innovativeness and new product performance (Szymanski, Kroff & Troy, 2007) find that innovativeness is a relevant factor of new product success under selected conditions. When innovativeness is conceptualized as having a meaningfulness component (meaningful to the customer, what others have labeled “useful”), the strength of the relationship with performance is greater. Furthermore, innovations that are new to the world rather than new to the firm are more apt to exhibit a relationship with performance. We measured innovation with respect to “newness”, without specifically testing for usefulness, many of the ideas in our sample was new to the firm, not the world, and were service-related. Therefore, there was relatively little innovation that should have contributed to success in this specific study.

We also examined individual characteristics that may moderate the effect of the negative feedback. Neither the initial innovativeness of the product nor the individual’s sense of ownership of the idea affected the influence of the negative feedback on product changes or innovativeness. ESE, however, increased the effect of negative feedback on changes in product attributes. Those entrepreneurs who exhibited confidence in their entrepreneurial capabilities changed their products more based on the negative feedback they received.

Last, we examined the effect of reductions in innovativeness and degree of product change on subsequent performance of the new product. Changes in the product during the development process resulted in higher performance, but changes in innovativeness did not. In addition to this finding, we find a curious result based on our control variable, process completeness. The extent to which the entrepreneurs reported conducting extensive NPD activities (such as detailed market studies, business and financial analyses, and testing) was negatively related to product performance. One possible explanation is that the entrepreneurs did not execute the steps as well as they claimed, that their view of “complete” is not as thorough as it was in the studies that have previously shown a positive relationship between thoroughness and success. Another possibility is that studies have shown process completeness is more critical to performance for more innovative new products. Given our sample, with relatively few truly innovative ideas, being intensely thorough in NPD processes may be counter-productive – perhaps more time and energy was spent on the process than was useful. This unexpected finding warrants additional research.

Limitations

Most of the limitations of this study are associated with the sample utilized for this research. Although the business ideas were new to the SBDC clients, they were not necessarily innovative

ideas with respect to the market. This possibly influenced the data in that it was unlikely the innovativeness of the product would be significantly reduced during NPD. Additionally, portions of the sample do not have access to sufficiently high speed web access to enable them to take the survey easily, which may have reduced our response rate. Last, all the independent and dependent variables are from a single source, which could bias the results. With respect to this last limitation, we did include control variables from external sources, and took care to word the questions objectively to try to reduce biased answers.

Contributions for research

Little has been done in the new products literature on the role of feedback and how it influences the development of an idea outside of the importance of customer feedback. In addition, there have been few (no?) studies that examine the impact of feedback from multiple sources on *entrepreneurs* and their business ideas. We have provided evidence that negative feedback is a significant influence on products during the development of product based on pre-venture ideas, that is, during opportunity exploitation. Negative feedback from multiple sources, including customers, family members and external advisors influences changes in product attributes, and the greater the extent of these changes, the better the performance of the product. Previous work in NPD literature has examined various influences of customer input into the NPD process, but we have isolated the effect of negative feedback in this process, while broadening the scope to include other stakeholders important to entrepreneurs. Additional promising areas of research would be to determine more closely the impact of each of these stakeholder groups, and also the influence of positive feedback.

Contributions for practice

This study provides a contribution to the literature by opening the door to an important and managerially controllable factor that can impact organizational performance. Entrepreneurs and small business owners may not actively seek out disconfirming or negative feedback on their business ideas. Demonstrating that, in fact, negative feedback has a positive impact on the performance of the final product may encourage entrepreneurs to seek out feedback. These results are important for Small Business Development Center counselors and others that provide assistance and feedback to entrepreneurs.

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Figure 1: The influence of negative feedback during opportunity exploitation

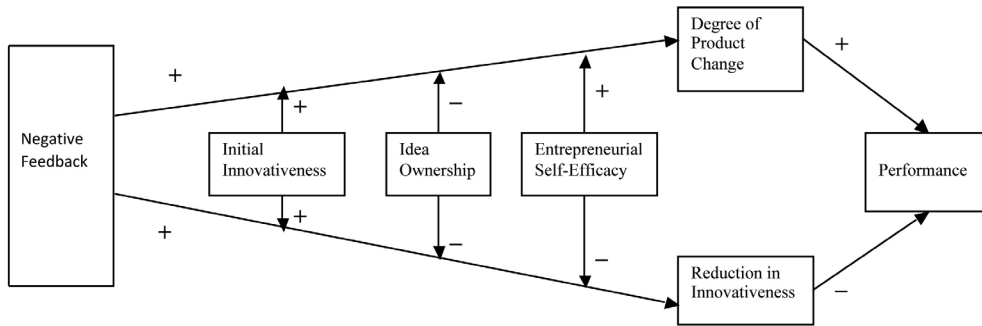


Table 1: Regression Models

	DV = Extent of Product Change				DV = Reduction in Innovation				DV = Performance	
	Con- trols	Hyp. 1a	Direct Effects	Hyp 2a, 3a, 4a	Con- trols	Hyp. 1b	Direct Effects	Hyp 2b, 3b, 4b	Con- trols	Hyp 5a, 5b
Counseling hours	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Previous ideas launched	.03	.03	.03	.01	.02	.02	.03	.03	.03	.03
Industry dynamism	-.09	-.03	-.03	-.02	.04	.03	.06	.05	.18 ⁺	.25 [*]
Initial Innovativeness	.12	.14	.13	.17	.26**	.25**	.28**	.28**	.00	.03
Negative Feedback		.27**	.28**	.29**		-.04	-.04	.02		
Idea Ownership			-.02	-.02			-.09	-.09		
ESE			.12	.10			-.11	-.11		
Initial Innov x Neg. Feedback				-.18				.09		
Idea own. x Neg. Feedback				-.02				-.13		
ESE x Neg. Feedback				.24 [*]				.03		
Process Completeness									-.13**	-.11**
Extent of Product Change										.28 [*]
Reduction in Innovativeness										-.11
Number of observations	89	89	89	89	92	92	92	92	64	64
<i>F value</i>	.86 p=.49	2.11 p=.07	1.67 p=.13	1.88 p=.06	2.98 p=.02	2.40 p=.04	2.01 p=.06	1.60 p=.12	3.89 p=.00	4.00 p=.00
<i>R</i> ² ; <i>Adjusted R</i> ²	.04, .00	.11, .06	.13, .05	.19, .09	.12, .08	.12, .07	.14, .07	.16, .06	.25, .18	.33, .25

Significance based on one-tailed tests: ** $p \leq .01$; * $\leq .05$; ⁺ $p \leq .10$

BUFFERING THE FAILURE OF NEW PRODUCT DEVELOPMENT PROJECTS: A MULTI-LEVEL APPROACH



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ABSTRACT

We develop a multi-level model of the impact of new product development (NPD) failures on firm valuation based on organizational, managerial, and product-level characteristics of high technology firms. Drawing on signalling theory we argue that the impact of failure increases with the product's development stage, and that this effect is contingent on the resources of the firm. Using data on 234 NPD failures of biopharmaceutical firms listed on the NASDAQ Biotechnology index, the findings largely support our model and demonstrate that organizational and managerial characteristics are important factors that mitigate the impact of NPD failures in new technology firms. We discuss implications for the product development literature.

INTRODUCTION

In the product development and supply chain management literatures, the impact of new product development events on financial value has been widely investigated. For example, scholars have analyzed the consequences of ISO certification (Corbett et al., 2005), the effect of new product introductions (Chaney et al., 1991) and the financial consequences of delays in new product introductions (Hendricks and Singhal, 1997) for NPD projects. Fewer studies (Sarkar and de Jong, 2006; Girotra et al., 2007) have focused on how NPD is linked to firm valuation and stock market response. Specifically, although NPD processes are typically associated with high failure rates, empirical studies that investigate these failures are rare. For example, in the biotechnology sector more than 80% of all new products fail, and an average drug needs approximately \$US 897 million before it can be introduced to market (DiMasi et al., 2003), suggesting a severe impact of NPD failures on the firm's market value. How can firms mitigate the negative impact of a product failure on valuation?

Existing studies on NPD failures (Sharma and Lacey, 2004; Brixa et al., 2007) have primarily focused on why failures occur. Drawing on signaling theory which suggests that organizational characteristics signal the future performance of a firm, in this article we develop a multi-level model investigating how firm-specific resources buffer negative effects of NPD failures on firm valuation. We acknowledge that products can fail at different development stages and that organizational and managerial resources will contribute to buffer the impact of failures contingent on the product's development stage. We test our model with data on 234 biopharmaceutical NPD failures of publicly traded biotechnology firms during the period 1994 to 2008. Using an event study technique we show that later stage NPD failures have a stronger negative impact on firm valuation than early stage failures. Moreover, we find that this effect is stronger for firms with fewer employees, higher R&D expenses, and higher revenues. We do not find moderating effects

of managerial team variables, although firms with younger management teams decline less in valuation after NPD failures than firms with older management teams.

We make the following contributions to literature. First, our multi-level contingency approach goes beyond existing studies that investigate market responses to new product developments based on linear and single-level effect models (Sarkar and de Jong, 2006). Second, although existing entrepreneurship literature has recognized that the external environment can negatively impact new venture performance (Nicholls-Nixon and Cooper, 2000), little is known about factors specific to the organization can buffer this impact. Finally, our work has implications for managers of high-tech companies since our results allow them to better anticipate the consequences of NPD failures and act appropriately to preserve stakeholder value when such failures occur.

THEORY AND HYPOTHESES

In dynamic and uncertain environments NPD processes are characterized by high failure risks. This is particular true for young firms that typically suffer from constraints in resources and effective internal routines (Stinchcombe, 1965). However, the visibility of NPD processes and their outcomes have a large impact on stakeholders' perceptions and evaluations of a firm (Sharma and Lacey, 2004; Bixia et al., 2007). Thus, NPD failures can be characterized as events that deteriorate the perceived value creating capacity of a firm. Moreover, these failures do not only increase stakeholders' uncertainty about future firm performance, but also lead to an increase in information asymmetry surrounding the venture. Furthermore, NPD failures reduce the firm's intangible resources that are typically valuable, rare and difficult to duplicate (Wernerfelt, 1984). Thus, NPD failures lead to a negative signal to firm's stakeholders since they reflect losses in expected future cash flows and performance. Recent studies have shown that product failures, especially those in NPD processes, typically lead to sharp drops in firm valuations (Guedj and Scharfstein, 2004; Sharma and Lacey, 2004).

Research in cognitive psychology has shown that negative information is more likely to focus shareholders' attention than positive information (Mizerski, 1982) suggesting that NPD failures send a strong signal to the capital markets. However, there is heterogeneity in the effects of product failures on firm valuation, specifically in the case of young high technology firms. In this case, shareholders may use more information than just that fact that an NPD failure occurs when evaluating the firms' market value. We will now investigate how available information on (i) the development stage of the failed product, (ii) organizational factors and (iii) managerial factors influence the impact of NPD failures. Our particular attention is on effects across levels since we propose that organizational and managerial level factors will determine, partly, the extent to which the development stage of the failed product impacts firm valuation.

Product development stage and NPD failures

New product development is often associated with long development times (Bixia et al., 2007), and in some industries such as drug development these processes are regulated and proceed along a series of different, well-defined stages. These stages differ significantly in their needs in resources, and depending on the progress of the new product will send different signals towards firms' shareholders. In the biopharmaceutical industry, the development process of a new drug is particularly well defined. It usually starts with basic research in the lab, followed by pre-clinical studies where the drug candidate that emerged from the laboratory studies is tested in animals. Subsequently,

this product candidate is tested in three stages of clinical trials in human subjects, and if it succeeds, it enters the NDA review process before the Food and Drug Administration (FDA) classifies the drug as “approvable” (Sarkar and de Jong, 2006). Based on scientific and financial information, a biopharmaceutical company has to decide at each development stage whether to continue with the next, even more expensive phase, or stop development in case the trial’s desired end points were not met or competitors have in parallel developed a more promising drug candidate for the same disease (Guedj and Scharfstein, 2004).

The later the development stage, the more resources firms need to start the next clinical trial. For example, a typical phase I clinical trial demands about \$32 million, whereas costs for a phase III trial on average amount to \$220 million (DiMasi et al., 2003). Because of that increase in resources demands failures in later development stages will provide a more negative signal to shareholders than failures in early development stages where few resources have been invested into the failed product. Further, the closer the new product to market, the more likely it will create revenues for the firm and value for the firm’s shareholder. For example, Girotra (2007) reported that a typical drug in the biopharmaceutical industry undergoing phase III trials has an average success probability of about 80%, suggesting that most investors would think that future returns from a phase III drug candidate are relatively certain. However, if the phase III candidate fails, the firm loses this potential future cash flow, and Girotra (2007) claimed that in this case investors likely lose confidence in the firm’s future potential as a whole and may penalize the firm and its management for much more than just the lost product candidate. Thus,

H1: The more advanced a young technology firm’s new product candidate, the larger the decrease in firm value after failure of that candidate.

Organizational-level factors and the buffering of NPD failures

In our study we focus on organizational-level factors that have been shown to influence organizational outcomes and may affect shareholder response to NPD failures of high technology firms: firm size, R&D expenses, and revenues.

First, size is an important characteristic of a firm since it signals legitimacy and opportunities to access and control resources (Haveman, 1993). This increased resource availabilities may buffer the impact of NPD failures because they allow the firm to quickly recover from such events. For example, larger firms can compensate for failures more easily than small firms because they can often draw on a substantial network of contacts to other organizations to find, acquire, or in-license new product candidates and re-fill their pipeline. Further, in case such an agreement is reached, the negotiation power of large firms allows them to appropriate a substantial part of the licensed product’s ownership. Consistent with these arguments, Womack (1996) found that firm size mitigates market reaction after recommendations by brokerage analysts.

It appears that this buffering effect of firm size is particularly important for failures of late stage products. In contrast to early stage product candidates, late stage candidates reflect substantial investments in the past and near future earnings. Size can signal to investors that (i) the firm has not invested all (or a too high part) of its resources in the failed product so that future development efforts are threatened, and (ii) the firm has enough networks, legitimacy, and other resources to acquire a substitute product candidate at the same development stage that will generate earnings in the new future. For failures in early development stages, size may not be a similarly important buffering signal because (i) the resources that have already been invested in the project

are not as substantial even for a small firm, and (ii) improvement of basic technologies that may underlie the early stage failure may also be feasible for small firms with little legitimacy and fewer network contacts. Thus,

H2a: The larger a young technology firm, the smaller the decrease in firm value after NPD failure.

H2b: The relationship between the development stage of a young technology firm's new product candidate and the value of the firm after NPD failure is more negative when the firm is small than when it is large.

Second, R&D expenditures reflect intangible assets of a firm and signal uncertain future benefits. Girotra et al. (2007) found that R&D expenses positively impact firm valuation given that the firm allocates these investments in a way that the product pipeline optimally balances long development cycles and low success rates. High R&D expenditures signal to investors that the firm invests much of its resources to develop new products, suggesting that investors will have high expectations for those products reaching market launch and generating revenues for the firm. In case such a product fails during development, shareholders may interpret high R&D expenditures as an inefficient allocation of resources. In contrast, NPD failure of firms with low R&D expenditures will have less impact on firm valuation because in this case investors' a priori expectations of products entering the market will be lower.

High R&D expenditures will be particularly daunting for the firm's value when the failing product has already reached a mature development stage. This is because the misallocation of resources appears particularly apparent to investors and their expectations of the failed product entering the market. This is consistent with previous studies (Ely et al., 2003; Bixia et al., 2007) demonstrating that R&D expenses in drugs at later development stages are more value-relevant than R&D investments in early development stages. Thus,

H3a: The higher the R&D expenses of a young technology firm, the larger the decrease in firm value after NPD failure.

H3b: The relationship between the development stage of a young technology firm's new product candidate and the value of the firm after NPD failure is more negative when the firm has higher R&D expenses than when it has lower R&D expenses.

Finally, existing literature (Medoff and Abraham, 1980) has shown that higher firm performance is associated with substantially higher revenues of the firm, which is consistent with Chandra and Ro's (2008) recent observation that firms that generate more revenues achieve higher stock market valuations than firms with less or even no revenues. High revenues signal to investors that the firm is able to capture much of their products' value. For products under development, shareholder will thus expect that firms that are currently generating high revenues will be able to generate high revenues in the future based on their product development pipeline. That is, if a product under development fails, shareholders will discount the value of a firm more if they assume that this firm could have generated high revenues from that product than when they assume that the firm would have generated only moderate or low revenues.

The signalling effect of high revenues, however, will vary with the development stage of the product. When products in early stage development stages fail, higher revenues are seen more positive by investors, because they allow firms to compensate failed compounds by their own earnings (Ertimur et al., 2003). In contrast, Guedj and Scharfstein (2004) have claimed that when failures during later stages occur, firms with higher revenues will lose more market value since investors' expectation that substantial revenues from the sale of the failed product will finally materialize have been higher. Thus,

H4a: The higher the revenues of a young technology firm, the larger the decrease in firm value after NPD failure.

H4b: The relationship between the development stage of a young technology firm's new product candidate and the value of the firm after NPD failure is more negative when the firm has high revenues than when it has low revenues.

Top management teams and the buffering of NPD failures

The upper echelon perspective (Hambrick and Mason, 1984) claims that the Top Management Team (TMT) is authorized to take any firm decisions necessary to adapt the firm to environmental demands. For example, Jensen and Zajac (2004) found empirical support that variables that measure visible and heterogeneous characteristics of TMTs matter to organizational outcomes. Especially for young high technology ventures that operate in uncertain environments, the composition of the TMT is crucial for firm performance and stakeholder interpretations of event severity are influenced by TMT characteristics. In our analysis we explicitly focus on those TMT characteristics that are known to influence shareholder interpretation of NPD failures (DeCarolis and Deeds, 1999; Bixia et al., 2007): the size of the TMT and the average age of its members.

First, TMT size (measured by the number of team members) is an important aspect of TMT research (Carpenter et al., 2004). Larger teams have been found yield better firm performance and faster firm growth (Eisenhardt and Schoonhoven, 1990). Furthermore, the size of a TMT has been shown to positively influence the valuation of the firm at IPO (Finkle, 1998). Large TMT are believed to have more cognitive resources than small teams which facilitates them dealing with complex decision tasks (Haleblian and Finkelstein, 1993). Moreover, larger teams tend to have more social capital in terms of valuable contacts to other individuals working in the same or related industries. These advantages over small teams suggest that investors will see large teams as superior to small teams regarding their resources to deal with a complex situation such as an NPD failure and to work out a viable strategy to recover from that failure. Consequently, the decrease of firm value after NPD failures will be more severe for small than for large teams.

This positive effect of TMT size on buffering of NPD failures appears particularly important in later development stages of new products. Whereas a failure of an early stage product represents a relatively frequent situation for the firm due to the high failure rates at those stages, late stage failures are less frequent and represent a newer and perhaps unprecedented situation for the firm, requiring high levels of managerial resources. Second, when products have already reached late development stages, a substantial part of the firm's assets have developed in a way that is specific for the product (e.g. large scale manufacturing or marketing capabilities). A failure at a late stage will thus represent a challenging situation for the firm and may be accompanied by a major reorganization of the assets developed leading to strategic reorientation. These situations require high

levels of managerial talent and competence, suggesting that investors will place particular value on having the firm run by a large team when late stage failures occur. Thus,

H5a: The larger the top management team of a young technology firm, the smaller the decrease in firm value after NPD failure.

H5b: The relationship between the development stage of a young technology firm's new product candidate and the value of the firm after NPD failure is more negative when the firm's top management team is small than when it is large.

Second, with respect to TMT age, previous studies (Hambrick and Mason, 1984; Wiersema and Bantel, 1992) have shown that older TMTs have a reduced willingness to change the firm's status quo. Moreover, they are less open to new ideas and for them security increases in importance. Furthermore, Wiersema and Bantel (1992) demonstrated a negative relationship between average TMT age and change in corporate strategy. As visible demographic characteristic, high TMT age may signal to shareholders little ability and willingness to change the firm's strategic direction as response to an NPD failure. That is, the impact of NPD failure on firm valuation will be more substantial for older than for younger teams.

Further, the benefits of young TMT age in terms of signalling recovery potential to investors appear to be more substantial when the failed product has already reached a late development stage. As argued earlier, in this case the firm's assets are likely more specific to the developed product, and the TMT will be less familiar with the situation faced than when early products fail. Therefore high ability and willingness to change the firm's strategy – signalled by a young TMT – will be more highly valued by investors when NPD failures occur at later development stages than at earlier development stages. Thus,

H6a: The higher the average age of a young technology firm's top management team, the larger the decrease in firm value after NPD failure.

H6b: The relationship between the development stage of a young technology firm's new product candidate and the value of the firm after NPD failure is more negative when the age of the firm's top management team is high than when it is low.

RESEARCH METHOD

Data and Sample

To test our hypothesis we chose the biotechnology industry as a research setting. This sector is well suited for our analysis because it is a relatively young, knowledge and invention intensive industry where highly risky NPD is critical for success. Our sample consists of publicly traded biotechnology firms that were listed in the Nasdaq Biotechnology Index during the period 1994 to 2008. To ensure homogeneity of our sample with respect to technology and NPD activities we exclusively included firms commercializing drugs for the treatment of human diseases. Moreover, to ensure comparability of NPD failures we focused on those failures that occurred during the clinical development stages of new drugs. Clinical trial data we collected from Recombinant Capital Database (ReCap) whereas financial data were gathered from The Wall Street Journal, Market Watch database, Lexis Nexis database and the companies' web pages.

From our initial sample of 92 biotechnology firms that experienced 593 NPD failures at clinical trial stage, we had to drop 276 failures because full information and the exact failure date were not available. Moreover, we had to exclude additional 83 failures because firm's financial data were not fully available. Our final data set covers 234 NPD failures that match our criteria and for which we have all data to test our hypotheses.

Variables

Cumulative abnormal return (CAR), the dependent variable in our study, captures the financial impact of a clinical NPD failure on firm valuation. We build on previous research on event study methodology (Brown and Warner, 1985) and control for potentially confounding events by taking care for the identification of the exact event date and the optimal length of the event window. In order to ensure that we capture the exact event date, we double-checked each observation identified in the ReCap database drawing on news reports provided by the Lexis Nexis database. By doing so, we identified the specific date of the earliest news release for every observation of our sample. Second, we focused on a narrow 3-day event window (Mc Williams and Siegel, 1997) that included the day prior to, the day of, and the day following the announcement of the failure, following research on event study methodology that supports short event windows. We calculated the CAR by utilizing stock market data from The Wall Street Journal and the Market Watch database. Finally, in order to control for confounding, industry-wide events we used the Nasdaq Biotechnology Index as benchmark. We measured the CAR as the relative difference between the price of the Nasdaq Biotechnology Index and the firms' share price during the 3-day event window around the failure date. If the event day was not a trading day our CAR represented the trading days immediately before and after the event date.

Our independent variables were split into three categories depending on the levels they represent. First, the product level is represented by the development stage of the product candidate. When we calculated the average CAR for all four product development phases that constitute the drug development process we found changes in firm valuation of -4% for clinical phase I failures, -7% for clinical phase II failures, -19% for clinical phase III failures, and -19% for failures in the NDA filing phase. Thus, we observe a clear split between phases I and II on the one hand and phases III and NDA filed on the other hand. We therefore consider phase I and II as "early development stage" and phases III and NDA filed as "late development stage". *Development stage* therefore is a contrast coded variable with a value of 0.5 when the failure occurred in early stage, and -0.5 otherwise.

Second, variables representing organizational level characteristics were taken from the 10-K SEC filings and the firms' annual reports in the period before the failure occurred. We measured firm size as the number of *Employees*. We included further a size corrected measurement of *Revenues* by dividing revenues by employees. Similarly, we measured *R&D expenses* by dividing firms' R&D expenses by employees. All these data we validated by cross checking with the firms' consolidated balance sheets.

Third, TMT variables were based on the firms' 14-A SEC filings. In line with previous studies (Haleblian and Finkelstein, 1993; Carpenter et al., 2004) we operationalized the sum of top managers that were listed one period before the failure occurs as *TMT_size*. *TMT_age* was measured by the average age of all TMT members.

Control variables were included in our analysis because they are known or expected to influence the firm's CAR. First, we controlled for *firm age* since older firms are likely to have more products in development and on the market than younger firms (Deeds and Hill, 1996). Furthermore, younger firms are considered to have higher failure risks due to their lack of environmental legitimacy and organizational constraints (Zheng et al., 2009). We measured firm age by the days from a firm's inception to its product failure. Second, we controlled for effects that product development with a partner may have on firm valuation. We coded *Alliances* by a dummy variable with the value 1 if the firm developed the failed drug within an alliance and 0 otherwise. Alliances may buffer the negative effect of product failures on stock markets valuation since a firm's engagement in alliances is viewed as facilitating its R&D process, post-approval production, and risk sharing (Baum et al., 2000). Third, we controlled for the firm's product pipeline using the dummy variable *Products*. This variable indicates whether the firm had only one drug candidate (*Products* = 0) or several products (*Products* = 1) within its development pipeline. Recent studies support that declines in firm value after NPD failures are mitigated by the presence of parallel development strategies and backup projects (Girotra et al., 2007) whereas single product firms may lose significantly more value because their managers are less willing to drop unpromising drug candidates (Guedj and Scharfstein, 2004). Fourth, we controlled for the firms' cash positions and operationalized *Cash* as the amount of firm cash divided by employees. Finally, the tenure of the TMT may influence its strategic decision. Longer tenured TMTs are found to have greater commitment to the status quo of the firm (Wiersema and Bantel, 1992) and have negative effects on organizational outcomes (Boeker, 1997). *Tenure* denoted average tenure of all those executives that constitute the TMT.

RESULTS

To test our hypothesis we run OLS regression analyses while controlling for within-firm error correlation. Further, to account for potential heteroskedasticity that is often observed in event studies, we estimated our models with robust standard errors. Since the correlation coefficients indicated some correlation between independent variables (e.g. between revenues and employees) we tested for multicollinearity by calculating variance inflation factors (VIFs). Multicollinearity was not a problem in our data as indicated by, the maximum VIF of 2.64, which is below the acceptable threshold for multivariate analysis (Hair et al., 2005).

Table 1 shows the results of the analysis. We first entered the control variables (Model 1). This base line model is statistically significant ($R^2 = 0.12$, $p = 0.018$). In the next step, we added the independent variables, resulting in a statistically significant model (Model 2) with an increase in explained variance as compared to the base line model ($R^2 = 0.35$, $\Delta R^2 = 0.23$, $p < 0.001$). Finally, we entered the interaction terms (Model 3) yielding a considerable increase in explained variance as compared to the base line and main-effect only models ($R^2 = 0.44$, $\Delta R^2 = 0.09$, $p < 0.001$).

Regarding main-effects hypotheses (Model 2), our results reveal that later stage NPD failures have a stronger impact on firm valuation than early stage failures, supporting Hypothesis 1. Regarding organizational factors and their buffering impact after NPD failures we find the expected effects stated in Hypothesis 2a and 3a. With respect to managerial resources we find that the higher the average age of a firm's TMT, the larger the decrease in firm value after NPD failure, supporting Hypothesis 6a.

Moreover, we find statistically significant interactions between development stage and (i) number of employees, (ii) R&D expenses, and (iii) revenues (Model 3). Since we do not find sig-

nificant interactions between development stage and (iv) team size and development stage and (ii) team age, Hypotheses 5b and 6b are not supported. In order to better understand the significant interactions we plot them on a x-axis of project development stages and on a y-axis of CAR and plots representing low and high levels of organizational-level firm characteristics (one standard deviation above and below the mean, Figure 1).

Figure 1A shows that the relationship between development stage of the failed product and CAR is less negative when the firm has more employees than when the firm has fewer employees. The nature of this significant interaction supports Hypothesis 2b. Figure 1B shows that the negative relationship between development stage of the failed product and CAR is more negative when the firm has higher levels of R&D expenses than when the firm has lower levels of R&D investments. The nature of this significant interaction supports Hypothesis 3b. Finally, Figure 1C shows that the relationship between development stage of the failed product and CAR is less negative when the firm has high revenues than when the firm has low revenues. The nature of this significant interaction provides particular support for Hypothesis 4b. For this latter case, it is interesting to note that the two lines representing high and low revenues cross. That is, while for late stage failures, firms with higher revenues suffer more, for early stage failures the impact on firm valuation is stronger for firms with lower revenues. We will discuss this finding below.

DISCUSSION

In this study, we build on the product development literature to shed new light on the role of firm specific characteristics in explaining heterogeneity of event severity across firms. We focus on NPD failures, which are frequent in many technology-based industries. We study how the development phases of product candidates and the firms' organizational and managerial-level characteristics mitigate the negative impact of NPD failure on firm valuation. We acknowledge that interactions between product-level and organizational-level variables and between product-level and managerial-level variables may occur and explain some variance in shareholder reaction to NPD failures. Our empirical analysis supports wide parts of our model.

The literature on new product development is relatively silent on the effect of project failure at different development stages. Much of the existing literature has focused only on the firm specific factors that can mitigate the valuation effect of an NPD failure (Sharma and Lacey, 2004; Sarkar and de Jong, 2006; Bixia et al., 2007), but these studies have neglected the effects of different product development stages on firm valuation. Indeed, to the best of our knowledge only two studies have been published that explicitly took into account the development stages of products. Girotra et al. (2007) conducted an event study on product failures of phase III clinical trials and explained heterogeneity in project valuation based on interactions with the development stages of other product candidates in the firm's pipeline. Guedj and Scharfstein (2004) pointed out that phase II drug candidates of young firms are less likely to advance to phase III because of agency problems between managers and stakeholders. Therefore young firms typically bring less promising (less valued) product candidates to phase II trials than established firms. We add to this literature by investigating how failures of early and late development stage product candidates can be mitigated by organizational and managerial level properties.

An interesting empirical finding of our study is that while in early development stages firms with less revenues suffer more from NPD failures than firms with high revenues, this effect is reverse for NPD failures at late development stages (see the crossing lines in Figure 1C). Shareholders

appear to interpret the role of revenues differently in the case of early and late stage failures. This result can be interpreted in line with Guedj and Scharfstein (2004) who suggest that late stage failures are viewed by investors as losses of expected average sales of the product. The higher the firm's revenues, the higher are the shareholders' expectations of sales, and the more severe the drop in firm valuation will be when those expectations are not met because of an NPD failure. For early stage failures, in contrast, shareholders may see high revenues as a source for finance that allows the firm to quickly develop new, early stage projects that compensate for the failed candidate. Future research can test this explanation.

Our results are consistent with the resource-based view of the firm (Wernerfeldt, 1984) which suggests that firms are idiosyncratic bundles of resources that are crucial determinants of organizational performance and firm valuation. A late stage product candidate represents a more valuable resource for a firm than an early stage candidate since more finance has been invested in a late candidate and the late stage candidate is closer to market. Consequently, the negative impact of product failure on firm valuation is more severe in later stages of the development process. Importantly, however, our results demonstrate that other organizational resources can buffer this negative effect contingent on the product's development stage. In the case of NPD failures investors appear to value a firm not only based on the resource destroyed (the failed product) but also based on how that resource is expected to contribute to firm performance given the firm's idiosyncratic characteristics. This is in line with recent research showing that the composition of a firm's product development portfolio explains, partly, the impact of NPD failures on firm valuation (Girotra et al., 2007).

Moreover, our study adds to upper echelon research (Hambrick and Mason, 1984) by investigating the role of the management team in the case of NPD failures. While much upper echelon research has focused on how TMTs impact financial performance over an extended time frame or a yearly basis (e.g. Boeker, 1997; Jensen and Zajac, 2004), much less is known about their role in the case of adverse events. For example, Wiersema and Bantel (1992) found that TMTs propensity to change corporate strategy is linked to its demographic characteristics and much higher when TMT age is lower and TMT tenure is shorter. We present one of the first empirical studies on how TMT characteristics can mitigate the negative effect of NPD failure on firm valuation. We show that firms with older management teams decline more in valuation than firms with younger management teams, independently of the failed product's development phases. These findings complement previous studies (Haleblian and Finkelstein, 1993; Wiersema and Bantel, 1992) that have shown that older TMTs display a reduced willingness to change the firm's status quo. As visible demographic characteristic, TMT age seems to act as signal towards shareholders to demonstrate the TMT's ability to change the firm's strategic direction in difficult situations such as after NPD failures.

Our findings have implications for practice, especially for managers of high technology firms since they allow them to better anticipate and understand the consequences of NPD failures. Specifically, our result highlight the influence that shareholders perceptions of the organizational and managerial characteristics of the firm have on value destruction after NPD failures, and that this influence is dependent on the product development stage of the failed product. Managers who develop a portfolio of product candidates at different development stages should align those stages with their organization's characteristics in terms of firm size, R&D expenses, revenues, and age of the management team. For example, for small firms it appears more beneficial than for large firms to sell or out-license product candidates before they reach later development stages

(even if the firm has sufficient financial resources to finalize their development) because in case the product fails in late development the effect on firm valuation is particularly daunting for small firms. Aligning the product development portfolio with organizational characteristics can preserve shareholder value in case of NPD failures.

As all studies, this one has limitations which in turn provide opportunities for future research. One issue concerns the focus on biotechnology companies, and thus on a single high technology industry. While this sampling technique rules out methodological threats (Zheng et al., 2009), it raises the question of generalizability to a larger population. Caution must be exercised when transferring results from a single industry to others. We hope that future research will verify our findings in settings other than the biotech industry. Further, since we exclusively focus on companies listed in the Nasdaq Biotechnology index to better operationalize the relative difference between the benchmark and the firm's share after NPD failure, our measure of CAR is incomplete to the extent that focal firms' losses in share price influence the performance of the index itself (that is, the firm that experiences a focal NPD failure itself contributes to the composition of the index). Although our approach is in line with Michaely et al. (1995) who argue that measurement of the CAR by using a fitting index is beneficial to avoid confounding events that are industry-specific, more work is needed to investigate alternative measures of the CAR.

In conclusion, this study shows that product, organizational, and managerial-level factors explain variance in the impact of NPD failures on the valuation of young technology firms. Our results demonstrate that these factors interact in mitigating this impact such that the effect of the development stage of the failed project product is contingent on firm size, R&D expenses, and revenues. These results advance our understanding of shareholders' perspectives of product failures and emphasize that cross-level effects should be considered by future research seeking to explain variance in investor behaviour and firm valuation.

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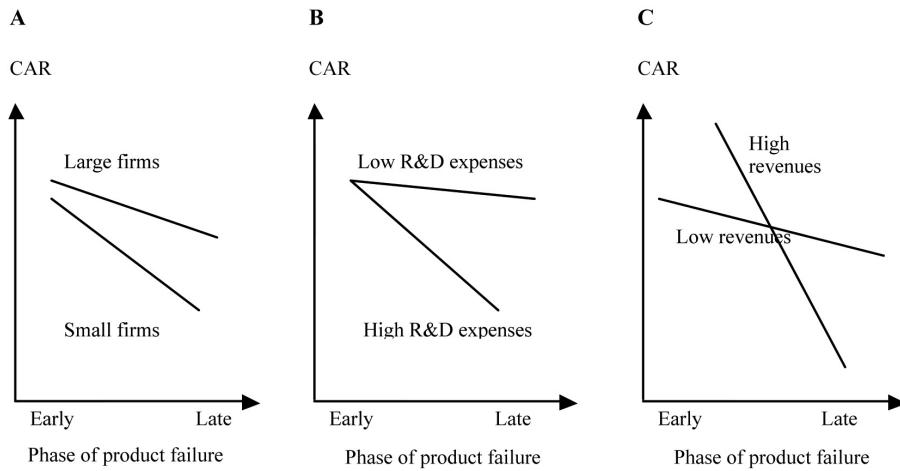
Table 1: Results of OLS regression

Variables	Cumulative Abnormal Return (CAR)		
	Model 1	Model 2	Model 3
Constant	-0.287 (0.056)***	-0.256 (0.053)***	-0.243 (0.053)***
<i>Control variables</i>			
Firm age	0.004 (0.013)	-0.014 (0.013)	-0.013 (0.013)
Alliances	0.008 (0.028)	0.012 (0.024)	0.006 (0.026)
Products	0.200 (0.054)***	0.141 (0.049)***	0.139 (0.047)***
Cash	0.005 (0.011)	-0.005 (0.010)	-0.006 (0.009)
TMT-tenure	0.001 (0.015)	0.006 (0.014)	0.006 (0.013)
<i>Direct effects</i>			
Development stage		0.060 (0.015)***	0.062 (0.012)***
Employees		0.040 (0.011)***	0.036 (0.011)***
Revenues		-0.022 (0.015)	-0.000 (0.010)
R&D expenses		-0.053 (0.015)***	-0.052 (0.017)***
TMT-size		-0.012 (0.014)	-0.019 (0.015)
TMT-age		-0.034 (0.016)**	-0.044 (0.019)**
<i>Cross-level effects</i>			
Development stage x Employees			-0.031 (0.011)***
Development stage x Revenues			0.027 (0.010)***
Development stage x R&D expenses			0.054 (0.010)***
Development stage x TMT-size			0.014 (0.015)
Development stage x TMT-age			0.023 (0.015)
Observations	234	234	234
R-squared	0.12	0.35	0.44
Change in R-squared		0.23***	0.09***
F-test(df)	2.94 (5)	6.53 (11)	8.06 (16)

Robust standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Figure 1: Interaction effects between different project development stage of product failures and (A) the firm size, (B) the level of R&D expenses, and (C) the level of revenues.



ENTREPRENEURIAL ORIENTATION AND FIRM PERFORMANCE IN CHINA: THE ROLE OF RESOURCE ENDOWMENTS



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ABSTRACT

Entrepreneurial and strategic research links the growth and performance of the new firm to the degree of its entrepreneurial orientation (EO), or its willingness to innovate, take risks, and be proactive relative to opportunities (Miller, 1983; Covin & Slevin, 1989). In this study, we test the EO-performance relationship on a sample of small and medium-sized enterprises in Northeast and Southeast China (n = 195), focusing on the moderating effect of resource endowments. Results indicate that when the resource endowment is poor, the relationship between EO and performance is curvilinear (inverted “U”-shaped). When the resource endowment is munificent, the relationship is also curvilinear, but with the opposite shape (“U”-shaped). Our findings bring to the fore the complex relationship between EO and performance in resource-constrained emerging markets and indicate that a configurational approach to entrepreneurial orientation should be given more attention in both theory and practice.

INTRODUCTION

China is the biggest transitional economy in the world. After more than two decades of sustained market transition, domestic entrepreneurial organizations have emerged as one of the most important driving forces behind China's rapid economic development (Yiu & Lau, 2008). As in all countries in transition, entrepreneurs in China create wealth and advance the economy to higher levels of competitiveness through their energy, proactiveness, and innovative strategies (Peng, 2001). That private entrepreneurs realize to the full extent their growth and performance potential, is, therefore, an important managerial and public policy concern.

Entrepreneurial and strategic research links the growth and performance of the firm to the degree of its entrepreneurial orientation (EO), or its willingness to innovate, take risks, and tendency to be proactive relative to marketplace opportunities (Miller, 1983; Covin & Slevin, 1989; Lumpkin & Dess, 1996; Wiklund, 1999). Taken together, the three dimensions suggest entrepreneurially oriented organizations are more likely to focus their attention on the discovery and exploitation of market opportunities (Wiklund & Shepherd, 2003), and make a new entry in competitive space (Lumpkin & Dess, 1996). Most extant research has found a positive relationship between entrepreneurial orientation and performance (Covin & Slevin, 1991; Zahra, 1991; Zahra & Covin, 1995; Wiklund, 1999). In addition, research increasingly focuses on the internal and external factors that moderate the relationship between entrepreneurial orientation and performance (Lumpkin & Dess, 1996; Wiklund & Shepherd, 2005). For example, Covin & Slevin (1989) found that entrepreneurial strategic posture will benefit performance more strongly in dynamic and hostile environments.

While entrepreneurial orientation is universally important, it is especially critical in transitional economies such as China. China's economy is undergoing a large-scale transition, providing scholars with a quasi-experimental social setting (Meyer & Peng, 2005) for the study of entrepreneurial conduct in turbulent environments. Research on entrepreneurial orientation in China has found that the relationship between entrepreneurial orientation and performance is quite complex (Chow, 2006; Tang, *et al.*, 2008), suggesting that further work is needed in this area.

The transition from a centrally planned to a market oriented economy in China is fraught with challenges. Incomplete laws on property rights, limited capital markets, and an inefficient labor market (especially for qualified labor) have made entrepreneurial activity challenging. Most private firms in China face resource constraints and compete to acquire strategic assets in order to gain and sustain competitive advantage. Some researchers posit that EO benefits organizational performance in the long run (Wiklund, 1999), but that the fledgling firm needs to be configured with the appropriate resources (Wiklund & Shepherd, 2005). In other words, contrary to popular opinion which argues that resource endowments per se are sources of competitive advantage for entrepreneurial firms (Barney, 1991; Shane & Stuart, 2002), in firms in transitional economies, resource endowment can be considered a strategic constraints because the weak liquidity of resources coupled with incomplete strategic factor markets constrain the benefits stemming from a strong entrepreneurial orientation.

In this paper, we explore the moderating role of resource endowments on the relationship between entrepreneurial orientation and firm performance in China. Specifically, we ask the question *What is the role of resource endowments in the entrepreneurial orientation – performance relationship in transitional economies*. In the next section we explore the existing research on entrepreneurial orientation and performance and then extend that to our Chinese context. We argue that China is both a turbulent and a dynamic market, so that the relationship between entrepreneurial orientation and performance under conditions of poor resource endowments may be radically different from the relationship between entrepreneurial orientation and performance under conditions of munificent resource endowments. We then go on to present our methodology and findings and then discuss our results and their implications.

THEORY AND HYPOTHESES

Entrepreneurial Orientation and New Venture Performance

Entrepreneurial orientation refers to a firm's strategic orientation, capturing specific entrepreneurial aspects of innovativeness, proactiveness, and risk-taking (Covin & Slevin, 1989). Innovativeness reflects "a firm's tendency to engage in and support new idea, novelty, experimentation, and creative process" (Lumpkin & Dess, 1996) to pursue new opportunities. Proactiveness refers to the acting and anticipating with a forward-looking perspective to introduce new products or services (Miller & Friesen, 1982). Risk-taking is the degree of risky behavior in the entrepreneurial strategic process. Overall, entrepreneurial orientation is related to the entrepreneur's methods, practices and decision-making styles (Lumpkin & Dess, 1996). These factors may be both necessary and sufficient conditions for successful new entry (Child, 1972; Van de Ven & Poole, 1995; Lumpkin & Dess, 1996).

One of the well established relationships in both the conceptual and the empirical literature is the relationship between entrepreneurial orientation and performance. Starting with Miller

(1983), and continuing throughout the conceptual literature, scholars have argued for a positive and significant relationship between entrepreneurial orientation and firm performance. The majority of the empirical studies in this area have validated this positive and significant relationship (see for example, Covin & Slevin, 1989, Zahra & Covin, 1995, Wiklund, 1999).

While entrepreneurial orientation is a thoroughly studied concept in developed economies, it is less well understood in transitional economies. In transitional economies such as China, the environment is dynamic and turbulent, attracting a rapid flow of foreign investment (Bruton & Ahlstrom, 2003) and motivating complex modes of business transactions (Peng, 2001). Firms with an entrepreneurial orientation are better aligned with the shifting competitive landscape. For example, Tan (2005) found that firms operating in China after 1990 are far more innovative and risk oriented than those operating in previous years. In addition, in a sample of 1,100 enterprises located in Shandong, Inner Mongolia, Hebei and Tianjin China, Tang *et al* (2007) found a positive and significant relationship between EO and performance. Given that the firms in our sample are from a newly industrialized area of China that is experiencing rapid growth, we hypothesize:

Hypothesis 1: There will be a positive relationship between EO and new business performance in China.

Resource Endowment and the Link between Entrepreneurial Orientation and Performance in China

While research in developed and emerging markets indicates a positive and significant relationship between entrepreneurial orientation and firm performance, recent scholarship suggests that the relationship is more complex than originally thought. For example, Tang *et al* (2008) in a reanalysis of his 2007 China data found that instead of a positive linear relationship between EO and performance, the relationship is better expressed as an inverted U shape. These findings suggest that in the context of emerging markets, the entrepreneurial orientation of the owner/founder is valuable but only up to a certain point.

In addition to the unclear relationship between EO and performance in turbulent and dynamic emerging markets, some authors have argued that internal factors, such as availability of resources (Wiklund & Shepherd, 2005), moderate the relationship between EO and performance. Resources are heterogeneous, and include all assets, capabilities, processes, and knowledge controlled by a firm. They enable firms to conceive and implement strategies, hence improving overall effectiveness (Barney, 1991), and are a source of sustainable competitive advantage, to the extent they are valuable, unique, and costly to substitute or imitate (Wernerfelt, 1984; Barney, 2001; Alvarez & Barney, 2004). In the case of new ventures, which are in the process of building their resource base, initial resource stocks include financial, technological, and human capital (e.g., Brush, Greene, & Hart, 2001; Greene & Brown, 1997; Lichtenstein & Brush, 2001).

While resources are clearly essential for the performance of a new venture, most entrepreneurial firms do not have ownership or control over the set of resources which are needed for building competitive advantage. This problem is likely to be exacerbated in dynamic and turbulent emerging markets like China. The transition from central planning to a market driven economy is characterized by incomplete factor markets (Luo, 2003), hence resource availability is likely to influence the entrepreneur's decision about how to enter and compete in a new business. The inefficient factor markets in transitional economies are particularly disadvantageous to resource-intensive strategies such as innovation, pro-activeness, and risk-taking, which are based on cre-

ativity, flexibility, and speed. More specifically, we argue that when the resource endowment of the new venture is below average, low levels of entrepreneurial orientation will be negatively associated with performance, because of the difficulty to build a market advantage necessary to compete with industry incumbents (Penrose, 1959). However, high levels of entrepreneurial orientation will be just as detrimental, because of the inefficiency of the market mechanisms for resource exchange, the difficulties in resource valuation, and/or the potential opportunistic behavior of contracting partners (Barney, 1991; Capron *et al.*, 1998; Wiklund & Shepherd, 2009). In other words, entrepreneurial orientation will benefit the new venture up to a point, after which it will start to undermine performance. In a recent article specifically focused on the link between entrepreneurial orientation and performance in the Chinese context, Tang *et al.*, (2008) identified both environmental and firm-specific factors that shape this inverted “U” relationship. At the environmental level, these authors point out the role of the institutional environment, which is still predominantly state-centered and vertically-oriented, making political connections particularly influential in getting access to resources and markets. Firm-level factors include the relatively low levels of human capital, particularly in terms of managerial skills and competencies, which may adversely affect performance particularly when the new venture engages in highly proactive, innovative, and risky strategic behaviors.

In contrast, if the new firm enjoys a rich resource endowment, it will be more flexible to pursue its chosen strategic orientation; be it conservative or aggressive. In the case of small players, in particular, a low-risk strategic behavior such as defending a niche market positioning coupled with well-established customer or supplier relationships can be a source of sustainable competitive advantage. Resource munificence also allows new and small players to successfully pursue highly aggressive and resource-intense strategies such as innovation or preemptive competitive entry. At the same time, some players may be tempted to pursue proactive, risky, or innovative agendas for which they lack the skills, competencies, or managerial capabilities, just because resources are readily available. Such opportunity-driven, non-strategic behavior, however, is most likely to undermine firm performance. Formally:

Hypothesis 2: Resource endowment will moderate the relationship between EO and new business performance:

Hypothesis 2a: Given a poor resource endowment, low and high, but not moderate, levels of EO will be negatively related to entrepreneurial performance, resulting in an inverted U-shaped relationship.

Hypothesis 2b: Given a munificent resource endowment, low and high, but not moderate, levels of EO will be positively related to entrepreneurial performance, resulting in a U-shaped relationship.

METHOD

Sample

A questionnaire survey method was used to collect data in the Dalian city and Guangzhou city of China. Firstly, we developed a Chinese questionnaire based on the current instrument in extant studies (Covin & Slevin, 1989; Rosabeth, 1985; Reid & Smith, 2000; Wiklund & Shepherd, 2005). We acquired the company list with 540 company names from the management committee of the Dalian high technology firm district, and MBA program in Guangzhou. To capture the effect

of the variance in the level of resource endowment on the relationship between entrepreneurial orientation and performance, we extended the age cut-off point to 2008 year, so that the average age of the firms in our sample is 9.91 years, while the number of employees is below 1,000. In terms of China's business classification system, the firms selected are all considered to be small and medium-sized enterprises (SMEs). Each company was contacted by phone, and 36.1% of the district members agreed to participate in the study, to a final usable sample size of 195 firms. Data were collected in 2008 through mail, email and interviews with a middle or top firm manager. In a series of t-tests, we found no statistically significant non-response bias.

Measures

New Business Performance. We followed Rosabeth (1985) and Reid & Smith (2000) and measured *new business performance* by three items: "the number of new business projects", "the percentage of new business projects in the total business of the company", and "the sales from new business projects in total sales".

Entrepreneurial Orientation. Covin & Slevin's (1989) original nine-item scale was used to measure *EO*. All items employed a seven-point semantic differential scale with a neutral midpoint. To test measurement bias, we designed another question about firm strategy. Our entrepreneurial orientation measure was significantly correlated with high level innovation strategy ($r = .18, p < .05$).

We employed exploratory and confirmatory factor analysis to test for the dimensionality of the *EO* construct (Lumpkin & Dess, 1996; Kreiser, *et al.*, 2002; Avlonitis & Salavou, 2007; Hughes & Morgan, 2007). First, we tested for the factor structure by exploratory factor analysis and we found the nine items loaded on three factors. The factor loading of one item from the risk-taking subscale was lower than 0.6 and was thus discarded from further analysis, so a total of eight items are used in the subsequent second-order confirmatory factor analysis. We used the AMOS 4.0 statistical package for the confirmatory factor analysis. In the second-order confirmatory analysis, the eight *EO* items we retained firstly loaded on three independent constructs in the first-order model, as follows: three items loaded on innovativeness, two items loaded on risk taking and the remaining three items loaded on proactiveness. Then these three dimensions loaded on one dimension in the second-order model. The model's Chi-square was 13.661, with 17 degrees of freedom, and a p-level a 0.691. The Goodness-of-Fit index (GFI) was 0.983, the adjusted GFI was 0.964, and the Normed Fit Index (NFI) was 0.967, which were all above the 0.9 acceptable level (Bentler, 1990), and RMSEA was a very acceptable (Kline, 1998). The results imply that entrepreneurial orientation is a higher-level construct, composed of three sub-dimensions- innovativeness, risk-taking and proactiveness, consistent with the finding in Kreiser, Marino & Weaver (2002)'s study and the initial argument made by Covin, Slevin & Heeley (2000). Considering the result of the confirmatory factor analysis, we use *EO* as a uni-dimensional construct. In other words, in our hierarchical linear equation *EO*'s three sub-dimension were combined into one dimension as an independent variable.

Reliability coefficients of 0.70 or higher are considered adequate for purposes of construct validation (Cronbach & Warrington, 1951; Nunnally, 1978). As can be seen from Table 2, the Cronbach's alpha values of all factors were above 0.70, suggesting that the theoretical constructs exhibit good psychometric properties and the measures are reliable.

Construct validity is the extent to which the items in a scale measure the intended theoretical construct (Chandler & Sweller, 1991; Churchill, 1979). A loading value of 0.70 is the suggested minimum level for item loadings on given scales. Table 2 shows that the loadings are all above the 0.70 level, suggesting good construct validity of the scales (see Table 2).

Resource Endowment. We used three items to measure *resource endowment*, which assessed financial resources (Wiklund & Shepherd, 2005), technological resources, and human resources (Shan & Stuart, 2002) on a seven-point scale with two opposite statements “insufficient and a great impediment for our development” and “fully satisfactory for the firm’s development”.

Control Variables. We controlled for firm size and age as both of them may influence organizational performance (Stam & Elfring, 2008; Wiklund & Shepherd, 2005; Zahra & Neubaum, 1998). For measuring firm size, we used the number of employees and firm assets (self-reported measures). Additionally, we controlled for industry effects by introducing a binary variable, where “0” = traditional industry, and “1” = high technology industry.

ANALYSIS AND RESULTS

To capture the theoretical interdependencies between entrepreneurial orientation and the configuration model, we analyzed the data using hierarchical regression modeling (SPSS statistical package).

The descriptive statistics and correlations of the variables are showed in Table 1. The correlations matrix implies that the control variables are not significantly associated with the independent variables, but for further test for multicollinearity in the higher-order model, we applied multicollinearity diagnosis. All of variance inflation factors (VIF) are below the threshold value of 4.0 (see Table 3), alleviating multicollinearity concerns (Hair *et al.*, 1998).

We tested our hypotheses using a four-step model. First we tested for the effect of the control variables on new venture performance and found that 3% variance of new venture performance was explained by firm assets. Second we tested for the direct effect of EO on new venture performance, and found that an additional 8% of the variance was explained. In this step we found that entrepreneurial orientation was significantly and positively related to new venture performance ($\beta = .29, p \leq .001$), which supports our hypothesis 1.

Next we tested for the effect of the quadratic term of entrepreneurial orientation on new venture performance. We found a weak but significant ($p \leq 0.1$) relationship between the quadratic term and new business performance. Finally, in step 4, we tested for the interaction effect between resources and the quadratic term of entrepreneurial orientation. Here there was a significant and positive relationship between the interaction term and new venture performance ($\beta = .18, p \leq .05$). Recalling that the interaction term would produce a cubic function, this implies that (1.) given a poor resource endowment, there will be an inverted U-shaped relationship between entrepreneurial orientation and new business performance, while (2.) given a rich resource endowment there will be U-shaped relationship between entrepreneurial and new business performance. Therefore, we find positive support for both hypotheses 2a and 2b.

DISCUSSION

In this paper we explore the link between entrepreneurial orientation and firm performance in the context of a dynamic and turbulent emerging market, China. Our findings indicate that there is a strong relationship between entrepreneurial orientation and firm performance, but that this relationship deserves additional exploring. Specifically we add the moderating variable resources, which we operationalize as financial, technological and human resources to the entrepreneurial orientation – firm performance nexus. We tested this additional moderating variable on the squared entrepreneurial orientation variable, given the recent evidence of threshold effects in the EO-performance relationship (Tang, *et al*, 2008). Here we found positive and significant results, suggesting that the level of resource endowment matters. Our findings thus argue for the importance of the entrepreneurial orientation-firm performance relationship in transitional economies, but also that there are threshold effects that question the traditional linear nature of the EO-performance relationship which are exacerbated when resources are considered. We discuss each of these below .

Entrepreneurial orientation is positively related to firm performance in transitional economies such as China. Our first finding confirms the traditional Covin & Slevin (1989) argument that increased entrepreneurial orientation is positively and significantly associated with enhanced firm performance. However, given our transitional economy setting, we move beyond the now thoroughly tested EO-performance relationship in developed economies to suggest that this relationship will hold in emerging economies as well. Our finding of strong support adds to the growing body of literature on the importance of entrepreneurial orientation.

Resource endowments moderate the relationship between EO and firm performance. Our second finding explores the more complex relationship between entrepreneurial orientation and firm performance under different levels of resource endowments. In support of prior work by Tang *et al.*, (2008), we find that when the resource endowment is poor, entrepreneurial orientation benefits new and small ventures up to a point, after which it starts to undermine firm performance. In contrast, when the resource endowment is munificent, clear strategic positioning (e.g., either low or high level of entrepreneurial orientation) benefits firm performance, whereas a moderate level of entrepreneurial orientation does not. Figure 1 illustrates these relationships (see Figure 1).

In general our findings highlight the complex relationship between entrepreneurial orientation and firm performance in munificent and resource-constrained emerging markets. They suggest that while entrepreneurial orientation generally benefits new business performance in hostile environments (Covin & Slevin, 1989), it is also quite resource-intensive. Therefore, when factor markets are incomplete and market institutions are underdeveloped, excessive proactiveness, innovation, and risk-taking can quickly deplete the resource base of the new venture and render it vulnerable to competitive threats and economic downturns. Under high resource constraints, therefore, a moderate level of entrepreneurial orientation will benefit new business performance the most. Overall, our research indicates a configurational approach to entrepreneurial orientation should be given a lot more attention in both entrepreneurship theory and practice.

IMPLICATIONS AND CONCLUSION

This research extends our understanding of the entrepreneurial orientation – firm performance link in an under researched context, transitional economies. It then adds the moderating

variable firm resources to the relationship to explicate the role of resources in emerging economies. While our research makes a valuable contribution to the EO-performance relationship, it is not without limitations. Specifically, we have limited our attention to just the EO/resources – firm performance relationship without exploring other important characteristics of the firm. While this allows us to concentrate on our focal relationship, it does exclude other possible factors from consideration. It is likely that, while important, resources are not the only important factor that needs to be considered when exploring entrepreneurial orientation and performance. Additionally, in this study we only considered tangible resources, but intangible resources, such as firm knowledge may also play an important and hitherto unexplored role in entrepreneurial orientation.

In addition to our concentrated approach to understanding EO and firm performance, we used cross-sectional data to explore the entrepreneurial orientation – performance relationship. As indicated by Wiklund (1999), entrepreneurial orientation is a long-term strategy thus making it more appropriate for exploration using longitudinal data. Additionally, while our study explores the EO/resources – firm performance nexus in an emerging economy, we are limited in that we only look at one region in China. While economic conditions are similar across emerging markets, it is possible that our findings are skewed by this geographical constraint.

Limitations notwithstanding, our study explores the complex relationship between entrepreneurial orientation and firm performance in a new setting. We then add firm resource endowments to better understand the subtleties of the EO- performance relationship. Our findings indicate that resources are an important factor in understanding entrepreneurial orientation in transitional economies. Thus, our research provides a finer-grained analysis of what is a complex and under explored area, thus extending our understanding of the importance of entrepreneurial orientation and firm resources and the multifarious ways in which they interact.

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Table 1: Descriptive Statistic and Correlation Matrix

	Mean	S.D.	1	2	3	4	5	6
Firm Age	9.91	5.92	1.00					
Employee	1.59	1.20	0.06	1.00				
Asset	2.33	11.28	-0.09	0.26**	1.00			
Industry	0.62	0.49	-0.05	0.06	0.08	1.00		
EO	3.14	0.64	0.09	0.07	-0.10	-0.05	1.00	
RES	2.65	0.88	0.02	0.11	0.01	-0.14	0.37**	1.00
PERF	2.98	0.94	0.07	0.01	-0.15*	0.03	0.30**	0.27*

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table 2: Factor Loading and Reliability

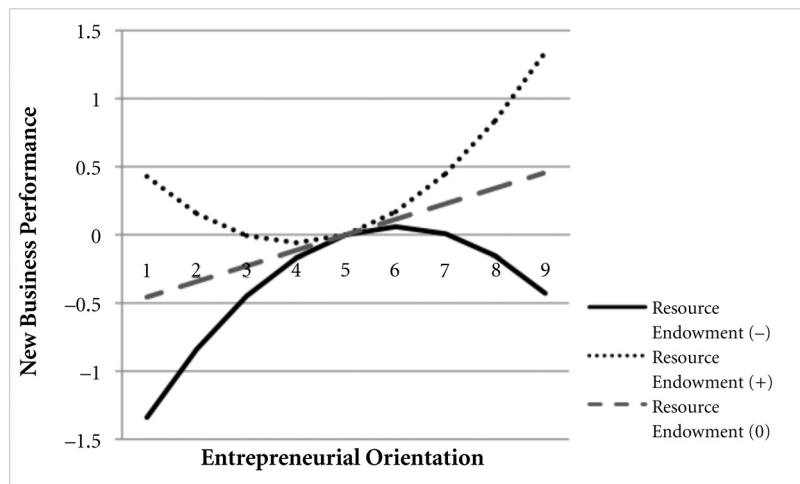
		Component					Cronbach's
		1	2	3	4	5	α
Entrepreneurial Orientation	F01	.113	.811	.164	.134	.036	0.731
	F02	.081	.799	.105	.087	.099	
	F03	.176	.721	.092	.067	.028	
	F04	.774	.270	-.016	.100	.108	0.779
	F05	.854	.080	.116	.023	.065	
	F06	.785	.071	.075	.167	.060	
	F07	.147	.074	.028	-.024	.865	0.724
	F09	.054	.075	.231	.087	.852	
Resource Endowment	RES1	-.048	.074	.802	.093	.204	0.724
	RES2	.023	.167	.812	.132	.126	
	RES3	.223	.129	.717	.074	-.046	
New Venture Performance	PERF1	.104	.137	.105	.778	-.117	0.717
	PERF2	.119	.145	.125	.826	.015	
	PERF3	.056	.014	.060	.747	.160	

Table 3: Results of Hierarchical Linear Regression ^a

	New Business Performance			
	Step 1	Step 2	Step 3	Step 4
	β	β	β	β
Firm age	.09	.06	.06	.06
Employee	.04	.01	.02	.01
ln asset	-.14†	-.12	-.12†	-.12†
Industry	.01	.03	.04	.05
EO		.29***	.30***	.21**
EO square			.11	.06
Resource				.08
EO × Resource				.01
EO square × Resource				.18*
R ² / Adj R ²	.03/.01	.11/.09	.12/.09	.17/.13
ΔR^2	.03	.08	.01	.05
F-value	1.37	17.35***	2.69	3.37*

†, $p \leq 0.1$; *, $p \leq 0.05$; **, $p \leq 0.01$; ***, $p \leq 0.001$.

a. N=195, All VIF value is less than 1.8.

Figure 1: EO squared, Resource Endowment and New Venture Performance

THE ATTRIBUTES OF FIRM GROWTH – WHY AND WHY NOT A FIRM DOES GROW



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ABSTRACT

Although previous studies suggest that innovative behavior has a positive effect on firm growth, little is known about the interaction between innovative behavior and different attributes of growth. In this study we examine the interaction between firm growth and different arrangements of growth attributes, such as willingness, abilities and opportunities for growth. We suggest that the order or causal relationship of growth attributes is not definite. In addition, we investigate does the innovative behavior moderate the relationship between growth attributes and firm growth by applying a qualitative configurational approach. Our results show that innovative behavior moderates firm growth: non-innovative firms seem to benefit more from growth intentions than other firms.

INTRODUCTION

In recent years, there has been an increasing interest in examining the different factors affecting on the firm growth. Primarily, the growth of the firm is related to the intentions of the entrepreneur or manager (Birley & Westhead, 1990; Wiklund, Davidsson, & Delmar, 2003; Wiklund & Shepherd, 2003). Entrepreneur or manager makes the fundamental decision to grow or not to grow his/her firm. However, these intentions are only one dimension of the attributes of firm growth (Sexton & Bowman-Upton, 1991; Toivonen, Stenholm, & Heinonen, 2006). As Covin and Slevin (1997) emphasized in their theoretical model that the effect of growth aspirations on firm growth is likely moderated by market constraints, entrepreneurial capabilities, and organizational resources.

In this study we assume that all of the three attributes, willingness, abilities, and opportunities, have to be fulfilled to achieve growth. As previous studies have shown, growth aspirations are positively associated with firm growth. However, this relationship is affected by other factors, like abilities and opportunities (Sexton & Bowman-Upton, 1991; Wiklund & Shepherd, 2003). Growing a firm requires abilities or their reconfiguration to adapt firms' activities and outcomes to the perceived growth opportunity. Without required abilities, like management skills or financial resources, growth is unlikely, even if primary decision-maker would have growth intentions (Penrose, 1959; Wiklund & Shepherd, 2003). If a firm already owns or is able to acquire the particular resources, it is likely that firm is able to react to the recognized opportunities. However, taking advantage of growth opportunities may require innovative behavior. In order to match the firm's abilities to the recognized opportunities firms may have to renew and reconfigure their abilities as well as introduce new products or services to the markets (Lumpkin & Dess, 1996). Similarly, innovative behavior may create a whole new set of opportunities for growth.

Therefore, we assume that innovative behavior moderates the relationship between the attributes of growth and actual growth. This assumption is partly supported by previous research that

shows that different kinds of innovative behavior have a positive effect on firm growth (Sandvik and Sandvik 2003; Wolff and Pett 2006). However, still it is not clear how innovative behavior may interact with the attributes of firm growth and firm growth. By using a longitudinal data we examine the association between growth attributes and realized growth, and how innovative behavior does moderate this association. Due the non-linear characteristics of growth attributes, we analyze them with a qualitative configurational approach examining different configurations and combinations of the attributes of firm growth (cf., Fiss, 2007). This approach enables us to sort out the interaction of different growth attributes and innovativeness. Our study starts with an overview of the attributes of firm growth and the role of innovativeness in firm growth. Then we represent the theoretical aspects related to our study. After specifying our research design, we introduce results and conclude the study.

ATTRIBUTES OF FIRM GROWTH

The prerequisites of firm growth have been traditionally linked to the essential role of individual's motivation. Concepts like growth aspirations, personal motivation or willingness have been the starting points when studying growth. Growth aspiration is related to the personality and psychological factors of the entrepreneur or manager and to exogenous factors, like situational factors that may affect the decision-making (Bird, 1988; Davidsson, 1991; Krueger, 2000; Miner, Smith, & Bracker, 1994; Moran, 1998). Theoretically this attribute is related to the theory of planned behavior (Ajzen, 1991), which models in more detail the psychological processes preceding the observed behavior. Theory of planned behavior has frequently been used in illustrating the importance of intentions and perceptions, norms and situational factors related to growth behavior (Delmar & Wiklund, 2003; Wiklund & Shepherd, 2003). In addition, the behavior takes place under limited volitional control (Delmar & Wiklund, 2008), and the actions based on the aspirations are dependent on the perceived desirability (outcomes), feasibility (abilities) and opportunities associated with intended behavior (Ajzen, 1991; Davidsson, 1991; Krueger, Reilly, & Carsrud, 2000; Wiklund & Shepherd, 2003). In addition, possible earlier growth experiences do also affect the aspirations, and according to Delmar and Wiklund (2008) including the notions of feedback and stability of motives in the analysis is likely to lead to better models of firm growth.

As such, the aspiration for growth is, however, only a predictor for actual behavior, not the end result. Still, the reason for the crucial role of growth aspiration is apparent. The entrepreneur or management makes the actual decision to grow or not to grow the firm (Davidsson, 1991; Gibb & Davies, 1990; Kolvereid, 1992; Wiklund et al., 2003). Hence, the growth aspiration is perceived here as one of the crucial attributes of firm growth (Birley & Westhead, 1990; Cliff, 1998), but its' existence without other attributes of growth is not explicit.

Previous studies show a positive relationship between growth intentions and growth (Baum, Locke, & Smith, 2001; Bellu & Sherman, 1995; Delmar & Wiklund, 2008; Kolvereid, 1992; Kolvereid & Bullvag, 1996). However, the some of these results show that association seems to be rather frail, which implies that the association between growth aspiration and growth is affected also by other factors (Saemundsson, 2003; Wiklund & Shepherd, 2003). Covin and Slevin (1997) and Sexton and Bowman-Upton (1991) suggested that the relationship between growth aspiration and actual growth is likely moderated by market constrains, entrepreneurial capabilities, and organizational resources. Wiklund and Shepherd (2003) found that the relationship between aspirations and behavior is moderated by the resources and opportunities available. In addition, Dutta and Thornhill (2008) found that entrepreneurs' or managements' perception of the competitive condi-

tions may modify their growth intentions. These findings suggest that the relationship between aspirations and growth appears to be more complex than usually is stated.

Thus, two other attributes of growth are required to take into consideration: abilities and opportunities (Davidsson, 1991; Morrison, Breen, & Ali, 2003; Sexton & Bowman-Upton, 1991; Toivonen et al., 2006). The lack of abilities or unrecognized opportunities may hinder the firm growth, especially in small-sized firms, even if primary decision-maker would have intentions for growth (Penrose, 1959). The abilities refer to the resources and skills needed in pursuing growth (Brown & Kirchoff, 1997; Gibb & Davies, 1990; Penrose, 1959). Accordingly, this attribute of growth is grounded on the resource-based view. Here, we emphasize the importance of management skills and expertise in growing a firm (Birley & Westhead, 1990; Gibb & Davies, 1990; Greiner, 1972; Penrose, 1959). Moreover, managerial skills are required for directing and acquiring other growth abilities, such as human resources, organizational routines, and financial resources which are also the key denominators for separating strategically relevant resources from those less strategically relevant (Barney, 1991; Wernerfelt, 1984). Consequently, the importance of managerial skills as a key ability for firm growth is made particularly explicit in this study.

Managerial skills are also decisive in recognizing growth opportunities or generating competitive strategies for growth (Baum et al., 2001). As such, growth opportunities are typically understood as a specific feature of the external environment, as an exogenous factor for firm growth. The environment can offer opportunities to grow, such as new market-product combinations or new market niches, providing revenues and chances for growth (Sexton & Bowman-Upton, 1991). Among others the institutional theory (DiMaggio & Powell, 1983; Scott, 1995) as well as resource dependence theory (Pfeffer & Salancik, 1978) emphasizes the role of limiting factors to the autonomous choices done by organizations or individuals. Thus, growth is taking place only, if the environment is positive for growth. According to Gartner (1985) and Krueger (2000) the importance of the environment has been acknowledged as a background factor of growth, mainly as an explanatory factor of desires. However, the external environment can be seen as subjective and the opportunities it provides are the result of entrepreneurial capabilities obtained by a firm. According to Brown and Kirchoff (1997) the subjective understanding of the growth opportunities offered by the environment is more important than the objective. The processes linked to acquiring knowledge are thus important preconditions for perceiving the opportunity (Eckhardt & Shane, 2003). Here, we assume that the perception of growth opportunities is an essential growth attribute.

As presented here, our approach on firm growth combines three different theoretical aspects. Moreover, our approach on firm growth leans on the work presented by Davidsson (1991). His model of determinants of small firm growth includes growth motivation, abilities as well as opportunities as prerequisites for firm growth. Instead of assuming the cause-and-effect –relationship, we represent an approach in which growth attributes are coexisting and interacting through different configurations.

Interactions of the attributes of firm growth

As Delmar and Wiklund (2008) have underlined a linear setting for analyzing the relationship between growth aspiration and growth may not be valid as such. Previous studies show that this relationship is moderated by external (competition, environment) and internal (resources, abilities) factors (Baum et al., 2001; Saemundsson, 2003; Wiklund & Shepherd, 2003). Accordingly, in

this study we assume that three growth attributes have to coexist before firm growth may occur (cf. Toivonen et al., 2006). Access to resources and abilities are needed to achieve growth. These, again, are directed according to the opportunities recognized. Moreover, the choices taken in previous dimensions operate as double constraints (Thakur, 1999) against which the growth aspiration should be mirrored. Important addition here is that the order or causal relationship is not definite. Abilities required for growth and recognized opportunities may exist before growth aspirations take place. The task of sorting out these interactions into configurations, or complements, of practices poses a problem of complex dimensionality (Kogut, MacDuffie, & Ragin, 2004).

The assumption of coexistence requires including the interaction effects of different growth attributes into the analyses (cf., Wiklund & Shepherd, 2005). At its purest form, in the core of growth, the interaction is three-dimensional between each attribute – coexistence of willingness, abilities, and opportunities. In addition, there are several other possible combinations of attributes that offer different ways for fulfilling all the attributes of firm growth (Table 1). For instance, a firm may have willingness to grow but it has not yet recognized any suitable opportunities or reconfigured its abilities accordingly. Thus, it is still on the verge of becoming a potential growth firm. On the other hand there are firms that have the abilities and opportunities available, but they still lack the aspiration for growth. Similarly, the recognition or willingness to search for growth opportunities may vary according to the growth aspirations (Toivonen et al., 2006), but still the abilities and opportunities may remain the same. In all cases the route to achieving growth is different. Consequently, as previously emphasized by Delmar and Wiklund (2008), adding more and more factors/variables into the growth models increases their complexity, and hence, direct them out of reach of traditional causal analysis (cf., Fiss, 2007). Therefore, it is important to notice that growth is contingent, and thus, when analyzing causal relationships many effects will remain hidden if only the main effects of the relationships are investigated.

The interaction between different growth attributes may be contextual, and the potentiality of different combinations arises from the ways how and when individual activities are performed (Dess, Lumpkin, & Covin, 1997; Porter & Siggelkow, 2008; Wiklund & Shepherd, 2005). In addition, two different attributes may be complementary with each other. According to Milgrom and Roberts (1990) two different activities should be defined to be complementary if the marginal benefit of one activity was increased by the level of the other activity. This could be the case in the association between opportunities and abilities – taking advantage of recognized growth opportunities for growth may increase the incentives for reconfiguring or acquiring needed abilities. On the contrary, if the marginal benefit of one activity decreases by the level of the other activity, these activities are substitutes (Porter & Siggelkow, 2008).

In this study we assume that the differences between different combinations of growth attributes will produce different growth results. We expect that the attributes of firm growth themselves are complementary and in addition their interactions produce complementarities. In addition, we propose that a major reason for the differences between firm growth or for the lack of it is the complementary effect of innovative behavior.

Fulfillment of the attributes of firm growth and growth of the firm

In this study we assume that in order to achieve growth all of the three attributes, willingness, abilities, and opportunities, has to be achieved. As previous studies show growth aspirations are positively associated with firm growth, but this relationship is more likely moderated with other

factors, like abilities and opportunities (Wiklund & Shepherd, 2003). Like in the case of business start-up, growing a firm requires resources and abilities or their reconfiguration in order to adapt firms' activities and outcomes to the perceived growth opportunity (Alsos, Borch, Ljunggren, & Madsen, 2007; Sexton & Bowman-Upton, 1991; Shane, 2003). If a firm owns or is able to acquire the particular resources and capabilities (Covin & Slevin, 1997; Damanpour, 1991; Rastogi, 2000), the more likely it is able to react to the recognized opportunities for growth or gain competitive advantage (Verhees & Meulenbergh, 2004; Wolff & Pett, 2006). When these three attributes are fulfilled, firm may achieve growth. Hence, we propose the following hypothesis.

H1: Firms that fulfill all three attributes of growth are more likely to grow than firms that will not fulfill all three attributes of growth.

Innovative behavior as a complementary attribute for firm growth

The presence of moderating factors in the association between growth aspiration and growth indicates that the boundaries and opportunities of the markets are decisive for firm growth. Due to changes, uncertainty, and competition in the market, firm abilities or products/services may not always meet the requirements of the markets or firm's ideas may be a couple of sets ahead of customer needs (Lumpkin & Dess, 1996). Therefore, in order to take advantage of recognized growth opportunities, firm has to innovate (Katila & Shane, 2005). This may require new processes, products/services or adaptation of new technologies that will offer the needed chances for creating new value for present or prospective customers (Ardichvili, Cardozo, & Ray, 2003; Kirzner, 1997). This kind of innovative behavior is an indication of the market orientation, and it has shown to have a positive impact on firm growth (Verhees & Meulenbergh, 2004). Gundry and Welsch (2001) found that high-growth-oriented entrepreneurs actually do emphasize innovative activity, such as technological change and organizational development, more than other entrepreneurs. In addition, innovative behavior is related to the recognition and exploitation of opportunities (De Carolis & Saporito, 2006; Lumpkin & Dess, 1996). Previous results also show that simply improving firms' ability to adopt or implement new innovations is positively associated with firm performance and growth (Cho & Pucik, 2005; Santos-Vijande & Álvarez-González, 2007; Subramanian & Nilakanta, 1996). Innovative entrepreneurs seem to follow the market changes more actively than their less innovate counterparts (Manimala, 1992). This, again, means that innovative behavior is also related to managerial capabilities, since the evaluation of opportunities and finding innovative solutions are dependent on them (Thakur, 1999). This suggests that innovative behavior would increase the likelihood for the firm growth, and therefore, complete or replace the attributes of growth. Hence, the following hypotheses are proposed.

H2a: Innovative behavior increases the likelihood for firm growth when all of the attributes of growth are not fulfilled.

H2b: The lack of innovative behavior hinders firm growth even if all of the needed attributes are fulfilled.

RESEARCH DESIGN

Variable definitions and measures.

Firm growth. Firm growth is measured with the growth of the number of employees. Even if hiring new personnel is decided by the entrepreneur or manager, the growth of the number of

employees is a clear and objective indicator of firm growth (Delmar, 1997; Dobbs & Hamilton, 2007). However, in order to use firm growth as an outcome measure it requires data from, at least, two different time points (Blackburn, Hart, & Stokes, 2004; Delmar, Davidsson, & Gartner, 2003). In this study the growth measure is based on self-reported numbers of employees in 2003 and 2006.¹ Different types of employment growth, organic or non-organic (Delmar et al., 2003), are not separated in this study. The relative growth is calculated as a percentage of change in the number of employees in 2003–2006. An increase of over zero percent is defined as moderate growth and an increase over 30 % as high growth.

Willingness to grow. Growth intentions are usually measured with different subjective indicators, which are based, at their simplest, on a question of the type “aspires-does not aspire to grow” asked from the management. Even if the growth intentions are discovered to have an effect on the realized growth of the enterprises (Delmar & Wiklund, 2008; Wiklund & Shepherd, 2003), the deficiency in this subjective measurement is that it does not indicate the actual growth. This deficiency, however, may be minimized by using longitudinal data. In this study the willingness to grow is measured with a question: “Does your firm aim at growth?” with five-point -scale of “Yes, remarkably ... Not, at all.” This measure is from year 2003, and it was recoded as a dummy variable in which an indication of a will to grow (Yes, remarkably – Yes, at some level) combined as one category. The value of 1 indicates that a primary decision-maker had a will to grow their firm.

Growth opportunities. Growth opportunities are defined as the perceived development of the total markets in which a firm was operating. Previous research indicate that in a dynamic environment growth intentions would be higher (Wiklund & Shepherd, 2003), and, consequently more growth would emerge (Eisenhardt & Schoonhoven, 1990). Thus, the perceived development of the markets was used as a measure of growth opportunities. This was measured by the attitude statement: “The growth of our enterprise is made difficult by the diminishing total markets of our industry” with five-point –scale from totally agree to totally disagree. This variable was recoded as a dummy variable in which value of 1 indicates that primary decision-maker has perceived growth opportunities.

Growth abilities. According to Penrose (1959) the lack of managerial skills may hinder the firm growth, especially in small-sized firms, even if intentions for growth would exist. Consequently, growth abilities are defined here as managerial competence needed for growing a firm. Growth abilities were measured by an estimate of the skills of the management with the attitude statement: “The growth of our enterprise is made difficult by the fact, that the skills of the management are not adequate for managing larger organization” with five-point –scale from totally agree to totally disagree. This variable was also recoded as a dummy variable in which value of 1 indicates that firm has growth abilities.

Innovative behavior. Innovative behavior was studied with three self-reported measures. First, respondents were asked about their firms’ activity in launching of new products/services (commercialization) during the previous three years (cf. Chaston & Mangles, 1997; Covin & Slevin, 1997; McDaniel, 2002). Second, in order to analyze the role of internal innovative behavior respondents were asked about their firms’ activity in developing of their internal processes during the previous three years (Chaston & Mangles, 1997; Covin & Slevin, 1997). Third, the activeness in acquiring new technologies (adaptation of external technologies) was asked in order to evaluate the level of absorptive activities during the previous three years. All of these measures were recoded into dummy variables in which value of 1 indicates that firm is behaving innovatively.

Control variables. Previous research shows that the size and industry of the firm have an effect on firm growth (Almus & Nerlinger, 1999; Cliff, 1998; Davidsson, Kirchoff, Hatemi-J, & Gustavsson, 2002; Kangasharju, 2000; Wiklund & Shepherd, 2003). For example, the use of relative growth measure seems to favor smaller firms (Delmar et al., 2003; Rosa, Carter, & Hamilton, 1996), because of which the size of the firm should be controlled for. In addition, earlier research suggests that entrepreneur/manager characteristics, such as the managerial experience and previous growth experiences (growth history), would affect firm growth (Delmar & Wiklund, 2008; Kolvereid, 1992). These demographic factors were used in the analysis.

Sample and data.

We used a longitudinal data in our analysis. Data were collected from Finnish small- and medium-sized enterprises in years 2004 and 2007. The sample frame consisted of Statistics Finland's data on all Finnish enterprises from all industries. In 2004 sample was based on a stratified random sample in which stratifying was done by firm size. Small and medium-sized enterprises were defined along with the recommendation of European Commission, and enterprises only less than 250 employees were included in the sample in 2004. Data were collected through telephone interviews in both years. The final, representative sample of Finnish SMEs was 1.300 firms, of which 498 participated in the survey in 2004. The telephone interviews were targeted at the primary decision-maker (owner-manager or entrepreneur) of the firm. If he/she could have not been reached, some other owner or somebody else from the management was interviewed instead.

A follow-up data from these respondents were collected during the spring 2007, and 276 observations were obtained. Total of 102 firms refused to participate in the follow-up survey. The rest of non-follow-up-participants, 120 firms, had either closed their businesses, or could not be reached by phone despite multiple attempts. Chi-square test and Student's t-tests were conducted in order to check for non-response bias. Analyzes were done concerning industry, location, age and size between the 276 who responded and the 222 who did not participate in the follow-up survey. No statistically significant differences were found between non-respondents and respondents. In the final sample the average number of employees was 39 and the average age of the firms was 25 years. Almost half of the firms (43%) were in manufacturing and every fourth were operating in service sector.

Analysis method

The relationship between attributes of growth is complex due to three-dimensional interactions and their coexisting nature. Thus, linear analysis methods do not offer appropriate means for our study, since statistical techniques tend to ask which incremental change in the dependent variable is caused by another incremental change in the independent variable (Grandori & Furnari, 2008). Instead, we examined growth non-linearly with a qualitative configuration analysis (QCA) including different configurations of the growth attributes and innovative behavior. We analyzed attributions of firm growth using a QCA based on Boolean logic (Ragin, 1987). With this approach it is possible to find if a given factor works as a sufficient or necessary condition or as part of a sufficient or necessary condition for the known outcome (Wagemann & Memoli, 2007). As presented by Fiss (2007) configurational approach to organization are based on the fundamental premise that patterns of different possible attributes will exhibit different features but still they may lead to same outcome depending on how they are arranged. Accordingly, configurational approach

emphasizes multivariate interaction of multiple organizational elements and possible equifinality of different combinations for reaching the same outcome.

The first step in QCA is to generate of truth tables. For these tables the data must be coded into “1” (yes or present) and “0” (no or not present). Combinations of elements can be then expressed in the Boolean algebra language. The number of combinations in the truth table grows exponentially if adding new variables into analysis. Therefore, focus has to be on variables with specific theoretical importance. Important part of QCA is Boolean algebraic reduction which logically eliminates unnecessary configurations (see Ragin, 1987). Typically QCA results deal with the necessary and/or sufficient conditions of an outcome to occur. In this study, the combinations of elements or attributes were derived from existing entrepreneurship literature and organizational theory. Therefore, we restricted our analysis of theoretically important three growth attributes, and left the reduction of configurations outside of this study’s objectives and empirical section. We tested the simultaneous co-existence of proposed growth attributes and furthermore explored theory-based growth configurations by modifying the original truth tables. Finally, we evaluated how attributes interact with each other. It has been said that revealing a configuration is not enough, and therefore, we should also have insights into theoretical mechanisms beyond each configuration.

RESULTS

First, we tested the presence of growth attributes that we assume to be the necessary attributes of growth (Table 2). Out of all the firms 23 % were high growth firms that grew more than 30 % (in number of employees) during years 2003–2006. In addition, 50 % of the firms grew moderately more than 0 % during the same time period. As seen in table 2, the results related to growth attributes were unexpected and confusing. We hypothesized (H1) that firms with all of the growth attributes would grow more than the other firms. However, half of these most potential growth firms show moderate growth. At the same period of time 63 % of the firms with only two attributes (willingness and abilities) show similar growth. Therefore, the presence of all growth attributes seems to have no impact on likelihood of moderate or high growth. On the contrary, there were several other configurations which had higher likelihood to grow. Thus, there is an indication that H1 could be rejected.

In order to find an explanation for unexpected results we modified the hypothesized growth attributes with different attributes related to firm growth. In the second step of our analysis we tested the role of some theory-driven attributes in growth configurations. We created configurations all of which included innovative behavior. Other variables illustrated best the different growth configurations in the data according to our judgment and analysis. In addition, we included some demographic variables, such as the size and industry of the firm as well as education and managerial experience of the primary decision-maker, into the analysis as control variables. However, the differences between higher and lower education, and longer and shorter managerial experience seemed too coincidental or marginal, and therefore they were excluded as irrelevant from our analysis. Respectively, the industry and firm size proved to be significant factors in differentiating growth configurations from each other.

In practice, the modification of the second version of truth table meant creating several dozens tables with different attributes. When the truth tables were introduced with innovative behavior and demographic variables some of the original attributes – growth opportunities and abilities –

were identified as irrelevant after several trials. However, willingness to grow still hold its' position as an essential attribute of growth. After several modifications the attributes in the second version of the truth table were willingness to grow, growth history and innovative behavior added with size (less than 50 employees) and industry of the firm (manufacturing vs. other industries) (Table 3).

Results show that innovative behavior has the role that we hypothesized in the hypothesis H2a (Table 3). Innovative behavior seems to increase the likelihood for growth even if all attributes are not fulfilled. Results also suggest than innovative behavior may even replace growth abilities and opportunities, but this takes place only under certain configurations. Results related to configurations 3 and 4 show that some growth may take place even if firm would not have high levels of innovative behavior. This is explained partly by the effect of industry. Non-manufacturing firms were growing if they were willing to grow and had a growth history despite the level of their innovative behavior. The effect of demographic variables on the moderating role of innovative behavior suggest that hypothesis H2b could be rejected.

As seen from table 3 even willingness to grow did not have unambiguous role in the growth attributes. Despite the fact that willingness is low in configuration 2, this configuration still achieved high proportion of growth firms. How this can be explained? Configurations 1 and 2 are otherwise similar meaning that if a firm is innovative, has a growth history, has less than 50 employees and is a non-manufacturing firm, it doesn't matter, if it has willingness to grow or not. It must be noted that manufacturing firms did not grow as often over 30 % as other firms (18 % vs. 26 %). Therefore, it was justifiable to represent configurations 5 and 6 with manufacturing firm. These configurations show both similarities and dissimilarities with each other. Both configurations include manufacturing firms with high willingness to grow and growth history. However, an apparent difference between manufacturing firms is that large firms need behave innovatively to grow but small firms manage to grow even without being innovative. On the other hand, this difference may be partly explained by the use of relative growth measure.

As the results were still somewhat ambivalent and contradictory we decided to look the relationships between growth history, willingness to grow, and innovativeness in a traditional way (see Wiklund & Shepherd, 2005) by analyzing the different interactions between these attributes. We studied four sets of interactions that illustrate different configurations of firm growth. In each of the following figures we marked firms behaving innovatively with solid line (Figure 1).

Results show that under conditions of growth history and non-willingness to grow firms with innovative behavior grew more often than any other condition. In addition, figure 1 show also that innovative and non-innovative firms behave differently depending on their willingness to grow and growth history. How is it possible that the best configurations are related to a) innovativeness and non-willingness and b) non-innovativeness and willingness when firm has no growth history? We found that innovative behavior has a clear moderating role between realized growth and willingness to grow, but the direction of the moderation was not as assumed. Since innovative behavior is usually regarded as a necessary condition to growth, we assumed that innovative behavior would accelerate growth, and act as a complementary attribute with other attributes. However, results show that willingness to grow is linked to growth, but it is not a growth attribute among innovative firms. Only non-innovative firms seem to benefit from growth intentions.

CONCLUSIONS

Our results show that innovative behavior moderates firm growth. In the case of high growth, growth history is an essential attribute for growth. Willingness to grow is also linked to growth, but it's not a vital growth attribute for firms that behave innovatively. Results also show that non-innovative firms seem to benefit more from growth intentions. Consequently, innovative firms with growth history, but no willingness to grow, may still grow at least with moderate results. Thus, our results suggest that the one of the major reason for the differences related to firm growth is related to the innovative behavior or to the lack of it. Innovative behavior may act as a complementary attribute with other growth attributes. However, there are some limitations that should be noted when interpreting the results. At this phase of the study further statistical analysis comparing variance in different groups has been neglected. Thus, these results are yet indicative.

In conclusion, our study has revealed details about the attributes of growth. Two of the proposed growth attributes proved to be irrelevant for firm growth. Thus, configurational approach turned out to be useful in evaluating different combinations of attributes. Our results contribute on the possible reasons why some firms with required growth attributes do not grow, and on the contrary, why firms may grow without these attributes.

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NOTES

The reliability of self-reported number of employees was tested with correlation tests. In both years the correlation between self-reported numbers and number collected from Amadeus database was very good (2003: *Pearson* 0.930, $p < .001$, $n = 134$, 2006: *Pearson* 0.932, $p < .001$, $n = 124$). Because there was no balance sheet data available for all firms in the survey, self-reported numbers were selected in order to include enough observations in the analyses.

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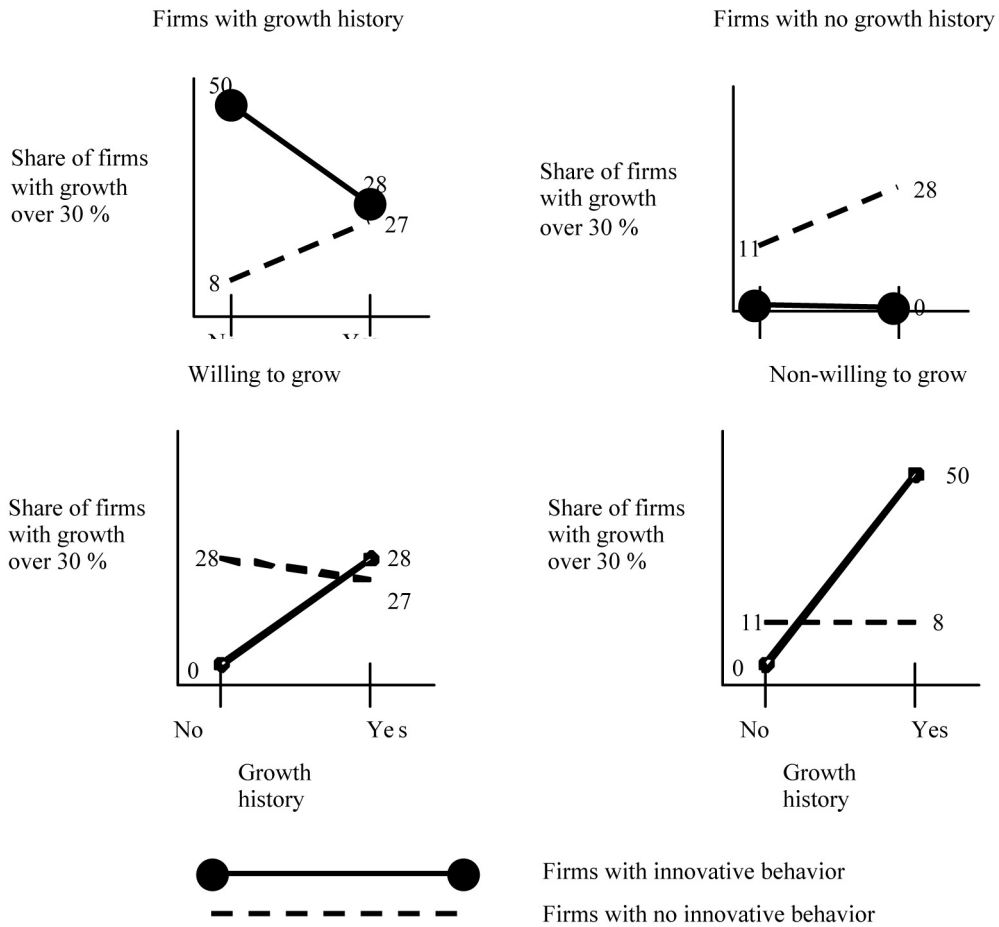
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Figure 1: Interactions between innovative behavior, growth history and willingness to grow



≈ SUMMARY ≈

**THE LIABILITY OF SHRINKING WINDOWS OF OPPORTUNITY:
STRATEGIES FOR TECHNOLOGY ENTREPRENEURS**

Nachiket Bhawe, University of Minnesota, USA

Principal Topic

New technology entrepreneurs face a tough tradeoff while making decisions related to entry timing—when should they stop developing and start selling? Early technology entrants can gain a first mover advantage by being the first to come out with a new technology gaining early customers and capturing significant market share. However, empirical evidence also suggests that later entrants survive longer indicating that they are able to improve their technology and increase the performance advantage thereby offering fitter products. On the other hand, delaying market entry is fraught with the potential risk of being driven out of a profitable market a problem exacerbated in technology driven markets with demand externalities suggesting brief windows of entry for technology entrepreneurs. However, research on entry timing suffers from lack of data on the effect of early or late entry on venture performance. For instance, we can only know the performance of iPhone since its launch in June, 2007 but not how it would have performed say a few years earlier or a few years later. In this study, I attempt to empirically test if new ventures suffer from an incorrect decision related to entry timing.

Method

The Hatch-Waxman Act of 1984 created a unique interplay between the patent and FDA approval process and thus provides a natural setting to tease out the dichotomy between delaying entry and improving technology. A sample of 541 investigational new drug (IND) applications filed with the FDA is used to test if new ventures made optimal choices for technology entry. The duration between the first publications of new drug technology and the IND application proxies the delay in technology entry. I use an event-history model to analyze the date to account for censoring. I generate an agent based model that replicates the tradeoff between delaying entry and improving technology and use it to propose two strategies that can mitigate the effects of non-optimal entry.

Results and Implications

This research represents some of the first attempts to empirically test if entrepreneurs make the correct decisions on entry timing. I contribute to literature in entrepreneurship and strategy by highlighting one of ways in which the liability of newness can act especially in the technology domain.

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≈ SUMMARY ≈

**LEGITIMIZING THE NATURAL ENVIRONMENT IN SMES:
A STRATEGIC ISSUE INTERPRETATION PERSPECTIVE**

Clay Dibrell, Oregon State University, USA

Justin Craig, Bond University, Australia

Principal Topic

How do businesses legitimize their natural environmental strategic initiatives? In this research, we are concerned with how managerial interpretations of natural environmental issues predict natural environmental strategic action related to firm innovativeness in SMEs. Results from this study will provide managers with a greater understanding of the benefits from a natural environmental initiative. The research questions that are addressed include: (1) Does the legitimization of the natural environment in an SME positively affect firm innovativeness? (2) What benefits are associated with socially embedding natural environmental policies? and (3) How do the strategic issue and social embeddedness theories predict how a SME will benefit from an increased focus on the natural environment?

We draw from strategic issue interpretation perspective, which suggests the processes that determine what managers heed and ignore in their decision making processes. As responses to societal expectations are ambiguous and require interpretative categorization by managers, we also frame our conversation in the social embeddedness literature. Our overarching argument focuses on the notion that there are measurable payoffs from legitimizing the natural environment inside the firm, and this process of legitimization has increased benefits if it is more thoroughly embedded in the firm. Specifically, the more discretion that manager's are given in the implementation of natural environmental policies, the greater will be the positive outcomes of innovativeness.

Method

Through a mail questionnaire of SMEs in the forest products industry, we received a total of 160 usable surveys (16.7% response rate). The items of natural environmental firm legitimization and managerial autonomy in managing the natural environment were taken directly from Sharma (2000), as was firm innovativeness from Craig and Dibrell (2006). To test for moderation, we employed hierarchical moderated regression analysis with natural environment legitimization to firm innovativeness being moderated by natural environment managerial autonomy. With the inclusion of multiple control variables, our results support moderation at the .05 level of significance and had an *adjusted R*² of .418.

Results

Our results indicate legitimizing the natural environment by top management is integral in generating a positive relationship to firm innovativeness. Further, the empowerment of managers by increasing their discretion embeds natural environmental legitimacy in the culture of the firm, which furthers business performance and competitiveness through increased innovativeness.

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≈ SUMMARY ≈

EFFECTUATION & NEWNESS: AN INTERTWINED RELATIONSHIP?

Christophe Garonne, Queensland University of Technology, Australia

& Euromed Management, France

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Principal Topic

Effectuation theory suggests that entrepreneurs develop their new ventures in an iterative way by selecting possibilities through flexibility and interactions with the market; a focus on affordability of loss rather than maximal return on the capital invested, and the development of pre-commitments and alliances from stakeholders (Sarasvathy, 2001, 2008; Sarasvathy et al., 2005, 2006). As Sarasvathy resumes, “effectuation is a straight inversion of rational choice theory” (Sarasvathy, 2001).

However, little is known about the consequences of following either of these two processes. One aspect that remains unclear is the relationship between newness and effectuation.

On one hand it can be argued that the combination of a means-centered, interactive and open-minded process should encourage and facilitate the development of innovative solutions.

On the other hand, having a close relationship with their “future first customers” and focusing too much on the resources and knowledge already within the firm may be a constraint that is not conducive to innovation, or at least not to a radical innovation.

Method

In our attempt to capture newness in its different aspects we have considered the following four domains where newness may happen: new product/service; new method for promotion and sales; new production methods/sourcing; market creation. We identified how effectuation may be differently associated with these four domains of newness. To test our four sets of hypotheses a dataset of 1329 firms (702 nascent and 627 young firms) randomly selected in Australia was examined using ANOVA Tukey HSD Test.

Results and Implications

Results indicate the existence of a curvilinear relationship between effectuation and newness where low and high levels of newness are associated with low level of effectuation while medium level of newness is associated with high level of effectuation. Implications for academia, practitioners and policy makers are also discussed.

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≈ SUMMARY ≈

STRATEGY FORMATION OF ENTREPRENEURIAL TEAMS: A LONGITUDINAL STUDY IN NASCENT VENTURES

Dietmar Grichnik, WHU – Otto Beisheim School of Management, Germany

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Diana Kapsa, Witten/Herdecke Universit, Germany

Principal Topic

Explanations for how entrepreneurs deal with uncertainty and develop their strategies can be found in two streams of literature: the entrepreneurial strategy literature and the entrepreneurial cognition literature. Recent research in these fields suggests that focusing on the individual level of the nascent entrepreneur and taking a cognition-based approach might be beneficial for understanding first-time strategy formation. Our study is concerned with one central question concerning first-time formation of a strategic mindset at the individual level. How does a strategic mindset come into existence at early stages of the entrepreneurial process? We analyze whether and how strategic mindsets come into existence focusing on three aspects: the extent of prediction orientation (Wiltbank et al., 2006; Sarasvathy, 2001), the extent to which the entrepreneur focuses on risk limitation as opposed to return maximization, i.e. the risk-return orientation (Sarasvathy et al., 1998; Sarasvathy, 2007; Dew et al., 2008; Sarasvathy, 2003), and the extent of strategic flexibility (Nicholls-Nixon, Cooper, 2000).

Method

We used a web-based questionnaire to collect data on nascent entrepreneurial teams participating one of the four major business-plan competitions in Germany. In total, 262 entrepreneurial teams provided complete information regarding their team pre-founding experience and team composition as well as strategy constructs. Six months later we gathered follow up information regarding the strategy constructs and initial success variables. We used hierarchical regressions and cluster analysis to examine the proposed relationships.

Results and Implications

With respect to the prediction orientation of nascent entrepreneurs, our research highlights prior entrepreneurial expertise and market-related innovativeness as key predictors. We find that expert entrepreneurs prefer a more detailed understanding of decision situations and future scenarios (Wiklund, Shepherd, 2008; Wright, Robbie, 1997). Our results support research on cognition suggesting that expertise in the entrepreneurial domain generates specific mental frameworks and heuristics (Mitchell et al., 2000; Mitchell et al., 2007) which enable founders to avoid premature action (Choi et al., 2008; Cooper et al., 1995).

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≈ SUMMARY ≈

DOES BUSINESS PLANNING HELP NASCENT ENTREPRENEURS? A SIX YEAR LONGITUDINAL INVESTIGATION OF NASCENT BUSINESS PLANNING AND ITS RELATION TO VENTURE PERFORMANCE

Benson Honig, Wilfrid Laurier School of Business and Economics, Canada

Mikael Samuelsson, Stockholm School of Economics, Sweden

Principal Topic

While a number of studies have demonstrated that nascent entrepreneurs who complete business plans are more persistent than those who do not plan (Delmar & Shane, 2004; Gartner & Liao, 2006; Samuelsson, 2004) studies have not been able to demonstrate a relationship between persistence and success. Assumptions (generally untested), purport that business plans assist individuals in making better decisions or that they help with organizational performance. Surprisingly, the limited research conducted so far evaluating the utility of business plans in entrepreneurial environments has failed to produce clear findings (Stone & Brush, 1996). Yet, despite a feeble empirical record, business plan production seems to be a “taken for granted” activity more common to traditions and ritual (Meyer & Rowan, 1977) than to competition and efficiency. Our objective in this study is to systematically examine, over a full six year period, the affects and frequency of business planning activities.

Method

The study of emerging organizations is important, but difficult to observe. This research was therefore uniquely designed to provide population estimates for business start-up efforts, and to follow a random sample of nascent activities. We maintain that this data is unique worldwide, as we followed a random sample of nascent business start-ups from conception for six full years. Response rates for eligible cases in the successive waves were 90.5% (6 months), 91.9% (12 months), 87.2% (24 months), 98.5% (18 months), and 86% (6 years - 230 respondents out of 267 eligible respondents).

Results and Implications

We found that institutions play a significant role in the life of the entrepreneur and the social forms new firms take. The second major finding element of this study, related to the relationship between planning and performance. Our analyses show conclusively that planning at the start of a nascent venture fails to lead to performance improvements. In sum, this study provides conclusive evidence that early stage planning is misguided, but provides important evidence to support the impact and utility of later stage planning on long term success. Our findings should be relevant to a broad range of scholars, practitioners, and policy actors.

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≈ SUMMARY ≈

**COOPERATIVE STRATEGIES OF TECHNOLOGY-BASED FIRMS:
THE ROLE OF COMPETITIVE INTERACTIONS DURING
NEW TECHNOLOGY COMMERCIALIZATION**

Mazhar Islam, University of Minnesota, USA

Principal Topic

Over the past few decades, technology-based firms have emerged as a key source of innovation and entrepreneurship. These firms differ from their established counterparts in that they are often resource constrained. For example, they may lack vital complementary assets such as manufacturing facilities and distribution channels. Moreover, they may also lack the knowledge and experience about the market, customers and other external stakeholders. These limitations seriously impede these firms' ability to commercialize new technologies successfully (Shepherd et al., 2000).

Meanwhile, the extant literature advocates the necessity for these firms to form cooperative relationships especially with their established counterparts to overcome their limitations (Powell et al., 1996; George et al., 2001). One common theme emerges from this literature is that it focuses on the internal determinants of cooperative strategies and mostly ignores the external ones. In this paper, I intend to fill this important gap by examining how competition influences the choice of level of cooperative strategies of technology-based firms. To understand the phenomenon more fully, I ask: (a) *Does increased competition induce technology-based firms to choose collaborative strategies?* (b) *How do entry timing and firm-specific attributes shape this choice?* (c) *Given that a focal technology-based firm chooses collaborative strategies under competitive pressure, what are the performance implications of such strategies?*

Method

I test the theoretical framework on a panel data from the U.S. biopharmaceutical clinical trials between 1996 and 2005, exclusively developed for the study. The level of analysis is a start-up's drug development project. I follow a cohort of drugs from the Phase I clinical trials to their U.S. Food and Drug Administration (FDA) review to examine the effects of competition on collaborative strategies and the performance implication of such strategies.

Results and Implications

The paper contributes to *entrepreneurship research* and to *practitioners* by providing a deeper understanding of the influence of competition on technology-based firms. Specifically, it will demonstrate the mechanisms the technology-based firms may use to overcome this external pressure and remain competitive. Moreover, the paper will provide important insights that would help *policy makers* develop competition policies to foster the growth of technology-based firms without necessarily harming technological innovations.

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≈ SUMMARY ≈

PRICING FOR NEW PRODUCTS AND SERVICES IN NEW TECHNOLOGY-BASED VENTURES: AN EMPIRICAL INVESTIGATION ON CHARACTERISTICS, DETERMINANTS, AND EFFECTS

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Principal Topic

Due to its direct impact on profitability, pricing disposes of success or failure in every company (e.g., Gruber, 2004). In particular, pricing of new products and services has become increasingly important (Henard & Szymanski, 2001). Still, entrepreneurial managers often undervalue the great relevance of this topic since their ventures are limited in size and their focus lies on the products and services themselves (Gruber, 2003; Hills, Hultman & Miles, 2008). In addition, academic research in this area is not effective, especially regarding coverage of new ventures, methodologies, and impact on managers.

This study of new ventures' pricing of new products and services makes three major contributions to entrepreneurship research. First, we analyze the characteristics of pricing actually applied by entrepreneurs. Second, we identify fifteen major determinants of the pricing practices, that is, value-, competition-, and cost-informed pricing. Third, we show the effects on venture performance. In answering these questions, we build on three related theoretical perspectives: Resource-Dependence Theory, Information Economics, and Principal-Agent Theory.

Method

Based on a survey within technology-intensive industries in Germany, we evaluated the behavior of 220 new ventures and 200 established businesses. We applied partial least squares (PLS) as the most accepted variance-based structural equation modeling approach.

Results and Implications

Considering the characteristics of pricing, the first contribution, our findings suggest that young businesses strive for fairness as a major pricing objective even more than established companies. They use all three relevant sources of information—value, competition, and cost—in a more balanced way. Considering the antecedents of pricing, the second contribution, our data prove that various antecedents from four areas drive an effective behavior: characteristics of venture, offer, customers, and competition. The degree of innovation is one of the central determinants. Considering the effects of pricing, the third contribution, our analyses reveal that pricing has great performance implications. It is not enough to gear prices toward value—information on cost and competition must also not be overestimated. Consequently, the study encourages researchers as well as entrepreneurs to attend to pricing more intensively—especially to the pricing-performance logics of new ventures being proven as differing from big business.

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≈ SUMMARY ≈

DODGING BULLETS: OPPORTUNITIES AND THREATS IN NEW VENTURES

Elaine Mosakowski, University of Connecticut, USA

David Gras, University of Connecticut, USA

Principal Topic

Most business news these days is bad news. Internal and external threats are more common than are opportunities. What does this mean for entrepreneurs? We suggest that the concepts of sustained competitive disadvantage and its source, liabilities, speak to this question. We extend resource-based theory to define these concepts and formulate propositions concerning entry opportunities and firm success.

Method

We begin by defining the sources of sustained competitive disadvantage (SCD), liabilities. A firm can be said to have liabilities when four conditions exist: 1) when a firm's factors reduce its efficiency or effectiveness; 2) when these value-erosion factors are not held by a firm's competitors; 3) when these factors are nondivestible; 4) when the inefficiency or ineffectiveness of the factor is not so large as to cause firm failure. Thus, factors that are costly, rare, nondivestible, and non-life-threatening constitute liabilities that are causally linked to SCD.

To describe the relationship between liabilities and entrepreneurial opportunities, we create a typology of opportunity sources based on products, factors, and markets on one axis and internal versus external sources on the other axis. Traditionally, entrepreneurship literature has emphasized four of the five "cells" in this matrix: opportunities based on improving a firm's own products, opportunities based on improving upon competitors' products, opportunities based on developing or leveraging resources within the firm, and opportunities based on exploiting new markets with existing products and factors. Consistent with our emphasis on SCDs, we highlight the fifth cell – opportunities based on exploiting competitors' liabilities using the new venture's resources and/or its competitive strategy.

Lastly, we show that resources and liabilities are socially-embedded, causally-ambiguous, and time- and context-dependent. Firm characteristics, such as corporate culture, may be valuable resources at one time, yet later transform into liabilities, often for unknown reasons. We discuss uncertain situations where such transformations might emerge and how new ventures can behave differently ex ante than do incumbent firms.

Implications

Our research contributes to entrepreneurship theory by presenting two new constructs: liabilities and SCDs. We discuss how entrepreneurs can identify and exploit competitors' liabilities and avoid these liabilities themselves. These prescriptions center on new venture resources and competitive strategy. Combining these prescriptions with the aforementioned descriptions, we advance the opportunity identification literature by highlighting SCDs.

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≈ SUMMARY ≈

NOT FAST ENOUGH! MANAGING DECELERATING EFFECT OF NEW KNOWLEDGE ON SPEED OF NEW PRODUCT INTRODUCTIONS

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Principal Topic

Firms are under increased pressure to combine new knowledge and convert it into products at an accelerated rate. However, to generate adequate returns, such innovations must be more exploratory in nature. The necessity of exploration may result in decelerating effects in knowledge conversion processes, hence slowing up the conversion process. Yet, speeding up the process could result in increased returns for the firm. To address this duality of combining diverse knowledge and combining it at a faster rate, I propose that certain firms could be endowed with speed as a capability for successfully exploring at a faster rate. Extending prior literature on innovation speed, I propose four measures of innovation rates – speed, acceleration, pace, and scale. While speed and acceleration in prior product developments are important, pace refers to temporal distance between successive innovation events and density of such events. Scale refers to the variation in length of innovation times. I test the effects of these innovation rates measures on how they affect the speed of innovation for an innovation that is exploration or exploitation oriented.

Method

I examine the speed of new product introduction using all primary drug patents from 1985 to 1995 in the US. After eliminating firms with fewer than three prior product introductions and patents acquired from other firms, the final sample consisted of 672 primary patents from 89 firms. Of these patents, only 17.23% were eventually converted to drugs. The measures of speed, acceleration, pace, and scale are based on all approved drugs by the FDA for a given firm between 1950-1985. These measures are derived from Weibull distribution of innovations over time. I use an accelerated failure time Weibull regression to account for unobserved heterogeneity in the conversion process.

Results and Implications

Measures of speed of innovation are a key aspect to furthering our understanding on how firms can leverage innovation rate capabilities. Findings suggest that speed and acceleration are important at lower levels of exploration. Furthermore, pace and scale are important for more explorative ideas. Firms could be ambidextrous by leveraging appropriate capabilities. Finally, I extend innovation speed literature by proposing measures that account for different distributions of innovation activities over time.

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≈ SUMMARY ≈

THE ONE HIT WONDERS: ROLE OF KNOWLEDGE SEARCH BEHAVIORS OF VENTURES IN REDUCING POST-IPO FAILURE

Pankaj C. Patel, Ball State University, USA

Principal Topic

Fama and French (2004) document a dramatic decline in the survival rates of newly listed firms over the past several decades, both in absolute terms and relative to seasoned firms. Therefore, IPOs, which are considered the drivers of innovation in modern economies, may suffer from questionable credibility if they have low survival rates after their first great success. I focus on the central drivers – invention capability and commercialization capability – that may prevent such failures. These firms' ability to acquire and integrate new knowledge into inventions and their ability to convert inventions to innovations could be central to ensuring survival.

This leads to the following research question: Is the development of post-invention and post-commercialization capabilities deliberate (through strategic investments in specialized assets) or inadvertent (e.g., due to path dependency or causal ambiguity)? Furthermore, if the development of capabilities is path dependent, do strategic investments play an important role in further leveraging path dependence?

Method

I first identify all technology IPOs (excluding internet IPOs) between the years 1990-2000. I use the SDC Corporate Restructurings database, www.bankruptcydata.com, and corporate delistings from the CRSP events file to identify whether an IPO survived until end of 2008. Information on patents and products were obtained from USPTO and CorpTech respectively. After matching firms with patent and CorpTech data, the final sample consisted of 933 IPOs of which 38.12% failed. To test path-dependence and IPO survival, I use a GLS-Tobit model and Weibull regressions, respectively.

Results and Implications

The central framework of this study explains how new firms can reduce threats of obsolescence by developing invention and commercialization capabilities. Results indicate that the capability development process is strictly path dependent and post-IPO strategic investments are useful only in context of path dependence. Firms lacking initial invention and conversion capabilities cannot “catch-up” by making strategic investments. This path dependence suggests the importance of routines and processes and organizational imprinting. By connecting technological diversification, and path dependence, I test the explicit link between how firms diversify and how strategic investments may not be useful unless prior resource and routine endowments are leveraged.

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≈ SUMMARY ≈

DIRECT AND MODERATING EFFECTS OF TOP MANAGEMENT TEAM CHARACTERISTICS ON STRATEGIC ENTREPRENEURIAL BEHAVIOR AND PERFORMANCE OF SMALL ICT VENTURES

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Jeroen Hermans, Erasmus University Rotterdam, The Netherlands

Michaela Schippers, Erasmus University Rotterdam, The Netherlands

Principal Topic

Entrepreneurship and strategic management are both concerned with growth and wealth creation (Hitt & Ireland, 2000; Hitt, Ireland, Camp & Sexton, 2001). Although both fields have developed largely independently, they both aim at explaining how firms adapt to environmental change and exploit opportunities (Venkatraman and Sarasvathy, 2001). Strategic entrepreneurship reflects both entrepreneurial opportunity-seeking actions and strategic advantage-seeking actions (McGrath and MacMillan, 2000; Hitt and Ireland, 2000). Top management teams (TMT) are critically important for exercising strategic entrepreneurship. They have the final responsibility for selecting the firm's strategies (Hambrick and Mason, 1984). Particularly in start-up firms, the influence of top management teams on strategic directions and eventually on their firm performance is especially significant (West & Meyer, 1998). Despite scholars recognize the importance of both strategic entrepreneurship and top management team influence in understanding the performance of start-up firms, little empirical work has combined both views. In this paper we examine the relative impact of top management team characteristics on the relationship between strategic entrepreneurial behavior and start-up firm performance.

Methods

Data was drawn from a sample of 139 ICT firms that were founded between 2002 and 2004. For each firm we collected the data using questionnaires among two members of the start-up team. The final sample consisted of 57 firms. Strategic entrepreneurial behavior was defined as a set of opportunity-based management practices. For the TMT characteristics we examined the TMT tenure, age and educational and TMT cognitive conflict diversity. The dependent variable, firm performance, was regressed on strategic entrepreneurial behavior and TMT characteristics.

Results and Implications

Results show a strong positive support for the contribution of strategic entrepreneurial behavior and cognitive conflict on firm performance. Concurrently we found that age diversity was negatively related to firm performance. Furthermore we found that age diversity was negatively moderating the relationship between strategic entrepreneurial behavior whereas educational diversity was positively affecting this relationship. The study contributes to the entrepreneurship literature by taking into account the top management team characteristics and strategic entrepreneurial behavior and how they interact to shape start-up performance.

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≈ SUMMARY ≈

**LINKING RESOURCE ACQUISITION AND DEVELOPMENT
PROCESSES TO RESOURCE-BASED ADVANTAGE:
BRICOLAGE AND THE RESOURCE-BASED VIEW**

*Paul R. Steffens, Queensland University of Technology, Australia
Julienne Senyard, Queensland University of Technology, Australia*

Principal Topic

The resource-based view (RBV) of the firm focuses on the role of resources in determining strategic advantage of a firm (Barney 1991; Alvarez & Barney, 2002). Yet traditional RBV literature has been less concerned with how these resources are acquired and developed. Alternatively, recent research has explored the resource development processes of entrepreneurial firms through bricolage (Strauss 1967) defined as defined as “making do by applying combinations of the resources at hand to new problems and opportunities” (Baker and Nelson 2005). Our contribution is to study the link between bricolage and the RBV – a firm’s resource position.

We investigate the level of bricolage within a firm’s resource development process and its resource advantage/disadvantage position. We argue that firms engaging in higher levels of bricolage will be better at overcoming obstacles and working around barriers to progress. As such we propose: (i) firms employing moderate and higher levels of bricolage (bricoleurs) will tend to have less areas of resource disadvantage; and will tend to more quickly overcome their most important sources of resource disadvantages. Owing to the idiosyncratic nature of this process, high and moderate bricoleurs may develop resource advantages that are difficult to copy (Ciborra 2002). As such we propose: higher levels of bricolage will tend to lead to some resource advantages that can be less quickly imitated by competitors.

Method

These hypotheses are tested using a survey of 1,108 entrepreneurial start-ups (nascent and young firms < 3 years old). To generate a random sample of such firms, we conducted a screening phone survey of 30,193 randomly selected households (using the PSED methodology, Reynolds 2007). This process yielded 1,988 eligible cases. The full length interviews were completed by 1,108 respondents, representing a response rate of 55.7%.

Results and Implications

Initial results indicate that higher levels of bricolage behaviour are associated with fewer disadvantages and also have a positive effect on the firm’s key resource advantage as hypothesised. The paper will provide an important theoretical link between the processes of resource development and resource-based advantages of young and nascent firms.

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≈ SUMMARY ≈

THE EXHIBITION OF ENTREPRENEURIAALLY-ORIENTED BEHAVIORS AS A PREDICTOR OF NEW ENTRY IN SMALL FIRMS

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Principal Topic

Lumpkin and Dess (1996) theorize the launching of new ventures to constitute the principal defining outcome of an EO. However, to date the major concern for previous research has been the relationship between EO and performance without consideration of the causal mechanism of *how* the processes, practices, and decision-making activities associated with an EO are linked to performance. In this paper, we posit the launching of new market entries to constitute an explanatory, mediating influence in the relationship between EO and firm performance.

Method

The data for this study were collected from a stratified sample of managing directors from Swedish small-medium sized enterprises (SMEs) over three consecutive years. Out of the 808 firms in the initial sample, 413 SMEs provided complete, usable responses. EO was measured in year one using Miller and Friesen's (1982) original scale. Whether the firm had setup a new organization, entered a new market, or launched a new product were captured as indicators of new market entry in year two. Finally, in year three four indicators of growth were utilised to measure firm performance; sales growth, employment growth, sales growth compared to competitors, and market value growth compared to competitors.

Results and Implications

The results of our longitudinal analysis support the supposition that the undertaking of new market entries represents an important linkage in the relationship between EO and firm performance. The results indicate that the presence of EO in year one predicts the extent to which firms' engaged in new entry measured a year later. In turn, both year one EO as well as year two new entry predicted firm growth in year three, with a stronger effect of EO than new entry on firm growth suggesting that EO operates through other mechanisms than new entry alone. Results suggest that as a driver of firm-level entrepreneurship, EO may influence performance through outcomes other than solely new entry as posited by Lumpkin and Dess (1996). To speculate, it is conceivable that EO may also contribute to firm performance through other corporate entrepreneurial outcomes such as strategic renewal (e.g., Guth & Ginsberg, 1990). A line of inquiry offered as a potentially fruitful area for future research.

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≈ SUMMARY ≈

DOES LEGITIMACY REALLY MATTER FOR NEW VENTURES?

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Principal Topic

New ventures have been recognized as the most important power for economic development and wealth creation (Christensen and Bower, 1996). A recent meta-analysis, however, revealed that the survival rate among US technology ventures is low (Song, Podoyntsyna, Van der Bij, and Halman, 2008). The findings suggested that, after four years, only 36 percent of companies survived. After five years, the survival rate fell to 21.9 percent.

Based on their prominent publications, Shane and his colleagues argued that legitimacy is a critical determinant for new venture survival (Shane and Foo, 1999; Delmar and Shane, 2004). Gaining organizational legitimacy and social acceptance can overcome the liability of newness.

In their theoretical work, Zimmerman and Zeitz (2002) outlined three key sources of legitimacy: cognitive, regulative, and normative residing within the psyches or social actors. However, prior research failed to adopt and test this classical categorization. As Suchman (1995) noted, “most treatments cover only a limited aspect of the phenomenon as a whole and devote little attention to systematizing alternative perspectives (p. 572).”

The purpose of this paper is to link venture’s early stage performance with all three types of legitimacy including *cognitive*, *regulative*, and *normative*.

Method

The research setting is 3,579 new businesses in the United States founded in 2004. The data is obtained from the large longitudinal survey, Kauffman Firm Survey (KFS). We measure new venture’s second year *performance* by a dummy variable indicating whether its revenue exceeds \$100,000 (1 = yes, 0 = no). We measure *cognitive legitimacy* by founders’ industry work experience and start-up experience, *regulative legitimacy* by payment of federal insurance tax and filing articles of incorporation, *normative legitimacy* by networks with suppliers through trade financing. The relationship between legitimacy and new venture performance is estimated using *logistic analysis*. Given that our dependent variable is whether firm’s revenue exceeds \$100,000, logistic regression is an appropriate analysis technique.

Results and Implications

Results show that all of cognitive, regulative, and normative dimensions positively affect new venture performance, providing empirical support for the framework of Zimmerman and Zeitz (2002). Our research also highlights the importance to address all the three different facets of social judgments in the founding strategy.

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∞ INTERACTIVE PAPER ∞

LINKING ENTREPRENEURIAL STRATEGY AND FIRM GROWTH

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Principal Topic

A dominant literature stream addressing the growth of new ventures is the resource-based view. Arguably, resources are only one part of the story. Firms employ resources to attain organizational goals, i.e. they deploy strategies. The strategy literature has traditionally focused on how companies build competitive advantage to enter product markets. More recently, researchers argue that firms may focus their efforts on targeting technology markets. So far, the literature on product and technology markets has mainly focused on explaining market choice, without examining the effects of the chosen commercialization strategy for firm growth. Furthermore, growth is not a unidimensional construct. Therefore, scholars have argued that research should focus on the differences in dominant type and the determinants of these differences. In this paper, we extend previous literature by focusing on the relationship between entrepreneurial strategy and firm performance conceptualized as growth in revenues and employment.

Method

To test our hypotheses, we use a unique hand-collected sample of 80 research-based spin-offs in six European countries. We limit the sample to firms that are founded between 1995 and 2002; these companies have survived, yet do not resemble established firms. We used two sources to collect the data for our study: 1) financial databases to collect data on revenue and employment growth, and 2) data on the firm's strategy, founding team and sector were collected during face-to-face interviews with the founder or top management of the firm.

Results and Implications

In this paper, we analyzed how the strategy deployed by firms influence growth in revenues and employment respectively. We found revenue growth to be positively associated with product and hybrid strategies while a technology strategy has a negative effect on revenue growth. We also showed that employment growth is positively associated with a hybrid strategy, while there is no significant relationship between product and technology strategies and employment growth. Our findings lend support to the view that growth in revenues and growth in employees reflect different underlying constructs in the value creation process. By explicating the role of entrepreneurial strategy, we offer theoretical insights into the mechanisms underlying revenue and employment growth.

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≈ INTERACTIVE PAPER ≈

**UNDERSTANDING ENTREPRENEURIAL EXIT DURING
ORGANIZATION EMERGENCE: AN INTEGRATION OF
STRATEGIC AND BEHAVIORAL PERSPECTIVES**

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Principal Topic

What explains why some entrepreneurs quit during the process of venture creation? For this study, we explore the reasons nascent entrepreneurs offer for quitting the process of venture creation and we link types of reasons for quitting with prior capabilities and efforts to provide insights into indicators of venture disbanding. We integrate both strategic and behavioral perspectives into a model of venture disbanding. And, we test this model using data from the panel study of entrepreneurial dynamics.

Method

The proposed theoretical framework is examined by studying emerging ventures using data from the panel study of entrepreneurial dynamics (psed). Details of the survey process and descriptions of specific items in the questionnaires used for the initial and follow-up interviews can be found in the *handbook of entrepreneurial dynamics* (gartner, et. Al., 2004). Consistent with previous studies, we measure resources at the nascent stage by entrepreneurs' human capital (i.e., education, startup experience, working experience). Personal sunk costs are measured by personal investment (money) and business planning (efforts). Alternative opportunities are measured as a dichotomous variable with presence or absence of other attractive opportunities.

We plan to employ a series of hierarchical regression models with strategic and behavioral variables entering as separate blocks, followed by interaction terms. Control variables include industry and growth orientation.

Implications

From a theoretical standpoint, this paper represents an initial effort towards building a mid-range theory that accounts for the resource endowments that nascent entrepreneurs have and seek to utilize with the quality of opportunities they pursue within their venture development efforts as well as those opportunities they recognize in the broader context of their situations. From a practical standpoint, our findings should point towards a set of indicators of the types of factors leading towards quitting the venture creation process. We expect to show that the factors that lead entrepreneurs to quit due to reasons involving their specific venture opportunity such as "poor quality opportunity" or "lack of resources" are likely to be different from such reasons as "found a better opportunity" that constitute a larger set of opportunities they face outside their specific venture creation efforts.

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∞ INTERACTIVE PAPER ∞

**TAKING A CLOSER LOOK AT THE WINGS OF THE BUTTERFLY
– AN EMPIRICAL INVESTIGATION ON COMPETITIVE
STRATEGIES OF TECHNOLOGY-BASED NEW VENTURES**

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Principal Topic

Researchers have included competitive behavior into models explaining new venture performance. But, although the potential advantage of a carefully set-up competitive strategy has been discussed, still, little is known about the phenomenon competitive strategy within the setting of new ventures. Creating a competitive strategy that allows overcoming the liability of newness and the liability of size is a critical task. To succeed, the competitive strategy needs to address market circumstances and suit the scarce resource base and capabilities. Existing literature does not give much practical and theoretical advice on this topic. Particularly, knowledge is limited regarding the interaction of competitive strategies with environmental circumstances and resource-based capabilities. We pose three questions: How do different types of competitive strategy relate to new venture performance? How do competitive strategies interact with environmental circumstances? How do competitive strategies interact with resource-based capabilities?

Method

To test hypotheses on the performance and interaction effects of competitive strategy, we utilized a representative sample of 285 German independent new ventures. In order to control for size and age effects we generated an additional sample consisting of established companies. To formally test the hypotheses we used SEM and partial least squares as the most suitable approach for analyzing relatively small sample sizes and research models with formative and reflective constructs.

Results and Implications

Our research enhances knowledge about the phenomenon competitive strategy within the setting of new ventures by testing the performance effect of different competitive strategies and providing insight into the relationship between such and environmental circumstances as well as resource-based capabilities. By generating and testing a model of twofold strategic fit, we offer a distinctive analytical approach that contributes conceptually and theoretically to the entrepreneurial strategy literature.

We generate several valuable recommendations for practitioners how to deal with competitive strategy as a new venture. For instance, we give advice which competitive strategy should be implemented under specific internal and external conditions. Further, we present advice regarding the question whether internal or external factors should be considered more intensively when crafting competitive strategy. A clear understanding of such factors will enable practitioners to better identify viable strategic options and help achieving superior company performance.

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∞ INTERACTIVE PAPER ∞

THE FALLACY OF GROWTH: AFFORDING SUSTAINABLE STRATEGIES FOR A BUSINESSES LIFELONG EXISTENCE

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Principal Topic

Previous research has identified a distinctive group of companies that have survived many years providing their owners with acceptable returns and lifestyles, despite insignificant dimensional growth. The field of entrepreneurship regards these firms as having little to offer because it is generally considered that a growth orientation is a fundamental feature of the entrepreneurial firm.

We discuss dimensions of growth followed by a reconsideration of the importance of growth to the field of entrepreneurship. The proposition is that a strategy for long term sustainability does not necessarily relate to growth because ventures can and do pursue diverse goals. Using a teleological approach we seek to provide an appreciation of the role and importance of personal goals to a firm's success and show that the aspirations of many successful firms do not necessarily encompass dimensional growth.

Methods/Key Propositions

This research takes a case study approach using grounded theory. Twenty interviews were conducted with entrepreneurs from a range of firms with diverse growth strategies - from high growth (*gigantism*) to stunted growth (*dwarfism*) – to understand their growth or non-growth strategies and the reasoning behind them. In a different approach to understanding growth, increasing sales or owner's dimensional structure was seen as a *contingent opportunity*. Firms' goals not only related to increased profits, but often to their ability to satisfy human or other needs. Issues such as giving back, making a difference, community and family figured significantly in their strategy development.

Results and Implications

There is much to be learned from taking a qualitative approach to growth. Firms interact within an open system and therefore must respond to the wider community if they are to survive. Often self-interest is at the core of a firm's birth, but survival requires successful interaction with the stakeholders critical to its continued success.

A continuing strategy of exploiting resources and opportunities to satisfy personal financial goals may not be optimal for firms' continued success and the survival of our planet. Therefore it is incumbent upon us to encourage nascent entrepreneurs to consider the factors critical to success but also to recognise that unrestrained growth strategies may not always be the most prudent approach to the long-term viability of entrepreneurial firms.

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∞ INTERACTIVE PAPER ∞

HOW TO DEVELOP SUCCESSFUL FIRST-PRODUCTS IN CHINESE NEW VENTURES

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Principal topic

The development of commercially viable products is of paramount importance for firms that operate in fast-changing and competitive markets. The challenges of new product development are particularly daunting for new ventures that seek to launch new products in the Chinese market (Atuahene-Gima and Murray, 2007). This paper focuses on the development and performance of the first product launched by new ventures in the Chinese market. The literature on new product development indicates that few contributions examine the antecedents and outcomes associated with the first product conceived by new ventures (Schoonhoven et al, 1990). What skills and resources are necessary to build positional advantages for the first product and which drive the performance of the first product? How does the Chinese context impact first product performance? What are the most important drivers of first product success?

Method

We received complete survey data on 694 first product development projects from 694 new ventures (a response rate of 32%) in five industries. We perform confirmatory factor analysis followed by full structural equation modeling.

Results

Prior studies indicate that marketing and technical skills and resources, the level of supplier integration and product launch skills and resources have been identified by entrepreneurs as necessary for building positional advantages and for first product success. Two important positional advantages for a successful product are the timing of product launch and the level of product differentiation. The results suggest that a new venture's marketing and technological skills and resources have a differentiated impact on the positional advantages created by the venture. Stronger marketing skills and resources have a detrimental impact on the level of product differentiation. Increasing levels of technological skills and resources are negatively correlated to the timely introduction of the first product. Product launch skills and resources are surprisingly negatively correlated with the timing of product launch. The level of supplier integration – is positively related to both positional advantages of the first product. The level of supplier integration contributes positively to the timely introduction of the venture's first product. Finally, the two positional advantages of the first product – timing of product introduction and product differentiation - created by the range of skills and resources discussed above - have a positive impact on the performance of the first product as expected.

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∞ INTERACTIVE PAPER ∞

**FOUNDING CONTEXT, BUSINESS MODEL AND
PERFORMANCE OF NEW VENTURES IN EMERGING
ECONOMIES – A LONGITUDINAL STUDY**

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Principal Topic

In a dynamic environment, entrepreneurs' role is not only creating new ventures but also negotiating them through the changing environment. Literature in entrepreneurial strategy has studied the influence of current environment, but ignored the impact of past environments in the present context. Organizational imprinting literature, on the other hand, explores the lasting impact of environmental conditions during foundation on organizations. Nature of elements institutionalized inside organizations (organizational imprints), having systematic relationship with the characteristics of founding context (Stinchcombe, 1965; Johnson, 2007), will strongly impact their adaptation and evolution in a dynamic environment. However, studies exploring the influence of founding contexts on adaptation in a changed environment lack longitudinal designs essential for understanding the dynamics of evolution. We investigate how founding conditions influence the evolution of business model and performance of new ventures.

Method

The rapidly changing business environment accompanying successful economic reforms in India provides a natural experimental setting for this study. This secondary data based longitudinal (seven years) multi-industry quantitative study with a sample of 1911 Indian private sector ventures, investigates the effects of two types of founding contexts: specific eras after economic liberalization in India, and affiliation of ventures to business groups. Two dimensions of business model studied are: orientation towards ramping up physical assets, and orientation towards developing technological capabilities. The performance dimensions studied are growth and profitability.

Results and Implications

The research reveals: the diversity of founding contexts result in variation in both firm performance and business models, but the strategic choices exercised by entrepreneurs tend to overcome these variations by dynamically moderating these effects. This leads to convergence of the firm performance over a period of time. The study validates the organizational imprinting hypothesis for broad macroeconomic founding contexts specific to emerging economies, extends the theory to illustrate how entrepreneurial strategies dynamically moderates the effect of organizational imprints on firm performance. The findings emphasize the role of the entrepreneur in reestablishing the relationship with the environment which has undergone significant change subsequent to founding and provide insights into how this is carried out.

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EXPLORING NON-LINEAR EFFECTS OF FAMILY OWNERSHIP AND INVOLVEMENT ON PROFITABILITY: A LONGITUDINAL STUDY ON NON-LISTED COMPANIES



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ABSTRACT

Research on the profitability of family firms is growing, but results are mixed, especially for small unlisted companies. We argue this is due to the co-presence of benefits and disadvantages of both family ownership (FO) and family involvement (FI). Thus, we build upon two complementary theoretical perspectives – the stewardship and the stagnation perspectives – to explore the presence of non-linear effects of these two variables on profitability. We run regression analyses on longitudinal data drawn from 294 small privately-held family firms in Italy. We measure FI by the involvement of the family in management, the involvement of the family in the board of directors and the number of generations involved. Our results grasp the complexity of the effects of FO and FI in small unquoted companies: we find an inverted U-shaped relationship between FO and ROA, a positive relationship between family involvement in management and ROE, and a negative relationship between the number of generations involved and ROE.

INTRODUCTION

The study of family firm performance is becoming increasingly central within the field of family business research (Eddleston, Kellermanns, Sarathy, 2008; Miller, Le Breton-Miller, Lester and Cannella, 2007; Habbershon, Williams and MacMillan, 2003; Chrisman, Chua and Litz, 2003), and a remarkable number of studies attempted to understand if and how family ownership (henceforth FO) and family involvement (henceforth FI) affect profitability. However, there is still a need to investigate these relationships because there are no unanimous findings in the literature: positive, negative and null associations have been found between the two concepts and different measures of performance (e.g. Lauterbach and Vaninsky, 1999; Anderson and Reeb, 2003; Filatotchev, Lien and Piesse, 2005; Lee, 2006; Villalonga and Amit, 2006; Martinez, Stohr and Quiroga, 2007; Sraer and Thesmar, 2007). Moreover, most of previous research focused on large listed firms (with the exceptions of McConaughy, Matthews and Fialko, 2001; Castillo and Wakefield 2006; Westhead and Howorth, 2006), although the vast majority of companies are small and unquoted in each economy.

Thus, there is still the need to grasp the relationships between FO, FI and profitability, despite the many papers published on the topic. The presence of conflicting results, as well as the presence of opposite arguments in the literature on family firms, led us to suspect the presence of non-linear relationships among the above-mentioned variables. In other words, the conflicting results of previous research are expected to mirror the presence of opposite effects of both FO and FI on profitability. This paper aims to explore these non-linear relationships. More specifically, building upon two complementary theoretical perspectives – the stewardship and the stagnation perspectives (Miller, Le Breton-Miller and Scholnick, 2008) – we developed and tested a hypothesis on

an inverted U-shaped relationship between FO and profitability, and a hypothesis on an inverted U-shaped relationship between FI and profitability.

We developed two non-linear hypotheses because, drawing from previous family business literature, we argue that the benefits of both FO and FI exist until they are overcome by their disadvantages. We hypothesized the curve to be inverted U-shaped because we did not expect the benefit to be effective until FO and FI reached a certain level; nor did we anticipate the disadvantages to be particularly relevant until FO and FI approach the maximum level.

The study had been carried out on a longitudinal data set of 294 Italian firms: unlike most of the previous studies, our sample, designed to be representative of the Italian economy, is mainly made up of small- and medium-sized companies, none of which is listed. This is the first time, to our knowledge, that a longitudinal study on the effects of FO and FI on profitability is run on small businesses. Results of regression analysis were partially unexpected. The first hypothesis was confirmed: we found an inverted U-shaped relationship between FO and ROA, thus extending the findings of Anderson and Reeb (2003) to non-listed companies. The second hypothesis was rejected instead. We measured FI by the involvement of the family in management, the involvement of the family in the board of directors and the number of generations involved, and we found a positive relationship family involvement in management and ROE, and a negative relationship between the number of generations involved and the same profitability indicator.

We contribute to the literature on FB performance by grasping the complexity of the effects of the presence of the family in the business and its profitability in small unquoted companies. Consequently, the present research contributes to practice by advising FB owners and consultants on the levers to be used to sustain profitability in the context of small unlisted family companies.

The paper is structured as follows: first, we review the literature on profitability in family business in order to highlight research gaps. Second, we develop hypotheses concerning relationships between key variables. A methodological section, where sample and variable treatments are presented, follows. The next section is devoted to the presentation and discussion of results, and the paper concludes by highlighting the contributions and possible future developments of this study.

LITERATURE AND HYPOTHESES DEVELOPMENT

A short literature review

As far as the relationship between FO and profitability concerns, most of the relevant studies were run on listed companies and results partially converge towards the acknowledgment of positive effects of FO on profitability (Anderson and Reeb, 2003; Lee, 2006; Villalonga and Amit, 2006; Martinez, Stohr and Quiroga, 2007; Sraer and Thesmar, 2007). However, some scholars have not found any influence of FO on profitability. It is the case of Filatotchev, Lien and Piesse (2005). Only two studies have been run on unquoted companies in order to explore the relationship between FO and profitability: those of Westhead and Howorth (2006) and Castillo and Wakefield (2006). No correlations have been found. That said, the research gap is still open; the existence of a clear relationship between FO and profitability has yet to be studied, especially in unlisted companies.

Also research on the relationship between FI and profitability arrived at conflicting results and focus on listed companies. According to Lee (2006) FI has positive effects on profitability. On

the other hand, Lauterbach and Vaninsky (1999) and Filatotchev, Lien, Piesse (2005) argue the opposite. Some other studies have tried to grasp the complexity of conflicting results, arriving at more articulated theses. Anderson and Reeb (2003), for instance, found that when family members serve as CEO, profitability is higher than with a non-family member CEO. Even Tobin's q is higher if the CEO is a family member, but only in those cases in which he is also a founder: if the CEO is non-founder, Tobin's results lower. Sraer and Thesmar (2007) confirmed these findings in the French context and extended them to profitability and growth. According to Villalonga and Amit (2006) instead, FI can add or destroy value: it adds value when the founder serves as CEO or as chairman, but destroys value when descendants occupy these types of positions. Only three studies have been run in unquoted companies. McConaughy, Matthews and Fialko (2001) and Castillo and Wakefield (2006) found a positive association between FI and profitability, while Westhead and Howorth (2006) found no association. Thus, even in the case of FI, its effects on performance require additional research efforts, especially within unlisted companies.

The empirical evidence that justify both positive and negative relationships between FO and profitability and FI and profitability lead us to assume that these relationships are nonlinear, meaning that they can have both a positive and negative sign depending on the level of FO and FI. We used two complementary perspectives on family businesses, stewardship and stagnation (Miller et al. 2008), in order to develop our hypotheses.

Family ownership and profitability

Stewardship in family business manifests itself in business continuity, employees and customers (Miller et al. 2008). We argue that only the first two forms of stewardship explain the benefits of FO for profitability. The third pertains only to the benefits of FI.

Stewardship over continuity derives from the owning family's intentions to pass the company to succeeding generations. In other words, owners view their firm as an asset to pass on to their descendants rather than wealth to consume. Such an orientation should induce family businesses to spot profit opportunities even when the perceived risks are relatively high. Family shareholdings are usually characterized by lower turnover rates and greater patience in waiting for returns, thus reducing the managers' perceptions of risks (Adams, Manners, Astrachan and Mazzola 2004; Sirmon and Hitt 2003). FO may increase managers' investment levels and lengthen their payoff-time horizons (James 1999), thus supporting their assumption of such risks. Owning family member may also have incentives to spot new opportunities in order to create employment for themselves and for their offspring (Zahra 2005).

Finally, stewardship over continuity may also lead to efforts to build reputation (Lyman 1991), which is a crucial resource for long term profitability. Strong reputation can help attract new customers, and strategic alliances partners, as well as consolidate the relationship with them. Family businesses may benefit from their name recognition and connection to other family businesses.

Stewardship over employees derives from the fact that paternalism is often extended from family to non-family employees, promoting a sense of commitment and stability (Lee 2006). It manifests itself in a broader assignment of responsibilities and more flexibility (Arregle et al. 2007; Goffee and Scase 1985). Flexibility and local autonomy likely enhance the identification of profit opportunities. Moreover, stewardship over employees manifests itself in deeper training programs (Pruitt 1999), which further enhances their efficient implementation.

Drawbacks of FO on profitability can be explained with the stagnation perspective highlighting family business resource restrictions, conservative behavior, and potential for conflict. Profitability is influenced by the availability and quality of resources to invest (Grant, 1991).

Family owned firms generally have less access to capital markets than non-family firms (Grassby 2000) and a paucity of capital could lead to a lack of resources. Opening the equity to non-family shareholders could facilitate the acquisition of relevant resources. Moreover, non-family shareholders can provide financial, technological and human resources essential for the functioning of the firm. Equity partners can provide the firm with experienced managers and are therefore more apt to increase the efficiency the company. Some family businesses suffer from a lack of human resources because parents tend to offer investment opportunities to sons (Lubatkin, Ling and Schulze 2007), even if they have insufficient skills for managing the company.

Some authors have claimed that resource restrictions and worries about family security give rise to risk aversion (Allio 2004). A few writers have explained this conservatism as a result of the founder's imposition of a restrictive 'generational shadow' (Davis and Harveston 1999) that mires firms in traditions.

Research indicates that family businesses tend to have a conservative attitude (Donckels and Fröhlich 1991; Ward 1998) and be risk adverse (Naldi Nordqvist, Sjöberg and Wiklund 2007). Thus, family owners could feel concerned about the safety of family wealth when developing new initiatives.

According to the stagnation perspective, family owned companies are also characterized by shareholder conflicts, which may even endanger the business survival (Jehn 1997; Levinson 1971). Although previous research has highlighted that some conflicts, such as task and process conflicts, may have positive effects for sustainability (Kellermanns and Eddleston 2004, 2007), empirical studies have confirmed that relationship conflicts hamper family business functioning (Eddleston and Kellermanns 2007). Family firms are fertile grounds for shareholder misunderstanding and conflict (Miller and Rice 1988), since divergent groups may pursue competing goals (Gersick, Davis, Hampton and Lansberg 1997). Financial goals may conflict with non-financial goals (e.g., increasing revenues vs. securing family employment) and family objectives may conflict with business objectives (e.g., controlling firm destiny vs. global growth), paralyzing the company (Adams et al. 2004).

In synthesis, FO may have both positive and negative effects on the functioning of the firm. Stewardship and stagnation serve as theoretical bases for this conclusion. This observation led us to hypothesize that the relationship between FO and profitability is non-linear. More specifically, we argue that the relationship is inverted U-shaped: on the one hand, the benefits of FO predicted by the stewardship of family owners over continuity and employees increase until a certain level of FO is reached. On the other hand, the drawbacks of FO predicted by stagnation in terms of a lack of resources, low risk-orientation and shareholder conflicts are more likely to take precedence when FO approaches 100 percent. Therefore, we formulate hypothesis 1 as follows:

Hypothesis 1 (H1): There will be an inverted U-shaped relationship between family ownership and profitability. Moderate levels of family ownership will be associated with the highest levels of profitability.

Family involvement and profitability

As for FO, the stewardship perspective can also be applied to identify the benefits of FI for profitability. Family participation in employment can reinforce the benefits FO has for profitability. If owners and managers are family members, stewardship effects are amplified as they include both stewardship of ownership and stewardship of managerial participation (Pierce, Kostova and Dirks 2001).

To sustain stewardship over continuity, family managers may pursue new entrepreneurial opportunities and responsibilities. Moreover, the involvement of family members in the business can help reduce the perceived risk and enhance the establishment of a market reputation. Similarly, stewardship over employees can be reinforced if family members are included in the board of directors and management team. Family presence offers a sign of commitment to the business. One distinctive positive effect of FI on profitability refers to stewardship over customers. Family managers are oriented to customer loyalty (Miller and Le Breton-Miller 2003; Slater and Narver 1995). Family managed businesses are believed to build enduring relationships with clients and resource suppliers (Gomez-Mejia et al. 2001; Palmer and Barber 2001). Family managers may take a more personal approach to marketing, involving relationship commitment and trust, which increases mutual understanding and solidifies relationships among exchange partners (Morgan and Hunt 1994). The ability to build strong customer relationships should encourage family managers to convince new customers to trust the family managed business. In other words, stewardship over customers could encourage family to pursue market opportunities and make them easier to be realized.

Like in the case of FO, the stagnation perspective can be used to identify negative effects of FI on profitability. This perspective underlines the shortage of managerial talent in family management teams which represent a relevant resource for the business (Schulze et al. 2001, 2003). The problem mainly derives from nepotism which drives owners to appoint unskilled relatives (Perez-Gonzalez 2006) and could hamper performance. Hiring non-family managers with prior developed capabilities could be a way to overcome such a problem. In addition, restricting the governance and management of the firm to family limits the firms' capacity to build social capital (Arregle et al. 2007), with negative effects on profitability. Social capital can be defined as the ability of individuals to secure benefits by virtue of membership in social networks (Portes 1998). It facilitates the acquisition of knowledge by promoting a constant flow of information from diverse sources (Blyler and Coff 2003), with positive effects for the recognition of new opportunities. Coleman (1988) suggests that social relations reduce the time and investments required to gather information. Burt (1992) argues that such a benefit increases as the social network increases. In addition to new information, many resources can be accessed due to non-family members' social capital. The information base of non-family managers is expected to be different and greater than that of family managers increasing entrepreneurial opportunity recognition and exploitation (Shane 2003).

The benefits of FI on profitability can be offset by possible conflicts among family managers. Family businesses are places where individuals who work together can experience interpersonal incompatibilities about values and attitudes (Jehn 1997) that result in disagreement about task priorities and ways to accomplish tasks. Family adds complexity to business conflicts, since family members are concerned with business performance and with their involvement and satisfaction

with the business (Sorenson 1999). Family conflict over strategies, tactics and goals can slow down and hinder performance.

In synthesis, FI comes both with benefits and drawbacks for the functioning of the firm. Stewardship and stagnation serve as theoretical bases for this conclusion. Like the case of FO and profitability, this observation led us to hypothesize that the relationship between FI and profitability is non-linear. More specifically, we argue that the relationship is inverted U-shaped: on the one hand, the benefits of FI induced by stewardship over continuity, employees and customers increase until a certain level of FI is reached. On the other hand, the drawbacks of FI as portrayed by stagnation in terms of increased potential for conflicts among family managers and employees, reduced management competencies and social capital as are more likely to show up once the level of FI approaches 100 percent. Therefore, we formulate hypothesis 2 as follows:

Hypothesis 2 (H2): There will be an inverted U-shaped relationship between family involvement and profitability. Moderate levels of family involvement will be associated with the highest levels of profitability.

METHOD

Data collection was carried out in two steps. In the first one – not run by the authors – independent variables were collected. This first step was done within a research project called “Generational Transitions in Medium-size Italian Family Firms: Successful experiences and best practices,” started in 2000 by two Italian Universities: Bocconi University and Catholic University. Empirical data were collected among incorporated Italian firms, registered at the Italian Chamber of Commerce. A sample of 15,517 firms was randomly extracted from the Italian population of 4,840,366 firms in order to be representative of size and economic activity. A mail questionnaire was sent in October 2000 to the CEOs of these firms and data collection concluded in January 2001. The response rate was 4.1%, because only 620 CEOs completed the questionnaire. Such a low response rate is in-line with those typically reached in Italy when samples are randomly extracted. The main reason underlying this low response rate stands to the fact that the vast majority of the Italian companies are of small and medium size, whose leaders are unfortunately reluctant to devote time to filling questionnaires for running academic research. Fortunately, a chi-square test run by those researchers that gathered data revealed no differences in age, size and economic activity between respondents and non-respondents (Gnan and Montemerlo, 2006).

In the second step, after 6 years, the authors collected financial data in order to measure the dependent variable (i.e. profitability). Financial data were available for 294 firms. Among the cases analyzed, the 91.2% employs less than 250 persons and none of them is listed. Manufacturing firms represent the 40.8% of the analyzed cases. The two hypotheses were tested by running regression analyses.

In order to measure our dependent variable, i.e. profitability, two measures were adopted: ROE (net income divided by book value equity at the beginning of the fiscal year) and ROA (operating income divided by the company total assets at the beginning of the fiscal year). Independent variables are FO and FI. The former was measured using the percent of the firm’s equity held by the owning family in 2000 (Astrachan and Kolenko, 1994; Sharma, Chrisman and Chua, 1996). FI was measured in three different ways: the percentage of a firm’s directors who were also family members, that we can label “family involvement in the board of directors” (henceforth FIB)

and captures the family members' involvement in decision making and setting the firm's strategic direction (Zahra, 2003); the percentage of a firm's managers who were also family members, that we can label "family involvement in management" (henceforth FIM); the number of generations involved in the company (henceforth NGI) that captures family members' involvement with the firm's operations (Davis et al., 1997). The average value of FO in our sample is 77.8 %; the average values of FIB, FIM and NGI are respectively 67.2%, 62.2% and 2.1%.

Several control variables have been adopted in the regression models: Company Age, Company Size and Industry. Company Age was measured by the number of years the firm has been in existence, whereas Company Size was measured by the number of full-time employees. The average company age in our sample is about 35 years, with a standard deviation of about 28. The average number of employees is instead about 100, with a standard deviation of about 319. Thus, for kurtosis considerations and following Zahra (2003), the two variables were measured respectively by the logarithm of the number of years the firm has been in existence and by the logarithm of the number of full-time employees. In this way, kurtosis coefficients were acceptable enough to include the two variables in the regression models (respectively -0.154 and 0.066). We controlled also for Industry, including the following dummy variables: agriculture, manufacturing, services, constructions, mining, transport, distribution, retail and other.

RESULTS

A preliminary correlation analysis was run. Multicollinearity was not a serious concern; all correlation coefficients related to couple of variables that have been subsequently included in the same regression model were lower than 0.8, thus permitting the use of multiple regression analysis to test the hypotheses (Bryman and Cramer, 2001). The correlation coefficients related to the couples FO-FIB, FO-FIM and FIB-FIM resulted too high, thus impeding to run regression models including FO, FIB and FIM at the same time.

Table 1 reports model 1 and 2. They include, aside from control variables, those variables necessary to test H1. The former model has ROE as dependent variable, the latter has ROA. In both models we first introduced control variables (step 1), then subsequently introduced and FO (step 2) and FO Squared (step 3): they both resulted significant. In the former, we obtained only one significant beta coefficient: size resulted negatively related to ROE. In the latter, we found not only that size is negatively related to ROA, but that ROA is positively related to FO and negatively related to FO squared. This means that H1 is supported: our data confirm the existence of an inverted U-shaped relationship between FO and profitability in unquoted companies. The threshold level that distinguishes those situations in which FO brings disadvantages that overcome disadvantages was found at 53%.

Models 3 to 8 aim at testing H2 instead. Table 2 reports models 3 and 4 that include, aside from control variables, those variables necessary to grasp the relationship between profitability and FIB. The former has ROE as dependent variable, the latter has ROA. In both models we first introduced control variables (step 1), then subsequently introduced FIB (step 2) and FIB Squared (step 3). Only the former resulted significant. However, the only significant beta coefficient we found is the one related to company size, negative as in the previous models. Thus, models 3 and 4 do not support HP2.

Models 5 and 6 are reported in Table 3 and include, aside from control variables, those variables necessary to grasp the relationship between profitability and FIM. The former has ROE as dependent variable, the latter has ROA. As in the previous cases, in both models we first introduced control variables (step 1), then subsequently introduced FIM (step 2) and FIM Squared (step 3). Even in this case, only the former resulted significant. Within such a significant model, FIM resulted positively related, in significant terms, with ROE. Thus, models 5 and 6 do not support HP2.

Finally, we tested models 7 and 8, to grasp the relationship between profitability and NGI. As shown in Table 4, the former has ROE as dependent variable, the latter has ROA. In both models we first introduced control variables (step 1), then subsequently introduced NGI (step 2) and NGI Squared (step 3). As far as model 7 concerns, it resulted significant at the second and the third steps and NGI appears to be negatively related to ROE. Model 8 instead resulted significant at the first and second steps and two industries – transport and commerce – appear negative related to ROA. Thus, even models 7 and 8 do not support HP2. The absence of multicollinearity was checked again in each regression model; no Tolerance coefficient was close to 0, and no VIF coefficient was higher than 5 (Bryman and Cramer, 2001).

DISCUSSION

Results were partially unexpected, making the research process challenging. On the one hand, HP1 was confirmed: there is an inverted U-shaped relationship between FO and ROA in unlisted companies. On the other one, HP2 was not confirmed: the relationship between FI and profitability is linear, and its sign depends on the measure of FI we adopt. More precisely, FIM is positively related to ROE, while NGI is negatively related to it. In the present section we discuss these results on the basis of the theoretical perspectives of stewardship and stagnation.

As far as the first hypothesis concerns, we basically extend the findings of Anderson and Reeb (2003) to small unquoted companies. The relationship between FO and profitability is positive until FO reaches the level of about 53% and then it becomes negative. In other words, until that threshold level is reached, the benefits of the stagnation perspective overcome the risk of stagnation: the effects of the stewardship over continuity and employees are strong enough to make ROA grow as far as ownership increase. If the family controls the ownership of the company, then the lack of resources, the conflicts among shareholders and the risk-aversion of the family itself could hamper the profitability of the firm, so that ROA decreases as far as FO increases. The non-linearity of such a result is consistent with Westhead and Howorth (2006) and Castillo and Wakefield (2006): we believe these scholars did not find any significant relation between FO and performance in unlisted companies because they were looking for linear effects.

As far as the second hypothesis concerns, despite it is not confirmed, we arrived at results that support the co-presence of positive and negative effects of FI on profitability. More precisely we found that FI in terms of participation to the management of the company (FIM) has positive effects, while FI in terms of number of generations involved (NGI) has negative effects.

The first finding – the positive relationship between FIM and profitability - can be explained as follows: the risks of stagnation brought by the involvement of family members in the management team are overcompensated by the benefits of stewardship over continuity, employees and customers. We argue that this is in contrast with what happens for FO, because there are no

stewardship effects of FO on customers. In other words, FIM brings additional positive effects compared to FO that make the relationship with profitability fully positive. We can also comment this result by stating that the disadvantages of stagnation are probably more related to FO than FIM: for example, risk-aversion is more related to FO, because it manifests itself at a decision-making level that belongs to the owners, not to the managers. Such a result is in line with the findings of Castillo and Wakefield (2006), according to which profitability satisfaction in small firms is positively related to FIM. Moreover it extends the findings of Anderson and Reeb (2003) and Sraer and Thesmar (2007) from large listed firms to small unquoted companies.

The second finding – the negative relationship between NGI and profitability – can be interpreted as follows: generational involvement brings so many disadvantages that lead the company to stagnate. More precisely, compared to FO and FIM, NGI raises the conflict probability, because of the possible cultural differences among generations (Davis and Harveston, 2001). At the same time, generational involvement reduces some of the benefits of stewardship: stewardship over continuity, for example, may be higher in first generation firms rather than in later generation companies – where continuity has been already put in practice. Thus, the benefits are not enough to compensate the disadvantages. The involvement of the family in the board of directors (FIB) instead, did not result correlated to profitability. Such a situation could be interpreted in the light of the fact that it is recognized how in small unlisted family companies the board of directors is not functioning as it should (Lane, Astrachan, Keyt and McMillan, 2006) especially within the Italian context where governance practices are far behind the USA (Corbetta and Montemerlo 1999).

The fact that ROE results positively influenced by FIM and negatively influenced by NGI shed some light on the real effect of FI on profitability: the capability to generate profits is not hampered by the presence of family members per se, but by the presence of family members belonging to different generations. This result is in line with the findings of McConaughy, Matthews and Fialko (2001) on small unquoted companies and with those of Anderson and Reeb (2003), Villalonga and Amit (2006) and Sraer and Thesmar (2007) in large listed firms. In the above mentioned studies, FIM was evaluated only by the presence of a family CEO and the presence of several generations by the fact that the CEO is not the founder. Contrary to them, we measured FIM and NGI in a more fine-grinded way, adopting interval measures instead of dummy variables.

CONCLUSIONS

The present paper contributes to the literature on FB performance in several ways. First, while extending to small unquoted companies the findings of Anderson and Reeb (2003) on the relationship between FO and profitability, we justify the findings of Westhead and Howorth (2006) and Castillo and Wakefield (2006) on the absence of any significant relationship between FO and performance in small unlisted firms: the relationship exists, but it is non-linear. Second, while previous literature did not arrive at consistent results, the present research clarifies the nature of the influence of FI on profitability in small unquoted companies distinguishing between different types of FI: the effect of FIB is null, the consequences of FIM are positive and the influence of NGI is negative. Thus, we extended the findings of Anderson and Reeb (2003), Villalonga and Amit (2006) and Sraer and Thesmar (2007) to small unlisted firms, adopting more fine-tuned measures of FIM and NGI. Third, it shows how two complementary theoretical perspectives on FB can be helpful in understanding the complexity of the relationships between FO, FI and profitability.

Several implications come from our findings. First of all, we suggest opening the equity of the firms if the companies are fully controlled by the families. Finding equity partners whose presence reduces the disadvantages of FO could be a way to avoid the stagnation induced by families' risk-aversion, lack of competencies and conflicts among shareholders. This suggestion doesn't mean to sell the majority of the company: the family control ensures the realization of some advantages related to the stewardship over continuity and employees that the presence of a family can bring. The optimal FO value is 53%.

Opening the management team to non-family members appears not so necessary. As a matter of fact, having family members in the management team reinforces the benefits of stewardship over continuity and employees and adds the stewardship over customers. Thus, the core issue in the management of a family firm is not to open the management team, but to have a competent team at the lead of the company. Educating and training the family members in a proper way appears a viable way to avoid the drawbacks of FI (lack of competencies, conflicts and risk-aversion) and save the advantages of stewardship. What family firms are called to recognize is that the co-presence of several generations can reduce some benefits (as the stewardship over continuity) and increase some disadvantages (as the conflicts among family members): consequently, we invite the families to reduce this facet of their involvement into the firm.

The present study is not free from limitations. First, data have been collected exclusively in Italy, therefore limiting the possibility to generalize of our findings. Moreover, our regressions models display low Adjusted R squared, as often occurs with regressions on performance measures in privately-held firms. We believe that there are several lines of further research on this topic. Analogous investigations should be conducted in countries other than Italy in order to increase the external validity of our results. Hypotheses should be tested controlling for several variables that may moderate the relationship between FO and profitability and FI and profitability, as family members' levels of education and social capital.

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Table 1: Regression Analysis: Family Ownership and Profitability

<i>Variables</i>	ROE			ROA		
	<i>Step 1</i>	<i>Step 2</i>	<i>Step 3</i>	<i>Step 1</i>	<i>Step 2</i>	<i>Step 3</i>
Company age	-0.77	-0.96	-0.96	.010	-0.005	.001
Company size	-.186**	-.178**	-.178**	-.141*	-.135*	-.138*
Agriculture	-.053	-.072	-.07	-.087	-.103	-.123
Manufacturing	-.06	-.137	-.13	.042	-.022	-.113
Services	.035	-.014	-.01	-.022	-.062	-.116
Construction	.053	.016	.019	.099	.068	.024
Extraction and min.	-.066	-.07	-.068	-.061	-.065	-.096
Transport	-.048	-.073	-.071	-.151	-.171	-.198
Retail	-.13	-.191	-.185	.084	.035	-.037
Commerci	-.048	-.095	-.092	-.109	-.147	-.178
Other	-.122	-.161	-.159	-.039	-.072	-.107
Family ownership (FO)		.068	.019		.055	.705*
FO squared			.051			-.666*
<i>Models</i>						
Adj. R2	.044	.045	.041	.054	.053	.068
F	2.159*	2.080*	1.916*	2.379**	2.241*	2.497**

* = p<0.05; ** = p<0.01; *** = p<0.001

Table 2: Regression Analysis: Family Involvement in the Board of Directors and Profitability

<i>Variables</i>	ROE			ROA		
	<i>Step 1</i>	<i>Step 2</i>	<i>Step 3</i>	<i>Step 1</i>	<i>Step 2</i>	<i>Step 3</i>
Company age	-.086	-.103	-.105	.042	.040	.039
Company size	-.241**	-.230*	-.241**	-.164	-.163	-.171
Agriculture	-.055	-.077	-.086	-.108	-.111	-.117
Manufacturing	-.067	-.136	-.188	.040	.032	-.003
Services	.031	-.010	-.044	.015	.010	-.015
Construction	.122	.094	.072	.085	.082	.069
Extraction and min.	-.075	-.081	-.094	-.078	-.079	-.088
Transport	-.090	-.104	-.122	-.071	-.072	-.085
Retail	-.179	-.237	-.279	.051	.044	.016
Commerci	.030	-.003	-.029	.006	.002	-.015
Other	-.093	-.123	-.147	-.033	-.036	-.053
Family Inv. in the board of dir. (FIB)		.072	.328		.008	.175
FIB squared			-.263			-.173
<i>Models</i>						
Adj. R2	.088	.087	.087	.002	-.004	-.008
F	2.642**	2.500**	2.371**	1.025	.935	.884

* = p<0.05; ** = p<0.01; *** = p<0.001

Table 3: Regression Analysis: Family Involvement in Management and Profitability

<i>Variables</i>	ROE			ROA		
	<i>Step 1</i>	<i>Step 2</i>	<i>Step 3</i>	<i>Step 1</i>	<i>Step 2</i>	<i>Step 3</i>
Company age	-.089	-.106	-.117	-.01	-.007	-.013
Company size	-.205**	-.147	-.161*	-.131	-.139	-.147
Agriculture	.004	.002	.005	-.068	-.068	-.066
Services	.09	.101	.099	-.002	-.004	-.005
Construction	.069	.07	.072	.07	.071	.073
Extraction and min.	-.057	-.056	-.06	-.066	-.066	-.069
Transport	-.033	-.028	-.023	-.126	-.126	-.124
Retail	-.096	-.097	-.101	.052	.052	.049
Commerci	-.015	-.022	-.021	-.14*	-.139*	-.138*
Other	-.073	-.063	-.06	-.002	-.003	-.002
Family Involvement in management (FIM)		.136*	.438		-.018	.149
FIM squared			-.315			-.175
<i>Models</i>						
Adj. R2	.051	.063	.064	.036	.032	.029
F	2.321*	2.495*	2.388*	1.889*	1.716	1.596

* = p<0.05; ** = p<0.01; *** = p<0.001

Table 4: Regression Analysis: Number of Generations Involved and Profitability

<i>Variables</i>	ROE			ROA		
	<i>Step 1</i>	<i>Step 2</i>	<i>Step 3</i>	<i>Step 1</i>	<i>Step 2</i>	<i>Step 3</i>
Company age	-.123	-.004	-.005	-.051	-.050	-.049
Company size	-.127	-.099	-.098	-.089	-.089	-.089
Agriculture	-.029	-.021	-.029	-.117	-.117	-.115
Services	.089	.104	.102	-.016	-.015	-.015
Construction	.073	.082	.081	.087	.087	.087
Extraction and min.	-.065	-.088	-.092	-.074	-.074	-.073
Transport	.008	.029	.047	-.143*	-.142*	-.146*
Retail	-.083	-.045	-.042	.061	.062	.062
Commerci	.005	.009	.011	-.164*	-.164*	-.164*
Other	-.030	-.019	-.011	.020	.020	.019
Number of generations involved (NGI)		-.220*	.234		-.003	-.079
NGI squared			-.476			.080
<i>Models</i>						
Adj. R2	.024	.053	.068	.055	.050	.045
F	1.508	2.044*	2.250*	2.160*	1.953*	1.791

* = p<0.05; ** = p<0.01; *** = p<0.001

≈ SUMMARY ≈

GOVERNANCE AND ENVIRONMENTAL PERFORMANCE IN FAMILY-CONTROLLED PUBLIC CORPORATIONS

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Cristina Cruz, Instituto de Empresa Business School, Spain

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Principal Topic

This paper compares the environmental performance of family-controlled public corporations with that of nonfamily controlled companies. Using institutional theory and insights drawn from organizational identity, corporate governance, environmental management, and family business literature, we formulate the following arguments.

First, family owners share certain features such as a strong personal attachment to the firm and desire to portray a good corporate image and reputation. Moreover for family owners, personal and organizational identity tend to be isomorphic, providing a distinctive organizational identity. Given these common features family firms are more likely to pursue environmental strategies to avoid being stigmatized as an irresponsible corporate citizen.

Second, the family firm is more sensitive to the needs and pressures of the surrounding community, the degree of “local roots” augments the family firm’s motivation to project a desirable community image and thus reduce its environmental footprint.

Third, because of greater monitoring capacity and unique social dynamics, family firms tend to rely less on long term financial incentives as a mechanism to promote responsible environmental behaviors among top executives. Lastly, because they are at the core of what a family firm’s identity represents, greater presence of family members in the firm’s governance structure and higher family stock ownership result in a concomitant improvement in observed environmental performance.

Methods

The study is based on a sample of U.S. companies required to report their emissions in the “Toxic Release Inventory” program of the Environmental Protection Agency. The total sample comprised 194 firms, out of which 101 were identified as family firms and 93 as nonfamily firms.

Results and Implications

Our results show that that family firms pursue conscious strategies to improve their environmental performance, and that this relative sensitivity towards the environment increases with the degree of local roots and family ownership. . In doing so, the family firm may gain efficiency and overcome the size and growth constraints that may put its survival at risk in a highly competitive market. However, we also find that the advantage a family firm has in environmental performance is not increased either by long-term CEO pay incentives or by having a family member as the CEO.

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≈ SUMMARY ≈

**ENTREPRENEURIAL ORIENTATION ACROSS GENERATIONS
IN FAMILY FIRMS: THE ROLE OF OWNER-CENTRIC
CULTURE FOR PROACTIVENESS AND AUTONOMY**

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Mattias Nordqvist, Jönköping International Business School, Sweden

Leif Melin, Jönköping International Business School, Sweden

Principal topic

Many family firms have the vision to succeed across generations to come. This means that they need to develop sustainable renewal capabilities including an innovative, aggressive, autonomous, proactive, and risk taking mindset to face future competitive demands, i.e. possess an entrepreneurial orientation (EO) towards their business activities. Combining theoretical frameworks of corporate entrepreneurship and literature on organizational cultures, our purpose is to analyze the role of culture as a family influenced resource for understanding how EO is developed over time in family businesses. We focus on how the development of two EO dimensions – autonomy and proactiveness – are fostered over time and across generations or hampered by the family influenced organizational cultures.

Method

We rely on case research into two medium-sized and multigenerational family firms, conducted within the Global STEP Project on Family Enterprising. In-depth interviews were made with owner and family members active in the business, non-family executives, and board members. Observations, including focus group interviews, were made in half-day long sessions and three annual workshops of two days each. The empirical material was coded and analyzed using established techniques for qualitative research.

Result and implications

We introduce the concept of owner-centric culture to conceptualize strong family business cultures and their impact on EO over time, moving beyond the conventional life-cycle model with founder centric cultures influencing in the early stage of the firm's life cycle. Owner-centric culture can hamper the entrepreneurial activities of next generation individuals, but support such activities on an organizational level. We further find that proactiveness on the organizational level does not necessarily follow from autonomy on the individual level. To understand the role of autonomy where different generational needs clash, we draw parallels to Schumpeters' notion of 'mental freedom'. These findings extend the literature on familiness, which hitherto has not noted that what is a positive or negative family influence on resources may vary with level of analysis. For theory and practice this means that from a cultural perspective there is not a linear transfer of an EO from one generation to another. Rather there is a complex translation and transformation of the assumptions, norms and values in the trans-generational process.

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≈ SUMMARY ≈

**THE RELATIONSHIP BETWEEN WORK-FAMILY
CONFLICT AND PSYCHOLOGICAL OUTCOMES FOR
FAMILY AND NON-FAMILY BUSINESSES**

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Principal Topic

The creation and management of new businesses can create both positive and negative outcomes for entrepreneurs. In particular, the demands of a new business may stress the link between the entrepreneur's family and work domains, and thereby create conflict within the entrepreneur. This conflict, which is termed work and family conflict (Burke & Greenglass, 1987), can hinder the psychological health of the entrepreneur and subsequently affect the performance of the new firm. Whether the conflict is related to family demands that inhibit attention to business needs, or work demands that affect family processes, work and family is particularly relevant to family businesses (Neubauer & Lank, 1998). The current study considers the relationships between work and family conflict on important psychological outcomes, namely work tension and satisfaction. These relationships are examined for entrepreneurs of family and non-family firms, with the goal of clarifying the theoretical relationships between these constructs.

Method

A national (United States) random sample of 2000 new ventures was acquired from Dun and Bradstreet for use in this study. A usable sample of 214 family and non-family firm founders who are also members of their top management team was obtained. Approximately 40% of the firms in the sample were identified as being family businesses. Established measures were used to assess each of the hypothesized constructs.

Results and Implications

Results suggest that work and family conflict variables differentially predict psychological outcomes for entrepreneurs leading family versus non-family ventures, in support of our hypotheses. The findings suggest that entrepreneurs leading family businesses tend to experience increased work tension and decreased satisfaction when tension from the family domain interferes with their ability to effectively perform their responsibilities in the workplace. More broadly, the implications of this research present an important opportunity for the entrepreneurship and family business disciplines to contribute theoretically to the work and family conflict literature.

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≈ SUMMARY ≈

SOLVING THE PARADOX: A MULTI FACETED APPROACH TO CORPORATE ENTREPRENEURSHIP IN FAMILY FIRMS

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Principal Topic

Existing studies on entrepreneurship in family firms seem to agree on that the unique nature of these type of companies offers a distinct context for entrepreneurship. Specifically, while some depicts family firms as a context where entrepreneurship flourishes, others view them as too conservative and inflexible to take the risk associated with entrepreneurship.

We believe that part of this controversy is due to adopting a limited view of entrepreneurship when studying family firms. This is why this paper attempts to contribute to shed some light to this debate by adopting a multi-faceted phenomenon of entrepreneurship in family firms. This approach covers not only “real entrepreneurial activities” within organizations, but also entrepreneurial alertness, since existing research portrays the ability to recognize opportunities as key factors that support entrepreneurship. Moreover, it distinguishes among the creation of new businesses and product and/or technological innovation when examining real entrepreneurial activities. Our general thesis is that first of all, given family’s risk and return expectations which are not only financial but also socioemotional, family businesses are more likely to build portfolios of businesses. Moreover, family’s networks and multigenerational involvement gives them an advantage over non family firms to discover new business opportunities. However, the distinctive nature of family businesses also implies a lower degree of product and technological innovation in the new business activities undertaken.

Methods

Our study is based on a sample of 1259 family businesses, drawn from the GEM Spanish survey for year 2005 which includes some questions addressing the family involvement in a given company.

Results and Implications

Our results show that family businesses not only possess a higher “entrepreneurial mindset” that allows them to investigate new opportunities, but they also transform these opportunities into real businesses to a higher extent than non family firms. However, and contrary to our expectations, our findings indicate that family firms have apparently no lower levels of innovativeness than non family companies. This has important implications for scholars and family business owners. Given the lower survival rates of family firms compared to that of non family firms, it seems that future research should analyze how families can become a critical engine for sustainable entrepreneurial activity.

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≈ SUMMARY ≈

**STRONG TIES VERSUS WEAK TIES IN FAMILY BUSINESS
BACKGROUND AND SOCIAL NETWORKS IN NASCENT VENTURES**

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Principal Topic

Research suggests the link between social networks and new venture opportunity recognition, conceptualization, implementation, and performance provides a compelling focal point for new venture activity (Aldrich & Zimmer, 1986; Davidsson & Honig, 2003; Dubini & Aldrich, 1991; Larson & Starr, 1993; Liao & Welsch, 2005; Nahapiet & Ghoshal, 1998; Singh, Hybels & Hills, 2001). Studies suggest social networks can be sources of information fostering opportunity recognition (e.g., Singh, Hybels & Hills, 2001) and a foundation for acquiring strategically important resources (e.g., Brush & Greene, 1996; Larson & Starr, 1993), but few focus on family business background as it relates to social capital use in the new venture creation process (Dyer, 2003; Marger, 2001). This study focuses on three questions to extend and amplify this line of inquiry. First, is family business background associated with the strength of social “tie” development in the early stages of new venture creation? Second, do men and women with family business backgrounds differ with respect to the strength of social “tie” development they report in the early stages of new venture creation? Third, to what extent does the combination of family business background, gender, and tie strength influence the new venture growth expectations?

Method

This project utilizes publicly available archival and longitudinal data from the Panel Study of Entrepreneurial Dynamics in order to examine the proposed relationships. We employ descriptive and comparative quantitative data analysis techniques to examine the proposed relationships.

Results and Implications

In general, preliminary results suggest that founders report having strong ties with start-up team members early in the nascent new venture creation process, regardless of family business background. Interestingly, however, results further suggest that possessing a family business background does differentiate reported tie strength when considering founder gender. Specifically, females consistently report having strong ties with start-up team members irrespective of family business background. By contrast, males without a family business background report stronger ties, whereas those with family business backgrounds report a mix between strong and weak ties. Similarly, results suggest that gender and tie strength play a significant role in the development of early revenue growth expectations, but not job growth expectations.

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≈ SUMMARY ≈

**FAMILY OWNERSHIP AND INVOLVEMENT:
EXPLORING NONLINEAR EFFECTS ON INTERNATIONALIZATION***Salvatore Sciascia, Università IULM, Italy**Pietro Mazzola, Università IULM, Italy**Joseph Astrachan, Kennesaw State University, USA**Torsten Pieper, Kennesaw State University, USA***Principal Topic**

To date, relatively few studies have empirically investigated the effects of family ownership (FO) and family involvement (FI) on internationalization (INT). Moreover, findings are inconsistent. This paper aims to solve these conflicts by proposing and investigating the presence of nonlinear relationships. Drawing on two opposite theoretical perspectives, i.e. stewardship and stagnation, we derived two hypotheses: a hypothesis on an inverted U-shaped relationship between FO and INT and a hypothesis on an inverted U-shaped relationship between FI and INT.

Method

Data were collected from 1,035 family businesses in the United States by an independent survey firm in 2007. We measured INT by the percentage of sales generated from international markets in 2006. More precisely, we used an ordinal measure of foreign sales, adopted by the survey company that collected data. FO was measured using the percent of the firm's equity held by the owning family in 2006. FI was measured in two ways: the percentage of directors belonging to the controlling family and the percentage of employees belonging to the controlling family. To analyze the data, we ran ordinal regression analyses.

Results and Implications

As expected, we find an inverted-U shaped relationship between FO and INT: the advantages of FO for INT are higher than the disadvantages until an intermediate level of FO is reached. Beyond this point, which we identified at 60%, the disadvantages of FO prevail over the advantages.

The relationship between FI and INT can be graphed instead as a U shaped curve, meaning that the disadvantages of FI for INT are higher than the advantages until an intermediate level of FI is reached. Beyond this point, that is 50% in the case of family participation in employment and 70% in the case of family participation in the board of directors, the advantages of FI prevail over the disadvantages.

The identified curves represent a point of reference for family owners, managers and consultants: on the basis of the FO and FI level registered in the company, they could use the lever of opening the equity or the participation to non-family members.

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≈ SUMMARY ≈

FAMILY PORTFOLIO ENTREPRENEURSHIP

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Principal Topic

This paper seeks to extend our understanding of the field of Portfolio Entrepreneurship (Westhead & Wright 1998; Carter & Ram 2003). We follow Carter and Ram's (2003) call to explore portfolio entrepreneurship within the family context. Specifically, we address the how (process) of family portfolio entrepreneurship.

Regarding the relevant processes, a key element is *"likely to derive from the resources immediately available to the family"* (Carter & Ram 2003). However, more research is needed, as *"little investigation of how portfolio strategies are undertaken"* (p.376) and *"existing research has rarely broached the processes that may be involved in the development of portfolio ownership approaches"* (p.378).

Method

We are investigating these questions through the theoretical lens of the Resource Based View (RBV), paying particular attention to a family firm's Familiness (Habbershon & Williams, 1999), ultimately enabling them to engage in portfolio activity. We focus on the family as level of analysis, following calls by researchers (e.g., Carter & Ram 2003, Habbershon & Pistrui 2002). Given the lack of both theoretical and empirical insights, we rely on case study methodology (Eisenhardt 1989), using three case studies that have been developed within the STEP research project.

Results and Implications

Building on previous work regarding the role of resources in portfolio entrepreneurship (Wiklund & Shepherd, 2008), we come up with a detailed examination of how social and human capital act as enablers of the process of portfolio entrepreneurship. Specifically, we identify relevant subdimensions and their respective role, as well as interactions between these two types of resources. This advances current knowledge about processes of portfolio entrepreneurship in family firms from a resource based view perspective.

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≈ INTERACTIVE PAPER ≈

**PLANNING AND SUCCESSOR CHARACTERISTICS
AS DETERMINANTS OF SUCCESSFUL OWNERSHIP
TRANSFER IN SME'S: AN EMPIRICAL STUDY**

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Principal Topic

This study examines the relationship between successor characteristics, transfer planning characteristics and post-transfer profitability within Dutch SMEs. On the one hand, based on the resource dependency view, it is assumed that successors with more knowledge and experience, derived from work experience from outside the target firm, will be able to extract higher rents from the firm than those with less (diverse) work experience. On the other hand, based on the knowledge management literature, and in particular, concepts such as *tacit knowledge*, this research makes the contrasting prediction that post-transfer profitability is likely to be higher in firms where the successor is an insider and is related to the predecessor. Moreover, this paper proposes, based on the theory of planned behavior, that having a written succession plan and strategic intent both have a positive association with post-transfer profitability.

Method

The data were collected in 2008 through a telephone interview from a longitudinal panel survey of Dutch SMEs. Data about business transfers were collected from 604 firms that were transferred within last 15 years. This data was combined with profitability data measured in 2006 and 2007. The sample only includes those firms in which ownership had been transferred at least three years before the data collection period to assure that profitability reflected the post-transfer period. The final sample includes 146 firms. The source of information is the current director (the successor).

Results and Implications

Results from the current study suggest that determinants of post-transfer profitability may be quite different in the family-to-family (FTF) vs. nonfamily (NF) ownership transfer (i.e. whether or not the successor is related to the predecessor). First, the FTF transfers are slightly less profitable than NF transfers. Moreover, for both types, transfers involving successors with more outside work experience are also somewhat less profitable after the transfer. A written succession plan, furthermore, has no effect for either type of transfer. However, in the case of a FTF transfer, strategic planning has a positive effect, whereas in the case of a NF transfer it has no effect. This may mean that much more important for the family business is to plan for change (and, probably to introduce changes) than to strive for knowledge retention.

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≈ INTERACTIVE PAPER ≈

**ACCESSION TOURNAMENTS: THE APPLICATION OF A
GAME THEORY DERIVATIVE TO THE MULTI-DIMENSIONAL
FAMILY BUSINESS ACCESSION PROCESS**

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Principal Topic

We argue that the recent governance and professionalization focus in family business research conversations, while helpful in understanding succession, and family businesses in general, needs to be complemented with a theoretical discussion of the multi-dimensional accession process. We contend that this process is multi-dimensional as, unlike in a corporate setting where the incumbent is succeeded by a suitable successor, multi-generational family businesses are more complex and there is potentially a plethora of *positions of influence* for which actors can compete. We use tournament theory to propose how family actors will act in accession tournaments and propose that the absence of a 'final' tournament further distinguishes family from non-family businesses.

Model Development

Tournament events differ in family businesses. Additional agency behaviors such as adverse selection (nepotism) and family altruism may occur, as, for example, an actor may wish to add additional actors from their branch of the family (i.e., allies) to increase their base of power and thereby increase the likelihood the actor will attain the next level within the organization with the resulting payout. As well, in family business, because wages are not the only form of remuneration and positions of influence are attained using other means, there is an added level of complexity. Further, we posit that tournaments will be guided by a governance initiative driven agreements (i.e., the rules of the game) and the availability of tangible (e.g., financial capital) and intangible (i.e., social capital) resources for distribution to the family business in determining the probability of anti-competitive behaviors occurring during the accession tournament.

Implications

This research has particular relevance to the Successful Transgenerational Entrepreneurship Process (STEP) global research initiative. STEP has provided researchers both the motivation and opportunity to work with well established multi-generational business families to identify how well they are positioned to survive multiple generational transitions. The rich data being collected by STEP scholars to test the universal theoretical EO/RBV framework provides unique insights into significant business families around the world. As well, STEP is evolving as a catalyst for scholars to explore alternative theoretical applications to examine these established business families. The initial conversations and conceptual model presented in this current research is particularly useful to STEP scholars to better understand accession in the families with whom they are working and studying.

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LOOKING BEYOND THE LOCAL TIES: EXAMINATION OF THE INDUSTRY NETWORK STRUCTURE'S ROLE IN THE IMPRINTING OF NEWCOMERS' STATUS



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ABSTRACT

Given the importance of network status, this study aims to develop a richer understanding of how industry network characteristics, specifically network density and structural differentiation, influence status of the organizations entering the industry network. I develop a model including the direct and moderating effects of the industry's network on newcomer's status and test proposed relationships on a panel data of 410 U.S. venture capital firms (3,616 observations). The findings suggest that newcomers' status is positively imprinted when the organization enters the industry network at a time when the network is not as dense or structurally differentiated. For newcomers who enter a structurally differentiated network, finding prominent partners in the year of entry may offset the negative effects of "social newness" imposed by structurally differentiated industry networks.

INTRODUCTION

Due to their liability of newness, young organizations heavily rely on interorganizational relationships (Stinchcombe, 1965) and strive for moving up the industry's status hierarchy (Larson, 1992). Ambition for network status – or centrality relative to other organizations in the industry network – is driven by the wish to access many privileges that status brings (Benjamin & Podolny, 1999), which ultimately lead to higher performance (Shipilov, 2005). In this light, recent research started to build a bridge between the network entrants' initial relationships and later status. We know that for newcomers entering industry networks, founders' social capital acts as an important origin of their initial network position (Hallen, 2008), while the structure of initial formal partnerships makes for an important imprinting factor that influences a newcomer's status in the long term (Milanov & Fernhaber, 2007; Milanov & Shepherd, 2008)

Notwithstanding the contribution of the initial efforts to understand origins of status, prior research disregarded that in addition to partnering history of individual firms, partnership formation is also affected by the changes in the overall industry network (Hagedoorn, 2006). Industry network structure is an important factor in the model of status imprinting because firms do not form partnerships in a vacuum. Indeed, their perceptions of partner availability and attractiveness are also a result of the overall context in which they are embedded (Gulati & Gargiulo, 1999). This in turn means that the evolution, formation and diffusion of status beliefs depend on how the information is mobilized within the overall social system (Tortoriello, McEvily, & Perrone, 2004).

Accordingly, this study aims to develop a richer understanding of how newcomers attain status by accounting for the industry network characteristics whose properties differ over time with respect to network density and structural differentiation (Ahuja, 2000). Specifically, I seek to understand how network status is imprinted by: 1) the *industry network density* – as it may influ-

ence the availability of potential partners and 2) *industry network structural differentiation* – as it determines the extent to which the structural and relational characteristics of firms are imbued with meaning, and consequently, the extent to which firms' social positions become guiding points for evolution of status structures (Gulati et al., 1999).

This study has three primary intended contributions. First, by accounting for industry level network effects, this study goes beyond the formation of first direct ties and examines in more detail than has been done before the importance of the initial social context at the time of network entry for newcomer's status. Second, examining an interdependency that arises from the joint influence of multiple aspects of newcomers' embeddedness (Dacin, Ventresca, & Beal, 1999; Hagedoorn, 2006) I provide a more fine-grained picture of the initial social context. This represents a response to the call in the recent literature (Hagedoorn, 2006) to account for both direct and interaction effects of industry structure and quality of newcomer's first partners in building a more comprehensive model of organizations' social status. Third, while prior research examined the effects of industry level network properties for general partnership formation (Gulati & Gargiulo, 1999), this study shows that the same factor that was found to promote partnership formation among network incumbents does not necessarily represent same partnering opportunities to newcomers. Compared to network incumbents, newcomers to the network suffer from the liabilities of newness, resource constraints, and lack of a history of partnerships in the network (Bae & Gargiulo, 2003), meaning that the rules of network evolution discovered by looking at incumbent firms are not necessarily applicable to newcomers. Hence, scholars are advised to distinguish between newcomers and incumbents in order to better understand the multiple roles that broader network structures play in shaping the opportunities and barriers for the firms in the network (Dacin et al., 1999; Granovetter, 1985; Powell & Smith-Doerr, 1994).

Global social context

The impact of social relationships can be studied with respect to organizations' direct ties or their "local" embeddedness in dyads, triads and group memberships (Granovetter, 1985; Scott, 1991; Wasserman & Faust, 1994). Likewise, to account for the structure of the indirect ties surrounding organizations (Ahuja, 2000), one can take a more "global" perspective, and study organizations' embeddedness in the broader social structures that surround them (Gilsing, Nooteboom, Vanhaverbeke, Duysters, & van den Oord, 2006; Gulati et al., 1999; Hagedoorn, 2006; Kenis & Knoke, 2002). Prior research substantially added to our understanding of the important consequences of the social relationships in which the organizations are embedded, yet it rarely considered the multiple aspects of organizations' embeddedness that result from participating in the industry's social structure.

This study builds on prior findings regarding the mechanisms through which the initial relationships generate the social signals that shape the path of the newcomer's status. While the majority of studies focus on the effects of organizations' positions stemming from their early direct and indirect ties (Baum, Calabrese, & Silverman, 2000; Milanov et al., 2008; Stuart, Hoang, & Hybels, 1999), there have been fewer empirical studies that complemented the above by additionally theorizing about the structure of relationships in the overall industry. Accordingly, we relax the assumption that the audiences' perceptions are independent of the overall context in which they are embedded (Granovetter, 1985), and acknowledge that the evolution, formation, and diffusion of status beliefs depends on how the information is mobilized within the social system (Tortoriello et al., 2004).

Social structures direct attention, shape meanings and dictate the information on which actors focus (Benjamin & Podolny, 1999) on different levels. More specifically, the meaning and mechanisms of the transfer of initial signals stemming from the local network context are likely to inherently depend on the structure of the overall industry network, and the extent to which such social structures are distinct to allow market stratification and differentiation (Gould, 2002). Therefore by taking a “nested view” of an organization’s embeddedness (Hagedoorn & Duysters, 2002) and exploring the global industry network context in conjunction with initial partnerships, we can gain a richer view of how newcomers achieve central positions.

Industry Network Structural Differentiation

Social attributes are likely to be of higher or lower importance depending on the extent to which the roles and expectations from certain social positions are defined, understood and adopted by organizations in the field. Small group research shows that the structure of social positions emerges gradually, as group members construct collective understandings through interaction (Ridgeway, 1991). In the industry network context, the emergence of social positions and a consensus on their meanings depend primarily on the structural differentiation of the field.

Structural differentiation is defined as “an emergent systemic property that captures the extent to which organizations come to occupy an identifiable set of network positions, each of them characterized by a distinct relational profile” (Gulati & Gargiulo, 1999:1450). At the very birth of an organizational field, when relationships between organizations are sparse, the roles and meanings of taking certain positions in the social context are typically vaguely defined. As industry networks evolve, the extent and nature of social information available about organizations changes (Baum, Shipilov, & Rowley, 2003), and the criteria of social ordering become better defined. As a consequence, the structural and relational characteristics of organizations become imbued with meaning, and organizations’ social attributes become guiding points for the evolution of status structures (Gulati & Gargiulo, 1999).

Increasing structural differentiation enables network incumbents to discriminate among partners based on their social profiles in the network (Baum et al., 2003; Gulati & Gargiulo, 1999). As a direct consequence, this means that the organizations can rely less on the exogenous factors (such as mutual resource interdependence) in forming new relationships (Gulati, 1998) and instead base their partnering behavior guided by signals in the industry network in which they are embedded. When structural differentiation is high, the social positions that organizations occupy become of primary importance, making the incumbents more alert to preserving (or enhancing) their positions by paying more attention to the quality of organizations with whom they form relationships (Podolny, 1994; Washington & Zajac, 2005) – where the signals of quality will increasingly be of a social, relational nature.

Observed as a system level property, additional social information provided by the progressive structural differentiation of the network decreases the *systemic* level of uncertainty faced by organizations (Gulati & Gargiulo, 1999). At the same time, this means that organizations are more sensitive to signals stemming from social positions, which may in fact *increase* the relative uncertainty surrounding the newcomer. Consequently a lack of rich social history of relationships in the network may constrain the newcomer in attaining high social status.

Prior research has found that the probability of relationship formation between any two companies in the industry increases as structural differentiation increases in the network (Gulati

& Gargiulo, 1999). However, this need not be the case when one of the two organizations is a newcomer to the network, because the increase in vertical differentiation in the network increases the incumbents' sensitivity to similarity in structural position (Chung, Singh, & Lee, 2000). While social information in the network may aid network incumbents in selecting their partners (Gulati & Gargiulo, 1999), lack of newcomer's social history may point to its "liability of social newness", and impede the organization in gaining status. In other words, because the strong structural differentiation sharpens the awareness of distinct positions and advantages of status, the rules of status homophily which emerge to guide the network dynamics may present a strong social barrier to entry (Washington & Zajac, 2005) to newcomers trying to build their status. In the interorganizational network context, structural differentiation highlights the fact that partnering with a network unknown dilutes the status of the high status organization (Podolny, 1994; Stuart et al., 1999). Thus, at a time when a status homophily is established as an endogenous rule of selecting ones' affiliates, incumbents may develop the awareness of the newcomer's social liability that likely represents a disadvantage for a newcomer's status.

On the contrary, when the structural differentiation is low, the differences of structural and relational profiles are not as clear (Baum et al, 2003; Gulati & Gargiulo, 1999), and the social equality among participants in the industry is likely greater due to the lack of institutionalized rules on social positions. Consequently, when structural differentiation is not high, the social discrimination is not pronounced (Washington & Zajac, 2005) and the newcomer's lack of a "partnering portfolio history" need not present a liability to building its status.

H1: Controlling for the social attributes of a newcomer's initial social context, the extent of industry network's structural differentiation at the year of the newcomer's network entry will be negatively associated with its status.

Mitigating the negative effect of social newness

I proposed that the increase in the industry network's structural differentiation may be negatively associated with the newcomers' status. However, this negative direct effect does not take into account the variance in the quality of the first partners that newcomers acquire at the time of entry. Because of the inherent interdependence of social signals on the general systemic properties of networks, it is necessary to consider the development of the global network in conjunction with the initial local context (Gulati & Gargiulo, 1999) of the organization's entry to the network.

Prior research points to the importance of finding prominent partners for young organizations. Prominent actors are visible and outstanding organizations that are well regarded for their performance and success in the industry, and accordingly, their behavior is widely visible and observed among industry participants (Rindova, Williamson, Petkova, & Sever, 2005). In that sense, prior research finds that having prominent partners can be an important endorsement of quality (Stuart et al. 1999) and a strong stamp of visibility (Gulati 1998), which enhances newcomers' chances to find better positioned future partners (Milanov & Shepherd, 2008). While research reports various positive effects that stem from having prominent partners (Baum et al., 2000; Stuart, 1999), including the positive effect on status (Milanov & Shepherd, 2008), partners' prominence may be differentially important in achieving status, contingent on the overall structural differentiation of the industry network.

For the newcomer with prominent initial partners, a structurally differentiated network may work to its advantage. Having its initial "prominent" label from the identity of its partners is likely

to convey a stronger meaning in the context of a structurally differentiated network and enforce newcomer's initial position. The value of the initial partners' prominence for the newcomer's signal of quality may in effect be enhanced because in structurally differentiated networks the incumbents increasingly rely on the relational and structural signals (Gulati, 1998). Thus, when the industry network is more structurally differentiated, and the incumbents' social positions more distinct and stable, the strength of the newcomer's signals from prominent partners is likely to be more pronounced in the network.

On the contrary, a structurally differentiated network may pose higher challenges to the newcomer without a prominent backing. With rules and positions in the network firmly defined, a newcomer without prominent partners may face a stronger social discrimination (Washington et al., 2005), which is likely to leave the organization at the "margins" of the social circle. Due to the emphasized awareness of the newcomer's liability of social newness in structurally differentiated networks and the explicit homophily behavior of the network incumbents, the newcomer may find it even harder to prove itself deserving of high status. Thus, I expect:

H2: Newcomers that develop partnerships with prominent organization in the year of a their network entry will mitigate the negative effect of structural differentiation of the industry network on newcomer's status such that the negative relationship between the industry structural differentiation and status is less negative the greater the prominence of the newcomer's partners n in the year of network entry.

Industry network density

Industry density is a macro-level property of social networks, which is represented by the proportion of realized observed ties to all potential ties between a set of organizations (Wasserman & Faust, 1994). Prior literature offers different mechanisms through which industry network density, capturing the intensity and the extent of interaction observed in the socio-structural system, may influence incumbents' behavior.

One perspective argues that density means that organizations are better informed on the pervasiveness of new forms of cooperation (Gulati & Gargiulo, 1999) and see industry network density as a corollary to the legitimacy of partnering as an organizational practice. According to this view when the cooperative relationships are sparse, the form is still considered illegitimate. In contrast, as network density increases, a firm's propensity to collaborate would increase because of the industry environment it is embedded in (Hagedoorn, 2006). More broadly, another perspective argues that industry network density influences the availability of information in the system (Blau, 1977), as well as the speed and the reliability with which the information is spread through the network (Kenis & Knoke, 2002; Wasserman & Faust, 1994). Both of these perspectives could lead us to expect that industry network density potentially influences the overall rate of collaboration in the industry because the organizations learn about new partnering opportunities (Kenis et al., 2002), which may increase newcomer's chances to find partners and become more central as legitimacy of partnering pervades the industry.

However, in addition to influencing the availability of information in the system, the pervasiveness of ties in the industry network also influences the extent of resources available for forming new relationships. In other words, less dense networks are expected to have a larger number of firms which are available as potential partners as organizational resources are not completely exhausted in current relationships. Accounting for the carrying capacity of the network actors to form new

relationships, the dense industry network may lower the newcomer's ability to form new relationships because the incumbents' resources are engaged in multiple extant relationships. This argument is in line with the embeddedness perspective which additionally highlights that members of more embedded networks are more risk averse to reach outside of the extant relationships in the fear that an unknown partner could prove unreliable (Sorenson & Stuart, 2005; Uzzi, 1996). Hence, the existing relationships between firms in the network may lower incumbents' propensity to dis-embed themselves from their existing relationships and shift their resources in order to establish novel relationships with the newcomer. As the newcomer may be facing a crowded relational space in its first year in the network when such a network is dense, the lack of available social capital to draw upon in forming new relationships may have a negative and enduring influence on its ability to advance its position in the industry status hierarchy¹.

H3: Controlling for the social attributes of a newcomer's initial social context, the extent of industry network density at the year of the newcomer's network entry will be negatively associated with its status.

METHODS

Sample

Venture Capital (VC) industry represents a good context for this study because relationship formation that occurs through co-investments of VC firms in portfolio companies (so called syndicates) is a frequent and important practice in the industry (Lerner, 1994). Moreover, network status carries important benefits for both the VC firm (Podolny, 2001), and the companies in its portfolio (Hochberg, Ljungqvist, & Lu, 2007).

We use VentureXpert as a main source of data and derive a sample of 411 U.S.-based limited partnership firms, involved in venture-related investments and founded in the 1980 – 1995 period, which entered the industry network through syndicated relationships within the first three years of their founding. We start identification of VCFs for the sample in 1980 due to the institutionalization of the private equity industry in this period. As 2004 presents the last available year of complete data, the selection window closes in 1995, to ensure at least 10 years of operation for the firms which were founded in that year. A 10 year period should allow for a more stringent test of the imprinting hypotheses, as compared to prior studies that examined a 6-year period to test the endurance of initial conditions (Bamford, Dean, & McDougall, 2000; Baron, Hannan, & Burton, 1999)

Measures

Prior to calculating network measures, we first constructed network adjacency matrices. We define a network relationship between two VCFs when these firms jointly invest (syndicate) in a portfolio company in the same year (Podolny, 2001). While the sample is composed only of private limited partnerships, other types of firms also participate in VC investing (such as investment banks or corporate subsidiaries) and a large percentage of them enjoy important positions in the industry's social structure (Florida & Smith, 1993). Therefore, they were included as members of the industry network. Following prior network literature (e.g. Ahuja, 2000; Gulati & Gargiulo, 1999, Hochberg, et al., 2007), we constructed the network adjacency matrices as 5-year moving windows, where the measure of status for 1987 would include all relationships that a firm formed

in years 1983-1987. In calculating all network measures, we used UCINET 6.81 (Borgatti, Everett, & Freeman, 2002).

VCF status ($t+1$). A commonly accepted measure of a firm's network status uses Bonacich's (1987) centrality measure (Podolny, 2001; Sorenson & Stuart, 2001). Based on this measure, a VCF's status is dependent on the number of other VCFs with which it has participated in financing particular portfolio companies, as well as the status of those firms. The scores are calculated for each VC firm in the network and normalized by the maximum status score in the industry for the respective year (Podolny, 2001).

Industry Network Density at Entry. This variable is operationalized as the cumulative number of syndicated relationships in the industry in a certain year, divided by the total number of possible relationships in the system (Wasserman & Faust, 1994; Gulati & Gargiulo, 1999). Like all other imprinting variables, the measure is time invariant and recorded for the year of the firm's entry to the network (1980-1995).

Industry Network Structural Differentiation at Entry. Following Gulati and Gargiulo (1999), this construct is operationalized by computing the centralization index of the network, which is measured as the standard deviation of eigenvector centrality scores of the organizations in the industry in that year (Wasserman & Faust, 1994). Prior to calculating the standard deviation of the scores, each firm's score is normalized by dividing its eigenvector centrality score by the highest eigenvector centrality score among the network firms in the industry for each year. This is necessary in order to make the measure comparable across time, as well as to capture the relative internal differentiation of the industry's network for each year.

Initial Partners' Prominence. To identify prominent initial partners, we require a measure that reflects how visible, outstanding and well regarded an organization is relative to other industry participants. Accordingly, we operationalize each partner's prominence as the cumulative number of the IPOs that the newcomer's partner achieved up to the year of study. This measure captures a firm's prominence because in the VC context, IPO brings out the VC firm's operations to the public and significantly increases its visibility (Gompers, 1996). IPO events generate pronounced interest and the coverage of such events in both public and industry-specific press is extensive (Echols & Tsai, 2005). Second, IPOs are considered to be "golden exits" in the VC industry, so taking a cumulative record in the IPO market captures the extent to which initial partners have become well regarded in the industry. Finally, IPO data are publicly available and thus achieving an IPO makes a firm stand out from others independently of any "insider" insight into its operations. We calculate overall initial partner prominence as the mean prominence of newcomers' initial partners across all initial partners (dividing the total prominence with a number of newcomer's partners in the year of entry to the network). We used the average rather than the sum, because it purifies any effects on status that may have resulted from the size of the newcomer's ego-network at the time of network entry. The variable enters the analyses as a time-invariant covariate

Initial Structural Embeddedness is operationalized as the focal firm's ego-network density (Rowley, Behrens, & Krackhardt, 2000). The measure is calculated as the number of present connections between a firm's syndicate partners divided by all possible connections between them (Wasserman & Faust, 1994). The measure is time invariant and recorded for the year of firm's entry to the network.

We included a series of control variables in all our models. Our first consideration was to isolate the imprinting effect of hypothesized variables in the year of network entry from the endogenous change in status. Hence, we include status at time t , in all of our models as a predictor of status in year $t+1$. This is important because prior literature highlights the self-reproducing nature of status orderings (Podolny & Phillips, 1996). Inclusion of this variable should help account for the structural path dependency of network positions (Chung et al., 2000; Lavie & Rosenkopf, 2006) and help account for specification bias which may arise from unobserved heterogeneity. Specifically, this control resolves an acknowledged identification problem: do initial embedded networks and prominent initial partners imprint status, or are these imprinting variables spuriously correlated with status because newcomers are more likely to have prominent partners and related higher status due to the same unobserved characteristics that make the newcomers superior in some other way? Controlling for status in network entry year and all subsequent years is likely to account for differences in such characteristics as well as control for endogeneity in status development. This procedure is consistent with literature studying the dynamics of networks (Baum et al., 2000; Powell, Koput, & Smith-Doerr, 1996), and more specifically, status evolution (Podolny et al., 1996).

Next, we include *time-period effects* and enter a collection of decade indicator variables, excluding the 2000s for comparison. These dummies help account for any temporal heterogeneity (Baum et al. 2003; Shipilov 2005) that could influence the dynamics of status. To control for the number of available partners and the extent of competition in the industry, we introduce *industry network size* as a control, measured as the number of VC firms participating in the industry network in each year.

In addition, we introduce a number of controls for the characteristics of the VC firm. Because the relationships formed in the industry may reflect the firm's capabilities or others' perception of such capabilities (Baum et al., 2000) we control for *newcomer's ego-network size*, measured as the number of partners that the newcomer had in each consecutive year. We control for *newcomer's size* because larger VCFs could be more attractive as partners. Following with prior literature (Echols & Tsai 2005; Podolny 2001), we measure size as the number of funds from which a VC firm invests in each year. We control for *newcomer's age at entry* because some firms may have some pre-established legitimacy prior to entering the network by engaging in non-syndicated investments (Gompers, 1996). The next control is for *newcomer's location* because firms operating from regions with higher industry clustering may be more attractive as partners than other firms. Location is controlled by introducing two dummy variables for repeatedly cited hubs of VC activity: Massachusetts and California (Florida & Kenney, 1988). I also introduce two controls capturing VC firms' investment strategy. First, I control for *VCF lead specialization* in forming relationships in each year by including a proportion of rounds where the focal VCF acts as a lead investor. Prior research has established that leading syndicates may reflect a firm's "investment in reciprocity" (Hochberg, Ljungqvist, & Lu, 2006), and such behavior may ultimately influence status. Firm was identified as a lead investor if in the first round of investment into the company it was the only firm to have invested, or when the firm invested in the first and all subsequent rounds (Sorenson & Stuart, 2008). Second, I include the *average round* in which a newcomer invested in each year as a control in all models. Early rounds reflect the higher uncertainty of the portfolio company (Dimov, Shepherd, & Sutcliffe, 2007) where strategic input by the VC firm is critical for the company's success. Hence, a tendency to invest in earlier rounds may signal the newcomer's capability to add value to the company and position the newcomer as an attractive partner. Next,

because status is in part a reflection of observable quality, I control for the number of IPOs that the newcomer achieved in each consecutive year.

Analytical Methods

This research employs a longitudinal research design and tests the hypotheses set forth on a panel data set spanning years from 1980 to 2005, with time-variant variables updated yearly. Before conducting the analyses, the data were analyzed to ensure they did not depart substantially from normality. Measures of skewness and kurtosis were assessed for each variable in the database. Based on these results, several transformations were made. First, as somewhat expected, the distribution of the status variable is skewed, with many more low-status firms than high-status firms. The found distribution is consistent with the status distributions observed in other industries, such as investment banking (Podolny, 1993), and in the wine industry (Benjamin & Podolny, 1999). To correct for such non-normality, the variable was transformed using the log linear transformation which improved the variable properties.

Scholars analyzing panel data are typically presented with a choice between fixed and random effects models. While generally, the preference is given to the fixed-effects estimators, which analyze only within-organization over-time variation (Halaby, 2004) because the major theoretical variables of interest (as well as important location control variables) are time-invariant, this study uses random effects estimation to predict status (Wooldridge, 2002).

RESULTS

In Table 1, we present the results testing the influence of industry network factors on VCF status (hypotheses 1 and 3). Model 1 introduces all the control variables. Model 2 adds the main effects for industry network density and structural differentiation in the year of newcomer's network entry. In Model 3, I add the interaction term between industry structural differentiation and partners' prominence (testing hypothesis 2). In Table 1, each column reports the results for a dependent variable measured at time $t+1$. Each row contains the effects of an explanatory variable measured at time t , or in the case of the independent variables, at the time of a VCF's network entry. As evidenced in Table 1, all models are significant and each subsequent model improves the fit of its preceding model, as suggested by the significant increase of the Chi-square statistic.

Hypothesis 1 proposed that the industry network's structural differentiation at the time of newcomer's network entry will be negatively associated with the firm's status. Referring to Model 2 I find a negative and somewhat marginally significant coefficient (coefficient = -1.32, $p < 0.055$), which remains negative and achieves higher significance level in Model 3 (coefficient = -2.77, $p < 0.001$), thus providing support for hypothesis 1. In Model 1, hypothesis 3 is also tested, which proposed a negative effect of industry network density at the time of newcomer's network entry on the newcomer's status. Reading of Model 1 shows support for hypothesis 3, as the coefficient is negative and significant (coefficient = -1.74, $p < 0.05$).

Hypothesis 2 posited that the prominence of newcomers' initial partners may mitigate the negative effect of industry structural differentiation on status proposed in the prior hypothesis. Model 3 within Table 1 shows that the estimated coefficient is positive and significant (coefficient = 0.393, $p < 0.001$). To better understand the interaction effect, the results from the full model were plotted following established methods (Aiken & West, 1991). In Figure 1, the two lines on the graph respectively represent situations when the newcomer enters an industry network that is less

or more structurally differentiated. As Figure 1 illustrates, the steeper slope of the line representing newcomers who initially affiliated with prominent partners in the industry suggests that VCFs entering the network with highly prominent initial partners can mitigate the negative effects of initial structural differentiation of the industry network, which supports hypothesis 2.

DISCUSSION

In studying the industry network as an important status imprinting factor, this study directly responds to Hagedoorn's (2006) call for a richer understanding of the firm's social context by showing that status-hungry newcomers' should tailor their initial networking strategies contingent on the structure of the industry network.

Overall, the results show that accounting for the direct and moderating effects of the industry network structure at the time of a firm's entry to the network adds to our understanding of a newcomer's status. Specifically, the results suggest that industry network density and structural differentiation at time of entry differentially influence newcomers' status. Finding a negative influence of industry network density on status contributes to social network and management literatures by showing that industry network density – beyond its communication role in transferring information among network incumbents – has key implications for the competitive dynamics in the industry. Additionally, finding a negative effect for the industry network's structural differentiation on newcomer's status contributes to entrepreneurship literature as it teases out a heretofore ignored liability of organizations' *social* newness. Finally, the interaction between the structural differentiation of the network and quality of newcomer's first partners reveals that mechanisms exist to overcome the liabilities associated with social newness, if the newcomer is strategic in its selection of first partners.

Like all research, this study suffers from certain limitations which must be acknowledged. First, although prior literature acknowledged that especially for young companies, achieving social status is one of their ultimate aspirations (Larson, 1992) and that network status can be seen as "network performance" (Shipilov & Xiao Li, 2008), in this research its relationship to firm's performance was only assumed. Second, although choosing the VC context lent itself well to understanding the mechanisms of social imprinting and antecedents to the firm's status, care should be taken in generalizing these results beyond the US VC industry. Likewise, I acknowledge that some VCFs may be omitted in our sample due to the chosen time frame (1980-2004), as they may have operated and died before 1980. Additionally, our results should be interpreted with caution due to a form of survivor bias which may have been introduced by excluding 81 firms with single observations from the analyses.

In conclusion, this study highlights industry network structures' multiple roles in shaping the opportunities and barriers for the firms in the network, and enables us to make more refined recommendations in advising newcomers on how to approach network entry.

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NOTES

1. Different argument to the embeddedness perspective highlights that VC network incumbents establish dense networks in order to keep the other firms from entering their market (Hochberg, et al., 2005). While this explanation focuses more on the competitive nature of the industry, the implications for the newcomer are the same because the “competition oriented” perspective suggests that the VC firms *proactively* use networking as a part of their strategy to deter entry for the newcomers.

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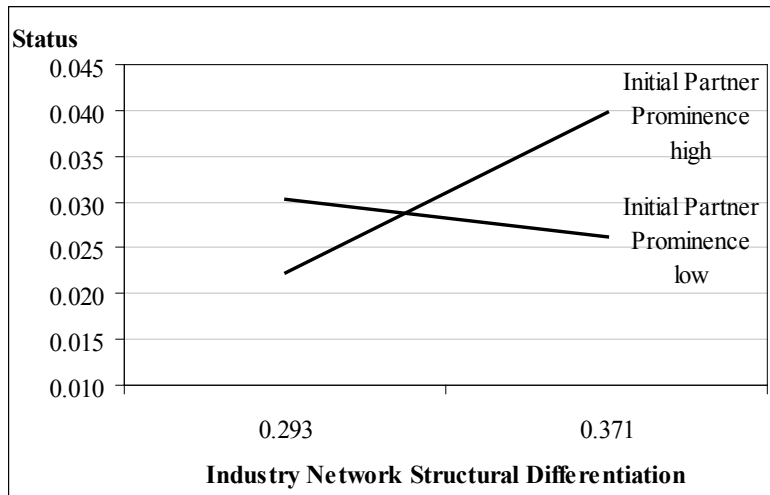
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Table 1: Results

Variable:	Model 1		Model 2		Model 3	
<i>Independent Variables:</i>						
Industry Network Structural Differentiation (<i>t entry</i>) ^b			-1.318 † (0.686)		-2.771 *** (0.808)	
Industry Network Density (<i>t entry</i>)			-1.742 * (0.865)		-1.555 * (0.866)	
Interaction IPP x Industry Structural Differentiation (<i>t entry</i>)					0.393 *** (0.115)	
<i>Control Variables</i>						
VCF Status (<i>t</i>) ^a	0.662 *** (0.011)		0.663 *** (0.011)		0.664 *** (0.011)	
1980s	0.091 (0.062)		0.087 (0.062)		0.093 (0.062)	
1990s	-0.015 (0.058)		-0.023 (0.058)		-0.024 (0.058)	
Industry Network Size (<i>t</i>)	-0.0001 * (0.000)		0.000 ** (0.000)		0.000 * (0.000)	
VCF Ego Network Size (<i>t</i>)	0.002 *** (0.000)		0.002 *** (0.000)		0.002 *** (0.000)	
VCF Size: Number of Funds (<i>t</i>) ^a	0.206 *** (0.024)		0.208 *** (0.024)		0.207 *** (0.024)	
VCF Age at Network Entry	0.010 (0.030)		0.016 (0.030)		0.018 (0.030)	
VCF Location: CA	0.256 *** (0.046)		0.257 *** (0.046)		0.264 *** (0.046)	
VCF Location: MA	0.166 * (0.070)		0.171 ** (0.070)		0.159 * (0.070)	
VCF proportion of industry's IPOs (<i>t</i>)	0.373 (0.885)		0.410 (0.885)		0.449 (0.883)	
VCF proportion of deals lead (<i>t</i>)	-0.020 (0.035)		-0.019 (0.035)		-0.018 (0.034)	
VCF average round entered (<i>t</i>)	-0.041 *** (0.005)		-0.041 *** (0.005)		-0.041 *** (0.005)	
IPP - Initial Partners' Prominence (<i>t entry</i>)	0.004 ** (0.001)		0.003 † (0.001)		-0.122 *** (0.036)	
ISE - Initial Structural Embeddedness (<i>t entry</i>)	0.144 * (0.071)		0.155 * (0.071)		0.162 * (0.071)	
Constant	-1.297 *** (0.115)		-0.521 *** (0.366)		-0.089 (0.387)	
Rho	0.336		0.337		0.337	
Wald Chi Sq. (d.f)	9536.71		9545.8		9584.41	
d.f.	14		16		17	
ΔWald Chi Square			9.11 **		38.59 ***	
Δd.f. from model (#)			2		1	

Figure 1: Interaction of Industry Network Structural Differentiation and Initial Partners' Prominence

≈ SUMMARY ≈

**WHEN NETWORKS MATTER: NETWORK
CONTENT AND INNOVATION OUTPUT***Irem Demirkan, Northeastern University, USA**David L. Deeds, University of St. Thomas, USA***Principal Topic**

From a network theory perspective (Granovetter 1973, 1985; Burt, 1992) it has been argued that firms are embedded in social networks, which play a critical role in individual firm performance. Existing literature has paid considerable attention to understanding the role of network relationships on firm performance in the form of innovation. A firm's innovativeness is critical to its performance (Zaheer & Bell, 2005) and may arise not only from the firm's internal characteristics, but also from its external organizational relationships. Despite the popular scholarly interest in the relationship between social networks and firm innovation, the existing literature is lacking in two important respects. First, in these studies network content has rarely been a variable (Burt, 1997; Hoang & Antoncic, 2003). In other words, network theory is mostly silent on issues regarding the network content – the characteristics of the actors and/or the qualitative nature of the relationships and the innovation outcomes of such networking interactions are still unclear. Second, of all the studies that focused on network content, very few have examined it from an inter-organizational perspective. How does inter-firm network content affect the innovation performance of individual firms? This question has been left unexplored. In this paper, we seek to explore the above issues from an inter-organizational view. We look into which types of network, and what type of relationships matter most for the firm's innovative performance, specifically in the biotechnology industry. We will address the following questions: What is the nature of knowledge shared in firm's ego networks? What are the characteristics of network members? How do these qualitative assessments of the network affect firms' performance outcome?

Method

We tested the above hypotheses by examining the U.S. biotechnology industry. We identified a sample of publicly-traded biotechnology firms listed in Recombinant Capital (ReCap). The panel used for the analysis includes specific variables for the period 1990-2005. Due to some missing variables as well as two-year lagged independent variables an observation number of 3349 remained in the sample with 482 firms.

Results and Implications

Our study contributes to the literature by arguing that network content encompasses both the quality of relationships and the characteristics of members within a network, and then empirically demonstrating the significance of key network content variables in driving a firm's innovation in the biotechnology industry. A major contribution of this study is to demonstrate the importance of the *nature* of the ties in a firm's ego network. Our study supports the view that in addition to the effects of network structure, the quality of one's relationships in a network matters in innovation output.

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≈ SUMMARY ≈

**THEY ARE THE SUM OF THEIR OPTIONS:
HOW NETWORKS DIRECT ATTENTION IN YOUNG & NEW FIRMS**

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Alexander McKelvie, Syracuse University, USA

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Joy Godesiabo, Colorado School of Mines, USA

Principal Topic

Extant theorizing suggests that the portfolio of strategic options held by the firm is defined as a function of how existing routines, governance structures, and information channels focus the attention of decision-makers (Barnett, 2008). In the case of new ventures, however, these established routines, structures, and channels are absent or weak. Questions as to the mechanisms through which founders/founding teams focus their attention toward developing a portfolio of strategic options are important, but under-developed in the literature. In this study we bring together the foundational tenants of options reasoning with the Attention Base View (ABV), investigating the general proposition that when identifying the set of strategic options held by the venture, the professional and personal networks of the founder/founding team serve as substitutes for established routines, structures, and information channels characteristic of large firms.

Method

This research is based in two separate but inter-related studies. In Study 1 we employ a multiple-case study design based on replication logic, and conduct semi-structured interviews with 12 founders of ventures between 2 and 5 years. Analysis across cases serves to identify emerging conceptual insights (Brown & Eisenhardt, 1997). In Study 2, the insights from Study 1 are operationalized in a survey instrument. Data is collected from 75 start-up entrepreneurs in the northeastern United States. We examine professional networks in terms of the customers, suppliers, competitors, and financiers; personal networks include family, community, and social groups. UCINET is used to calculate network measures, and hierarchical multivariate regression analysis is employed to determine the influences of network types on attention.

Results and Implications

Options are important for new ventures, and our findings suggest that absent formal structures that focus attention, new ventures rely of social networks to inform their strategizing with regard to strategic options. Our results are grounded in rich and systematic data positioned to better understand networks (i.e. structural holes & ties), and how they influence the options identified by the venture. As such, we offer insights that help open up the “black box” of what lies behind the behavior of new firms.

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≈ SUMMARY ≈

RESPONDING TO KEY CHALLENGES AND CRISES IN HIGH-VELOCITY ENVIRONMENTS: COPING MECHANISMS OF HIGH GROWTH FIRMS

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Marc Sosna, IESE Business School, Spain

Principal Topic

Despite a growing body of literature on high-growth firms many questions remain open as to how firms cope with key challenges and deadly crises in growth phases. Past research on turnarounds has mainly focused on large corporations and scholars have concentrated on manufacturing businesses. There is a lack of research with regard to young technology firms. Measures to define ‘turnaround situations’ used in the past are inappropriate for high-growth firms operating in high-velocity environments. Young innovative firms can find themselves in turnaround situations within very short time frames. Therefore we focus on turnarounds from near-death experiences triggered by unexpected events. While scholars have mentioned several factors for declining performance, there is not much research on ‘contamination processes’ once a firm enters into a downward spiral. Literature describes a two-tiered response, consisting of an initial retrenchment phase and a long-term recovery phase. This might be different for young firms. Guiding research questions are: What are triggers of crises? How do ‘contamination paths’ and strategic responses look like? Are there patterns?

Method

The level of analysis is the ‘near-death episode.’ Settings are the mobile technology and software service solutions industries. Our approach: grounded theory-building. We monitored 50 ventures from a peer-group forum by spending 2.5 days with the CEO, every 4 months for 4 years. We developed seven in-depth case studies of firms that went through near-death experiences. Information was collected using semi-structured/open interviews, and secondary sources such as company documents. Multiple techniques were then used to analyze the data, including data sequencing and pattern matching.

Results and Implications

Our research shows that any core element of a firm/its ecosystem can be a trigger into crisis, but eventually the subsequent ‘contamination path’ is the same. This contamination takes place at a very rapid speed. We do *not* find a clearly separated/partly overlapping 2-stage response to the turnaround as the literature suggests, but one that aims at many levels (operational, strategic, political) simultaneously. Literature suggests several recovery strategies – one being ‘continuous retrenchment’ – this is not a realistic option for the firm types in our sample. As VC-backed ventures, they are forced to go back on a (high-) growth path as quickly as possible and strategic responses need to allow firms to quickly scale up again. Executives operating in high-velocity environments must evaluate the ‘infection potential’ of the various elements.

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≈ INTERACTIVE PAPER ≈

RELATIONSHIP STRATEGIES FOR ENTREPRENEURIAL ALLIANCES

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Principal Topic

Interfirm alliances are a commonly used method for firms to access resources. Trust has been identified as a fundamental aspect of these relationships, but the concept of trust remains somewhat ambiguous. A premise of this theoretical paper is that entrepreneurs look to their developed social networks to create potential resource-providing relationships (e.g. Uzzi, 1999). Smith & Lohrke (2008) applied an interorganizational concept of trust to entrepreneurial network development, proposing a three-stage model of socioeconomic exchange between a new venture and a resource provider and the associated levels of affective and cognitive trust. Their definition of trust, however, was based on a single continuum. I will extend their work by applying a more ambivalent definition of trust, which includes a component of distrust (e.g. Lewicki, McAllister, & Bies, 1998). The framework prescribes a level of distrust, manifested in legal and contractual mechanisms, which would encourage a professional arms-length association and enhance exit provisions. This is particularly valid in entrepreneurship where there is often a power asymmetry with resource providers. I believe further investigation and clarification of the simple norm that “more trust is better” is required.

A challenge in trust analysis has been its operationalization and application of what was commonly held as a dyadic characteristic to organizational relationships. Zaheer, McEvily, & Perrone (1998) provided a framework in their empirical analysis of interorganizational and interpersonal trust between dyadic producer/supplier relationships. Interorganizational trust was measured as the extent to which individual members have a collectively-held trust orientation toward the partner *firm*, while interpersonal trust was determined by interactions between what Katz & Kahn called *individual boundary spanners*. My unit of analysis is individual boundary spanners and their specific alliance relationships, who in aggregate account for the trust/distrust by the entrepreneurial firm. The framework proposes that these individuals in particular need to establish arms-length relationships, despite personal social history, in order to protect the interests of their firm. Propositions:

1. Boundary spanners' distrust will be positively related to negotiating alliances with fair exit provisions.
2. Boundary spanners' distrust will be positively related to firms achieving strategic goals for the alliance.
3. Boundary spanners' distrust will be positively associated with achieving a positive return vs. cost concerning the alliance.

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≈ INTERACTIVE PAPER ≈

BREAKING UP IS HARD TO DO: EXAMINING THE ROLE OF PARTNER CHANGES ON STRATEGIC ALLIANCE OUTCOMES

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Principal Topic

Facing increasing uncertainty in their external environments, many firms have formed strategic alliances with various external actors including customers, suppliers, and even competitors (Brush & Chaganti, 1996). Alliances offer significant benefits for managing uncertainty by helping a firm achieve a more negotiated environment (Stearns et al., 1987).

At the same time, cooperation can also create uncertainty, particularly in terms of its long-term impact on a firm (Das & Teng, 1998). Despite these potential threats, alliance popularity continues to increase (Elfring & Hulsink, 2003), a somewhat surprising result, especially given that some estimates suggest alliance failure rates may range from 50 to 70 percent (Day, 1995; Park & Ungson, 2001). These difficulties in successfully managing alliances so that they attain organizational goals raise a key research question for both researchers and practitioners:

What critical factors increase the probability of alliance success (Lambe et al., 2002)?

Extant research has cited myriad success factors impacting alliance outcomes including each partner's individual strategic directions, alliance goals, alliance commitment, and resource endowments present at the alliance's formation (e.g., Parke, 1993). Research has increasingly noted, however, that beyond these *ex ante* conditions, other events that occur during the alliance's existence (e.g., major changes in the external environment) may impact alliance outcomes (Park & Ungson, 2001). Thus, to provide a more complete view of factors impacting alliance success or failure, research needs to examine not only initial alliance conditions but also how changing firm conditions over time may impact an alliance's eventual success or failure.

Method

To examine these issues, we employ a unique dataset based on surveys administered in 2003 to firms participating in the U.S. Commerce Department's Advanced Technology Program, which supported highly innovative and risky, but feasible, technology developed by firms involved in strategic alliances. This program provided grants totaling several millions of dollars for applicant firms that could demonstrate both the scientific and business merits of their projects. Our final sample includes 95 alliances.

Implications

Based on our findings, we will detail important implications these results have for both practitioners and alliance research as well as suggest future research avenues to build on our results.

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∞ INTERACTIVE PAPER ∞

BUSINESS SUPPORT WITHIN BUSINESS INCUBATORS

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Principal Topic

Researchers and practitioners agree that business support is a crucial dimension of business incubators, among others such as space, shared resources and access to networks. Yet business support impact is seldom researched. This gap results in no insight about *how* and *how much* business support is actually being delivered within business incubators. In this study, we operationalize business support using a framework of problem solving. The chief assumption here is that such problems are intrinsic to new venture development. The incubator value lies therefore in its capability of helping tenants overcome their problems. We seek to answer three main questions: i) Does business support help to explain problem solving?; ii) Does the specific business incubator support help to explain problems solving? ii) Are differences across incubator focus impacting their ability to help tenants to solve their problems?

Method

We used data coming from NENSI – North European Network of Service Incubators, a transnational network of business incubators spanning six European countries. The survey was sent to 354 tenants companies and the response rate of 29% (N=101). We examined the seriousness of problems within fundamental areas of firm development such as strategy, finance, human capital and networks. Furthermore, we enquired on where support was sought and whether the problems were solved.

Results and Implications

Our results show that incubators are not intensively helping their tenants even though they (the tenants) experience frequent and serious problems. Tenants experience only about half of the problems we inquired about. Support for solving those problems is not necessarily sought and it is even less likely to be sought within the incubator. Furthermore, our analysis suggests a mismatch between the type of problems tenants face and the support given by the incubator: strategic problems are among the most frequent and serious problems tenant face, incubator support is mostly likely sought in human capital development areas. Finally, we speculate on what reasons might be beyond the impact of the type of business incubator in our results. Further avenues for research are also suggested.

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FROM ENTREPRENEURSHIP TO ECONOMIC DEVELOPMENT: CELEBRATING TEN YEARS OF GLOBAL ENTREPRENEURSHIP MONITOR



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ABSTRACT

This paper reviews ten years of theoretical and empirical contributions by the Global Entrepreneurship Monitor consortium. The evolution of GEM measures of entrepreneurship is tracked, and the quantity and quality of peer-reviewed scholarship based on GEM data and models is assessed. Prospects for the future are noted, as GEM continues to expand and scholars outside the consortium increasingly employ GEM data in their work.

INTRODUCTION

In this paper, we review the ten years of empirical and theoretical contributions of the GEM project. We do this by first reviewing the main scientific contributions of GEM to date. Second we analyze the evolution of GEM's main indicators over the 10-year period 1999-2008 and show how some GEM measures effectively could contribute to our understanding of the relationship between entrepreneurship and economic development. Finally we highlight recent advances in entrepreneurship measures and propose recommendations that may benefit the GEM project.

Entrepreneurs create new businesses, and new businesses create jobs, intensify competition, and may even increase productivity through technological change. This is how entrepreneurship is believed to contribute to economic development. Some studies argue that during the last two decades the development of new technologies, and by consequence the emergence of new business models, has shifted from large corporations to small and new ventures (Audretsch and Thurik, 2001; Thurow, 2003; Wennekers et al., 2005, Amorós and Cristi, 2008). By consequence high levels of entrepreneurship will thus translate directly into high levels of innovation, employment and development (Schumpeter, 1934; Baumol, 2002; Acs and Audretsch, 1988). However, we have much to learn about why entrepreneurship rates differ not only among countries with different development stages but also among regions in a single country, and why not all entrepreneurial efforts have the same impact on economic development.

Many of these issues are widely explored by the Global Entrepreneurship Monitor (GEM) research program, which assesses entrepreneurial activity annually in nations and regions of the world. GEM was created in September 1997 by Michael Hay and Bill Bygrave as a joint research initiative by London Business School and Babson College. The project's success would not have been possible without the tremendous efforts of GEM entrepreneur Paul Reynolds, who was Principal Investigator of the project between 1998 and 2003. The first GEM Global study was conducted in 1999. This first effort analyzed 10 countries: the G7 countries (i.e., Canada, France, Germany, Italy,

Japan, United Kingdom and United States) and three additional countries, Denmark, Finland and Israel because some researchers of these countries had relevant expertise. By 2008, GEM had conducted annual assessments in 66 countries, covering more than 80% of world population and almost all nations with globally significant economies.

GEM's research program, based on a harmonized assessment of the level of national entrepreneurial activity for all participating countries, involves exploration of the role of entrepreneurship in national economic development. The evolving GEM model serves as a vehicle to guide the data collection process, facilitate data interpretation and provide a framework for further theory development and policy (Reynolds et al. 2005; Levie and Autio, 2008).

Since its inception, GEM has sought to explore the widely accepted link between entrepreneurship and economic development (Carree and Thurik, 2003; Acs, 2006; Audretsch 2007). A wide range of entrepreneurial initiatives has been uncovered, including those entrepreneurship initiatives that expect the creation of significant numbers of employees or "growth start-ups". These high-impact entrepreneurs in particular make a large contribution to job creation, sometimes providing for the totality of new net job creation in the economy (Autio, 2007; Acs, Parsons and Tracy, 2008). The first GEM report explained: "The central focus was to bring together the world's best scholars in entrepreneurship to study the complex relationship between entrepreneurship and economic growth" (Reynolds, Hay and Camp, 1999 p.3). To understand this central aim GEM defined a model that sets out key elements of the relationship between entrepreneurship and economic growth and the way in which the elements interact. The first GEM model considered five major groups of key elements: 1) Social, Cultural and Political National Context; 2) General National Framework Conditions and specific Entrepreneurial Framework Conditions; 3) Entrepreneurial Opportunities and Entrepreneurial Capacity; 4) Business Dynamics; and 5) National Economic Growth.

After 10 year of empirical evidence and continuous improvements, GEM researchers revised the GEM model to reflect the complexity of the *causal relationship* between entrepreneurship and economic development globally (Bosma et al. 2009). This revised model is founded on the concept that the contribution of entrepreneurs to an economy varies according to its phase of economic development (Wennekers et al. 2005; Gries and Naude, 2008). The revised model introduced a more nuanced distinction between phases of economic development, in line with Porter's typology of "factor-driven economies", "efficiency-driven economies" and "innovation-driven economies" (Porter et al., 2002). Additionally the revised model introduced three main components that capture the multi-faceted nature of entrepreneurship: entrepreneurial attitudes, entrepreneurial activity, and entrepreneurial aspiration (Acs and Szerb, 2009). The original and revised GEM Model is showed in Figure 1. For factor-driven economies, economic development is primarily driven by basic requirements: development of institutions, infrastructure, macroeconomic stability and health and primary education. In efficiency-driven economies, focus is (or should be) on ensuring a proper functioning of the market; critical factors include higher education, goods and labor markets, technological readiness, etc.. Even though these conditions are not directly related to entrepreneurship in the Schumpeterian sense of "creative destruction", they are indirectly related since the development of markets will also attract and enable more entrepreneurship. Finally for countries whose economic development is primarily innovation-driven, entrepreneurial framework conditions become more important as levers of economic development than basic requirements or efficiency enhancers. The outcome of this new model is national economic growth through, for example, job creation and technical innovation.

In the next section, we review the main scientific contributions related to GEM project. Then, we analyze the evolution of the GEM's main indicators over the 10-year period 1999-2008 and show how some GEM measures can aid understanding of the relationship between entrepreneurship and economic development. Finally we highlight recent scholarship based on the GEM model and data and propose recommendations that may benefit the GEM project.

A TEN YEAR CONTRIBUTION TO ENTREPRENEURSHIP SCHOLARSHIP

While entrepreneurship is a broad term with many different meanings, GEM operationalizes entrepreneurship as: "Any attempt at new business or new venture creation, such as self-employment, a new business organization, or the expansion of an existing business, by an individual, a team of individuals, or an established business." In its first year, the GEM research program posed some fundamental research questions including: does the level of entrepreneurial activity vary between countries, and, if so, to what extent? And, does the level of entrepreneurial activity affect a country's rate of economic growth and prosperity? Based on these research questions, GEM focused on three main objectives: 1) To measure differences in the level of entrepreneurial activity among countries. 2) To uncover factors determining national levels of entrepreneurial activity. 3) To identify policies that may enhance the national level of entrepreneurial activity.

Uncovering differences in the level of entrepreneurial activity among countries

Without a doubt one of the main contributions of the GEM project is the development of consistent, harmonized and internationally comparable measures of entrepreneurial activity. To calculate these measures, GEM has two guiding principles. The first guiding principle of GEM research is that entrepreneurship *is a process*, and the second is that it is undertaken by *individuals*. This differentiates GEM measures from other data sets that measure newer and smaller firms. The individuals that follow the entrepreneurial process constitute the base of GEM measurements. One of the most recognized and cited GEM measure is Total early-stage Entrepreneurial Activity. Originally introduced in the 2000 Global Report, this measure was formerly called the GEM Total Entrepreneurial Activity (TEA) Index. The acronym TEA has been retained in the revised description, which recognizes that TEA does not measure all entrepreneurial activity, but more specifically entrepreneurial activity at the early stages of the process through which individuals and teams become active entrepreneurs. TEA prevalence rates are calculated as the sum of people aged 18-64 who are involved in entrepreneurial activity as either nascent entrepreneurs or new business owners¹. TEA and its components form a central part of many GEM-related reports. Table 1 summarizes the TEA rates of all GEM participants countries since 1999 to 2008.

One of the main criticisms of the GEM project is that TEA does not reflect the (assumed linear) relationship between entrepreneurship and economic development (Acs, 2006). The direct application of the TEA as a measure of entrepreneurship activity has several limitations (Hindle, 2006), or not capturing entrepreneurship in existing businesses, data inconsistency and the potentially different interpretation of the questions over countries (Baumol et al., 2007, Godin et al., 2008). But, as the revised model shows, the relationship is not that simple, and TEA should not be used as a simple ranking. As Bosma et al. (2009) discuss, based on the revised GEM model it is certainly not the case that higher TEA rates are always to be preferred. In factor-driven economies, for example, a reduction in the TEA rate may be seen as a good sign because it may signal a decline in the rate of necessity entrepreneurship (people who start businesses because they have no other options on the job market); it is especially likely when the general economic climate is doing well

and job opportunities increase. In innovation-driven economies, a high TEA rate may be specific to regional economic, demographic and cultural contexts and may be composed of entrepreneurs who may vary in type and aspiration.

The impact of GEM on entrepreneurship scholarship and in the wider world

Members of the GEM consortium publish not only annual GEM reports but also an increasing number of articles, using GEM data, in international peer reviewed journals. As GEM data becomes more available to scholars generally, the authorship of GEM-based data has widened. GEM-based research also is published in several languages and has become a key resource not just for scholars but also for public policy and practitioners. In this section, we assess the impact of the GEM project on entrepreneurship scholarship. In order to assess the growth in the influence of GEM, we replicated a general proxy of GEM influence employed by Davidsson (2005, p 355). A general search for “Global Entrepreneurship Monitor” in Google in April 2009 yielded 99,200 hits, compared with 11,900 in May 2005 as reported by Davidsson. This is 833% more hits in four years. Google Scholar, a more refined search of academic-related literature on the internet, reported 4,960 hits. These numbers show an increasing impact of GEM on the Internet.

A familiar output of GEM is its annual reports. GEM Consortium produces annual global reports and other reports related to special topics like High Growth/High Expectation Entrepreneurship, Financing, Women Entrepreneurship and Innovation. Table 2 shows the number of downloads of annual reports from the gemconsortium.org website between May 2007 and April 2009. An extraordinary 100,000 copies of GEM reports were downloaded during that two year period.

In order to refine our assessment of the academic impact of GEM, we made use of EBSCO, one of the leading sources of electronic databases for academic research. We perform an advanced search on 2nd March 2009 using EBSCO Host’s Business Source Complete database, including limited search with these specific restrictions: articles from only peer review academic journals, publications between 1999 and 2009 and only in English. We located 1633 journal articles that include in their complete text or references any citation to the GEM Project. To refine the search to locate articles which were dependent in some way on GEM, and which are aimed squarely at entrepreneurship scholars, we use two main criteria: 1) Search only “GEM based” articles, that is, publications that use GEM data in their empirical methods (main or complement source of data) and articles based on GEM model that make a theoretical contribution; 2) search only in specific “entrepreneurship” journals that are indexed on ISI Web of Sciences®. Accord to this second criterion the selected journals are *Journal of Business Venturing*, *Entrepreneurship Theory and Practice*, *Small Business Economics*, *Entrepreneurship & Regional Development*, *International Small Business Journal* and *Journal of Small Business Management*.

Small Business Economics, SBE, hosted 30 articles, more than any other journal. SBE has published three special issues related to GEM’s Research Conferences. 18 of these articles are empirical and use multi-country samples. However, six of them conduct single country analyses. Another describes the GEM methodology and summarizes the first years of the project. This paper “*Global Entrepreneurship Monitor: Data Collection Design and Implementation 1998–2003*” by Reynolds et al. (2005) could be consider the “cornerstone” of the project and an introduction to GEM’s development and methodology. Three papers are introductions to special issues and two have a special characteristic, being related to Paul D. Reynolds’ “International Award for Entrepreneurship and Small Business Research”.

Entrepreneurship Theory and Practice (ETP) and, *International Small Business Journal* have each published four articles during the period under review. (It is worth noting in passing that a paper by Davidsson and Wiklund (2001) in ETP titled “Levels of analysis in entrepreneurship research: Current research practice and suggestions for the future” was one of the first peer-reviewed papers to mention GEM as a potential source of data for future research on entrepreneurship topics.) *Journal of Business Venturing* and *Entrepreneurship & Regional Development* have each published three empirical GEM-based articles. To date, *Small Business Management* does not have any GEM-based articles. Table 3 summarizes all these articles.

Finally, since only one article in this search was older than 2005, we widened the search again to include all GEM-based English-language peer-reviewed articles published between 2004 and 2008, using both the GEM consortium’s in-house list and a search from January 2004 to December 2008 on ABI-INFORM. This revealed 81 articles. We then coded the journal quality of these articles using the Harvey-Morris 2008 ranking (published by the Association of Business Schools at www.the-abs.org.uk). The results are presented in Table 4. They show that the average rank (on a 0 to 4 scale) of GEM-based articles over the past 4 years is 2, but that around half of all articles are published in 3 or 4-rated journals. Only 6 of the 81 articles are in journals rated 4 by the Harvey-Morris ranking. However, these have all been published in the last two years. Some of these highly ranked journal articles have been written by scholars outside the GEM consortium, using publicly available GEM data. This demonstrates increasing acceptance of the value of GEM data for scholarship.

In Table 5, we show the principal topics of these 81 articles. The most popular (38% of all articles) was attributes of entrepreneurs and entrepreneurial activity, reflecting the nature of the raw data in the GEM adult population survey. The next most popular (23%) was on institutions and entrepreneurial activity. In some of these papers, use was made of GEM expert survey data in addition to adult population survey data. The third most frequent topic was on the link between entrepreneurial activity and economic growth (15%). Finally, 10% of the articles focused on methodological issues.

Looking for new ways to measure entrepreneurship using GEM data and policy impact

By developing new measures of entrepreneurial activity in addition to TEA, GEM can help educate and inform a more sophisticated understanding of the complexity of the phenomenon. GEM has a strong track record of innovation in this regard, including distinguishing between opportunity-driven and necessity-driven entrepreneurship in the 2001 GEM report, between low expectation and high expectation entrepreneurship (e.g. Autio 2007). The latest two GEM executive reports are a clear indication that GEM is moving beyond the quantity-related TEA index (Bosma et al., 2009). Besides the prevalence rate of activity, the report puts more emphasis on other quality-related characteristics of the early phase activity, such as innovation, high growth potential, business discontinuation and the environmental factors of entrepreneurship perception. An example of redefinition is the calculation method for opportunity-driven early-stage entrepreneurial activity (opportunity-TEA). Since 2007 this measure includes only those who are pulled to entrepreneurship by opportunity and because they desire independence or to increase their income, not those who are pushed to entrepreneurship out of necessity or those who sought only to maintain their income. These relative prevalence rates from 2007 and 2008 are shown in Figure 2. The countries with high relative prevalence of improvement-driven opportunity entrepreneurship are primarily innovation-driven countries. In these countries, opportunities may be expected

to be more abundant, and individuals may have more alternatives to make a living. Therefore the trend of the degree of opportunity TEA in relation with GDP per capita has increasing slope. Necessity entrepreneurship shows the opposite behavior.

The wide number of measures provided by GEM is moving to “new generation” of more compressive entrepreneurship measures. An example of the “next step” measures is the recent work of Acs and Szreb (2009): The Global Entrepreneurship Index (GEINDEX). The GEINDEX offers a measure of the *quality and quantity* of the business formation process in 65 of the most important countries in the world. The GEINDEX captures the contextual feature of entrepreneurship by focusing on entrepreneurial attitudes, entrepreneurial activity and entrepreneurial aspirations. The index construction integrates 31 variables, 17 from GEM, and 14 from other data sources, into 14 pillars, three sub indexes and a “super index”. Using this complex index the relationship between entrepreneurship and economic development is positive and high correlated (see Figure 3).

If well, the GEINDEX is not a replacement for TEA, or any of the other measures that GEM has created this new measure is very useful because harness the information in these measures to create a wider measure of *productive entrepreneurship* in general in a nation. The latter is a priority issue of entrepreneurship policy makers in several countries. GEINDEX also open the possibility to apply similar methodology using the existent GEM data to construct entrepreneurship ranks of different regions in one country, or sub-regions of a global region such as the EU. Further applications are the subject of future research.

CONCLUSIONS

Our literature search of GEM-based peer-reviewed scholarship has revealed that GEM is increasingly being integrated into high quality scholarship. Evidence for this includes recent publication of GEM-based articles in the highest-ranking journals in our field by scholars within and without the GEM consortium of scholars. There is also evidence that the wider world is actively using GEM reports – over 100,000 global and special topic reports have been downloaded from the gemconsortium.org website in the last two years. This excludes national reports. However, much remains to be done. Only 15% of the 81 peer-reviewed articles over the past five years were on the central issue that GEM seeks to shed light on: the link between entrepreneurship and economic growth. This is understandable in that longitudinal data may be most useful in addressing this topic. Increasingly, scholars who are not intimately familiar with the GEM database will be employing GEM data, freely available from the GEM website, for sophisticated analyses that combine GEM data with other national and international databases. Care will need to be taken by the academy to avoid incorrect weightings, misattribution of constructs to variables, overfitting of data, and neglect of control, moderating and mediating variables as these could reduce the value of GEM data for scholarship and policy. Another research area that is likely to expand in future is GEM-based studies at the less-than-national level. As databases for several years are pooled, more country databases will have sufficient sample sizes to identify regional differences in entrepreneurial attitudes, activity and aspirations. A critical issue will be to identify what type of regions are most appropriate for this research. Finally, we suggest that the GEM consortium itself will need to continually innovate both in measures and in methods if it is to remain at the forefront of international research in entrepreneurship and economic development.

We believe that our paper makes some important contributions. First, this work summarizes the main contributions of one of the most important academic research projects on entrepreneurship. Second, it demonstrates the importance of having appropriate measures on entrepreneurship and shows the ten years evolution of these measures under the GEM methodology. Third, we measure the quality and quantity of recent GEM-based scholarship. Finally we suggest which areas might be fruitful for further research, including how new approaches to using GEM data can help to the scholarly community, practitioners and policy makers to understand better the wide and relevant phenomenon of entrepreneurship and its importance in economic development.

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NOTES

1. For GEM, the payment of any wages for more than three months to anybody, including the owners, is considered to be the “birth event” of actual businesses. The distinction between *nascent entrepreneurs* and *new business owners* depends on the age of the business. Businesses that have paid salaries and wages for more than three months and less than 42 months may be considered *new*.

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Table 1: Evolution of Early Stage Entrepreneurial Activity (TEA) from 1999 to 2008

	Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
1	Angola										22.7
2	Argentina		7.77	10.52	14.15	19.73	12.84	9.49	10.24	14.43	16.5
3	Australia		10.93	16.21	8.68	11.62	13.38	10.87	11.96		
4	Austria							5.28		2.44	
5	Belgium		2.44	4.58	2.99	3.87	3.71	3.93	2.73	3.15	2.9
6	Bolivia										29.8
7	Bosnia & Herzegovina										9
8	Brazil		16.04	14.21	13.53	12.9	13.48	11.32	11.65	12.72	12
9	Canada	6.80	7.93	10.98	8.82	8.01	8.85	9.33	7.12		
10	Czech Republic								7.85		
11	Chile				15.68	16.87		11.15	9.19	13.43	12.9
12	China				12.34	11.59		13.72	16.19	16.43	
13	Colombia								22.48	22.72	24.5
14	Croatia				3.62	2.56	3.73	6.11	8.58	7.27	7.6
15	Denmark	2.00	4.51	8.07	6.53	5.88	5.31	4.75	5.32	5.39	4.4
16	Dominican Rep.									16.75	20.4
17	Ecuador						27.24				17.2
18	Egypt										13.1
19	Finland	1.50	3.94	9.32	4.56	6.85	4.39	4.97	4.99	6.91	7.3
20	France	1.80	2.2	7.23	3.2	1.63	6.03	5.35	4.39	3.17	5.6
21	Germany	4.10	4.73	7.03	5.16	5.21	4.47	5.39	4.21		3.8
22	Greece					6.77	5.77	6.5	7.9	5.71	9.9
23	Hong Kong				3.44	3.23	3.47			9.95	
24	Hungary			11.42	6.64		4.29	1.9	6.04	6.86	6.6
25	Iceland				11.32	11.24	13.57	10.66	11.26	12.48	10.1
26	India		6.3	11.25	17.88				10.42	8.53	11.5
27	Indonesia								19.28		
28	Iran										9.2
29	Ireland		1.25	12.11	9.14	8.1	7.7	9.83	7.35	8.22	7.6
30	Israel	5.40	4.17	5.97	7.06		6.62			5.44	6.4
31	Italy	3.20	5.68	10.16	5.9	3.19	4.32	4.94	3.47	5.01	4.6
32	Jamaica							17	20.32		15.6
33	Japan	1.60	1.26	5.08	1.81	2.76	1.48	2.2	2.9	4.34	5.4
34	Jordan						18.26				
35	Kazakhstan									9.36	
36	Korea		13.67	14.85	14.52						10
37	Latvia							6.65	6.57	4.46	6.5
38	Macedonia										14.5
39	Malaysia								11.09		
40	Mexico			18.73	12.4			5.91	5.26		13.1
41	Netherlands			6.38	4.62	3.6	5.11	4.36	5.42	5.18	5.2
42	New Zealand			15.63	14.01	13.6	14.67	17.57			
43	Norway		7.91	8.69	8.69	7.46	6.98	9.25	9.14	6.47	8.7
44	Peru						40.34		40.15	25.89	25.6
45	Philippines								20.44		
46	Poland			9.98	4.44		8.83				
47	Portugal			7.09			3.95			8.78	
48	Puerto Rico									3.06	
49	Rumania									4.02	4
50	Russia			6.91	2.52				4.86	2.67	3.5
51	Serbia									8.56	7.6
52	Singapore		2.06	5.18	5.91	4.95	5.69	7.24	4.85		
53	Slovenia				4.63	4.05	2.6	4.36	4.63	4.78	6.4
54	South Africa			9.37	6.54	4.3	5.4	5.15	5.29		7.8
55	Spain		4.55	7.78	4.59	6.77	5.15	5.65	7.27	7.62	7
56	Sweden		3.87	6.67	4	4.12	2.97	4.04	3.45	4.15	
57	Switzerland				7.13	7.14		6.06		6.27	
58	Taiwan				4.27						
59	Thailand				18.9			20.74	15.2	26.87	
60	Turkey								6.07	5.58	6
61	Uganda					29.26	31.64				
62	United Arab Emirates								3.74	8.44	
63	United Kingdom	3.30	5.16	7.68	5.37	6.36	6.25	6.22	5.77	5.53	5.9
64	United States	8.40	12.69	11.65	10.51	11.9	11.33	12.44	10.03	9.61	10.8
65	Uruguay								12.56	12.21	11.9
66	Venezuela					27.31		24.99		20.16	

Source: GEM APS.

Table 2: Downloads of GEM executive and special topic reports, 09/05/2007 – 15/04/2009

<i>Global Reports</i>	<i>Other Reports</i>
2008 GEM Global Report – 5,892	GEM 2005 High Expectation Report – 7,440
2007 GEM Global Report – 22,556	GEM 2007 High Growth Report - 4,160
2006 GEM Global Report – 26,109	
2005 GEM Global Report – 3,055	GEM 2007 Women's Report – 3,824
2004 GEM Global Report - 11,750	GEM 2006 Women's Report – 3,010
2003 GEM Global Report – 2,000	GEM 2005 Women's Report – 2,909
2002 GEM Global Report – 982	GEM 2004 Women's Report – 2,047
2001 GEM Global Report – 837	
2000 GEM Global Report – 1,261	GEM 2006 Financing Report – 979
1999 GEM Global Report – 2,327	GEM 2004 Financing Report – 1,071

Table 3: Selected Papers on ISI Entrepreneurship Journals

Author	Title	Date	Vol	Issue	Pages	Type
<i>Small Business Economics</i>						
Poh Kam Wong; Yuen Ping Ho; Erkkö Autio	Entrepreneurship, Innovation and Economic Growth: Evidence from GEM data	2005	24	3	335-350	Empirical: 37 countries
Rolf Sternberg; Sander Wennekers;	Determinants and Effects of New Business Creation Using Global Entrepreneurship Monitor Data	2005	24	3	193-203	Introduction to special issue
Paul D. Reynolds; Niels Bosma; Erkkö Autio; Steve Hunt; Natalie De Bono; Isabel Servais; Paloma Lopez-Garcia; Nancy Chin;	Global Entrepreneurship Monitor: Data Collection Design and Implementation 1998–2003	2005	24	3	205-231	Theoretical + Methodology description
Pia Arenius; Maria Minniti;	Perceptual Variables and Nascent Entrepreneurship	2005	24	3	233-247	Empirical: 29 countries
Pia Arenius; Dirk De Clercq;	A Network-based Approach on Opportunity Recognition	2005	24	3	249-265	Empirical: 2 countries
Hector O Rocha; Rolf Sternberg.	Entrepreneurship: The Role of Clusters Theoretical Perspectives and Empirical Evidence from Germany	2005	24	3	267-292	Empirical: One country
Sander Wennekers; André van Wennekers; Roy Thurik; Paul Reynolds;	Nascent Entrepreneurship and the Level of Economic Development	2005	24	3	293-309	Empirical: 36 countries
André van Stel; Martin Carree; Roy Thurik;	The Effect of Entrepreneurial Activity on National Economic Growth	2005	24	3	311-321	Empirical: 28 countries
Zoltán J. Ács; Attila Varga;	Entrepreneurship, Agglomeration and Technological Change	2005	24	3	323-334	Empirical: 9 countries

Table 3: Selected Papers on ISI Entrepreneurship Journals (continued)

Author	Title	Date	Vol	Issue	Pages	Type
<i>Small Business Economics</i>						
Per Davidsson.	Paul D. Reynolds: Entrepreneurship Research Innovator, Coordinator, and Disseminator	2005	24	4	351-358	Special Paper
Paul D. Reynolds.	Understanding Business Creation: Serendipity and Scope in Two Decades of Business Creation Studies	2005	24	4	359-364	Special Paper
Markku Maula; Erkkö Autio; Pia Arenius	What Drives Micro-Angel Investments?	2005	25	5	459-475	Empirical: One country (Finland)
P. Köllinger; Maria. Minniti	Not for Lack of Trying: American Entrepreneurship in Black and White	2006	27	1	59-79	Empirical: One country
Zoltan J. Acs; Laszlo Szerb	Entrepreneurship, Economic Growth and Public Policy	2007	28	2/3	109-122	Introduction to special issue
Zoltan J. Acs; Colm O'Gorman; Laszlo Szerb; Siri Terjesen	Could the Irish Miracle be Repeated in Hungary?	2007	28	2/3	123-142	Empirical: 2 countries
Jonathan Levie	Immigration, In-Migration, Ethnicity and Entrepreneurship in the United Kingdom	2007	28	2/3	143-169	Empirical: One country
André van Stel; David J. Storey; A. Roy Thurik	The Effect of Business Regulations on Nascent and Young Business Entrepreneurship	2007	28	2/3	171-186	Empirical: 39 countries
Ho, Y.P. and P. K. Wong	Financing, regulatory business costs, and entrepreneurial propensity	2007	28	2/3	187-204	Empirical: 29 countries
Heiko Bergmann; Rolf Sternberg	The Changing Face of Entrepreneurship in Germany	2007	28	2/3	205-221	Empirical: One country
Maria Minniti; Carlo Nardote,	Being in Someone Else's Shoes: the Role of Gender in Nascent Entrepreneurship	2007	28	2/3	223-238	Empirical: 37 countries
Polona Tomin; Miroslav Rebernik	Growth Aspirations and Cultural Support for Entrepreneurship: A Comparison of Post-Socialist Countries	2007	28	2/3	239-255	Empirical: 3 countries
László Serv.; Gábor Rappai; Zsolt Makra; Siri Terjesen	Informal Investment in Transition Economies: Individual Characteristics and Clusters	2007	28	2/3	257-271	Empirical: 3 countries
Philipp Koellinger	Why are some entrepreneurs more innovative than others?	2008	31	1	21-37	Empirical: 30 countries
Zoltan J. Acs; Sameeksha Desai; Jolanda Hessels	Entrepreneurship, economic development and institutions	2008	31	3	219-234	Introduction to special issue
Jonathan Levie; Erkkö Autio	A theoretical grounding and test of the GEM model	2008	31	3	235-263	Theoretical + Empirical: 54 countries

Table 3: Selected Papers on ISI Entrepreneurship Journals (continued)

Author	Title	Date	Vol	Issue	Pages	Type
<i>Small Business Economics</i>						
Zoltan J. Acs; Sameeksha Desai; Leora F. Klapper	What does “entrepreneurship” data really show?	2008	31	3	265-281	Empirical: 40 countries
Dirk De Clercq, Jolanda Hessels, André van Stel.	Knowledge spillovers and new ventures’ export orientation	2008	31	3	283-303	Empirical: 34 countries
Zoltan J. Acs; José Ernesto Amorós	Entrepreneurship and competitiveness dynamics in Latin America	2008	31	3	305-322	Empirical: 56 countries
Jolanda Hessels; Marco van Gelderen; Roy Thurik	Entrepreneurial aspirations, motivations, and their drivers	2008	31	3	323-339	Empirical: 36 countries
Paul Davidson Reynolds	Screening item effects in estimating the prevalence of nascent entrepreneurs	in press				Empirical: One country
<i>Entrepreneurship Theory and Practice</i>						
Per Davidsson; Johan Wiklund	Levels of analysis in entrepreneurship research: Current research practice and suggestions for the future	2001	25	4	81-99	Theoretical
Cristopher Baughn, Bee-Leng Chua and Kent E. Neupert	The Normative Context for Women’s Participation in Entrepreneurship: A Multicountry Study	2006	30	5	687-708	Empirical: 37 countries
Nan Langowitz; Maria Minniti	The Entrepreneurial Propensity of Women	2007	31	3	341-364	Empirical: 41 countries
Jeffery S. McMullen, D. Ray Bagby and Leslie E. Palich	Economic Freedom and the motivation to engage in entrepreneurial action	2008	32	5	875-895	Empirical: 37 countries
<i>Journal of Business Venturing</i>						
Ruta Aidis; Saul Estrin; Tomasz Mickiewicz	Institutions and entrepreneurship development in Russia: A comparative perspective	2008	23	6	656-672	Empirical: one country
Seok-Woo Kwon; Pia Arenius	Nations of entrepreneurs: A social capital perspective	2009		in press		Empirical: 36 countries
Sergey Anokhin; William S. Schulze	Entrepreneurship, innovation, and corruption	2009		in press		Empirical: 33 countries
<i>Entrepreneurship and Regional Development</i>						
Ingrid Verheul; André van Stel; Roy Thurik	Explaining female and male entrepreneurship at the country level	2006	18	2	151-183	Empirical: 29 countries
Yancy Vaillant; Esteban Lafuente	Do different institutional frameworks condition the influence of local fear of failure and entrepreneurial examples over entrepreneurial activity?	2007	19	4	313-337	Empirical: one country
Wim Naudé; Thomas Gries; Eric Word; Aloe Meintjies	Regional determinants of entrepreneurial start-ups in a developing country	2008	20	2	11-124	Empirical: one country

Table 3: Selected Papers on ISI Entrepreneurship Journals (continued)

Author	Title	Date	Vol	Issue	Pages	Type
<i>International Small Business Journal</i>						
Dirk De Clercq; Pia Arenius	The role of knowledge in business start-up activity	2006	24	4	339-358	Empirical: 2 countries
Pia Arenius : Anne Kovalainen	Similarities and Differences Across the Factors Associated with Women's Self-employment Preference in the Nordic Countries	2006	24	1	31-59	Empirical: 2 countries
Stephen Roper; Jonathan M. Scott	Perceived Financial Barriers and the Start-up Decision: An Econometric Analysis of Gender Differences Using GEM Data	2009	27	2	149-171	Empirical: 4 countries
Piers Thompson; Dylan Jones-Evans; Caleb Kwong	Women and Home-based Entrepreneurship: Evidence from the United Kingdom	2009	27	2	227-239	Empirical: one country

Table 4: GEM-based articles 2004 to 2008 by journal ranking

	No. of papers (peer-reviewed)	No. of level 4 papers	% of level 3 or 4 papers	Average level of papers
2008	19	3	53	2.1
2007	27	3	44	1.9
2006	10	1	50	2.1
2005	14	0	71	2.4
2004	11	0	0	0.2

Table 5: GEM-based articles 2004 to 2008 by topic

	No.	%
Entrepreneurship and Economic Growth	12	15
- National	3	4
- Regional	5	6
Institutions and Entrepreneurial Activity	19	23
- Social security/welfare	2	2
- Finance	8	10
- Other	2	2
Attributes of Entrepreneurs and Ent. Act.	31	38
- Gender	11	14
- Other	8	10
Methodology: Models, Measures etc	6	7

Figure 1: GEM original and revised models

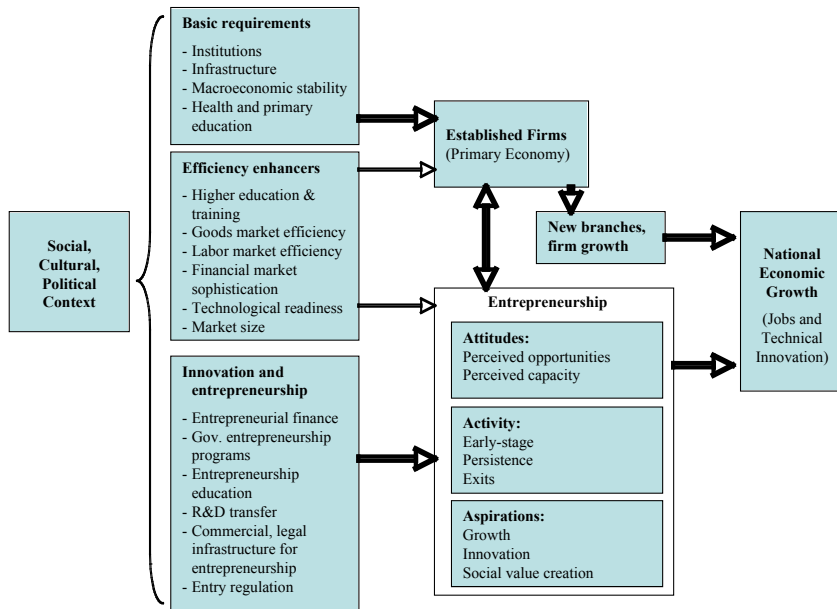
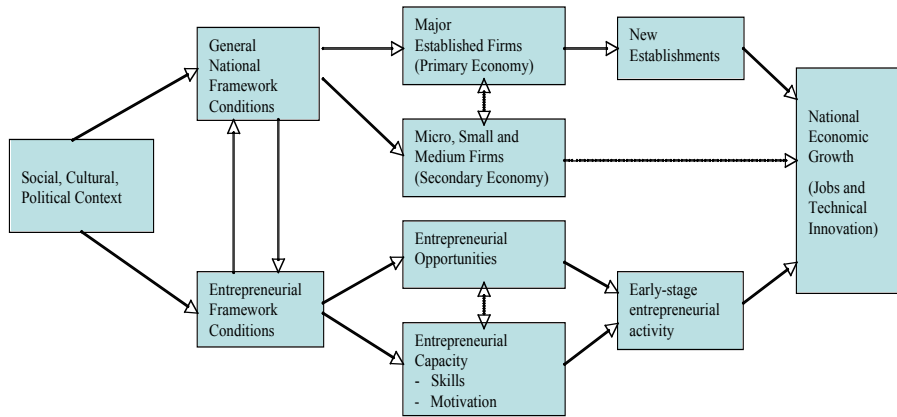


Figure 2: Improvement-Driven Opportunity and Necessity Rates 2007-2008

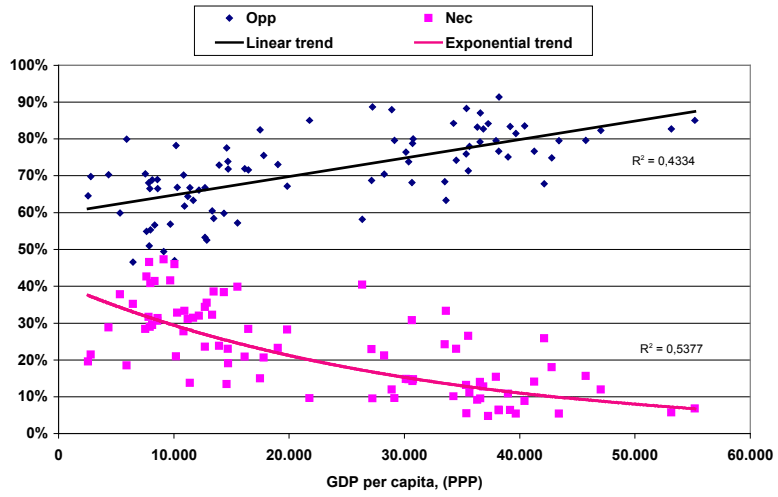
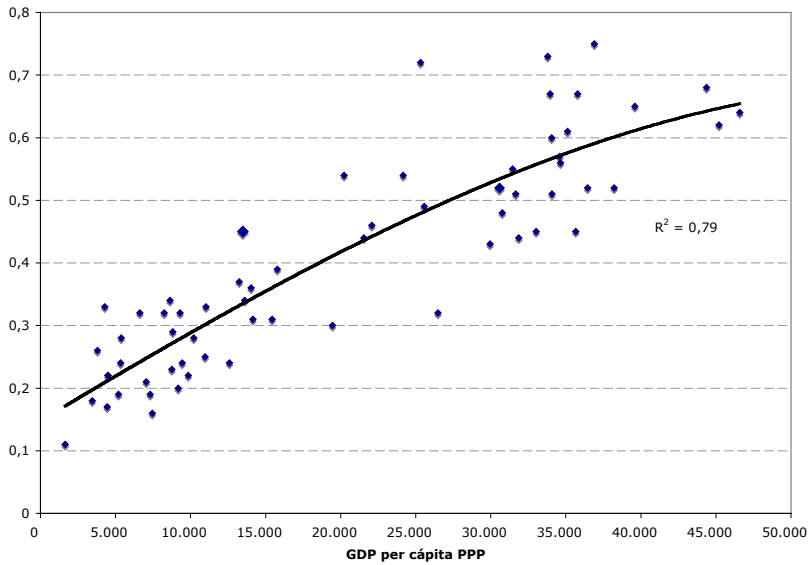


Figure 3: The New Global Entrepreneurship Index in Terms of GDP PPP



DRIVING FORCES BEHIND ENTREPRENEURSHIP: DIFFERENCES ON ENTREPRENEURSHIP RATE LEVEL AND ITS VOLATILITY ACROSS COUNTRIES



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ABSTRACT

This paper analyzes entrepreneurship volatility across a sample of countries participating in the Global Entrepreneurship Monitor (GEM) Project. Entrepreneurship volatility is modeled as a function of a set of institutional variables. Using longitudinal data on necessity-motivated entrepreneurship, we find significant differences in entrepreneurship volatility across lower-middle income countries. Our results suggest that government efficiency and entrepreneurship education and training contribute to reducing entrepreneurship volatility.

INTRODUCTION

An increasing number of studies emphasize the relationship between entrepreneurship (business ownership rates) and economic growth. Modeling these relationships is not easy because of the many factors both entrepreneurial activity and economic growth (Wennekers and Thurik 1999). Moreover, it is particularly difficult to determine the direction of causality between entrepreneurial activities and economic growth at the country level. Some studies emphasize the effect of economic growth on countries' entrepreneurial rates (Amorós and Cristi 2008; Wennekers et al. 2005), while others focus on the effect of entrepreneurial activity on national economic growth (van Stel, Carre and Thurik 2005). Carre et al. (2002, 2007) is one of the few studies developing a simultaneous equation model testing for both economic growth and entrepreneurship rate.

Blau (1987) and Acs et al. (1994) have proposed the existence of a "U-shape" relationship between rates of entrepreneurship (self employment) and economic growth. Carree et al. (2002), Wennekers et al. (2005), Belso-Martínez (2005) and Amorós and Cristi (2008) also find evidence of a "U-shape" curve. Recently, using data for 23 OECD countries, Carree et al. (2007), revisited the "U-shape" relationship and proposed instead an "L-shape" curve to describe the effect of economic growth on entrepreneurial activities.

Thus far, these models have focused on the average level of entrepreneurial activity and have neglected the empirical analyses of countries' "entrepreneurial volatility". Amorós and Cristi (2008) suggest that countries with lower gross domestic product per capita exhibit a higher variance of entrepreneurial activity, though they do not offer an explanation for this finding. Using a sample of countries participating in Global Entrepreneurship Monitor (GEM) Project, Amorós et al., (2008) have suggested that countries with more predictable and consistent policy taxes and government regulation, with sufficient government subsidies available for new and growing firms and with better entrepreneurship education and training exhibit lower volatility. The lack of research on countries' entrepreneurial volatility contrasts with the wealth of literature existing on the volatility

of economic growth (Acemoglu et al. 2003; Aghion and Banerjee 2005; Hnatkovska and Loayza 2004; Ramey and Ramey 1995), as well as on the variability of business entry and exit rates within countries (Bosma et al. 2005; Davis et al. 2006; Reynolds 1999; Reynolds and Maki 1990).

This paper contributes to our understanding of entrepreneurial dynamics by focusing on the heterogeneity of entrepreneurial volatility across countries. To this purpose, we test whether “institutional variables” affect the volatility of entrepreneurial activity proxied by data on new business creation collected by the Global Entrepreneurship Monitor (GEM) project for a group of countries during the period 2001-2008. Data used to proxy institutional variables come from the GEM National Expert Survey (NES)¹ data collected to measure countries *Entrepreneurial Framework Conditions* (EFCs) (Levie and Autio 2008; Reynolds et al. 2005)², from the *Worldwide Governance Indicators* (WGI), and from The Index of Economic Freedom. We suggest that these variables affect entrepreneurial activity and are related to concepts that potentially enhance a country’s entrepreneurial activity, such as education, government efficiency, regulation quality, and government size.

The next section provides a review of the literature on the variability of entrepreneurship rates. The third section offers some guidelines for the study of entrepreneurship volatility. The fourth section presents a model for the level and volatility of country’s entrepreneurial activity. The fifth section describes the data and variables used in the study. The sixth section shows our results. Finally, the concluding section discusses the implications of our results for developing economies with an emphasis on entrepreneurship policy.

ENTREPRENEURSHIP AND VOLATILITY

Recent studies identify “entrepreneurial activities” as a factor contributing to economic growth during last decades of the twenty-century (Audretsh and Keilbach 2004). Other studies, on the other hand, find that entrepreneurial activity has a positive effect on economic growth only in high-income countries (Acs and Amorós 2008; Amorós and Cristi 2008; van Stel et al. 2005; Wennekers et al. 2005). Carree et al. (2007) and Hessels et al. (2008) remark that the relationship between business ownership rates and economic growth changes over time and it depends on the level of economic development. If these variations are extremely accentuated between periods, there could well be an entrepreneurship volatility phenomenon.

The concept of business fluctuations has been linked to Schumpeter’s (1912) idea of creative destruction. According to the Schumpeterian tradition, new and independent firms lead the innovation processes that bring about creative destruction. It is precisely this creative destruction that, through the disruption of innovations, may cause fluctuations. Firms that create, adopt and respond better to these innovations are the ones that can prevail and, as a result, contribute to a country’s economic growth (Aghion and Howitt 1998). Some empirical evidence supports the Schumpeterian view. Davis et al. (2006 pp. 4), for example, posit that “the large job flows and high firm level volatility reflect the restructuring, experimentation and adjustment processes at the heart of Schumpeterian theories”. In Schumpeterian terms, emerging firms can cause significant changes in certain sectors and thus play an important role in wealth distribution (Spencer, Kirchoff and White 2008).

Schumpeterian volatility warrants that the most efficient entrepreneurs provide the services that the community demands. Nevertheless, volatility can also be caused by institutions’ failure

and lack of conditions supporting entrepreneurial ventures. This second source of volatility may require public policy aiming at reducing its level. Research in this area includes the analysis of firm-level volatility and the relationship between external and internal business factors (Comin and Philippon 2005). Other studies instead link industrial diversification, volatility and economic growth (Imbs and Wacziarg 2004; Koren and Tenreyro 2004). Overall, most studies addressing firm-level volatility focus on consolidated businesses and primarily large public firms (Davis et al. 2006). In an alternative, we fill a gap in the literature by focusing on new ventures since little empirical evidence exists on the relationship and cross-country differences in the volatility of early stage entrepreneurial activities and entrepreneurship rates.

INSTITUTIONS AND ENTREPRENEURSHIP VOLATILITY

When studying the relationship between entrepreneurial volatility and institutions, two main factors need to be considered: First, in addition to the Schumpeterian entrepreneur with a “pull motive” (i.e., desire for independence, increased income, status and recognition), several individuals are “pushed” into entrepreneurship because no better employment options exist. As Reynolds et al. (2005 pp. 217) point out, “they cannot find a suitable role in the world of work” and “creating a new business is their best available option”. Although many studies recognize that most entrepreneurial activity results from opportunities (Bosma et al. 2008; Carter et al. 2003; Feldman and Bolino 2000; Hessels et al. 2008; Kolveried 1996), necessity-motivated entrepreneurship is nonetheless significant in many low and middle income countries. Importantly, in some of these countries, necessity entrepreneurship can be linked to a lack of institutions and policies which probably cause lower productivity and investment, and higher unemployment rates (Caballero 2006).

Second, recent empirical evidence has shows that low and middle-income countries, entrepreneurial activity varies with per-capita GDP levels along with some other endogenous factors that – in many cases – significantly change total entrepreneurial dynamics (Acs and Amorós 2008; Amorós and Cristi 2008; Wennekers et al. 2005). This phenomenon could be linked to Baumol’s (1990) argument that the allocation of entrepreneurship in the economy is influenced by the structure of rewards in a country (Desai and Acs 2007). Specifically, Baumol (1990 pp. 899) states that “entrepreneurial behavior changes direction from one economy to another in a manner that corresponds to the variations in the rules of the game.” Entrepreneurial volatility in each country is likely to be influenced by these endogenous factors.

The GEM research project is an excellent source of data for the study of entrepreneurship variation rates over countries and time. For the 10-year period between 1999 and 2008, GEM collected data in 66 countries with different rates of entrepreneurship. Using adult population surveys, GEM data allow estimates of an *Early-stage Entrepreneurial Activity Index*. That is, the percentage of adult population (people between 18–64 years old) actively involved in starting a new business. GEM’s respondents are also divided between *opportunity-based entrepreneurs* and *necessity-based entrepreneurs*. The former are those who have taken actions to create a new venture pursuing perceived business opportunities, while the latter are those who are involved in new ventures because they have no other employment options. In this paper we focus on necessity-based entrepreneurial activity (*NEC*) because low and middle-income countries have a relatively high prevalence of necessity-motivated entrepreneurs (Acs and Amorós 2008; Bosma et al. 2008; Bosma et al. 2009).

MODEL SPECIFICATION

As in Wennekens et al. (2005) and Amorós and Cristi (2008), we model *NEC* as a function of *GDP* per capita. In addition, we hypothesize that the variance of *NEC* depends on a vector of country specific institutional variables, *X*. Thus we obtain:

$$NEC_{it} = f(GDP_{it}, \alpha) + h(X_{it}, \beta)\varepsilon_{it} \quad (1)$$

where *i* denotes the country, *t* is the year, α is an unknown vector of parameters governing the relationship between *NEC* and *GDP*, β is also a vector of unknown parameters, and ε_{it} is a random variable with $E(\varepsilon_{it}) = 0$ and $v(\varepsilon_{it}) = E(\varepsilon_{it}^2) = 1$.³

The first term in equation (1) describes the effect of *GDP* on the deterministic (mean) part of *NEC*, whereas the second term describes the effect of the set of variables X_{it} on the stochastic (variance) part of *NEC*. That is, $E(NEC_{it}) = f(GDP_{it}, \alpha)$ and $V(NEC) = [h(X_{it}, \beta)]^2$. The latter indicates that the volatility of necessity entrepreneurship in each country depends on the country's specific institutional variables, *X*.

Using *NEC* as the dependent variable reduces the probability of endogeneity on the regressor (*GDP* per capita). In fact, empirical evidence shows that opportunity-based entrepreneurial activity has a positive effect on economic growth (van Stel et al. 2005), while the same cannot be said for necessity-based entrepreneurial activity.⁴

DATA

For *NEC* we use data from a sample of 50 countries participating in GEM during the period 2001-2008. We exclude countries with only one observation. As proxy for institutional variables we use quality of entrepreneurship education in colleges and universities, government effectiveness, government regulatory quality, and government size. The list of the 50 countries and a detailed description of all variables is presented in the Appendix.

Entrepreneurship Education

As Levie and Autio (2008, p. 243) point out, entrepreneurship education and training are different from general education because they are aimed at improving students' cognitive abilities toward opportunity recognition, instrumental skills for new venture creation, and cultural attitudes favorable to entrepreneurial behavior (Honig 2004; DeTienne and Chandler 2004; Peterman and Kennedy 2003). Some evidence exists that entrepreneurial education increases individuals' willingness to engage in entrepreneurial activity (Lee and Wong 2003; Peterman and Kennedy 2003), thereby contributing to the creation of new firms. This is the case because this type of education provides the tools necessary to handle more effectively the shocks associated with new businesses. Unlike other international measures of general education (i.e., UNESCO dataset, Global Competitive Report subset of education and training variables, etc.), GEM data provide information specific to higher level *entrepreneurship education*. Specifically, the variable is constructed using a specific question from the National Expert Survey (NES) conducted annually by the GEM project to complement the APS data from which our measurements for *NEC* is taken.⁵ Specifically, higher education (*HighEdu*) is measured by a 5 point Likert scale applied to the answers to the question: "In my country, colleges and universities provide good and adequate preparation to

start up and to develop new firms.” Consistently with Amorós et al. (2008), we hypothesize that as the entrepreneurial education in a country improves, the volatility of its entrepreneurial activity decreases.

Government Quality

As in the case of education, the multifaceted nature and complexity of governmental policy and programs across countries makes it difficult to measure how government influences entrepreneurial activity (Valliere 2008). We use World Bank’s governance indicators and the Heritage Foundation’s Index of Economic Freedom since they provide consistent and comprehensive measures for our period of interest.

The World Bank’s Project on Governance constructs the *Worldwide Governance Indicators* (WGI) since 1999 (Kaufmann, Kraay and Zoido-Lobaton 1999; Kaufmann, Kraay and Mastruzzi 2008). WGI has developed aggregate and individual governance indicators for 212 countries and territories. The WGI covers six dimensions of governance: Voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law and control of corruption. Accordingly to the WGI’s definitions, the two proxies more directly related to entrepreneurship activities are government effectiveness and regulatory quality (Kaufmann, Kraay and Mastruzzi 2008: 7-8).

Government effectiveness (*GovEff*) measures the perceptions of the quality of public services, the quality of civil service and the degree of its independence from political pressures, the quality of *policy formulation and implementation*, and the credibility of the government’s commitment to such policies. Regulatory quality (*RegQua*) measures the perceptions of the ability of the government to formulate and implement sound policies and regulations that allow and *promote private sector development*. Both variables have a theoretical range from -2.5 to 2.5.

Government Size (*GovSiz*) is taken from The Index of Economic Freedom, an annual report produced by The Wall Street Journal and The Heritage Foundation that tracks economic freedom around the world. The Index covers 10 freedoms –from property rights to entrepreneurship– in 183 countries.⁶ Government size is measured as a function of the percentage of *GDP* used in government expenditure.. Large governments receive very low scores. The Index methodology uses a scale from 0 to 100, where 100 indicate highest degrees of freedom. Government size is relevant to new business creation because, as the Index of Economic Freedom document states (Miller and Holmes 2009) “a government’s insulation from market discipline leads to inefficiency, bureaucracy, and lowered productivity. Government expenditures necessarily compete with private agents and interfere in market prices by overstimulating demand and potentially diverting resources through a crowding-out effect. The government’s appetite for private resources affects both economic freedom and economic growth.” (p. 13)

Government effectiveness, government size, and quality of regulations have a mayor impact on the business environment faced by entrepreneurial firms. The relationship between public programs and policies and startup rates has been widely analyzed (Stevenson and Lundström 2005; Storey 2005; Amorós 2009). Here, we link government size, government effectiveness and quality of regulation to entrepreneurial volatility and hypothesize that when government regulations are applied in a predictable and consistent way the volatility of entrepreneurial activity decreases.

RESULTS

Estimation of the vectors of parameters α and β is accomplished by rewriting equation (1) as:

$$NEC_{it} = f(GDP_{it}, \alpha) + v_{it} \quad (2)$$

where

$$v_{it} = h(X_{it}, \beta)\varepsilon_{it} \quad (3)$$

Notice that our previous assumptions about ε_{it} , $E(\varepsilon_{it}) = 0$ and $V(\varepsilon_{it}) = 1$, and equation (3) imply that $E(v_{it}) = 0$ and $V(v_{it}) = E(v_{it}^2) = [h(X_{it}, \beta)]^2$.

For empirical purposes, we then assume non linear specifications for $f(GDP_{it}, \alpha)$ and $h(X_{it}, \beta)$:

$$f(GDP_{it}, \alpha) = \alpha_0 GDP_{it}^{\alpha_1} \quad (4)$$

$$h(X_{it}, \beta) = X_{1it}^{\beta_1} X_{2it}^{\beta_2} X_{3it}^{\beta_3} X_{4it}^{\beta_4} \quad (5)$$

where X_1, X_2, X_3, X_4 represent *HighEdu*, *GovEff*, *RegQua*, and *GovSiz*, respectively.

Equation (2) is estimated using pooled Nonlinear Least Squares (NLS). This provides a consistent estimator of α , $\hat{\alpha}$, and of the error term v_{it} , \hat{v}_{it} , under a broad range of conditions (see Just and Pope, 1978). Nevertheless, because of equation (3), this estimation can be considered as a heteroskedastic regression. To test the latter we use the \hat{v}_{it} 's obtained from the regression in equation (2).⁷ Plotting \hat{v}_{it} against GDP (Figure 1) we observe that the lower a country's GDP is, the greater the dispersion of \hat{v}_{it} .

This result provides some support for our hypotheses that equation (2) can be considered a heteroskedastic regression and leads us to hypothesize that the variance of \hat{v}_{it} depends on the country's idiosyncratic shocks as in equation (3). A more rigorous test for the behavior of \hat{v}_{it} is obtained from the estimation of equation (3). To accomplish this we use the following relationship:

$$v_{it}^2 = [h(X_{it}, \beta)]^2 \mu_{it} = \quad (6)$$

where $E(\mu_{it}) = 1$ by definition of expectations.⁸

Taking logarithms of equation (6) and replacing in it the proposed functional form for $h(X_{it}, \beta)$, as in equation (5), we obtain the following equation:

$$\ln v_{it} = \beta_0 + \beta_1 \ln X_{1it} + \beta_2 \ln X_{2it} + \beta_3 \ln X_{3it} + \beta_4 \ln X_{4it} + \mu_{it}^* \quad (7)$$

where $\beta_0 = E\left(\frac{\ln \mu_{it}}{2}\right)$ and $\mu_{it}^* = \frac{\ln \mu_{it}}{2} - E\left(\frac{\ln \mu_{it}}{2}\right)$. The latter implies that $E(\mu_{it}^*) = 0$.

Although a more general specification of equation (7) could be obtained by adding an error term time specific to investigate time effects common to all countries that may be affecting the variance of entrepreneurial activity, we leave that extension for future research.

Because *GovEff*, *RegQua*, and *GovSiz* are highly correlated, estimation of equation (7) faces a problem of multicollinearity. To solve this problem, we use a principal component analysis to capture most of the variance (Hair et al. 1995) of government variables and calculate a new variable that we call Government Quality (*Govq*).

For estimation purposes, we replace $\ln v_{it}$ with $\ln|\hat{v}_{it}|$ in equation (7) as the dependent variable, where the \hat{v}_{it} 's are obtained from the NLS regression in equation (2). Estimation of equation (7), using Ordinary Least Squares (OLS), provides a consistent estimator of β , say $\hat{\beta}$, under the same conditions for the consistent estimator of α in equation (2). This allows us to verify the hypothesis of heteroskedasticity for v_{it} by analyzing the statistical significance of the parameters in β . It also allows us to compute the variance of entrepreneurial activity in each country as $\left[h(x_{it}, \hat{\beta}) \right]^2$.

Finally, we re-estimate equation (2) using NLS weighted regression with weights $1/\sqrt{\left[h(x_{it}, \hat{\beta}) \right]^2}$ to obtain an estimation of α that takes into account the heteroskedastic nature of that model and the effect of X_{it} upon countries' entrepreneurial volatility.

Consistency of our estimation process also requires that no endogeneity problems with the regressor *GDP* in equation (2) exist. Thus, we perform a residual-based form of the Hausman test which is asymptotically equivalent to the original Hausman test (Wooldridge 2002 chapter 6.2), and involves estimating an auxiliary regression for *GDP* per capita on a constant, the exogenous variables of the model, *Govq* and *HighEdu*, and regressor specific instruments. As instrument we use the 10 measurers of economic freedom of The Index of Economic Freedom. The test is performed using OLS in a log-log model using those variables. The regression of the natural log of GDP_{it} on the natural log of NEC_{it} , including the residuals from the auxiliary regression for *GDP* as an additional explanatory variable is then estimated by OLS. The statistical significance of the coefficient associated with the residuals is evaluated. If that parameter is not statistically significant then the Hausman test does not reject the hypothesis of exogeneity of the regressor.⁹ In our case, the coefficient associated with the residuals has a p-value of 0.29, which indicates that there no endogeneity problem with *GDP* is present.

Parameter estimates for the deterministic and stochastic components of necessity-based entrepreneurship are shown in Table 1.

Results for the variance of *NEC* (stochastic component), equation (7), indicate that the parameters for *Govq* and *HighEdu* are significant at 5% of significance level. Moreover, *Govq* and *HighEdu* have a negative marginal effect on *NEC* variability. These results are consistent with Amorós et al. (2008) and Levie and Autio (2008). Amorós et al. (2008) use a set of variables of government activity that affect entrepreneurial volatility obtained from GEM data to show that governments play a key role on entrepreneurial volatility. In that paper, given a completely different source of data, results provide some evidence that government quality reduces entrepreneurial volatility. This shows that the result of government on entrepreneurial volatility is quite robust.

With respect to education quality, Levie and Autio (2008) test the relationships between EFCs and different types of entrepreneurial activity and found evidence that the EFCs are related to high growth entrepreneurial framework conditions.¹⁰ Their main results show that entrepreneurship education and training at institutions of higher education and entrepreneurship policy (regulation and taxation) have a positive and significant effect on high-potential entrepreneurship.

Estimates for the deterministic component of necessity-based entrepreneurial activity, equation (6), show that *GDP* has a negative effect on the average level of *NEC*. This result is consistent with Wennekers et al. (2005), Carree et al. (2007), Hesseles et al. (2008) and Acs and Amorós (2008).

CONCLUSIONS AND POLICY IMPLICATIONS

In this paper, using GEM data, we show that entrepreneurial volatility can be a problem for middle-and-low income countries. As an example, in Figure 2 we illustrate this phenomenon using the cases of Venezuela, India, Brazil and Argentina.

Because of the lack of understanding about entrepreneurial volatility, policymakers have focused on how to move from necessity-based entrepreneurial activity towards opportunity-based entrepreneurial activity but made hardly any effort to stabilize entrepreneurial activity. In this paper we use the concept of entrepreneurship volatility and show the existence of significant fluctuations in the necessity-based entrepreneurship across countries.

Countries with a low income face high rates of necessity-based entrepreneurial activity because a large part of the population is not been able to find other sources of employment and, as a result, starts new ventures because of the lack of alternatives.. In fact, necessity-based entrepreneurship is often the result of a country's environment in which entrepreneurship framework conditions do not contribute to improving opportunities or high potential innovative activities. Moreover, these necessity-based entrepreneurs operate often out of the formal markets and are not regulated by formal business laws (Yamada 1994). It is possible, though not necessarily desirable, that clear institutions may help improve the general business environment and, therefore, reduce the incidence of necessity-based entrepreneurship. The transition from formal to informal activities is an interesting topic for future research.

By focusing on countries' necessity-based entrepreneurial activity we help policymakers in their efforts to reduce entrepreneurial volatility. Our results imply that better focused entrepreneurship education programs can improve opportunity recognition and help potential entrepreneurs to reduce their constraints and eventually transform their isolated business or self-employment initiatives into value-adding and competitive firms (Levie and Autio 2008). Entrepreneurship education, together with entrepreneurship policy can create a "societal-readiness" to improve entrepreneurship activities across countries (Stevenson and Lundström 2005). Indeed, our results illustrate how government institutions and policies, and education could work together to restructure and adjust entrepreneurial framework conditions which, in turn, could enhance productivity, generate investment and, as a consequence, provide a more stable environment for new ventures.

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NOTES

1. For the complete GEM project measurements and methodology see Reynolds et al. (2005), and the introduction and appendix in Minniti et al. (2006)
2. For the complete GEM's NES measurements and methodology see Reynolds et al. (2005). For NES results and linkage of EFCs with other international measurements see Bosma et al. (2008). NES captures qualitative data on exogenous factors that have an impact on entrepreneurial activity in a given national context. NES employs multi-item scales to provide measurements of EFCs. Levie and Autio (2008) provide an extensive review of Leibenstein's theories of entrepreneurship and economic development (1968, 1978, 1995) and link their propositions to EFCs.
3. This type of specification has been widely used in the theory of agricultural production where not only the output average is a function of the inputs used by a farmer, but also the variance of output. In the agricultural literature, this specification was originally proposed by Just and Pope (1979) who pointed out that no generality is lost in assuming $V(\varepsilon_{it}) = 1$, since if $V(\varepsilon_{it}) = \sigma_\varepsilon^2$ then the $h(X_{it}, B)$ could simply be modified by a multiplicative factor σ_ε^2 .
4. There is not a clear relationship between necessity-based entrepreneurial activities and Baumol's (1990) distinction between unproductive or destructive entrepreneurship because some necessity-based activities could be productive depending on the context.
5. For the complete GEM's NES questions see Reynolds et al. (2005).
6. For complete information about the Index and his methodology see: <http://www.heritage.org/Index/Default.aspx>
7. $\hat{v}_{it} = NEC_{it} - f(GDP_{it}, \hat{\alpha}) +$
8. Because $E(v_{it}^2) = [h(X_{it}, \beta)]^2$ we can write $v_{it}^2 = [h(X_{it}, \beta)]^2 u_{it}$ with $E(u_{it}) = 1$
9. Wooldridge (2002 chapter 6.2.1) point outs that a valid test for the significance of that parameter associated with the residuals requires an efficient estimation of this equation. Because of this we estimate the variance-covariance matrix with the Huber/White/sandwich estimator.
10. For more information about high-potential entrepreneurs using GEM methodology see Autio (2005, 2007).

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APPENDIX

List of countries in the sample:

Argentina, Australia, Austria, Belgium, Brazil, Canada, Chile, China, Colombia, Croatia, Denmark, Dominican Republic, Finland, France, Germany, Greece, Hong Kong, Hungary, Iceland, India, Ireland, Israel, Italy, Jamaica, Japan, Korea, Latvia, Mexico, Netherlands, New Zealand, Norway, Peru, Poland, Portugal, Romania, Russia, Serbia, Singapore, Slovenia, South Africa, Spain, Sweden, Switzerland, Thailand, Uganda, United Arab Emirates, United Kingdom, United States, Uruguay and Venezuela.

Variables Description.

Variable	Description	Source	Mean	Max.	Min.	SD.
<i>NEC</i>	% of adult population who are involved on Necessity-based entrepreneurial activity	GEM Adult Population Survey	2.22	14.40	0.09	2.54
<i>GDP</i>	Gross Domestic Product in USA dollars adjusted by purchase power parity	IMF Database v. October 2008	2088	55199	690	12370
<i>HighEdu</i>	Higher level entrepreneurship education	GEM National Expert Survey	2.57	3.51	1.64	0.36
<i>GovEff</i>	Government effectiveness	World Bank's Worldwide Governance Indicators (WGI)	0.94	2.41	-0.96	0.91
<i>RegQua</i>	Regulatory quality	World Bank's Worldwide Governance Indicators (WGI)	0.85	2.01	-1.56	0.78
<i>GovSiz</i>	Government Size	Wall Street J. & Heritage Foundation Index of Economic Freedom,	56.20	94.12	0	25.33
<i>Govq</i>	Government Quality	Variable constructed by principal component analysis.	0.14	2.94	-2.29	0.98

Table 1: Estimates of the Deterministic and Stochastic components of necessity-based entrepreneurial activity

Model	Constant	<i>GDP</i>	<i>LnGovq</i>	<i>LnHighEdu</i>	R ²	N
Estimates of the determinist component using NLS	815** (221)	-.604** (.031)			0.71	274
Estimates of the stochastic component using OLS	11.42** (1.73)		-4.26** (.733)	-1.85** (.477)	0.23	180
Estimates of the Deterministic component using a weighted NLS regression	1790** (519)	-.705** (.032)			0.74	180

Numbers in parentheses are standard errors. ** $p \leq 0.05$ significance level.

Figure 1: Dispersion of Error Term of Necessity Entrepreneurial Dynamics (v_{it}) versus GDP per capita

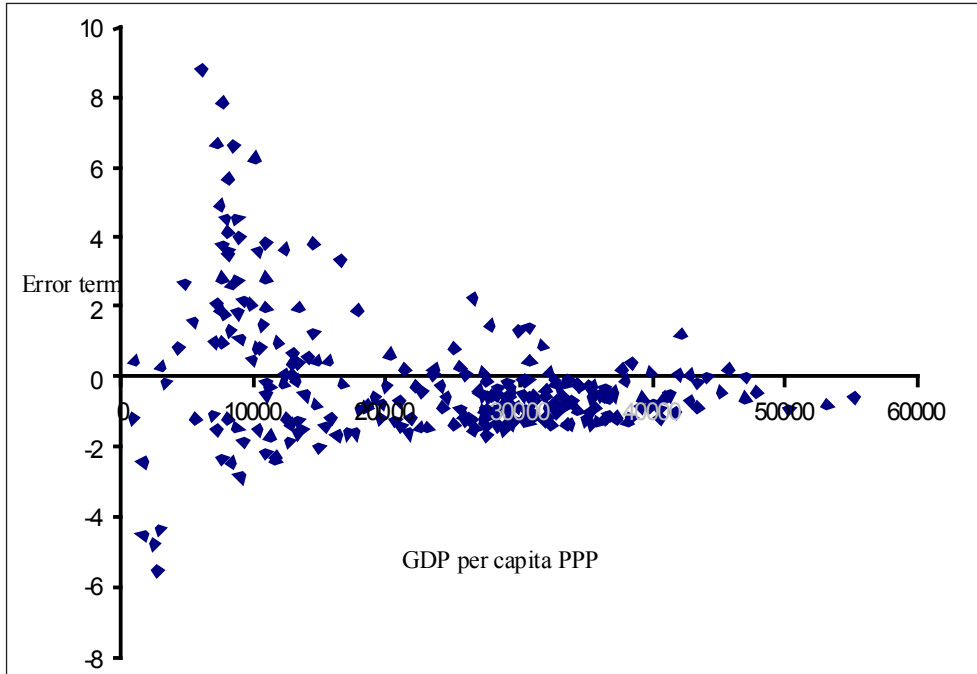
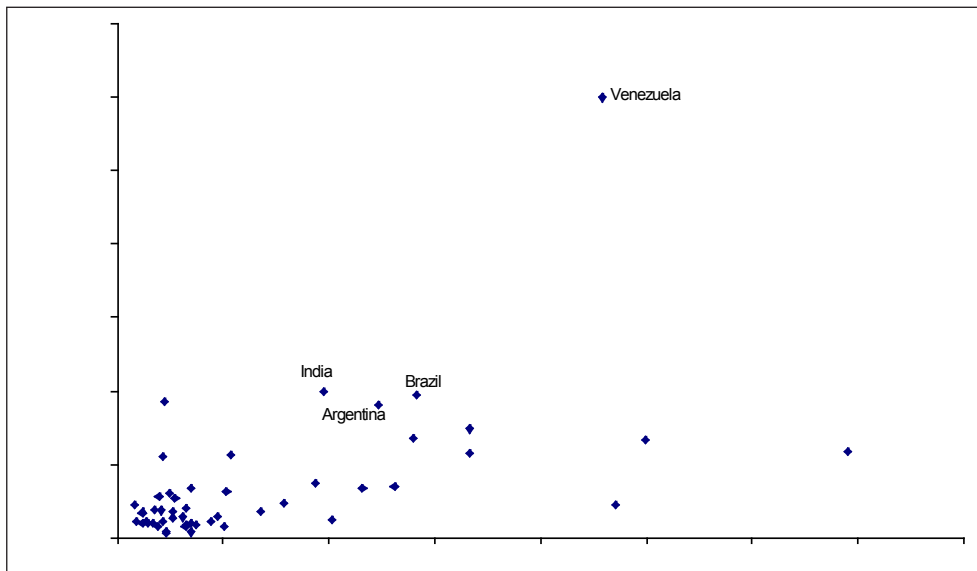


Figure 2: Entrepreneurial Volatility 2001-2008



The variance has been computed using $h(X_{it}, B)^2$

≈ SUMMARY ≈

**ENTREPRENEURSHIP, URBANIZATION ECONOMIES
AND PRODUCTIVITY OF REGIONS; A MULTILEVEL
APPROACH APPLIED TO EUROPEAN REGIONS**

Niels S. Bosma, Utrecht University, The Netherlands

Principal Topic

Regional economic growth literature has established that differences in regional productivity can to large extent be explained by the density of economic activity. This effect of ‘urbanization economies’ has been documented for regions in the United States (Ciccone and Hall 1996) and Europe (Ciccone 2002). Many studies have since contributed to ‘opening’ the black box of urbanization economies (Duranton and Puga 2004; Rosenthal and Strange 2004). Consistent with recent literature (Acs et al. 2004) we argue that entrepreneurship constitutes a relevant additional explanatory factor for observed regional variation in labor productivity. Moreover we argue that specific types of entrepreneurship can be related to urbanization effects. The need for identifying specific types of entrepreneurship requires the inclusion of the individual as the unit of analysis.

Method

We use a large database abstracted from the Global Entrepreneurship Monitor (GEM) consisting of over 350,000 inhabitants spread over 137 identified regions in 17 EU countries. First, we add regional-level rates of different types of early-stage entrepreneurship as explanatory variables to the model put forward by Ciccone (2002) designed to explain regional levels of productivity while measuring the effect of urbanization economies.

By using advanced multilevel regression techniques and controlling for individual-level determinants of involvement in entrepreneurship we also test for the importance of entrepreneurship as an *additional factor* explaining economic development. An alternative interpretation views the entrepreneurial process as a trigger for other inputs, such as employment and human capital.

Results and Implications

Our results indicate that regional levels of both low growth oriented early-stage entrepreneurship and high growth oriented early-stage entrepreneurial activity are indicators of higher levels of regional labor productivity. The impact of low growth oriented entrepreneurship complements urbanization economies, while high growth oriented entrepreneurship can be directly linked to urbanization economies. However, the estimated effect vanishes if we model entrepreneurial activity at the individual level and account for basic individual-level determinants of entrepreneurship in the multilevel analysis. Overall our results provide support for the importance of entrepreneurship as a – particularly urban – *mechanism*, since estimated effects of other indicators of productivity become more pronounced once we account for determinants and consequences growth-oriented entrepreneurship.

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≈ SUMMARY ≈

**ENTREPRENEURIAL POTENTIALITY IN THE PROCESS
OF OPPORTUNITY REALIZATION: MODELING AND
TESTING OF MULTIPLE-LEVEL EMERGENCE***Min-Seok Cha, KAIST, Korea**Zong-Tae Bae, KAIST, Korea***Principal Topic**

This paper proposes a model of entrepreneurial potentiality that is the possibility of actualization of business opportunity. The emergent process is that of providing the solutions to numerous predicted and unpredictable problems (Katz & Gartner, 1988; Ansoff, 1975; Busenitz & Barney, 1997) and filling gaps between resources at hand and the level of resources that market opportunity requires. The new ventures have root causes of entrepreneurial motivations and mechanism of resource combination to overcome the 'liability of newness' (Stinchcombe, 1964) in the multi-level process. It is paradoxical that the new ventures do not have the necessary quality of resources in advance that can be evaluated from resource-based view. It might have inevitable limitations in dealing with the nature of emergent process from potential situations to actual business. The ad-hoc concept is entrepreneurial capability (Alvarez and Busenitz, 2001; Alvarez and Barney, 2000). We accommodate and link with organization and innovation perspective and model the 'entrepreneurial potentiality.'

Model and Method

In the modeling phase, we divide the possibility into two kinds of level. First is the possibility of 'new resource combination' and the latter is possibility of 'market acceptance'. Entrepreneurial potentiality is formulated based from motivation, that is least researched (Mitchell et al., 2007), activity, and conditions. Our propositions are based on the multiple-level emergence model. A simple structural equation modeling is used to show preliminary evidences. The model is tested with structural modeling by PLS 3.0. The number of firms listed in sample frame was 4008, and 3693 firms responded. After two years, in 2001, SMBA conducted the mail survey for registered 9978 firms, and received survey data from 8245 firms. The response rate was 88%. 1119 firms are included in the statistical analysis.

Results and Implications

The result shows that the model of entrepreneurial potentiality is the function of entrepreneurial motivation, resource condition, external conditions and characteristics of opportunity. This paper addresses the issue of opportunity realization or resource combination with theoretical approach and empirical test. Theory building on the emergence in the process of opportunity realization could provide a meaningful integrative perspective. This research may shed light on understanding of new business creation and creating focused mindset and actions in the emergent process of resource combination. The theory is intended to be useful to practitioners and educators in confronting obstacles for opportunity realization.

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≈ SUMMARY ≈

WHY DO ENTREPRENEURS WRITE BUSINESS PLANS? A STUDY OF 457 NEW VENTURES

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Qing Zhao, Babson College, USA

William D. Bygrave, Babson College, USA

Principal Topic

A widely-held business school mantra is that a new venture should start with a written business plan. Business plan advocates state that for an aspiring entrepreneur a written business plan has many benefits including articulating the business model, strategic, operational, and financial planning, examining critical assumptions, and fundraising. While there is no argument in the prescriptive literature on the importance of having such a plan in approaching investors, there is much more controversy concerning a business plan's practical value. Empirical studies into the effectiveness of business plans have produced mixed results. But there is general agreement that two important reasons for writing a business plan are institutional and mimetic pressure. When those two factors are combined, it is expected that would-be entrepreneurs who are seeking external funding and have taken a basic entrepreneurship course are more likely to write a business plan than those who are not seeking external funding and have never taken an entrepreneurship course.

Method

We surveyed alums of a business school that is a leader in entrepreneurship education. The survey was emailed to all alums who graduated between 1985 and 2006 and for whom the school has an email address. From approximately 2,000 responses we culled the alums who had started at least one full-time venture. Our final data set comprised 457 entrepreneurs and their companies.

Results and Implications

Companies started with written plans were more likely to have raised external startup funding than those without one ($p < .001$); but companies with written business plans raised no more external funding than those without one. Entrepreneurs who had been taught how to write a business plan were more likely to have written a business plan before starting new ventures. Our findings suggest that institutional pressure (raised capital externally) and mimetic pressure (taught to write a business plan) are important determinants of who writes business plans for new ventures. When we combine these findings with our finding that there is no difference in the operating performance of businesses started with or without written business plans, we believe that writing a business plan before launching a new venture is only necessary for those entrepreneurs who are seeking external startup funding.

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≈ SUMMARY ≈

**RURAL AND URBAN ESTABLISHMENT BIRTHS
AND DEATHS USING THE U.S. CENSUS BUREAU'S
BUSINESS INFORMATION TRACKING SERIES**

Lawrence A. Plummer, Clemson University, USA

Brian Headd, Small Business Administration, USA

Principal Topic

The entry and exit of firms is a mechanism by which outdated ideas and industry practices are replaced by new and potentially revolutionary ones. Urban and suburban areas are said to have a fast pace of life, but it is unclear if such density translates into higher rates of entry and exit. Thus, this paper has two objectives: first, it documents a set of county-level establishment birth and death (EBD) tabulations available from the U.S. Census Bureau. Second, it presents a descriptive analysis of establishment birth and death rates across rural and urban counties.

Method

The EBD tabulations were extracted from the Census Bureau's Business Information Tracking Series (BITS) file. These tabulations report total, single-unit, and multi-unit establishment births and deaths by industry classification for every county in the United States from 1990 to 2003. A birth in a given year is counted if an establishment reports payroll sometime in the current year and no payroll the year prior. A death in a given year is counted if payroll is zero in the current year and positive the year prior. In addition to reporting descriptive statistics of the data, the paper discusses various practical matters on using the tabulations for scholarly research.

For the urban-rural analysis, the birth and death rates are calculated using the ecological method and the labor force methods. The ecological rate is the number of establishment births or deaths divided by the number of establishments in the previous year. The labor force rate is the number of establishment births or deaths divided by the county labor force in the previous year. These rates are compared across urban and rural areas defined alternatively by metropolitan statistical areas (MSA) and rural urban continuum codes (RUCC).

Results and Implications

The analysis yields a surprising result: the differences in the average rates of establishment births and deaths across urban and rural areas, although statistically significant, are extremely small. Thus, it would appear that rural counties are just as "entrepreneurial" as urban areas. This result has implications for economic development policy, especially where such policies hinge on stimulating and supporting local entrepreneurial activity (e.g., "economic gardening" programs).

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≈ SUMMARY ≈

THE PRODUCTION OF ENTREPRENEURIAL OPPORTUNITY: A CONSTRUCTIVIST PERSPECTIVE

Matthew S. Wood, Southern Illinois University, USA

William McKinley, Southern Illinois University, USA

Principal Topic

We develop a theoretical model that depicts the process of opportunity production from a constructivist perspective. The model assumes that opportunity production proceeds through several stages, including perception, objectification, and enactment. However, between each stage, some opportunities are abandoned due to inadequate objectification or insufficient resource support. We identify several variables that determine whether or not opportunities are objectified and subsequently enacted, and these variables are incorporated as predictors into empirically testable propositions.

Method

Opportunities for engaging in entrepreneurial activities begin as perceptions by individual entrepreneurs and develop as a process of social construction (Weick, 1979). At the initial stage, the entrepreneur begins a sense-making process (Weick, 1979) intended to clarify the existence of an opportunity. This sense-making process takes place through interaction between the entrepreneur and her peers, and based on the degree of peer consensus the opportunity is either invested with the status of an objective reality (Berger and Luckmann, 1966), or abandoned.

At the second stage of the process, opportunities undergo attempted enactment by the entrepreneurs who believe in their reality. Each attempted enactment involves a set of social interactions with resource providers and other stakeholders whose support is needed to turn the opportunity into a working venture. Depending on the entrepreneur's reputation and her access to social networks that can be used to enlist stakeholders, the opportunity is either enacted into a new venture, or not.

As a final component of our model, we argue that opportunity abandonment, whether at the objectification stage or the enactment stage, will trigger a post-hoc cognitive reconstruction by the entrepreneur. In that reconstruction, the entrepreneur redefines her initial perception of the opportunity as an illusion. We argue that this post-hoc reconstruction has benefits for the entrepreneur, increasing her cognitive flexibility and her openness to the pursuit of new opportunities.

Results and Implications

The paper should help scholars and entrepreneurs conceptualize the evolution of opportunities over time, as opposed to viewing them as fixed, time-invariant external entities. This paper also considers the role of opportunity abandonment, which is rarely mentioned within the existing entrepreneurship literature. Finally, this paper provides insights for entrepreneurs by suggesting that social influences on and by the entrepreneur may be critical to initial opportunity production and exploitation.

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≈ INTERACTIVE PAPER ≈

**OPPORTUNITIES AND RENTS: THE RELATIONSHIP
AMONG ROUTINES, PATH DEPENDENCE, AND
SUSTAINED COMPETITIVE ADVANTAGE**

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Simon Parker, Richard Ivey School of Business, University of Western Ontario, Canada

Principal Topic

Resource-based theory's central assertion is that valuable and costly to copy resources and capabilities that are also heterogeneously distributed across competing firms can be sources of sustained competitive advantage (Barney 1991). Resource-based theorists have also identified several kinds of resources and capabilities that are likely to meet these criteria for generating sustained competitive advantages, e.g., resources and capabilities that are causally ambiguous (Lippman and Rumelt 1982), socially complex (1986; Barney 1991) tacit and intangible (Itami, 19xx), characterized by asset mass efficiencies and time compression diseconomies (Dierickx and Cool 1989) and so forth.

Method

While progress continues in developing and testing resource-based theory assertions, relatively little work examines where these heterogeneously distributed and costly to copy resources come from in the first place. Indeed, most resource-based research takes firm heterogeneity as given and focuses on its implications for firm performance going forward (Barney 1986). Research on where heterogeneous and costly to copy resources come from either attributes their development to luck or superior expectations (Barney, 1986b)—without explaining why some firms are lucky and why some firms have superior expectations—or to path dependent processes shrouded in a firm's only dimly understood history (Collis, 1991). In this sense, the sources of heterogeneous and costly to copy resources and capabilities for firms remains resource-based theory's unopened "black box."

Results and Implications

This paper begins to open this black box. It links two core resource-based concepts—path dependence and the development of resources and capabilities (Barney, 1991) and routines (Nelson and Winter 1982) with entrepreneurship theory (Alvarez and Barney, 2008) concerning the nature of opportunities. In particular, Alvarez and Barney (2008), building on the work of (Aldrich and Kenworthy 1999; Shane 2003; Aldrich and Ruef 2006), identified two types of entrepreneurial opportunities—those created by exogenous shocks to an existing industry or market (called discovery opportunities) and those created endogenously by the actions of entrepreneurs (called creation opportunities). Building on Alvarez and Parker (2009), this paper develops a Bayesian learning model of the path dependent process by which firms build routines during exploitation process. Routines developed in discovery settings are less likely to have attributes required for sustained competitive advantage, whereas routines developed in creation settings are more likely to have these attributes. The model suggests an important source of the heterogeneous and costly to copy resources and capabilities controlled by a firm may be the types of opportunities that firms are formed to exploit.

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≈ INTERACTIVE PAPER ≈

**INNOVATING IN OPAQUE ENVIRONMENTS: THE
PERFORMANCE IMPLICATIONS OF VENTURE ORIGIN IN
UNCERTAIN AND AMBIGUOUS ENVIRONMENTS**

Steven W. Bradley, Baylor University, USA

Kimberly G. Nix, Clemson University, USA

Kendall W. Artz, Baylor University, USA

Principal Topic

New ventures can be started by independent entrepreneurs (IVs) or by corporate parents (CVs). Research has shown that origin influences a new venture's access to resources, its autonomy, its decision making process and its performance (Hitt et al., 1999; Zahra, 1996). Research has also shown that the value of resources varies depending on the conditions a firm faces in its environment (Miller & Shamsie, 1996). Since resource availability differs based on venture origin, and resource value depends on environmental conditions, then a question arises whether venture origin would be expected to influence performance in different environments. This question is the primary focus of this study.

Utilizing the knowledge-based perspective, numerous hypotheses are developed and tested investigating the performance of IVs and CVs under different environmental conditions. Specifically, we examine conditions of innovative intensity, uncertainty, and ambiguity; contexts that have implications for the usefulness of knowledge resources and for the comparative advantage of IVs and CVs. While a main focus of this paper is to compare IV and CV performance in different environmental conditions, we also examine how the degree of relatedness between parent and CV impacts CV performance. Research has shown that resource relatedness between parents and CVs has the potential to be either positive or negative depending on the context in which the resources are deployed (Thornhill and Amit, 2001).

Method

The analysis is based on secondary data drawn from the population of all independent and subsidiary incorporated companies registered in Sweden from 1994-2002. The hypotheses will be tested using a fixed effects panel regression model. Measures of performance include sales growth and ROA. Innovative intensity, dynamism and ambiguity are industry level measures.

Implications

This research provides insight into the impact that external conditions can have on the relative performance of IVs and CVs. Understanding the role of venture origin in performance can help these ventures better understand their competitors and the advantages or disadvantages each may face under particular conditions. Evidence is also presented that contributes to a better understanding of the conditions under which parent-venture relatedness may influence CV performance.

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∞ INTERACTIVE PAPER ∞

BOUNDING NOVELTY: THE ROLE OF SELECTIVE LEARNING IN THE DEVELOPMENT OF ENTREPRENEURIAL KNOWLEDGE

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Principal Topic

How do entrepreneurs know how to evaluate something that is fundamentally new? Novelty plays an essential role in breakthrough innovations, entrepreneurship and economic change. Yet novelty is difficult to recognize, hard to assess and associated with high levels of failure. This “inaccessibility and indeterminacy of novelty” (Schumpeter, 2005) has made the assessment of novelty a challenge in both the economics of change and understanding the process of innovation.

Novelty is classically viewed as hard to assess because of problems of bounded rationality arising from individual, environmental, and ecological sources of novelty. Individual sources of novelty are assessed by means that are bounded by the capacity of the individual to process information, such as differences in cognition and prior knowledge. Environmental sources of novelty are assessed by means that are bounded by the costs of searching for information, such as differences in information channels. An emerging view is that novelty could be assessed using ‘ecological rationality’, where the limitations of the individual rationality are reduced by knowledge about the information environment (Todd and Gigerenzer, 2003).

Ecologically rational strategies are useful under conditions of incomplete information when search and stopping rules are well defined. However simple defined rules do not seem to perform well under the ambiguous, dynamic and contextual conditions associated with entrepreneurial settings. I argue that entrepreneurs use strategies that simultaneously recognize individual and environmental sources of novelty by engaging in selective learning. In selective learning, entrepreneurs learn about failure criteria rather than assessing factors of success.

Method

This paper models three different selective learning strategies where opportunities are picked from pool of ideas. Each idea is a complex combination of generic factors with significant but uncertain independencies between factors. I compare the factor information requirements for ranking models and expert models to three selective learning strategies I call: (1) deal killers, (2) red flags and (3) discoveries.

Results and Implications

These models show that entrepreneurs can use selective learning strategies to assess potential opportunities under ambiguous, dynamic and complex conditions with relatively low trade-offs to opportunity quality. However, under certain conditions, these strategies can be intentionally or unintentionally gamed, so the models provide prescriptive benefits in identifying unfavorable learning processes.

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≈ INTERACTIVE PAPER ≈

TRANSACTIONING, OPPORTUNITIES AND ENTREPRENEURSHIP

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Adam D. Bailey, *Texas Tech University, USA*

Benjamin T. Mitchell, *University of Minnesota, USA*

Ronald K. Mitchell, *Texas Tech University, USA*

Principal Topic

In this study, we investigate the emergence of new transactions. Whereas transaction cost economics (TCE) takes transactions as given—focusing on questions of governance—in this study we investigate how the emergence of new transactions might be explained. A transaction consists of three elements: the *creating entity* (social actors as transaction instigators), *others* (social actors as transaction participants), and a *work* (the domain specific undertaking that is the focus of exchange). Using general specifications of TCE, we investigate the extent to which bounded rationality (BR), opportunism (O), and specificity (S)—three attributes of transacting that have been asserted to cause transaction costs—affect the emergence of new transactions. Our hypothesis is that where *the effects* of BR-O-S are high, transactions are less likely to emerge.

Method

We used an experiment to test our hypothesis, wherein 56 three-person groups engaged in an opportunity-focused transacting exercise. Our dependent variable was *extent of transacting*: a count of transactions completed by the group in a 12-minute period. Groups were randomly assigned to high or low effects of BR-O-S conditions (which were manipulated in the rules of the transacting task). We utilized ANCOVA because it allowed us to control for group motivation and group competitiveness in our analysis.

Results and Implications

The results indicated support for the hypothesis that transactions are less likely to emerge where the effects of BR-O-S are high ($F_{1,52} = 29.57, p < .001$). An important implication of this finding is that due to the effects of BR-O-S, transactions cannot be assumed into existence. Knowing this, we theorize that three capability-based systems exist which respectively reduce the effects of BR-O-S—planning systems, promise systems, and competition systems—and thus facilitate the emergence of new transactions. Another important implication of this finding is that it allows us to *estimate* a prior (unconditional) probability of entrepreneurial transacting: transactions which emerge but might not have. In this way, our research provides a first step in the development of a theory of transacting that explains why some potential transactions and not others come into being through capability-based opportunity formation processes.

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≈ INTERACTIVE PAPER ≈

**THE DYNAMIC RELATIONSHIP BETWEEN
ENTREPRENEURSHIP AND ECONOMIC GROWTH:
EVIDENCE FROM U.S. MANUFACTURING INDUSTRIES**

*Jose M. Plehn-Dujowich, Fox School of Business, Temple University, USA
Dunli Li, Department of Economics, University at Buffalo, USA*

Principal Topic

We study the dynamic relationship between entrepreneurship and growth at the U.S. industry-level using Vector Autoregressions (VARs) to test Granger causality.

Method

We draw upon three datasets: the NBER-CES productivity database at the U.S. 4-digit SIC level, to obtain the growth rate of the real value of shipments per employee (*GRSHIP*), Domar TFP growth (*GTFPD*), value added weighted TFP growth (*GTFPV*), and industry sales weighted TFP growth (*GTFPS*); the Bureau of Labor Statistics (BLS), to obtain the self-employment rate across U.S. manufacturing sectors; and the Statistics of U.S. Businesses (SUSB), to obtain the new establishment entry rate (gross entry and net entry) at the U.S. 3-digit SIC level. These yield two panels: self-employment and growth spanning 73 sectors from 1983 to 1996; and industry dynamics and growth spanning 140 3-digit sectors from 1989 to 1996.

To estimate the dynamic panel models, we apply the “difference” generalized method of moments (GMM) (Holtz-Eakin et al., 1988; Arellano and Bond, 1991) and “system” GMM (Arellano and Bover, 1995; Blundell and Bond, 1998). To select the lag length, we follow the sequential test in Holtz-Eakin et al. (1988). We perform a battery of tests: panel unit roots; Hansen and Difference-in-Hansen on the validity of the instruments; and Arellano and Bond for autocorrelation. Panel unit root tests show that all entrepreneurship and growth variables are stationary, thus VAR analysis is valid. In the two panels, the lag length is identified as one year for both the entrepreneurship and growth equations.

Results and Implications

The evidence is mixed. Net and gross entry have a negative Granger causal effect on *GRSHIP* and a positive Granger causal effect on *GTFPD*, but neither *GRSHIP* nor *GTFPD* has a Granger causal effect on net or gross entry. Gross entry has a positive Granger causal effect on *GTFPV* and *GTFPS*, and *GTFPV* and *GTFPS* have a positive Granger causal effect on gross entry. Self-employment and TFP growth (*GTFPD*, *GTFPV*, and *GTFPS*) do not have Granger causal effects on each other. *GRSHIP* has a positive Granger causal effect on self-employment, but self-employment does not Granger cause *GRSHIP*.

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≈ INTERACTIVE PAPER ≈

**OPPORTUNITY RECOGNITION IN THE POST-BUBBLE PERIOD:
TECHNOLOGY BUNDLING, RESOURCE HIGH-JACKING AND
MARKET LOCK-IN MECHANISMS IN SKYPE AND YOUTUBE**

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Principal topic

Skype Technologies was sold to Ebay for 2,6 billion USD after less than 2 years of its founding. In a similar manner, YouTube managed to grow to a USD 1,65 billion worth business in merely 20 months. The price tags of these two companies when sold were high, reaching the amount that had not been seen after the dot.com crash in early 2000. This rapid success intrigued us with the questions of how did the entrepreneurs recognize and develop such opportunities in a period of resource scarcity and prevailing market pessimism. What lessons can we learn from these cases to improve our understanding of the opportunity recognition process?

Methods

We used a grounded case study analysis and pattern matching methods to build a contextually grounded model for opportunity recognition in post-bubble periods. The secondary data of Skype Technologies and YouTube were used to accomplish this goal as the studied companies are abundantly documented with secondary data in web news portals, online magazines and other web sources that proved to be very effective. Using data source triangulation this enabled us to build an extensive database to reconstruct the chain of events for the two cases. We then used this analysis of important events in the opportunity recognition process for identifying patterns of opportunity recognition in the two companies. The data analysis process led us to several underlying concepts and mechanisms with a potential to become building blocks of a more general theory on opportunity recognition.

Results and Implications

Using a qualitative research method based on secondary data for the study proved to be an efficient and fruitful strategy for the specific context leading to important insights. The grounded approach identified several interesting mechanisms that the entrepreneurs used: such as technology bundling, resource hijacking and market lock in mechanisms; We show how entrepreneurs are able to make money of technologies and resources that were developed before the bubble burst. In a period where money is not as easy to get we outline how entrepreneurs need to be smart, bundle, and high-jack things that are out there in order to recognise and develop valuable opportunities. We discuss our findings to the general observations on opportunity recognition and outline specific suggestions for further research on post-bubble opportunity recognition.

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COMPOSITE DEFINITIONS OF ENTREPRENEURIAL OPPORTUNITY AND THEIR OPERATIONALIZATIONS: TOWARD A TYPOLOGY



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ABSTRACT

We examined 19 years of conceptual and operational definitions of entrepreneurial opportunity and opportunity-related processes (recognition, discovery, etc.). We found 56 articles in 6 entrepreneurship-focused publications, with 23 conceptual and 6 operational definitions of opportunity as well as 25 conceptual and 24 operational definitions of opportunity-related processes. Among those definitions, we identified 25 distinct definitional elements and 12 operational elements of opportunity as well as 48 definitional elements and 39 operational elements of opportunity-related processes. We used the definitional elements to develop six composite definitions of opportunity and eight composite definitions of opportunity-related processes. Additionally we found a disconnect between conceptual and operational definitions.

INTRODUCTION

“Opportunity” is a word that has appeared frequently in the entrepreneurship literature, particularly since several seminal articles called attention to its importance in understanding entrepreneurship (Kirzner, 1997; Venkataraman, 1997, Shane & Venkataraman, 2000). However, scholars have approached entrepreneurial opportunity from a variety of diverse perspectives, which has led to inconsistent definitions and operationalizations. Thus much of the work done by scholars on entrepreneurial opportunities and processes of opportunity recognition, identification, creation, etc. (henceforth simply referred to as opportunity-related processes) cannot be generalized to our understanding of the concepts. Theory building is frustrated by the fact that these scholars were not all examining the same theoretic constructs. We aimed to shed some light on the issue by investigating entrepreneurship literature examining entrepreneurial opportunities. Specifically, we systematically examined the various conceptual and operational definitions of entrepreneurial opportunity and the various processes involving opportunity (e.g. recognition, discovery, creation, etc.) and developed a set of composite definitions that may be useful in developing a typology.

Given its importance to entrepreneurship, scholars have attempted to understand entrepreneurial opportunity using four distinct approaches. They have looked at it conceptually and empirically for both the opportunity itself and opportunity-related processes. Conceptually, scholars have debated exactly what constitutes an entrepreneurial opportunity and in doing so, they have generated a wide variety of definitions, sometimes ambiguous, sometimes contradictory, resulting in a considerable amount of variance in perspectives (McMullen, et al, 2007). For example, opportunity has been viewed as either simply an idea (Davidsson, et al., 2004), or more specifically as an unexploited project (Casson and Wadeson, 2007), business form, or potential venture (Singh, 1998; DeTienne & Chandler, 2007). Opportunity has also been contrasted as either

an objective phenomenon that is distinct from the entrepreneur (Kirzner, 1997; Shane, 2003), or a subjective phenomenon inextricably linked to and stemming from the entrepreneur's own cognition (Sarason, Dean, & Dillard, 2006).

However, for an opportunity to be meaningful to some entrepreneurship scholars, it must be recognized, discovered, identified, etc. and thus scholars also debate how to define the processes related to opportunities. For example, while some have viewed opportunity as something identified in a moment of insight that is the result of accidental discovery (Long & McMullan, 1984), others think the opportunity-related process takes place over time (Bhave, 1994; de Koning, 1999), is the result of a systematic search (Fiet, Piskounov & Patel, 2005) or is enacted and constructed in the present (Fletcher, 2004). One view is that it is a cognitive process that can involve mental simulation and counterfactual thinking (Gaglio & Katz, 2001), heuristics based logic (Baron 2004), or maybe an effectuation process of forming, shaping, creating, or enacting an opportunity that emerges from within the entrepreneur (Sarasvathy, 2001). Similarly the opportunity-related process has been viewed as a creative process (Hills et al., 1999), involving creativity (Ardichvili et al., 2003), or even as a special case of problem solving (Harper, 2008)

Entrepreneurship scholars have also looked at opportunities in a variety of empirical ways, though with less frequency compared to conceptual definitions. For example, some have operationalized business opportunities as novel ideas subjects have recently had (DeTienne & Chander, 2007), while others operationalized it as the demand for or potential introduction of a product (Eckhardt & Ciuchta, 2006). Finally, the processes entrepreneurs use to recognize, discover, identify, etc. opportunities have also been examined. In some instances the processes are operationalized as cognitive ones, such as recognizing, perceiving, discovering, identifying, sensing, seeing and/or focusing on unmet needs, goods/services or opportunities (McCline, Bhat & Baj, 2000; Kolvereid & Isaksen, 2006; Ensley, Carland & Carland, 2000; DeTienne & Chander, 2007; Shepherd & DeTienne, 2005). Yet in other instances, the processes have been considered an innate trait where an entrepreneur has an alertness, an ability or an individual capability to recognize opportunities (Ropo & Hunt, 1995; Ozgen & Baron, 2007).

Pfeffer (1993) argued that fragmentation presents a serious obstacle to scientific growth within the organization sciences because it reduces the ability to work collaboratively on research. Furthermore, he argued that paradigms based on shared definitions make interdependent collaborative activity more possible. The lack of such paradigms, he argued, seriously hampers the growth of a discipline. Relatedly, Davidson (2005, p. 33-39) highlighted the need for entrepreneurship research to be more theory-based with theory being used to guide design and analysis of empirical studies and to interpret results. He argued that a good theory requires a set of *well-defined*, abstracted concepts and a set of well-specified relationships among those concepts. This mirrors the view of theory building experts that theories must be built upon a set of defined constructs (Bacharach, 1989; Dubin, 1969; Whetten, 1989).

Gartner, Carter and Hills (2003) noted that among entrepreneurship scholars there has been a proliferation of terminology related to opportunity. They argued that multiple perspectives are valid and that if scholars limit their thinking to one point of view that will constrain discourse on and understanding of the topic. Thus, they called for an even larger vocabulary related to opportunity. However, they cautioned that words imply meanings that are specific to each individual, thus highlighting the need to define opportunity and opportunity-related processes, which are the theoretic building blocks of entrepreneurship research. With this in mind we set out to systemati-

cally examine the entrepreneurship literature for evidence of definitions and operationalizations of opportunity and opportunity-related processes.

METHOD

This initial study was intended to be representative of the broader literature, but is not exhaustive due to the large number of articles about entrepreneurial opportunity published in a variety of disciplines in recent years in response to numerous calls for papers on this topic (Gartner, Carter & Hills, 2003; Ucbasaran, Westhead & Wright, 2001; Venkataraman, 1997). We systematically examined articles involving entrepreneurial opportunity published in five top entrepreneurship journals including the *Entrepreneurship & Regional Development (ERD)*, *Entrepreneurship: Theory & Practice (ETP)*, *Journal of Business Venturing (JBV)*, *Journal of Small Business Management (JSBM)*, and *Small Business Economics (SBE)*, plus *Frontiers of Entrepreneurship Research (FER)*. Our goal was to find papers that defined and/or operationalized “opportunity” and/or “opportunity recognition” or variants thereof. An initial broad search indicated that the majority of such papers were found in the five journals listed, thus we limited the current study to those five journals as well as the Babson proceedings. Furthermore, we limited our review to articles published since 1990. The seminal articles listed above (Kirzner, 1997; Venkataraman, 1997; Shane & Venkataraman, 2000) brought greater attention to the importance of opportunity perception to understanding entrepreneurship in the middle of this time period.

The method involved first searching electronic databases of journals using a broad collection of terms found in the entrepreneurial opportunity literature (e.g., opportunity, discovery, idea and alert) and combinations of them (e.g., “opportunity discovery,” “entrepreneurial opportunity” and “alert entrepreneur”) to electronically search the full text of articles in the journals. In total we used 17 search terms. For issues of journals for which an electronic word search was not possible we visually scanned articles for the key terms. For the *Frontiers of Entrepreneurship Research*, we looked at those papers that were listed under opportunity-related headings and also searched for the word “opportunity” when it did not appear in headings (1993-1996). The initial search resulted in the identification of 166 articles published between 1990 and the present in the five journals and Babson proceedings. We conducted a systematic content analysis of each article in order to record its definitions and operationalizations. Many articles however used “opportunity” in describing or defining the field of entrepreneurship (or sub-fields such as international entrepreneurship) and thus offered no insight into the definitions of opportunity or opportunity-related processes. The analysis revealed a large number of papers that neither explicitly defined nor provided a clear operationalization of opportunity or an opportunity-related process. The final sample of articles used in the analysis included 56 articles, which can be found listed in Table 1 below.

The analysis was conducted by the three co-authors in multiple rounds. In the first round, each of us made a list of the elements that made up definitions of opportunity and opportunity-related processes within the 56 articles. We grouped terms that appeared synonymous and discussed them to reach a consensus on a set of elements that most completely and parsimoniously represented the elements used to define opportunity and opportunity-related processes. In the next round we independently identified which specific elements were represented in each definition. We were in full agreement for 94% of the elements in the opportunity definitions and 97% of the opportunity-related process definitions. We then discussed our differences and reached consensus for each definition. Once we had the elements of each definition identified, which can be found in Tables 2 and 3, we independently grouped definitions based on similarity of the elements used. Our initial

level of agreement was 84% for the opportunity definitions and 76% for the opportunity-related process definitions. We then discussed our differences and reached consensus for every grouping.

In the third round each of us generated one or more composite definitions based on the definitions in each group, noting the dominant and identifying common elements (i.e., elements represented in 50% or more of the grouped definitions, many of which clearly distinguished one group from the others). We were able to reach a consensus on a composite definition for each group (in two cases we combined groups), which can be seen in Tables 4 and 5. In total we identified six composite definitions of opportunity and eight composite definitions of opportunity-related processes. In the final round we turned our attention to the operationalizations. We started with the previously identified definitional elements to identify the elements of the operationalizations. However, it was clear that the operationalizations contained many elements not represented in the conceptual definitions, so we developed additional elements. After comparing how we identified the elements of each operationalization, we agreed 94% for opportunity and 97% for opportunity-related processes. We were able to reach consensus on the elements for each operationalization. A comparison of the elements found in definitions and the elements found in the operationalizations can be found in Tables 2 and 3.

FINDINGS AND DISCUSSION

Table 1 provides summary information about the articles we analyzed. Entries in the table indicate the authors, dates of publication and whether articles included empirical analysis or whether they were conceptual only. Additionally, the table indicates which articles included definitions of opportunity, clear descriptions of how opportunity was operationalized, definitions of opportunity-related processes, and clear descriptions of how opportunity-related processes were operationalized. Several insights can be gleaned from the results. One thing that is apparent from the table is that interest in researching opportunity picked up in the year 2000. Ten papers in our sample were published between 1990 and 1999, but 46 were published between 2000 and 2009. This may have been in response to the 1997 seminal articles previously noted. Additionally, interest in conceptual papers appeared to have picked up in the second decade; only one was published in the 1990's versus 12 in the 2000's, most of which have occurred since 2003.

The most surprising finding was the fact that among the articles we studied many conceptual papers failed to offer definitions and many empirical papers failed to describe operationalizations or provide definitions. Among the 56 articles included in our study, which only represents articles that explicitly defined or operationalized opportunity or opportunity-related processes, only 23 (41%) offered a definition of opportunity and only 25 (45%) provided a definition of the opportunity-related processes. Of the 25 papers that offered definitions of opportunity-related processes, 16 (64%) failed to define opportunity. Only eight (14%) of the 56 articles defined both opportunity and opportunity-related processes. These findings indicate that within the literature we analyzed many scholars appeared to assume that the way they define opportunity and opportunity-related processes were commonly shared and, therefore, did not require stating.

Only six of 43 empirical studies reported how the scholars operationalized opportunity and of those six, four defined opportunity prior to operationalizing it. Twenty-four of 43 empirical studies reported clear-enough details for us to ascertain how opportunity-related processes were operationalized. Of those 24, only six defined the opportunity-related processes of interest prior to operationalizing them. The failure to clearly describe how constructs were operationalized or to

offer definitions of constructs prior to operationalizing them makes it difficult for other scholars to understand what exactly was being studied and how the findings may help them in their own studies.

Of the 24 articles that clearly explained how opportunity-related processes were operationalized, nine (38%) relied on a count of the number of ideas or opportunities that were recognized, created or otherwise processed by the subjects of the study. This operationalization could be considered problematic because it may actually measure an outcome of opportunity-related processes but not the processes themselves. Thus, these scholars treat opportunity-related processes as a “black box.” This is additionally problematic for some studies because it suggests that more ideas necessarily mean better “opportunity recognition.” When these are considered, only 15 (27%) of 56 articles we analyzed operationalized opportunity-related processes in a way that peers inside the black box and illuminates understanding about opportunity-related processes.

Definitional and Operational Elements

Table 2 provides information about the elements that were used to define opportunity and/or to describe operationalizations of opportunity within the articles we examined. The table includes all the elements we found, with italics representing those elements that emerged as instrumental in constructing composite definitions of opportunity (discussed in the next section). Additionally, the table indicates the number of articles that used each element in their definitions of opportunity and the frequency with which each element was used within descriptions of operationalizations of opportunity. Several insights can be gleaned from the table. We were able to identify 25 elements that were used to define opportunity but only 12 elements that were used to operationalize it. The most dramatic finding highlighted by Table 2 is that 16 (64%) of the 25 elements found in definitions of opportunity did not appear to be operationalized for empirical study. Furthermore, 11 (69%) of those 16 were used to construct composite definitions (as described below) and were therefore deemed important to understanding opportunity. Three of the most frequently used elements in definitions (i.e., *entrepreneur*, *feasibility* and *business form*) were not included in descriptions of operationalizations. Additionally, four elements that were included in descriptions of operationalizations did not appear in definitions. Thus, within the 56 articles we analyzed there appeared to be a significant disconnect between definitions and operationalizations of opportunity. This finding indicates that much of the empirical research on opportunity has not been as conceptually grounded as would be ideal.

Table 3 provides information about the elements that were used to define opportunity-related processes and/or to describe operationalizations of opportunity-related processes within the articles we examined. The table includes all the elements we found, with italics representing those elements that emerged as instrumental in constructing composite definitions of opportunity-related processes. Additionally, the table indicates the number of articles that used each element in their definitions of opportunity-related processes and the frequency with which each element was used within operationalizations of opportunity-related processes. Several insights can be gleaned from the table. We were able to identify 48 elements used to define opportunity-related processes, which is nearly double the number of elements found in definitions of opportunity. We also found 39 elements used to operationalize opportunity-related processes, nearly four times as many as we found for operationalizations of opportunity. The majority of elements were used in less than one-fourth of the articles that defined or operationalized opportunity-related processes, indicating a highly fragmented approach. Similar to our findings regarding opportunity, twenty-

nine (60%) of the 48 elements used to define opportunity did not appear to be operationalized for empirical study. However, only five of those were used to construct composite definitions. Eighteen elements that were included in descriptions of operationalizations did not appear in definitions. Thus, within the 56 articles we analyzed there appeared to be a significant disconnect between definitions and operationalization of opportunity-related processes. However, the disconnect was different. For opportunity, most of the definitional elements were not operationalized. For opportunity-related processes many of the operationalized elements were not part of definitions. This finding indicates that, as we found for opportunity, much of the empirical research on opportunity-related processes has also not been as conceptually grounded as would be ideal.

Composite Definitions of Opportunity and Opportunity-Related Processes

Table 4 presents the results of our synthesis of various definitions in the form of six composite definitions we crafted, which we feel best reflect various definitions found within the literature. After each definition is a list of the dominant and identifying common elements that we found within the literature that were used to craft that definition, followed by references to the specific articles from which those elements were drawn. We labeled these elements “dominant” because each element was included within definitions offered in at least 50% (although most were in the 80-100% range) of the articles from which the specific definition was drawn. We also labeled these elements “identifying” because they helped us cluster articles according to common themes and to distinguish one cluster from the others.

Several things stand out about these results. Most notably, among the 23 articles that offered definitions, all of which were different, we found six conceptually distinct views of opportunity. This provides clear evidence that no commonly accepted definition of opportunity exists and substantiates the need for all scholars who study opportunity to include definitions regarding how they conceptualize opportunity. Our results also indicate that some views have been more popular among scholars than others. Primarily, the first definition was drawn from common elements found in the definitions used in 11 articles, whereas the rest were drawn from five or fewer articles. Differences among the various definitions reflect diverse views about the relative importance of various elements. For example, the entrepreneur is central to many but not all definitions of opportunity. For some, the market or customer needs are preeminent, for others, the company offerings or products are preeminent, and for some both are equally important. For many, profitability is central to entrepreneurial opportunity whereas others emphasize offering value to customers. Finally, for some, entrepreneurial opportunity is tied to creation of a new business venture and for others it clearly is not.

Table 5 presents the results of our synthesis of various definitions in the form of eight composite definitions we crafted, which we feel best reflect various definitions found within the literature. After each definition we added a label that we feel best reflects the process being defined. Next is a list of the dominant and identifying common elements that we found within the literature that were used to craft that definition, followed by references to the specific articles from which those elements were drawn. The “dominant” and “identifying” labels follow the same justification as they were used for the composite definitions of opportunity described above.

Several insights can be garnered from the results presented in Table 5. Clearly, scholars have expressed several conceptually distinct views regarding processes related to entrepreneurial opportunities. Although terms like recognition, identification, and discovery are most frequently used

(and often used interchangeably), our results show that scholars' definitions suggest several other opportunity-related processes. Furthermore, the ability to distinguish several clearly distinct views highlights that it is problematic to view various processes interchangeably. It is also interesting that each composite definition was pulled from only a few articles. Therefore, it did not appear that any one particular view dominated the literature. Finally, five of our eight analytically derived labels had a strong bent toward proactivity rather than responsiveness (i.e., opportunity development, opportunity scanning, opportunity matching, opportunity creating, and problem solving) suggesting the labels like "opportunity recognition" or "opportunity identification" may be inappropriate if used as "catch all" phrases.

CONCLUSIONS

A recent special issue of *Small Business Economics* focused on the lack of understanding and confusion surrounding the examination of entrepreneurial opportunities. The editors argued that:

"The challenge of establishing anything close to an interdisciplinary consensus regarding opportunity notwithstanding, it may be far more important for scholars to simply take a stance on this issue and then clearly articulate their position and definition of what is and is not an opportunity." (McMullen, Plummer and Acs, 2007, p. 279)"

Our findings clearly support this view. Opportunity has been cited as a central and unique component of entrepreneurship (Gaglio and Katz 2001; Kirzner 1997; Venkataraman, 1997). However, as described above, an examination of more than 19 years worth of publications in six, frequently-cited, entrepreneurship-focused publications revealed a scant 23 papers with explicit definitions of opportunity and 25 papers with definitions of opportunity-related processes, even though this is a central component of entrepreneurship and indeed considered by some to be *the* central component. As mentioned earlier, this may hinder theory building, paradigm development, and ultimately progress of the discipline.

This study systematically highlighted the degree of fragmentation in the entrepreneurship literature regarding opportunity and opportunity-related processes. It also clearly pointed out what appears to be a serious disconnect between theory and empirical examinations. Many of the articles we examined did not operationalize constructs in a way that was consistent with their own definitions, whereas the majority failed to offer any definitions. Our study also makes a substantial contribution by offering our analytically derived definitions of opportunity and opportunity-related processes. These definitions could provide the starting point for discussion of typologies of opportunities and typologies of opportunity-related processes.

One obvious limitation of our paper is that our composite definitions were driven by content analysis of the literature and not by theory. This puts our approach in stark contrast to the theoretically derived typologies of other scholars. For example, Sarasvathy (2002) postulated three types of opportunity-related processes: recognition, discovery and creation. Our results indicated that at least eight different processes have been discussed in the literature. Future work should focus on how and why our set of definitions differ from published typologies. However, our results may indicate that a typology of three or four approaches to opportunity may be too limited. Another limitation is that the articles we studied reflect the time lag required for publication and thus may

not reflect the most current view of scholars. An obvious direction for future research is to survey entrepreneurship scholars to ask them about current conceptualizations.

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Table 1: Summary of Articles

Authors (Year)		Opportunity		Opportunity-Related Processes	
		Definition	Operational-ization	Definition	Operational-ization
Alsos & Kaikkonen (2004)	Empirical	X		X	
Anderson (2000)	Empirical	X		X	
Anna, Chandler, Jansen & Mero (2000)	Empirical				X
Ardichvili, Cardozo & Ray (2003)	Conceptual	X		X	
Brunetto & Farr-Wharton (2007)	Empirical	X	X		
Casson & Wadeson (2007)	Conceptual	X		X	
Chandler & Hanks (1994)	Empirical		X		
Chandler & Jansen (1992)	Empirical				X
Chandler, DeTienne & Lyon (2003)	Empirical	X			
Christensen & Petersen (1990)	Empirical			X	
Companys & McMullen (2007)	Conceptual	X			
Corbett (2002)	Empirical				X#
Corbett (2007)	Empirical			X	X#
Craig & Lindsey (2001)	Empirical			X	
Davidsson, Hunter & Klofsten (2004)	Empirical	X		X	
DeTienne & Chander (2007)	Empirical	X	X		X#
Dimov (2003)	Empirical	X			X
Dimov (2007)	Conceptual	X			
Dutta & Crossan (2005)	Conceptual	X			
Eckhardt & Ciuchta (2006)	Empirical	X	X		
Edelman, Friga, Mishina, & Yli-Renko (2004)	Empirical		X		
Eisenhauer (1996)	Empirical	X		X	
Ensley, Carland & Carland (2000)	Empirical				X
Fletcher (2004)	Empirical			X	
Gaglio (2004)	Conceptual	X		X	
Gaglio & Taub (1992)	Empirical			X	X#
Gnyawali & Fogel (1994)	Conceptual	X			
Grégoire & Shepherd (2004, 2005)	Empirical			X	X
Harper (2008)	Conceptual			X	
Haugh (2007)	Empirical			X	
Hills, Lumpkin & Singh (1997)	Empirical			X	
Hills, Shrader & Lumpkin (1999)	Empirical			X	
Kemelgor (2002)	Empirical				X
Kickul & Gundry (2000)	Empirical			X	X
Ko & Butler (2003)	Empirical	X			X#
Ko & Butler (2004)	Empirical				X#
Koen & Kleinschmidt (2005)	Empirical	X		X	X
Kolvereid & Isaksen (2006)	Empirical				X
Krueger (2000)	Conceptual	X			
Lee & Venkataraman (2006)	Conceptual	X			
Lumpkin & Lichtenstein (2005)	Conceptual			X	
McCline, Bhat & Baj (2000)	Empirical			X	X
Ozgen & Baron (2007)	Empirical				X
Plummer, Haynie & Godesiabo (2007)	Conceptual	X			
Ropo & Hunt (1995)	Empirical			X	X
Sarason, Dean & Dillard (2006)	Conceptual	X			
Schindehutte, Morris & Kocak (2008)	Empirical			X	
Shepherd & DeTienne (2001)	Empirical				X#
Shepherd & DeTienne (2005)	Empirical				X
Singh, Hills, Hybels & Lumpkin (1999)	Empirical				X#
Smith, Matthews & Schenkel (2009)	Empirical	X	X		X
Ucbasaran, Westhead & Wright (2003)	Empirical			X	X
Ucbasaran Westhead & Wright (2008)	Empirical				X#
Ucbasaran, Westhead & Wright (2009)	Empirical				X#
Yu (2000)	Empirical			X	

Operationalized as number of ideas or opportunities

Table 2: Elements used to Define Opportunity and/or to Describe Operationalizations of Opportunity

Element (<i>Elements used to construct composite definitions</i>)	Frequency of use in definitions	Frequency in descriptions of operationalization
<i>Entrepreneur</i>	14	
<i>Situation/external environmental conditions</i>	13	1
<i>Feasibility/possibility</i>	13	
<i>Product</i>	12	2
<i>New/novelty</i>	12	2
<i>Business form</i>	12	
<i>Internal value/profit</i>	10	1
<i>Market need/Demand</i>	8	3
<i>Introduce</i>	8	1
<i>Resources</i>	8	
<i>Cognitive connections/bisociation of satisfying the market</i>	7	
<i>Perception</i>	6	
<i>Information</i>	4	2
<i>Action</i>	4	
<i>Creative process/creativity</i>	4	
<i>Customer or market benefit/external value</i>	4	
<i>Idea/business idea</i>	3	1
<i>Future</i>	3	
<i>Objective/subjective</i>	3	
<i>Progression of development</i>	3	
<i>Problem-solution</i>	2	
<i>Improve</i>	2	
<i>Unexploited</i>	2	
<i>Unexpected</i>	1	
<i>Concept</i>	1	
<i>Competition</i>		2
<i>Industry stage</i>		1
<i>Marketing</i>		1
<i>Differentiation</i>		1

Table 3: Elements used to Define Opportunity-Related Processes and/or to Describe Operationalizations of Opportunity-Related Processes

Element (<i>Elements used to construct composite definitions</i>)	Frequency of use in definitions	Frequency in descriptions of operationalization
<i>Cognitive process (recognize, identify, etc.)</i>	12	6
Process	11	
<i>Market need/Demand</i>	9	5
New/novelty	5	8
<i>New business</i>	5	7
Idea/business idea	5	6
<i>Match/Fit</i>	5	2
<i>Supply</i>	5	1
<i>Transform idea</i>	5	
<i>Focus attention/scan/search</i>	4	8
<i>Internal value/profit</i>	5	1
Development	4	
<i>Feasibility/possibility</i>	3	6
<i>Alertness</i>	3	2
Customer or market benefit/external value	3	1
Business concept	3	
Evaluation	3	
Intuitive judgment	3	
<i>Problem solving</i>	2	4
<i>Improve/transform business</i>	2	2
Trait/ability	2	2
<i>Creativity</i>	2	
Break/Create means-ends	2	
Imagination	2	
Resources	2	
Product	1	4
Generation	1	3
Situation/environmental conditions	1	3
<i>Timing</i>	1	1
Uncertainty	1	1
Additional definitional elements (<i>Accidental, Alternatives, Arbitrage, Attitude, Awareness, Cognition, Emergence, External suggestions, Future, Government intervention, Learning/Experience, Multidimensional, Non-linear, Profit-seeking, Project, Selection, Signal processing, Social construction, Underemployed</i>)	1	
Opportunities		14
Fluency		12
Talk to others		3
Unmet		3
Ways/methods		3
Innovate		3
Buy a business		2
Seize		2
Additional operational elements (<i>Business plan, Create, Daily activities, Partners, Invest money/Investors, Growth, Research, Information, Threats</i>)		1

Table 4: Composite Definitions of Opportunity

1. An opportunity is the possibility of introducing a new product to the market at a profit

Dominant & Identifying Common Elements: Introduce; New/Novelty; Product; Feasibility/Possibility; Internal value/Profit; Market need/ Demand

Authors (Year): Alsos, & Kaikkonen (2004); Companys & McMullen (2007); DeTienne & Chander (2003); Dutta & Crossan (2005); Eckhardt & Ciuchta (2006); Eisenhauer (1996); Gaglio (2004); Ko & Butler (2003); Lee & Venkataraman (2006); Plummer, Haynie & Godesiabois (2007); Smith, Matthews & Schenkel (2009)

2. An opportunity is a situation in which entrepreneurs envision or create new means ends frameworks

Dominant & Identifying Common Elements: Situation/External environmental conditions; Cognitive connections/ Bisociation of satisfying the market; Resources; Entrepreneur

Authors (Year): Companys & McMullen (2007); Koen & Kleinschmidt (2005); Sarason, Dean & Dillard (2006)

3. An opportunity is an idea that has developed into a business form

Dominant & Identifying Common Elements: Business form; Idea/business idea; Progression of development

Authors (Year): Anderson (2000); Ardichvili, Cardozo & Ray (2003); Davidsson, Hunter & Klofsten (2004); Dimov (2007)

4. An opportunity is an entrepreneur's perception of a feasible means to obtain/achieve benefits

Dominant & Identifying Common Elements: Entrepreneur; Feasibility/Possibility; Perception; Internal value/Profit

Authors (Year): Brunetto & Farr-Wharton (2007); Casson & Wadeson (2007); Dimov (2003); Gnyawali & Fogel (1994); Krueger (2000)

5. An opportunity is an entrepreneur's ability to create a solution to a problem

Dominant & Identifying Common Elements: Entrepreneur; Market need/ Demand; Problem/solution; Creative process/creativity

Authors (Year): Chandler, DeTienne & Lyon (2003)

6. An opportunity is the possibility to serve customers differently and better

Dominant & Identifying Common Elements: Feasibility; Customer/Market Benefit/External value

Authors (Year): Alsos, & Kaikkonen (2004)

Table 5: Composite Definitions and Labels of Opportunity-Related Processes**1. A cognitive process of recognizing an idea and transforming it into a business concept (“Opportunity development”)**

Dominant & Identifying Common Elements: Cognitive process (Recognize/Identify/etc.); Transform idea

Authors (Year): Alsos, & Kaikkonen (2004); Anderson (2000); Davidsson, Hunter & Klofsten (2004); Kickul & Gundry (2000); Lumpkin & Lichtenstein (2005)

2. A process of scanning or being alert (“Opportunity scanning/Alertness”)

Dominant & Identifying Common Elements: Focus/Attention/Scan; Alertness

Authors (Year): Casson & Wadeson (2007); Eisenhauer (1996); McCline, Bhat & Baj (2000); Ucbasaran, Westhead & Wright (2003); Yu (2000)

3. A cognitive process of matching supply and demand (“Opportunity matching”)

Dominant & Identifying Common Elements: Cognitive process (Recognize/Identify/etc.); Match/Fit; Market need/Demand; Supply

Authors (Year): Ardichvili, Cardozo & Ray (2003); Grégoire & Shepherd (2003, 2004), Koen & Kleinschmidt (2005); Schindehutte, Morris & Kocak (2008)

4. Perception of a felt need (“Need perception”)

Dominant & Identifying Common Elements: Cognitive process (Recognize/Identify/etc.); Market need/Demand; External suggestions

Authors (Year): Haugh (2007)

5. A creative process of generating new alternatives (“Opportunity creating”)

Dominant & Identifying Common Element: Creativity

Authors (Year): Christensen & Petersen (1990); Gaglio (2004); Hills, Shrader & Lumpkin (1999)

6. A special case of problem solving (“Problem solving”)

Dominant & Identifying Common Element: Problem solving

Authors (Year): Gaglio & Taub (1992); Harper (2008)

7. Perceiving a possibility to profitably create a new business or improve an existing one (“Business possibilities”)

Dominant & Identifying Common Elements: Cognitive process (Recognize/Identify/etc.); Improve/Transform business; New business; Feasibility/Possibility; Profit

Authors (Year): Craig & Lindsey (2001); Hills, Lumpkin & Singh (1997); Ropo & Hunt (1995)

8. A process of social construction within a window of time (“Social construction”)

Dominant & Identifying Common Elements: Cognitive process (Recognize/Identify/etc.); Selection; Timing; Social construction

Authors (Year): Fletcher (2004)

TESTING AND REFINING A CREATIVITY-BASED MODEL OF OPPORTUNITY RECOGNITION



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ABSTRACT

We conducted a longitudinal study of a creativity-based process model of opportunity recognition. Our findings suggest three elaborations: First, there are multiple layers/levels concurrent creative processes taking place in any given opportunity recognition process; each creative process results in a creative product; and creative products feed back into the overall process. Additionally, a critical transition was found in which the process “*turned into something completely different*” upon selection of a concept. Finally, two modes of opportunity development were observed, one in which the final concept was conceived early and survived by withstanding criticism and one in which the concept evolved over time through an iterative process.

INTRODUCTION

Background

Ten years ago at the 1999 BKERC Hills, Shrader and Lumpkin presented a creativity-based model of opportunity recognition. The model was introduced as a way to reconcile diverse and fragmented perspectives in opportunity research. They also intended to represent the inherent creativity in entrepreneurial opportunity processes, which is intuitively appealing and has been gaining acceptance. The model has appeared in several recent journal publications (e.g., Corbett, 2005; Lumpkin & Lichtenstein, 2005; Tominc & Rebernik, 2007) as well as the Barringer and Ireland Entrepreneurship text. Others, while not directly using the model, have cited Hills et al. in acknowledging that opportunity recognition is a creative process (e.g., Baron, 2008; DeTienne & Chandler, 2007; Dimov, 2007). The Hills et al. study showed evidence that recognizing entrepreneurial opportunities involves creativity; however they did not fully test the elements or the process of the model. A later test of the model presented at the 2005 BKERC by Hansen, Lumpkin and Hills showed only mixed support for the elements and was unable to examine the process given that they used cross-sectional data. Thus the purpose of this paper is to present results of a mixed-method longitudinal study of a creativity-based *process* of opportunity recognition. The findings suggest a refinement of the Hills et al model, which is also presented.

Creativity in Opportunity Research

In recent years, entrepreneurial opportunity has been increasingly associated with creativity. A number of authors have described the opportunity recognition process as a creative process or at least involving creativity (cf., Ardichvili et al., 2003; Baron, 2008; DeTienne & Chandler, 2007; Long and McMullan, 1984). Some scholars considered it to be a specific case of creativity (cf., Amabile, 1997). Indeed, Ward (2004) suggested that the Geneplore model of creativity, involving generative and explorative processes, as one of several cognitive perspective views of creativity that would be useful for examining entrepreneurial processes. Additionally, recent researchers examining opportunity recognition have used methods borrowed from the creativity literature such as

creative problem solving (Kitzmann & Schiereck, 2005) and idea generation exercises (Corbett, 2007; Shepherd & DeTienne, 2005; Ucbasaran, Westhead & Wright, 2009).

MODEL DESCRIPTION

Hills et al. (1999) proposed a 5-stage creativity-based model of opportunity recognition consistent with prior research (Csikszentmihalyi, 1996; Wallas, 1926). The five stages include preparation, incubation, insight, evaluation, and elaboration. Preparation refers to the skills and knowledge that one brings to the creative process. Wallas (1926) describes it as consciously accumulating knowledge or investigating a problem and Csikszentmihalyi (1996) describes it as conscious or subconscious immersion in problem(s). Hills et al. (1999) believe that preparation can be both conscious and purposeful as well as an unintended result of experience. Skills and knowledge can come from such things as one's personal background, prior knowledge (Shane, 2000), work experience, education/training, social networks, etc. Additionally, preparation can be viewed as project-specific research into finding customer problems, which is in line with Amabile's preparation stage where she suggests a "great deal of learning takes place" (Amabile, 1988, p. 139).

Incubation refers to contemplating a problem or considering an idea. It is described in the literature as a subconscious activity. Wallas (1926) describes it as a time when one is "not consciously thinking about the problem." Csikszentmihalyi (1996) describes it as subconsciously mulling things over. Hills et al. (1999, p. 218) expressly state that it is not "conscious problem-solving or systematic analysis. Instead it is typically an intuitive, non-intentional style of considering possibilities or options." They describe this stage as one where new combinations (Schumpeter, 1942) of possibilities emerge. More simply, incubation can be viewed focusing on things other than the problem at hand or taking a break (Hennessey, 2003), to allow information to interact subconsciously. Incubation is associated with creative attributes such as divergent thinking and formation of unusual associations.

Insight refers to the moment of realization that a problem is clear and that a solution is at hand (Csikszentmihalyi, 1996). Wallas (1926) describes it as a "flash" that is the realization of a train of associations that occurred during incubation and Csikszentmihalyi (1996) describes it as an "aha" experience interspersed with incubation, evaluation and elaboration. Many terms have been used to describe this stage in the opportunity recognition literature, such as "eureka" (Gaglio and Taub, 1992), "aha" and "point of vision" (Long and McMullan, 1984). It is the point when an answer or solution to a problem is discovered or a new possibility is perceived. Gaglio and Katz (2001) described it as breaking the means-ends framework. The insight can be any idea that potentially solves a problem; determining how well it does so is left for the next stage - evaluation.

However, insight is not limited to the big "aha"-type insights, but may involve numerous small insights (Csikszentmihalyi, 1996; Lumpkin et al., 2004). Small insights can build on previous small insights resulting in a cumulative "aha"-type insight. A classic example is the Theory of Evolution. Darwin developed his theory over decades through many small insights that eventually converged to become his theory of evolution. Thus, it can be that greater (radical) insights may take longer to develop because many small insights (and incubation periods) are needed (Csikszentmihalyi and Sawyer, 1995). Often times, therefore, the emerging idea will be referred back to the preparation or incubation stages for further consideration. Thus, an iterative looping back process may be required for an insightful moment (or multiple moments) of "aha" before proceeding on to the evaluation and elaboration stages.

Evaluation refers to investigating the idea to determine whether or not it is viable. Wallas (1926) described it as "verification" where the idea is tested and refined. Csikszentmihalyi (1996) describes it as the conscious decision of whether an insight is valuable and worth pursuing. Hills et al. (1999) suggest that it will include, among others, preliminary market testing, feasibility analysis and feedback from others. Results of the analyses and feedback often require looping back to earlier stages in the process for refinement of the idea.

The final stage is Elaboration, which refers to the actualization of the creative insight (Csikszentmihalyi, 1996). Hills et al. (1999) suggest that this stage includes business planning, organizing, legitimacy-seeking, building a support system, selecting options/choices and organizing resources. This is the most difficult and time-consuming stage of the process. Due to the effort to reduce uncertainty and risk, the process may loop back to any of the previous stages for further development.

In a later elaboration of the model, Lumpkin, Shrader & Hills (2004) divided the model into two parts – discovery and formation. The first three elements described, preparation, incubation and insight, comprise discovery; evaluation and elaboration represent formation. Thus described, the model is clearly a process model, including a critical transition, and should be tested using more qualitative and longitudinal data as suggested by Davidsson who notes the "difficulty of capturing processes in survey research" (2004: 56.) The research methodology is described next.

METHOD

A longitudinal case study method was employed using a mixed methodology to collect both qualitative and quantitative data, which, according to Eisenhardt (1989), are complementary in case study research. Given that the primary interest of this study was to examine process theory (how events proceed over time), as opposed to variance theory (how variables are related to one another), the case study method is very well suited (Yin, 2003).

The subjects of the study were four interdisciplinary teams of students enrolled in an AACSB award-winning two-semester course working to discover and pursue new market opportunities by developing innovative new products for a client firm. Teams comprised a roughly even mix of students from mechanical engineering, industrial design and MBA programs. Each team worked to develop a market opportunity for the same client firm. The teams were named Hydro, Shakers & Shooters (Shakers), Vandelay Industries (Vandelay) and Wired. The teams were tasked with identifying opportunities in the health beverage, alcohol, cold beverage and coffee categories, respectively. To preserve anonymity, team members are denoted below using a combination of the first letter of their team name and a number. The researcher is denoted using the letter R.

Data collection involved both qualitative and quantitative data. The qualitative data included video-recorded team interviews, audio-recorded individual team member interviews, and class observation. Each team had between 8 and 10 total individual interviews in addition to two group interviews. The quantitative data collection began with a background questionnaire, which included among other things the Work Preference Inventory (Amabile, Hill, Hennessey & Tighe, 1994) to measure both intrinsic and extrinsic motivation and an 'alternate uses' task to measure their divergent thinking ability (Torrance, 1974). Throughout the study students, faculty and client representatives were given periodic idea rating questionnaires, which measured creativity in terms of both novelty and usefulness (Amabile, 1998) from both the firm and customer perspec-

tive (Danneels and Kleinschmidt, 2001). The scales were adapted from Im and Workman (2004). Other quantitative data included: logs of the amount of time each student worked alone, in sub-groups or as a team on various general tasks such as primary or secondary research, thinking, sketching or modeling; task lists the teams tracked through Microsoft Project; and an end of year questionnaire, which included a measure of team innovativeness by Huang and Page (2004).

Analysis of the data involved a combination of both theory-inspired deduction (use of the creativity model and theories of creativity) and data-inspired induction. That is, frequent themes that occurred in the data throughout the analysis inspired additional insights into the process. The unit of analysis was the creative process, with ideas, teams and individuals as embedded units (which are essentially secondary or sub-units of analysis). The level of analysis includes both the team and individuals. Given that the unit of analysis is a process, which takes place over time, the study was broken down into weeks for analysis. Weeks were chosen in part because the class met weekly and much of the data was in weekly form (e.g., team tasks and work logs). In total there were 31 weeks, which includes two 15-week semesters and a week for spring break.

FINDINGS AND IMPLICATIONS

Model Findings

Preparation occurred mostly during the early weeks. In particular, teams conducted voice of the customer (Griffin & Hauser, 1993) research during weeks 3 to 6. Additionally, teams conducted their first round of focus group interviews, which were geared towards uncovering and clarifying customer problems. One could also extend the description of preparation as a period in which “great deal of learning takes place” (Amabile, 1988, p. 139) to include learning about themselves as a team. In this case, the Project Management Challenge assignment, which was used in part as a team building exercise, would also be considered part of the preparation component. In addition, examination of the work logs for activities conducted for each team shows that research was the predominant activity for almost every team through week eight. The exception was Vandelay, who recorded more writing than research, although was ranked second, in weeks 5-8. This was most likely time spent writing the results of their research. Thus preparation occurred during weeks 3-8 (though Shakers conducted one focus group in week 9.)

Incubation, in the sense of taking a break and working on something else, occurred essentially every day. In a narrower sense of taking an extended break from the project, there were two major occurrences of incubation: winter break and spring break. Incubation could be viewed as the time between the end of customer research (preparation) and the beginning of idea generation (insight). In this sense, there were differences observed in the incubation periods for the teams. In particular, Hydro conducted an informal idea generation exercise in week nine, two weeks before all teams went through the more formal idea generation process in the Thinkubator, an off-campus, privately-run, creativity-facilitation space. The activities and total hours logged in the weekly work log for each team lend some support to weeks nine and ten being a period of incubation. For most teams there was a considerable drop in total hours recorded overall during those weeks. The exception was Hydro, who recorded a good deal of thinking activities, especially in week nine. They were also the only team not to show a drop in total hours from week eight to week nine. Thus for all teams except Hydro, weeks nine and ten were a period of incubation.

Regarding insight, the idea generation process at the Thinkubator in week 11 was one of the major insight activities observed during the study. Separate team brainstorming was another major component. As mentioned above, Hydro conducted a brainstorming session in week nine. Wired also conducted a separate brainstorming session, but after the Thinkubator in week 12. The activities teams logged through their weekly work log, provides evidence of insight activities. The logged activities shows that, with the exception of Vandelay, the thinking category dominated the recorded activities in week 11, and was a top activity in week 12 for both Hydro and Wired. Also, for all but Vandelay, the sketching category saw an increase in recorded activity in week 12, which was also a method of idea generation used in particular by the designers. The activity logs show that there was a flurry of different activities during weeks 12 - 13. Sketching was a top activity recorded for all teams especially for Vandelay in weeks 13 and 14. Additionally, screening, the process of team members selecting a subset of ideas through team discussion carried out by all teams in weeks 12 and 13, involved some idea generation. That is, in the process of paring down lists of ideas, most teams modified ideas by combining, expanding, revising, and altering existing ideas to create all new ideas. A prime example is what would end up being the final concept for Vandelay. Their final coaster product was a combination and alteration of a few of the ideas generated at the Thinkubator. All teams showed that some ideas were added to their lists during the initial cuts. Idea screening in weeks 12 and 13 was generally informal and focused within the team, like the 'gut check' entrepreneurs make (Craig & Lindsey, 2001), and also involved generation of new ideas. Thus there is further evidence that weeks 12-13 involved insight. Looking at the number of ideas the teams were considering from week to week reveals that every team except Hydro added one new concept during week 14, Hydro added one during week 13 because they had made their cut earlier than the other teams. Thus it was evident from that data that the insight element mostly occurred during weeks 11-14.

Evaluation as a more formal, externally-focused process consisted of, in this case, the focus group concept testing in weeks 16–18 and the quantitative concept testing in weeks 19 and 20. The weekly worklogs show that, especially for Wired and Hydro, research was a major activity during weeks 16–20. Additional evaluation occurred in later weeks as teams tested the technology of their concepts. Thus evaluation took place in weeks 16 through 20, and reoccurred iteratively in the remaining weeks.

Elaboration was found to have occurred throughout the projects, though mostly in the second half. The first major occurrence was the development of concept cards (5x7 cards with diagrams and descriptions of concepts to be used for concept testing) in weeks 13–17. This overlapped with the focus group concept testing (evaluation) in weeks 16–18, where the concept cards were revised and refined with each subsequent focus group. The next major elaboration activity was the development of a marketing plan. This was scheduled to begin in week 18 and run through the final week, but the teams only began working on it after they chose a final concept in week 21 or 22. Other elaboration activities included determining benefits, features and specifications of the final concepts during weeks 21 and 22, and modeling and prototyping the final concepts in the final nine weeks, which is evident in the activities charts, as modeling and prototyping generally picked up in week 22 or 23. Additionally, looking at the activities charts shows that beginning week 21 or 22 most teams began doing a little bit of everything. That is, for most weeks there was not one clearly dominant activity, which is what one would expect during elaboration. Thus elaboration occurred throughout the process, but was the dominant process in weeks 21 to 30.

Thus, the data suggests that, although all five components were found to occur throughout the process, the components mostly occurred in accordance with the model sequence and in a generally linear fashion, though becoming less linear and more iterative over time. Table 1 includes the major activities along with their associated model elements. As can be seen, preparation and incubation occurred prior to insight, which was followed by an iterative process of evaluation and elaboration. An examination of the table also reveals that the majority of the activities prior to each presentation could be classified as one of four components. More specifically, preparation was the main activity leading up to the first presentation in week nine. Insight was the major activity (incubation is non-activity) leading up to the second presentation in week 15 (with some elaboration and informal evaluation). Formal evaluation was the major activity leading up to the third presentation in week 23, though there was some elaboration. Finally, elaboration was the primary activity leading up to the final presentation in week 31. Thus in general the projects proceeded in four phases with the end result of each phase being the presentation deliverables. Each of these phases, preparation (weeks 3-8), insight (weeks 11-14), evaluation (weeks 16-20) and elaboration (weeks 21-30), had a deliverable that was presented to the client in the four presentations (weeks 9, 15, 23 and 31).

In looking at all instances of model components, there were instances that did not fit neatly into this four phase process. For example, there were numerous instances of insight throughout the period. Wired conducted an idea generation exercise to generate a list of questions for the voice of the customer interviews in week three (preparation phase). Wired also had an insight of its final grinder product while preparing to conduct concept testing in week 16 (evaluation phase). Shakers engaged in generating product sketching as an exercise in generating ideas during week seven (preparation phase). Hydro added a new concept idea during concept testing in week 18 and Shakers added (and cut) several throughout the evaluation phase. The case descriptions (not included due to space) reveal numerous other insight occurrences. Preparation could also be found throughout the process. For example, Vandelay conducted secondary market research to further explore ideas they were considering during idea screening. Evaluation occurred throughout the process as teams considered various possibilities generated for each phase such as questions to ask customers, alternative designs of the concepts, and names for the concepts. Shakers noted that they spent time elaborating the questions they developed for customer research in the preparation phase. Further examples of elaboration occurring “out of phase” include Wired and Hydro discussing how the teams would further develop and build support for ideas by modifying the ideas through discussion among team members while still in the process of generating ideas.

These findings suggests that although the model mostly fits the process at the broad project level of analysis as expected, there are numerous instances where the creativity components occurred “out of phase” when examining what happens within each phase as they have just been described. More specifically, preparation tasks like customer research are not the only tasks conducted during the preparation phase; insight tasks like idea generation are not the only tasks completed during the insight phase, etc. The observed occurrences of “out of phase” creativity components may be manifestations of the various creative tasks and sub-tasks required to complete each phase. That is, within each phase there were numerous tasks that required creativity and may have been complete creative processes themselves. Additionally, each phase could be considered a complete creative process in itself since it had a creative outcome (the deliverable). A summary of these “models within the model” can be found in Table 2.

Revised Model

These findings led us to make several extensions to the original model. First, *there are multiple layers/levels concurrent creative processes taking place in any given opportunity recognition process*. Developing any new business or product requires a multitude of tasks. Every task, be it major task or sub-task, could be either routine or non-routine. That is, there is either a set method for conducting the task with a clearly expected outcome (routine), or the method has to be created and the outcome is not entirely knowable a priori (non-routine). These latter non-routine tasks require some creativity in order to be completed and are more likely to result in creative outcomes (Sethi et al., 2001). Examples of non-routine tasks include each of the major tasks, because the outcomes were not completely knowable a priori. For example, teams did not know what customer problems existed and would be of interest until they had conducted their research and compiled and interpreted their results. Integrating this realization about non-routine tasks clarifies the nature of the process.

The results of those non-routine tasks were both novel and useful (i.e. creative) in that the problems were new to the individuals conducting the research and useful because they provided a basis for continuing the process of developing a new product concept. Thus, they can be considered to be creative processes in themselves. Furthermore, many of the sub-tasks were creative processes with creative outputs. This suggests that there were numerous occurrences of the creativity model. This leads to the second elaboration, *each creative process (cycle) results in a creative product (output)*. More specifically, it is suggested that each phase of the project was in itself a creative process in which there may have been multiple occurrences of creativity, depending on the sub-tasks. This would explain the multiple observations of creativity model elements occurring “out of phase.”

Most of the tasks and sub-tasks were completed in order to move the project forward by providing an input for the next step. For example, as shown in table two, each of ‘models within a model’ represent a major task and each resulted in an output that also served as the input for the next phase. Likewise most of the sub-tasks were completed in order to contribute to the main task. As these are creative processes and the outcome of a creative process is a creative product, we can say that the third extension to the model is that *creative products feed back into the overall process*. These products may serve as input for a subsequent creative process (at the highest level) or may be a sub-task within an active creative process

Transitions

In a later version of the model, Lumpkin et al. (2004) divided the process of entrepreneurial opportunity recognition into two phases – discovery and formation – thus suggesting there should be some transition during the process. This prompted a research question: *What transitions, if any, take place during the process and what characterizes those transitions?* To help answer this question, students were asked whether they had noticed a shift or change that occurred during the two semesters of the course. Although there were a variety of answers to the query, every team mentioned one transition in particular – the change that occurred after the final concept was selected. For example, a member of Hydro said: “[A]s soon as [our rep] said do the bottle, that was a big shift, because then everything became concentrated on the bottle. ... When we decided to concentrate on the manufacturing, that was sort of a shift because that started to control the design of it.”

Hydro was not the only team to indicate that the selection changed things, Shakers noted how the selection ended the difficulty they were having with the evaluation results and thus allowed

them to move forward with the project. *“There was a shift because at one point we were kind of struggling to figure out [conflicting results from the focus groups]. There wasn't any clearly defined, this is what people should go for.”*

In Wired's case it was a bit sudden. “We were looking, we were doing research ... and we were doing designs, thinking [about the clock/brewer] ... and suddenly we just decided to go with the grinder. So that was a shift.” As Vandelay points out, with the final concept selected, things began to change for the team. *“I think once we figured out what we decided on making, it ... turned to something completely different for us”.*

What changed in particular is what the team members had to work on, individuals could focus on their particular specialization because, as Vandelay points out, they now knew what had to be done.

“In fact until midterm, we were doing a lot of teamwork. After which, we are doing a little individual groups within the group, because that's the kind of activity that's happening. We're not doing, V5 and I are not doing much of the design or engineering part of it. ... It wasn't like that until before that. It's only now that it is like that because we recognize that our roles play an important part at this point of time, where we need to focus on this particular aspect. ... but that is kind of reduced now because each one of us know what we are doing.”

Now members of teams, like Hydro, began to draw on individual specializations. *“Next four weeks or so, I'm putting together a marketing plan, with the other MBA student, working on that.”* As discussion with Wired points out, this specialization was made necessary by the decision of the final concept.

R: *“You did mention earlier that you're all starting to go off into sort of discipline directions now. Would you say that's another shift?”*

W6: *“But I think that's based on the fact that we made this milestone decision to go with a specific product.”*

R: *“Ok, so the shift happened when you made that decision?”*

W7: *“It's just that now we need that specialization.”*

W6: *“Right, now that we have a product, we are able to go do discipline specific stuff.”*

Shakers pointed out that with work specialized, those outside a field would have difficulty contributing to others. *“[W]e are not going to play a role in most of the things that are coming up. I mean between design and engineering, I'm really sort of useless.”*

The work by specialization also enabled Vandelay team members to begin talking in their fields' jargon. *“Well that's when we started getting more into depth about what we know and things I haven't heard from ... the engineers ... came out a little more. Like, 'how's this going to work,' and engineers ... were saying things I haven't heard before. Before ... we were kind of one where we talked about the same thing, 'let's try to do this,' 'how about this,' and now ... each one of us has like our own language.”*

Use of jargon was not limited to just engineers, as evidenced by Wired. *“So like marketing's doing their marketing. So like we were sitting there and they were talking about stuff in the technical jargon and we were like, 'we have no idea what you're talking about.'”* This helped cause Vandelay, among others, to break up into sub-teams. *“I'd say at this point since we're sort of in the last part of the project. We've broken down into groups a little more because of our specialties.” “So the only shift I can think of is whereas before we were like doing all the same things, and splitting it up. But now we have more detailed, so we split a little bit. But not, we didn't split, but we were sub-teams...”*

Beyond these insights from the students, there was plenty of additional evidence of a transition to working by sub-teams, particularly within disciplines. First, it was evident in the weekly team meetings with faculty, which began to take place of the class meeting as a whole in week 22 – the week when all teams had made a final concept selection – that students were sitting by discipline. In fact, one faculty member pointed this out in meeting with Shakers and Shooters in week 25. This was evident not just with Shakers and Shooters, but all teams.

More evidence of a transition appears in the teams' task lists that they were required to record in MS Project. Hydro stopped meeting as a whole team after week 18. Shakers, though, actually increased their team meetings beginning week 23. This is attributed to the need to coordinate the various tasks being done. That is, they were meeting as a team to discuss progress, but were not actually conducting any tasks as a team. Likewise, Vandelay assigned the last whole team task in week 22, which was the second midterm presentation.

Examination of the work logs, particularly the ratio of group/non-group work, reveals that with the exception of Vandelay, there was a general downward trend in the ratio of whole team work versus solo and sub-group work following the Thinkubator session in week 11. Vandelay's exception may be explained by the fact that they among all teams reported the least amount of sub-group work to begin with, possibly because they made no distinction between sub-group and whole-group, evidenced by the fact that only 1% of their hours over the course of the entire project were logged as sub-group work. Wired, though appearing very stochastic, clearly had consistent low ratios of teamwork in weeks 24 through 29. Shakers clearly had a downward trend following a peak in week 19. Hydro had a similar trend beginning in week 20.

Further evidence of a transition can be found in the activities reported in the work logs. Each team's log reveals that in general, around week 22 or 23 teams became less focused on one or two particular activities. For example, week 23 was the first week in which Hydro reported hours in every activity category. Wired had seven consecutive weeks in which they reported at least twice as many hours spent researching than any other category. That changed in week 23.

Even more evidence of a transition can be found in conflict that arose within Wired. Their conflict seemed to come up when an individual from one discipline tried to help out in another discipline when the process had moved to a point where the work was very discipline specific, i.e. after the final concept has been selected. Before the final concept selection it seemed that anyone could, and was encouraged to, contribute since tasks were generally less discipline specific. When they became disciplinary, people began to object to others “butting in” to their work regardless of experience and expertise.

Altogether, there is overwhelming evidence that when teams selected their final concepts, things *“turned to something completely different.”* Once the selection was made students were able

to begin working on more well-defined tasks that required applying their particular skills and the increasing use of technical expertise. That is, MBAs got to work on the marketing plan, engineers got to work on the mechanics of the concepts and designers got to work on the designs. This led to division within the teams based on discipline: they began to speak more in their native “jargon” and worked mostly with their disciplinary counterparts.

The transition observed to some degree in each of the groups indicates clearly that opportunity recognition is an emergent process during which something qualitatively novel comes into being, in this case, new product concepts. When such an emergence event occurs there is a system-wide shift that significantly affects the next phase of organizing (Lichtenstein, Dooley, and Lumpkin, 2006). The transition observed in each of the teams was characterized by a change in team functioning after which the teams conducted their business significantly differently.

The earlier evidence which suggests that all five elements of the opportunity recognition process manifest during each stage suggest that the process is not strictly limited to two phases as Lumpkin et al. (2004) anticipated. Nevertheless, it is clear that opportunity recognition involves phases of activity that culminate in emergent outcomes followed by transitions to new organizing processes. In this study, each of the teams experience a more-or-less clearly defined emergence event, that is, “a coordinated and punctuated shift in multiple modes of entrepreneurial organizing at virtually the same time” (Lichtenstein et al., 2006, p. 167). Future opportunity recognition research can benefit from anticipating such transitions and endeavoring to better understand them.

Modes of Development

Table 3 summarizes the conception, evaluation, selection and transformation of the final concepts for the four teams. Regarding the conception of the product ideas, there is a distinct difference between two pairs of teams, as summarized in Table 4. For both Hydro and Shakers, the idea came up early in the process and stayed relatively the same throughout the early stages. The idea survived through the introduction of over 100 additional ideas and a critical team member. Each time the idea was evaluated against others or critiqued, it only became more established as the leading idea (what did not kill it, made it stronger). As noted in Table 4, these two teams scored lower in every measure of creativity. Thus to be successfully creative they emphasized convergent thinking in order to select the best idea. This is evident by their emphasis of fit with the client as a criteria for selection. Thus, the ideas from Hydro and Shakers went through very little transformation.

For both Vandelay and Wired, the idea was conceived much later in the process and was in fact an elaboration of earlier ideas. That is, both teams’ final concepts were some combination of previous concepts that had been generated earlier in the process. These new combinations came about during the evaluation of ideas. In terms of evaluation, their more supportive climates led to a lack of criticism. This, combined with higher levels of creativity, may have fostered the survival of more ideas leading to the combination of multiple ideas into one final concept. Additionally, Vandelay and Wired emphasized their own preference in the final concept selection. Thus, the ideas from Vandelay and Wired went through more transformation.

These findings suggest that there were two distinctly differing modes of development among the teams in the study. While none of the ideas were transformed significantly in the final weeks before selection, they differed in terms of development leading up to the final weeks. One mode

involved conceiving an idea early in the process and making it stronger in order to withstand critique and comparison to other ideas. The other mode involved looking for what was best in the list of ideas previously generated and creating new, superior, concepts out of them.

CONCLUSIONS

This study adds to the entrepreneurial opportunity literature in several ways. First, it provides a very rare examination of opportunity recognition at the team level. To date, this has been sorely under-researched. Second, it elaborates on the creativity-based model of opportunity recognition introduced by Hills et al. (1999) and partially tested by Hansen et al. (2005). There were three primary elaborations. First, there are multiple (layers/levels) concurrent creative processes taking place. Second, each creative process results in a creative product. Third, the creative products feed back into the overall process. Additionally, it was found that there was a point at which a critical transition took place, which is conceptually similar to an emergence event (Lichtenstein et al. 2006). Finally, two modes of opportunity development were observed, one in which the final concept was conceived early and survived by withstanding criticism and one in which the concept evolved over time through an iterative process. This provides support and expands on the idea of opportunity development described by Dimov (2007).

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Table 1: Course Activity Summary with Model Components

Model Component	Activity	Weeks conducted
Preparation	Voice of the Customer Research	3-6
	Project Management Challenge (team building exercise)	4-6
	Focus Group Research	7-8
Incubation	None	9-10
Insight	Ideation	11 ¹
Insight/Evaluation	Idea Screening	12-14
Elaboration	Concept Cards	13-17
Evaluation	Focus Groups – Concept Testing	16-18
Evaluation	Quantitative Concept Testing	19-20
Elaboration	Marketing Planning	18-24, 27-30
	Final Concept Selection	21
Elaboration	Determining Benefits, Features and Specifications	21-22
	Modeling and Prototyping	22-30
	Preparing Presentations (actual presentations the following week)	8, 14, 22 & 30

¹ For Hydro insight also occurred in week nine, leaving just week ten as a period of incubation between two occurrences of insight.

Table 2: Models within the Model

Phase	Element within Phase	Description of the Element
Preparation	Preparation	Research to find customer problems to solve
	Insight	Recognition of the problems found – generating lists
	Evaluation	Sorting out the problems – which should be considered?
	Elaboration	Refining, combining, elaborating the problems
	Deliverable	A set of customer problems
Insight	Preparation	The set of problems; research / knowledge of existing solutions
	Insight	Generation of ideas to solve problems
	Evaluation	Sorting through the list of ideas to find the better ones
	Elaboration	Combine, contract, expand, etc. the ideas
	Deliverable	A set of potential product concepts that solve customer problems
Evaluation	Preparation	Research and knowledge of how well each of the potential product concepts will solve customer problems
	Insight	Generation of a list of criteria
	Evaluation	Using the criteria to evaluate concepts and select final concept
	Elaboration	Build support for selection decision
	Deliverable	Final concept selection
Elaboration	Preparation	Knowledge and research into market, mechanics and design for final concept
	Insight	Generation of a list of potential market strategies, configurations and designs
	Evaluation	Evaluation and selection of the potential market strategies, configurations and designs
	Elaboration	Developing selected strategies, configurations and designs
	Deliverable	Marketing plan, prototype and models

Table 3: Concept Summaries

Team	Hydro	Shakers & Shooters	Vandelay Industries	Wired
Concept	A coated glass bottle	Quick glass chiller	LED coaster	Cordless grinder
Problem solved	The team found in their research that people want to drink from glass for taste and sanitation, but don't take glass to go because it easily breaks, thus the bottle was designed to be durable and transportable	Replaces other methods of chilling glasses that either take too much time (freezer) or waters down drinks (ice water), also provides a way for people to entertain while making drinks, which were all findings from customer research	No customer problems. It only relates to the issue of creating a trend, which is something they decided they wanted to do while at the Thinkubator	It addresses the problems of messes, waste and to some extent, noise, which were all problems uncovered during customer research
Conception	The idea came during a brainstorming session the team had immediately after the first midterm presentation because they were told they were too narrow in their focus	One team member thought of it early in the project, but it wasn't really considered until the team was in the go/no go stage	It was an elaboration and combination of other ideas they had conceived during the Thinkubator	The concept came from a moment of insight while the team was preparing concept cards. It was a re-conceptualization of a previous grinder idea
Week of conception	It was conceived in week 9	The initial conception is unknown, but was considered by the team in week 13	It appeared in the idea lists in week 13	It came about in a team meeting a couple of days into the second semester - week 16
Other leading concepts considered	The team was leaning towards a cleaning device for most of the first semester	Storage was the leading choice prior to week 13, and was still considered until it was determined to be infeasible	The Swiss Army concept bottle	The clock/brewer, which the marketers preferred, was the dominant choice among most of the team in week 14
Evaluation criteria emphasized in selecting the final concept	Fit with the client was the primary reason for selecting the bottle - the team was debating between a cleaner and the bottle, but their client rep told them the bottle was a better fit	The chiller was ranked third in quantitative testing, but ended up the choice because the storage concept was infeasible and the cooler didn't fit the client. The chiller was favored in the focus groups	Almost every evaluation method was mentioned as a reason to select the coaster, though it all seemed to boil down to the team's excitement about the idea	The team immediately liked the concept and knew it would eventually be their final one - concept testing only confirmed for them that it was the right choice
Amount of transformation prior to and through testing	Only slight alterations compared to the other final concepts	The chiller was the least changed compared to other concepts	The coaster (as well as the concept bottle) was unchanged throughout concept testing	The concept started with four variations going into testing and thus the final version selected had changed very little

Table 4: Summary of Distinct Differences between Teams

	Hydro and Shakers	Vandelay and Wired
<u>Creative Process</u>		
Idea conception	The final idea came about early in the process	The final idea came about later in the process
Idea generation	Began early	Waited until the Thinkubator
Evaluation criteria emphasized in making the final selection	Fit with the client	Team preference
Changes over the winter break	Major changes	Minor changes
Transformation of the final concepts	Final concept was only an elaborated and more detailed version of the original idea	Final concept was a transformation of two or more previous ideas
Modeling and prototyping over the life of the project	Average of about 20 hours per person	Average of about 40 hours per person
<u>Creativity Factors</u>		
Ideational fluency	Lower (6.5, 5.5) ^a	Higher (10, 10) ^a
Intrinsic motivation	Lower (4.04, 4.06)	Higher (4.2, 4.3)
Team innovativeness	Lower (4.0, 3.7)	Higher (4.3, 4.4)
“Good idea” generators identified by teammates	Concentrated – only a few team members noted as generating good ideas	More distributed – most team members noted as generating good ideas
Correct major predictions ¹	Higher (50%, 67%)	Lower (21%, 7%)
<u>Team Climate</u>		
Deferral of criticism	Some problems with particular team members	No problems – exercised deferral of criticism
Bonding	Bonded later in first semester (after midterm, after final)	Bonded very early in the process
Fun	Not an emphasis among the team	Emphasized by the team
Team member contribution	Had one or more members not fully contribute	Seemed to have gotten full participation from all members

^a Information within parentheses represents the teams as (Hydro, Shakers) and (Vandelay, Wired) in the respective columns.

¹ Although not reported in the case descriptions, the independent raters that rated the ideas generated in the “brick” exercise were asked to try to identify the major of each respondent based on the ideas generated. This can be seen as proxy for flexibility, where a lower prediction rate indicates more flexible thinking. That is, generating ideas that diverge from what one might expect a person in a field to generate, perhaps by generating ideas in widely varying conceptual categories.

≈ SUMMARY ≈

ENTREPRENEURIAL MANAGEMENT PRACTICES: AN EMPIRICAL INVESTIGATION OF ALERTNESS TO OPPORTUNITY

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Principal Topic

Contemporary definitions of entrepreneurship tend to center around the pursuit of an opportunity (eg: Brazael, 1999; Shane and Venkataraman, 2000; Venkataraman, 1997). In fact, Howard Stevenson (1983) conceptualized corporate entrepreneurship as a management approach for the pursuit and exploitation of an opportunity without regard to resources currently controlled by the firm. That opportunity-based conceptualization of entrepreneurship echoed the classical definitions such as Kirzner's (1973) "alertness to opportunity". Entrepreneurial management consequently may be seen as a 'mode of management' and consequently, an organization is entrepreneurial, when its management acts entrepreneurially (Stevenson and Jarillo, 1990:25). Despite its relatively old conceptualization, the opportunity-based entrepreneurship research is still lacks solid, testable theory (Sexton and Landström, 2000).

The purpose of our study is to fill the gap identified in the literature through empirically testing the behavior of Stevenson's concept of opportunity seeking manager on a large sample of firms. Consequently, the central question of our research is *what can we learn about entrepreneurial opportunity seeking behavior that has application to professional management?*

Method

From a random sample of 1000 SMEs, only 600 non-agricultural firms with at least of 3 years of existence were selected and invited to fill our online survey. The response rate was above 25%. The data was analyzed using descriptive analysis as well as Multi Dimensional Scaling. The use of MDS was an effort to develop the field further, since in their review, Chandler and Lyon (2001) pointed out that scholars increasingly tend to employ sophisticated methodology in entrepreneurship research, however, only 20% of the 416 articles reviewed used no statistical analysis beyond simple descriptive statistics. Arriving to similar conclusion, Oviatt & McDougall (2005:540) argued that entrepreneurship research calls for the application of state-of-the-art statistical techniques.

Implications

We believe that our study improves theoretical understanding and empirical generalization of entrepreneurial management with three important insights. First, it provides an empirical testing of opportunity-based entrepreneurship. Second, findings have implication for practitioners by highlighting what distinguish the work of entrepreneurial management, why those relationships exist, and what they imply. Third, the analysis of constructs is made in a comprehensive and methodologically grounded manner upon a European database.

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≈ SUMMARY ≈

EFFORT OF PRIVATE EQUITY IN BUYOUTS

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Principal topic

The PEF has no unlimited resources for dedicating infinite amounts of effort to each individual company in her portfolio, and she faces the standard opportunity costs of effort (cf. Shepherd et al. 2005). We assert PEF's are undiversified investors who have a strong incentive to maximize the value of *each* individual investment (cf. Sorensen and Stuart, 2008). Even though prior research shows *whether* and *how* PEF effort creates value in the investee firm, it remains unknown *how much* effort the PEF should add in the case of buyouts. We aim to fill the gap by proposing an integrated theory that addresses *whether* value is created by defining the components of value (creation), *how* value is created by describing the action-outcome relationship, and *how much* effort is dedicated by analyzing the distinct roles of the PEF and the entrepreneur of the investee firm. Our theory seeks optimal PEF effort levels for value creation in private equity-backed buyouts.

Method

We combine a rational financial-economic value maximization model (cf. Casamatta, 2003) with Vroom's (1964) expectancy theory. The rational model provides us with the necessary conditions for value creation in different stages of the investee firm's lifecycle. In terms of Vroom, the model delivers the rational PEF action-outcome association (*expectancy*). As value of PEF effort can also be non-financial, we enrich our model with prior research to define the potential for value creation per lifecycle stage (*valence*). Together, we develop propositions regarding the nature and level of PEF effort that creates positive value which is Vroom's outcome-outcome association (*instrumentality*). We analyze the valence, expectancy, and instrumentality of PEF effort in four case studies. We have interviewed both the PEF and the CEO or CFO of the investee firm, and have analyzed secondary data (company reports, press articles, etc.).

Results and Implications

Although our value maximization model predicts limited value creation or even value destruction in the later lifecycle stages, we observe PEFs try to escape from these negative outcomes by formulating action-outcome relationships that push the firm back into profitable stages of the lifecycle. Valence is updated through monitoring, soundboarding, and if necessary through active PEF participation in the investee firm's board. Updated expectations make PEFs allow for adjustments in the level and nature of effort, for additional investments by the investee firm, or for changing the scheduled moment of the exit. Our findings feed new propositions about the nature and level of effort in buyouts.

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≈ SUMMARY ≈

**A 2x2 CONCEPTUAL FOUNDATION FOR
ENTREPRENEURIAL DISCOVERY THEORY**

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Principal Topic

Theories about entrepreneurial discovery are important to entrepreneurship research. However, the dominant paradigm underlying those theories commonly assumes opportunities form based on either deliberate search or serendipitous discovery (Alvarez & Barney, 2007; Gaglio & Katz, 2001). The former emphasizes creative action, search tactics, information processing, traits, and individual affect (Fiet, 2007). The latter holds that opportunities exist *out there* and are surprising to alert entrepreneurs because they are unanticipated (Shane, 2000). This dichotomy has evolved into a unidimensional continuum corresponding to the subjective and objective aspects of opportunities (Alsos & Kaikkonen, 2005; McMullan & Shepherd, 2006). The paradigmatic approach erects barriers to entrepreneurial discovery theory development and fuels debates over how opportunities form. Our paper addresses this issue and contributes a critique and extension of the current view.

Method

The dominant opportunity paradigm leads to oversimplifications because moderate cases fall into a kind of conceptual middle range, where coincidence and irrelevance are confounded. This ambiguity stunts theoretic development because it defies formal description. A gap exists because deliberate search and serendipitous discovery are not opposites. High deliberation does not equal low serendipity, and high serendipity does not equal low deliberation. Although the former entails purposeful creation and the latter reflects accidental discovery, one's presence does not equate to the other's absence. Opportunities usually entail both modes simultaneously.

Results and Implications

Research in this area commonly misattributes variance belonging to opportunities to individuals instead (Shane, 2000). This 2x2 framework makes a contribution by going beyond person-situation interactionism to integrate *who* (entrepreneur), *where* (situation), and *what* (opportunity) more fully. Thus, it can help open the way to new models that address the emergence and existence of opportunities. Such theory can help recast the creation versus discovery approach with a flexible multidimensional framework of four permutations representing opportunity classes (eureka; systematic search; legacy; serendipitous discovery) which, in turn, reflect and coordinate existing streams (effectuation; search; family business contexts; knowledge-based approaches).

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≈ SUMMARY ≈

**COUNTERVAILING EFFECTS OF INNOVATION
PROACTIVENESS IN SMES**

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Principal Topic

We investigate the role of the entrepreneurial processes within SMEs operating within a well established supply chain operating under high innovation constraints. We specifically analyze the interaction effects between the recognition and evaluation and selection processes for innovations and their impact on firm performance. Our study provides insights into countervailing effects of innovation proactiveness and the rigidity of the innovation evaluation and selection processes.

Alertness is seen as a precondition for opportunity discovery (Gaglio & Katz; Kirzner 1999). Goal-setting theory stresses the need to specify overarching strategic goals to direct idea generation. We propose that these components jointly define innovation proactiveness and that both innovation alertness (H1) as well as innovation goals (H2) support firm performance. While alertness can be expected to be more important to understanding the performance of small firms (H3), innovation goals should be more important for the performance of medium sized firms (H4).

The number of innovation ideas generated is related to firm success (Lawson, Samson 2001). But an increase of ideas could also cause an evaluation and selection problem requiring organization: Increased innovation proactiveness may thus lead to more alternative innovation proposals and require a more rigid evaluation&selection process. This may lead to missed or delayed innovation opportunities. **The positive effects of innovation proactiveness on firm performance may thus be countervailed by negative effects of process rigidity (H5).**

Method

To test our hypotheses we conducted an empirical study of high-tech SMEs operating within a supply chain of a large European corporation. Data were gathered from a questionnaire sent out to 300 companies. The actual sample consists of 100 companies. A structural equation model was estimated. Furthermore, to test for the contextual effect of firm size, we split the sample into the two groups of small and mid-sized companies and performed a multiple group analysis. The overall and the differentiated models achieve acceptable fits.

Results and Implications

The model exhibits a strong explanatory power. The five predictor variables explain a significant portion of the variance of firm performance. All hypotheses proposing direct effects are supported by the data. Innovation proactiveness exhibits two countervailing effects on firm performance: a direct positive effect on firm performance and an indirect negative effect resulting from the negative mediating effect of evaluation&selection rigidity. Firm size appears to be an important moderating variable.

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≈ SUMMARY ≈

OLDER BUT NOT ALWAYS WISER: THE DISORDINAL IMPLICATIONS OF FIRM AGE AND EXPERIENCE FOR LEVERAGING CAPABILITIES FOR INNOVATION

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Principal Topic

Innovation requires the entrepreneurial capabilities to recognize opportunities and to exploit them. Such capabilities generally accrue over time from a firm's cumulative learning and experience. In this study, we examine the linkage between a small and medium-sized enterprise's (SME) innovation capabilities and the level of innovation activity. We then examine the moderating role that firm age and experience has over the innovation capabilities-innovation activity relationship. Specifically, we believe this moderation relationship may be in the form of a disordinal interaction such that when both younger and older firms have high levels of innovation capabilities, we expect older firms to have higher levels of innovation activity than younger firms do. However, when both younger and older firms have low levels of innovation capabilities, we expect younger, less experienced firms to have higher levels of innovation activity than older, more experienced firms do.

Method

We examine hypotheses for the linkage between a firm's innovation capabilities and innovation activity, and the proposed moderating effect of firm age/experience, with a stratified random sample of 677 SMEs from the 2005 National Small Business Poll on Innovation provided by the National Federation of Independent Businesses (NFIB). For our analyses, given the binary nature of our dependent variable and some of our other measures, we utilized logistical regression analysis using SPSS version 16.0. Further, we control for industry group, firm size, technological propensity, and industry dynamism.

Results and Implications

In support of our initial hypothesis, firms with higher levels of innovation capabilities are more likely to produce higher levels of innovation activity. Additionally, contrary to prior research, we found that younger, less experienced firms appear more likely to have higher levels of innovation activity than more experienced firms do, when neither firm has highly developed innovation capabilities. However, when both firms have highly developed innovation capabilities, older firms appear more likely to have higher levels of innovation activity than younger firms do. Finally, we also hope that this study may serve to motivate further research and improve practice in this area.

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HUMAN RESOURCE MANAGEMENT AND INTERNATIONAL NEW VENTURES FROM EMERGING MARKETS



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ABSTRACT

This paper examines the factors that encourage small entrepreneurial firms in emerging markets to invest in HRM practices as they internationalize. We show that when firms internationalize into either more economically developed countries or those countries with stronger employment regulations, they invest more in HRM practices. Moreover, firms led by CEOs with general management experience, who are concerned about meeting international standards, and who have built more extensive international partnerships will also invest more in HRM practices. Our findings, which are based on a sample of firms from India, China, and South Africa, suggest that internationalization of entrepreneurial firms into global markets spurs the development of HRM practices in emerging markets.

INTRODUCTION

Entrepreneurial firms face many of the same HRM issues as larger firms, but without the same training, resources or formalized policies to guide them. HRM in small firms is often ad hoc, and often a reflection of the backgrounds of founders and entrepreneurs (Cardon & Stevens, 2004; Mayson & Barrett, 2006). The challenges involved in developing human capital and managing HRM are typically much greater for entrepreneurial firms in emerging markets. Such firms often lack HRM expertise, established communities of practice, and the well developed human capital and managerial experience that makes implementation of these practices possible (Som, 2007). However, entrepreneurial firms that do invest in HRM have been shown to exhibit greater long-term employment growth and enhanced survival probabilities over time (Rauch, Frese & Utsch, 2005; Sels, De Winne, Delmotte, Faems, & Forrier, 2006). In emerging markets, firms with better developed HRM systems use targeted recruiting and job advertising rather than word of mouth; structured interviewing and selection testing rather than referrals and personal contacts (Ryan, et al., 1997). They use formal rather than on-the-job training, market based pay, and performance evaluations (Keating & Olivares, 2007). They also pay greater attention to the selection and training of expatriates (Welch & Welch, 1997). At later stages, they are likely to implement integrated high performance work systems (Ciavarella, 2004; Ordiz-Fuertes & Fernandez-Sanchez, 2003). This paper examines the factors that encourage small entrepreneurial firms in emerging markets to invest in HRM practices as they internationalize.

We develop hypotheses on how HRM investments among internationalizing entrepreneurial firms in emerging markets are influenced by the economic development of their international markets, the regulatory regimes in place, and expectations related to the meeting of rigorous international standards. In addition, using arguments drawn from the upper echelons literature, we examine how the characteristics and backgrounds of founders are related to the willingness of

firms to make such investments. Third, based on the organizational learning and absorptive capacity literatures, we examine how the use of expatriates and networks of international partnerships impacts HRM investments.

We find that internationalization is associated with investment that entrepreneurial firms from emerging economies make in HRM practices. Investment in HRM depends on the labor regulations in countries where firms do business, the background of founders, and the number of international partnerships with other companies. From a managerial standpoint, our study suggests that the countries that entrepreneurial firms target for international expansion as well as the type of relationships formed overseas are likely to impact HRM at home. Firms that can compete in more developed markets with more stringent regulations and standards are likely to benefit from investments in HRM. This investment is facilitated by founders with previous general management experience and firms being involved in a larger number of international partnerships. Since most of the employees in firms we studied remain in their home countries within emerging markets, our results indicate potentially important implications for the voluntary transmission of employment norms across international boundaries.

LITERATURE REVIEW AND RESEARCH HYPOTHESES

HRM is important for entrepreneurial firms because of its relationship to business performance. Recent meta-analysis of research on the relationship between HRM practices and organizational performance finds that the operational and financial benefits of HRM practices are significant and robust for larger firms (Combs, Liu, Hall & Ketchen, 2006). While a great number of moderating conditions has been identified, studies have consistently demonstrated the positive impact of HRM across different types of businesses and for manufacturing in particular (Datta, et al., 2005). HRM practices including recruiting, selection and training increase firm human capital in terms of specific knowledge, skills, and abilities that translate into organizational capabilities. In addition, HRM creates the conditions for employees to apply those skills through employee involvement and empowerment. Finally, HRM motivates employees through goal setting and appropriate incentive mechanisms (Combs, et al, 2006).

While most of the work on HRM and performance focuses on large firms in the U.S. and Europe, a number of recent studies extend this work to small entrepreneurial firms. There is some evidence that the early approaches that small firms take to HRM and the extent to which they invest in practices and people have long-term impacts on organizational growth and survival. For example, Chandler and McEvoy (2000), found positive effects for HRM in small firms that implemented TQM practices. They looked at 66 small manufacturing firms and concluded that training and incentive pay in particular moderated the impact of TQM on firm earnings. In more recent work, Rauch, Frese and Utsch (2005) examined 119 small firms in Germany and found that investment in employee development and involvement were directly related to employment growth over time. Hayton (2004) found HRM to be positively related organizational learning and performance in 99 U.S. SMEs and De Grip and Sieben (2004) found a positive relationship between HRM and employee productivity in a study of Dutch pharmacies. The strongest evidence is provided by Sels and colleagues (2006), who collected data from 416 small companies in Belgium and Luxembourg. They measured HRM intensity that included selection, performance management, training, compensation, internal promotion, and employee participation. They found that HRM reduced voluntary turnover and had a positive relationship with employee productivity and firm profitability in firms with less than 100 employees.

HRM also plays an important role in internationalization, though its effects have been largely overlooked by researchers particularly in the context of small firms in emerging markets. Studies (e.g., Gomez-Mejia, 1988; Wright, Snell & Dyer, 2005) have largely focused on the HRM issues in large multinationals and indicate that superior HRM can be a sustained source of high productivity and competitive advantage in multinational enterprises, Colman (2002) observed that human resource management was one of weakest capabilities in most multinationals, suggesting that improvements in the effectiveness of international HRM practices may have substantial performance benefits.

Research Hypotheses

Internationalization provides both challenges and opportunities for entrepreneurial firms. This is particularly true in the context of firms in emerging economies. Entrepreneurial firms from such economies doing business in international markets recognize that they need to adapt their operations and make the necessary investments that will make them internationally competitive. As such, we can expect internationalization to result in added investments in HRM. We predict that three primary mechanisms drive such investments. First, the extent of investment in HRM practices by firms in emerging markets will depend on the countries where they do business and the requirements of competing successfully in those markets. In other words, investments in HRM are driven by the external pressures of competing in more developed markets, complying with international employment laws, and meeting international standards for quality, speed, and professionalism. Second, the extent of HRM investment in response to internationalization is likely to be a function of the characteristics of the founding manager. These individuals play a pivotal decision making role in small, entrepreneurial firms and we can expect their backgrounds and experiences to influence the level of investments in HRM made by their firms in response to needs posed by internationalization. Finally, internationalization can be expected to drive changes in HRM practices by creating opportunities to learn about HRM practice in other countries and other firms.

Host Country Development and Labor Regulation. Scholars have argued that a firm's investment in human capital and HRM practices represents an important source of competitive advantage (Barney & Wright, 1998; Datta et al., 2005; Wright & McMahan, 1992). This also suggests that entrepreneurial firms are likely to implement the HRM practices that their competitors are using successfully. In fact, there are strong theoretical reasons to argue that firms will adopt innovative HRM practices to improve performance, maintain legitimacy with their competitors (Subramony, 2006), or simply because everyone else seems to be investing in similar practices (Gibson & Tesone, 2001). These competitive and institutional pressures are even more likely to apply for emerging market companies who compete internationally.

We argue that entrepreneurial firms in emerging markets will invest in HRM based on the characteristics of countries they target for international business. First, doing business in countries that are more economically developed is likely to spur investment in HRM for several reasons. Developed economies are characterized by greater competition and customers with high expectations for product quality and prices. Doing business in such countries also exposes small firms from emerging markets to competitors with well-developed HRM systems and dedicated HR staff that provide positive models for replication. Second, doing business in countries with different employment regulations requires firms to invest in HRM to navigate local HR related laws. Finally, the degree to which firms have to meet international standards for such things as manufacturing

processes, quality, and environmental health and safety requires that internationalizing firms in emerging markets are likely to be more keen in developing employees with new skills and expertise in these areas. In sum:

Hypothesis 1: Entrepreneurial firms in emerging markets whose internationalization involves economically developed countries will invest more in HRM practices than those internationalizing to less developed countries.

Hypothesis 2: Entrepreneurial firms in emerging markets whose internationalization involves countries with stronger employment regulations will invest more in HRM practices than those internationalizing to countries with weaker employment regulations.

Hypothesis 3: Entrepreneurial firms in emerging markets concerned about meeting international standards will invest more in HRM practices than less concerned about meeting such standards.

Founder Characteristics. Research on small and medium sized enterprises suggests that management practices and internationalization are related to the characteristics of the founder (Ruzzier, Antoncic, Hisrich, & Konecnik (2007). Their background and experiences are likely to have important implications for firm decision making processes and performance (Stone, 1998). The way in which an entrepreneurial firm responds to internationalization is likely to be related to founder characteristics. Formalization of HRM policies should follow growth and internationalization, but requires recognition and support from the founder (Ordiz-Fuertes & Fernandez-Sanchez, 2003; Rauch, et al., 2005). This requires some knowledge of the importance and benefits of HRM as well as the awareness of the gap between the types of practices used in the firm and the types used by firms that the founder desires to emulate. Finally, founders must be willing to hire HRM expertise and provide and allocate the necessary resources towards the establishment of HRM systems (Mayson & Barrett, 2006).

The upper echelons literature (Hambrick & Mason, 1984) highlights the relationships between managerial background experiences and decision making. Managers tend to interpret issues in ways that reflect their background experience. This research suggests that backgrounds and experiences are an important indicator of the cognitive orientation and the knowledge base that managers bring to their jobs, which, in turn, influence their perceptions on what they see as being important in achieving competitive advantage. The study by Thomas, Litschert and Ramaswamy (1991) indicates that managers who have backgrounds in operations, accounting and/or process R&D possess a control and efficiency orientation, while those with functional background in marketing, sales and product R&D generally exhibit a preference for new products, new markets, and new opportunities. In other words, managers are more likely to see greater value in investments that fit their backgrounds. There is also a growing recognition in the international management literature that managerial mindsets and experiential knowledge influence strategic choices made by internationalizing firms (Herrmann and Datta, 2006). In addition, the process models of internationalization (Johanson & Vahlne, 1977) also highlight how that the experiential knowledge of top managers is central to international investments.

Significant variability exists in the backgrounds of founders of SMEs in emerging markets. While some are functionally specialized, having spent a majority of their careers in one primary functional area (e.g., engineering/manufacturing, marketing or perhaps finance), others have

more general management experience with exposure to multiple areas and a larger breadth of perspectives. We argue that SME founders in emerging markets with a general management background are more likely to possess the cognitive orientation and values that predisposes them to make HRM investments to respond to the needs of their foreign markets. Those with extensive general management experience would have developed the general management and administrative skills which provide a foundation for the management of human capital within an organization. Moreover, it can be argued that founders with general management backgrounds are more likely to recognize that modern HRM practices can be the source of sustained high productivity and competitive advantage in foreign markets and are more likely to facilitate investments in the HRM function. Therefore,

Hypothesis 4: Entrepreneurial firms in emerging markets whose founders have general management background will invest more in HRM than those with founders who do not have such a background.

The international experience of founders is also likely to impact the willingness of firms to invest in HRM following internationalization. The relationship between the international experience of top managers and firm behavior has received a great deal of attention in the international management literature. Studies have associated such experience with increased confidence in international markets (Kedia & Mukherjee, 1999), greater international diversification (Herrmann & Datta, 2005) and enhanced organizational effectiveness in such markets (Tihanyi, Johnson, Hoskisson & Hitt, 2000). SMEs in emerging markets seeking to internationalize are confronted by considerable uncertainty in understanding foreign markets, regulations, and international standards. The international experience of founders should contribute to the reduction of such uncertainty. In addition, international experience can facilitate the accumulation of cultural knowledge and the development of a “global mindset” that leads in greater confidence in foreign environments (Tung & Miller, 1990) and effective handling of challenges posed by global competition.

Several potential benefits can be associated with founder international experience. Studies (e.g. Daily, Certo, & Dalton, 2000; Tihanyi et al., 2000) indicate that top management international experience has an important influence on a firm’s effectiveness in international markets. In particular, knowledge of and experience in foreign markets should provide SME founders with a more complete understanding of how business practices in general and HRM practices in particular contribute to the achievement of internationalization goals. Founders of emerging market SMEs with significant international experience can be expected to have accumulated knowledge of foreign cultures and foreign business practices and are more likely to make the HRM investments needed to ensure that their own practices are reflective of those prevailing in key overseas markets. They are also likely to value the role of HRM function and appreciate the importance of shaping their HRM practices in a manner that is consistent with the expectations and demands of their key buyer markets. In sum:

Hypothesis 5: Entrepreneurial firms in emerging markets whose founders have international experience will invest more in HRM than firms whose founders do not have such experience.

Opportunities for HRM Knowledge Transfer. While multiple motives underlie firms’ desire to engage in international partnerships, inter-organizational learning represents one of the most important reasons for doing so (Hamel, 1991; Parkhe, 1991). Firms with international partner-

ships can achieve competitive advantage by internalizing and adapting partner skills and capabilities. The number of foreign partnerships can also be viewed as an indicator of the firm's network embeddedness. Scholars (e.g., Granovetter, 1992; Gulati, 1998; McEvily & Zaheer, 1999) see such embeddedness as an important factor influencing firm capabilities and performance outcomes, with closely tied firms more likely to develop a shared understanding of the value of organizational actions and behaviors (Coleman, Katz & Menzel, 1996).

Internationalization provides entrepreneurial firms with learning opportunities that are likely to spur investment in HRM. Perhaps, the most important mechanisms for transferring knowledge of effective HRM practices across national boundaries are international networks with other firms (Yan, 2003), and the use of expatriates (Hocking, Brown & Harzing, 2007). Through their relations with international partners, firms absorb new knowledge pertaining to HRM practices, which can then be applied in their own organizations. The same is true for expatriate employees who transfer business practices when they return (Vance & Paik, 2005). In the context of SMEs in emerging markets, those with a greater number of international partnerships and expatriates can be expected to make significant investments in HRM practices because such partnerships enable them to learn and internalize best practices. In other words, existing partnerships enhance the absorptive capacity of firms.

The absorptive capacity of firms, or the ability to assimilate new knowledge, is greater when new knowledge is related to firms' existing knowledge structures (Cohen & Levinthal, 1990). Thus, firms that have a larger stock of existing knowledge from existing partnerships and expatriate employees can be expected to internalize and adapt partner capabilities more quickly than those without preexisting knowledge (Petersen, Welch, & Liesch, 2002). Indeed, empirical research has been largely supportive of the notion that new knowledge is more easily absorbed when it overlaps with existing knowledge (e.g., Ahuja & Katila, 2001). In the context of internationalization by SMEs in emerging economies, arguments related to absorptive capacity suggests that foreign market knowledge, including those related to HRM practices, accumulated by organizations through existing partnerships and expatriates, will influence their subsequent learning. In other words, we can reasonably argue that firms with a greater number of partnerships and expatriates (and, therefore, with a greater stock of knowledge related to HRM practices in other countries) will be in a superior position to absorb additional knowledge related to desired HRM practices and make the necessary investments. In other words,

Hypothesis 6: Entrepreneurial firms in emerging markets who send expatriates abroad will invest more in HRM than those which do not.

Hypothesis 7: Entrepreneurial firms in emerging markets with a higher number of foreign partnerships will invest more in HRM practices than those with fewer foreign partnerships.

METHOD

Sample and Data Collection

We collected a unique sample of 171 independent new ventures in three countries: China, India, and South Africa. The data were collected between November of 2002 and May of 2003 in India and South Africa and between September and December of 2003 in China. Our sampling criteria required firms to be an independent new venture, to be under ten years of age, and to have current international sales. These firms, on average, entered international markets two years after

founding and derive nearly 48% of their revenue from international sales. Consistent with early internationalization of entrepreneurial firms, 84% of the ventures in our sample either exported directly or used intermediaries. 58% of the firms are in knowledge intensive industries (ITC hardware, software, pharmaceuticals).

After screening firms from secondary sources, we contacted firms by telephone to identify whether or not they met our criteria. Those firms that fit the sampling criteria were administered the survey in person. Such a thorough method of constructing the sampling frame is superior to convenience or snowball samples, which are common in emerging markets strategy research (Hitt, Boyd & Li, 2004). We identified a total of 610 entrepreneurial firms in China that satisfied the sampling criteria, and while 144 firms initially agreed to be surveyed, we eventually were able to obtain a total of 92 surveys. In India, the surveys were collected in Bangalore, Mumbai, Chennai, Hyderabad, Ahmedabad, New Delhi, and Calcutta using lists of firms obtained from the Exporters Association Directory, Federation of Commerce Directories, and industry directories. We identified 593 firms that met the sampling criteria. 166 agreed to be participate and we obtained 140 usable surveys. Finally, in South Africa, data were collected in the Western Cape Area using lists of firms from the Wesgro Exporter Database, City of Cape Town Exporters, and the Cape Town Chamber of Commerce directories. The sampling criteria yielded 219 firms and while 103 agreed to be interviewed, we obtained 76 surveys. In general, response rates in this study are certainly within acceptable norms for surveys from emerging markets (Aulakh, Kotabe & Teegen, 2000). We matched firms across countries by industry. After accounting for missing values, we had a usable sample of 171 firms: 79 Chinese, 52 Indian, and 40 South African.

Measures

Dependent Variable. To assess the extent of investment by entrepreneurial firms from emerging markets in HRM practices as a result of internationalization, we developed an index of six common HRM practices: recruitment, hiring, training, development, compensation, motivation of employees consistent with a configurational approach to measuring HRM (Delery & Doty, 1996; Guest, 1997). Respondents were asked, "To what degree has your company invested in the following to meet the demands of international customers?" with a five-point response scale from "not at all" to "very aggressively". A principal component analysis showed that the six item index loaded on one factor with an eigenvalue of 3.59 and with individual factor loadings between 0.63 and 0.85.

Predictor Variables. We hypothesized that the host country's level of economic development, employment regulation, and international standard will affect the extent to which firms from emerging markets would invest in HRM practices. We operationalized the host country's level of *economic development* using the World Bank's classification of countries based on their income levels and membership in the Organization for Economic Co-operation and Development (OECD). We dichotomized this variable into host countries that are considered high income by the World Banks and are members of the OECD (1) versus those that are not (0). Host country's level of *employment regulation* was operationalized using the approach used by Botero, Djankov, La Porta, Lopez-de-Silanes, and Shleifer (2004). We focused on the Index of Employment Laws within which Botero et al., (2004) evaluated the measures of employment laws with measures the protection of labor and employment laws that are an average of: (1) alternative employment contracts; (2) cost of increasing hours worked; (3) cost of firing workers; and (4) dismissal procedures." In addition to the environmental measures of economic development and labor regulation, we added

a self-reported measure wherein respondents indicated their firm's ability to meet *international standards* before internationalizing using a 5-point Likert type scale.

In addition, we captured both the prior general management and international experience of the founder with two dummy variables where '1' represents founders with general management experience as opposed to functional experience (coded as '0'). Likewise, founder's prior international experience is coded as '1' and its absence as '0'. *Use of expatriates* was coded as '1' to reflect their presence and '0' otherwise. Although it would have been preferable to measure the magnitude of expatriate deployment, the data was heavily skewed with 64% of firms sending no expatriates. Finally, the number of *international partnerships* reported by respondents averaged slightly less than 4 per firm.

Control Variables. We employed several controls in our study. First, we controlled for country effects associated with the new venture's country of origin with two dummy variables, one for China and one for South Africa. In addition, we controlled for initial employment, measured at the end of the first year of operation, and for overall growth in employment from the end of the first year of operation. In both cases we used the natural logarithm to control for data skewness. We controlled for industry variation with a dummy variable where knowledge intensive industries (e.g., information telecommunications hardware, software products, biotech and pharmaceuticals, information technology services, and management services) are coded as '1' and traditional manufacturing (e.g., machinery and equipment and traditional chemicals) as '0'. We also controlled for the number of domestic partnerships that firms have as a measure of their domestic embeddedness. In addition, we operationalized the degree of internationalization in terms of two measures: time since international entry (Luo, 1999) and international diversification measured as international sales as a percent of total sales (Calof & Viviers, 1995).

ANALYSES AND RESULTS

Table 1 shows the means, standard deviations, and the correlations of study variables. We regressed the dependent variable on the control and independent variable and present the results in Table 2. The correlations between independent variables are relatively low, and VIF tests confirmed that multicollinearity is not a major concern. To assess common method bias, we used the single-component test suggested by Podsakoff and Organ (1986). Results indicate that common method variance is not a problem in our study.

We used robust regression to test our hypotheses. Ordinary Least Squares regression has been shown to perform poorly when used with cross-national data (Dietz, Frey & Kalof, 1987). For OLS to produce unbiased and efficient estimates, a range of assumptions must be met, including data normality. A number of the variables in our model suffer from skewness which persists after log transformations. Robust regression resists the pull of outliers and produces more efficient standard errors than would OLS for a similar regression. Model 1 in Table 2 represents the regression model that incorporates only the control variables. The model R-squared is 0.24. Three of the control variables are significant at least at $p < .05$. Model 2 in Table 2 tests our hypotheses. Overall, the model explains a notable proportion of variance for a survey-based cross-national study: the R-squared for the regression is .42. The change in R-squared between Models 1 and 2 is significant at $p < .001$.

Hypothesis 1 is supported at $p < .05$; i.e., entrepreneurial firms in emerging markets that internationalize to more developed countries invest more in HRM practices than firms which internationalize to less economically developed countries. Likewise, Hypothesis 2 is supported at $p < .05$. Internationalization involving countries with more stringent labor regulations is positively associated with investments in HRM practices. Hypothesis 3, which states that entrepreneurial firms in emerging markets that are concerned about meeting international standards will invest more in HRM practices, is also supported at $p < .01$.

Hypothesis 4 argues that entrepreneurial firms from emerging markets led by founders with general management background will invest more in HRM practices than firms whose CEOs have other functional experience. This hypothesis too is supported at $p < .01$. Hypothesis 5 regarding CEOs with international experience is, however, not supported. In other words, the international experience of founders does not predict higher investment in HRM practices. In addition, hypothesis 6, which states that the use of expatriates will be related to investment in HRM, is not supported. Entrepreneurial firms from emerging markets that send expatriates abroad do not invest more in HRM practices than those firms which do not. Finally, hypothesis 7 is supported at $p < .001$, i.e., when entrepreneurial firms from emerging countries have more foreign partnerships, there is a greater propensity on their part to invest in HRM practices.

DISCUSSION AND CONCLUSIONS

We find that internationalization impacts the investment that entrepreneurial firms from the emerging economies of India, China, and South Africa make in HRM practices. More specifically, they depend on the countries where firms do business, the background of founders, and the number of international partnerships with other companies.

First, the stage of development and employment regulation of the country into which entrepreneurial firms internationalize influences such investments. Our results support our arguments that, when entrepreneurial firms from emerging economies seek international markets in more economically developed countries, they are much more likely to invest in HRM practices. We also observed that entrepreneurial firms in emerging economies were more inclined to invest in HRM when they internationalized into countries with more stringent employee regulations. Likewise, those entrepreneurial firms which were concerned about meeting international standards were more likely to make greater investments in HRM than firms that exhibited less concern. We attribute these findings to the competitive pressures of doing business in more developed countries as well as the need to navigate regulations and standards that vary around the world. Investment in HRM in this case may also reflect the desire on the part of firms in our sample to maintain legitimacy in the eyes of both their competitors and customers in foreign markets via the adoption of HRM practices that are deemed to be "world class." This is especially true when their primary foreign markets are more economically developed or have more stringent employment regulation. In addition, it is apparent from our results that the prevalence of stringent employee regulations even in other countries puts additional pressure on firms in emerging economies to invest in the HRM function and forces them to adapt their own practices to conform to those prevalent in the country of their trading partners. Potentially, this may reflect an effort on the part of firms in our sample to address possible concerns among their international customers related to lax HRM policies in emerging markets. Finally, as our results indicate, the willingness of emerging economy firms to invest in HRM is positively associated with the extent to which they feel they need to meet international standards in business practices.

Second, we find that the background of the founders impacts firms' willingness to invest in HRM. As anticipated, we found that founders with general management experience were more inclined to invest in HRM in response to firm internationalization, but observed no such relationships with respect to their international experience. In other words, while we had expected founders with international experience to be more supportive of HRM investments in the internationalization process, our finding indicates that it is not the case, a result that we found somewhat surprising. One possible reason for the non-finding might be that while such experience might be a key factor in the decision of an entrepreneurial firm to expand its operations into international markets, internationally experienced founders recognize that investment in HRM (like all other investments) given resource constraints must be evaluated in the context of anticipated payoffs. Furthermore, while they might have an inherent desire to invest in HRM, international competition and customer expectations far outweigh such desire. In other words, their decisions related to HRM investments are likely to be driven by external pressures rather than their own personal experiences.

Third, we find mixed results for our hypotheses regarding expatriates and international partnerships as drivers of investment in HRM. Surprisingly, we did not find a direct relationship between placing expatriates abroad and investment in HRM practices. However, our findings with respect to foreign partnerships do highlight the importance that network embeddedness and absorptive capacity have on decisions that entrepreneurial firms make about the level of investment in HRM practices. This suggests that firms in our sample are influenced by the context in which they are embedded, with firms that have close ties to foreign partners more likely to perceive the importance of HRM investments in achieving the desired goals in their international endeavors. The greater willingness to invest in HRM might also be a function of partnership related learning involving global HRM practices. When entrepreneurial firms from emerging economies have international partners, they are more likely to absorb new knowledge pertaining to HRM practices, and then seek to apply them in the context of their own organizations. Notably, we controlled for the firm's domestic partnerships. Although the coefficient was weakly significant ($p < .1$), its sign is negative which further supports our arguments about the influence of network embeddedness on investment in HRM practices. Taken together, our findings suggest that further research should consider whether the learning mechanisms for entrepreneurial firms from emerging markets differ from those of established firms in that international partnerships may be substantially more influential than expatriate placements in spurring investment in HRM practices.

Conclusions and Implications

While our study provides interesting insights on the determinants of HRM investments among entrepreneurial firms in emerging economies, our findings should be interpreted in the context of study limitations. The first relates to the cross-sectional nature of the sample. Research on HRM practices in emerging markets remains sparse and opportunities for systematic longitudinal research have been few and far between. Second, as with most survey research, retrospective bias on the part of the respondents may be a problem; however, we relied on informed respondents and asked questions that called for their assessment of action not their recall of specific actions tied to calendar based events. A third limitation of our study has to do with possible survival selection bias from which many studies in management share. Third, we only had single respondents from each new venture, affecting the reliability of survey responses and creating the potential for idiosyncratic bias. Finally, while our research examines the extent of investments in HRM made in

the context of internationalization, data limitations do not allow us to examine the specific nature of changes in individual practices associated with HRM.

The literature in international business suggests that internationalization is a major organizational change for firms in general and entrepreneurial firms in particular. Adaptation and survival in international markets requires significant changes to a firm's policies and procedures of which HRM practices are a part. Clearly, future research ought to examine the micro foundations of how entrepreneurial firms in emerging markets modify their HRM practices in terms of specific changes to recruitment, training, development and compensation. Moreover, future studies should consider whether as the rates of internationalization increase, the HRM practices show evidence of greater convergence in such across countries. In undertaking this research our objective was to contribute to the growing literature on the role of HRM practices as entrepreneurial firms enter the global economy. From a research perspective, our examination of the role of environmental and organizational factors influencing the investments in HRM by entrepreneurial firms in the emerging economies of China, India and South Africa fills an important void in the previous literature on international HRM and international entrepreneurship. Our results highlight the importance of international expansion in stimulating investment in HRM practices in emerging markets. Future research will have to determine if these investments translate into superior performance and survival of entrepreneurial firms from emerging markets over the long run. In sum, much work remains in identifying other organizational and contextual conditions that influence the HRM practices among internationalizing entrepreneurial firms, especially those located in key emerging markets. We hope this study informs and stimulates further work in this regard.

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Table 1: Means and Correlations

Variables	Mean*	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 Investment in HRM	3.58	0.97															
2 China	0.46	0.50	0.23														
3 South Africa	0.23	0.42	-0.34	-0.51													
4 Initial employment	28.9	33.15	0.26	0.38	-0.46												
5 Growth in employment	0.24	0.30	0.18	0.16	-0.08	-0.25											
6 Knowledge industry	0.58	0.49	0.01	-0.15	0.27	-0.15	-0.02										
7 Domestic partnerships	4.80	9.80	0.02	0.26	-0.03	-0.04	0.09	0.10									
8 Time since international entry	4.61	2.93	-0.04	0.01	-0.06	0.29	-0.29	-0.10	-0.17								
9 International diversification	47.64	34.86	0.10	-0.20	0.09	-0.01	0.02	0.00	-0.27	0.23							
10 Host country member of OECD	0.79	0.41	0.10	-0.07	0.18	-0.03	-0.05	0.09	-0.06	0.09	0.21						
11 Regulation of employment in host country	0.32	0.18	0.01	-0.06	0.10	0.04	-0.07	-0.06	-0.04	-0.06	-0.03	-0.13					
12 Firm's ability to meet international standards	3.77	1.14	0.14	-0.24	0.04	-0.01	0.04	-0.15	-0.14	0.00	0.11	-0.08	0.03				
13 Founder general management background	0.25	0.44	0.08	-0.10	0.19	0.02	-0.01	0.05	0.15	0.09	-0.06	0.03	-0.06	0.08			
14 Founder international experience	0.58	0.49	-0.03	-0.16	0.05	0.01	-0.09	0.05	-0.07	0.07	0.07	0.14	-0.04	0.04	0.03		
15 Expatriates abroad	0.36	0.48	0.00	-0.19	-0.06	0.02	0.04	0.10	0.07	-0.04	0.28	0.14	-0.11	0.06	-0.06	0.11	
16 Number of foreign partnerships	3.82	7.87	0.14	-0.03	0.11	-0.08	0.12	0.22	0.48	-0.20	0.03	0.16	-0.07	0.01	0.09	0.03	0.24

N=171 $r > .15$ is significant at $p < .05$

*Means and standard deviations are for un-logged variables

Table 2: Robust Regression on Investment in HRM

	Model 1		Model 2	
	B	SE	B	SE
China	-0.07	(0.16)	0.05	(0.16)
South Africa	-0.76	(0.19) ***	-1.04	(0.18) ***
Initial employment	0.15	0.07 *	0.12	(0.12) +
Growth in employment	0.96	0.40 *	0.73	(0.37) *
Knowledge industry	0.24	0.14 +	0.24	(0.13) +
Domestic partnerships	0.02	0.05	-0.11	(0.06) +
Time since international entry	-0.03	0.02	-0.03	(0.02)
International diversification	0.003	(0.002)	0.002	(0.002)
International diversification squared	0.0001	(0.00007) +	0.0001	(0.00007) *
Host country member of OECD			0.30	(0.15) *
Regulation of employment in host country			0.26	(0.13) *
Firm's ability to meet international standards			0.13	(0.05) **
Founder general management background			0.44	(0.14) **
Founder international experience			-0.01	(0.12)
Expatriates abroad			-0.09	(0.14)
Number of foreign partnerships			0.25	(0.08) ***
Constant	3.33	0.18 ***	3.46	0.26 ***
Model F		5.80***		6.92***
Model R-squared		0.24		0.42
Model Adjusted R-squared		0.20		0.36
Change in R-squared				0.18***

N=171

+ $p < .1$; * $p < .05$; ** $p < .01$; *** $p < .001$

≈ SUMMARY ≈

NASCENT ENTREPRENEURS' PERCEPTIONS OF ENTREPRENEURIAL CLIMATE IN LATVIA AND THE UNITED STATES

Jurgita Baltrusaityte-Axelson, Stockholm School of Economics in Riga, Latvia

Principal Topic

This paper explores nascent entrepreneurs' (NEs') perceptions of the entrepreneurial climate in Latvia and the United States. Because of Latvia's relatively recent transition to a market economy, we hypothesize that Latvian NEs perceive environment more negatively than Americans. Further, we hypothesize that women NEs perceive entrepreneurial climate more positively than men (Carter 1997) and that NEs with previous startup experience perceive entrepreneurial climate more negatively (Reynolds and White 1997). We also hypothesize that climate perceptions differ depending on NEs' motivation (necessity vs. opportunity). Since actual business opportunity is not present to motivate necessity-entrepreneurs, a positively perceived entrepreneurial climate may be a more important motivator for them than for the opportunity-entrepreneurs. Since there is a link between a positive entrepreneurial climate in terms of labor force growth and taxes (Armington and Acs 2002) and firm formation rates, we hypothesize a positive relationship between NEs' perception of entrepreneurial climate and their venture growth expectations.

Method

The data come from the first waves of the American Panel Study of Entrepreneurial Dynamics (PSED) II (collected September 2005-March 2006) and the Latvian PSED (November 2006-Summer 2007). The American PSED II offers a random sample of 1,214 NEs and the Latvian PSED – 400 NEs. The interview questions in both panels are identical with regard to the variables of this study. The results are based on ANOVA, t-tests, and regression analysis.

Results

Surprisingly, Latvian NEs scored significantly higher on the entrepreneurial climate index than did American NEs. Reynolds and White (1997) found that the greater one's involvement in entrepreneurial process, the more negative one's judgments about the entrepreneurial climate. Since entrepreneurship has always been commonplace in the US, this "exposure" may have made Americans more critical of their entrepreneurial environment. No differences in perceptions of entrepreneurial climate in regards to gender or start-up experience were found. As hypothesized, necessity-entrepreneurs perceive the entrepreneurial climate more positively in both countries, but more so in Latvia. Since actual business opportunity is not present to motivate necessity-entrepreneurs, it is possible that NEs' positive outlook on the entrepreneurial climate compensates for the opportunity. No relationship between NEs' perceptions of climate and firms' growth expectations was detected. Possibly, a time lag would show these effects. Implications of the results are discussed in the full paper.

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≈ SUMMARY ≈

IS EMOTIONAL INTELLIGENCE THE MOST INTOXICATING FACTOR IN THE ENTREPRENEURIAL SUCCESS EQUATION?

Nikolinka Fertala, Vienna University of Economics and Business Administration, Austria

Principal Topic

The empirical evidence accumulated illustrates that emotional intelligence does have a significant impact on the individuals' economic performance. It has been shown that emotional intelligence is just as important as regular intelligence in being a well-balanced employee. This formal and informal mix of knowledge is the basis for creating an environment, which gives support to various functions leading to entrepreneurial success.

In this context, the objective of the current paper is to investigate the impact of founder's emotional intelligence on the entrepreneurial success measured by two main indicators such as volume of sales per employee and age of company conditional on various internal and external factors.

Method

The empirical analysis is based on a detailed unique survey of 1,450 immigrant entrepreneurs from Former-Yugoslavia, Poland and Turkey venturing in Austria. The survey was conducted during the period March-December 2007 by means of mail questionnaire to study the emotional intelligence and other aspects of immigrant entrepreneurship.

Results and Implications

The main findings suggest that emotional intelligence does vary across the enterprises included in the study. The Turkish founders, for instance, accounted for the highest value of emotional intelligence (0.67), followed by Poland (0.52) and the Former-Yugoslavia (0.36). However, having worked in Austria prior to venturing an own business increases significantly the volume of sales by 12.39 % *ceteris paribus*. This effect is negative for the experience cumulated in the country of origin. The estimated coefficient for years of education obtained either in Austria or abroad depicts that the sales per employee increase by 4.38 %.

How did our empirical evidence change when including the emotional intelligence? We are surprised to encounter that the volume of sales per employee was indeed positively correlated with the emotional intelligence and the estimated effects across all immigrant entrepreneurs are much stronger compared to those for years of working experience and formal education. More precisely, the volume of sales rises by 16.28 % while increasing the value of emotional intelligence by 10 %.

Overall, the patterns of emotional intelligence among the immigrant entrepreneurs studied in Austria are remarkably robust over the varying types of relations investigated in the study. As a consequence, we can conclude that the emotional intelligence does lead to improved performance and should be considered as a significant factor in the entrepreneurial success equation.

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≈ SUMMARY ≈

INTERNATIONALIZATION AND THE IPO PERFORMANCE OF NEW VENTURES

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Principal Topic

Research of the internationalization-performance (I-P) relationship is dominated by studies of mature public companies, yet many international new ventures exist. Such ventures, often technology-based, may internationalize to quickly recover investment costs, or due to short product lifecycles. This study answers the question “does the performance of new technology-based companies that choose an international strategy differ from that of similar ventures that choose a solely domestic strategy?”

Method

Firm characteristics are crucial to the direction and strength of the I-P relationship and also to initial public offering (IPO) performance. Internationalization increases a venture’s resource stocks (experiential knowledge, routines to manage complexity and coordination mechanisms) that investors may value. This suggests that international intensity is positively related to IPO performance.

Conversely, internationalization exacerbates the information asymmetries between new ventures and their investors, and increases uncertainty due to exposure to increased economic and political risks, heightening agency issues that can influence IPO performance. This suggests that investors price these risks into IPO valuation, resulting in a negative I-P relationship.

The sample of 184 venture capital-backed, technology-based new ventures that executed an IPO in the period 1997-2003 contrasts sharply with prior I-P relationship studies. Two dependent variables, *IPO Valuation* and *Time-to-IPO*, measure IPO performance. The key independent variable is the venture’s international intensity. Control variables reflect factors that may influence IPO performance. Ordinary least squares regressions and hazard models are utilized.

Results and Implications

The results indicate a negative relationship between IPO valuation and international intensity: a high degree of foreign revenues in the IPO year is associated with a 41% decrease in IPO valuation over solely domestic ventures. Ventures with low and high degrees of internationalization execute IPOs later than solely domestic ventures.

If VC providers expect delayed and/or lower portfolio company valuations due to intense foreign sales, they may advise strategies that eschew foreign market entry as a means of maximizing their return on investment. Entrepreneurs may similarly resist internationalization if they believe that the value they receive at IPO will be less. It may be better for them to move into foreign markets after IPO than to enter other countries early and risk future funding.

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≈ SUMMARY ≈

**PERFORMANCE CONSEQUENCES OF INTERNATIONALIZATION
AMBIDEXTERITY IN ENTREPRENEURIAL FIRMS:
THE EFFECT OF ABSORPTIVE CAPACITY**

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Principal Topic

Internationalization is important for the survival and success of entrepreneurial firms. Although several empirical studies have linked internationalization to the performance of entrepreneurial firms (e.g., Bloodgood et al. 1996; Qian & Li, 2003), little attention has been given to the performance consequences of different internationalization processes. In this paper, we apply ambidexterity, a concept mainly used in innovation research, to study internationalization processes of entrepreneurial firms. Ambidexterity is defined as the ability of firms to perform alignment and adapting tasks at the same time (Tushman & O'Reilly, 1996). We propose that firms which seek to both explore and exploit international markets perform better than firms with no or focused international activities. The coordination of exploration and exploitation activities in international markets requires knowledge-based resources within the firm. High absorptive capacity as the capability to assimilate and apply knowledge (Cohen & Levinthal, 1990; Zahra & George, 2002) increases a firm's opportunities to generate value from internationalization. Absorptive capacity may, therefore, have a crucial influence on the relationship between internationalization ambidexterity and firm performance.

Methods

In order to test our hypotheses we draw on a sample of 128 German IPOs. We consider two measures of internationalization ambidexterity: (1) Adapting the measure of ambidexterity by Lin et al. (2007), the first indicator is based on the number of new countries with subsidiaries divided by the total number of new subsidiaries. (2) We calculate an interaction term consisting of foreign sales and the number of new countries where the firm established subsidiaries.

Results and Implications

We believe to make three contributions to the international entrepreneurship literature. First, we merge the ideas of international entrepreneurship and ambidexterity and introduce the concept of internationalization ambidexterity. Second, we show that entrepreneurial firms benefit from combining exploration and exploitation activities in internationalization. The results indicate that internationalization ambidexterity increases the performance of entrepreneurial firms. Third, we consider the absorptive capacity of firms as a contingency that influences the success derived from internationalization ambidexterity. Absorptive capacity reinforces the positive relationship between internationalization ambidexterity and the performance of entrepreneurial firms.

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≈ SUMMARY ≈

**ACCESS TO CREDIT AND PERFORMANCE OF FEMALE
ENTREPRENEURS IN LATIN AMERICA**

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Principal Topic

There has been considerable interest in identifying important predictors of access to credit and its role in entrepreneurial success. In this context, gender has emerged as an attribute of particular interest. This paper contributes significantly to this literature by using firm level data from the 2006 Enterprise Survey of 13 countries in the Latin America region, we examine gender based gaps in entrepreneurial performance and test various hypotheses offered to explain the observed patterns, including gender based differences in access to formal credit.

Method

In this paper, we define entrepreneurship rigorously by looking only at principal owners of privately held shareholding companies, partnerships and sole proprietorships. We measure relative performance of male and female entrepreneurs on a number of dimensions including: sales revenues, sales per worker, profit, total factor productivity, sales growth and employment growth. In addition, we explore both economic and institutional explanations for the patterns we observe.

Results and Implications

We find that the evidence for female underperformance is strongest only in the case of large firms. Among small and medium firms female entrepreneurs perform better than their male counterparts in terms of growth, and among micro firms female entrepreneurs under perform in only some dimensions, while in others they perform better than their male counterparts.

We test whether lack of access to bank financing is an explanatory factor for these performance gaps; we find that women in Latin America are as likely as men to apply for formal credit. However, they are less likely than men to obtain formal credit if they are running micro or medium firms. On the other hand, they are more likely to obtain formal credit if they are running large firms.

We also find that male-owned enterprises perform better (in terms of overall size and value added) in the event of technology adoption and innovation. These gaps could signal gender specific gaps in mediating variables like credit, technical knowledge, training etc. Finally, we also find limited evidence that female entrepreneurs are disproportionately concentrated in low performing sectors.

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≈ SUMMARY ≈

VENTURING OFFSHORE: THE INTERNATIONALIZATION OF ENTREPRENEURIAL FIRMS' BACK OFFICE ACTIVITIES

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Principal Topic

Across industries and geographies, outsourcing is a mega-trend (Hitt, Ireland, & Hoskisson, 2000). While firms have offshored work for decades, practitioner and academic literatures focus on manufacturing and IT in publicly-held MNEs, perhaps due to greater visibility and ease of data collection. One of the most under-researched entrepreneurship phenomena is the outsourcing and increasingly the offshoring of back-office activities. Recent studies shed light on the phenomenon: 83% of leading entrepreneurial firms outsource at least one activity and over 55% outsource payroll (E&Y, 2003). Australian SME data indicates 97% purchase accounting services outside the firm (Carey, Simnett, & Tanewski, 2005). Clearly, SMEs are customers in the estimated global \$115B business process outsourcing market for finance and accounting services. While new venture internationalization research traditionally focused on globalization of customer markets, the sourcing of other venture activities constitutes internationalization (Birkinshaw et al, 2003).

Entrepreneurial firms are resource-constrained, facing liabilities of smallness and newness which can be overcome through networks with partners. New firms often operate in niches, developing highly modularized and commoditized products/services and outsourcing non-core primary and supporting activities (Dossani & Kenney, 2006). Third-party vendors enable firms to respond to environmental uncertainty without adding costs (D'Aveni & Ravenscraft, 1994) and can lead to superior performance (Rothaermel, Hitt, & Jobe, 2006).

This study further develops and tests recent conceptual models of outsourcing and offshoring (Holcomb & Hitt, 2007; McIvor, 2008; Lampel & Bhalla, 2008) by integrating the complementary but converging transaction costs economics (TCE) and resource-based (RBV) theories regarding opportunism and collaboration. TCE examines firm boundaries, including outsourcing (Williamson, 1975) and is relevant for entrepreneurial firms facing high transaction costs abroad (Zacharakis, 1998). Key research questions include: What are the drivers of outsourcing and offshoring? How do entrepreneurial firms reorient value chains to optimize global dispersions of talent and knowledge? How are risks mitigated? What are the performance implications?

Method

As accountants play key roles in outsourcing decisions (Smith, Morris, & Ezzamel, 2005), hypotheses are tested using data from an internet-situated survey of accountants.

Results and Implications

Beyond contributions to theory and practice, insights may be useful for policymakers who are interested in the size and scope of offshoring to best inform decisions about attracting and retaining key activities.

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∞ INTERACTIVE PAPER ∞

THE ROLE OF EXPERIENCE IN THE INTERNATIONALIZATION PROCESS OF FRENCH NEW VENTURES

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Principal Topic

There is a growing amount of evidence that the former business experience of international entrepreneurs guides both their tendency to form international ventures and the subsequent international expansion of the venture. This line of research has been developed parallel to the top management team literature that asserts that, to a great extent, an organization is a mirror of its top managers. One can argue that this mirror effect is even stronger for new ventures as the impact of the entrepreneur is not balanced through the firm's history and organization.

Recent literature reviews on international new ventures emphasized several studies that suggest a relationship between internationalization and the experience base of the entrepreneurs (Rialp, Rialp and Knight, 2005; Zahra 2005; Aspelund, Madsen and Moen, 2007). Indeed, this relationship was one of the key findings in McDougall, Shane and Oviatt's (1994) seminal case studies of INVs and is also reflected in more recent work.

This study investigate to which extent the background and former experience of international entrepreneurs from the Rhone-Alps region in France influence the pace, direction and extent of international activities of the ventures they form.

Methods and Key Propositions

The study is based upon a sample of early internationalizing new ventures from the Rhône-Alpes region in France. The data stem from three sources. First, 28 interviews were conducted with industry experts from the region (within technology, finance, entrepreneurship and exports). Second, 10 in-depth case studies were performed. Finally, there was conducted a mail survey targeting 450 INVs (111 responses yielding a 24.6 % response rate). OLS and logit regressions seek to unveil the relationship between the entrepreneur's background, work experience, education, motivation and establishment process and the pace, direction and extent of the international activities of the firm he/she created.

Results and Implications

This study expands our knowledge on the relationship between the entrepreneurs and the traits of the venture they form. The study integrates the top management team literature in the entrepreneurial setting, and specifically on the issue of internationalization of new ventures. In terms of managerial implications we offer new insight for entrepreneurs that seek to put together entrepreneurial teams for their new ventures or investors wishing to evaluate their prospects. Finally, the study offer input to policy-makers that design and manage export support programs.

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RISKY INFORMATION EXCHANGE: HOW NETWORK POSITION CAN CAUSE DIFFICULTIES FOR CORPORATE INNOVATION



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ABSTRACT

To enhance innovation effectiveness, many incumbent corporations make equity investments in young technological startups. Four out of five corporate investors syndicate at least some of their investments with other incumbents. While syndication practices may be beneficial to incumbent corporations, in this study we elaborate on the notion of information exchange paradox to demonstrate that syndication may be detrimental to corporate innovation. Using a unique data set of investment decisions of 163 corporations over four years, we show that for some corporations the losses of participating in syndicate networks may outweigh the gains. In particular, we demonstrate that syndication network centrality negatively moderates the ability of a corporation to benefit from its investments. We also show that the effect is particularly strong in highly concentrated industries but is virtually non-existent in industries with low concentration. This supports a contingency view of syndication and implies that benefiting from equity investments in startups is a non-trivial task for managers of incumbent corporations.

INTRODUCTION

While the benefits of open innovation practices are many, contingency factors shaping their effectiveness – for instance, the extent to which external ideas are converted into corporate patents – have not been documented sufficiently. The present study addresses this notable shortcoming. We explore these contingencies in a specific setting which we believe is of particular importance for the study of open innovation – equity investments by incumbent corporations into promising new ventures – commonly referred to as corporate venture capital (CVC). Venture capital practices are at the very core of the transition from a closed to an open innovation paradigm (Chesbrough, 2003). Adoption of the venture capitalists-like practices by the established firms is thus one of the major archetypal phenomena in the world of open innovation

While previous studies have largely postulated a positive relationship between CVC investment intensity and corporate learning and patenting (Dushnitsky & Lenox, 2005b; Keil, Zahra, & Maula, 2004), our current understanding of the role of contingency factors that may affect this association is at best scarce. We explore how the interplay of two possible contingencies – deal syndication and industry concentration – shapes the effect of CVC investments on corporate patenting.

Deal syndication – an approach to financing new ventures where multiple incumbents pool their resources to invest jointly in new ventures of interest – by virtue of bringing fellow investors close to each other in a syndication network results in network externalities from which incum-

bents may both gain and lose. Generally, financial benefits of syndication include higher and more certain financial returns due to risk sharing, risk reduction and access to deals flow (Lockett & Wright, 2001; Ruhnka & Young, 1991), whereas strategic benefits have to do with the opportunity to observe and learn from fellow investors' conduct with respect to CVC investments as well as to internalize innovative ideas championed by the syndicate partners and the partners' investees. However, syndication has its own costs: firms not only gain from network externalities but also contribute to them. Inasmuch as firms are heterogeneous in terms of their involvement with CVC, some firms may lose more than they gain from becoming close to fellow investors. It is not at all clear whether strategic benefits of syndication could outweigh possible losses for firms with above-average CVC involvement: they cannot learn a great deal from their less active partners while risk their own unique capabilities imitated away. Besides, the know-how developed by the incumbents' investees may be appropriated by their (more agile) syndicate partners. In fact, such firms may competitively suffer from being close to fellow investors.

As such, deal syndication presents corporate investors with what we call an information exchange paradox: flow of information within such syndicates should be both open and closed. Otherwise the incumbents will neither be able to learn from their investments nor will be able to protect their own sources of competitive advantage from being imitated away by the fellow investors. Accordingly, it is critical to explore the role of the information exchange paradox in corporate venture capital practices. Sadly, beyond a mere recognition of the fact that many deals are syndicated, the effects of deal syndication in the open innovation context have not received adequate treatment in the extant literature even though many deals are co-funded by multiple corporations.

We also introduce another moderating mechanism accentuating the relationships between a corporation's CVC investments and corporate patenting. Industries vary greatly with respect to the dominant innovation logic (Malerba & Orsenigo, 1996). Some industries are effectively controlled by a few incumbents while others are increasingly entrepreneurial and are shaped by numerous smaller players (Hou & Robinson, 2006; Levy, 1985). While formal vehicles such as syndication networks that facilitate the information exchange may be required for incumbents to tap into open innovation wellsprings in industries dominated by a limited number of large competitors, our findings indicate that this is not necessarily the case in entrepreneurial industries where interaction between the holders of information often does not require such specialized forums. We thus maintain that the interaction effects of CVC and network structural position on corporate innovation may be particularly well-pronounced in highly concentrated industries.

In this paper we address these two contingency effects and provide some guidelines with respect to designing the architecture of corporate venture capital programs. The paper is organized as follows. First, because extant CVC literature has essentially ignored to date the issue of deal syndication, we provide a rather detailed description of the phenomenon, discuss the benefits associated with syndication as suggested by the independent VC literature, and explicate the expected benefits and drawbacks of syndicating deals by corporate investors. Second, we formalize our arguments and develop hypotheses. Third, we introduce our data, explain the methodology involved in testing the hypotheses, and present the results. The paper concludes with the discussion of our results, their implications for theory and practice, overview of the study's limitations and suggestions for future work

LITERATURE REVIEW AND HYPOTHESES

Deal Syndication and Corporate Innovation: Elaboration on the Information Exchange Paradox

Although there are numerous benefits to deal syndication, there are also certain theoretical reasons to believe that corporations may be better off not syndicating their investments with other incumbents if they are interested in absorbing the know-how from startups they support. The reason is that close connections to firms interested in similar technologies may backfire: those firms, too, may learn about the focal incumbent's capabilities, operational processes, and know-how. In other words, in the process of joint supervision of the investee's development – which often brings representatives of firms connected by a syndicate network into physical contact in the new venture's board room – the corporation may lose some of its own otherwise ambiguous and socially complex know-how to the syndicate partners. In the process of new ventures development the corporation may absorb the proprietary information shared by co-investors as well as inadvertently disclose its own valuable information that under different circumstances would have remained protected from others. Besides, know how of strategic importance championed by the new venture may transfuse to the fellow investors. Using the bathtub metaphor, on balance, syndication may rather be a leak, not an inflow when it comes to accumulation of the corporation's asset stock (Dierickx & Cool, 1989).

As noted earlier, there are parallels between deciding to syndicate and deciding to locate in agglomeration. Not surprisingly, prior studies have found that, for instance, semiconductor managers, concerned that their technology might spill over to existing firms, decided to avoid locations where their competitors were located when choosing new production sites (Yoffie, 1993). It is likely that syndication precludes corporations from extracting sustainable competitive advantage from their CVC investments since the same benefits could potentially accrue to all syndicate partners. Perhaps for that reason some researchers claim that substantively syndication is a way to manage risks and is driven by the desire to build a financially strong investment portfolio, not the need to invest in companies of strategic interest (Hardymon, DeNino, & Salter, 1983). It has also been suggested that a syndicated CVC investment is unlikely to be a means of sustainably superior performance; rather, it is a means to keep up with competitors because all gain access to the same information (Reaume, 2003).

Thus, to truly benefit strategically from CVC investments incumbents must solve a non-trivial information exchange paradox: they must ensure the free flow of information from new ventures to corporate parents as well as block the loss of valuable information to competitors. Being close to other incumbents allows corporations to tap into know-how advanced by co-investors and their investees but at the same time facilitates loss of valuable knowledge to syndicate partners. In other words, being close to fellow investors has its benefits and drawbacks. The corporation has to decide how deeply it wants to engage in the syndicate network, and whether it loses more than it gains by joining such forums for information exchange.

The Information Exchange Paradox and the Moderating Role of Network Centrality on the CVC Intensity and Corporate Innovation Relationship

To sum up our earlier arguments, the main benefit as well as the main drawback of deal syndication in the corporate innovation context is the possibility of knowledge spillover: While incumbents could learn from their investments and from the proprietary knowledge of their peers,

so can also fellow investors learn from the incumbent corporation. This may harm rather than benefit the incumbent corporation's innovative output. Thus, as with agglomeration, it is clear that deal syndication is a matter of give and take (Shaver & Flyer, 2000).

We believe that the incumbent corporation's syndicate network centrality is instrumental in understanding the relationship between CVC intensity and corporate innovation. For incumbents with below-average level of CVC intensity which do little of their own investment activity the benefits are most pronounced: Not only do they learn from their more active syndicate partners but also absorb ideas developed by their partners' multiple investees. On the contrary, firms with above-average level of CVC intensity have little to gain and a lot to lose: While they cannot learn a great deal from those few projects their less active partners support, they lose their know-how to such partners through network connections because, as we said, new ventures' board rooms are a forum where ideas are exchanged and knowledge flows freely.

Following the research of Freeman and others we argue that companies with very active CVC programs are more likely to experience difficulties in utilizing the most out of the rich information flows if they are close to co-investors (Freeman, 1979; Sykes, 1990). It seems much more promising to become deeply entrenched in syndicates when the corporation makes very few own investments. With large CVC portfolios there is a lot of information passing through the incumbent corporation. This information must be processed to eventually develop into a patent. However, if the corporation is involved in many new ventures there is a risk that the massive body of information cannot be processed efficiently and that important information leaks and is acted upon by others before the firm grasps the respective opportunities. Since patents are awarded on a first-come, first-served basis, a corporation may lose the rights to a technology to CVC partners that identify and extract the value of the information first. The corporation simply cannot control the spread of information as effectively as when managing a smaller investment portfolio.

Moreover, parallel support of many new ventures may provide the corporation with information of more general character because of the difficulties of being deeply involved in every venture. This means that the corporation may be left with information that is too general to be useful for patents which often require more specific and specialized information. In this sense, it can be far from beneficial, if not even detrimental to possess a central position when having a large investment portfolio.

For companies with smaller portfolios there are more benefits associated with possessing a central position in the network. At the same time, the potential leakage costs will be significantly smaller; due to fewer investees there is less information to leak but there is still a significant inflow of information by virtue of having a central position in the network, being connected to several other partners, and sharing their information. With fewer ventures to control, there will also be more time for processing appropriated information and judging whether it is of value and should be kept secret. Thus, being centrally positioned in CVC syndicate networks may be most beneficial for corporate patenting when the firm has low CVC investments. When the company is involved in substantial CVC support to a great number of ventures it may be better off to move far away from the center of the network to appropriate the innovation without sharing it unnecessarily with close partners.

On average, thus, firms with low CVC intensity will benefit the most in terms of improving their innovative stature by syndicating while corporations that support many new ventures will benefit the least, and could in fact competitively lose by inadvertently helping improve their com-

petitors' innovativeness. Hence, we expect a firm's involvement into syndicate networks – that is, its closeness to fellow-investors – to negatively moderate the effect of CVC intensity on corporate innovativeness. To state formally:

Hypothesis 1: Syndicate network centrality negatively moderates the relationships between a corporation's CVC intensity and corporate innovation.

The Role of Industry Concentration

Our previous arguments build on the idea that syndicate networks function in part like specialized forums for information exchange and knowledge flows and thus may in many instances facilitate innovation. Yet, the logic of the innovative process – and the need in such specialized forums – is known to differ between industries. We argue that such forums may be less important in industries where ideas are exchanged naturally, independently of active encouragement or discouragement by corporations. An example of such a setting is Silicon Valley's microelectronics research and manufacturing industry where ideas flow freely as people meet socially, switch employers or start their own businesses (Saxenian, 1994). Such industries are characterized by strong entrepreneurial dynamics and low concentration ratio (Chuang & Lin, 1999; Dean & Meyer, 1996; Kock & Santalo, 2005). Often, they exhibit high opportunity and low appropriability conditions that facilitate constant entry of new innovators, and low cumulateness conditions, which do not allow the persistence over time of innovative success at the firm level – hence, few firms manage to grow large and establish any degree of control over their industries (Malerba et al., 1996). Because ideas cross corporate boundaries in such industries easily without specialized vehicles like syndicate networks, one could expect that the need for formal mechanisms facilitating open innovation is relatively unimportant there.

At the same time, due to significant R&D required to propel innovation, other industries are dominated by a few large-scale incumbent innovators who are naturally interested in protecting their developments from other large-scale industry participants such that the threat of imitation is minimized (Nelson & Winter, 1982). Incumbents have little access to their competitors' stock of knowledge. Such industries are typically characterized by high opportunity, appropriability and cumulateness conditions; Malerba and Orsenigo suggest that they are generally consistent with the so-called Schumpeter Mark II logic (Malerba et al., 1996). Incumbents are generally not inclined toward sharing their ideas with competitors, so the flow of knowledge between firms within such industries may require facilitation, and specialized forums such as syndicate networks may become the facilitation device. In these highly concentrated industries the information exchange forum created through syndication may be one of the few opportunities corporations have for information sharing. Although incumbents are typically secretive about their innovation practices, the CVC context may relax the situation. This implies that in highly concentrated industries the effects of information flows made possible by participating in syndicate networks will be more apparent, compared with the industries of the first type. Thus, the logic implied by our previous hypothesis should be particularly strong in highly concentrated industries but may be weaker (or even irrelevant) in less concentrated, fragmented, entrepreneurial industries. In other words:

Hypothesis 2: Industry concentration moderates the relationships between a corporation's CVC intensity, network centrality and corporate innovation such that the effect implied in Hypothesis 1 is stronger in highly concentrated industries than in industries with low concentration.

METHODS

Data

To examine whether and when deal syndication is beneficial or detrimental for the incumbent's innovation, we constructed and analyzed an extensive data set on corporate equity investments, patent applications, as well as accounting information that public corporations are required to disclose. The data consisted of investment decision of 163 corporations during the course of four years, rendering a set of data with 652 unique measurement points. Data were pooled from four major secondary sources. VentureXpert by Venture Economics and Corporate Venturing Directory & Yearbook (hereafter – the Yearbook) by AssetAlternatives were utilized to reconstruct the pattern of CVC investments by incumbent corporations. Both of these data sources have been used in CVC research extensively (Dushnitsky, 2002; Dushnitsky, 2004; Maula & Murray, 2000). Still, they are known to have certain deficiencies: the Yearbook may double count particular deals and VentureXpert may inflate the number of investment rounds (Lerner, 1995). Besides, the overlap between the databases is not perfect: each data source has information on some deals that the other database does not cover. We followed meticulous procedures to ensure data accuracy, to match data between the two databases, and to estimate and reduce redundancies. Thus, by carefully matching the data we were able to obtain the most accurate information on the CVC investments of the corporations. We only considered investments committed during 1998-2001 as this period is best covered by both databases. After matching the data on CVC deals reported by VentureXpert and the Yearbook, we merged our database with annual firm-level accounting and financial data from Standard & Poor's Compustat. Since the data reported in the Compustat relate to a financial and not a calendar year of the corporation, we do not use annual aggregates reported by VentureXpert directly but rather look at the exact dates of particular deals to match them to appropriate financial years. Thus, for a corporation with a financial year starting in March and ending in February we would consider a CVC investment made in January of 2000 as a part of year 1999. Finally, we utilized the USPTO database to obtain information about patent applications by the incumbents. Again, we made sure that patent information complied with financial, not calendar year schedule adopted by the corporations. We deliberately excluded certain industries from the dataset (e.g., financial services, real estate, and hotels) as is conventional in the CVC research (Field, 1999). We also excluded companies for which it was not possible to designate a primary industry affiliation (e.g., General Electric). Our main reason for doing this was to reduce the noise and bias in the dataset following potential flaws in classification.

Dependent Variable

Our dependent variable is the number of patent applications filed by a corporation in any given financial year (i.e., the number of applications listing the focal incumbent as an assignee in the USPTO database). We utilized patent applications for a number of reasons. Many of the applications have not yet resulted in patents at the time of data collection due to a laborious and lengthy process that the patent office has to go through to grant the application (Ernst, 2001; Silverman & Baum, 2002). Accordingly, patent applications rather than granted patents represented a more accurate snapshot of a corporation's innovation activities. Similarly, although considering patent citations accumulated over time would have been useful, those patent applications that have been granted could not have generated proper citation record yet (Dushnitsky & Lenox, 2005a). Finally, we believe that for the purpose of our study patent application is a proper metric because it reflects a corporation's attempt to protect future appropriation of the benefits associated with a particular

invention and as such firms prefer to file early even though the U.S. follows first-to-invent and not first-to-file legal approach to innovation. Thus, if a corporation absorbs innovation from its CVC investments, syndication partners or partners' investees, patent application date and not patent grant date would provide the closest congruity to the moment of mastering the new technology.

Independent Variables

We operationalized *CVC intensity* as the number of distinct ventures supported by the incumbent corporation in a given year. Prior research looked at the dollar amount of CVC investments (Dushnitsky et al., 2005a) Alternatively, some studies focused on the number of CVC deals (Wadhwa & Kotha, 2006). In the context of this particular study, both these measures have certain deficiencies over the one we propose. First, corporations may absorb the knowledge developed by the new venture regardless of the size of their investment (Reaume, 2003). In this sense, considering the dollar amount would only introduce unnecessary noise. Second, the amount invested is often simply a function of the investment round and is not indicative of the investment's importance or relevance: later rounds typically require more significant investments (Gompers & Lerner, 1998). To that end, we specifically control for corporate preferences with respect to investment round (see the explanation of our control variables below). Third, the incumbent is in a position to learn from the venture regardless of the frequency of investments; in fact, multiple investments during the same period may simply reflect investment tranches or accounting practices adopted by the corporation. What is of importance is the number of distinct firms supported during a particular period and not how often the corporation transfers money to the respective accounts. Finally, most importantly, although the Yearbook lists specific investments it does not report amounts of each transaction. Hence, we were not able to re-estimate our model with an alternative operationalization of CVC intensity. However, analytical reports by Ernst & Young suggest correlation of over 0.90 between the number of deals and the amount invested. Our own calculations based on the data we managed to collect suggest a similar correlation coefficient of 0.85. Thus, we are confident that our independent variable is a high-quality reflection of the CVC activity of incumbent corporations.

Syndicate network centrality was operationalized as closeness centrality computed with the software Ucinet 6. The input matrix consisted of a dichotomous classification of whether or not two incumbent corporations co-financed any deals during the specified period. By analyzing all investments by all corporations in our sample we identified the new ventures that received funding from more than one incumbent and were able to map the syndication network. We use a centrality measure composed from the mean geodesic distance (i.e., the shortest path) between a vertex and all other vertices reachable from it, meaning that incumbent corporations in a syndication network that have short distances to other CVC investors are declared central actors, compared to non-central actors that have longer distances to other CVC investors in the network (Borgatti, Everett, & Freeman, 2002). We chose this particular centrality measure because it was specifically designed to estimate the expected time required for an incumbent corporation to transmit and access information and valuable knowledge in a network (Borgatti, 2005). This measure of centrality is highly correlated with other types of centrality measures, including degree centrality.

Industry concentration ratio was conceptualized as the four-firm industry concentration (i.e., the market share of the four largest firms within their four digit industries). The variable was computed based on the information from the Compustat database. This measure has been commonly and successfully adopted in previous studies to indicate the degree to which an industry is oli-

gopolistic and the extent of market control held by the four largest firms in the industry (Chuang et al., 1999; Dean et al., 1996; Kock et al., 2005). The concentration ratio may vary from a low of 0 percent to a high of 100 percent, where 0 percent demarcates an extremely competitive market and 100 percent implies an extremely concentrated oligopoly or even monopoly situation.

Control Variables

We control for a number of things that may affect the pattern of the observed relationships in our sample. First, as said earlier, we need to control for the preferred investment round: some firms may prefer to invest late when the startup already has a product or at least a prototype while others may prefer to invest in early-stage ventures where they may affect the direction of technological development. We label this variable *preferred investment stage*. According to the extant literature it is believed that early-stage investments are significantly riskier than the late-stage ones (Ernst & Young, 2002; Fredriksen & Klofsten, 2001). For this purpose we dichotomize investment stages into relatively risky (seed and early stages) and relatively non-risky (extension, later, and balanced stages). To create the variable we use the data from the Yearbook.

To partial out the effects of CVC investments on corporate patenting we control for the effects of the corporations' *Internal R&D expenditures* and *firm size* (proxied by the log of sales). We included a control for *organizational slack* as slack has been deemed important for the study of corporate venture capital (Chesbrough & Tucci, 2004). In fact CVC intensity itself may be related to the corporation's possessing extra resources which subsequently may influence its innovative outputs. Slack was in this study operationalized as the current ratio of assets to liabilities of the incumbent corporation (Singh, 1986). Finally, because some industries are more inclined to patent than others, we controlled for the effects of the *industry patenting propensity*. To that end we created a dummy variable that equaled 1 if the corporation belonged to the industry with above-average propensity to apply for patents and 0 otherwise. All variables nominated in dollars have been adjusted for inflation based on annual CPI indices reported by the Bureau of Labor Statistics.

Models and procedures

Because the number of patent applications is a count variable, we utilized a population-averaged negative binomial estimation technique with equal-correlation structure (McCullagh & Nelder, 1989). The models were fitted by use of the generalised estimation equation approach (Liang & Zeger, 1986). In all, we report three models. Model 1 includes control variables. Model 2 tests Hypothesis 1 and includes a two-way interaction of CVC intensity and syndicate network centrality in addition to the independent and control variables. Model 3 tests Hypothesis 2 and includes a three-way interaction of CVC intensity, syndicate network centrality and industry concentration ratio along with the independent, control variables and required product terms.

RESULTS

The data reveals that on average corporations are rather active with their patenting efforts – the mean number of annual patent applications is close to two hundred. Incumbents in our sample invested significant amounts – close to nine hundred million dollars annually – into internal research and development, and supported between five and six distinct ventures in any given year with some firms like Intel sponsoring many times this number of new firms. The corporations had average sales of over twelve billion dollars per year. All variables are correlated in the expected

direction; the magnitude of correlation coefficients is within conventional limits (Cohen, Cohen, West, & Aiken, 2003). To further reduce the threat of multicollinearity due to the presence of multiple interaction effects implied by Hypotheses 1 and 2, we standardized our predictor variables. Descriptive statistics including correlation table are available from the authors.

Table 1 presents the results of hypotheses testing. All three models rendered significant overall model chi-squares, with Model 2 demonstrating a significant improvement over Model 1 ($\Delta\chi^2=83.66$, $\Delta d.f.=3$, $p<.001$), and Model 3 being significantly better than Model 2 ($\Delta\chi^2=161.00$, $\Delta d.f.=4$, $p<.001$). Overall, the models show that all of the control variables except the preferred investment stage were significantly related to corporate patenting. Firm size, industry patenting propensity, and internal R&D were all positively related while organizational slack was negatively related to corporate patenting.

Model 2 provides strong support for Hypothesis 1. Syndicate network centrality negatively moderates the relationship between the number of distinct ventures supported by the corporation and corporate patenting ($b=-0.61$, $p<0.001$). Interestingly, the direct effect of CVC intensity is positive ($b=0.36$, $p<0.001$), which agrees to conventional wisdom, while the direct effect of network centrality is non-significant. To better understand the nature of the interaction between CVC intensity and network centrality in the context of corporate innovation we plotted the interaction (see Figure 1a). As the plot indicates, for corporations with low network centrality the effect of CVC intensity on patenting is positive, while for their counterparts occupying central position in syndicate networks the effect is rather negative. This agrees to our conceptual development presented earlier in the paper: apparently, there are important tradeoffs corporations need to consider when joining syndicates.

Hypothesis 2 was tested with Model 3. Indeed, we find support for a significant three-way interaction of CVC intensity, syndicate network centrality and industry concentration in the context of corporate innovation ($b=-0.68$, $p<0.05$). Importantly, regression coefficients reported in Models 1 and 2 retain their sign, magnitude, and significance thus indicating that the findings are robust. We plot the results in two separate ways. First, we present a comprehensive plot (Figure 1b) that demonstrates that CVC intensity and syndicate network centrality are potent predictors of corporate patenting only in industries characterized by high concentration while in the industries with low concentration their effect appears negligible. Consistent with our Hypothesis 2, the relationship revealed in Hypothesis 1 is particularly pronounced in highly concentrated industries while remaining effectively mute in the industries characterized by low concentration. Thus, based on the significance of the regression coefficient and the plot (Figure 1b), our results demonstrate support for Hypothesis 2.

The three-way interaction plot (Figure 1b) also seems to suggest that the corporate strategies with respect to CVC intensity and syndicate network centrality could be ranked in terms of their patenting effectiveness related to highly concentrated industries. According to the plot, for the corporations in highly concentrated industries the best course of action to benefit from CVC investments is to support many new ventures while keeping distant from the center of the syndication network (strategy 1). The next best strategy appears to be the exact opposite – i.e., maintaining high involvement in the syndicate network (high centrality) while keeping own investments at a minimum (strategy 2). High centrality coupled with high CVC intensity constitutes the third best strategy (strategy 3). Finally, low CVC intensity together with low centrality is the least effective solution for stimulating corporate patenting through supporting technological startups (strategy

4). We ran a series of post-hoc analyses in form of t-tests to explore the differences between those strategies (results are available from the authors). Strategy 1 significantly outperforms the next best strategy 2 ($p < 0.05$). Strategy 2, however, is not statistically different from strategy 3 (judged as the third best strategy according to the plot) in terms of patenting effectiveness. Strategy 3 only marginally outperforms strategy 4 with respect to patenting ($p < 0.10$). This is particularly interesting because strategies 3 and 4 represent two extreme cases: high CVC intensity - high syndication network centrality (strategy 3) and low CVC intensity - low centrality (strategy 4); yet, the difference between them is only marginally significant if at all.

DISCUSSION, LIMITATIONS AND CONCLUSION

Extant literature has revealed that different modes of open innovation are not equal in terms of generating benefits for the incumbent firms. In this paper we analyzed conditions making one of those modes – corporate venture capital – more or less effective. We demonstrated that the effect of CVC largely depends on the corporation's policy with respect to participating in syndicate networks, and that the effects are observed primarily in the industries with high levels of concentration but are virtually non-existent in fragmented industries. We suggest that our findings could be explained by what we call the information exchange paradox of corporate venture capital.

While previous studies have assumed that the effect of corporate venture capital investments on corporate innovation is uniformly positive and simply tried to suggest the types of firms corporations should support to benefit strategically, we ventured that under certain conditions corporations may lose more than they gain from supporting new technological startups. Because the vast majority – four out of five – corporations syndicate at least some of their investments, we set out to investigate the effect such practices might have on the ability of incumbents to benefit from their CVC involvement. Our analyses suggest that syndication may be considered one of the key variables explaining the effectiveness of corporate venture capital investments in the context of corporate innovation. Indeed, it significantly moderates the relationship between the number of ventures supported by the incumbent and corporate patenting. For the corporations positioned far away from the center of the network the relationship is positive: these incumbents should increase the number of firms supported with CVC in order to stimulate own patenting. However, for corporations positioned in the center of the syndicate network the relationship is in fact negative.

Our results also indicate that corporations which position themselves in the center of the syndicate network and at the same time support many new ventures do not get full benefits that corporate venture capital may provide. In fact, at best such strategy only marginally outperforms the 'minimalist' strategy when corporations support very few ventures and shy away from the center of the network. Thus, it appears that incumbents should make a conscious choice between CVC intensity and syndicate network centrality. Since supporting many new ventures requires significant resources, the choice may be dictated by the availability of own and borrowed resources that the corporation has at its disposal. However, because the first strategy (high CVC intensity and low syndicate network centrality) significantly outperforms the second one (low CVC intensity and high syndicate network centrality) as suggested by the t-tests we ran, perhaps corporations should develop approaches to managing their CVC budgets which would allow them to maximize the number of investees while minimizing the capital outflows. There may be two easy ways towards this objective. First, because the ability of the corporation to observe, understand and absorb the technology developed by the new venture does not really depend on how much the corporation

invests, the incumbents may simply select to minimize their equity stakes in the ventures they finance (Reaume, 2003). Second, perhaps corporations should invest more in firms in the early stages of development, when investments tend to be much smaller in size (Murray, 1999). We know that the majority of incumbents prefer later-stage, less risky investments which cost them relatively more and thus may drain their CVC budgets quickly. Yet, in none of our models have the stage of investment been shown significant. Thus, perhaps corporations should consider changing their preferences with respect to investment round, and increase the number of ventures they support with the same budget. It will remain critical, of course, to stay away from the center of the syndicate network if the corporation is to benefit fully from such investments.

Our results also question the wisdom of engaging in CVC in fragmented industries characterized by low concentration. When the industry is dynamic, specialized forums for idea exchange such as corporate venture capital are not required: information flows freely regardless of the focused efforts of a few incumbents (Saxenian, 1994). While we cannot prove it with the data we have, perhaps other, more efficacious modes of open innovation could work better in such environments. Alternatively, if we consider entrepreneurial dynamics in those industries itself to represent alternative modes of open innovation, then perhaps our findings could be seen as corroborating the claim of Schildt et al. that CVC is less effective in promoting corporate innovation compared to the alternatives (Schildt, Maula, & Keil, 2005). More research effort is needed to further explore this important finding.

Two implications of our research are particularly important for academics. First, this study clearly demonstrates that open innovation is not a universal cure for improving corporate patenting. Our results support the notion that contingencies shape the effectiveness of such practices to an extent where open innovation may inhibit corporate patenting. As such, future open innovation research should acknowledge possible contingencies and recognize the risks of proposing models that are too universal in character. Second, this study introduces an information exchange paradox inherent in syndicated CVC investment decisions. The essence of this paradox is that information exchanges within CVC networks must be both open and closed at the same time. Unlike prior CVC research, we demonstrate that knowledge sharing in open innovation forums may have a counterproductive side.

Clearly, our study has limitations. Despite the fact that we have a rather large sample, it is somewhat dated, and the question remains if that sample is representative of all corporations engaged in open innovation practices and if the relationships between the variables of interest might have changed after the sharp drop in CVC investments in 2002. While we would have liked to explore the issue in more details, data requirements make this goal very hard to reach: one of the sources of information on CVC (Corporate venturing directory and yearbook) has been discontinued after 2002 and it is thus impossible to generate the data set of comparable quality. As always, there remains a possibility that some important variable have been omitted that could have modified our results. We simply tried our best to provide a meaningful set of controls to concentrate on the relationship between the variables of interest. It may also be argued that corporate investors are not the only ones syndicating their deals, and that any new venture may have a group of investors representing both corporate and independent venture capital (Lerner, 1994). While this is undoubtedly true, independent venture capitalists only invest for financial reasons and do not seek strategic benefits such as innovation. For that reason, we believe it was safe to leave them out for the purpose of this study.

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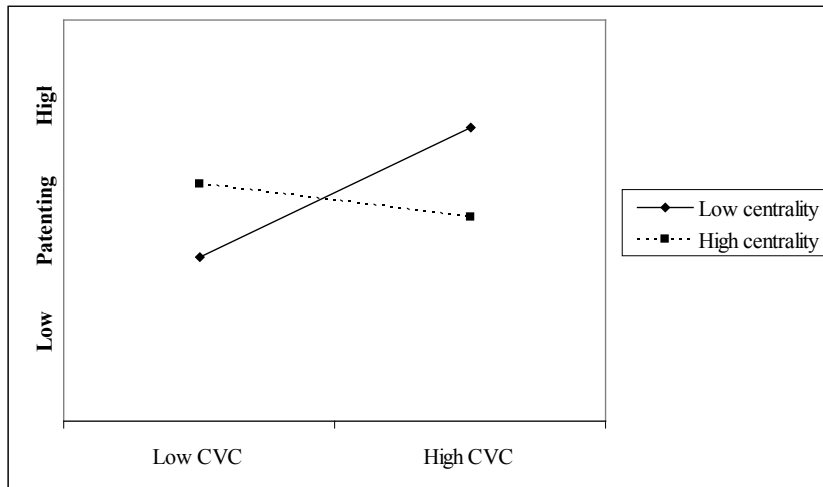
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Figure 1: Interaction effects

a



b

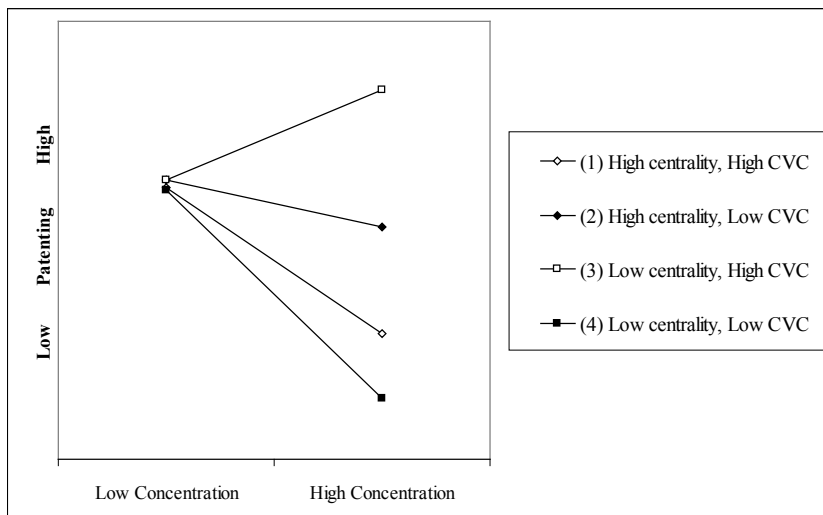


Table 1: Regression Results

Predictor variables	Criterion variable: patent applications					
	Model 1		Model 2		Model 3	
<i>Step 1: Controls</i>						
Intercept	4.26***	(.13)	4.36***	(.14)	4.23***	(.14)
Preferred investment stage	0.04	(.13)	0.02	(.13)	0.04	(.15)
Firm size	0.25*	(.10)	0.24*	(.10)	0.51***	(.10)
Organizational slack	- 0.19***	(.04)	- 0.21***	(.04)	- 0.18***	(.03)
Internal R&D	0.79***	(.12)	0.74***	(.12)	0.61***	(.14)
Industry patenting propensity	1.47***	(.13)	1.48***	(.13)	1.06***	(.17)
<i>Step 2: Testing Hypothesis 1</i>						
CVC intensity			0.36***	(.08)	0.35***	(.09)
Syndicate network centrality			- 0.06	(.17)	- 0.12	(.16)
Syndicate network centrality x CVC intensity			- 0.61***	(.13)	- 0.74***	(.12)
<i>Step 3: Testing Hypothesis 2</i>						
Industry concentration					- 0.53***	(.12)
Syndicate network centrality x Concentration					- 0.13	(.18)
CVC intensity x Concentration					0.34	(.18)
CVC intensity x Syndicate network centrality x Concentration					- 0.68*	(.30)
χ^2	326.39		410.05		571.05	
d.f.	5		8		12	
p	<.001		<.001		<.001	

*p<0.05; **p<0.01; ***p<0.001; two-tailed significance test; semi-robust standard errors in parentheses.

CORPORATE VENTURING GOVERNANCE, KNOWLEDGE FLOWS AND PERFORMANCE



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ABSTRACT

This study investigated how governance structure in corporate venturing (CV) impacts knowledge flows between a parent company and its new ventures. Based on agency theory, we proposed that autonomy and incentive scheme may stimulate or eliminate agency behaviors of CV programs in the knowledge transfer process, and ultimately influence the performance of new ventures. Using a sample of 61 companies in Japan and the United States, we found that autonomy may stimulate agency behaviors of CV programs by discouraging them to participate in the knowledge transfer process. On the contrary, the strategic-based incentive scheme may mitigate such agency behavior and encourage knowledge flows in CV activity. In addition, we also found the moderator effects of CV objectives on these relationships.

INTRODUCTION

Over the past three decades, companies have shown significant interest in corporate venturing (CV) as a means of achieving strategic renewal, building organizational capabilities and creating value for shareholders (Narayanan, Yang & Zahra, 2009). Business interest in CV has stimulated academic interest in the topic, resulting in a growing body of literature. In particular, CV has been viewed as an important source of new knowledge that helps the parent either leverage the existing core businesses or build new businesses with growth potential (e.g. Keil, 2000; Maula, 2001; McNally, 1997; Schildt, Maula, & Keil, 2005). However, as Birkinshaw (2005) pointed out, most CV programs are themselves startups. Different from well-established existing business units, CV units are usually operated under inexperienced management with the purpose of discovering new business domains. Thus, how to govern CV activity and improve its performance is a challenge facing the corporate parents.

In this study, we attempt to address this research question from the knowledge-based view. We argue that knowledge transfer between the corporate parents and their new ventures provides an essential building block of new competencies that will eventually lead to better performance (e.g., Zahra, Neilsen & Bogner, 1999; Zahra, Sapienza & Davidsson, 2006). Furthermore, we link the governance issues such as autonomy and incentive scheme to the knowledge transfer process. Grounded in the agency theory, we suggest that different control mechanisms may trigger or hinder agency behaviors in the knowledge transfer process, and finally influence the knowledge flows between the parents and their new ventures.

The paper is organized as follows. In the next section, we first define CV activity, and then elaborate on the relationships between CV governance, knowledge flows and new venture per-

formance. In the third section, we lay out the data and methods to examine the hypotheses. A concluding section hints at the results, and offers potential implications.

THEORY AND HYPOTHESES

Knowledge Flows in CV Activity

CV is a manifestation of corporate entrepreneurial efforts leading to the creation of new business within or outside the organization (Sharma & Chrisman, 1999), as well as being linked to innovation and strategic renewal (Zahra, 1995). CV activity may follow innovations that exploit new markets or new products; they also may lead to significant changes in an organization's business or strategy or its competitive profile (Narayanan, Yang & Zahra, 2009).

In the past three decades, CV activity has been prevalent in corporations. Typically, a parent company creates an organizational unit/program in charge of investing in and developing new businesses. Although such CV programs may take many forms, their critical common mandate is to act as an approach to innovation (Birkinshaw & Hill, 2005) either by exploiting existing resources or by exploring new domains. In fact, CV programs provide a learning vehicle for new knowledge that helps the parent better capture the values of both existing assets and entrepreneurial ideas. For example, a number of studies have suggested that CV activity such as CVC investments can help the parent company update its knowledge base and stimulate internal technology innovation (e.g., Dushnitsky & Lenox, 2005a, 2005b).

On the other hand, new businesses need knowledge from their parent companies to facilitate the venturing process. With years of investments in knowledge accumulation, the parent companies possess huge knowledge stocks related to R&D, marketing, human resources management, etc.. Knowledge flows from the parent will provide a wide range of supports to its new businesses at both the operational level such as technological and marketing supports (Maula, Autio & Murray, 2003) and the strategic level such as missions and visions. Thus, knowledge sharing between the parents and their new ventures are critical to the success of CV activity.

Governance Structure and Knowledge Flows

Corporate parents normally delegate the task of new venture development to their CV programs, and moreover depend upon their venturing branches to collect and deliver knowledge from new businesses. On the other hand, knowledge flow to a new venture from its parent is mostly controlled by the CV program as well. Some researchers have observed that CV programs often involve other business units in the new business development (e.g. Henderson & Leleux, 2002). The involvement of other business units in new business development contributes to knowledge flows between new ventures and their parents (Dushnitsky & Lenox, 2005a). However, the extent to which other business units can be engaged in this process is largely determined by CV programs' judgment and efforts. Thus, we argue that CV governance structure such as autonomy and incentive scheme may stimulate or mitigate agency behaviors in the knowledge transfer process, and influence the knowledge flows between new ventures and their parents.

Autonomy and Knowledge Flows. According to the agency theory, autonomy is typically associated with managerial discretion, low task programmability, and ambiguous cause-effect relationships, all of which give rise to information asymmetries (Eisenhardt, 1988; Gerhart & Milkovich, 1990; Gomez-Mejia, 1992; Rajagopalan & Finkelstein, 1992). Thus, high levels of autonomy may

stimulate agency problems unless other controlling mechanisms exist, whilst the low level of autonomy helps the principals better monitor and verify agent behaviors, thereby tightly controlling the agency problem.

CV activity exhibits a range of autonomy levels. At one extreme, a new business can function as an independent firm. There is little exchange of personnel between the parent and the new venture unit, no need for the parent's approval of an investment, and no formal reporting relationship. At the other extreme, a new venture unit can be tightly controlled by the parent. In addition to a regular exchange of personnel, the new venture unit may also participate in the formal planning and budgeting system of the parent and directly compete with existing units for resources. In the context of CV activity, loose control from the parent may allow corporate venturing managers to quickly respond to the changes in the environment; however, as discussed before, the high level of autonomy creates information asymmetries, and makes the parent difficult monitor CV units' agency behaviors. For example, most of the learning tasks are largely carried out by CV managers through working closely with the parent and other existing business units. It is possible that CV managers may pursue personal financial interests by sacrificing the learning tasks that require efforts and commitment but may not be directly related to their performance and personal financial rewards. Close oversight of corporate new ventures may mitigate CV managers' such agency behavior, and help the parents obtain the desired knowledge. So, we propose that:

H1: The autonomy of the new businesses are negatively related to the knowledge flows between the parent and its new businesses

Incentives and Knowledge Flows. How to provide agents incentives so that they behave in the principals' interests has long been discussed in the literature of agency theory (e.g. Eisenhardt, 1989). It is believed that an appropriate compensation package would align the agents' interests with those of the principals, and then limit the agency problems (e.g. Jensen & Meckling, 1976). In general, compensation systems can be classified into two groups: *behavior-based* and *outcome-based*. Numerous studies have argued that outcome-based incentive schemes are more appropriate when agent behaviors are costly or difficult to observe due to information asymmetry (Conlon & Parks, 1990). In addition, incentive schemes signal the principle's objectives and directly influence the actions and behavior of their agents (Galbraith & Merrill, 1991).

Typically, CV activity generates both financial and strategic outcomes. A financial outcome-based compensation would encourage CV managers to pursue financial success of new ventures, rather than fulfill strategic objectives of CV activity. As a result, less knowledge will be transferred back to the parents. To chase their personal financial success, CV managers may be even reluctant to transfer knowledge back to the parents when new ventures may be in the competition with existing business units.

In contrast, a strategic outcome-based incentive scheme would motivate CV managers to better serve the strategic objectives because it connects CV managers' income with the parent's long-term performance. Thus, we would expect that under the strategic outcome-based incentive scheme, CV managers are willing to facilitate knowledge transfer from the new businesses to the parents, and are dedicated to the longstanding strategic contribution to their parent companies. On the other hand, the strategic outcome-based incentive scheme would also discourage CV managers' commitment to the new businesses, in particular when they are competing with the existing core business units (Alvarez & Barney, 2001).

H2a: The financial-based incentive scheme will encourage knowledge inflow from the parent to the new businesses.

H2b: The strategic-based incentive scheme will encourage knowledge outflow from the new businesses to the parent.

CV Objectives and Knowledge Flows. The center of agency theory is the question of how the principals can ensure that their agents act in the principal's interests and not in their own. The conflicts may arise due to *adverse selection* (Akerlof, 1970; Eisenhardt, 1989) and *moral hazard* (Eisenhardt, 1989; Jensen & Meckling, 1976). Recently, Hendry (2002) pointed out that in addition to adverse selection and moral hazard, agency problems more be derived from the principals' incompetence. For example, facing "multitasking" (Holmstrom & Milgrom, 1991), principals may be unable to clearly specify their complex or multifaceted objectives in the contract. So, the agents may not have the ability to meet their principal's objectives even though they are honest and dutiful (Hendry, 2002).

CV activity represents a typical example of "multitasking" activity and has demonstrated a wide range of strategic objectives (e.g., Braody & Ehrlich, 1998; Keil, 2000; Maula, 2001). The parent company can use CV activity to stimulate its innovation rate and develop its knowledge base, technologies, products and processes (e.g. Dushnitsky & Lenox, 2005a), or to stimulate demand for their technologies and products (Keil, 2000), or to build options to acquire companies (e.g. McNally, 1997), or to proactively shape the market (Keil, 2000). In general, these objectives can be summarized into two major categories: (1) improving the capture of value from existing assets for the purpose of *exploitation* and (2) improving the capture of value from new ideas for the purpose of *exploration*. Through exploitation, parent companies are able to exploit traditional assets such as world-class manufacturing skills, extensive distribution networks, or strong brand awareness. Through exploration in the new territories, CV activity can provide a learning vehicle to both market level and venture specific knowledge.

With multiple objectives (exploration vs. exploitation), the parent companies sometimes struggle with the priorities of different strategic goals, and fail to deliver well-defined long-standing missions for their new businesses. It is one of the reasons why many CV efforts went unsuccessful (Brody & Ehrlich, 1998). Compared to exploitation, exploration of new technology/market seems to be a more important objective for CV activity as it helps the parent to learn new technologies and simulate internal innovativeness. This argument is supported by the result from the Ernest & Young Corporate Venture Capital Survey on 40 global leading CVC programs in 2002. Thus, CV managers' agency behaviors may be mitigated by clearly defined CV objectives toward exploration. For example, when a CV activity is clearly claimed to develop new competencies and gain access to new technology, new market or new materials, CV managers may feel obliged to transfer knowledge associated with these new domains back to the parent even when they have high level of autonomy to operate the new businesses. In addition, the financial-based incentive scheme may not be enough to encourage knowledge inflows to the new businesses because knowledge transferred from the existing businesses may be irrelevant to the conditions of new territories. On the contrary, the strategic-based incentive scheme may become more relevant because the incentive scheme is congruent with the objectives. Thus, we propose:

H3a: The negative relationship between the autonomy of the new businesses and knowledge flows between the parent and its new businesses may be mitigated when the new businesses are mainly engaged in exploration.

H3b: The positive relationship between the financial-based incentive scheme and knowledge inflow from the parent to the new businesses may be mitigated when the new businesses are mainly engaged in exploration.

H3c: The positive relationship between the strategic-based incentive scheme and knowledge outflow from the new businesses to the parent may be strengthened when the new businesses are mainly engaged in exploration.

Knowledge Flows and New Venture Performance

On the side of new ventures, knowledge inflows (*i.e.*, technological and marketing knowledge) from the corporate parents may help them grow quickly. Corporate new ventures typically are formed based on brilliant new ideas and innovative technologies. However, new business development is a complex and multi-disciplinary process. New ventures typically don't have the broad range of skills, expertise, and capabilities to accomplish this task alone (Deeds & Hill, 1996; Teece 1986). On the contrary, the parents typically possess knowledge stocks related to R&D, marketing, human resource management, *etc.* In addition, some corporate parents are leaders in the marketplace, and so new ventures can learn the best practices by observation and benchmarking. Thus, knowledge inflows from the parents may complement the inexperience of new ventures (Block & MacMillan, 1993; Pisano, 1994; Teece, 1986), thereby enhancing their performance.

Knowledge outflows from new ventures may also relate to their performance. The literature has suggested that intraorganizational knowledge flows are reciprocal (Schulz, 2003). When a new venture sends its new knowledge to the parent, it provides clues about its operations and market information. In the case of exploitation, the more knowledge a new venture sends to other business units, the more the others are aware of the relevance of their knowledge for the new venture, and they will become more motivated to share the knowledge when it is relevant (Schulz, 2003). In the case of exploration, new ventures open a window over new technology/market for their parents. Knowledge outflow back to the main businesses will be integrated into the parents' knowledge base, thereby enhancing the strategic importance of new ventures. In both cases, knowledge outflow will lead to successive resources inflows into new ventures and then improve their performance.

H4a: The knowledge flows between the parent and its new businesses are positively related to the performance of the new businesses.

However, knowledge inflows from the parents may not always improve their new ventures' performance, especially when CV activity is aimed at exploring new markets/technologies. First, knowledge transferred from the existing businesses may be irrelevant to the conditions of new territories. Furthermore, knowledge inflows from the parents may localize their new ventures' learning activity. In exploitation, local search can make learning more efficient and increase reliability of average performance; however, such learning tendency may reduce deviation of performance that is essential in exploration activities (Levinthal & March, 1993). All of the analysis leads to:

H4b: The knowledge inflow from the parent is negatively related to the performance of the new businesses when the new businesses are mainly engaged in exploration.

METHODS

Data Collection and Sample

Survey instruments were used to collect data for major constructs. The relevance and clarity of the questions were examined using a pilot survey with five CV managers and five experts in CV activity (i.e., consultants and researchers). The target companies were collected from Fortune Global Companies. First, we selected large technology-based companies in the US and Japan. We excluded the service- or finance-related companies in order to maintain a consistency in our sample. Then, using the Hoover's database, we identified managers in charge of: (1) business planning/business venturing, (2) product development, or (3) chief technology officer. The letters with our survey website URL were mailed or emailed to these managers. By the fall of 2007, 74 surveys had been received, out of which 61 surveys were from Japanese companies and 13 from the United States. Sixty-one surveys with complete data were used in the regressions.

Below are the descriptive statistics for the 74 responding companies. On average, these companies had US\$ 10.1 billion sales in 2007. These companies have on average 15 full-time staff members in support of new businesses. For the last 5 years, these companies have conducted 9.3 feasibility studies, from which 3.3 new businesses were started. From these 3.3 new businesses, 2.7 businesses were on-going upon the survey time. Responding companies reported that 37.2% of these on-going businesses were "strategically" successful, and 22.4% of these were "financially" successful. This result is consistent with that of Little's survey on European technology-based companies in 2002.

Measures and Data Analysis

The purpose of this study is to examine the impacts of CV governance structure on knowledge flows between the parent and the new businesses as well as the performance of CV activity. The measures were either newly developed for the study or adopted from the literature. To increase the reliability of the survey data, multi-item scales were used to measure a majority of the constructs, including incentive schemes (2 items), autonomy (6 items), knowledge inflow (3 items), knowledge outflow (3 items), objectives of exploration (8 items), and new venture performance (3 indicators). The inter-item reliabilities were tested using Cronbach's alpha, and the factor analysis and correlation matrices were used to examine the validity of the measures. This section describes how each variable was measured and the rationale associated with each measurement.

New venture performance. In the literature, firm performance is typically measured by accounting indicators (e.g., ROE), strategic indicators (e.g., market share, sales growth) or market value. However, this information is usually unavailable for new businesses within corporations. Thus, we designed a set of questions to ask the respondents to subjectively assess the performance of new businesses. Specifically, the respondents were asked the extent to which their new businesses' performance satisfies the expectation for the last five years in sales growth, profit, and return on equity. The items were rated on a 5-point scale ranging from 1 = Very dissatisfied to 5 = Very satisfied. Responses to the 3 items were averaged to provide a score of new business performance. The mean of the scale is 2.28 and the inter-item reliability is 0.88.

Knowledge flows. Based on Schluz (2003), knowledge flows were categorized into three general domains: knowledge related to sales and marketing, knowledge related to technology, and knowledge related to strategy. Schluz's scales (2003) demonstrated strong convergent and discriminant

validity. For knowledge inflows to new businesses from the parent, the respondents were asked to indicate the extent to which they agreed with the following statements: (1) The parent company and the existing businesses provide a great deal of knowledge about sales and marketing to the portfolio companies (e.g., knowledge about advertisement, public relations, service delivery); (2) The parent company and the existing business units provide a great deal of technological knowledge to the portfolio companies (e.g., knowledge about R&D, information systems, production process); and (3) The parent company and the existing business units provide a great deal of strategic knowledge to the portfolio companies (e.g., knowledge of competitors, suppliers, government regulations). For knowledge outflows from new businesses to the parent, three similar items were asked. These items were measured using a 7-point Likert scale ranging from 1 = Strongly disagree to 7 = Strongly agree. Both of the scales had strong internal consistency ($\alpha = .82$, and $\alpha = .89$, respectively).

In order to validate the measures of knowledge flows in both directions, a factor analysis of the 6 items was conducted. When the items were entered in the factor analysis, two factors emerged. The first factor was comprised of the three items stating knowledge inflows to new businesses from the parent. Responses to the 3 items were averaged to provide a score that represented the knowledge inflows to new businesses and the mean is 4.732. The second factor was comprised of the three items stating the knowledge outflows from new businesses to the parent. Responses to the 3 items were averaged to provide a score that represented the knowledge outflows from new businesses and the mean is 4.239. An average of the 6 items was also created to represent the knowledge flows between new businesses and the parent and the mean is 4.464.

Autonomy. There are three primary dimensions which were used to evaluate the autonomy of a CV program: 1) strategic objective, 2) staffing, and 3) the decision-making process. Two items assessed the autonomy of determining the investment objective. These items were, "Strategic objectives are determined by the parent company and existing businesses" and "Strategic objectives are determined by the unit or project actually in charge of new businesses". Two items assessed the staffing autonomy. The two items included, "Staffing decisions in the unit or the project in charge of new business must be approved by your parent company and existing businesses" and "A unit or project in charge of new businesses has the authority to hire anyone it needs". Finally, two items were used to examine the autonomy of the investment decision making process, including "All investments made by new businesses must be approved by the parent company or existing businesses" and "The unit that is in charge of new businesses has the authority to make investment decisions on its own". These items were measured using a 7-point Likert scale ranging from 1 = strongly disagree to 7 = strongly agree. A factor analysis was conducted on all 6 autonomy items. The first factor was comprised of five items. One item with much lower loading was deleted. The inter-item reliability of the remaining five items is 0.677.

Incentive scheme. In order to measure the characteristics of incentive scheme, respondents were asked: (1) the extent to which the compensation and incentive scheme for the managers who are actually running new businesses was dependent upon the financial returns of the new businesses. A similar question was asked regarding the strategic benefits. The items were rated on a 5-point scale ranging from 1 = Not at all to 5 = Always.

Objectives. To measure whether CV objectives have been well-defined toward exploration, the respondents were asked to indicate the importance level of eight objectives including develop new core competencies, gain access to new product-related technologies, gain access to new manufac-

turing process-related technologies, strengthen the ability to innovate, retain or gain “high potential employees”, gain access to new markets, gain access to new materials/parts/subsystems, and identify market trends. The items were rated on a 5-point scale ranging from 1=not important at all to 5=very important. The reliability of the scale is 0.861 and the mean of the 8 items is 3.85.

Controls. Two controls were used in the study: (1) the size of parent company measured by the number of employees reported by the respondents, and (2) the number of full-time employees in support of new business development.

RESULTS

Table 1 presents the intercorrelations among the variables in the study. The correlations between the independent variables ranged from $-.282$ to $.638$. Larger than desirable correlation was found between the financial-based incentive and the strategic-based incentive ($\rho=.638$, $p<0.01$). To investigate potential multicollinearity problems, variance inflation factors (VIFs) were examined in the regressions and all of VIFs for these two variables were less than 2, which is substantially below the rule-of-thumb cutoff of 10 for multiple regression models (Netel, Wasserman, & Kutner, 1985).

Table 2 presents the results of the linear regressions examining the impacts of autonomy, incentive schemes, and CV objectives on knowledge flows between new businesses and the parent. The full-time employees in support of new business development as control was negatively related to knowledge flows between new business and the parent ($p<0.05$). Our results supported Hypothesis 1, which proposed that the autonomy level is negatively related to knowledge flows. The coefficients of autonomy were all negative and significant when knowledge outflows was used as the dependent variable ($\beta=-1.96$, $p<0.05$). The results regarding incentive schemes also provided evidence in support of Hypothesis 2b, which proposed positive impacts of strategic-based incentive on knowledge outflows from new businesses to the parent ($\beta=2.785$, $p<0.05$). In addition, strategic-based incentive schemes also encouraged knowledge inflows to new businesses as well ($\beta=2.877$, $p<0.05$). With respect to the impact of financial-based incentive schemes, the coefficients were significant but the signs were opposite to what we expected. Thus, Hypothesis 2a was not supported.

Our results also showed significant moderator effects of objectives on the relationships between autonomy, incentive schemes and knowledge flows. The interaction between autonomy and objectives was significant when knowledge outflows was used as the dependent variables ($\beta=2.395$, $p<0.05$); however, the interaction became insignificant when either knowledge inflows or knowledge flows was used as the dependent variables. Thus, Hypothesis 3a was partially supported. Our results suggested that objectives moderate the relationship between the financial-based incentive and knowledge inflows ($\beta=3.906$, $p<0.01$) and the relationship between the strategic-based incentive and knowledge outflows ($\beta=-3.108$, $p<0.05$). We further drew the interaction plots to examine the directions of the moderator effects (see Figures 1 and 2) and the results were consistent with our Hypothesis 3a but opposite of Hypothesis 3c.

Table 3 presents the results of the linear regressions examining the impacts of knowledge flows on new business performance. The results failed to support Hypothesis 4a, which expects positive relationships between knowledge flows and new business performance. Neither did the result support the moderator effects of exploration objectives on the relationships.

DISCUSSION

Learning new knowledge has been regarded as one of the most important objectives of CV activity (e.g., Schildt, et al., 2005). Through the theoretical lens of agency theory, we examined how the governance structure such as autonomy and incentive schemes influenced knowledge flows in CV activity. Consistent with Hypothesis 1, the results suggested that with a high level of autonomy, CV managers may be less motivated to promote knowledge transfer between new businesses and the parent. Particularly, autonomy would discourage them to transfer knowledge from new businesses to the parent as knowledge transfer requires efforts and commitment that may not lead to personal benefits. However, when a CV activity has a clear objective to explore new technology, new market or new materials, the negative impact of autonomy on knowledge flows was dramatically alleviated. This finding suggested that with clear objectives, CV managers may feel obliged to transfer knowledge associated with these new domains back to the parent. This finding supported Hendry's argument (2002) that some of the agency problems may arise from the principal's incompetency rather than the agent's self-interest.

Consistent with Hypothesis 2b, the results suggested that strategic-based incentive schemes would encourage knowledge outflows from new businesses to the parent. In addition, such incentive schemes will also encourage knowledge inflows to new businesses from the parent and the existing business units. Opposite to Hypothesis 2a, our finding revealed a negative impact of financial-based incentive schemes on knowledge flows. These results emphasize the importance of strategic-based incentive schemes in CV activity. In addition, corporations should be cautious when using financial incentives to motive CV managers if the strategic benefits are the major objectives.

This study failed to provide evidence in support of the positive relationship between knowledge flows and new business performance. This result is inconsistent with the extant literature, and may be due to the limitations in research method and sample selection. The use of surveys as a method of data collection can be considered a limitation to the study as self-report questionnaires have the potential for allowing response bias to affect the results. For example, the corporate respondents may exaggerate the knowledge flows from the parent to new businesses, and underestimate the knowledge flows from new businesses to the parent. In addition, the sample size is relatively small and so the generalization of the major findings should be cautious.

The study primarily investigated the impacts of incentive scheme, autonomy, and objective. However, there are other factors that also influence the knowledge transfer processes in CV activity. For example, Henderson and Lelux (2002) reported that the involvement of the existing business unit was positively related to the transfer of resources between the CV ventures and the parent, whereas existing business unit's lack of commitment is a significant obstacle to resource transfer. Thus, future research should extend this line research to other factors. In particular, the relationship between new business units and existing business units deserves further investigation.

CONCLUSIONS

This study investigated how governance structure in corporate venturing (CV) impacts knowledge flows between a parent company and its new ventures. Using a sample of 61 companies in Japan and the United States, we found that autonomy may stimulate agency behaviors of CV programs by discouraging them to participate in the knowledge transfer process. On the

contrary, the strategic-based incentive scheme may mitigate such agency behavior and encourage knowledge flows in CV activity. In addition, we also found the moderator effects of CV objectives on these relationships. This study made several contributions to the literature. First, we extend the prior literature of corporate venturing by revealing the impacts of both the knowledge inflows and outflows on the success of corporate new ventures. Second, by linking the governance structure such as autonomy and incentive scheme to knowledge flows, the study may advance our knowledge on how to manage knowledge flows across organizational units – one of the essential topics in the knowledge-based view. The finding may also give directions on how to govern and improve CV activity.

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Table 1: Correlation Matrix

	1	2	3	4	5	6	7	8	9	10
1. Performance	1.000									
2. Knowledge flows	.171	1.000								
3. Knowledge inflows	.207	.841**	1.000							
4. Knowledge outflows	.095	.878**	.479**	1.000						
5. Autonomy	-.108	-.031	-.090	.030	1.000					
6. Financial incentive	.276*	.110	.107	.083	.241*	1.000				
7. Strategic incentive	.217	.020	.031	.004	.239*	.638**	1.000			
8. Exploration obj.	-.059	.111	.276*	-.064	.182	.248*	.226	1.000		
9. # of employees	-.063	.058	.084	.019	.013	-.131	-.093	-.059	1.000	
10. # of full-time employees in new business development	-.143	-.232	-.282*	-.128	.195	-.123	.067	.043	.106	1.000

* Correlation is significant at the 0.05 level (2-tailed). ** Correlation is significant at the 0.01 level (2-tailed).

Table 2: Results of Linear Regressions Examining the Effects of CV Governance Structure on Knowledge Flows

	Knowledge Inflows			Knowledge Outflows			Knowledge Flows		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
# of employees	.036	.087	.098	.048	.048	.054	.050	.077	.087
# of full-time employees in new business development	-.301*	-.278*	-.324*	-.135	-.120	-.171	-.247	-.225	-.281*
Autonomy		-.180	-.130		.046	-1.960*		-.067	-1.312
Financial incentive		.104	-3.400*		.134	-2.201		.141	-3.212*
Strategic incentive		.040	2.877*		-.011	2.785*		.014	3.303**
Exploration obj.		.326*	.298		-.106	-.758		.107	-.321
Autonomy × Obj.			-.076			2.395*			1.478
Financial × Obj.			3.906**			2.578			3.722*
Strategic × Obj.			-3.180*			-3.108*			-3.669**
N	61	61	61	61	61	61	61	61	61
Adjusted R ²	.057	.142	.219	-.015	-.062	.126	.027	-.002	.157
ΔR ²		.138	.108*		.024	.213**		.037	.185**
F-value	2.856	2.686*	2.901**	.550	.402	1.981	1.851	.976	2.262*

*** Significant at the .001 level

** Significant at the .01 level

* Significant at the .05 level

Table 3: Results of Linear Regressions Examining the Effects of Knowledge Flows on New Business Performance

	Model 10	Model 11	Model 12	Model 13	Model 14	Model 15	Model 7
# of employees	.027	.022	.025	.030	.040	.026	.042
# of full-time employees in new business development	-.083	-.051	-.039	-.077	-.068	-.068	-.043
Autonomy	-.220	-.173	-.178	-.188	-.222	-.187	-.228
Financial incentive	.284†	.297†	.276	.312†	.300†	.304†	.271
Strategic incentive	.127	.141	.165	.140	.150	.139	.176
Exploration obj.		-.157	-.130	-.131	-.167	-.132	-.163
Knowledge inflows		.088	.074				
Knowledge outflows				-.004	.021		
Knowledge flows						.038	.046
Know. in. × Obj.			.090				
Know. out. × Obj.					.110		
Know. flow × Obj.							.149
N	57	57	57	57	57	57	57
Adjusted R ²	.088	.074	.063	.067	.057	.069	.069
ΔR ²		.02	.007	.014	.008	.015	.017
F-value	2.095†	1.650	1.477	1.587	1.434	1.600	1.531

*** Significant at the .001 level ** Significant at the .01 level
 * Significant at the .05 level † Significant at the .1 level

Figure 1: Autonomy x Exploration Objectives

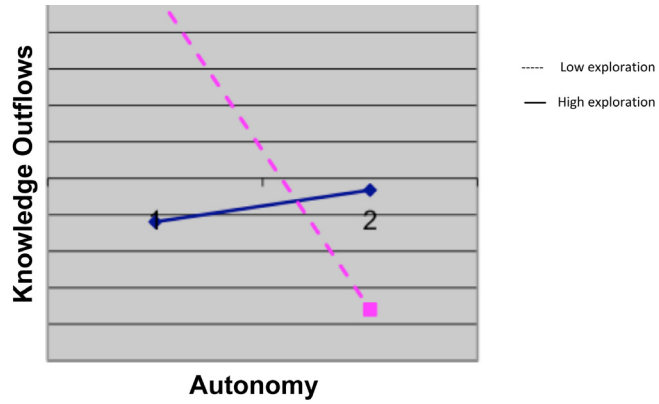
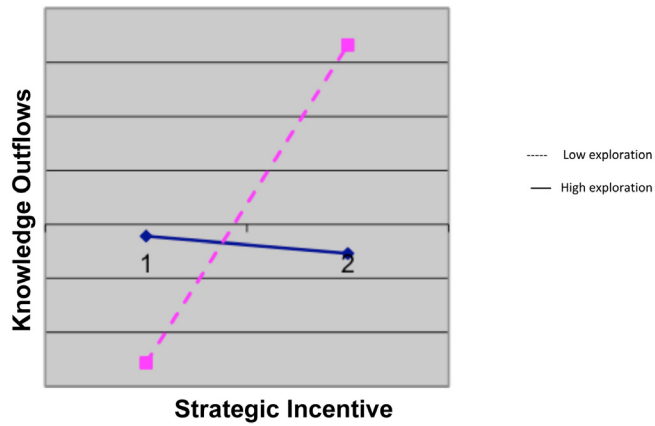


Figure 2: Strategic Incentive x Exploration Objectives



≈ SUMMARY ≈

SHOULD I STAY OR SHOULD I GO? MANAGING INTERDEPENDENCIES BETWEEN EXPLORATION AND EXPLOITATION

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Principal Topic

Researchers overall agree that, in most circumstances, exploration and exploitation need to be separated without being isolated (2003; Govindarajan & Trimble, 2005; Markides & Charitou, 2004; Tushman & O'Reilly, 1996) i.e. they need to be “loosely coupled.” (Weick, 1989) Loose coupling allows for responsiveness between exploration and exploitation –preventing fragmentation– as well as autonomy – allowing for idiosyncrasies. Less consent exists on the degree of separation (strength and amount of remaining interdependencies) and how to manage the constantly changing nature of the interdependencies over time.

Method

This research deploys case studies to build grounded theory (Strauss & Corbin, 1998). Our focus is on projects that address opportunities that established firms are unlikely to perceive or that don't look like an opportunity i.e. new value network and reduced financial hurdle rate projects. New value network projects involve new supplier channels, customer channels, retailers, distributors and/or partners. Reduced financial hurdle rate projects embody projects that look initially unattractive from a financial perspective, but may over time bring in substantial profits and prevent low-end disruption. We currently have collected and analyzed data on one case. This project concerns a financial hurdle rate exploration by a US-based medical device firm targeting consumers in Asia Pacific, a market with large potential in size but which is price-sensitive.

Results and Implication

Whereas the execution of this project largely took place in Asia-Pacific; approvals for expense moneys, business cases and/or budget appropriations had to pass through headquarters. Significant championing for this product from out of the Asia-Pacific region was required to keep it alive. Even though the project by itself showed positive financials; the overall prospect to the business relative to other projects in the pipeline was loss. Several mechanisms were used to convince headquarters the worth of the project e.g. by manipulating the proposed positioning of the product based on unlikely assumptions; by front-end prototyping; and by proposing cross-divisional profit calculation methods. The unavoidable and tight linkage with the traditionally US-focused headquarters through finance, sales, marketing and manufacturing significantly slowed this project down. This case study looks at these linkages and starts to build a theory on the interdependencies between exploration and exploitation.

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≈ SUMMARY ≈

EFFECTS OF LEADERSHIP BEHAVIOR ON EMPLOYEES' AFFECT AND THEIR ENTREPRENEURIAL CREATIVITY

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Carina Lomberg, Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland

Principal Topic

The purpose of the present paper is to contribute to the small but growing literature studying the role of individual-level factors in corporate entrepreneurship. Specifically, we draw on the volitional core of the broader personality-systems-interactions (PSI) theory (Kuhl, 2000) to analyze how leadership behavior and affect influence the creative performance of employees. Creativity is widely considered to be core to entrepreneurship as it is conducive not only for exploring new opportunities but also for a variety of other key activities in entrepreneurship such as resource acquisition and networking activities. PSI theory explains human personality functioning in terms of its underlying mechanisms by stating that the personality of individuals accounts for the capability to regulate affect (Kuhl, Kazén & Koole, 2006).

Method

We used an experimental design to collect real-time data from practitioners and academics working in a creativity-relevant work environment (N=423). Specifically, participants were asked to cope with two randomly assigned tasks measuring entrepreneurship relevant aspects of creativity. During the tasks, participants were confronted with five different types of feedback on their performance. The measurement of creative performance before and after the feedback allows for analyzing the effect of feedback while taking into account the base level of creativity. Data is analyzed by means of structural equation modeling (SEM) using AMOS 17.0.

Results and Implications

The findings of the present study provide a number of new insights for the academic literature on corporate entrepreneurship, and for managerial practice. First, against a backdrop of sparse prior research investigating the individual level of corporate entrepreneurship, our results offer important insights on how the creativity of employees can be enhanced by leadership behavior. Second, our findings suggest that leadership is an affect-laden process, i.e., affect has a major influence on creativity and thus on the employees' *ability* to act entrepreneurially. Third, we accentuate the importance of the valence and confidence of feedback which is vital for the *willingness* to act entrepreneurially. From a managerial perspective, our findings suggest a powerful way to enhance employees' ability and willingness to act entrepreneurially by taking into account the distinct effects of feedback on emotions.

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AN ASSESSMENT OF THE PERCEIVED IMPACT OF CORPORATE ENTREPRENEURSHIP CHARACTERISTICS AND KEY ELEMENTS OF A CORPORATE BUSINESS SYSTEM ON THE DEVELOPMENT OF A RADICAL INNOVATION MANAGEMENT SYSTEM: THE KOREAN VS. U.S. EXPERIENCE

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Mark P. Rice, Babson College, USA

Principal Topic

This research focuses on the evolution of a corporate radical innovation management system in the context of two different of economic systems and business cultures: Korea and the U.S. In particular to what extent do key elements of a corporate business system (strategy, process, customer, and employee) influence the development of a radical innovation management system; and further, to what extent do characteristics of corporate entrepreneurs (proactiveness, risk-taking, autonomy, and aggressiveness) influence the engagement of these four key elements of a corporate business system? The firm's corporate entrepreneurship capacity may vary as a function of the types of corporate entrepreneurship characteristics embodied in the firms' corporate entrepreneurs; the extent to which they are encouraged or discouraged; and the extent to which they are developed to influence the engagement of the key elements of a firm's business system.

Method

Given the exploratory nature of this study, we chose to use a multiple case study/multiple respondent methodology. Based on commonly-accepted criteria for identifying radical innovation projects, a total of eight cases were recruited: four from Korea and four from the U.S.

Results and Implications

Our in-depth analysis of four Korean firms reveals that strategy, among the four elements of a corporate business system, influences the development of the firm's system for managing product-based radical innovation most strongly, while engagement of employees does so for process-based radical innovation. The analysis also shows that different corporate entrepreneurship characteristics are related to each element of corporate business system. Our exploratory analysis of four U.S. firms shows a similar pattern -- with some minor differences. This study improves the theoretical understanding of the relationship among corporate entrepreneurship characteristics, key elements of corporate business system, and radical innovation through our empirical study using qualitative and quantitative analysis. It is our hope that the insights gained through our study may also help firms mature their capacity for radical innovation.

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≈ SUMMARY ≈

**MANAGING THE EO-FIRM PERFORMANCE RELATIONSHIP:
THE ROLE OF HUMAN RESOURCE MANAGEMENT**

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Principal Topic

This research suggests that human resource management (HRM) represents an important, overlooked moderating influence upon a firm's ability to maximize the effectiveness of its EO. Two elements of HRM are investigated being the development of high performance work systems (HPWS) and a strong employee partnership philosophy. Addressing the recent call for research exploring questions at the intersection of entrepreneurship and HRM (Baron, 2004; Katz, Aldrich, Welbourne, & Williams, 2000), this research explores whether the preceding HRM elements enable new ventures to attain greater performance through their EO efforts.

Method

An online survey was sent to the executives of 2000 U.S. start-ups within the computer hardware, software, and services industries. Out of the 2000 firms surveyed, 215 responded, and 125 provided complete, usable data. All firms were less than 10 years old and had greater than 10 employees. EO was operationalized using Covin and Slevin's (1989) scale. HPWS was operationalized using a scale adopted from Way (2002) and Sels et al. (2006). The works of Guest and Peccei (2001) and McCartan (2002) were used to identify nine items that measure partnership philosophy. Firm performance was assessed using survey based measures of sales growth. Control variables were included for firm age, size, industry, presence of venture capital financing, and ownership structure. The analysis was conducted using OLS Regression, as well as using SEM with no significant differences in findings.

Results and Implications

Although EO was not found to be directly related to new venture sales growth ($p > .10$), the interactions between EO and HPWS as well as EO and partnership philosophy were highly significant ($p < .05$). Concerning the lack of significance between EO and firm performance, it may be that the firms in the study are all relatively new enough and competing in such dynamic industries that an entrepreneurial orientation was a necessity, and thus an insufficient source of competitive differentiation. However, when coupled with the proper managerial philosophy and constellation of practices, EO was observed to constitute a significant source of competitive advantage in our sample of relatively young and technology-intensive organizations.

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≈ SUMMARY ≈

**RISK, UNCERTAINTY AND PARTICIPATION IN
CORPORATE ENTREPRENEURSHIP: THE MODERATING
EFFECTS OF ORGANIZATIONAL IDENTIFICATION
AND ENTREPRENEURIAL ORIENTATION**

Erik Monsen, Max Planck Institute of Economics, Germany

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Principal Topic

Recent studies experimentally examine employee decisions to participate in new corporate ventures (Monsen, Patzelt, & Saxton, in press; Monsen, Saxton, & Patzelt, 2007), however, they do not distinguish between risk and uncertainty. Entrepreneurial decisions are more often made under uncertainty rather than “risky certainty” (Alvarez & Barney, 2005). Therefore, using risk-related theories, including agency (Jones & Butler, 1992), utility maximization (Douglas & Shepherd, 2000, 2002), and expectancy theories (Gatewood, Shaver, Powers, & Gartner, 2002) is questionable. Extending corporate entrepreneurship studies (Monsen, 2005; Monsen & Boss, 2009), we examine corporate venture opportunities from the social identity perspective (Ellemers, de Gilder, & Haslam, 2004; Tajfel & Turner, 1986) to explain an employee’s willingness to accept more uncertainty and to act more entrepreneurially for their employer (compare, Sauner-Leroy, 2004; Wright & Cordery, 1999).

Methods

We experimentally manipulate five types of corporate venture uncertainty: reward, team, time, strategy, and structure. In our metric conjoint-based experiment (Shepherd & Zacharakis, 1997), participants evaluate 32 corporate venture opportunities following an orthogonal fractional-factorial design and complete questionnaires on their organizational identification (Mael & Ashforth, 1992) and their firm’s entrepreneurial orientation (Covin & Slevin, 1990). Controlling for framing biases, respondents are either informed that management has asked them to participate or that management has sent an email to the entire company asking for volunteers. We analyze the data with hierarchical linear modeling (Hofmann, 1997; Raudenbush & Bryk, 2002).

Results and Implications

To date, we have data from 125 full-time employees, 110 of which are part-time MBA students. Part-time MBA students have been used as respondents in past studies (Monsen, et al., in press), however, this is one of the first studies to compare the both groups. Our findings will suggest how risky and uncertain aspects of corporate new ventures (e.g. reward, team, time, strategy, and structure), an individual’s organization identification, a firm’s entrepreneurial orientation, and the corresponding multi-level interactions impact the design of and participation in corporate new ventures (compare, Hayton, 2005; Ireland, Covin, & Kuratko, 2009; Kuratko, Ireland, Covin, & Hornsby, 2005).

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≈ INTERACTIVE PAPER ≈

**THE DYNAMICS OF EDUCATIONAL ENTREPRENEURSHIP
IN PUBLIC SECTOR SCHOOLS**

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Miri Lerner, The Academic College of Tel-Aviv-Yaffo, Israel

Principal Topic

Research into the dynamics of entrepreneurial processes as they materialize in existing organizations in the public sector, especially in educational organizations has rarely been conducted. This paper aims to contribute, within the corporate entrepreneurship literature to the dynamics of educational entrepreneurship in public sector schools. The research poses the following three questions, based on the assumption that similarities may be found with entrepreneurial processes as they appear in other public organizations (Perlman and Cornwall, 1990; Brown and Cornwall, 2000): (1) How are entrepreneurial ideas (initiatives) incorporated by teachers into practice in schools? (2) What factors influence the institutionalization of initiatives in school? (3) To what extent do schools differ in the entrepreneurial processes evolving within their walls and what factors explain those differences?

Method

An ethnographic field study was conducted in three Junior High Schools in Israel over a two-year period (2001-2003). A multiple case study approach enabled construction of process models by tracing a chronological narrative of the events involved in each of the three case studies. Data were collected by means of face-to-face in-depth interviews with 44 entrepreneurial teachers (who were identified based on their presentation of 69 initiatives), three principals and two administrators in the Ministry of Education. Two categories of triangulation were used: within-method and between-method. Analysis involved a five-stage inductive search of connections and structures in the data, as guided by application of "grounded theory".

Results and Implications

Our findings show that the dynamics of educational entrepreneurship in public sector schools is usually a bottom-up process that includes nine factors: (1) Idea development - opportunity recognition; (2) Locating alternatives for solving the educational problem identified (primarily administrative or pedagogic); (3) Enlisting internal and external partners; (4) Acquiring legitimacy; (5) Obtaining resources; (6) Implementation; (7) Self-evaluation; (8) Dissemination: adoption of the initiatives by other teachers; and (9) Institutionalization: Initiative repeated in the following year.

The principal's priorities and support of the initiative and school culture were factors contributing to entrepreneurship and its institutionalization. Consistency between how teachers and their principals perceived initiatives in schools reflected the overt and covert psychological contract between managers and their employees. Some practical implications are provided.

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≈ INTERACTIVE PAPER ≈

**MOBILITY AS A TRIGGER OF CORPORATE
ENTREPRENEURSHIP: A STUDY OF THE CONGRUENCE
OF DIFFERENT ROLE-HOLDERS' VIEWS***Erik Lundmark, Linköping University, Sweden**Magnus Klofsten, Linköping University, Sweden***Principal Topic**

Over the last decades, the importance of corporate entrepreneurship has been increasingly emphasised by both academics and practitioners. For policy makers, entrepreneurial organisations have been seen as a source of innovation and growth. From an organisational perspective, corporate entrepreneurship has been described as a means of gaining a competitive advantage or even as a prerequisite for staying in business.

In the regional development field, labour mobility has been proposed as a source of corporate innovation. It is argued that labour mobility facilitates idea and knowledge dissemination and contributes to extended networks of organisations and individuals. However, studies at an organisational level are generally less optimistic about the effects of labour mobility; e.g. employee turnover has been found to be negatively related to innovativeness among firms.

Lately, there has been an increasing interest in the role of individuals in innovative and entrepreneurial organisations. Recent studies show that even within today's lean organisations a few individuals instigate a substantial part of organisations' innovative activities. The present study focuses on individuals within innovative projects and how different aspects of mobility (e.g. labour market mobility and to what extent the individual has changed area of work), affect the individuals behaviour within these projects.

Method

This study is ongoing and based on a cross-sectional survey of four entrepreneurial projects within four large organisations. The projects vary substantially in size the largest has 500 participants and the smallest 15. Two of the participating organisations are large private industries and two are large public organisations. The primary instrument is a questionnaire directed at both project managers and participants. Furthermore, interviews will be conducted to interpret quantitative results.

Results and Implications

The anticipated results of the study will elucidate and possibly bridge contradictory findings from the regional development field and organisational level research regarding the effects of labour mobility on organisational innovativeness. Thus, the study will facilitate the integration of micro and macro level theory by assessing the effects of mobility on individual innovative behaviour within organisations. Furthermore, with increasing mobility on labour markets our findings have implications not only for managers of entrepreneurial projects but also for HR-practices in large organisations.

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∞ INTERACTIVE PAPER ∞

THE MORE YOU KNOW, THE HARDER YOU FALL? SOCIAL CAPITAL, OVERCONFIDENCE AND ESCALATION OF COMMITMENT IN CORPORATE VENTURING

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Principal Topic

The current paper addresses the relationship between top management teams (TMTs) and corporate venturing (CV). We argue that TMTs portray an active role in CV rather than the passive role of acting as gatekeepers to the corporate resources as has been previously argued (Brazeal and Herbert, 1999). We assume that when faced with a decision to support a CV project TMTs must gather information in order to decide.

Building on network theory we argue that TMTs use their interpersonal networks (social capital) inside and outside the organization to obtain information to aid in the evaluation of a CV project. Likewise we propose that TMTs with greater member heterogeneity¹ will pose a large collective network granting them access to more non-redundant information in order to evaluate the CV project.

Conversely, we suggest that while access to information through a diverse network may aid TMTs in choosing an appropriate CV project to support, it may prove to be hindrance later on. The effect of the wealth of information available to the TMTs when choosing a CV project may result in the TMT being overconfident of the success of the project. In turn, overconfidence of the project's success may cause TMTs to disregard negative feedback on a failing CV project they have sponsored resulting in an escalation of commitment behavior.

Key Propositions

The diversity represented by the members of a TMT should have a positive relationship to the information gathering capabilities of that team.

- The amount of social capital the members of a TMT represent holds a direct relationship with the level of confidence those member have towards the accuracy of their decisions regarding new ventures.
- The level of confidence exhibited by Top managers may be directly related to the propensity of corporate ventures to display escalation of commitment

Contributions

This paper extends the literature linking TMT and social capital by including corporate entrepreneurship as possible output of that relationship. The paper answers the call for research on managerial networks and the role of TMTs in corporate entrepreneurs (Zahra et al, 1999; Brazeal and Herbert, 1999). This paper also provides an alternative view for corporate entrepreneurship research by expanding the role top manager's play in the process.

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¹ In terms of functional background and International experience of the TMT members.

∞ INTERACTIVE PAPER ∞

ENTREPRENEURIAL LEADERSHIP – CONSTRUCT REFINEMENT AND SCALE DEVELOPMENT

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Ayman El Tarabishy, The George Washington University, USA

Alan R. Carsrud, Ryerson University, Canada

Principal Topic

We refine the construct of entrepreneurial leadership and develop a scale for its measurement. We define entrepreneurial leadership as influencing and directing the performance of group members towards the achievement of those organizational goals that involve recognizing and exploiting entrepreneurial opportunities.

We distinguish the focal construct from corporate entrepreneurship and other related, but separate constructs. Entrepreneurial leaders operate on two fronts: On one hand, they participate themselves in activities that lead to recognizing and exploiting new business opportunities (“Entrepreneurial Doer”). On the other hand, they influence and direct the performance of employees towards recognizing and exploiting entrepreneurial opportunities by providing employees with the required resources and encouragement (“Entrepreneurial Accelerator”).

Method

We asked survey respondents to rate their immediate supervisor along entrepreneurial leadership items. Our data come from two samples: 317 working students at three US research universities, and 64 working adults. We developed a pool of items that were screened for inclusion in the entrepreneurial leadership scale. Job satisfaction and one’s perception of the organization were assessed in the same survey using established scales.

Results and Implications

The entrepreneurial leadership scale was refined through various steps of analysis (PCA, reliability analysis, CFA). The final scale yielded very promising indices of fit in the two validation samples: χ^2 -to-degrees-of-freedom ratio of 1.12, CFI = .99, TLI = .98, and an RMSEA = .04. An eight-item scale best measures employees’ perceptions of their supervisor’s entrepreneurial leadership: [Supervisor] (1) Often comes up with radical improvement ideas for the products / services we are selling, (2) Often comes up with ideas of completely new products / services that we could sell, (3) Is a risk taker, (4) Is creative, (5) Is passionate about his / her work, (6) Is a visionary, (7) Challenges and pushes me to act in a more innovative way, and (8) Wants me to challenge the current ways we do business. This scale is reliable and composed of items that measure both the “Entrepreneurial Doer” and “Entrepreneurial Accelerator” sides of entrepreneurial leadership. Finally, the entrepreneurial leadership scale was significantly correlated with job satisfaction and one’s positive perception of the organization.

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≈ INTERACTIVE PAPER ≈

**ENTREPRENEURIAL ORIENTATION, ENTREPRENEURIAL
LEARNING PROCESS AND FIRM PERFORMANCE:
EVIDENCE FROM A TRANSITION ECONOMY***Xin Zheng, South China University of Technology, China**Donna J. Kelley, Babson College, USA***Principal Topic**

This paper examines the nature of entrepreneurial orientation-Performance relationship, addressing two key limitations in the literature: First, while several studies have found that firms demonstrating more EO perform better (Wiklund,1999; Zahra, 1991; Zahra & Covin,1995), others have found either no significant relationship or even a negative effect (Wiklund&Sheperd,2005). These conflicting findings urge us to further explore and understand the missing link that may play an important role in this regard. Second, prior research tells us that entrepreneurship is a process of learning (Minniti&Bygrave, 2001), but relatively little organizational learning research has been explored within the entrepreneurship tradition, and the entrepreneurial context has not informed much of the organization learning literature (Harrison&Leitch, 2005). To address the above-mentioned challenges, this research explores the process of entrepreneurial learning and how this process fits in the EO-Performance relationship.

Method

We first ran a pilot test and then collected survey data from CEOs of 210 Chinese firms in different high-technology industries, drawing from a random selection of 2000 firms in the ISI Emerging Market-China Company database. A structural equation model (AMOS 5.0) was used to test the hypotheses. We conducted confirmatory factor analysis (CFA) to test the validity of the measurement models, and then estimated the whole model and checked path coefficients.

Results and Implications

We find support that entrepreneurial learning process is a second-order, common factor that underlies four aspects of exploratory information acquisition, experimentation, exploitative knowledge storage, implementation and refinement. An integrated path is supported which begins with EO predicting entrepreneurial learning process, which in turn predicts the knowledge developed, and concluding with overall performance. In particular, the more developed a firm's entrepreneurial learning process is, the more knowledge will be developed, and the greater its overall success. The result also found that entrepreneurial orientation is positively related to this learning process, and that the process acts as an important mediator and mechanism through which a firm's entrepreneurial orientation influences its overall performance.

This research contributes to the literature by enhancing our understanding of the mechanisms through which EO impacts firm performance. By conceptualizing the entrepreneurial learning process, this research also contributes to our knowledge about the interface between organizational learning, knowledge management and the entrepreneurial context.

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SPINOFF DIFFUSION



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ABSTRACT

Using data on the population of English and Scottish universities and their spinoff firms over a period of 15 years, we show how differential coercive and normative state powers can affect the diffusion of innovations among public organizations. Our work has implications for institutional and diffusion theories as results indicate that when state-mandates are not backed by specific monitoring and sanctioning mechanisms, public organizations are left exposed to fashion setters and mimetic behaviors that dictate the process of adoption. The paper has also implications for fashion theories as it illustrates that previously proposed country-level norms of rationality are insignificant predictors of fashion diffusion. Instead, we show that industry- or field-level norms, even when these are controlled by the state, can be used to prevent fashions from spreading.

INTRODUCTION

This paper draws inspiration from the empirical context of academic entrepreneurship (Etzkowitz, 2003; Shane, 2004) to unfold the complexity of diffusion processes among public organizations. In contrast to traditional theoretical explanations which assume the presence of explicit government regulations and norms that guide the diffusion process of new practices, we argue that ambiguity over or absence of field-level norms force public organizations towards fashion-style adoption of state-mandated practices and towards transition over different diffusion processes until the institutionalization of the new practices is finally achieved.

Diffusion of new activities among public organizations has been the focus of organization theorists for decades (e.g. Rogers, 2003; Wejnert, 2002). Among them, institutional theorists have convincingly argued that compliance to state regulatory and normative demands is controlled through coercive methods, and that these coercive methods are responsible for the rapid, unconditional adoption of state-mandated practices (DiMaggio & Powell, 1983; Ruef & Scott, 1998; Scott, 1981). However, their conclusions have been based on the assumption that the state regulatory and normative demands are explicit. It is analytically and empirically unclear how the diffusion of practices among public organizations occurs when there is absence of state norms. How will organizations respond to triggers of change in view of long-term ambiguity and uncertainty over the exact demands placed upon them, and which is the most likely diffusion process?

An alternative but less explored theoretical perspective on diffusion has been proposed by management fashion theorists (Abrahamson, 1991; 1996; Nelson, Peterhansl & Sampat, 2004). Their research aims to explain the diffusion of non-beneficial practices and the rejection of beneficial ones. Here, the diffusion of practices happens due to various fashion-setters promoting their own irrational, non-validated practices as efficient management techniques in a field. The main assumption is that country-level norms of rationality will moderate the diffusion of these fashions, so that rational nations will experience only short-lived fashions as the latter are quickly unmasked (Abrahamson, 1991, 1996). However, this stream of research neglects to include field-

level constructs that might affect the speed and scope of the diffusion process. Even within a rational society, how do specific environmental demands imposed by the state impact the adoption of new practices among organizations in public sectors? How are new organizational practices adopted when the state's actions challenge the country's norms of rationality?

In this study, we emphasize the importance of uncertainty that stems from the absence of governmental regulation and norms on the adoption of new practices among public organizations. We draw a distinction between early government legislation as a "trigger of change" (Strang & Sine, 2002:507) and regulations/norms that define and monitor organizational action. We argue that early state legislation creates niches for the adoption of new practices but that absence of coercive and normative control mechanisms dramatically increases the importance of mimetic pressures as well as the bargaining power of fashion setters, thus leading to the spread of practices in a fashion style (Abrahamson, 1991, 1996). We therefore challenge previous assumptions that state mandates or requirements are quickly and unconditionally adopted by public organizations (Tolbert & Zucker, 1983; Rowan, 1982) by claiming that compliance to these demands is moderated by specific state actions that define differential behaviors, sanctions and rewards. Further, we add to common assumptions made among fashion theorists that fashions emerge as a result of action from mimicry or the influence of external interest groups such as media (Abrahamson, 1996) by emphasizing the moderating role of government regulation and monitoring in a specific field.

The United Kingdom university spinoff industry that we study here is an ideal context for this (Lockett & Wright, 2005; Shane, 2004). Spinoffs are private corporations based on university intellectual property that emanates from school laboratories, and are often controlled by universities through equity stakes. Intensive government mandates for UK university technology transfer and spinoff formation were left unmonitored for years, leaving universities unsure as to how the spinoff industry should be regulated and how spinoffs could enhance university resources relative to other alternatives such as licensing. The uncertainty from the lack of sanctions, rewards and regulations not only left universities susceptible to cognitive pressures for mimicry among each other as to how spinoff activities should look like, but also left them exposed to fashion setters such as the media. Thus, we are able to show that when coercive pressures are weak, the diffusion of innovations among public organizations can take an uncommon fashion trajectory even in a "rational nation" (Abrahamson, 1996).

DIFFUSION THEORY

Activities that spread go through three distinct phases. The first involves institution building, where new activities are mandated, defined and rationalized by legislators and various agencies (DiMaggio & Powell, 1983; Rowan, 1982; Scott, 1981). In public organizations, compliance to these mandates is controlled through coercive methods and sanctioning mechanisms run by the state. In the second stage, emerging activities gain legitimacy through professional bodies and associations, and are eventually seen as useful within a field. Here, the government defines technical standards through these associations and specifies which behaviors are appropriate. This process of "professionalization" makes organizations easier to observe in a field because assigning organizations to certain groups makes them easier to observe and more legitimate (Zuckerman, 1999). In the final stage, the newly created activities are constantly administrated and if balance is achieved among audiences and users (Rowan, 1982), the diffusion takes permanent status, otherwise declines or is

abandoned (DiMaggio & Powell, 1983; Scott, 1981). Thus, in the final stage, cognitive agreement on the usefulness of the new activities is achieved, often through mimicry among social players.

In public organization settings, institutional theorists have rarely attributed the diffusion of new practices to mimetic pressures. Mimicry is seen as resulting from state regulatory and normative uncertainty as conflicting norms force organizations to imitate each other towards a state of isomorphism (DiMaggio & Powell, 1983; Henizs & Delios, 2001). Institutional theorists claim that isomorphism through mimicry is rare among public organizations because the state apparatus is assumed to have clear rules and sanctioning mechanisms that regulate their conduct (Meyer & Rowan, 1977). Because of their dependence upon the state, public organizations will therefore rush to adopt the changes, lest they are seen as illegitimate. For example, Tolbert & Zucker (1983) have examined how the adoption of civil service reforms begun due to state regulatory requirements and attributed the rapid diffusion of the reforms to institutional compliance of city administrators towards state mandates (cf. Edelman, 1990, 1992). The coercive powers of the state have therefore been stronger in explaining the adoption of new practices requested by the government and all public entities need to do is follow the government's clear guidelines.

Fashion theorists contend that fashions tend to be frequent but short-lived in countries where norms of rationality and efficiency are clearly specified (Abrahamson, 1996:263). Also, popular practices that have been state-mandated may lose their appeal if the government withdraws its mandate (Abrahamson, 1996:256). Yet, these theorists have not examined how industry-specific norms can mediate the speed and duration of fashions. We argue that government regulation targeted at certain fields within state jurisdiction (e.g. the higher education industry) may not exist from the outset, thus leaving the field open to external influences. Such external influences can be powerful fashion setters (e.g. the media, lobbyists, consultants) that affect public opinions and influence the adoption of practices through their deceitful portrayal as beneficial to public educational organizations. We thus argue that while fashions diffuse in a field through demand and supply forces (Abrahamson, 1996), government regulatory controls through associations, public bodies and professional agencies in specific fields can differentially affect the speed with and the extent to which the fashion spreads. This is also true among private organizations because trade associations can presumably prevent the dissemination of fashions among their members through discourse and rational analysis.

Our main assumption is that, in most diffusion studies, authors misattribute the adoption of practices to institutional compliance and coercive pressures for two reasons (Greenwood *et al*, 2008). First, they assume that the state has rationally examined clear benefits for the adopting institutions before mandating the new practices or that it has formalized its monitoring mechanisms with regards to how adopting and non-adopting entities are rewarded and punished. In this instance, mimetic behaviors are excluded from the analysis as the taken-for-grantedness of the new activities is given by state approval and cognitive definitions of what must be done through mimicry are not necessary. Second, in organizational studies, coercive and normative pressures are difficult to operationalize and authors have often examined mimetic processes without detailing the regulative or normative environments at all. Few have satisfactorily operationalized all three pillars in a single study (Mizruchi & Fein, 1999) and in some cases institutional theorists have deliberately blended coercive and normative elements to form a composite "institutional profile" (Greenwood *et al*, 2008: 16) that supposedly affects diffusion. This has led researchers to commonly attribute the diffusion of practices to some unspecified "institutional dynamics" that they designate at will.

In this paper, we detail the natural history of the adoption of a practice among public educational organizations to uncover the full diffusion process. We show that when clear norms and standards are not there, organizations adopt practices not because they feel threatened by coercive and normative state pressures but because of mimetic behaviors and the influence of external environmental forces that reign in their field with fashionable solutions. Lack of coherence and agreement over which specific new activities are mandated and how they are validated is particularly important in educational markets (Rowan, 1982; Clark, 1968). Formalized educational markets with clear regulations, associations, organized communities, bodies and groups of interests are important in guiding the process of accrediting newly diffused practices (Meyer, Scott & Strang, 1987; Scott, 1981). Institutional theorists have placed little emphasis on how the differential ability of these coercive and normative control mechanism can affect the diffusion of practices in educational markets. In this study, we detail how the absence of rational rules and standards can lead to educational innovations spreading as fashions.

ENGLISH AND SCOTTISH SPINOFFS

We define spinoffs as new ventures that are dependent upon licensing or assignment of a university's intellectual property for initiation (Lockett & Wright, 2005:1044). Our definition distinguishes spinoffs from other university startups that are established by students, graduates or researchers that are not affiliated with research conducted on university intellectual property. Spinoffs are complex organizations that rely on some form of patent or invention and seed funding from private investors to be set up and grow. They were historically seen as a rare route for knowledge commercialization since other forms of technology transfer such as licensing had been prevalent for decades (Shane, 2004).

The origins of the United Kingdom spinoff industry can be traced back in 1977 when the then Patents' Act gave inventors the right to share financial benefits from their research with their employer. In 1986, the UK government abolished the British Telecom Group's monopoly in telecommunications and further privatizations throughout the 1980's incentivized research and development among private companies that sought to enter industries now open to competition. A lot of these companies looked at universities to provide them with technology expertise through patenting and licensing. In 1993, a government White Paper designated universities as key to the realization of the UK's research potential and suggested policies to increase university-industry collaboration (HM Treasury, 1993). In response, university Technology Transfer Offices spread in the early 1990's and there was heated debate among universities over strategies for the most efficient route to commercialize technology as mandated by the government. Although spinoff firms had been formed for many years prior to 1993, their numbers were characteristically low and their emergence could be described as naturalistic. Our data show that between 1963 (when the first spinoff was registered) and 1993, only 103 spinoffs had been incorporated for an average of 3/ year among 113 universities. In contrast, by the late 1990's, most English and Scottish universities had incorporated at least one spinoff within their facilities.

Lack of State Rules and Norms

Despite incentives favoring university commercial activities and seemingly high university technology transfer up to 2001, the UK government never monitored or regulated the spinoff industry. In 1996, the first major university "Research Assessment Exercise" (RAE) took place. RAEs are conducted every 5-7 years by the higher education authorities and incorporate per-

formance assessments of university teaching and research collapsed into numerical scores. RAE scores are extremely important because they guide university funding for the years until the next RAE. The 1996 assessment did not make any explicit mention to technology transfer, nor it produce scores for commercial activities. In 2001, the second RAE took place, with the assessment process this time including only minor, random technology transfer criteria for the evaluation of research at engineering and medical departments. The test only referred to aspects of research that had “immediate commercial applications” in the UK industry.

Contrary to teaching and research activities, the government had not established any association that would exclusively oversee spinoff activities. The most relevant such watchdog, UNICO, was established in 1994 by university managers to coordinate technology exploitation within Technology Transfer Offices (TTO). Other agencies, such as HEFCE, that are responsible for the allocation of university funds were also left uninvolved. The lack of such professional bodies that could regulate and oversee spinoff activities prior to 2001 was in contrast to mainstream diffusion explanations, particularly in higher education where state monitoring is important for the professionalization and institutionalization of novel practices (Meyer & Rowan, 1977; Scott, 1981). Yet, spinoff numbers continued to rise steadily for many years until 2001. The government had also not collected any form of official data on spinoff activities until 2002 when the first “Higher Education Business Interaction survey” took place. The survey, which has been running annually ever since, wished to identify university strategies for the exploitation of intellectual property by collecting quantitative information from individual institutions across the UK. The stated aim was to provide “invaluable intelligence for knowledge exchange practitioners and policy makers” (HEBCI, 2008).

By 2001, following the last research assessment exercise, government suggestions to halt the acceleration of spinoff formation among universities were loudly voiced for the first time. Reflecting world-wide evidence on the spinoff industry, a major review by the UK government concluded that the number of spinoff firms being formed was hard to sustain unless a radical shift towards spinoff performance in the universities’ general incubation model was urgently implemented (HM Treasury, 2003). Identifying key performance indicators of university commercial activities became a policy priority. Further, to promote successful technology transfer strategies, in 2000 the government established a £50million University Challenge venture capital fund and sponsored several Science Enterprise Centers based in universities (Lockett & Wright, 2005). The next year it extended invitations at universities to apply for special funding targeted at commercial activities and by 2002 the first substantial public funds dedicated to technology transfer were distributed to universities by the English and Scottish authorities (HEIF funds).

As with sanctioning, the government had not established rewarding schemes for technology transfer prior to 2001. In the early years, the assumption supported by state discourse was that spinoff production would be financially self-rewarding for universities. State expectations were that spinoffs would directly compensate universities through equity investments that, when liquidated, would result in cash flowing into the schools and their individual inventors (Feldman, Feller, Bercovitz & Burton, 2002). There was also expectation that commercial agreements with external industry financiers linked to spinoffs (e.g. venture capitalists) would bring investments into university laboratories and other facilities.

The Spinoff Diffusion

Our data on the English and Scottish spinoff industry show that firm foundings concentrated around the years 1996 and 2001 when the two research assessment exercises took place, indicating elements of compliance to state mandates (figure 1). However, after 2001, not only did spinoff foundings decline, but spinoff deaths also increased sharply. We attribute the collapse of the spinoff population post-2001 to a fashion-style diffusion process. According to Abrahamson (1996:256), fashions exhibit a bell-shaped pattern of diffusion similar to the one observed in the UK spinoff industry.

Scholars in the United States and Europe who have looked for answers as to why spinoffs spread so quickly have offered efficiency-based explanations of how university strategies and initiatives as well as general economic conditions favored the diffusion of these firms (DiGregorio & Shane, 2003; Lockett & Wright, 2005; O'Shea, Allen, Chevalier & Roche, 2005). Researchers have implicitly assumed that more spinoffs were better for national economies and universities, without considering the prospects of survival and growth of these companies or the actual benefits that they brought back to universities. Abrahamson (1991) has claimed that this dominant perspective in the diffusion literature is indicative of the pro-innovation bias which suggests that diffused innovations will benefit the adopters, despite lack of such evidence. He and other theorists have proposed that lack of evidence is a predictor of fashion diffusion processes (Abrahamson, 1991; Nelson *et al*, 2004) because the resulting ambiguity forces organizations to accept practices that are not beneficial or financial sustainable within their structure.

Below, we formulate hypotheses based on two periods that differentiate between fashion (1993-2001) and rational (2002-2007) diffusion processes that are moderated by lack of state norms and regulations. As we explained earlier, we treat 2001 as the turning point in our analysis for several reasons. First, it was the year of the last Research Assessment Exercise. Second, it was the year that the government introduced special spinoff funds accompanied by specific demands and guidelines for growth-oriented venturing. These and other regulatory and normative changes were implemented as a result of the government starting forming clear impressions on the spinoff industry based on the Higher Education Business Interaction survey.

Association Membership. In the early years of the spinoff industry, the void caused by lack of governmental rules and monitoring was left to be filled by universities. Institutional theorists argue that uncertainty breeds mimetic behaviors among organizations as the latter attempt to define what constitutes acceptable behavior versus not (DiMaggio & Powell, 1983; Ruef & Scott, 1998). Emerging activities and practices are defined by professional bodies, training organizations and other industry associations that confer legitimacy to those espousing the practice (Rowan, 1982). To participate or be monitored as a member of such a group or association makes organizations legitimate players that abide by newly defined professional standards (Zuckerman, 1999). In 1994, English and Scottish universities founded their own body, the University Companies Association (UNICO) as a natural reaction to the lack of rules and guidelines on spinoff formation. The Association was focused on exchanging best practice and training universities technology transfer personnel. Membership into UNICO increased rapidly as its members were attempting to design university strategies and structures that would increase spinoff venturing. Although other authors have offered rational explanations (e.g. O'Shea *et al*, 2005) and institutional and diffusion theorists focus on coercive state powers, we believe that university participation into UNICO during the early years was a university act that sought legitimacy and a sense of belonging into a

group of pioneering universities that abided to governmental discourse for reform. Membership into UNICO could therefore explain the intention of universities to generate spinoffs early in the 1990's. It was a symbolic university gesture towards convergence to a specific business incubation model that UNICO members defined themselves in view of absence of regulatory norms. Later, as the spinoff industry was redefined and regulated based on new evidence and government action (Abrahamson 1996; Oliver, 1992), UNICO may have lost its importance in predicting university spinoff formation. We hypothesize:

H1a. There is a positive relationship between UNICO membership and a university's decision to adopt spinoffs.

H1b. The effect of UNICO membership on a university's decision to adopt spinoffs was stronger when norms and regulations were absent than when they were present.

Mimicry. As universities were trying to designate behavioral norms (DiMaggio & Powell, 1983), the spread of spinoffs depended upon schools mimicking each other in order to appear modern in their field. The imitation process took place without universities being truly concerned with successful spinoff formation. Elements of a cognitive legitimization process that substituted the absence of coercive or normative demands (DiMaggio & Powell, 1983; Rowan, 1982) were evident in many cases. Imitation led most universities to restructure commercial activities around almost identical Technology Transfer Offices around the same time, although other arrangements such as outsourcing spinoff activities could have taken place, and did take place after 2001. We propose that since mimetic forces were in place, prior diffusion of spinoff activities in a local region would have further predicted the adoption of spinoffs by those schools that had not done so. This practice perhaps lost its impact after 2001, when government evidence and discourse on the spinoff industry emphasized that few spinoffs had accomplished the potential envisaged by the government (HM Treasury, 2003) and a more rational, evidence-based restructuring of the spinoff industry was needed. We therefore propose:

H2a. There is a positive relationship between spinoff local diffusion and a university's decision to adopt spinoffs.

H2b. The effect of spinoff local diffusion on a university's decision to adopt spinoffs was stronger when norms and regulations were absent than when they were present.

Media coverage. Despite lack of balance among audiences in the educational community (Rowan, 1982) as to whether spinoffs were the appropriate commercialization route and fears that they would negatively affected the traditional mission of the university (Bok, 2003; Slaughter & Leslie, 1997), spinoff popularity increased rapidly. Media coverage of spinoff events gathered pace from the early 1990's with spinoffs attracting almost 500 press articles by 2000 (figure 2). The average number of media reports per spinoff also increased from 1.12 in 1995 to 2.74 in 1998 and 3.76 in 2000. Typical mentions in the press hailed spinoffs as taking research methods "from the laboratory bench to the hospital ward" (*Observer*, 2000) and as "building the new knowledge-driven economy" (*M2 Presswire*, 1998). One university was seen as planning to form "80 spinoffs in only three years", highlighting excessive hopes on the "role that spinoffs would play in the national economy" (*Sheffield Star*, 2002).

The influence of media coverage is central to the diffusion of innovations and fashion literatures (Abrahamson, 1991; Rogers, 2003), however, research on university spinoffs has ignored it focusing instead on efficiency-based explanations (Lockett & Wright, 2005; O'Shea *et al*, 2005). Media coverage has not been used in higher education settings but we argue that similar to other non-profit organizational settings (Holden, 1986; Myers, 2000) it played an important role in how innovative practices spread among universities. We argue that the UK media magnified spinoff events granting them legitimacy and respectability (Deephouse, 2000) even among audiences negatively positioned towards spinoffs. This may have attracted other institutions to follow by forming spinoffs in a rapid mimetic process. We therefore propose:

H3a. There is a positive relationship between spinoff media coverage and a university's decision to adopt spinoffs.

H3b. The effect of spinoff media coverage on a university's decision to adopt spinoffs was stronger when norms and regulations were absent than when they were present.

Prior spinoff growth. By collecting information and setting norms and standards for financial rewards, the government made steps towards rationalizing the spinoff industry. Few universities had formed spinoffs with clear growth prospects since 1993 since most had seen high spinoff numbers as necessary or sufficient. Had the spinoff practice diffused based only on rational criteria as authors have suggested (DiGregorio & Shane, 2003; Lockett & Wright, 2005), there would have been no major differences in spinoff productivity in the industry's history. Figure 1 indicates that post-2001, not only did spinoff numbers decrease but spinoff deaths increased markedly. We contend that, following new evidence and new governmental guidelines, universities that did not consider the production of potentially successful spinoffs as feasible within their capabilities and resources would abandon the practice. In contrast, those few that had prior experience in successful spinoff formation would continue after the government had regulated the industry. We hypothesize:

H4a. There is a positive relationship between prior spinoff growth and a university's decision to adopt spinoffs.

H4b. The effect of prior spinoff growth on a university's decision to adopt spinoffs was weaker when norms and regulations were absent than when they were present.

METHODOLOGY

We gathered panel data on the population of universities (113) and spinoffs firms (1409) in England and Scotland covering a period of 15 years between 1993 to 2007. We located most data in publication outlets such the Higher Education Statistics Authority (HESA) and supplemented it with information from primary sources and direct contacts with universities and Technology Transfer Offices.

Dependent variables. We defined two dependent variables in our study. First, a binary variable measuring whether a university founded any spinoff in a given year (0=no, 1=yes) and second, a positive integer capturing the total number of spinoffs founded each year by a university.

Independent variables. *Membership* into the universities' spinoff association UNICO was measured as years since joining. As some universities left the association earlier than others, we used a decreasing ratio of 0.80 to capture the slowly-fading effect of a UNICO membership over the years. The reason for this is that having left UNICO did not automatically erase the cumulative UNICO experience of a university that participated in the union for years. *Local diffusion* was measured as the percentage of universities in a UK region that had formed at least one spinoff in a year. We used the UK's classification of 9 geographic regions (Government Office regions) plus Scotland to assign universities in each of these. We then counted the number of universities that had formed a spinoff in each region and divided the figure by the total number of universities located in that region. *Media coverage* of spinoffs was assessed by counting the number of UK press clippings that related to a university and its spinoff firms in a single article. We searched the LexisNexis database for articles with the name of a university and each of its spinoff firms as keywords and marked such articles in our 15 year period. We recorded a total of 8866 articles linked to 1409 spinoffs and their parent universities. Content analysis of this type has been used in various other settings in organizational studies (e.g. Holden, 1986; Myers, 2000). *Prior spinoff* growth was measured as the logarithm of a university's prior spinoffs' total assets. Theoretically, we expected that past spinoff growth would affect the decision to form spinoffs in the future (yes/no) or the number of spinoffs generated in the future (Deephouse, 1996). Assets are frequently used as firm size indicators and can capture common endowments at the time of a spinoff founding such as patents, office space and personnel granted to them by universities.

Control variables. We controlled for a number of university-level and environmental factors that may affect the diffusion of spinoffs, specifically: *university performance* (number of publications); *industry funding* and *university endowments*; *university reputation* (university rankings); *university status* (number of Nobel Prizes); *prior experience* in spinoff formation; *Technology Transfer Office experience*; *university age*; *university size*; *Scottish universities* vs. English; *regional GDP*; and *regional R&D intensity*.

As we saw, we defined the dependent variable in two ways: first, as the university decision to form spinoffs each year (yes/no) and second, as the number of spinoffs formed each year. In the first case, we employed discrete-time event history analysis estimating maximum likelihood logistic regression (Alison, 1984). In the second case, and as a robustness test, we estimated negative binomial regression models as we were concerned with count variables that take small positive values. Results of the negative binomial regressions are not reported here but are available at request from the authors. All independent and control variables in the models were lagged by one year to allow for their effects on the dependent variable to unfold smoothly.

RESULTS & DISCUSSION

Most correlations in our analyses ranged from small to moderate, however, to examine possible problems with multicollinearity we computed variance inflation factors (VIF). In both periods and with both event history and negative binomial analyses, we found that all variables had VIF well below the usual warning level of 10, with the highest VIF not exceeding 6.5 and the mean VIF always below 3 (Gujarati, 2003). Tables 1 and 2 show results of event history analysis on the decision to form spinoffs (yes/no). Overall, we find support for hypotheses 1a, 2a, 3a and 4a once more, as the four variables increase X^2 and decrease the log likelihood in all models except 10. Model 12 shows that media coverage cannot explain spinoff productivity in the second period, a fact that further supports hypothesis 3b (model 6 shows that media coverage is significant in

the non-regulated period pre-2001). Results also support hypothesis 2b and 4b as local diffusion was less important and prior spinoff growth was more important when government regulatory and normative action intensified. However, we did not find support that early membership into UNICO (1b) was more important than after 2001. We found similar overall supporting evidence using negative binomial models.

Our paper has important implications for the diffusion (Rogers, 2003) and fashion (Abrahamson, 1991; Nelson *et al*, 2004) theories for a number of reasons. First, we move towards a theory of more dynamic diffusion processes rather than static diffusion explanations. The implicit assumption among diffusion studies, particularly when dealing with public, non-profit organizations, is that there exist clear government guidelines that organizations follow in order to appear legitimate (Casile & Davis-Blake, 2002; D'Aunno *et al*, 1991; Davis, 1991; Greve, 1996). This sensitivity for compliance is extremely high among educational institutions because changes in their mission or structure are not evaluated in "technical terms" unless they have first been evaluated in terms of conformity to the state requirements (Rowan, 1982; Scott, 1981). We do not deny the role of coercive and normative powers in the diffusion of innovations but we argue that these powers have been strangely misrepresented to describe the cognitive aspects of neoinstitutional theory, thus replacing mimicry. Because coercive state pressures are seen as extremely important, particularly in non-profit fields, authors have assumed that organizations adopt practices automatically (Mizuchi & Fein, 1999). Instead, we suggest that state powers are not so rigid and suffer from inertia (Hannan & Freeman, 1984), therefore mimetic and fashion attributes can explain the socially constructed nature of practice diffusion. This conceptualization brings us closer to the true cognitive aspects of organizational change that lie at the heart of neoinstitutional theory. We believe that future research should incorporate measurements of relative state control to avoid attributing the diffusion of practices to some "unspecified institutional" or coercive mechanisms.

Second, our research has implications for management fashion theories. Despite Abrahamson's call (1996:274) there has been limited operationalization of fashion diffusion trajectories. Apart from compliance to normative or coercive pressures, the other dominant perspective among diffusion studies has been efficiency. Diffusion processes are often seen as starting from one of these states only to be followed by the other: either compliance first then technical efficiency, or technical efficiency first then compliance. Here, we show that given a country's norms of rationality, fashion theories are unable to explain the infiltration of fashion setters such as media into public organizations settings. We believe that a more fine-tuned process of measuring the normative environment and its codes of rationality is necessary if we are to understand the fashion market with its suppliers and buyers. This is critical for both public and private organizations that wish to avoid fashions within their fields. How can field- or industry-level norms, associations and standards work to prevent the spread of fashions among an industry's members? How can state policies and regulations contribute to or coordinate this process?

The paper has also important managerial and public policy implications. It shows how public money and efforts can be wasted when "compliance" and "conformity" to government pressures are left as the only driving forces behind public administration and restructuring. After the initial legislation of the 1980's, there were plenty of opportunities for the government to design specific policies for the spinoff industry including the accreditation of Technology Transfer Offices, the formation or endorsement of a spinoff association such as UNICO or other measures towards spinoff regulation. Such timely intervention would have been beneficial not least because alternative routes for the commercialization of university intellectual property existed prior to the spinoff

growth and could have been better unitized instead of spinoffs. The existence of alternatives such as these is a major reason why detailed monitoring and accreditation standards must be enforced to secure the avoidance of public organization management fashions.

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Figure 1: Spinoff births and deaths in England and Scotland, 1993-2007



Figure 2: Media coverage of English and Scottish spinoffs, 1993-2007 (average on right axis)

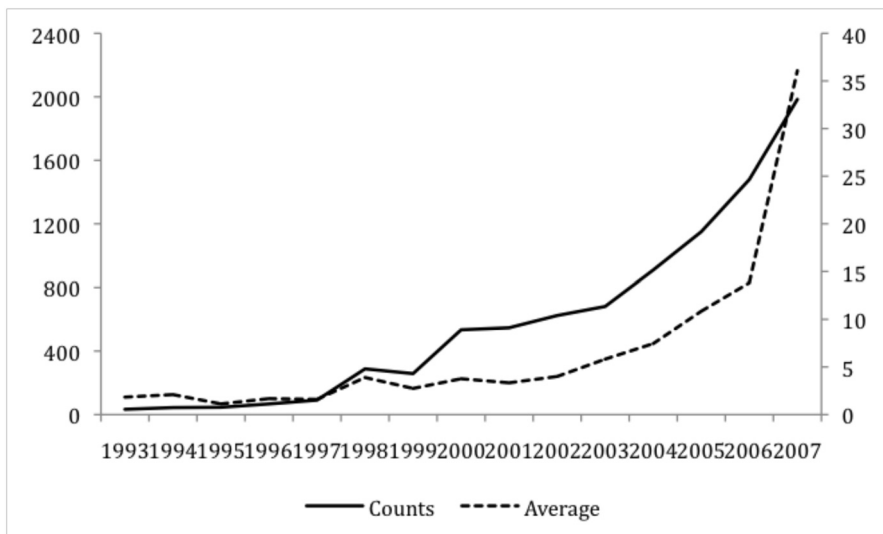


Table 1: Event history analysis on the decision to form spinoffs by year: 1993-2001

Variables	Model 1	s.e.	Model 2	s.e.	Model 3	s.e.	Model 4	s.e.	Model 5	s.e.	Model 6	s.e.
Publication output	1.00	(0.00)	1.00	(0.00)	1.00†	(0.00)	1.00	(0.00)	1.00	(0.00)	1.00	(0.00)
Industry funding	1.00	(0.00)	1.00	(0.00)	1.00	(0.00)	1.00	(0.00)	1.00	(0.00)	1.00	(0.00)
Endowments	1.00	(0.00)	1.00	(0.00)	1.00	(0.00)	1.00	(0.00)	1.00	(0.00)	1.00	(0.00)
Reputation	-0.97***	(0.01)	-0.97***	(0.01)	-0.97***	(0.01)	-0.97***	(0.01)	-0.97***	(0.01)	-0.97***	(0.00)
Status	0.98	(0.09)	1.02	(0.09)	1.03	(0.09)	1.00	(0.09)	1.00	(0.09)	1.06	(0.10)
Prior experience	1.51†	(0.35)	1.89**	(0.46)	1.86*	(0.46)	1.74*	(0.42)	1.20	(0.30)	1.87*	(0.51)
TTO age	1.11***	(0.02)	1.08***	(0.02)	1.08**	(0.03)	1.08***	(0.02)	1.10***	(0.02)	1.06**	(0.02)
Age	-0.99	(0.00)	-0.99	(0.00)	-0.99	(0.00)	-0.99	(0.00)	-0.99	(0.00)	-0.99	(0.00)
Size	1.00***	(0.00)	1.00**	(0.00)	1.00*	(0.00)	1.00*	(0.00)	1.00**	(0.00)	1.00	(0.00)
Scotland	2.95**	(1.02)	3.36***	(1.16)	-0.50	(0.24)	2.70**	(0.93)	2.52**	(0.89)	-0.64	(0.32)
Local GDP	1.00**	(0.00)	1.00**	(0.00)	-0.99*	(0.00)	1.00	(0.00)	1.00**	(0.00)	-0.99*	(0.00)
Local R&D	1.00*	(0.00)	1.00*	(0.00)	1.00*	(0.00)	1.00	(0.00)	1.00	(0.00)	1.00	(0.00)
Membership			1.18**	(0.06)							1.06	(0.05)
Local diffusion					1.35***	(0.08)					1.27***	(0.07)
Media coverage							1.00***	(0.00)			1.00**	(0.00)
Prior spinoff growth									1.05**	(0.02)	1.02	(0.01)
X ²	333.75***		344.46***		365.97***		358.93***		343.58***		381.91***	
Log likelihood	-341.06		-336.05		-325.30		-328.82		-336.14		-316.98	
df	12		13		13		13		13		16	

N=835; ***p<0.001, **p<0.01, *p<0.05, †p<0.10

Table 2: Event history analysis on the decision to form spinoffs by year: 2002-2007

Variables	Model 7	s.e.	Model 8	s.e.	Model 9	s.e.	Model 10	s.e.	Model 11	s.e.	Model 12	s.e.
Publication output	1.00	(0.00)	1.00	(0.00)	-0.99	(0.00)	-0.99	(0.00)	1.00	(0.00)	-0.99	(0.00)
Industry funding	1.00	(0.00)	1.00	(0.00)	1.00†	(0.00)	1.00†	(0.00)	1.00	(0.00)	1.00	(0.00)
Endowments	1.00	(0.00)	1.00	(0.00)	1.00	(0.00)	1.00†	(0.00)	1.00	(0.00)	1.00	(0.00)
Reputation	-0.98***	(0.00)	-0.98***	(0.00)	-0.97***	(0.00)	-0.97***	(0.00)	-0.98***	(0.00)	-0.97***	(0.00)
Status	3.45*	(1.70)	3.42*	(1.69)	3.96**	(1.99)	3.55*	(1.75)	3.16*	(1.56)	3.43*	(1.73)
Prior experience	1.93*	(0.52)	2.22**	(0.62)	1.84*	(0.52)	1.77*	(0.49)	1.67†	(0.47)	1.83*	(0.54)
TTO age	1.07***	(0.02)	1.05**	(0.02)	1.11***	(0.03)	1.11***	(0.02)	1.07***	(0.02)	1.09***	(0.02)
Age	1.00	(0.00)	1.00	(0.00)	1.00	(0.00)	1.00	(0.00)	1.00	(0.00)	1.00	(0.00)
Size	1.00*	(0.00)	1.00	(0.00)	1.00*	(0.00)	1.00**	(0.00)	1.00†	(0.00)	1.00*	(0.00)
Scotland	1.00	(0.42)	1.18	(0.49)	-0.14**	(0.09)	1.05	(0.45)	-0.90	(0.37)	-0.59	(0.45)
Local GDP	1.00	(0.00)	-0.99	(0.00)	-0.99***	(0.00)	1.00	(0.00)	-0.99	(0.00)	-0.99	(0.00)
Local R&D	-0.99***	(0.00)	-0.99***	(0.00)	1.00	(0.00)	-0.99***	(0.00)	-0.99***	(0.00)	-0.99	(0.00)
Membership			1.05*	(0.03)							1.07*	(0.03)
Local diffusion					1.39***	(0.12)					1.12	(0.11)
Media coverage							-0.99***	(0.00)			-0.99***	(0.00)
Prior spinoff growth									1.04*	(0.02)	1.03†	(0.02)
X ²	331.36***		335.84***		348.27***		350.95***		335.09***		363.78***	
Log likelihood	-261.51		-259.27		-253.05		-251.71		-259.05		-244.71	
df	12		13		13		13		13		16	

N=618; ***p<0.001, **p<0.01, *p<0.05, †p<0.10

∞ INTERACTIVE PAPER ∞

THE INFLUENCE OF GOVERNMENTAL INSTITUTIONS ON THE LIKELIHOOD OF AN INDIVIDUAL BECOMING AN ENTREPRENEUR

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Principal Topic

Although the decision to become an entrepreneur is an individual one, institutional factors are likely to influence the decision of an individual concerning whether or not to become an entrepreneur. It has been argued that increasing levels of economic freedom is an effective means to promote productive entrepreneurial activity (Gwartney and Lawson, 2002). In market-based economies with high levels of economic freedom, entrepreneurs may pursue economic profit by addressing consumer desires. Conversely, economies with high taxes, heavy regulations, trade restrictions, and a lack of property rights raise the cost of doing business, making pursuing such opportunities less attractive. In economies lacking economic freedom, opportunities for rent-seeking could yield higher returns than value-creating entrepreneurial opportunities (Kreft and Sobel, 2005), and higher levels of rent-seeking activities are likely to be observed. However, economies with high levels of economic freedom are more likely to have individuals engaging in productive entrepreneurship instead. In this paper, we investigate the following research question: How does economic freedom impact the level of self-employment in an economy?

Methods

To answer this question, we collect self-employment, unemployment, and per capita GDP data from 34 OECD countries. This data is matched with the Fraser Institute Economic Freedom of the World index. OLS regression is used using the self-employment rate as the dependent variable, with per capita GDP, unemployment rate, and the various components of the Fraser Institute Economic Freedom of the World index as the independent variables. Country and year fixed effects are included as well.

Results and Implications

Our preliminary results show that several components of economic freedom are significantly related to the level of self-employment. Small government size, sound money, freedom to trade internationally, property rights, and low levels of employment regulation were positively associated with the level of self-employment in an economy. This research highlights the important influence that institutions can have on many aspects of an economy, including the level of self-employment.

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THE LEWIS INSTITUTE AWARD AT BABSON COLLEGE FOR THE BEST
PAPER EXPLORING THE SIGNIFICANCE OF SOCIAL ENTREPRENEURSHIP

THE ORGANISATIONAL GOALS OF SOCIAL ENTREPRENEURS: HOW SOCIAL ARE THEY?



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ABSTRACT

There is an increasing consensus among academics that the common denominator of ‘social entrepreneurs’ is their adherence to a ‘*dominant social mission*’. The extent to which social entrepreneurs actually adhere to socially oriented goals and values is largely taken for granted and treated as a black box. Building on established theoretical constructs, this paper develops a number of measures that can potentially contribute to our understanding of how ‘social’ social entrepreneurs really are. More specifically, we empirically test four potential measures of “social proclivity” in a well defined sample of social ventures, performing confirmatory factor analysis (CFA) (N~270). CFA points to high reliability and validity for the measures of each of the four constructs and supports the existence of a higher order construct “social proclivity”. Further, results show that social entrepreneurs display strong social as well as economic motives, providing an empirical base for actually capturing the dual-bottom line that characterises these enterprises.

INTRODUCTION

The last decades there is an increasing interest in organisations that are established for meeting social or societal problems. Especially in developed countries, these initiatives are argued to be a response to diminishing government involvement in society (e.g., Sharir and Lerner, 2006; Nicholls, 2006). First, there is the social enterprise movement that has grown considerably in the US, the UK (Tracey and Jarvis, 2007), and in EU countries (Defourny and Nyssens, 2008). Social enterprises are generally referred to as “*the universe of practices and forms of mobilizing economic resources towards the satisfaction of human needs that belong neither to for-profit enterprises, nor to the institutions of the state in the narrow sense* (Moulaert and Ailenei, 2005)”. Second, there is an increasing interest in social entrepreneurs, typically referred to as firms tackling social problems and catalyzing social transformation. More specifically, social entrepreneurship is argued to be “*entrepreneurship with an embedded social purpose*” (2006), *through the recognition and exploitation of entrepreneurial opportunities* (Austin et al. 2006, Mair and Marti 2006), *not being limited to a particular juridical / organizational form* (Mair and Marti 2006). Empirical research on social entrepreneurship seems to focus on ‘good practices’ and success stories of ‘leading social entrepreneurs’ that perform as ‘change makers’ (Sharir and Lerner 2006, Van Slyke and Newman 2006). Research on social enterprises mostly encompass exploratory studies on regional characteristics (e.g., number of initiatives, employment,...) of the social enterprises in general (Nyssens 2006) and work integrating social enterprises in particular (Vidal 2005).

Essentially, social entrepreneurs are argued to place higher value on the creation of social value and can vary in their ambition for economic value creation which is generally seen as a necessary

condition to ensure financial viability (Dorado 2006, Schuler and Cording 2006). In line with this, authors stress that social enterprises want to realize explicit social objectives and are limited in their profit distribution (Defourny and Nyssens 2008, Vidal 2005). Further, Peredo and Chrisman (2006) argue that community-based ventures are characterized by adhering to an ‘array of aims’, where profit is seen as a resource to serve a social goal (Haugh 2007). This raises the question of the degree to which social entrepreneurs adhere to a social purpose and how this is balanced with economic – market oriented goals. To date however, there is no research demonstrating the degree to which social entrepreneurs adhere to a ‘social purpose’. Literature on social entrepreneurship, community-based ventures and social enterprises largely takes the ‘social’ for granted, suggesting homogeneity in their ‘social’ manifestation.

Building on established theoretical constructs, this paper develops a number of measures that can potentially contribute to our understanding of how ‘social’ social entrepreneurs really are. More specifically, we sent a standardized survey to a well defined sample of social enterprises and performed confirmatory factor analysis (CFA) to assess the reliability and (construct) validity (N~270).

The remainder of the paper is structured as follows. We start with an overview of the social entrepreneurship literature. We then explain the constructs we selected that can provide insight in the ‘social proclivity’ of social enterprises. Next, we discuss the cross-sectional survey design. In the results section we discuss the reliability and validity of the measures and the extent to which they relate to the higher order ‘social proclivity’ construct. Finally, suggestions for further research are articulated.

THE SOCIAL IN SOCIAL ENTREPRENEURSHIP

There is a general consensus that social entrepreneurship or “*entrepreneurial activity that primarily serves a social objective*” has been on the rise in recent decades (Austin et al. 2006, Peredo and McLean 2006). More specifically, social entrepreneurship is seen as a response to diminishing government involvement in the economy and society (e.g., Sharir and Lerner 2006, Nicholls 2006), originating from the non-for-profit sector (Dees 1998) and rapidly extending to the private and public sector (Johnson 2000).

The literature on social entrepreneurship has centred around two main debates: the level of analysis and the locus of social entrepreneurship. Regarding the level of analysis, the field potentially embraces individual, organizational and inter-organizational levels of analyses. At the individual level, definitions of social entrepreneurs focus on the founder of the initiative (Mair and Marti, 2006), who is generally referred to as a ‘change maker’ (Van Slyke and Newman 2006, Sharir and Lerner 2006), acting upon an opportunity and gathering resources to exploit it. At the (inter-) organizational level, definitions of social entrepreneurship typically refer to the process of value creation, including opportunity recognition, adopting a mission to create social value, engaging in a process of continuous innovation, adaptation, and learning (Dees 1998). The second debate addresses the contexts in which social entrepreneurship actually occurs. Mair and Marti (2006) contest the views that social entrepreneurship is limited to the non-profit sector on one hand or to socially responsible actions of mainstream business practice on the other. They conclude that social entrepreneurship refers to a means to tackle social problems and catalyze social transformation, irrespective of the for-profit or not-for-profit status of the organisation (Mair and Marti 2006, Austin et al. 2006). After more than a decade of definitional debates scholars increasingly

agree about the fact that social entrepreneurship is “*entrepreneurship with an embedded social purpose*” (e.g., Christie and Honig, 2006; Peredo and Chrisman, 2006), *through the recognition and exploitation of entrepreneurial opportunities* (e.g., Austin et al., 2006), *not being limited to a particular juridical / organizational form* (e.g., Mair and Marti, 2006).

To date, social entrepreneurship literature has focused on private organizations with two dominant characteristics. First, the initiatives focus on the ‘social mission’ or ‘the creation of social value’ (Dorado 2006, Nyssens 2006, Vidal 2005, Peredo and Chrisman 2006, Austin et al. 2006). Profit making will typically not be the primary purpose of social entrepreneurs (Peredo and McLean 2006, Johnstone and Lionais 2004). Peredo and Chrisman (2006) speak in terms of ‘a multiplicity of goals’ and an ‘array of aims’. Second, social enterprises have an enterprising character, which is particularly reflected in the fact that they are sustainable through trading (Tracey and Jarvis 2007, DTI 2007, Peredo and McLean 2006). For several scholars (e.g., Tracey and Jarvis 2007) trading is at the core of social entrepreneurship.

Empirical research on social entrepreneurs is limited and increasingly questions are being voiced that point to the central issue of understanding the ‘social’ in social entrepreneurs. Clearly, the extent to which a social entrepreneur adheres to a social purpose is often a matter of relative priority, where goals related to profit realization and social value operate on a continuum and often interplay (Mair and Marti 2006, Peredo and McLean 2006). To date however, the ‘social’ is largely taken for granted and treated as a black box.

UNDERSTANDING ‘SOCIAL PROCLIVITY’

In order to open this black box, we identified theoretical constructs from top tier journals that can potentially further our understanding of ‘how ‘social’ social entrepreneurs really are. In detail, we scanned the five management journals with the highest impact score on the web of science (i.e., strategic management journal, academy of management journal, academy of management review, administrative science quarterly, and organization science) in search for constructs that are potentially informative of the social orientation of a firm, incorporating a strategic, operational and individual point of view. We discuss subsequently the constructs “organizational identity”, “work values”, “social orientation” and “organizational goals”.

Organisational identity

Researchers define organizational identity as members’ shared perceptions about their organization’s central, distinctive, and enduring qualities (Foreman and Whetten 2002, Brickson 2007, Dutton et al. 1994, Dyer and Whetten 2006). Basically, organizational identity is the answer to the question ‘who are we?’ Two principal lines of thought can be identified (Ravasi and Schultz 2006). The *social constructionist perspectives* see organizational identity as result of sense making processes carried out by members as they interrogate themselves on central and distinctive features of their organization. Therefore, organizational identity resides in collectively shared beliefs and understandings about central and relatively permanent features of an organization (Ravasi and Schultz 2006). The *social actor perspective* emphasizes organizational identity as self-definitions proposed by organizational leaders, providing members with a consistent and legitimate narrative to construct a collective sense of self. In this view, organizational identity resides in institutional claims, available to members, about central, enduring and distinctive properties of their organization (Ravasi and Schultz 2006). These institutional claims are ‘explicitly stated views of what

an organization is and represents'. These deeply held beliefs, embodied in formal claims, tend to change only rarely and never easily. For example, Voss et al. (2006) claim that organizational identity is formed by top leaders' establishment of the core values and beliefs that guide and drive the organization's behavior. In this context Foreman and Whetten (2002) define organizational identification in terms of multiple and competing identities: a normative system, emphasizing traditions and symbols, internalization of an ideology and altruism, and a utilitarian system, characterized by economic rationality, maximization of profits and self-interest. Conceptually, these authors build on the work of Albert and Whetten (1985) on the hybrid identity of a modern research university.

The concept 'organizational identity' has been used to study a number of phenomena. For example, Fiol (1991) approaches organizational identity as a core competence contributing to competitive advantage and according to Brickson (2007), the concept of organizational identity is perfectly positioned to inform how businesses relate to stakeholders and why they relate to them as they do. Interestingly, there is a growing interest in examining organizational identity as a determinant of corporate social performance (Dyer and Whetten 2006). As studies on organizational identity aim to answer the question: '*where do we stand for?*', the concept can potentially inform us about the 'social proclivity' of an organization. From a social actor perspective, for example, Voss et al. (2006) claim that organizational identity is formed by top leaders' establishment of the core values and beliefs that guide and drive the organization's behavior.

Work values

Work values refer to what a person wants out of work in general and are guiding principles for evaluating work outcomes and settings and for choosing among different work alternatives (Ros et al. 1999). Thus, values affect behavior in general (Elizur et al. 1991), and decision making in particular (Judge and Bretz 1992, Mumford et al. 2003). Personal characteristics in general (Lepoutre and Heene 2006, Cambra-Fierro et al. 2008) and work values of owners/managers in particular are argued to be a key factor in socially responsible business practice in SMEs (Murillo and Lozano 2006) and top-level management commitment is argued to be crucial to its success (Jenkins 2006). In small entrepreneurial firms, the entrepreneur is likely to exert control over organizational decisions, and non-owners therefore are less influential than in larger or older firms, where there is a separation of ownership and control (Gimeno et al. 1997). Further, authors have repeatedly stressed the role of the 'individual social entrepreneur' who is generally referred to as the 'change maker' and plays a central role in social ventures (Sharir and Lerner 2006, Van Slyke and Newman 2006). Most authors agree that values are standards or criteria for choosing goals or guiding actions, and are relatively enduring and stable over time (Dose 1997) and the same values may be relevant to various life areas (Elizur and Sagie 1999).

A key dimension is the level of '*other*' regarding and '*self*' regarding values (Agle et al. 1999). In other words, to what extent is behavior ultimately self-interested or do individuals act in ways that benefit others, even to their own disadvantage? The self-interest dimension is ought to be important and to vary widely among individuals. It is argued that people perceive as important the things that are connected with their '*self*'- or '*other*' regarding values and thus influence the decisions organizational leaders make.

Social responsibility

Socially responsible business practice implies that there is a responsibility of firms beyond their wealth generating function (Aguilera et al. 2007, Barnett 2007). Carroll (1979) presents a continuum on which firms can be positioned in terms of what they consider as their responsibility. More specifically, the author suggests four stances, representing increasing levels of social engagement. The first 'social' responsibility of business is economic in nature: the production of goods or the delivery of services society expects and sell them at a profit. Second, a business has to fulfill its economic mission within the framework of legal requirements. Next, ethical responsibilities refer to society's expectations over and above legal requirements which are considered to be intrinsically "good". It involves those activities the organization "should" do, if it wants to do the "right" thing. Finally, the "discretionary" social activities are of a non-enforced, rather philanthropic nature referring to those responsibilities for which society has no clear-cut message for business. McWilliams and Siegel (2001) refer to the ethical and philanthropic perspective as corporate social responsibility and define it as '*the actions that appear to further some social good, beyond the interests of the firm, required by law*'.

Organizational goals

Goals are value premises that can serve as inputs to decisions (Simon 1964). For example, Townsend and Hart (2008) suggest that the adherence to social and/or economic goals of social entrepreneurs play a decisive role in the choice of organizational form. Following Roth and Ricks (1994) we define organizational goals as '*a desired state of affairs which the organization attempts to realize as espoused by top management*'. Several scholars have stressed the importance of specifying and clarifying the organization goals (Berson and Avolio 2004, Roth and Ricks 1994), claiming that transformational leaders tend to have higher agreement on the strategic goals of the organization (Berson and Avolio 2004). Research also shows the mutual influence of organizational goals between the firm and its employees: companies tend to select employees that match the strategic goals (Lin and Wang 2005) and organizational goals affect employees as they are likely to adopt personal goals that are consistent with the goals of the organization (Shore and Strauss 2008). Although firms pursue different goals so as to satisfy multiple stakeholders (Roth and Ricks 1994) to date organizational goals have been operationalized only in pure financial terms (Buchanan 1992).

METHODOLOGY

Building on the theoretical constructs, we develop measures to capture the social identity, the degree of social responsibility, the importance of a social goal and the importance of other-regarding work values. Collecting data via an e-mail survey to the directors of a well defined sample of social entrepreneurs in Flanders (region of Belgium), we use confirmatory factor analysis to assess the reliability and validity of each of the constructs and to determine whether or not they pertain to the same higher order construct 'social proclivity'.

Population and sample

Table 1 gives an overview of our sample frame. We selected four strata with organizations that are generally considered to be 'social entrepreneurs' (i.e. integration businesses, social investors' portfolios, social purpose companies and people-planet oriented cooperatives). After removing

overlaps between the strata we obtain a total valid N of 484 organizations. Next paragraph describe the different strata in more detail.

First, we selected a particular subpopulation of work integrating social enterprises (WISEs) in Flanders: the integration businesses. Integration businesses are profit businesses that enter into a partnership with government, in order to help poorly qualified unemployed people return to work and to society through productive activity. Second, we took the investment portfolios of four social investors that invest locally and we traced the projects they financed between 2004 and 2007. The social investors are listed by VOSEC and of 7 investors 4 are active in Flanders. Third, Coopkracht and VOSEC are two Flemish institutions who unite cooperatives on their social mission and triple bottom line values, thus bringing together firms that are considered to be social entrepreneurs. Fourth, social purpose companies (VSOs hereafter) relate to a relatively new judicial form in Belgium that can be added to any firm if it fulfils statutory commitments in three fields. For example, concerning the use of profits, it is fixed that any surplus must be used for the social objective.

Scholars (Roth and Ricks 1994) stressed the importance of managers and leaders in specifying and clarifying the organization goals, making them appropriate respondents for our study. Next to social proclivity measures, we collected data on the number of integration employees, start-up capital, age and judicial form. We collected financial data from the annual financial statements (such as turn-over, accumulated profit,...). To maximize response rate we made several follow-up calls resulting in a total response of 270 social ventures (response rate of 56%).

Measures

The construction of the measures is explained in the following paragraphs. Unless otherwise stated the items were measured on ordinal scales ranging from 1 (do not agree) to 7 (completely agree).

Normative and utilitarian identity

To measure the extent to which the social ventures adhere to a normative and/or utilitarian identity, we use the operationalization of Foreman and Whetten (2002). We included 5 items that represent the utilitarian identity (e.g., importance of price of products or services) and 5 items that represent the normative identity (e.g., social relationships with other members). Respondents indicate the importance of the items on a 7-point likert scale. We made two adjustments to the original set of items to fit the questionnaire in our research population. In detail, we changed those two 'cooperative' items into two items attributed to the social economy in general (e.g., quality of work is more important than profit) as described by Nyssens (2006). In line with Voss et al. (2006), we assessed leaders' beliefs about organizational identity by measuring their perceptions about the core values and ideology in their organization.

Other and self regarding work values

Based on the measurement instrument of Rokeach (1972), Agle et al. (1999) constructed a measure capturing the level of 'self-interest' versus 'other-regarding' interest. Values are expected to vary on a continuum ranging from profit maximization-firm-centered values to other-system-centered values. The authors developed 7 items of which 3 items represent self-interested values and 4 items other-regarding values. "A comfortable life (a prosperous life)" and "wealth (making

money for myself and family)” were considered as self regarding values while “helpful (working for the welfare of others)” and “loving (being affectionate, tender)” are examples of other regarding values. Respondents rate each item on a seven-point likert scale.

Social responsibility

To capture the corporate orientation towards social responsibility we use a measure of Aupperle (1985) which has been employed successfully in numerous studies (e.g., Agle et al. 1999, Ibrahim et al. 2008) We asked respondents to allocate 10 points among four items representing the four areas of responsibility. These four areas were represented by items such as ‘being as profitable as possible’ (economic responsibility), ‘abiding by laws and regulations’ (legal responsibility), ‘moral and ethical behavior’ (ethical responsibility) and, ‘voluntary and charitable activities’ (discretionary responsibility). We shortened the instrument to a manageable four sets of four items in our questionnaire although the original instrument contains 20 sets. Aupperle et al. (1985) indicate that each set of items searches the same basic information. Other researchers have limited the original set to 3 four-item groupings (Agle et al.,1999).

Importance of social goal

To gain understanding in the organizational goals of social entrepreneurs we build on Autio et al.’s (2000) study on the growth ambition of new technology based firms. We adjusted the authors’ measure for growth orientation to a measure that captures the relative and absolute importance of the social goal in the firm. First, we assess the relative importance of ‘maximising social value’ as compared to four other organisational goals: maximizing profitability, maximizing sales growth, maximising product / service superiority, maximizing value of the firm for eventual acquisition and maximizing stability and longevity of the firm. In line with Autio, the respondents are asked to divide 100 points between 5 organizational goals. This relative measure ensures variance (it circumvents the tendency of raters to give the socially desirable response that everything is extremely important). Next, we complement the relative measure with two items measuring the absolute importance of social value (“social value creation is the main goal of the organization” - on a 7-point likert scale). This avoids the forced trade-off inherent to the relative measure and reduces common method error (Autio et al. 2000).

Pretest

We selected a pretest sample (N~35) randomly out of a database of social economy organizations in Flanders (excluding the integration businesses since they are part of the sample frame). We sent out the draft questionnaire to the directors of the 35 organizations by email and made several follow-up telephone calls which resulted in a total response of 17 organizations. The respondents were contacted to ask for direct feedback on the questionnaire. The pretest resulted in typographical adjustments, rephrasing the items which were not clear for the respondents and adapting the Aupperle measure regarding philanthropical orientation to the specific regional context (which has a very limited tradition in philanthropy, especially in SMEs).

DATA ANALYSIS

The goal of our data-analyses is twofold: (1) to assess the reliability and validity of the measures and assess the existence of a higher order constructs ‘social proclivity’ and ‘economic proclivity’ (2) to empirically explore the potential trade-off social entrepreneurs are making between a

social and economic orientation. We subsequently discuss the characteristics of our sample frame, the validity and reliability of our measures.

Descriptive analysis

Our sample displays the following characteristics (see Table 2). Although the social ventures differ greatly in age (from start-up to well established firms of 89 years), our sample consists of mostly young (median 11 years) enterprises. 33% of the sample consists of nonprofit organizations while all other organizations have a for profit judicial statute (of which 35% are cooperatives, 13% limited liability companies, and 15% public limited companies). 68.5% of the companies were founded by at least one independent entrepreneur. Median number of founders is 3. Only 13% of the enterprises were co-founded by the government while only 30% of the enterprises were co-founded by existing private organizations. As a result 72% of all the start-up capital comes from private (market) sources. Majority of the enterprises delivers services (72%), 15% offers products and 12% offers both products and services. The amount of start-up capital varies from 0 K Euro to 2174 K Euro. Finally, our data on capital and reserves in 2007 show the same variance in enterprises from small to rather big companies.

Although there is a huge variety among the social entrepreneurs our data show that most are relatively young, set up by independent entrepreneurs with relatively low amounts of private capital.

Measuring social proclivity

Table 3 summarizes the results of the higher order CFA on our four measurement instruments which was performed in Lisrel 8.5. We present the measurement items for each construct with the respective factor loadings and the t statistic. We first discuss the model-fit and construct validity of our measures after which we discuss the results of the CFA.

Model fit and construct validity

From the original set of items we had to remove for each construct one item that measured normative identity, other-regarding values and philanthropical responsibility. The overall fit of the final measurement model is good (GFI = 0.9; AGFI = 0.84; RMSEA < 0.1; CFI = 0.92; Chi-square = 209.05 and degrees of freedom = 61). In general, the table shows that t-values of the respective parameter estimates are significant which indicates good validity for the construct. Cronbach alpha was used to determine overall construct reliability (of the remaining items). We exceeded construct reliability requirements (Nunnally, 1967), as all Cronbach alphas lie between 0.68 and .83. The extracted variances of the constructs are well above the minimum requirement of .50 (Fornell and Larcker, 1980). Taken together, the results from table 6 show good validity and reliability of the different theoretical constructs and are thus adequate to use in further analysis.

In detail, the remaining items of our measurement instruments were tested for (a) unidimensionality of the constructs, (b) reliability, (c) convergent validity, (d) discriminant validity. The instructions of Hair et al. (2006) guided our analysis. There is evidence for the unidimensionality of the measures as all indicators load high on one component. Our cronbach alpha's range from 0.68 to 0.83, showing sufficient reliability. Convergent validity was found in the significant size of the factor loadings. Constructs demonstrate discriminant validity if the variance extracted for

each is higher than the squared correlation between constructs. We examined each pair of constructs and found that all demonstrate discriminant validity.

Analysis of the CFA

CFA reveals that the three standardized measures of Autio can be reduced to one measure, suggesting that some underlying structure does exist (Hair et al. 2006). The resultant factor explains 83% of the variance. We also found one factor representing the normative identity (extracting 51% of the variance). The CFA confirmed the proposed factor structure in the values-measure and indicates that an 'other'-regarding factor exists extracting 66% of the variance. Lastly, CFA provided us with a factor combining the philanthropical responsibilities (explaining 65% of the variance). In conclusion, the CFA confirmed all our theoretically proposed constructs.

The proposed measures relate to the same concept (i.e. social proclivity). Table 6 shows that this arguments holds and that the four theoretical constructs are all significantly related to a second-order factor social proclivity. Convergent validity was determined by the significant size of the factor loadings, which ranged from 0.68 to 0.84.

Measuring economic proclivity

Table 4 shows the results of the higher order CFA on our three economic measurement instruments. The measure of Autio on organizational goals was adopted to assess the social proclivity and cannot be used to analyze the economic proclivity of social ventures. Like table 3, we present the measurement items for each construct with the respective factor loadings and the t statistic. We first discuss the construct validity of our measures after which we discuss the results of the CFA.

Model fit and construct validity

We can report a good overall fit of the economic proclivity measurement model (GFI = 0.93; AGFI = 0.89; RMSEA = 0.8; CFI = 0.96; Chi-square = 90.11 and degrees of freedom = 32). In line with the social proclivity model, the table shows that t-values of the respective parameter estimates are significant which indicates good validity for the construct. Here as well, Cronbach alpha was used to determine overall construct reliability. In line with construct reliability requirements (Nunnally, 1967), all Cronbach alphas are greater than .60. As for the extracted variance of the constructs we report values all well above the minimum requirement of .50 (Fornell and Larcker, 1980). In conclusion, the results from table 7 show good validity and reliability of the different theoretical constructs and are thus adequate to use in further analysis.

Following the instructions of Hair et al. (2006) we tested our model for (a) unidimensionality of the constructs, (b) reliability, (c) convergent validity, (d) discriminant validity. There is evidence for the unidimensionality of the measures as all indicators load high on one component (except for one item of utilitarian identity which flirts with the 0.4 rule of thumb). We have sufficient reliability as our cronbach alpha's range from 0.67 to 0.9. Convergent validity was found in the significant size of the factor loadings. Constructs demonstrate discriminant validity if the variance extracted for each is higher than the squared correlation between constructs. We examined each pair of constructs and found that all demonstrate discriminant validity.

Analysis of the CFA

The CFA gives evidence of 3 first-order factors leading to one second order factor economic proclivity. The factor for the utilitarian identity explains 62% of the variance. The self-regarding value items load on one factor which counts for 58% of the variance. Thirdly, we found one factor explaining 78% of the variance of the four economic responsibility items. In conclusion, the CFA confirmed our theoretically proposed constructs.

Further, the three proposed measures relate to the same concept (i.e. economic proclivity). This is confirmed in Table 7 which shows that the three theoretical constructs are all significantly related to a second-order factor economic proclivity. The factor loadings ranged from 0.52 to 0.87 pointing at a good convergent validity.

The relative importance of economic and social orientation in social ventures

The constructs and subsequent measures potentially provide insight in the trade-off social entrepreneurs have to make between social and economic objectives. We develop these arguments below.

Social orientation

Respondents divided 100 points between 5 organizational goals and indicated the importance of social goals on two Likert scales. Table 2 indicates that social entrepreneurs adhere to a plethora of goals, both social and economical (Peredo and McLean, 2006). The social goal seems to be the most important goal (sum 9877 and median 36.6), followed closely by the maximizing stability (sum 8714 and median 30). Two main reasons can explain this finding: (1) stability and survival is especially important for the many young organizations in our sample and (2) we argue that in essence, 'stability and survival' can partially represent a social orientation. More specifically, social entrepreneurs often want to deliver sustainable employment and therefore consider stability and longevity as important.

The Friedman test shows a significant difference between the different organization goals ($p < 0.001$). We further analyzed pairs of goals by performing Wilcoxon-tests (see z-scores in table x for detailed analysis) to get a better understanding in the trade-off between 'maximizing social value' and the other key goals. All goals differ significantly from the social goal, except the stability goal, pointing at the fact that the social and stability organizational goal seem to go hand in hand.

Extent of social responsibility

Table 6 (displaying the sum of the four items representing each responsibility across the four sets of items) shows that the most important goal for social ventures are the philanthropical responsibilities (median 11 and sum 3168), followed by the ethical responsibility. Ethical and philanthropical goals seem more important. CSR is about going beyond legal and economical responsibilities (McWilliams and Siegel, 2001). As a result, the social orientation lies in the adherence to the ethical and philanthropical responsibilities. We therefore took the sum of the economic and legal items and took the sum of the ethical and philanthropical items. We then took the sum of the resultant four items representing the economic and legal stances and the sum of the resultant four items representing the ethical and philanthropical orientation. Wilcoxon tests shows that

importance of the philanthropical and ethical perspective is significantly higher than the importance of the economic and legal perspective.

Work values

Thirdly, we analyze the work values of our respondents who indicated the importance of 7 values on point 7 Likert-scales. Wealth seems to be the least important value of social entrepreneurs (median 4 and sum 1031) and 'helpful' and 'equality' are the most important values for social entrepreneurs. Friedman test ($p < 0.001$) show that there are significant differences between the six values. However, the table also shows that other-regarding and self-regarding values are both considered to be important for social entrepreneurs. We then counted the sum of the other-regarding and the self regarding values. Wilcoxon test shows significant difference between the two types of values. Other-regarding work values are more important than self-regarding values.

Normative and utilitarian identity

Lastly, we asked respondents to indicate on a 7-point Likert scale the importance of 5 items representing a utilitarian identity and 5 items representing a normative identity. Based on the results of the CFA, we excluded 3 items for further analysis. Table 5 shows that both normative and utilitarian identity items were regarded as meaningful in our study. With median no lower than 5, we can conclude that both identities are present in social ventures. Further, we made the sum of all remaining normative and all remaining utilitarian identity components. Wilcoxon test show a significant difference between the 2 components. Both identities are strong although data show a stronger normative identity in social entrepreneurs.

CONCLUSION

Our study is the first attempt to actually measure the importance of social and economic proclivity in a clearly defined sample of social entrepreneurs in Flanders. The most important conclusions can be summarized as follows. First, confirmatory factor analysis validated the measures we used and the analyses pointed at the higher order constructs 'social proclivity' and 'economic proclivity'. Second, we found that social entrepreneurs display high social and economic proclivity, although the social outweighs the economic. More specifically, social goals are considered most important together with ensuring stability and longevity of the organization. Further, although both normative and utilitarian identity display high scores, the normative identity is significantly more important. The same argument holds for the ethical/philantropical orientation of the organization and the adherence to other- regarding values (as opposed to self-regarding values).

Further research will focus on capturing social and economic proclivity in one CFA model, and on more detailed and elaborate and hypothesis testing research on social entrepreneurs in Flanders. Additional hypothesis testing research is prepared to analyze relationships between the theoretical constructs in the model.

This research is important for at least two reasons. First, it helps establishing an empirical research base with quantitative measures on social entrepreneurs. Further research could focus on comparing the social / economic proclivity in different subsets and types of social entrepreneurs. Second, the 'social' in social entrepreneurship is largely taken for granted and to date, debates often stop at the generally accepted notion that "social entrepreneurs are social". Tackling the question

of what is actually meant with social and how social social entrepreneurs really are, is largely left unresolved. This research is a step in this direction, so that future quantitative studies can take into account varying levels of social and economic proclivity in hypothesis testing designs.

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Table 1: Sampling social entrepreneurs in Flanders

Integration businesses (2007)	Portfolio's of social investors (2007)	Triple bottom line cooperatives (2007)	VSOs (2007)
Official list of Flemish government	4 institutional social investors that invest locally	Constructed by FEBECOOP and VOSEC	CD-Rom Balanscentrale
Valid N = 170	Valid N = 230	Valid N = 89	Valid N = 100

Total valid N (after removing overlaps) = 484

Response = 270

Response rate = 56%

Table 2: Sample descriptives

	Mean	Median	Minimum	Maximum	Valid N
Age	17.7	11	1	89	270
Total start capital (in K Euro)	135	31	0	2174	166
FTE 2007	46	10	1	1035	245
Capital and Reserves 2007	3368	290	-424	195499	213
Accumulated profit (loss) 2007	367	24	-1008	36283	210

Table 3: Higher-order confirmatory factor analysis of the four social proclivity measures

Second-order factor	Standardized parameter estimate	T-value	First-order factor	Measurement items	Standardized parameter estimate	T-value
<i>Social proclivity</i>	0.81	9.17	<i>Social goal</i>	Maximizing social value (SG1)	0.71	/
				Social value creation is the main goal of the organization (SG2)	0.86	11.79 *
				Social value creation is not a driver of our organization (SG3)	0.81	11.48 *
	0.77	8.12	<i>Normative identity</i>	Community involvement (NI3)	0.69	/
				Social relationships with other members (NI2)	0.53	6.64 *
				Quality of work is more important than profit (NI5)	0.55	6.81 *
				Democratic decision making (NI1)	0.54	6.66 *
	0.66	8.56	<i>Other-regarding values</i>	Helpful (OV1)	0.86	/
				Compassion (OV2)	0,67	9,02 *
				Equality (OV3)	0,57	8.02 *
	0.62	6.19	<i>Philantropical respon.</i>	2	0.56	/
				3	0.65	7.74 *
4				0.90	7,93 *	

* $p < 0,05$

Table 4: Higher-order confirmatory factor analysis of the four economic proclivity measures

Second-order factor	Standardized parameter estimate	T value	First-order factor	Measurement items	Standardized parameter estimate	T value
<i>Economic proclivity</i>	0.87	8.24	<i>Utilitarian identity</i>	Economic value of products (UI5)	0.98	0
				Customer service (UI2)	0.39	7.96 *
				Price of products and services (UI1)	0.61	5.64 *
	0.52	5.46	<i>Self-regarding values</i>	Comfortable life (SV1)	0.76	0
				Wealth (SV2)	0,54	6.07 *
				Pleasure (SV3)	0,59	6.34 *
	0.59	6.58	<i>Economic responsibility</i>	1	0.83	0
				2	0.74	13.51 *
				3	0.91	18.24 *
				4	0.91	18.44 *

* $p < 0,05$ **Table 5: Organizational goals measure**

	Valid N	Median	Max	SD	Sum of scores	Wilcoxon test*	
						z-score	p-value
Maximizing profitability	270	10	50	12.2	3574	-9,829	,001
Maximizing sales growth	270	13.4	65	12.2	3612	-9.972	,001
Maximizing social value	270	36.6	100	23.3	9877	//	//
Maximizing value of the firm for eventual acquisition	270	0	30	6.8	1197	-13.013	,001
Maximizing stability and longevity of the firm	270	30	100	15.8	8714	-1.597	,110

*Wilcoxon test in pairs with maximizing social value goal

Table 6: Extent of social responsibility measure

	Valid N	Median	Max	SD	Sum of scores	Wilcoxon test*	
						z-score	p-value
Sum economic responsibilities	268	8	32	5.8	2122	-5.538	,001
Sum legal responsibilities	268	10	23	3.8	2565		
Sum economic and legal	268	18	36	6.8	4687		
Sum ethical responsibilities	268	11	26	3.2	2862	-5.538	,001
Sum philanthropi- cal responsibilities	268	11	30	5.3	3168		
Sum ethical and philanthropical	268	22	40	6.8	6030		

*Wilcoxon test of the two sets of responsibilities

Table 7: Work values of social entrepreneurs

	Valid N	Median	Maximum	SD	Sum of scores	Wilcoxon test*	
						z-score	p-value
<i>Other-regarding values</i>						-9.247	0.001
Helpful	270	6	7	1.0	1548		
Compassion	270	6	7	1.0	1506		
Equality	270	6	7	1.1	1548		
Other regarding values	270	17	21	2.6	4602	-9.247	0.001
<i>Self-regarding values</i>							
Comfortable live	270	5	7	1.3	1419		
Wealth	270	4	7	1.5	1031		
Please	270	6	7	1.3	1513		
Self regarding values	270	15	21	3.06	3963		

*Wilcoxon test of the two sets of values

Table 8: Identity of social enterprises

	N	Median	Max	SD	Sum of scores	Wilcoxon test*	
						z-score	p-value
<i>Normative identity</i>						-5.398	0,001
Community involvement	268	6	7	1.2	1544		
Social relationships with other members	269	6	7	1	1578		
Quality of work is more important than profit	269	6	7	1.2	1547		
Democratic decision making	270	6	7	1.2	1547		
Sum normative identity (Av.)	266	5.7	7	0.8	1550		
<i>Utilitarian identity</i>						-5.398	0,001
Value of products or services	270	5	7	1.6	1353		
Customer service	269	6	7	1.2	1600		
Price of products and services	269	5	7	1.6	1315		
Sum utilitarian identity (Av.)	268	5.3	7	1.2	1417		

*Wilcoxon test of the two sets of identities

≈ SUMMARY ≈

SOCIAL ENTREPRENEURSHIP OR ENTREDONNERSHIP?

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Principal Topic

Social entrepreneurship (SE) research, despite its popularity, is not defined yet, and no less muddled by parallels drawn with commercial entrepreneurship (CE). Through two questions, “what makes Social Entrepreneurship social and what makes it entrepreneurial,” scholars (Mair & Martí, 2006; Peredo & McLean, 2006) helped decide that SE had both characteristics, and therefore defined it as entrepreneurship with social/non-financial goals (Dees, 1994; Dees & Elias, 1998; Roberts & Woods, 2005; Peredo & McLean, 2006). SE and CE were argued to be different in degree, explicated in terms of where entrepreneurial initiatives sat on the social-commercial goals continuum. This paper posits that CE and SE differ more fundamentally, in sponsor motive.

Method

The paper proposes that:

- SE seeks value creation for the user through motivation of the sponsor/change-agent. CE aims to create wealth for sponsors through value creation for the user-buyer, and societal benefit as a by-product, *a la* Schumpeter (1934: vis-à-vis economic development), Dees (1994) or Austin *et al* (2006), does not equate sponsor motive in SE and CE.
- Unlike CE, entrepreneurial opportunity is not the defining characteristic of SE, which concerns itself with the nexus between enterprising individuals and their societal equity goals.
- SE, unlike CE, does not have a standard performance or efficiency assessment metric across different activities.
- In SE, unlike in CE, the user does not pay and the giver of money does not use the social services.

Therefore, to answer Mair and Martí (2006), SE does provide an independent field for research. It also deserves a distinct name. “Entreprendre” meaning “one who undertakes, takes into her/his hands” (entre: be in/among, and, prendre: to take) seeds the word “entrepreneurship”. In a fundamental sense, commercial entrepreneurs take; social entrepreneurs give. “Donner” meaning “to give, to supply, even to give away”, provides the etymology. Therefore, the distinct name proposed for the field is: “entredonnership,” and for the protagonist: “entredonner” – the one who is immersed in the giving of value to society.

Results and Implications

This paper encourages rethinking fundamental questions before the field gets muddled by force-fitting observation to a concept already named. It promises elegance in theory building, while helping the entrepreneurship domain keep its claim on the new field, “entredonnership”.

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≈ SUMMARY ≈

HIGH GROWTH NFP'S: A MODEL OF ENTREPRENEURIAL, FINANCIAL AND SOCIAL ORIENTATION

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Principal Topic

The purpose of this paper is to design a conceptual model that explains and predicts the performance of non-for-profit (NFP) organizations. We introduce and define three separate cognitive frameworks (mindsets) used by NFP executives/teams and examine their relationship to organizational performance as measured in terms of growth (Carton and Hofer, 2006). They are categorized as entrepreneurial, financial and social orientation. We build on Lumpkin and Dess's (1996) work on entrepreneurial orientation, and develop the other two concepts from theory. Each cognitive framework consists of a specialized set of prior experiences, knowledge, skills and mandates that form measurable constructs. The model is aimed at adding further depth and clarity to the decision making processes used by NFP executives, and analyzes how entrepreneurial behavior may effectively be explained and measured in the context of social entrepreneurship without the burden of having to reconcile the often dichotomously perceived relationship between for-profit motivation and social mission (Austin, et al., 2006; Frank, 2006)

Method

Our study looks at a highly successful non-for-profit organization, *Habitat for Humanity*. The organization was selected due to its business model that allows for regional autonomy (individual regional CEO control and influence) and that has a well known history for having an innovative social mission, growth and performance. Due to this de-centralized structure, NFP executive and team management orientations can be compared against other regions and controlled within a single organization/sector. Semi structured interviews were conducted with a pilot set of four CEO's to assess and provide face validity to the model. A nation wide and international study will follow.

Results and Implications

Based on theoretical and empirical findings, we hypothesize that a function of all three orientations operating within NFP executives/teams will be a significant predictor of high growth organizational performance. The NFP executives confirmed the validity of the three constructs in the model and emphasized that entrepreneurial orientation was both rare and extremely valuable to enhancing sustainability *and* social missions. However, measurement of growth based on current non-uniform and diverse criteria was considered by executives as difficult to achieve. We offer measurement criteria for testing based on the model presented. Future opportunities for research are discussed.

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≈ SUMMARY ≈

**FROM SUCCESS TO FAILURE: A CASE STUDY OF AN
AWARD WINNING SOCIAL ENTREPRENEUR**

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Principal topic

There is a general consensus that social entrepreneurship refers to those initiatives that primarily focus on the creation of social value. To date, academic interest in social entrepreneurship has focused on practitioner events and empirical work has focused on good practices and success stories of social entrepreneurs that act as ‘change makers’. This paper performs an in depth process analysis of an award-winning social entrepreneur that faced bankruptcy 2,5 years after its successful start-up.

Method

We perform an in depth historical process analysis in order to reconstruct the start-up and development of the social venture. Data come from multiple sources. First, we collected data through open-ended in-depth interviews with different stakeholders. Second, we used archival sources amounting to 250 pages of reports. Doing so, we (1) reconstruct the growth and subsequent decline of the firm through historical process analysis, and (2) perform a categorical analysis to identify first order terms and concepts and assign these under second-order theoretical labels (Van Maanen, 1979).

Results and implications

Early 2004 METALCON was founded by 2 entrepreneurs to make metal constructions for companies in the fiercely competitive environment of the building sector. The company was established with 425.000 Euro start-up capital and 13 people were employed at the start-up. After one and a half year the number of employees increased up to 50 people. Case data revealed that the social mission – embodied by the social entrepreneurs - was a driver behind the fast growth of the firm which led eventually to its bankruptcy. They were supported in their idealism by the ‘moral’ support of particular policy programs, early perceived success with special awards and press coverage, giving the firm visibility in the local community. METALCON developed cash flow problems and went into liquidation early 2006. Main contribution is the analysis of a ‘failure’, pointing to the challenges and pitfalls of social entrepreneurs, as opposed to the success-stories that dominate much of the literature, granting insight in the consequences of a single minded focus on the social mission, without taking into account the economic rationale of working in a competitive environment.

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≈ SUMMARY ≈

SOCIAL? SUSTAINABLE? ENTREPRENEURSHIP? A FIRST LOOK AT MENTAL PROTOTYPING OF “SOCIAL” ENTREPRENEURSHIP

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Principal Topic

Entrepreneurship as a field continues to exhibit a breadth that is remarkable in its inclusiveness, even to a fault. Social entrepreneurship appears to be even more inclusive. As scholars, we argue this is a two-edged sword. The field may lack the focus of more established fields, yet the diversity of perspectives is also a golden opportunity to gain deep understanding of social entrepreneurship and associated cognitive processes. This suggests that we should (a) explore the differing mental models underlying differences in how one defines and operationalizes “social entrepreneurship” and (b) that in-depth analysis of social entrepreneurship pedagogy should be quite revealing. We are exploring how that diversity is reflected in significant differences in the mental models evinced by social entrepreneurship *instructors*. Why do different instructors deploy different methods?

Method

We analyze two data sets that address the mental models of social entrepreneurship instructors in a data base of “social entrepreneurship” syllabi and a large online survey of “social entrepreneurship” instructors from around the world. We content analyze 298 course syllabi using 71 categories. We also analyzed 269 responses from an online survey of social entrepreneurship instructors that explicitly addresses key elements of instructors’ mental models.

Results and Implications

This study reveals a highly detailed map of social entrepreneurship pedagogy globally. We identify clear linkages between the mental models of instructors and the formal content and instructional methods of their courses. We have clearly identified that genuine experiential exercises are critical to advancing students’ entrepreneurial thinking from a more novice mindset to a more expert mindset. Analysis shows that this approach has not been diffused much in social entrepreneurship classes. There were differences between courses labeled as “social” entrepreneurship versus “sustainable” entrepreneurship.

For researchers, it is a golden opportunity to explore how different pedagogical approaches affect the social entrepreneurial mindset. In sum, it appears that like the field of entrepreneurship, understanding how social entrepreneurs think will be both productive intellectually and valuable practically. A better understanding of how they learn to think that way will be an exciting, productive domain for the foreseeable future.

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≈ SUMMARY ≈

COLLECTIVE ACTION WITHOUT SELECTIVE INCENTIVES: HOW SELF-SELECTED STAKEHOLDERS IN THE ENTREPRENEURIAL PROCESS CREATE A SURPLUS OF THE COMMONS

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Principal Topic

Several recent contributions have focused on the idea that market failure, in the form of environmental degradation, can represent entrepreneurial opportunity (Cohen & Winn, 2007; Dean and McMullen, 2007). Market failure has fascinated scholars in several disciplines including economics, sociology, management and political science, who have also modeled it as *The Prisoner's Dilemma* and other related puzzles. Although the traditional solution to market failure from each of these disciplines is collective action (Olson, 1971, 1982; Ostrom, 1998), an entrepreneurial model of collective action has not been offered. This paper supplements these theories with an entrepreneurship-based process model of collective action.

Method

In this theoretical work, I develop a model through bringing together streams of research on collective action, market failure and entrepreneurship. I utilize illustrative examples taken from interviews with founders of renewable energy firms.

Results and Implications

The model shows how individual entrepreneurs can kick start collective action solutions either by (a) actively creating selective incentives that overcome the tragedy of the commons (so that only those who contribute to the solution can obtain the benefits from the solution); and/or (b) effectually creating corridors for self-selected stakeholders who end up transforming the commons into a cornucopia of surplus, allowing selective incentives to emerge from the process itself.

This paper's contribution is twofold in that it: 1) offers a richer view of collective action than rational choice models typify, thereby helping not only to explain and measure both the social and economic contribution of entrepreneurial action, but also helping to establish the distinctive contribution of the field (Venkataraman, 1997); and 2) expanding theories of collective action to include a model of collective action without the necessity of first creating selective incentives. My hope is that this paper begins to fulfill the promise Olson saw when he wrote "... the incorporation of the concept of entrepreneurship in the provision of collective good into the model developed in this book does not contradict its logic or invalidate its conclusions, but rather enriches the argument, and makes it a better tool for the study of organization leadership and change" (Olson, 1971).

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≈ INTERACTIVE PAPER ≈

SOCIAL AND SUSTAINABLE ENTREPRENEURIAL FIRMS: AN EXPLORATION OF EXIT STRATEGIES

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Principal Topic

Ben and Jerry sold their firm to Unilever for \$326 million and The Body Shop sold to L’Oreal for \$1.4 billion. Burt’s Bees was sold to Clorox for \$913 million and Tom’s of Maine to Colgate/Palmolive for \$100 million. Four high profile firms, founded by individuals with strong social and sustainable values, sold to large firms who do not appear to have a mission congruent with that of the founders. Social and sustainable entrepreneurship, focusing on triple bottom line performance, is emerging as an important topic in both popular and academic discussions. Yet, little research has examined whether, and how, these firms differ from traditional economically-focused firms. These differences, however, are paramount to our understanding of the entrepreneurial process. In this research we examine one area of the entrepreneurial process – entrepreneurial exit – and explore how the exit decision may differ for founders of social and sustainable entrepreneurial firms.

Stewardship theory proposes that some individuals may assign a higher value to pro-organizational and collectivistic behaviors than to individualistic and self-serving behaviors, suggesting that founders with strong social and sustainable missions may make different decisions regarding entrepreneurial exit. Yet, the evidence presented above seems to suggest that many exit with strategies similar to other economically-focused firms. Thus, our primary question is “How does entrepreneurial exit differ for founders of social and sustainable firms than more economically-focused firms?” Secondly, “What factors impact the founder’s decision making process?”

Method

To examine these questions we use a multiple case study approach examining both founders who have exited, (e.g. Tom Chappell of Tom’s of Maine) and founders who’ve elected to retain control of their firms, (e.g. Yvon Chouinard of Patagonia).

Results and Implications

We extend theory and develop propositions which suggest that founders of social and sustainable ventures have different, and potentially overlapping, exit strategies including “selling out”, “cashing in”, and “staying true.” We extend stewardship theory by suggesting that life cycle, congruence of stakeholder goals, and perceived need for growth moderate the relationship between the founder’s social and sustainable goals and the potential exit.

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∞ INTERACTIVE PAPER ∞

ANTICIPATED OUTCOME EMOTIONS & COGNITIVE APPRAISAL: ASSESSING SOCIAL & ECONOMIC DIMENSIONS OF SOCIAL ENTREPRENEURIAL OPPORTUNITIES

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Principal Topic

How entrepreneurs perceive, evaluate and exploit opportunities is perhaps entrepreneurship's core phenomenon. That mandates we better understand those processes both from the rational cognitive perspective and the perspective of emotions. The best target phenomena to study then are those where both rational analysis and deep emotion must arguably be salient: Social entrepreneurial opportunities.

Neuroeconomics research argues to consider cognitive phenomena explicitly at deeper levels (Krueger, 2007) such as experiment-based analyses of how cognitive appraisal and anticipated-outcome emotions influence individual perception, evaluation and exploitation of entrepreneurial opportunities. Cognitive appraisal theories explicitly address cognitions, emotions and their interaction, assessing how persons appraise events (e.g., prospective venture launch) using both cognitions and emotions that significantly influence behaviour. Lazarus and Ellis's cognitive appraisal theory of emotion postulates we appraise events with respect to their importance and desirability (primary appraisal) and the ability to react (secondary appraisal).

More positive primary appraisals (general and situation-specific) and secondary appraisals will be associated positively on the perception and evaluation as well as the likelihood of exploiting entrepreneurial situations.

Method

In a 2x2 between-subjects experimental design, we asked ~300 subjects to envision a social entrepreneurial opportunity with both social and economic dimensions, randomly assigning subjects to conditions where envisioned opportunities had (a) either high or low economic return and (b) either high or low social return).

Subjects envisioned each situation, then estimated the intensity of outcome and attribution-dependent emotions using tested rating scales, controlling other potential causal factors to isolate the role of emotion, such as controlling for the perceived value and importance (primary appraisal) and secondary appraisal (available coping mechanisms) of the opportunity.

We hypothesize relationships between potential financial and social profit of an opportunity and its perception and evaluation as an entrepreneurial opportunity are moderated by evaluative cognitions and by anticipated emotions (especially fear of expected failure). We hypothesize that positive emotions drive more favorable evaluation of opportunities given the same outcome characteristics of opportunities and drive more opportunity exploitation.

Results/Implications

- (1) Demonstrate experimentally how anticipated outcome and attribution-dependent emotions influence opportunity perception, evaluation and expected exploitation.
- (2) Assess separately how they individually and collectively influence a critical entrepreneurial process.
- (3) Further evidence for neuroscience-influenced experimental methods, especially as applied to decision processes of social entrepreneurs.

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≈ SUMMARY ≈

**DISTINGUISHING EXTREME VS. AVERAGE
PERFORMANCE IN NASCENT FIRMS: PUTTING RISK
BACK INTO ENTREPRENEURSHIP RESEARCH**

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Principal Topic

Some of the most and the least desirable outcomes for organizations are extreme. For example, large corporate fiascos such as what occurred at Enron or the outstanding success of the Initial Public Offering (IPO) of Google have disproportionate impacts on all the stakeholders of those organizations. The principal method of inquiry in organizational scholarship studies the improvement of average outcome (Mohr, 1982) and one usually assumes equivalence with extreme outcomes. Even though this approach has its merits, it might be misleading, in particular in the context of entrepreneurship. Some stakeholders of nascent firms prefer improved chances of survival to the mere improvement of performance on average, while others, for instance Venture Capitalists (VCs), can exhibit risk preference by seeking exceptional firm successes such as IPOs over the mere improvement of average performance measures. When studying entrepreneurial successes or failures, variability and average effects could both be at work. For instance, successful fundraising could occur because of better performance on average (a mean effect) or because of chances in a more risky situation (a variability effect). On the bottom part of performance range, an entrepreneurial failure, e.g. going out of business, could be due to lower performance on average (a mean effect) or bad chances in a risky situation. This study explores whether various classical factors of the entrepreneurial situation influence performance variability in nascent firms. Furthermore, it explores whether such variability effect can overcome average effect.

Method

Empirically, the study leverages the new Kauffman Firm Survey (KFS), a survey of 4,928 firms that started in 2004. We test the influence on mean and variability of performance of the following factors: founder characteristic (gender, race, age, education, industry experience, start up experience), team characteristics (age diversity, gender diversity, race diversity, etc.), and context characteristics (funding sources and amounts, industry, legal form, intellectual property, location, etc.)

Results and Implications

This study contributes to entrepreneurial scholarship at two levels. First, it re-integrates the concept of risk into entrepreneurial studies by distinguishing effects on performance variability from effects on mean performance. Second, it identifies classes of factors that have such effects in a premier empirical setting, the KFS.

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≈ SUMMARY ≈

STOCK EXCHANGE LISTING AND PERFORMANACE OF FRENCH SME'S: WHAT IS THE IMPACT OF SHARHOLDING STRUCTURE?

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Principal topic

Stock exchange listing offers some advantages (reputation, fluidity of capital, managers' control, external growth, etc) and is subject to constraints, particularly in terms of cost and transparency. We seek to know if listing contributes to the creation of value in the SMEs, taking into account their specificities. Moreover, we wish to explain this value or lack of it by some strategic and governance variables such as the shareholding structure.

The basic theory of the paper is related to the governance theory. It stipulates that the financial market is a mechanism which governs the strategic behavior of the managers and reduces their managerial latitude. SMEs are not free of the agency problem. Some authors link that to owner opportunism, auto control, altruism with the family members, non-economic motivations... That's why it seems to be important to study which kind of shareholding (familial, managerial or controlled) is better in the context of listing. Three theses are in confrontation: convergence of interest, entrenchment and neutrality.

Method

In order to answer our questions, we use a longitudinal study, over seven years (three years before listing, the year of listing, and three years afterwards). The study related to a sample of 65 listed SMEs with 455 observations (pool data). It was carried out in two stages. The first one concerns the dynamic performance we use a method which describes explicitly the temporal dynamics. It is a question of measuring the rates of performance increase by company regarding especially to time and listing variables. The second model attempts to explain the mechanisms through which the stock exchange listing influence performance by using strategic, organizational and governance variables of which shareholder is a component.

Results/Implications

The evidence suggests performance of SMEs is negatively affected after the IPOs and shareholders structure has no impact on the performance of listed SMEs.

The interest of this work is academic and managerial. It tries to answer important questions that SMEs should consider before their IPO. This kind of study is rare in SME's case. In that sense, it presents a contribution in research in SMEs through an original methodology.

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≈ SUMMARY ≈

**MEASURING CROSS-NATIONAL INVARIANCE OF THE
ENTREPRENEURIAL ORIENTATION SCALE**

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Louis Marino, University of Alabama, USA

Patrick Kreiser, Ohio University, USA

K. Mark Weaver, Louisiana State University, USA

Principal Topic & Method

This study examines the cross-national validity and invariance of the EO measure (Covin and Slevin, 1989) by analyzing a data set spanning 1,200 SMEs from seven countries. Results from the study can be summarized under three main headings: dimensionality, validity, and invariance. From a dimensionality perspective, study results suggest the three-factor representation of EO is most appropriate. This finding is in contrast to previous research which has operationalized the construct in a unidimensional fashion.

This study also examined the convergent and discriminant validity of the constructs. Of the eight items examined in this study, two caused violations of both convergent and discriminant validity and were excluded from the remaining analyses. The multi-dimensional model excluding these items produced significantly better fit statistics than did the model including them. Four of the six items retained in the final scale, those intended to measure innovativeness and risk-taking, were originally developed by Miller and Friesen (1982). The other two retained items, designed to measure proactiveness, were developed by Covin and Slevin (1989). Thus, measurement problems associated with the items may be the result of items coming from differing sources.

Results and Implications

Our assessment of cross-national equivalence indicated that Greece was the lone country for which metric and scalar invariance was attained across each of the three EO dimensions. This suggests that researchers can assess substantive differences in latent factor variances, covariances, and latent means when their studies involve a comparison of U.S. and Greek entrepreneurs. However, the same could not be achieved for all three factors when comparing the U.S. sample against that drawn from each of the other five countries. The Australian and Mexican analyses yielded metric and scalar invariance for the proactiveness and risk-taking dimensions, but not for the innovativeness dimension. The Dutch analysis revealed metric and scalar invariance for the innovativeness and risk-taking dimensions, but not for the proactiveness dimension. Lastly, the Swedish and Indonesian analyses indicated that both metric and scalar invariance existed only for the risk-taking dimension.

These findings position the risk-taking dimension of EO as the most robust from a cross-national equivalence perspective and indicate that caution should be used in interpreting differences across countries in which cross-national invariance has yet to be established, especially in studies examining innovativeness and proactiveness. The reasons for this may relate to institutional and environmental forces such as like economic, social, and political factors, or the effect national culture has on the entrepreneurial mindset.

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≈ SUMMARY ≈

RECONCEIVING THE GESTATION WINDOW: THE CONSEQUENCES OF COMPETING DEFINITIONS OF FIRM CONCEPTION AND BIRTH

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Principal Topic

One of the challenges of organizational scholarship is defining when an organization begins to exist. Although the literature often borrows analogies from the biological realm, there is growing recognition that firm conception, gestation, and birth are complex constructs when applied to organizations. In this paper we take advantage of the rich data collected as part of the Panel Study of Entrepreneurial Dynamics II (PSED II) project to empirically examine the organizational gestation process and its outcomes. While there is agreement on the abstract meaning of both firm conception and firm birth, there is little agreement on the operational definitions of either. Drawing from the extant literature, we demonstrate how competing alternative operational definitions of “conception” and “birth” lead to very different conclusions about the duration of the gestation process and the overall rate of new firm births. We evaluate how four scholarly communities have conceptualized firm births: 1) entrepreneurship researchers who study the start-up process; 2) organizational ecologists who study the dynamics of organizational populations; 3) industrial organizational economists who are interested in economic transactions; and 4) labor market economists who are interested in employment. We review the relevant literature from these fields and demonstrate how their different operational definitions of firm birth lead to substantially different conclusions regarding the duration of the gestation period and the proportion of nascent ventures that achieve that status of a new firm.

Research Method

The PSED II Data is a unique resource for addressing this question as it was designed to identify individuals actively engaged in new venture creation. In the detailed interview information is obtained about 39 different start-up activities. For each activity that has been initiated, the respondent provides the month and year when this occurred. We develop four measures of firm birth to reflect different theoretical approaches to the phenomena and then use these competing definitions to analyze the PSED II panel data and assess the duration of the gestation process and the number of firms that would be considered “new births.” We present both descriptive data and event history analyses of birth rates.

Implications

We conclude by highlighting the need for scholars and policy makers to carefully consider what is meant by conception, gestation and birth as they are applied to entrepreneurial organizations.

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∞ INTERACTIVE PAPER ∞

STAIRWAY TO HEAVEN OR HIGHWAY TO HELL? THE USE OF GLOBAL ENTREPRENEURSHIP MONITOR DATA IN ACADEMIC RESEARCH

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Principal Topic

In 1998 Babson College and London Business School initiated the Global Entrepreneurship Monitor (GEM) program to increase our understanding of the role of entrepreneurship in national economic growth. GEM is now the largest single study of entrepreneurial activity in the world. In view of the 10th anniversary of the GEM project we seek to understand how the “heavenly” possibilities for entrepreneurship research are currently used in the academic world. With a thorough analysis of empirical academic papers using GEM data the paper aims to provide insights and recommendations about the future usage of the data.

Method

Based on information provided by the GEM consortium and an EBSCO search we identified 66 English-language papers published in academic journals using GEM data. To ensure a reliable evaluation of the papers we set up an analyzing framework including relevant aspects of data usage in empirical studies. Each paper was analyzed by at least two of the three authors.

Results and Implications

Academic papers use GEM data in a number of different ways and concerning different topics. In almost half of the papers the unit of analysis is the individual level while slightly more than half of the papers deals with aggregated data, mostly on the national level and only in a few cases on the regional level. Both groups of papers have specific strength and report specific limitations. Financing, gender and framework conditions are topics frequently covered. Most papers take the established constructs of Early-Stage Entrepreneurial Activity (TEA), nascent entrepreneurship and young business ownership. The breadth of information gathered within the GEM project is not fully utilized, e.g. established business owners are only seldom the focus of analysis. Often, GEM variables are used without discussing their appropriateness regarding the research question.

Our results have implications for researchers within and outside the GEM project. So far some papers based on GEM data have managed to climb the “stairway to heaven”, increase our knowledge about entrepreneurship and get published in top entrepreneurship journals. We believe that it is important to fully understand the GEM methodology in order to understand whether GEM data fit to a specific research question. We encourage researchers to make use of the individual data, be innovative, include new constructs and challenge established ways of using GEM data.

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∞ INTERACTIVE PAPER ∞

**NEW FIRM FORMATION IN THE RIO GRANDE DO SUL,
BRAZIL: THE DETERMINANTS AND CONSEQUENCES
FOR THE LOCAL DEVELOPMENT**

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André Carraro, Federal University of Pelotas, Brazil

Principal Topic

This paper is about the links between new firm creation determinants, new firm rate and new firm creation consequences. Our goal is to propose and test a model that disentangles the direct and indirect relations between these three elements, which allows answering the following question: Does new firm formation really matter for the local development?

Method

Using data from 467 counties in the province of Rio Grande do Sul, Brazil, the model considers the new firm birth rate in relation to the adult population (≥ 25 years) over 1999-2000 as a cause of economic and human development for the years to come measured, respectively, by the county per capita income and a socio-economic development index – IDESE (an index similar to the Human Development Index developed by the United Nations Development Programme). As determinants of new firm creation we considered economical, demographical and institutional factors. In economic terms we use the Gini index, the average unemployment rate during 1997-1998 and the personal income growth over 1991-2000. The demographic factors are the number of industry in relation to the county's adult population and area, the annual population growth over 1991-2000, the investments on education in 1991 and the variation in the number of year at school by the adult population between 1991 and 2000. Relevant institutional variables include the county's percentage of the total population who received 50% or more of their income from governmental transferences and the participation of micro and small enterprises on the number of enterprises in each locality.

Results and Implications

We found strong evidence that institutional, economical and demographic factors shape the counties new firm start-up activity. Moreover support was also found for the fact that the new firm creation rate impacts the development of localities. But, unlike other researches our results suggest that the new firm formation rate itself has no effects on the economic performance. Instead, we find that this rate has a positive impact on the IDESE, but only after a certain period of time.

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THE EFFECT OF BUSINESS OR ENTERPRISE TRAINING ON OPPORTUNITY RECOGNITION AND ENTREPRENEURIAL SKILLS OF GRADUATES AND NON-GRADUATES IN THE UK



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ABSTRACT

This paper attempts to overcome methodological challenges in demonstrating the effect of enterprise training on opportunity perception and entrepreneurial skills perception of trainees. A large scale sample of individuals in the UK, part of the 2007 GEMUK database, is utilised. Logistic regression shows that controlling for demographic effects, experience and attitudes, different types of training had different effects on opportunity perception and entrepreneurial skills perception. The results suggest that a combination of college-based training and work placements may provide a better all-round entrepreneurial capability for both graduates and non-graduates.

INTRODUCTION

Researchers have suggested that education and training for entrepreneurship should positively impact entrepreneurial activity by enhancing instrumental skills required to startup and grow a business (Honig 2004), by enhancing cognitive ability of individuals to manage the complexities involved in opportunity recognition and assessment (DeTienne and Chandler 2004), and by affecting their cultural attitudes and behavioral dispositions (Peterman and Kennedy 2003).

Demonstrating these effects, however, has been a challenge. First, there may be considerable self-selection into entrepreneurship education. Secondly, the effects may be long term rather than instantaneous. For example, in the short term, graduates of entrepreneurship education may recognise the need to amass specific knowledge (Fiet and Pankaj, 2008) and decide to defer action. Thirdly, there is the need for adequate control groups to demonstrate effects. Fourthly, individuals may receive such education and training at several points in their lives, such as at school, university, or after formal education, and it may take the form of traditional learning or experiential immersion in the phenomenon, through a placement, for example.

As a result of these issues, large-scale evidence concerning the influence of entrepreneurship training and education on entrepreneurial activity is still lacking (Béchar and Grégoire, 2005).

In this paper, we focus on the effects of enterprise education and training on the necessary antecedents of entrepreneurial activity (Reynolds et al., 2005): start-up skills perception and opportunity recognition. We suggest that if training has primed individuals to be more aware of opportunities as they present themselves, and if those individuals believe they have the knowledge, skills and experience to start a business, then they are more likely to start a business. However, in this paper, we only examine the first part of this model.

In the next section, we briefly review the literature on enterprise training, opportunity recognition and entrepreneurial skills perception, and derive our two principal hypotheses. Then, we outline the methodology used to test the hypotheses and the database we drew on. In our results section, we summarise the results of logistic regressions as formal tests of our hypotheses. Finally, we discuss the results, note limitations of the study, draw implications for enterprise training and recommend further research.

THEORY AND HYPOTHESES

The potential impact of enterprise training on the supply of entrepreneurship in a country has long been recognized. For example, Liebenstein (1968, p.82) noted that "...training can do something to increase the supply of entrepreneurship ...since entrepreneurship requires a combination of capacities, some of which may be vital gaps in carrying out the input-completing aspect of the entrepreneurial role, training can eliminate some of these gaps." In the UK, the issue of enterprise training features prominently in enterprise policy, particularly for graduates. For example, the National Council for Graduate Entrepreneurship was set up in 2004 to increase graduate entrepreneurship through the provision of more and better enterprise training in UK institutes of higher education (www.ncge.com).

In developing a model of the effect of enterprise training on entrepreneurial activity, we have utilized the Global Entrepreneurship Monitor (GEM) model (Levie and Autio, 2008) which suggests that the effect of enterprise training on allocation of effort into entrepreneurial activity (as opposed to other economic activity, such as being an employee) will be fully mediated by its influence on opportunity perception, on the one hand, and entrepreneurial skills perception, on the other. This justifies a study of the effect of enterprise training on opportunity and skills perception.

Several authors have argued that enterprise training and education enhances the cognitive abilities required for the discovery of market opportunities (DeTienne and Chandler, 2004). It may do this in several ways. One way is through providing examples of the process of entrepreneurship, with role models that trainees can identify with. These examples show trainees what is possible, and together with useful theory and techniques, can equip students to recognise, assess and shape opportunities (Fiet, 2000). While superior training may well lead to superior entrepreneurship, it seems plausible that any form of enterprise or business training may lead to a heightened awareness of entrepreneurship as an economic option, particularly in a country like the UK, where entrepreneurial activity rates are low compared to the US and where relatively few people know someone who has started a business recently (Bosma et al., 2009). This leads us to the first hypothesis:

Hypothesis 1: Individuals are more likely to perceive opportunities for starting a business in their environment if they have undertaken enterprise or business training, ceteris paribus.

Several authors have argued that entrepreneurs need a broad set of enterprise and business skills if they are to succeed (Lazear, 2004; Michelacci, 2003), and indeed that the belief one possesses such skills is a key determinant of propensity to engage in entrepreneurial activity (Boyd and Vozikis, 1994). We therefore propose that not just enterprise training but general business training may enhance an individual's self-belief in their own ability to start a business. We express this formally as Hypothesis 2:

Hypothesis 2: Individuals are more likely to believe they have the knowledge, skills and experience to start a business if they have received enterprise or business training, ceteris paribus.

These two hypotheses are silent on the quality of training received. This is deliberate. We suggest that it is more useful initially to look for effects of training, *ceteris paribus*, than to try to decipher the effect of a training method (such as business plan writing, for example) in a research design in which self-selection and unrepresentative samples can obscure the effect of the method. However, we do recognise that training may take place in different contexts and at different times of life, such as in school, in college or university, in work through a work placement for example, or on government-sponsored schemes.

METHODOLOGY AND DATA

We used data from a Global Entrepreneurship Monitor survey of almost 5,000 adults aged 18 to 44 across the United Kingdom in 2007 to test for the independent effects of four different types of business or enterprise training on subsequent individual propensity to recognise business opportunities and to believe that one has the skills, knowledge and experience to start a business. This age group was chosen because previous GEM surveys had shown that very few individuals over the age of 44 had ever taken part in business or enterprise training.

The survey was conducted by a reputable market research company that is regularly retained by the UK government to undertake household surveys of this type. They used a stratified random sampling method to locate adults in households in each of 12 government office regions of the UK with a fixed telephone line using random digit dialing according to strict guidelines laid down by the GEM consortium and supervised by the GEM international data manager (Reynolds et al., 2005; Levie, 2007). Numbers were called up to eight times before being abandoned and residents within the household were sampled using the “next birthday” method. The raw survey data was cleaned and harmonized first by the survey vendor, then by the GEM international data manager, then again by the UK GEM team.

The training types were: business or enterprise training at school, at college or university, placements in small or medium-sized businesses whilst at school or college/university, or in government programmes. We controlled for self-selection by asking each individual if the training was voluntary or compulsory, if they answered “yes” to any of the four training types. We examined graduates and non-graduates separately because of their different education experience, and their likely different career trajectory. We controlled for demographic characteristics of the individuals, including age, gender, employment status, education level at a finer grained level than graduate/non-graduate, ethnicity, migrant status, entrepreneurial attitudes including fear of failure, and an entrepreneurial networking measure (knowing a recently started entrepreneur). We controlled for experience with a dummy variable labelling individuals who had ever started a business. We used logistic regression to estimate the independent effect of different forms of business or enterprise training on individuals’ propensity to recognise opportunities and believe they had the skills necessary to start a business.

Our dependent variables were operationalized as follows. All respondents who agreed they were trying to start a business or running their own business, and a random half of respondents who were not, were asked the following questions:

“In the next six months will there be good opportunities for starting a business in the area where you live?”

“Do you have the knowledge, skill and experience required to start a new business?”

Respondents were asked to answer yes, no, or don't know and were given the option to refuse to answer. Refusals were very low at 0.05% of respondents asked these questions. Only 2.5% of respondents answered “don't know” to the skills question, but 17.9% answered “don't know” to the opportunity perception question. Previous UK GEM surveys have found similar levels of “don't know” responses, and in multivariate analyses, those answering “don't know” tend to behave from an entrepreneurship perspective in a similar fashion to those who answer “no”. Thus it may not be appropriate to eliminate this group from analysis; “don't know” is a legitimate response to this question (Levie, 2007).

Approximately fifty percent of respondents were under the age of 45, and all these were asked a battery of questions on business or enterprise questions from a total sample of 42713 adults aged between 16 and 64. Specifically, respondents were asked:

“Have you ever taken part in any of the following?”

- (i) Business or enterprise training at school?
- (ii) Business or enterprise training at college or university?
- (iii) Work experience in a small or medium sized business whilst at school or college?
- (iv) A Government or public sector training course in business or enterprise skills?”

For each type of training, respondents who answered “yes” were asked:

“Was this training (specific type described) compulsory or did you choose to take it?”

The sample was further reduced as the dependent variable questions were only asked of 50% of the non-entrepreneurially active respondents. (Derivative variables were created for these and other attitudinal variables that randomly sampled from the entrepreneurially active respondents in proportion with their relative size in the sample as a whole.) Although refusal and don't know responses were low for all dependent variables except household income (9.2% refusal rate), they were widely distributed and the effect of this was to reduce the sample size for which all required variables were answered by respondents to around 7,500. Finally, the sample was split into graduates and non-graduates, for sample sizes of around 2,400 and 5,000 respectively.

Before conducting a logistic regression on the sample, a list-wise correlation matrix was constructed that included all the variables to be entered in the regression. The highest correlation was between occupation and gender at .313. Accordingly, no problems of multi-collinearity appear to exist. Copies of the matrix are available on request.

RESULTS

Tables 1 to 4 show the final, most parsimonious models of direct effects of business or enterprise training, where all four types of training were entered simultaneously with control demographic, experience and attitudinal variables. Diagnostics are provided at the bottom of each table. The cutoff has been adjusted to maximise the ability of the model to predict both ones and zeros, bearing in mind the unbalanced nature of some of the samples in relation to the dependent variable. The predictive ability of the models is not high, at around 65% for opportunity perception and around 70% for skills perception. However, the Hosmer and Lemeshow tests suggest that the models appear to have a reasonable fit and in three of the models, very few outliers were detected despite the large size of the samples. In the case of non-graduates and skills perception, 55 outliers were identified which suggests that there are either other significant unmeasured variables or that undetected interactions may exist between the independent variables.

Considering the control variables first, all variables appear to be in the expected direction, with higher opportunity and skills perception among males, among the wealthy, those with business experience, and those with positive entrepreneurial attitudes. There were some differences between graduates and non-graduates. Age had no effect on opportunity perception, and had different effects on graduates and non-graduates, while migrant status had no effect among non-graduates. Ethnicity had no significant effect in any model and was omitted from the final models. The effect of startup and business experience was noticeably higher on skills perception than on opportunity perception.

Turning to the training variables, the results suggest that enterprise education and training at school has no significant effect on opportunity recognition or skills perception of graduates. College or university enterprise education has the strongest effect of the four types tested, and has a stronger effect on skills perception than knowing a recent startup entrepreneur (a proxy for social networks that include entrepreneurs).

Among graduates, government programmes only had a significant (but weak) effect on skills perception of volunteers but not of those who had to take the programmes. Effects on opportunity recognition were weaker, except for work placement, and again compulsory government programmes of enterprise education or training had no significant effect. It appears that work placement has a significant and positive effect on both opportunity and skills perception, in about equal measure, and that this is true for both compulsory and voluntary programmes. "Sandwich" and other courses at school or college that have built-in work placements appear to make a real, if limited, difference to the entrepreneurial capacity of students who become graduates. In relation to opportunity perception, they have about the same effect as previous experience in starting or running a business.

Among non-graduates, enterprise training in schools did have a significant effect on skills, but only if it was voluntary. Both voluntary and compulsory attendance at training programmes in college also had significant and positive effects on skills perception, but not on opportunity perception. Voluntary and compulsory placement in small and medium-sized businesses had around the same positive and significant effect on the odds of an individual perceiving opportunities to start a business locally as it had on graduates. Voluntary participation in government programmes had a positive effect on skills self-perception but not on opportunity perception.

DISCUSSION AND CONCLUSIONS

These results have implications for enterprise education and training policy. They suggest that government-run start your own business programmes in which participants feel compelled to attend have no effect on either opportunity recognition or skills self-perception for either graduates or non-graduates. However, enterprise education and training at college or university (or at school for non-graduates) does have a discernable positive effect on skills self-perception, while work placement whilst at school or college had a significant effect on both opportunity perception and skills self-perception. This suggests that a combination of enterprise classes in formal education and placements could make a measureable difference to the entrepreneurial capacity of the nation.

Although every effort has been made to control for issues that have plagued those who have tried to measure the impact of entrepreneurship education and training on attitudes and activity, such as self-selection, small, unrepresentative samples, and the time it can take for training to affect attitudes or action, this study has several limitations. One is that the “family effect” of having parents who ran their own business is not fully controlled for in this study. In the 2008 GEMUK survey, this was addressed, and respondents were also asked if they had worked in their parents’ business. In addition, a wider range of types of enterprise education was included, and the training referred to was more specifically about starting a business. We propose to compare the results of this study with the 2008 survey results, to investigate these issues further.

The pattern of effects of enterprise training in college should be of interest to entrepreneurship educators. It appears that training in college, as opposed to work placements, does not enhance opportunity perception, but it does enhance skills perception, even if the training was compulsory. This would be in line with a view that, as a group, UK entrepreneurship educators spend too much time on technical skills such as business plan writing and financial forecasting and not enough on encouraging students to spend time in the market, engaging with potential customers on the issues they are facing (Levie, 2006). Work placement may be providing this “face-time” in a way that class-based training fails to do. When it comes to skills, however, class-based training in college has a stronger effect than work placements. This again suggests that a combination of types of training is superior to one or the other.

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Table 1: Logistic regression of effects of business or enterprise training on opportunity perception among graduates

	B	S.E.	Wald	df	Sig.	Exp(B)
gender (male)	.327	.095	11.848	1	.001	1.387
migrant status (life long regional residents are ref. group)			14.671	2	.001	
migrant status (regional in-migrants, born in UK)	.299	.096	9.717	1	.002	1.348
migrant status (immigrants)	-.135	.144	.880	1	.348	.874
occupation (in full-time work is ref. group)			9.593	2	.008	
occupation (in part-time work)	.403	.130	9.579	1	.002	1.496
occupation (not in work)	.063	.155	.162	1	.687	1.065
income (over 50k sterling)	.287	.093	9.587	1	.002	1.332
ever started or currently running a business (yes)	.441	.122	12.992	1	.000	1.555
know someone who started a business in last 2 years (yes)	.717	.093	59.882	1	.000	2.048
business or enterprise training at school (none is ref. group)			1.012	2	.603	
compulsory business or enterprise training at school	-.100	.187	.284	1	.594	.905
voluntary business or enterprise training at school	.107	.140	.579	1	.447	1.113
business or enterprise training at college (none)			3.351	2	.187	
compulsory business or enterprise training at college	.305	.171	3.187	1	.074	1.356
voluntary business or enterprise training at college	.097	.125	.607	1	.436	1.102
work experience in a SME while at school/college (no)			15.505	2	.000	
compulsory work experience in a SME	.331	.108	9.338	1	.002	1.393
voluntary work experience in a SME	.400	.118	11.489	1	.001	1.492
government business/enterprise skills training course (no)			3.376	2	.185	
compulsory government-run training course	.292	.262	1.238	1	.266	1.339
voluntary government-run training course	.235	.151	2.415	1	.120	1.265
Constant	-1.476	.112	175.039	1	.000	.228

-2 Log likelihood = 2956.769 Nagelkerke R squared = .107

Hosmer & Lemeshow test statistic Chi-square = 5.947, d.f. = 8, sig. = .653

% of no or don't know responses predicted correctly on a cutoff of .4 = 68.2

% of yes responses predicted correctly = 55.3

Overall percentage predicted correctly = 63.2

Final N with all variables included: 2354. Number of positive cases: 920

Table 2: Logistic regression of effects of business or enterprise training on opportunity perception among non-graduates

	B	S.E.	Wald	df	Sig.	Exp(B)
gender (male)	.325	.073	19.959	1	.000	1.384
education level (reference group is no qualifications)			12.541	4	.014	
education level (A levels or equivalent)	.268	.150	3.216	1	.073	1.308
education level (GCSE or equivalent)	.038	.147	.067	1	.796	1.039
education level (vocational qualifications)	.236	.167	1.992	1	.158	1.266
education level (other qualifications)	-.176	.231	.584	1	.445	.838
income (over 50k sterling)	.190	.096	3.897	1	.048	1.210
ever started or currently running a business (yes)	.410	.097	17.862	1	.000	1.506
know someone who started a business in last 2 years (yes)	.760	.078	95.722	1	.000	2.139
have knowledge, skills, experience to start a business (yes)	.482	.078	38.260	1	.000	1.619
business or enterprise training at school (none is ref. group)			.317	2	.853	
compulsory business or enterprise training at school	.007	.169	.002	1	.965	1.007
voluntary business or enterprise training at school	.072	.128	.317	1	.574	1.075
business or enterprise training at college (none)			1.703	2	.427	
compulsory business or enterprise training at college	.220	.184	1.426	1	.232	1.246
voluntary business or enterprise training at college	.076	.114	.443	1	.506	1.078
work experience in a SME while at school/college (no)			24.032	2	.000	
compulsory work experience in a SME	.282	.086	10.809	1	.001	1.326
voluntary work experience in a SME	.445	.098	20.573	1	.000	1.561
government business/enterprise skills training course (no)			3.466	2	.177	
compulsory government-run training course	.115	.248	.213	1	.644	1.121
voluntary government-run training course	.215	.117	3.361	1	.067	1.240
Constant	-1.653	.086	369.489	1	.000	.191

-2 Log likelihood = 4747.951 Nagelkerke R squared = .130

Hosmer & Lemeshow test statistic Chi-square = 9.611, d.f. = 8, sig. = .293

% of no or don't know responses predicted correctly on a cutoff of .3 = 68.8

% of yes responses predicted correctly = 58.7

Overall percentage predicted correctly = 65.8

Final N with all variables included: 4269. Number of positive cases: 1247

Table 3: Logistic regression of effects of business or enterprise training on entrepreneurial skills perception among graduates

	B	S.E.	Wald	df	Sig.	Exp(B)
age	.037	.008	22.530	1	.000	1.038
gender(male)	.314	.094	11.158	1	.001	1.369
migrant status (life long regional residents are ref. group)			15.748	2	.000	
migrant status (regional in-migrants, born in UK)	-.183	.101	3.312	1	.069	.833
migrant status (immigrants)	-.587	.149	15.565	1	.000	.556
ever started or currently running a business (yes)	1.531	.158	94.092	1	.000	4.621
income (over 50k sterling)	.324	.097	11.051	1	.001	1.382
know someone who started a business in last 2 years (yes)	.620	.098	39.677	1	.000	1.859
afraid to start a business in case it might fail (yes)	-.471	.092	25.953	1	.000	.624
business or enterprise training at school (none is ref. group)			3.965	2	.138	
compulsory business or enterprise training at school	.243	.199	1.496	1	.221	1.276
voluntary business or enterprise training at school	.263	.152	2.996	1	.083	1.301
business or enterprise training at college (none)			62.999	2	.000	
compulsory business or enterprise training at college	.834	.187	19.806	1	.000	2.302
voluntary business or enterprise training at college	.994	.138	52.089	1	.000	2.701
work experience in a SME while at school/college (no)			15.625	2	.000	
compulsory work experience in a SME	.368	.115	10.264	1	.001	1.445
voluntary work experience in a SME	.409	.126	10.557	1	.001	1.505
government business/enterprise skills training course (no)			7.162	2	.028	
compulsory government-run training course	.190	.291	.427	1	.514	1.209
voluntary government-run training course	.466	.177	6.938	1	.008	1.594
Constant	-1.958	.286	46.857	1	.000	.141

-2 Log likelihood = 2786.783 Nagelkerke R squared = .256

Hosmer & Lemeshow test statistic Chi-square = 8.137, d.f. = 8, sig. = .420

% of no responses predicted correctly on a cutoff of .5 = 71.2

% of yes responses predicted correctly = 65.1

Overall percentage predicted correctly = 68.0

Final N with all variables included: 2379. Number of positive cases: 1247

Table 4: Logistic regression of effects of business or enterprise training on entrepreneurial skills perception among non-graduates

	B	S.E.	Wald	df	Sig.	Exp(B)
age	.188	.046	16.892	1	.000	1.207
agesquared	-.002	.001	10.018	1	.002	.998
gender(male)	.709	.073	93.474	1	.000	2.032
education level (reference group is no qualifications)			35.129	4	.000	
education level (A levels or equivalent)	.512	.151	11.531	1	.001	1.669
education level (GCSE or equivalent)	.268	.146	3.358	1	.067	1.307
education level (vocational qualifications)	.793	.168	22.407	1	.000	2.210
education level (other qualifications)	.714	.224	10.138	1	.001	2.043
income (over 50k sterling)	.308	.101	9.255	1	.002	1.360
ever started or currently running a business (yes)	1.723	.115	225.821	1	.000	5.599
know someone who started a business in last 2 years (yes)	.620	.083	55.214	1	.000	1.859
opportunities to start a business locally (yes versus no/dk)	.478	.080	35.925	1	.000	1.613
afraid to start a business in case it might fail (yes)	-.557	.074	56.570	1	.000	.573
business or enterprise training at school (none is ref. group)			6.702	2	.035	
compulsory business or enterprise training at school	.277	.178	2.406	1	.121	1.319
voluntary business or enterprise training at school	.309	.137	5.065	1	.024	1.361
business or enterprise training at college (none)			41.478	2	.000	
compulsory business or enterprise training at college	.946	.199	22.514	1	.000	2.576
voluntary business or enterprise training at college	.579	.120	23.354	1	.000	1.785
work experience in a SME while at school/college (no)			26.198	2	.000	
compulsory work experience in a SME	.338	.089	14.325	1	.000	1.402
voluntary work experience in a SME	.466	.103	20.282	1	.000	1.593
government business/enterprise skills training course (no)			17.622	2	.000	
compulsory government-run training course	-.160	.258	.386	1	.534	.852
voluntary government-run training course	.533	.130	16.805	1	.000	1.705
Constant	-5.495	.744	54.507	1	.000	.004

-2 Log likelihood = 4701.464 Nagelkerke R squared = .308

Hosmer & Lemeshow test statistic Chi-square = 11.209, d.f. = 8, sig. = .190

% of no responses predicted correctly on a cutoff of .45 = 79.4

% of yes responses predicted correctly = 61.2

Overall percentage predicted correctly = 71.7

Final N with all variables included: 4269. Number of positive cases: 1802

≈ SUMMARY ≈

**FOSTERING ENTREPRENEURIAL BEHAVIOR THROUGH
ENTREPRENEURSHIP EDUCATION: IMPACT OF SPECIALIZATION
AND DIVERSITY IN EDUCATIONAL INITIATIVES**

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Principal Topic

Even though university-based entrepreneurship education programs have grown substantially over the last decade (Katz, 2003; Vesper and Gartner, 1997), a question that remains unanswered is what should be the most desirable educational mix of inputs for fostering entrepreneurship. This is especially because of the time lag that normally exists between graduation and actual venture creation. Further, in the coming years entrepreneurship education will have to deal with many challenges: (i) academia-business incongruence, (ii) the field's maturity/complacency/stagnation trap, and (iii) an acute shortage of faculty, all of which will significantly affect the quality of the education offered (Katz, 2003; Kuratko, 2005).

Method

Given these competing needs and challenges, it is important to identify a judicious mix of knowledge inputs likely to be of the highest benefit to students pursuing entrepreneurial careers. Therefore, in this paper we examine the relationship between specialized entrepreneurship education and diversity of university educational experiences in fostering future entrepreneurial events. Our research proposes a conceptual model grounded in two alternate forms of knowledge relevant in entrepreneurship education:

Specialized Entrepreneurship Education: Knowledge specialized in terms of entrepreneurship-related content. Diversity of Educational Experience: Knowledge incorporating diversity of educational experience from courses and/or programs in other disciplines. We hypothesize that specialized entrepreneurship education and diversity of educational experience jointly lead to future entrepreneurial events. By considering the two independent variables and their joint impact on entrepreneurial events, we are able to propose and test a typology of entrepreneurs.

We test the model using a field survey of graduates (over a twenty year timeframe) of an established entrepreneurship program in a major public university in north-east US. Currently, our research is in the data collection and analysis stage. In February 2009, a web-based survey was sent to 2100 alumni. We have received 201 responses to date (approximately, a 10% response rate). Our survey will end on April 15. Our preliminary analysis shows that the indicators representing the independent and dependent variables share underlying relationships. In the coming days, our objective will be to test the conceptual model and the hypotheses proposed therein.

Results and Implications

This study aims to enhance our understanding of how prospective entrepreneurs benefit from specialized entrepreneurship education combined with diversified educational experience. The results of the study will have important implications for entrepreneurship educators, policy makers, as well as nascent entrepreneurs.

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