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Political risk and the equity trading costs of cross-listed firms

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ABSTRACT

In order to increase investor participation in capital markets and, consequently, minimize the total cost of trading, it is important to identify which political and social attributes most significantly impact trading and adverse selection costs. We examine the effect of the components of the political risk rating compiled by International Country Risk Guide on the equity trading costs of non-U.S. stocks listed on the NYSE in 2011. While the results show a significant effect of political and social attributes on trading costs, they also indicate that this effect is generally not significant on adverse selection costs in periods of extreme price movements. Our analysis allows investors to make a more informed assessment of political risks associated with democratic stability, economic development, government effectiveness, civic cohesiveness and international integration.

1. Introduction

The world's stock market capitalization rose by $6 trillion in 2010 to reach $54 trillion, accounting for more than half of the growth in global financial assets in that year.[1] This rapid growth, which facilitates the distribution of economic resources via a more efficient allocation of capital and diversification of financial risk, may depend on how well political and social institutions reduce trading costs by stimulating investor participation in financial markets. Stronger institutions may make savers more willing to share business successes (and inevitable failures) by increasing investor confidence in the stability of their government and its policies. They may provide incentives for innovation and creativity by facilitating the access to capital via higher investor participation and, consequently, more liquid markets.

The examination of the effect of institutions on equity trading costs is also very important for policy makers. Well-intentioned reforms that do not take into consideration political and social risks may end up negatively affecting the development of local markets. And the risk of unintended consequences for investors in particular and the economy in general may be very high. For example, Amann and Baer (2008) examine the effects of deregulation, privatization and trade liberalization reforms in Brazil. Although one of the goals of those reforms was to create deeper and wider financial markets with more dispersed ownership structures, Amann and Baer find that those reforms resulted in higher ownership concentration of Brazilian firms due to the highly concentrated nature of income distribution in that country.

A growing body of literature has shown that improvements in legal and political institutions are indeed associated with higher liquidity, and that liquidity positively impacts firm value by reducing transaction costs and information risk. Eleswarapu and Venkataraman (2006) contribute to this literature by examining the effect of political stability on the cost of liquidity for stocks cross-listed on the New York Stock Exchange (NYSE) in 2002. The authors provide evidence that trading costs are higher for stocks of countries with higher political risk. They argue that weak political institutions increase information risk in the form of higher likelihood of insider trading or low disclosure requirements, thereby discouraging investor participation and increasing transaction costs in financial markets. However, at the same time, Eleswarapu and Venkataraman point out that the evidence presented in their study is only suggestive and that several issues and puzzles remain to be addressed.

Our paper addresses one such remaining issue: "Why do we observe such a strong effect of political stability on the cost of liquidity?" In order to answer this question, we further examine the relation between political stability and trading costs, focusing

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[1] See Roxburgh, Lund, and Piotrowski (2011) for an in-depth analysis of the world's financial markets performance after the 2008 financial crisis.

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on the components of the political risk rating compiled by International Country Risk Guide (ICRG) and used by Eleswarapu and Venkataraman in their study.[2] We analyze the relation between each of the twelve different political and social attributes included in the political risk rating and the trading costs of 371 non-U.S. stocks from 37 different countries that traded on the NYSE in 2011. By studying stocks cross-listed on the NYSE, we can isolate the impact of political risk on equity trading costs while keeping microstructure effects constant. By focusing on trading cost (i.e., liquidity level), we can better understand how institutional quality and effectiveness may affect transaction speed and costs via changes in investor participation in stock markets.[3]

With this study, we make important contributions to the literature on political stability and trading costs. First, if more stable political institutions can increase investor participation in financial markets and, consequently, lower the cost of liquidity, it is important to identify which political and social attributes have the greatest impact on trading costs. The political risk rating is a composite measure that includes attributes related to the exposure of the countries covered by the ICRG to risks associated with democratic stability, economic development, government effectiveness, civic cohesiveness and international integration. Although the composite measure allows us to test whether political institutions have an impact on the equity trading costs of cross-listed firms, the examination of its components can help us to better understand how these individual attributes affect the cost of liquidity. To the best of our knowledge, this is the first paper to include an analysis of the twelve different components of this political risk rating in a study of equity trading costs.

Second, we contribute to the microstructure literature by using a more recent sample period to test the effect of the ICRG rating and its components on trading costs. As argued by Angel, Harris, and Spatt (2011), the U.S. equity market has changed significantly since 2002 due to regulatory changes and technological innovations while the main challenge has remained the same: to minimize the total cost of trading. The implementation of Regulation NMS in 2007, for example, integrated markets electronically and made it much easier for exchanges to compete. The share of electronic trading in stock markets increased from about 16 percent in 2000 to over 80 percent by 2010. Trading volumes are higher, bid-ask spreads are narrower, and average trade sizes are smaller than before. If political stability is related to trading costs because of its effect on information risk, the changes documented by Angel et al. are likely to have significantly affected this relation. Therefore, it is important to reexamine the effect of political institutions on the trading costs of cross-listed firms since the implementation of these significant innovations have resulted in such quality improvement in the U.S. equity markets.

The Sarbanes-Oxley Act (SOX) of 2002 is also likely to have significantly affected the relation between political stability and trading costs of cross-listed stocks due to its effect on the information environment. The Act requires higher finance disclosure standards and more stringent criminal provisions against fraudulent insider trading crimes in U.S. markets, regardless of whether the issuer is a foreign or a domestic firm. Although the Securities and Exchange Commission (SEC) has provided non-U.S. issuers certain accommodations to take into account their home country laws and regulations, SOX has enhanced investor protection from expropriation by insiders and reduced the information risk for both U.S. and cross-listed securities. Consistent with expectations, Dodd and Louca (2012) find evidence that investor protection improvement after 2002 is positively related to abnormal returns around the announcement of cross-listings, suggesting that the provisions of the Act increased the legal bonding benefits of cross-listing for non-US issuers.[4]

In this study, we do not find a significant relation between political risk and effective spreads or price impact for our more recent sample period after controlling for firm-level characteristics and home country turnover. This result is consistent with our argument that advancements in technology and regulation have affected the role of political risk in explaining the cross section of equity trading costs. And, taken alone, it would indicate that there is no relation between the quality of political institutions and our proxies for equity trading and adverse selection costs, respectively. However, when we examine this relation using the components of the political risk rating individually, we find that higher incidence of corruption, presence of military in politics, less effective legal systems, greater ethnic tensions and lower bureaucracy quality are related to higher effective spreads. We also find that the presence of military in politics, weak legal systems, and ethnic tensions are related to higher price impact, suggesting that political instability, relatively poor legal protection and ethnic polarization result in higher adverse selection costs. The lack of a significant effect of corruption and bureaucracy on price impact suggests that the relation between these attributes and effective spreads is not due to the informational component of trading costs.

Military in politics and ethnic tensions are, by nature, related to a high degree of political divergence, which inevitability increases social and economic uncertainty and decreases investors' incentives to provide capital to new and existing businesses. While the first is associated with unwillingness to compromise due to differences in political opinions, the latter is associated with conflicts attributable to racial or ethnical divisions. In both cases, we should find executive powers in the hands of a dominant group who has privileged access to material information, increasing the probability that investors will end up trading with an informed counterparty.

The significant relation between corruption and trading costs confirms that the detrimental influence of money in politics negatively affects government credibility and investor trust in financial markets, which should be fair and orderly in the absence of corruption. A less effective judicial system results in less liquid markets since investor's rights depend on the impartial application of legal rules. A higher risk of expropriation due to the ineffective protection by a country's legal system represents a clear disincentive for investment and risk sharing. Finally, state bureaucracy can contribute to an efficient distribution of public goods and services, but dysfunctional bureaucracy may increase trading costs by creating administrative bottlenecks and disruptions that discourage investment participation in equity markets.

Besides adverse selection costs, liquidity providers incur order processing (e.g., exchange fees, clearing fees, and back office costs) and inventory holding costs. Stoll (2000) provides evidence that

[2] Other studies have examined the relation between the political risk rating compiled by ICRG and, for example, stock returns (Erb, Harvey, & Viskanta, 1996b), fixed income returns (Erb, Harvey, & Viskanta, 1996a), stock market development (Perotti and van Oijen, 2001), foreign direct investment inflows (Busse and Hefeker, 2007), level of firm governance in emerging markets (Braga-Alves and Morey, 2012), development of financial sector (Trabelsi and Cherif, 2017), and cost of capital (Belkhir, Boubakri, & Grira, 2017).

[3] As argued by Acharya and Pedersen (2005), liquidity level is associated with an investor's ability to trade shares quickly and at low cost whereas liquidity risk is associated with the covariation between the stock's liquidity and the market liquidity, the covariation between the stock's return and the market liquidity, and the covariation between the stock's liquidity and the market return.

[4] Hostak, Lys, Yang, and Carr (2013) find evidence that private benefits of control, which are associated with a less transparent trading environment and higher information risk, motivated foreign firms to withdraw from the U.S. exchanges after the passage of SOX.

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both inventory and adverse selection costs are positively correlated with return volatility. Investors may react similarly in the face of increasing uncertainty and drive market makers' inventory too far from optimal holdings in terms of risk diversification during extreme market movements. Those market makers, who stand ready to accommodate order flows, need to be compensated for providing immediacy of trading and for the risk of losing money to informed traders since the adverse selection risk is higher in more volatile markets. Therefore, we further investigate the effect of the political risk rating and its components on trading costs of non-U.S. stocks when return volatility, and therefore inventory and adverse selection risks, is high.

The risk of corruption incidence, military in politics, weaker legal systems, greater ethnic tensions and lower bureaucracy quality are related to higher effective spreads whether or not we condition our analysis on days with high volatility. The political risk rating, socioeconomic conditions, and investment profile are significantly related to effective spreads only on days with extreme increases in stock returns. And democratic accountability is significantly related to our proxy for trading costs on days with extreme increases and decreases in stock returns.

Poor socioeconomic conditions affect trading costs via social and macroeconomic pressures (e.g., unemployment and poverty) that limit investment opportunities whereas weak investment profile affects trading costs via government intervention in private companies (e.g., breach of contracts and restrictions to profit repatriation) that increases business risks. Democratic accountability reflects how responsive government authorities are to the needs of their constituents and, as a result, the likelihood that those authorities will be replaced. Our results suggest that socioeconomic pressures, government intervention, and changes in government affect investor participation in equity markets in periods of very high stock returns. The effect of democratic accountability on liquidity costs during days of substantial negative returns is consistent with the argument that citizens' dissatisfaction with governments is greater in periods of low economic and financial performance.

While our results indicate that the effect of political and social attributes on trading costs in periods of greater volatility is at least as important as, if not more important than, in periods of normal volatility, they also suggest that this effect is generally not significant on adverse selection costs in periods of extreme price movements. Neither the political risk rating nor any of its components is related to price impact during extreme up days, and only government stability, which depends on government decentralization and popular support, is significantly related to our proxy for adverse selection cost on extreme down days. The relation between government stability and the informational component of trading costs may be interpreted as evidence that higher centralization of the decision-making process leads to higher information asymmetry that, in turn, increase trading costs.

In the remainder of this paper, we proceed as follows: We discuss the literature on institutional quality and trading costs in Section 2. We describe our empirical methodology in Section 3. We present our empirical findings relating political institutions and equity trading costs in Section 4. Finally, we summarize our results and present the main conclusions of the paper in Section 5.

2. Institutional quality and trading costs

As explained by Amihud, Mendelson, and Pedersen (2005), liquidity may be defined as the ease of trading a security. Investors who need to sell a liquid security should be able to quickly find investors who want to buy that security. If buyers are not immediately available, market makers may purchase and hold a less liquid security in their inventory. During the period between purchase and resale of the security, market makers are exposed to unfavorable price changes and, consequently, need to be compensated for this inventory cost. There is also the possibility that market makers will trade with informed counterparties who have superior information (or superior ability to process information) about the order flow or the fundamental value of the security, creating an adverse selection cost. These costs associated with illiquid securities negatively affect investors' rates of return and, hence, firms' cost of capital, which in turn affects the efficient allocation of a country's financial and real resources. As argued by Amihud and Mendelsen (1986), policies that increase liquidity help reduce the opportunity cost of capital, improving the trading and exchange processes.

In their literature survey of empirical analyses of liquidity, Holden, Jacobsen, and Subrahmanyam (2013) show that financial economists often measure trading costs (i.e., liquidity level) as the difference between the lowest offer and the highest bid prices available at the time of the trade. This quoted spread may be viewed as the cost of a round trip trade, in which the investor buys a security at the current offer price and simultaneously sells the same security at the current bid price. It can also be seen as the compensation to market makers for the risk they take of price changes that may negatively affect their inventory and for losses from trades with informed counterparties. Even though order processing costs represent another important component of bid-ask spreads, there is no reason to believe that they are affected by differences in the political and social attributes that we analyze in this study since processing costs are largely fixed.

Since trades usually happen at prices that are different from the lowest offer and the highest bid quotes, another common measure of trading costs is the effective spread, which is defined as the difference between the transaction price and the quote midpoint. Tinic (1972), Amihud and Mendelsen (1980), and Copeland and Galai (1983), among others, present models that show how effective spreads are related to order processing, inventory, and adverse selection costs. Huang and Stoll (1996) separate the adverse selection component of effective spread from inventory and order processing costs by defining price impact as the difference between the quote midpoint at an arbitrary amount of time after the trade and the quote midpoint at the time of the trade. Intuitively, the difference between the security's true value after the transaction and the security's true value at the time of the transaction represents the money lost to informed traders, who sell (buy) when private information is bad (good) news.

While the importance of estimating and incorporating trading costs has been a focus of many studies, including those previously cited, the same level of attention has not been given to the relation between institutional quality and equity trading costs. One exception is Eleswarapu and Venkataraman (2006), who argue that a higher float of equity due to stronger institutions might lead to higher investor participation and lower cost of liquidity for non-U.S. stocks listed on the NYSE. They also suggest that investor confidence in these institutions depends on the quality of the political system. For example, they propose that enforcement of laws will be more arbitrary and influenced by fewer people in authoritarian regimes than in democracies. Eleswarapu and Venkataraman provide evidence supporting these claims by analyzing the trading costs of 412 cross-listed stocks from 44 countries that traded on the NYSE in 2002. The authors find that the quality of political institutions helps to explain the cross section of transaction costs after controlling for firm-level and home country characteristics. But the list of issues and puzzles that remained unaddressed after their study is at least as important as their findings. As mentioned before, our paper addresses one of these issues. Specifically, our study examines why we observe a referred effect of political stability on the cost of liquidity.

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Another exception is Boulton and Shastri (2009), who provide us with a study that examines the relation between institutional effectiveness and liquidity costs focusing on measures of perceptions of home country institutional quality. The authors use six aggregate indicators compiled by Kaufmann, Kraay, and Mastruzzi (2006) (voice and accountability, political instability and violence, government effectiveness, regulatory quality, rule of law, and control of corruption) and find that cross-listed stocks from countries perceived as having lower institutional quality have higher liquidity costs and information risk. Their sample consists of 421 cross-listed stocks from 47 countries listed on the NYSE in 2005. Boulton and Shastri show that the effect of the objective measures commonly used in the finance literature is marginal at best when they are tested jointly with perception measures of shareholders' rights as determinants of trading costs for cross-listed stocks. This result is consistent with the authors' argument that home country institutions need to be perceived as effective in order to influence investor willingness to participate in equity markets.

In two related studies, Pastor and Stambaugh (2003) and Acharya and Pedersen (2005) examine whether there is a significant relation between systematic liquidity risk and expected stock returns. Pastor and Stambaugh (2003) find that higher sensitivity to aggregate liquidity results in higher expected returns even after we account for market return, size, value and momentum factors. Acharya and Pedersen (2005) provide evidence that the effect of liquidity risk on expected returns is important over and above the effect of liquidity cost (i.e., liquidity level). Acharya and Pedersen identify three forms of liquidity risks and show that liquidity sensitivity to market return is responsible for approximately 80 percent of the effect of liquidity risks on cross-sectional returns.[5] Despite the evidence that both liquidity level and liquidity risk are priced, we focus our analyses on liquidity level to examine how country-level attributes affect implicit transaction costs via investor participation and information risk.

3. Empirical methodology

3.1. Political stability rating

To assess the quality of political institutions, our study utilizes the composite measure of political stability compiled by ICRG. This measure is based on the subjective evaluation of publicly available information and allows investors to make country risk assessments and so more informed decisions. After an individual rating is assigned to each of the twelve different risk components, their values are added together to provide a political risk rating representative of a country's democratic stability, economic development, legal effectiveness, civic cohesiveness, and international integration. The highest number of points, 100, indicates the lowest potential risk for a particular country. A value of 0, which is the lowest possible value for that rating, indicates the highest potential risk.

Twelve percent of the political stability rating score comes from each of the following five components, with the highest possible score being 12 and the lowest possible score being 0 points. The components are: (1) 'Government Stability,' which considers the central government's ability to stay in office as a result of public and legislative support for official programs; (2) 'Socioeconomic Conditions,' which reflects socioeconomic pressures that could result in popular dissatisfaction and, therefore, constrain government actions; (3) 'Investment Profile,' which examines factors that are related to the risk of doing business in a particular country (e.g., nationalization, expropriation, and limits on repatriation of funds); (4) 'Internal Conflict,' which evaluates the risk of political unrest in the country and the potential impact on the proper management of public resources; and (5) 'External Conflict,' which assesses the risk of external pressure against the central government through diplomatic or trade restrictions, cross-border conflicts or war.

The seven other components used in the construction of the political stability rating are: (6) 'Corruption,' which considers how corruption reduces government efficiency and threatens foreign and local investors' ability to conduct business effectively; (7) 'Military in Politics,' which is related to the possibility of military takeover as the result of political instability and to the distortion of government policies that are associated with an uneasy environment for businesses; (8) 'Religious Tensions,' which indicates the existence of a predominant single religious group that seeks to establish a political system based on an official religion; (9) 'Law and Order,' which assesses the effectiveness of the legal system and the popular compliance with law and regulations; (10) 'Ethnic Tensions,' which represents the level of pressure related to racial, nationality, or language divisions; (11) 'Democratic Accountability,' which is a measure based on the existence of constitutional provisions for regular elections and the existence of an independent and legally recognized opposition; and, finally, (12) 'Bureaucracy Quality,' which indicates a country's ability to minimize revisions of basic public policies, specially when governments change. A risk rating equal to 6 indicates the lowest level of risk while a rating equal to 0 indicates the highest level of risk for six of these last seven components. 'Bureaucracy Quality' is the component that receives the lowest weight when ICRG compiles its political stability rating. For this risk component, a score of 4 points indicates low risk and a score of 0 points indicates high risk. Looking at each risk component individually allows us to examine the contribution of each component to the relation between political stability and equity trading costs.

3.2. Equity trading costs

As mentioned above, the quoted spread, defined as the difference between the prevailing ask and bid quotes, is expected to compensate liquidity providers for order processing, inventory holding, and adverse selection costs. However, trades often occur at a price inside the bid and ask quotes due to price improvements during the execution process, possibly due to latent liquidity not yet incorporated in the prevailing quotes. Therefore, we use the percentage effective spread as our measure of equity trading costs as it reflects the possibility of a price inside the bid and ask quotes and represents an estimate of the true execution costs for a trader. We define the percentage effective spread as follows:

$$\textit{Percentage effective spread} = 100 \times 2 \times S_{it} \times (P_{it} - M_{it})/M_{it}, \quad (1)$$

where P_{it} is the transaction price; M_{it}, defined as the average between the ask and the bid quotes, represents the prevailing quote midpoint at the time of the trade and acts as a proxy for the true underlying security value before the trade; and S_{it} is the sign of the incoming order for security i at time t. S_{it} equals +1 for a buyer-initiated order and −1 for a seller-initiated order. We follow Lee and Ready (1991) in classifying trade direction. Specifically, a transaction is regarded as buyer-initiated if it occurs above the prevailing quote midpoint and as seller-initiated if it occurs below the prevailing quote midpoint. If a transaction occurs at the quote midpoint, it is signed as buyer-initiated if the sign of the last nonzero price change is positive and as seller-initiated if the sign of the last nonzero price change is negative.

In the presence of information asymmetry, the market maker adjusts her quotes upwards after a series of buy orders and down-

[5] According to Acharya and Pedersen (2005), the other two forms of liquidity risk are the covariation between a security's liquidity and the market liquidity and the covariation between a security's return and the market liquidity.

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Table 1
Descriptive statistics of trading costs and political stability.

Panel A: Political stability and trading costs

Country	N	Effective spread (%)	Price impact (%)	Politicalstability
Argentina	10	0.3297	0.1479	64.50
Australia	5	0.3376	0.2136	84.50
Belgium	2	0.0829	0.0341	82.00
Brazil	25	0.0732	0.0295	69.00
Canada	73	0.0987	0.0345	86.00
Chile	11	0.2807	0.1160	77.00
China	75	0.3779	0.1843	62.50
Colombia	2	0.0837	0.0391	62.50
Denmark	1	0.0336	0.0112	84.50
Finland	1	0.0967	0.0543	92.00
France	7	0.2394	0.1393	78.00
Germany	5	0.0952	0.0431	82.00
Greece	14	0.2614	0.1082	69.00
Hong Kong	2	0.2238	0.1009	81.50
India	11	0.2006	0.0968	60.00
Indonesia	2	0.2382	0.1395	59.50
Ireland	6	0.2247	0.1139	77.50
Israel	2	0.5525	0.4796	64.50
Italy	4	0.2082	0.0620	75.50
Japan	18	0.1650	0.0715	79.00
Luxembourg	3	0.0513	0.0170	91.50
Mexico	16	0.6703	0.3851	68.50
Netherlands	8	0.0788	0.0354	86.00
New Zealand	1	0.1187	0.0437	87.50
Norway	2	0.0521	0.0176	88.50
Panama	2	0.1166	0.0589	75.50
Peru	2	0.0717	0.0297	62.50
Philippines	1	0.0800	0.0367	63.00
Portugal	1	0.1028	0.0301	76.50
Russia	4	0.0686	0.0253	63.50
Singapore	1	0.1670	0.1046	84.50
South Africa	5	0.1322	0.0561	66.50
South Korea	8	0.1209	0.0510	78.00
Spain	4	0.0551	0.0267	70.50
Switzerland	12	0.0443	0.0203	86.00
Turkey	1	0.0917	0.0727	57.00
United Kingdom	24	0.1274	0.0802	81.00

Panel B: Summary statistics

Variable	Mean	Median	Std. Dev.
Effective spread (%)	0.2108	0.0897	0.3092
Price impact (%)	0.1006	0.0378	0.1975
Political Risk Rating	74.40	77.00	9.77
Government Stability	7.95	8.50	1.30
Socioeconomic Conditions	7.94	8.00	1.40
Investment Profile	9.38	10.00	2.04
Internal Conflict	9.52	9.00	1.27
External Conflict	9.89	10.00	1.04
Corruption	3.53	3.50	1.23
Military in Politics	4.77	5.00	1.21
Religious Tensions	5.32	5.50	0.86
Law & Order	4.42	5.00	1.20
Ethnic Tensions	3.88	3.50	0.93
Democratic Accountability	4.69	5.50	1.71
Bureaucracy Quality	3.11	3.00	0.89
Market capitalization	23,170,495	7,512,602	39,631,305
Stock price	31.44	22.43	29.53
Daily trading volume	10,322,900	2,550,352	20,358,404
Mid-quote volatility	0.0234	0.0192	0.0203
Stock market turnover	0.9174	0.7526	0.4853

Panel A reports the number of firms, effective spreads, price impact, and political stability rating by home country. Percentage effective spread is computed as $[100 \times 2 \times S_{it} \times (price_{it} - midpoint_{it})/midpoint_{it}]$, where S_{it} equals one for a buyer initiated order and negative one for a seller initiated one. Percentage price impact is computed as $[100 \times 2 \times S_{it} \times (midpoin_{it+5} - midpoint_{it})/midpoint_{it}]$, where $midpoin_{t+5}$ is based on the first quote midpoint observed at least 5 min after time t. Political stability is a composite measure of political risk compiled by International Country Risk Guide (ICRG). Panel B reports summary statistics for the overall sample. Market capitalization is the firm's global market capitalization in thousands of dollars at the end of the most recent fiscal year. Stock price is the average closing stock price on a trading day. Trading volume refers to the average daily share volume traded on the NYSE. Mid-quote volatility is the standard deviation of returns based on quote midpoint prices. Stock market turnover is the total value of shares traded on the home market divided by the home market capitalization.

wards after a series of sell orders to incorporate the information provided by order flow imbalance, i.e., the difference between quantities of buy versus sell orders. These price adjustments reflect the amount of private information held by informed traders and, therefore, the adverse selection cost incurred by liquidity providers. Percentage price impact is often used as a proxy for the degree of information asymmetry between liquidity and informed traders. We calculate percentage price impact as follows:

$$Percentage\ price\ impact\ =\ 100 \times 2 \times S_{it} \times (M_{it+5} - M_{it})/M_{it}, \qquad (2)$$

where M_{it+5} is the quote midpoint of the first reported quote at least 5 min after time t and represents a measure of the value of the asset after the trade. We chose 5 min as when Bandi, Lian, and Russell, (2012) study the choice of the future quote midpoint as a proxy for true underlying security value, they concluded that using a 5-min interval is relatively more appropriate compared to longer waiting periods such as 30 min or 24 h. The other variables are defined as in Eq. (1).

3.3. Sample construction

Our initial sample starts with the 424 non-U.S. stocks listed on the NYSE as of December 31, 2010. These issuers represent 47 countries and include American Depositary Receipts (ADRs), Global Depositary Receipts (GDRs), ordinary common stock, Canadian issues, Global Shares, and New York Registry Shares. Since some non-U.S. stocks are incorporated in countries that do not reflect their true base of operations, we eliminate 36 firms incorporated in Bahamas, Bermuda, Cayman Islands, Guernsey, Jersey, Liberia, Netherland Antilles, and Puerto Rico, which are countries considered to be flags of convenience. We also eliminate securities that are not common stocks (11), are not the primary common stock series for dual-class companies (9), and do not have data that allows us to calculate the firm's global market capitalization at the end of the most recent fiscal year (6).

After these eliminations, our final sample consists of 371 non-U.S. stocks representing 37 different countries. We retrieve trade and quote information from the NYSE Trade and Quotes (TAQ) database from January to March 2011. We include in our analysis all trades and quotes that occurred on the NYSE during that three-month period between 9:30am and 4:00pm. We delete trades with cancellation or error codes and records with a zero or negative price or trade size. We also delete quotes with a negative bid price, ask price, bid offer size, or ask offer size.

Table 1 Panel A, reports the number of firms, effective spreads, price impact, and political stability rating by home country. The countries with the most cross-listed stocks are China (75) and Canada (73), followed by Brazil (25) and the United Kingdom (24). The high number of Chinese cross-listed stocks on the NYSE represents another significant difference between previous studies and ours. In December 2006, there were only 20 stocks from Chinese firms listed on the NYSE. Two years later, this number had more than doubled to 41 stocks. Denmark has both the lowest effective spread and price impact (0.0336% and 0.0112%, respectively) while Mexico has the highest effective spread (0.6703%) and Israel has the highest price impact (0.4796%).

Remember that a high political stability rating indicates that a country has the lowest possible potential risk. A value of 0, which is the lowest possible value, corresponds to the highest potential risk. In December 2010, Finland showed the lowest possible risk (92) while Turkey showed the highest (57). ICRG classifies countries into categories according to their political stability rating, with a rating between 0 and 49.9 being labeled a 'very high' political risk, a rating between 50 and 59.9 'high' risk, a rating between 60 and 69.9 a 'moderate' risk, a rating between 70 and 79.9 a 'low' risk, and a rating higher than 80 a 'very low' political risk. According

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to this classification, most European countries, Australia, Canada, Hong Kong, New Zealand, and Singapore are countries with very low political risk while Turkey and Indonesia are countries with high risk.[6] According to the ICRG categorization, none of the countries in our sample would be classified as having a very high political risk.

As discussed before, Eleswarapu and Venkataraman (2006) and Boulton and Shastri (2009) provide evidence that investors are more likely to participate in capital markets with greater shareholder protection, resulting in lower cost of liquidity in countries with more stable institutions. Table 1, Panel B reports the descriptive statistics for our measures of transactions costs and the political risk rating with its 12 components. For our sample, the mean (median) effective spread is 0.2108% (0.0897%) and price impact is 0.1006% (0.0378%), with a wide variation across countries. The mean (median) political risk rating for our sample is 74.4 (77), indicating that the average (median) country in our sample is classified as having a low political risk using the ICRG classifications.

The square of the correlation coefficient gives us the proportion of the variation in one variable that is accounted for by a linear fit of another. Table 2 reports that 9.6 percent of the cross-section variation in effective spreads can be explained by the variation in the political risk rating, and 6.9 percent of the variation in price impact can be explained by the ICRG's measure of political stability. Between 9.8 and 0.3 (6.7 and 0.3) percent of the variation in effective spreads (price impact) can be explained by an individual political or social attribute of the ICRG index. Corruption and government stability, respectively, are the attributes that can explain the highest and the lowest percentages of variation for both effective spreads and price impact. The correlation between trading or adverse selection costs and government stability is not statistically significant. In the next section, we combine the political risk rating and its individual components with a set of control variables in multiple regression analyses for a more accurate assessment of the effect of these variables on effective spreads and price impact.

Table 2
Correlation coefficients.

	Political risk rating	Government stability	Socioeconomic conditions	Investment profile	Internal conflict	External conflict	Corruption	Military in politics	Religious tensions	Law & order	Ethnic tensions	Democratic accountability	Bureaucracy quality
Effective spread (%)	−0.310	−0.055	−0.119	−0.278	−0.218	−0.158	−0.313	−0.297	−0.103	−0.232	−0.065	−0.240	−0.223
	(0.00)	(0.29)	(0.02)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.05)	(0.00)	(0.21)	(0.00)	(0.00)
Price impact (%)	−0.263	−0.056	−0.096	−0.220	−0.193	−0.138	−0.258	−0.256	−0.117	−0.206	−0.089	−0.181	−0.176
	(0.00)	(0.29)	(0.06)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.02)	(0.00)	(0.09)	(0.00)	(0.00)

This table shows the pair-wise correlation matrix for the following variables used in our study: Effective spread is computed as $[100 \times 2 \times S_{it} \times (price_{it} - midpoint_{it})/midpoint_{it}]$, where S_{it} equals one for a buyer initiated order and negative one for a seller initiated one. Price impact is computed as $[100 \times 2 \times S_{it} \times (midpoint_{it+5} - midpoint_{it})/midpoint_{it}]$, where $midpoint_{t+5}$ is based on the first quote midpoint observed at least 5 min after time t. PRS is the Political Risk Rating. Government Stability, Socioeconomic Conditions, Investment Profile, Internal Conflict, External Conflict, Corruption, Military in Politics, Religious Tensions, Law & Order, Ethnic Tensions, Democratic Accountability, and Bureaucracy Quality are the twelve political and social attributes of PRS. *P*-values are presented between parentheses.

4. Empirical findings

In this section, we investigate the effect of the quality of political and social institutions on equity trading and adverse selection costs controlling for country- and firm-level characteristics that may affect liquidity costs. We estimate the following equation with ordinary least squares and standard errors clustered by country:

$$Y_i = \alpha + \beta_1 \mathrm{ICRG_j} + \beta_2 \mathrm{Z_j} + \gamma X_i + \lambda_k + \varepsilon_i, \quad (3)$$

where Y_i is one of the measures of transaction costs (i.e., effective spread or price impact), ICRG_j is the political risk rating or one of its components, Z_j is the stock market turnover (from http://data.worldbank.org/topic), $\mathrm{X_i}$ is a vector of firm characteristics (i.e., natural log of firm market capitalization, inverse of average stock price, natural log of trading volume, and standard deviation of returns based on quote midpoint prices), λ_k denotes industry fixed effects defined based on Fama and French's 12-industry classification,[7] and ε_i is the error term. To calculate the firm's global market capitalization, we obtained the number of shares outstanding and the ratio of ADRs per home-country share from SEC filings. Stock price and trading volume information is from the Center for Research in Security Prices (CRSP).

[6] Belgium, Denmark, Finland, Germany, Luxembourg, Netherlands, Norway, Switzerland and United Kingdom are the European countries with very low political risk. France, Ireland, Italy, Portugal, and Spain are classified as countries with low risk while Greece is the only European country with moderate political risk.

[7] See http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/Data_Library/det_12_ind_port.html.

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Table 3
Political stability and transaction costs.

Panel A: Percentage effective spread

	Political risk rating	Government stability	Socioeconomic conditions	Investment profile	Internal conflict	External conflict	Corruption	Military in politics	Religious tensions	Law & order	Ethnic tensions	Democratic account-ability	Bureaucracy quality
Constant	1.621***	1.424***	1.464***	1.509***	1.526***	1.576***	1.518***	1.564***	1.479***	1.559***	1.639***	1.508***	1.536***
	(5.51)	(4.25)	(5.24)	(5.23)	(5.10)	(6.68)	(4.96)	(5.30)	(5.62)	(5.09)	(4.29)	(5.08)	(5.04)
ICRG measure	−0.002	0.007	0.003	−0.005	−0.005	−0.009	−0.021*	−0.026**	0.001	−0.034**	−0.040*	−0.011	−0.025**
	(−1.67)	(0.70)	(0.30)	(−0.51)	(−0.40)	(−0.56)	(−1.73)	(−2.45)	(0.07)	(−2.26)	(−1.71)	(−0.85)	(−2.24)
ln(Market value)	0.004	0.004	0.002	0.004	0.001	0.001	0.006	0.005	0.002	0.005	0.006	0.005	0.005
	(0.38)	(0.39)	(0.14)	(0.40)	(0.13)	(0.05)	(0.55)	(0.51)	(0.17)	(0.48)	(0.59)	(0.50)	(0.51)
Inverse of price	0.505***	0.516***	0.509***	0.505***	0.503***	0.512***	0.501***	0.528***	0.506***	0.520***	0.494***	0.521***	0.512***
	(4.40)	(4.50)	(4.17)	(4.25)	(4.24)	(4.26)	(4.38)	(4.55)	(4.16)	(4.77)	(4.50)	(4.41)	(4.43)
ln(Trading volume)	−0.090***	−0.093***	−0.091***	−0.091***	−0.090***	−0.089***	−0.091***	−0.090***	−0.091***	−0.090***	−0.096***	−0.091***	−0.092***
	(−4.08)	(−4.35)	(−4.21)	(−4.34)	(−4.06)	(−3.79)	(−4.16)	(−4.09)	(−4.14)	(−4.20)	(−4.10)	(−4.30)	(−4.24)
Mid-quote volatility	1.717*	1.831*	1.829*	1.776*	1.782*	1.811*	1.745*	1.696*	1.810*	1.724*	1.802*	1.755*	1.720*
	(1.87)	(2.00)	(1.91)	(1.87)	(1.93)	(1.96)	(1.92)	(1.86)	(1.93)	(1.97)	(1.96)	(1.85)	(1.87)
Market turnover	−0.056	−0.050	−0.048	−0.050	−0.045	−0.053	−0.061	−0.071	−0.044	−0.029	−0.051	−0.068	−0.059
	(−0.87)	(−0.77)	(−0.64)	(−0.82)	(−0.67)	(−0.91)	(−0.90)	(−1.13)	(−0.68)	(−0.56)	(−0.79)	(−1.35)	(−0.91)
Observations	371	371	371	371	371	371	371	371	371	371	371	371	371
R-squared	0.589	0.586	0.586	0.586	0.586	0.586	0.590	0.592	0.585	0.601	0.598	0.587	0.589

Panel B: Percentage price impact

	Political risk rating	Government stability	Socioeconomic conditions	Investment profile	Internal conflict	External conflict	Corruption	Military in politics	Religious tensions	Law & order	Ethnic tensions	Democratic account-ability	Bureaucracy quality
Constant	0.941***	0.823***	0.837***	0.866***	0.889***	0.900***	0.873***	0.903***	0.895***	0.896***	0.976***	0.860***	0.879***
	(4.41)	(3.41)	(4.22)	(4.21)	(4.12)	(4.76)	(4.00)	(4.28)	(4.60)	(4.08)	(3.73)	(4.13)	(4.08)
ICRG measure	−0.001	0.003	0.003	−0.003	−0.004	−0.004	−0.013	−0.016**	−0.007	−0.020*	−0.032**	−0.004	−0.013
	(−1.61)	(0.51)	(0.35)	(−0.40)	(−0.54)	(−0.38)	(−1.54)	(−2.24)	(−0.66)	(−2.02)	(−2.08)	(−0.40)	(−1.59)
ln(Market value)	0.003	0.003	0.002	0.003	0.001	0.001	0.004	0.004	0.002	0.004	0.005	0.003	0.004
	(0.46)	(0.40)	(0.22)	(0.44)	(0.20)	(0.15)	(0.62)	(0.57)	(0.22)	(0.53)	(0.80)	(0.41)	(0.52)
Inverse of price	0.040	0.046	0.043	0.041	0.038	0.044	0.038	0.055	0.038	0.049	0.031	0.046	0.044
	(0.43)	(0.47)	(0.47)	(0.44)	(0.41)	(0.46)	(0.40)	(0.59)	(0.41)	(0.55)	(0.34)	(0.46)	(0.47)
ln(Trading volume)	−0.053***	−0.055***	−0.054***	−0.054***	−0.053***	−0.053***	−0.054***	−0.053***	−0.054***	−0.054***	−0.058***	−0.054***	−0.054***
	(−3.45)	(−3.68)	(−3.55)	(−3.64)	(−3.43)	(−3.24)	(−3.53)	(−3.45)	(−3.47)	(−3.56)	(−3.58)	(−3.62)	(−3.58)
Mid-quote volatility	1.253	1.323	1.327	1.294	1.289	1.313	1.273	1.241	1.308	1.263	1.306	1.294	1.267
	(1.48)	(1.57)	(1.53)	(1.49)	(1.52)	(1.55)	(1.53)	(1.47)	(1.54)	(1.54)	(1.55)	(1.49)	(1.50)
Market turnover	−0.033	−0.029	−0.029	−0.029	−0.026	−0.031	−0.036	−0.043	−0.028	−0.017	−0.032	−0.034	−0.033
	(−0.83)	(−0.70)	(−0.62)	(−0.75)	(−0.64)	(−0.82)	(−0.84)	(−1.07)	(−0.68)	(−0.52)	(−0.79)	(−1.05)	(−0.82)
Observations	371	371	371	371	371	371	371	371	371	371	371	371	371
R-squared	0.399	0.396	0.396	0.396	0.396	0.396	0.400	0.402	0.396	0.408	0.416	0.396	0.398

This table presents the OLS coefficients (t-statistics) of regressions of percentage effective spread (Panel A) and percentage price impact (Panel B) on the political risk rating compiled by International Country Risk Guide (ICRG) and on rating components. On each column, we present the coefficient for a single measure of political stability (i.e., ICRG measure). We also include the natural log of the firm's global market capitalization, the inverse of the average stock price, the natural log of the average daily share volume traded on the NYSE, and the standard deviation of returns based on quote midpoint prices (i.e., mid-quote volatility) as firm level controls and the stock market turnover as a country level control. All models include binary variables based on Fama-French 12-industry classification (not reported). *T*-values are estimated using standard errors clustered by country and presented between parentheses. ***, **, and * denote statistical significance of the coefficient at the 1, 5, and 10 percent level, respectively.

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Table 4
Developed and emerging markets.

Panel A: Effective spreads in developed markets

	Political risk rating	Government stability	Socioeconomic conditions	Investment profile	Internal conflict	External conflict	Corruption	Military in politics	Religious tensions	Law & order	Ethnic tensions	Democratic account-ability	Bureaucracy quality
ICRG measure	−0.002	0.006	0.004	−0.004	−0.002	−0.012	−0.005	−0.036	−0.027	−0.035*	−0.024	0.008	−0.024
	(−1.00)	(0.71)	(0.72)	(−0.61)	(−0.17)	(−0.99)	(−0.77)	(−1.65)	(−1.51)	(−1.93)	(−1.70)	(0.59)	(−1.07)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	204	204	204	204	204	204	204	204	204	204	204	204	204
R-squared	0.646	0.645	0.644	0.644	0.643	0.647	0.644	0.655	0.655	0.648	0.653	0.648	0.646

Panel B: Effective spreads in emerging markets

	Political risk rating	Government stability	Socioeconomic conditions	Investment profile	Internal conflict	External conflict	Corruption	Military in politics	Religious tensions	Law & order	Ethnic tensions	Democratic account-ability	Bureaucracy quality
ICRG measure	−0.006	−0.015	0.003	−0.029	−0.011	−0.010	−0.037	0.066	0.008	−0.080	−0.092	−0.004	−0.006
	(−0.67)	(−0.58)	(0.35)	(−0.88)	(−0.57)	(0.52)	(−0.73)	(1.33)	(0.66)	(−1.52)	(−1.48)	(0.23)	(−0.18)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	167	167	167	167	167	167	167	167	167	167	167	167	167
R-squared	0.618	0.617	0.624	0.622	0.616	0.633	0.618	0.620	0.621	0.635	0.644	0.625	0.616

Panel C: Price impact in developed markets

	Political risk rating	Government stability	Socioeconomic conditions	Investment profile	Internal conflict	External conflict	Corruption	Military in politics	Religious tensions	Law & order	Ethnic tensions	Democratic account-ability	Bureaucracy quality
ICRG measure	−0.003	0.003	0.002	−0.033	−0.005	−0.013	−0.005	−0.041	−0.030*	−0.017	−0.021	0.005	−0.014
	(−1.08)	(0.45)	(0.35)	(−0.55)	(−0.50)	(−1.02)	(−0.66)	(−1.69)	(−1.80)	(−1.13)	(−1.39)	(0.61)	(−0.68)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	204	204	204	204	204	204	204	204	204	204	204	204	204
R-squared	0.437	0.427	0426	0.427	0.428	0.438	0.427	0.463	0.461	0.429	0.445	0.432	0.428

Panel D: Price impact in emerging markets

	Political risk rating	Government stability	Socioeconomic conditions	Investment profile	Internal conflict	External conflict	Corruption	Military in politics	Religious tensions	Law & order	Ethnic tensions	Democratic account-ability	Bureaucracy quality
ICRG measure	−0.002	−0.012	0.002	−0.017	−0.004	−0.008	−0.038	0.038	0.003	−0.061	−0.071	−0.004	−0.001
	(−0.28)	(−0.63)	(0.11)	(−0.71)	(−0.37)	(−0.42)	(−1.00)	(1.15)	(0.28)	(−1.63)	(−1.69)	(−0.40)	(−0.06)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	167	167	167	167	167	167	167	167	167	167	167	167	167
R-squared	0.413	0.414	0.417	0.418	0.413	0.439	0.417	0.416	0.415	0.439	0.453	0.428	0.412

This table presents the OLS coefficients (t-statistics) of regressions of percentage effective spread (Panels A and B) and percentage price impact (Panels C and D) on the political risk rating compiled by International Country Risk Guide (ICRG) and on rating components. We divide the sample in two groups: developed markets (Panels A and C) and emerging markets (Panels B and D). On each column, we present the coefficient for a single measure of political stability (i.e., ICRG measure). We include but, for sake of space, do not report the same control variables that we use in Table 3: the natural log of the firm's global market capitalization, the inverse of the average stock price, the natural log of the average daily share volume traded on the NYSE, the standard deviation of returns based on quote midpoint prices (i.e., mid-quote volatility), and the stock market turnover. All models include binary variables based on Fama-French 12-industry classification (not reported). *T*-values are estimated using standard errors clustered by country and presented between parentheses. ***, **, and * denote statistical significance of the coefficient at the 1, 5, and 10 percent level, respectively.

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Table 5
Political stability and transaction costs during extreme up days.

Panel A: Percentage effective spread

	Political risk rating	Government stability	Socioeconomic conditions	Investment profile	Internal conflict	External conflict	Corruption	Military in politics	Religious tensions	Law & order	Ethnic tensions	Democratic accountability	Bureaucracy quality
Constant	1.547*	1.040	1.346*	1.395*	1.413*	1.409*	1.334*	1.470*	1.223	1.407*	1.538*	1.415*	1.422*
	(1.91)	(1.54)	(1.74)	(1.80)	(1.76)	(1.92)	(1.72)	(1.89)	(1.68)	(1.79)	(1.78)	(1.86)	(1.83)
ICRG measure	−0.004***	0.024	−0.014*	−0.020**	−0.016	−0.011	−0.032*	−0.055***	0.011	−0.044**	−0.056**	−0.048***	−0.062***
	(−2.97)	(1.37)	(−1.76)	(−2.46)	(−1.54)	(−0.68)	(−2.01)	(−4.05)	(0.77)	(−2.70)	(−2.12)	(−4.81)	(−4.30)
ln(Market value)	−0.036***	−0.022	−0.037**	−0.031**	−0.037**	−0.038**	−0.032**	−0.033**	−0.035**	−0.033**	−0.027**	−0.022*	−0.029**
	(−2.83)	(−1.50)	(−2.61)	(−2.67)	(−2.63)	(−2.71)	(−2.67)	(−2.64)	(−2.37)	(−2.65)	(−2.24)	(−1.79)	(−2.42)
Inverse of price	0.538*	0.562*	0.540*	0.532*	0.540*	0.550*	0.538*	0.562**	0.554*	0.559*	0.545*	0.567**	0.544*
	(1.97)	(1.99)	(1.94)	(1.95)	(1.95)	(1.96)	(1.96)	(2.04)	(1.95)	(2.01)	(1.97)	(2.11)	(2.00)
ln(Trading volume)	−0.034	−0.050	−0.036	−0.037	−0.036	−0.037	−0.037	−0.034	−0.041	−0.038	−0.051	−0.041	−0.041
	(−0.88)	(−1.18)	(−0.91)	(−0.96)	(−0.94)	(−0.93)	(−0.97)	(−0.89)	(−1.04)	(−0.98)	(−1.22)	(−1.06)	(−1.03)
Mid-quote volatility	0.814**	0.795**	0.816**	0.815**	0.815**	0.813**	0.811**	0.804**	0.807**	0.794*	0.787*	0.803**	0.806**
	(2.12)	(2.05)	(2.12)	(2.13)	(2.12)	(2.11)	(2.10)	(2.09)	(2.08)	(2.02)	(2.00)	(2.14)	(2.10)
Market turnover	0.055	0.076	0.087	0.058	0.076	0.073	0.058	0.031	0.082	0.088*	0.069	−0.027	0.047
	(0.94)	(1.19)	(1.37)	(0.94)	(1.18)	(1.09)	(0.90)	(0.55)	(1.23)	(1.80)	(1.11)	(−0.44)	(0.81)
Observations	360	360	360	360	360	360	360	360	360	360	360	360	360
R-squared	0.706	0.705	0.703	0.705	0.703	0.703	0.705	0.709	0.703	0.708	0.707	0.709	0.707

Panel B: Percentage price impact

	Political risk rating	Government stability	Socioeconomic conditions	Investment profile	Internal conflict	External conflict	Corruption	Military in politics	Religious tensions	Law & order	Ethnic tensions	Democratic accountability	Bureaucracy quality
Constant	−0.104	−0.202	−0.106	−0.109	−0.091	−0.141	−0.079	−0.053	−0.096	−0.053	0.060	−0.079	−0.083
	(−0.24)	(−0.56)	(−0.26)	(−0.26)	(−0.21)	(−0.39)	(−0.19)	(−0.12)	(−0.25)	(−0.12)	(0.12)	(−0.19)	(−0.19)
ICRG measure	0.001	0.013	0.007	0.006	0.002	0.006	0.005	−0.005	0.005	−0.006	−0.029	0.003	0.005
	(0.46)	(1.64)	(1.12)	(1.05)	(0.30)	(0.63)	(0.39)	(−0.40)	(0.53)	(−0.43)	(−1.55)	(0.24)	(0.42)
ln(Market value)	−0.008	−0.001	−0.008	−0.010	−0.008	−0.007	−0.009	−0.008	−0.008	−0.008	−0.004	−0.009	−0.009
	(−1.33)	(−0.14)	(−1.21)	(−1.60)	(−1.25)	(−1.08)	(−1.44)	(−1.24)	(−1.32)	(−1.20)	(−0.69)	(−1.12)	(−1.35)
Inverse of price	−0.114	−0.109	−0.110	−0.109	−0.114	−0.115	−0.113	−0.114	−0.114	−0.114	−0.118*	−0.116	−0.115
	(−1.57)	(−1.45)	(−1.48)	(−1.43)	(−1.59)	(−1.59)	(−1.59)	(−1.54)	(−1.54)	(−1.53)	(−1.69)	(−1.59)	(−1.58)
ln(Trading volume)	0.011	0.007	0.010	0.011	0.012	0.011	0.012	0.013	0.012	0.012	0.006	0.012	0.012
	(0.49)	(0.25)	(0.42)	(0.48)	(0.49)	(0.42)	(0.51)	(0.55)	(0.48)	(0.52)	(0.24)	(0.51)	(0.51)
Mid−quote volatility	0.915***	0.907***	0.912***	0.914***	0.915***	0.914***	0.915***	0.915***	0.914***	0.913***	0.903***	0.916***	0.916***
	(5.16)	(5.02)	(5.15)	(5.13)	(5.18)	(5.11)	(5.16)	(5.10)	(5.10)	(4.96)	(4.89)	(5.13)	(5.13)
Market turnover	−0.047	−0.053	−0.054	−0.043	−0.050	−0.046	−0.047	−0.055	−0.050	−0.049	−0.056	−0.044	−0.047
	(−1.14)	(−1.31)	(−1.25)	(−1.09)	(−1.21)	(−1.26)	(−1.06)	(−1.28)	(−1.24)	(−1.28)	(−1.42)	(−1.22)	(−1.13)
Observations	360	360	360	360	360	360	360	360	360	360	360	360	360
R-squared	0.589	0.590	0.589	0.590	0.589	0.589	0.589	0.589	0.589	0.589	0.592	0.589	0.589

This table presents the OLS coefficients (t-statistics) of regressions of percentage effective spread (Panel A) and percentage price impact (Panel B) on the political risk rating compiled by International Country Risk Guide (ICRG) and on rating components when returns move two or more standard deviations above the sample period mean. On each column, we present the coefficient for a single measure of political stability (i.e., ICRG measure). We also include the natural log of the firm's global market capitalization, the inverse of the average stock price, the natural log of the average daily share volume traded on the NYSE, and the standard deviation of returns based on quote midpoint prices (i.e., mid-quote volatility) as firm level controls and the stock market turnover as a country level control. All models include binary variables based on Fama-French 12-industry classification (not reported). *T*-values are estimated using standard errors clustered by country and presented between parentheses. ***, **, and * denote statistical significance of the coefficient at the 1, 5, and 10 percent level, respectively.

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The quoted spread, which measures the costs for a liquidity trader who demands immediate execution and buys a security at the offer and sells at the bid price, is only the starting point of negotiations for traders. The effective spread, defined as the absolute difference between the trade price and the prevailing quote midpoint, captures the effect of price improvements that result from the execution of trades that happen at prices within the bid and ask quotes. In Table 3, Panel A, we present the results of multivariate analyses using effective spreads as our response variable since, as mentioned above, it represents a more refined measure of trading costs than the quoted spread.

While the coefficient on political risk rating is not statistically significant at standard confidence intervals, the specifications that include the individual rating components indicate that higher risk of corruption, greater likelihood of military in politics, a weaker legal system, more ethnic tensions, and lower bureaucracy quality are individually related to higher trading costs, as represented by wider effective spreads. The presence of military in politics and ethnic tensions are associated with small groups in power that have privileged access to information, increasing investors' potential losses to better-informed traders. Corruption prevents the development of a sound environment for investors since corrupt governments do not allocate public resources optimally. Poor laws and enforcement increase opportunities for expropriation of outside investors. Finally, bureaucratic bottlenecks like, for example, miscommunication among different levels of government can make it very difficult for investors to trade quickly and easily. Government stability, socioeconomic conditions, investment profile, internal or external conflicts, religious tensions and democratic accountability are not shown to be statistically related to the equity trading costs of cross-listed firms. The firm-specific control variables indicate that effective spreads are significantly higher for stocks with lower prices, lower trading volumes, and higher quote midpoint volatility.

Glosten (1987) argues that the market will incorporate information from submitted trades over time, i.e., prices will rise after buys and fall after sells, and the future quote midpoint will move closer to the true security value. The quote midpoint movement, referred to as price impact, reflects the market assessment of the private information conveyed by trades. Therefore, we use price impact as the measure of adverse selection costs incurred by the liquidity provider due to the risk of trading against more informed investors. Table 3, Panel B, reports the effect of political risk rating and its components on price impact for stocks cross-listed on the NYSE in 2011.

The first model reports a negative but not significant relation between political risk rating and percentage price impact. For the models that include the military in politics, law and order, and ethnic tensions components of the political risk rating, we find a significant relation between the risk component and price impact, which proxies for the degree of information asymmetry across traders. Surprisingly, high levels of corruption and low bureaucracy quality, which are associated with the widespread trade of favors and high dependence on political pressure that might lead to high information asymmetry between inside and outside investors, are not statistically related to price adjustments related to the amount of adverse selection cost incurred by the liquidity supplier. The coefficients on the other political and social attributes assessed by the ICRG's rating are not significant either, indicating that they are not related to the risk of trading against more informed investors. We also find that adverse selection costs decrease with trading volume. This relation is statistically significant in all our models.

4.1. Developed and emerging markets

Pastor and Veronesi (2013) develop a theoretical model in which investors are uncertain about future government policies. In that model, political uncertainty has a greater effect on business environment when the economy is weaker (i.e., disruptive policy changes are more likely). It seems fair to say that governments are more likely to adopt more disruptive policy changes in emerging than in developed markets. Bekaert, Harvey, and Lundblad (2007) present emerging markets as ideal settings for studies of market liquidity due to greater cross-sectional and time-series variations than those found in the U.S. The authors contend that liquidity plays a more important role in emerging markets than it does in the U.S. because of higher political risk and less effective legal environment. Bacidore and Sofianos (2002) examine differences between U.S. and non-U.S. stocks listed on the NYSE and provide evidence that higher trading costs for non-U.S. stocks are associated with information asymmetries. They conjecture that these differences are most severe for stocks from emerging markets because these markets are less transparent and less tightly linked with the U.S. market than stocks of developed countries. Since liquidity can be more of an issue in emerging countries, we investigate whether our empirical findings differ across groups of developed and emerging markets. Following the World Economic Outlook: Recovery, Risk, and Rebalancing (2010), we classify as developing economies: Argentina, Brazil, Chile, China, Colombia, India, Indonesia, Mexico, Panama, Peru, Philippines, Russia, South Africa and Turkey.

Panels A and B (C and D) in Table 4 present the results of the regressions of effective spreads (price impact) on political and social attributes and the same control variables that we use in Table 3 for subsamples of developed (Panels A and C) and emerging markets (Panels B and D). Panel A shows that only the effectiveness of a country's legal system is significantly related to trading costs when we restrict our analysis to stocks of companies from developed countries. Panel B shows that the coefficients on political risk and its components are not significantly related to effective spreads when we focus on emerging markets. From Panel C, we see that only religious tensions, which may exclude all but one religion from the political decision process and concentrate important information (e.g., unannounced unemployment rates) in the hands of a few, are related to adverse selection costs in developed markets. Finally, from Panel D, we see that none of the ICRG variables are significantly related to price impact for the subsample of emerging markets.

In unreported results, we find that a dummy variable that identifies cross-listed stocks from emerging markets is not significantly related to effective spreads and price impact when we include the ICRG variables in regressions with stocks from developed and emerging markets. Eleswarapu and Venkataraman (2006) also fail to find a significant relation between that dummy variable and trading costs in regressions that have proxies for the quality of political institutions as independent variables. They find that the inherent collinearity between economic growth and institutional variables complicates the task of assessing the effect of political and social attributes on liquidity costs and adverse selection risk in developing economies.

4.2. Extreme market movements

Stoll (1978) proposes a liquidity model in which market makers are compensated for the risk of holding non-optimal inventory levels. According to Stoll, this risk increases with market makers' risk aversion and stocks' return variance and decreases with market makers' wealth. O'Hara and Oldfield (1986) consider risk-averse

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Table 6
Political stability and transaction costs during extreme down days.

Panel A: Percentage effective spread

	Political risk rating	Government stability	Socioeconomic conditions	Investment profile	Internal conflict	External conflict	Corruption	Military in politics	Religious tensions	Law & order	Ethnic tensions	Democratic account-ability	Bureaucracy quality
Constant	0.841**	0.664**	0.780**	0.811**	0.783**	0.690**	0.802**	0.843**	0.761**	0.835**	0.909**	0.822**	0.838**
	(2.42)	(2.34)	(2.34)	(2.41)	(2.26)	(2.47)	(2.38)	(2.53)	(2.42)	(2.45)	(2.40)	(2.53)	(2.50)
ICRG measure	−0.001	0.012	0.001	−0.004	0.000	0.008	−0.009	−0.016*	0.004	−0.015*	−0.027*	−0.012*	−0.021**
	(−1.12)	(1.55)	(0.17)	(−0.90)	(0.02)	(0.85)	(−0.93)	(−1.99)	(0.69)	(−1.69)	(−1.90)	(−1.92)	(−2.61)
ln(Market value)	0.001	0.008	0.001	0.002	0.001	0.003	0.002	0.002	0.001	0.002	0.005	0.005	0.004
	(0.20)	(1.21)	(0.19)	(0.38)	(0.18)	(0.49)	(0.38)	(0.38)	(0.20)	(0.40)	(0.89)	(0.71)	(0.66)
Inverse of price	0.274	0.282	0.276	0.273	0.276	0.275	0.274	0.281	0.277	0.281	0.273	0.282	0.276
	(1.40)	(1.45)	(1.40)	(1.39)	(1.40)	(1.40)	(1.40)	(1.44)	(1.41)	(1.45)	(1.40)	(1.44)	(1.42)
ln(Trading volume)	−0.050***	−0.056***	−0.051***	−0.050***	−0.051***	−0.052**	−0.050***	−0.050***	−0.051***	−0.051***	−0.056***	−0.051***	−0.051***
	(−2.74)	(−2.76)	(−2.74)	(−2.77)	(−2.76)	(−2.69)	(−2.78)	(−2.76)	(−2.72)	(−2.78)	(−2.78)	(−2.84)	(−2.84)
Mid-quote volatility	0.933***	0.926***	0.934***	0.933***	0.934***	0.933***	0.932***	0.928***	0.933***	0.923***	0.923***	0.930***	0.929***
	(10.37)	(10.23)	(10.32)	(10.47)	(10.34)	(10.23)	(10.22)	(10.31)	(10.20)	(9.83)	(9.77)	(10.76)	(10.51)
Market turnover	0.000	0.000	0.000	0.000	0.000	0.000	0.000	−0.000	0.000	0.000	0.000	−0.000	0.000
	(0.24)	(0.37)	(0.44)	(0.25)	(0.43)	(0.58)	(0.20)	(−0.06)	(0.47)	(0.61)	(0.26)	(−0.44)	(0.02)
Observations	360	360	360	360	360	360	360	360	360	360	360	360	360
R-squared	0.838	0.839	0.838	0.838	0.838	0.838	0.838	0.839	0.838	0.839	0.839	0.838	0.839

Panel B: Percentage price impact

	Political risk rating	Government stability	Socioeconomic conditions	Investment profile	Internal conflict	External conflict	Corruption	Military in politics	Religious tensions	Law & order	Ethnic tensions	Democratic account-ability	Bureaucracy quality
Constant	−0.584	−0.487	−0.584	−0.600	−0.544	−0.506	−0.598	−0.593	−0.606	−0.606	−0.680	−0.617	−0.620
	(−0.70)	(−0.67)	(−0.74)	(−0.75)	(−0.67)	(−0.65)	(−0.75)	(−0.73)	(−0.81)	(−0.75)	(−0.86)	(−0.78)	(−0.77)
ICRG measure	−0.000	−0.012*	−0.004	−0.000	−0.007	−0.009	−0.002	−0.003	0.001	0.001	0.002	0.005	0.007
	(−0.23)	(−1.84)	(−0.59)	(−0.04)	(−0.96)	(−1.01)	(−0.15)	(−0.19)	(0.09)	(0.07)	(0.19)	(0.42)	(0.47)
ln(Market value)	0.004	−0.003	0.004	0.004	0.003	0.002	0.004	0.004	0.004	0.004	0.002	0.003	0.003
	(0.25)	(−0.16)	(0.23)	(0.27)	(0.19)	(0.13)	(0.28)	(0.27)	(0.25)	(0.26)	(0.11)	(0.19)	(0.22)
Inverse of price	−0.508*	−0.514*	−0.509*	−0.508*	−0.511*	−0.507*	−0.508*	−0.507*	−0.507*	−0.508*	−0.506*	−0.510*	−0.508*
	(−1.78)	(−1.81)	(−1.79)	(−1.78)	(−1.79)	(−1.78)	(−1.78)	(−1.77)	(−1.78)	(−1.78)	(−1.78)	(−1.79)	(−1.78)
ln(Trading volume)	0.034	0.039	0.034	0.034	0.035	0.035	0.034	0.034	0.033	0.034	0.037	0.034	0.034
	(1.00)	(1.06)	(1.02)	(0.98)	(1.03)	(1.02)	(0.98)	(0.99)	(0.96)	(0.96)	(1.03)	(0.97)	(0.97)
Mid-quote volatility	1.046***	1.054***	1.047***	1.047***	1.048***	1.048***	1.046***	1.046***	1.047***	1.047**	1.053***	1.048***	1.048***
	(2.75)	(2.77)	(2.77)	(2.75)	(2.77)	(2.76)	(2.74)	(2.73)	(2.75)	(2.70)	(2.76)	(2.75)	(2.75)
Market turnover	−0.001***	−0.001***	−0.001***	−0.001***	−0.001***	−0.001***	−0.001***	−0.001***	−0.001***	−0.001***	−0.001***	−0.001**	−0.001***
	(−5.23)	(−4.69)	(−5.40)	(−5.19)	(−5.90)	(−5.55)	(−5.11)	(−4.39)	(−5.50)	(−5.45)	(−5.25)	(−2.53)	(−4.73)
Observations	360	360	360	360	360	360	360	360	360	360	360	360	360
R-squared	0.570	0.571	0.570	0.570	0.570	0.570	0.570	0.570	0.570	0.570	0.571	0.570	0.570

This table presents the OLS coefficients (t-statistics) of regressions of percentage effective spread (Panel A) and percentage price impact (Panel B) on the political risk rating compiled by International Country Risk Guide (ICRG) and on rating components when returns move two or more standard deviations below the sample period mean. On each column, we present the coefficient for a single measure of political stability (i.e., ICRG measure). We also include the natural log of the firm's global market capitalization, the inverse of the average stock price, the natural log of the average daily share volume traded on the NYSE, and the standard deviation of returns based on quote midpoint prices (i.e., mid-quote volatility) as firm level controls and the stock market turnover as a country level control. All models include binary variables based on Fama-French 12-industry classification (not reported). *T*-values are estimated using standard errors clustered by country and presented between parentheses. ***, **, and * denote statistical significance of the coefficient at the 1, 5, and 10 percent level, respectively.

market makers facing uncertainty regarding inventory values and conclude that inventory levels affect the spread width. Shen and Starr (2002) report a positive relation between spread width and inventory holding exposure and suggest that the market is averse to the risk of market-maker insolvency. Comerton-Forde, Hendershott, Jones, Moulton, and Seasholes (2010) provide empirical evidence that NYSE specialists widen spreads when they hold large inventory positions or lose money. They argue that this relation is stronger when volatility is high and that their results can be extended to other competing liquidity suppliers. Copeland and Galai (1983) show that spreads increase with greater return volatility since market makers expect higher losses to informed traders in a market with higher variation of returns. Brooks, Park, and Su (1999) explain that trading increases on the buy side with large price increases and on the sell side with large price decreases whereas spreads increase in both scenarios to speed up price discovery during periods of higher information asymmetry. Therefore, we examine how political and social attributes affect trading and adverse selection costs for non-U.S. stocks during periods of extreme price movements.

In order to define extreme market movements, we calculate close-to-close returns of an equally-weighted portfolio of all cross-listed stocks in our sample between January 2011 and December 2011. After calculating the mean of daily returns, we select days that the portfolio returns move two or more standard deviations above (up days) or below (down days) the sample period mean. Our method of selecting days with extreme market movements is similar to those used by Blau, Van Ness, Van Ness, and Wood (2010) and Dennis and Strickland (2002). Following those authors' methodology, we define six extreme up days and eight extreme down days during our sample time period.[8]

Table 5 presents the results of regressions that examine the effect of political risk rating or one of its twelve components on trading costs on days when the NYSE experienced extreme up days. Panel A reports that political risk and eight of the risk components are significantly related to wider effective spreads on the extreme up days. Socioeconomic conditions (i.e., unemployment, consumer confidence, and poverty), investment profile (i.e., contract viability, profits repatriation, and payment delays), corruption, military in politics, law and order, ethnic tensions, democratic accountability, and bureaucracy are related to effective spreads when returns are at least two standard deviations higher than the mean. On the other hand, Panel B shows that none of the twelve political or social attributes are significantly related to adverse selection costs on extreme up days. Among the control variables related to firm-level characteristics and stock market turnover, market capitalization and stock price (quote midpoint volatility) are (is) negatively (positively) related to effective spreads. Only volatility is significantly related to price impact.

Table 6 presents the results of regressions that examine the effect of political and social attributes on effective spreads and price impact on days with extreme price decreases. Panel A, which presents regressions that have effective spreads as the response variable, reports that higher likelihood of military in politics, less effective laws and enforcement, higher ethnic polarization, low democratic accountability, and bureaucracy deficiencies are associated with higher equity trading costs for days when returns are at least two standard deviations lower than the mean. In contrast, Panel B, which presents the regressions for information asymmetry across traders, reports that only government stability (i.e., legislative and popular support) is significantly related to price impact for non-U.S. stocks traded on the NYSE for days when the returns for our equally-weighted portfolio substantially decrease. Trading volume is negatively related while quote midpoint volatility is positively related to effective spreads. Quote midpoint volatility and stock price are positively related and stock market turnover is negatively related to price impact.

5. Summary and conclusions

Eleswarapu and Venkataraman (2006) examine the effect of political institutions on liquidity costs of stocks cross-listed on the NYSE in 2002. The authors provide empirical evidence that trading costs are higher for stocks of countries with weak political institutions, which should discourage investor participation in financial markets due to higher information asymmetry and, therefore, higher risk of expropriation by insiders. We extend this analysis to the components of the political risk rating used by Eleswarapu and Venkataraman to better understand the effect of political stability on the cost of liquidity. In addition to examining the role of political and social attributes on the relation between political stability and liquidity costs, our paper also extends this analysis to a sample period that postdates substantial changes in the quality of U.S. equity markets due to technological innovations and more stringent regulations.

For a sample period that starts in January 2011 and ends in March 2011, we do not find a significant relation between political risk and trading costs. However, when we examine the components of the political rating individually, we find that higher risks of corruption incidence, military in politics, less effective legal systems, ethnic polarization and lower bureaucracy quality are related to higher trading costs. Countries with a major presence of military or an ethnic group in government commonly face little political opposition and, thus, have privileged access to information without independent oversight. Corruption results in the misallocation of a country's resources, reducing investment opportunities and increasing business-related risks. An ineffective judicial system significantly increases trading costs since savers are less likely to finance businesses if they cannot count on courts to resolve unanticipated disputes related to their investments. And dysfunctional bureaucracies create administrative disruptions for suppliers of capital, especially during substantial changes in government.

Our analysis of the effect of the political stability rating's components on the degree of information asymmetry shows that the risk of military in politics, low effectiveness of the legal system, and greater ethnic polarization are related to higher adverse selection risk. Corruption and bureaucracy are not significantly related to price impact, suggesting that the risk of business disruption due to high corruption incidence or low bureaucracy quality is not associated with the informational component of trading costs.

Since inventory holdings and adverse selection risks increase with return volatility, we also examine how political and social attributes affect transaction costs for non-U.S. stocks during periods of high volatility. Military in politics, law and order, ethnic tensions, and bureaucracy quality are related to effective spreads when we condition our analysis on days with high volatility as they are when we don't condition it. Political risk rating, socioeconomic conditions, investment profile, and corruption are related to trading costs on days with extreme increases in stock returns while democratic accountability is related to trading costs on days with extreme increases and decreases in stock returns. Poor socioeconomic conditions reflect popular dissatisfaction due to inadequate macroeconomic and social conditions such as unemployment and poverty. Weak investment profile is associated with a more challenging business environment due to breach of contracts, limitations on profit repatriation, and other forms of government intervention in the decisions of private companies. Democratic

[8] 8/09, 8/11, 10/10, 10/27, 11/28, and 11/30 are the extreme up days and 8/04, 8/08, 8/18, 9/22, 10/03, 10/31, 11/01, and 11/09 are the extreme down days.

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accountability reflects how responsive government authorities are to the needs of their constituents. A country's disadvantages in these three political risk components seem to be relevant to the level of investor participation in periods of extremely high stock returns. Low democratic accountability also seems to be relevant in periods of extremely low stock returns. Government stability, which indicates the level of legislative and popular support and, therefore, the likelihood of substantial changes in government, is the only attribute significantly related to adverse selection costs, and this is the case only on extreme down days.

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