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The Effects of Accruals Quality on Audit Hours and Audit Fees

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Abstract

We investigate whether auditors take into account accruals quality, a proxy for the cash flow risk associated with earnings, by adjusting audit hours and audit fees. Accruals quality tells investors about the mapping of accounting earnings into cash flows. Poor accruals quality weakens this mapping and thus increases this cash flow risk. We find a negative relationship between accruals quality and audit hours/fees, indicating that auditors increase their audit efforts by modifying audit procedures and substantive tests and charge higher fees for the increased cash flow risk. In addition, we find that both innate accruals quality and discretionary accruals quality are negatively related to audit hours and fees but that innate accruals quality is more likely to influence audit hours and fees than discretionary accruals quality. The results indicate that auditors incorporate the cash flow risk associated with accruals quality but that their response varies according to the source of accruals quality.

Keywords

audit quality, audit effort, audit hours, audit fees, accruals quality, innate accruals, discretionary accruals, cash flow risk

Introduction

In this article, we investigate whether auditors incorporate the quality of accruals by adjusting audit hours and fees. Cash flows reflect the basic element that investors price, and lower accruals quality, by definition, indicates high cash flow risk, where accruals are less likely to be realized as cash flows. Thus, low accruals quality increases cash flow risk, and thereby, both firm risk and audit risk. Therefore, low accruals quality is likely to affect the audit process in several ways including a demand for higher audit fees to cover the assessed audit risk.

Management biases (Rogers & Stocken, 2005) or managers' subjective judgments (Gong, Laura, & Xie, 2009) reflected in accruals may mislead users of financial statements to make poor investment decisions. Accordingly, the market demands that external

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auditors, who are assumed to be independent and professional, play an important role in ensuring that accruals provide an accurate estimate of future cash flows.[1] Auditing standards list examples of risk factors that auditors should identify, which are closely aligned with the cash flow risk reflected in accruals quality. In particular, recurring negative cash flows from operations and the inability to generate cash flows from operations while reporting earnings and earnings growth (AU §316.85) are important risk factors concerning potentially fraudulent financial reporting. This study's variables for accruals quality directly address this risk factor because we define accruals quality as the cash flow risk reflected in the extent to which accruals correspond to cash flows.

In this study, we explore whether auditors use the assessment of accruals quality in audit planning and implementation as well as in audit pricing. By using unique data on audit hours from Korea, we expect that auditors have incentives to assess the quality of accruals by adjusting audit procedures and substantive tests and demand higher audit fees for any increased audit risk.[2] Unlike firm-level indicators of audit quality (e.g., auditors' reputation or industry specialization), audit hours are a contract-level indicator of auditors' professional judgments in response to the cash flow risk associated with each engagement.

In addition, we examine whether the pricing of accruals quality vary according to the source of accruals quality, namely, innate accruals quality (which is driven by firms' business models and operating environments) and discretionary accruals quality (which is subject to management estimates). Although theoretical studies have not distinguished between sources of cash flow risk, empirical studies of discretionary accruals (Guay, Kothari, & Watts, 1996; Subramanyam, 1996) have indicated that discretionary accruals quality and innate accruals quality induce different responses from auditors. While auditors may incorporate both types of accruals quality, we expect that audit efforts have a stronger relationship with innate accruals quality than with discretionary accruals quality. The reason for this prediction is that managers make discretionary accrual choices, reflecting both opportunism (which exacerbates the risk) and performance measurement (which mitigates the risk). Thus, these two conflicting effects of discretionary accrual quality would induce an average auditor to respond more to innate accruals quality than to discretionary accruals quality. We also consider the effect of accruals quality on audit fee per hour to investigate whether auditors charge premium in addition to compensation for additional work.

The results indicate a negative relationship between accruals quality and both audit hours and audit fees. That is, the lower the accruals quality (i.e., the higher the cash flow risk), the more likely the auditor is to professionally judge and respond by spending more audit hours and demanding higher audit fees. In addition, both innate accruals quality and discretionary accruals quality are negatively related to audit hours and audit fees. Furthermore, auditors are more likely to respond to innate accruals quality than to discretionary accruals quality in adjusting their audit hours and demanding higher audit fees. This result provides support for the view that auditors are generally concerned more about the cash flow risk associated with firm-specific operating and environmental characteristics than about the risk associated with the exercise of managerial discretion. This is consistent with the theoretical literature (Demski, Patell, & Wolfson, 1984), which suggests that allowing management discretion over accounting choices improves the overall supply of information to markets, reducing the noise in accruals arising from inherent factors.

The cost of Big 4 auditors associated with poor accruals quality may be substantially larger than the cost of non–Big 4 auditors. This may induce Big 4 auditors to be more sensitive to accruals quality than non–Big 4 auditors. Thus, we investigate whether the effects of accruals quality on audit hours and audit fees vary according to the type of auditor. The

results indicate that, regardless of the type of auditor, auditors make active use of accruals quality in assessing cash flow risk and respond to low accruals quality by spending more audit hours and demanding higher audit fees. However, the effect of accruals quality varies with the type of auditor when accruals quality is decomposed into innate accruals quality and discretionary accruals quality. Specifically, Big 4 auditors are more likely to emphasize innate accruals quality, whereas non–Big 4 auditors are more sensitive to discretionary accruals quality. That is, Big 4 auditors are more likely to focus on the uncertainty associated with clients' business models and operating environments, whereas non–Big 4 auditors are more likely to be concerned about clients' accounting choices, implementation decisions, and managerial errors.

We also examine the effect of accruals quality on audit fee per hour to understand how auditors simultaneously adjust their resource allocation and pricing policies as accruals quality varies. The results show that audit fee per hour does not increase with the level of cash flow risk, and audit fee hourly premium stems neither from managerial discretion nor from the fundamental business risk. It appears that auditors perceive firm-level differences in business risk and obtain compensation through billing additional hours, not by raising the hourly charge.

This study contributes to the accounting literature in several ways: First, to our knowledge, this study is the first to investigate whether auditors use accruals quality to infer cash flow risk. Previous studies have typically examined the relationship between accruals quality and accrual mispricing (Sloan, 1996) and the effects of accruals quality on the cost of capital (Chen, Dhaliwal, & Mark, 2008; Francis, LaFond, Olsson, & Schipper, 2005; Kim & Qi, 2010). The present study contributes to the accruals quality literature by using broad samples over a long period to examine whether auditors determine allocation of limited resources and pricing of audit services by evaluating cash flow risk based on accruals quality.

Second, this study demonstrates that the quality of accruals, not the size of accruals, is what matters. Previous studies have examined whether auditors consider accruals but focused on the *magnitude* of accruals, not the quality (Bradshaw, Richardson, & Sloan, 2001; Sloan, 1996) or source of accruals. Accruals play an important role in mitigating various timing and matching problems inherent in cash flows, allowing earnings to better reflect firm performance (Dechow, 1994). However, the use of accruals provides managers with some discretion to manage earnings. Thus, the accrual process allows managers to signal their private information (Subramanyam, 1996) or to opportunistically manipulate earnings (Xie, 2001). Given these two conflicting views on accruals, the mere magnitude of accruals may not clearly reflect audit risk. For example, current accruals are converted into cash flows in the next period even if the size of total accruals is large. Then, the accruals convey private information without increasing cash flow risk rather than manifest earnings management.

Third, this study is the first to employ a contract-level measure, that is, audit hours, to reflect auditors' response to the cash flow risk assessed through accruals quality. Previous studies have used firm-level proxies for audit quality, including brand name, industry expertise, and economic dependency (Francis & Simon, 1987; Krishnan, 2003; Simunic, 1984). The use of this contract-level variable for audit efforts provides interesting and important insights into auditing practices because it allows us to determine whether auditors professionally respond to each engagement by adjusting their staff allocation and audit hours.

Fourth, this study is the first to consider both audit hours and audit fees to investigate auditors' resource allocation and pricing decisions in response to the assessed cash flow risk from accruals quality.[3] Audit fees are an indirect measure of auditors' effort. That is, auditors may charge more for high-risk firms by increasing the number of audit hours or by simply taking into account a risk premium regardless of audit hours. In this study, we demonstrate a positive relationship between audit fees and cash flow risk. This result provides support for the argument that auditors charge more for high-risk firms by increasing audit efforts.

The rest of this article is organized as follows: Section ''Hypotheses and Research Design'' develops the hypotheses and describes the measures of accruals quality. Section ''Sample Selection and Descriptive Statistics'' discusses the sample and provides descriptive information on the test and control variables, and Section ''Empirical Results'' reports the results for the relationship between accruals quality and audit hours/fees and examines whether innate accruals quality and discretionary accruals quality separately or differentially influence audit hours/fees. Section ''Additional Analyses'' presents the results of robustness checks and additional tests, and Section ''Summary and Conclusions'' concludes.

Hypotheses and Research Design

Accruals Quality and Auditing

Auditing is a process of reducing to a socially acceptable level the information risk to users of financial statements. The information risk refers to the risk that a firm's financial statements are materially false and misleading.[4] Auditors perform many tasks designed to reduce the risk of giving an inappropriate audit opinion on financial statements. They carefully gather data and analyze the assertions in financial statements. In addition, they take steps to ensure that they have properly examined financial statements when there is adverse information. These audit procedures are closely aligned with the underlying concept of accruals quality.

We define accruals quality as the cash flow risk associated with misstatements, that is, the risk that accounting earnings may not be converted into cash flows. A low correspondence between earnings and future cash flows may occur when financial statements are misstated or when accounting estimates or key assumptions are not reasonable. U.S. auditing standards specify that auditors are responsible for assessing cash flow risk in financial statements and examining whether there are material misstatements:

> Auditors also may use the events and transactions subsequent to the date of the balance sheet, but prior to the date of the auditor's report to identify and evaluate the reasonableness of accounting estimates or key factors or assumptions used in the preparation of the estimate. (AU Section §342.13)

The notion that accruals quality is the cash flow risk is found in AU §316.85, which states that one of the risk factors is recurring negative cash flows from operations and the inability to generate cash flows from operations while reporting earnings and earnings growth. Auditors assess this risk factor while inquiring the existence of misstatements, evaluating the reasonableness of accounting estimates, reviewing test results of sampling, and conducting analytical procedures.

The assessment of accruals quality may trigger auditors to revise their planning assumptions and maintain professional skepticism in gathering and evaluating audit evidence.

Furthermore, they may assign more experienced staff members or those with specialized skills; provide more supervision; or incorporate additional elements of unpredictability in the selection of further audit procedures (AU Section 316). For example, a large number of misstatements about the collectability of receivables may lead auditors to reconsider the control risk assessment related to assertions affecting the design of substantive tests of sales or cash receipts. If there is a mismatch between accounts payable and subsequent cash disbursements, auditors may strengthen sampling and consider additional audit procedures to test the recorded accounts payable for understatements because of omitted purchases (AU Section §350.17).

Auditors also employ the notion of accruals quality in practice to conduct analytical reviews. For example, auditors may assess either the inherent risk or the control risk to be high if receivables or inventories are converted into operating cash flows more slowly than expected (i.e., if accrual quality is poor).[5] In addition, auditors may make general changes to the nature, timing, or extent of further audit procedures as an overall response, for example, performing substantive procedures at the end of each period instead of at an interim date.

All additional audit procedures and the expanded scope of any audit require auditors to make more audit effort, which increases audit hours. From this perspective, the lower the accruals quality, the more likely the auditor is to spend more audit hours, indicating a negative relationship between accruals quality and audit hours. Accordingly, auditors may demand higher audit fees for the expanded audit program (i.e., for more work). However, auditors may demand higher audit fees for increased risk because they cannot increase audit hours without limit.

In addition, prior studies suggest that firms with poor accruals quality may be more willing to pay more for external audits. Firms that want to manage accruals deliberately choose low-quality auditors, leading to a negative relationship between accruals quality and audit fees. In addition, firms with material weakness in internal control tend to have poorly estimated accruals that are not realized in cash flows (Ashbaugh-Skaife, Collins, Kinney, & LaFond, 2008; Doyle, Ge, & McVay, 2007). In particular, Doyle et al. (2007) report that this result is driven by poor overall company-level control, which makes it more difficult to audit. These results suggest that low accruals quality firms are more inclined to pay higher audit fees due to weak internal control. Therefore, we expect a negative relationship between accruals quality and audit fees. In this regard, we propose the following hypotheses:

Hypothesis 1.1: Auditors spend more (fewer) audit hours for clients with poor (good) accruals quality.

Hypothesis 1.2: Auditors charge higher (lower) audit fees for clients with poor (good) accruals quality.

In this study, by using accruals quality as a proxy for cash flow risk, we examine whether auditors respond rationally to the assessed risk associated with accruals quality. Theoretical studies have demonstrated that information risk is a nondiversifiable risk factor (Easley & O'Hara, 2004; Leuz & Verrecchia, 2004; O'Hara, 2003). Empirical studies have provided evidence that firms with poor accruals quality face a higher cost of capital than those with good accruals quality (Chen et al., 2008; Francis et al., 2005; Kim & Qi, 2010; Ogneva, 2012), consistent with the view that cash flow risk is a priced risk factor.[6]

The Effects of Innate Accruals Quality and Discretionary Accruals Quality on Audit Hours and Audit Fees

Accruals quality can be divided into two components based on the source of accruals quality: innate factors and discretionary factors. Innate factors reflect economic fundamentals, and discretionary factors represent managerial choices (Francis et al., 2005; Kim & Qi, 2010).

Innate accruals quality is driven by firms' business models and economic fundamentals, which is expected if accruals are playing their intended role by capturing firms' economic substance. Low innate accruals quality indicates that uncertainties are embedded in earnings because of the nature of operating environments. Thus, it may be difficult for auditors to accurately assess cash flow risk based on financial statements when innate accruals are of poor quality. This triggers auditors to spend more audit hours to ensure the effect of economic fundamentals on the risk (i.e., convertibility of accruals into future cash flows).

Discretionary accruals result from accounting choices, implementation decisions, and managerial errors (Francis et al., 2005). Discretionary accruals quality is composed of three distinct subcomponents (Guay et al., 1996). The performance subcomponent reflects managers' attempt to enhance the ability of earnings to reflect firm performance in a reliable and timely manner. The second and third subcomponents reflect opportunism and pure noise, respectively. The first subcomponent is expected to reduce cash flow risk, whereas the second and third subcomponents are expected to increase it. Given that discretionary accruals have existed for centuries, the net effect of discretionary accruals in the population is to enhance earnings as a performance indicator (Guay et al., 1996).

Thus, as in the case of innate accruals, auditors may respond appropriately to the risk associated with discretionary accruals quality. However, the effect of discretionary accruals quality on auditors' professional response may differ from that of innate accruals quality. This is because discretionary accrual choices reflect both opportunism/noise (which exacerbate cash flow risk) and performance measurement (which mitigates cash flow risk).[7] These two conflicting effects may weaken the effect of discretionary accruals on auditors' effort adjustment. In contrast, innate accruals quality informs auditors of more about the firm's cash flow risk, making auditors respond to innate accruals quality stronger than discretionary accruals quality.

Based on these arguments, we propose the following hypotheses (stated in the alternative form):

Hypothesis 2.1: Auditors respond to poor (good) innate accruals quality by spending more (less) audit hours and demanding higher (lower) audit fees.

Hypothesis 2.2: Auditors respond to poor (good) discretionary accruals quality by spending more (less) audit hours and demanding higher (lower) audit fees.

Hypothesis 2.3: Innate accruals quality is more likely to influence audit hours/fees than discretionary accruals quality.

In sum, we expect that both innate and discretionary components have significant effects on audit hours and fees. However, we expect that the uncertainty of future cash flows associated with innate accruals be greater than that associated with discretionary accruals. Thus, we hypothesize that auditors would be more likely to respond to the cash flow risk generated from innate accruals quality than to that generated from discretionary accruals quality.

Overview of the Korean Audit Services Market

To test auditors' professional resource allocation associated with accruals quality, we use audit hour data in the Korean audit services market. The Korean economy has experienced phenomenal growth for the past decades, along with a rapid development in capital markets, which in turn increased the demand for credible financial reporting and external auditing. On the audit demand side, a significant number of firms are subject to external audits by requiring the financial statements of a firm whose total assets exceed a regulatory limit (currently 100 billion Korean won or about US$8.5 million) to be audited by an independent auditor. On the supply side, 14,986 certified public accountants (CPAs) were registered to the Korean Institute of Certified Public Accountants (KICPA), 127 audit firms were practicing as of 2013 and many of them have a member firm relationship with an international accounting firm such as the Big 4 audit firms.

In recent years, shareholder litigation against auditors has been common in Korea, and the amount of court-awarded damages has been enormous. With the trend of high litigation risk, auditors have stronger incentives to maintain auditor independence than ever. In addition, the Korean government decided in 2007 to fully adopt the International Financial Reporting Standards (IFRS) starting the 2011 fiscal year, requiring all the firms listed on stock exchanges to issue all financial statements in accordance with IFRS. In 2005, the KICPA decided to employ the New International Standards on Auditing (New ISA), which emphasizes audit procedures based on risk assessment (risk-based approach different from system-based approach). The Korean audit service market has more than US$2 billion with the Korean economy ranking 13 in terms of gross domestic product (GDP) size in 2012 and Korean stock exchanges (KSEs) ranking 18 according to the Global Financial Centers Index (March 2012). With the IFRS's full adoption and the new ISA, the Korean audit market experienced a substantial change in regulation and growth in market size, and thus viewed as quite competitive.

Research Design

Measuring accruals quality. The accruals quality (AQ) metrics that we use are based on Dechow and Dichev's (2002) model, which posits a relationship between working capital accruals in the current period and operating cash flows in the previous, current, and future periods. Following McNichols (2002), we modify Dechow and Dichev's model by including changes in revenues (ΔREV_{it}) and property, plant, and equipment (PPE_{it}) as additional explanatory variables:

$$TCA_{it} = \phi_0 + \phi_1 CFO_{it-1} + \phi_2 CFO_{it} + \phi_3 CFO_{it+1} + \phi_4 \Delta REV_{it} + \phi_5 PPE_{it} + u_{it}, \quad (1)$$

where TCA_{it} = total current accruals of firm i in year t, calculated as $\Delta CA_{it} - \Delta CL_{it} - \Delta Cash_{it} + \Delta STDEBT_{it}$, where ΔCA_{it} is the change in current assets between year $t - 1$ and t, ΔCL_{it} is the change in current liabilities between year $t - 1$ and t, $\Delta Cash_{it}$ is the change in cash between year $t - 1$ and t, and $\Delta STDEBT_{it}$ is the change in current liabilities between year $t - 1$ and t; CFO_{it} = cash flows from operations, calculated as $NIBE_{it} - TA_{it}$, where $NIBE_{it}$ is the net income before extraordinary items and TA_{it} is total accruals; ΔREV_{it} = the change in revenues between year $t - 1$ and t; and PPE_{it} = the gross value of property, plant, and equipment.

We present the firm subscript i in models only and suppress it throughout the article for simplicity. In addition, we include the time subscript t in models and tables, but omit it in the text. However, we clearly denote $t - 1$ for the variables if we use data at time $t - 1$.

We scale total current accruals for cash flows from operations in the previous, current, and future periods, changes in revenues, and *PPE* by average assets. We consider only those firms with at least 7 years of accounting data and conduct year-by-year cross-sectional regressions of Equation 1 for each industry group composed of at least 20 firms. This estimation generates firm- and year-specific residuals u. We use the standard deviation of firms' residuals from year $t - 4$ to year t as the accruals quality metric, AQ.[8]

Under this framework, working capital accruals reflect managerial estimates of cash flows. The extent to which these accruals do not map into cash flows, changes in revenues, and *PPE* (our AQ metrics)—because of intentional and unintentional estimation errors—is an inverse measure of accruals quality (Francis et al., 2005). Therefore, a higher AQ value indicates that the mapping of accruals into cash flows is more volatile, and this in turn implies potential inconsistencies in accounting. Therefore, a firm with a higher (lower) AQ metric value shows poorer (better) accounting information quality.

Decomposing accruals quality into innate and discretionary components. Innate factors change more slowly than those factors influencing discretionary accruals quality (e.g., managers' accounting implementation decisions). To estimate innate accruals quality, we use the innate factors suggested by Dechow and Dichev (2002) and Francis et al. (2005), including firm size, the standard deviation of cash flows from operations, the standard deviation of sales revenues, the length of the operating cycle, and the frequency of *negative* earnings reports:

$$AQ_{it} = \lambda_0 + \lambda_1 Size_{it} + \lambda_2 \sigma(CFO)_{it} + \lambda_3 \sigma(Sales)_{it} + \lambda_4 \sigma(OperCycle)_{it} + \lambda_5 NegEarn_{it} + \mu_{it}, \quad (2)$$

where AQ_{it} = the estimated accrual quality of firm i in year t based on Equation 1; $Size_{it}$ = the log of total assets; $\sigma(CFO)_{it}$ = the standard deviation of cash flows from operations in the past 10 years; $\sigma(Sales)_{it}$ = the standard deviation of sales in the past 10 years; $\sigma(OperCycle)_{it}$ = the standard deviation of the operating cycle, which is the sum of the accounts receivable turnover and the inventory turnover; and $NegEarn_{it}$ = the incidence of negative earnings reports in the past 10 years.

We explicitly separate innate components from discretionary ones by using annual regressions of AQ on innate factors. The predicted value from each regression yields an estimate of the innate portion of the firm's accruals quality in year t (*InnateAQ*), and the prediction error is the estimate of the discretionary component of the firm's accruals quality in year t (*DiscAQ*):

$$InnateAQ_{it} = \hat{\lambda}_0 + \hat{\lambda}_1 Size_{it} + \hat{\lambda}_2 \sigma(CFO)_{it} + \hat{\lambda}_3 \sigma(Sales)_{it} + \hat{\lambda}_4 \sigma(OperCycle)_{it}, \quad (3)$$

$$DiscAQ_{it} = \hat{\mu}_{it}. \quad (4)$$

Because *InnateAQ* measures the accruals quality associated with the firm's business model and operation environment, *InnateAQ* is a proxy for earnings quality attributable to the fundamental business risk. *DiscAQ* is a measure of earnings quality stemming from accounting choices, implementation decisions, and managerial errors, and thus *DiscAQ* is a

proxy for earnings quality arising from managerial discretion. It is important to note that *DiscAQ* is not a pure noise component.

Audit hour model with accruals quality. As a way to enhance corporate transparency, all publicly traded firms in Korea are required to disclose audit hour data in the annual reports filed with the Financial Supervisory Services (Securities Issuance and Disclosure Rules §72j). We employ the following audit hour model:

$$\begin{aligned} LAH_{it} = {} & \alpha_0 + \alpha_1 AQ_{it} + \alpha_2 SIZE_{it} + \alpha_3 SUB_{it} + \alpha_4 INVREC_{it} + \alpha_5 ROA_{it} + \alpha_6 LEV_{it} \\ & + \alpha_7 LIQ_{it} + \alpha_8 OPN_{it} + \alpha_9 BIG_{it} + \alpha_{10} INITIAL_{it} + \alpha_{11} EXCH_{it} \\ & + \alpha_{12} FRN_{it} + \sum_{k=1}^{K} \varphi_k IND_k + \sum_{t=1}^{T} \phi_t YEAR_t + \varepsilon_t, \end{aligned} \tag{5}$$

where LAH_{it} = the natural log of total audit hours of firm i in year t; AQ_{it} = standard deviation of firm i's residuals, from years $t - 4$ to t from Equation 1; $SIZE_{it}$ = the natural log of the book value of total assets; SUB_{it} = the number of subsidiaries; $INVREC_{it}$ = the sum of a firm's inventory and accounts receivable divided by its total assets; ROA_{it} = return on assets (income before extraordinary items divided by average total assets); LEV_{it} = the ratio of debt to total assets; LIQ_{it} = the ratio of current assets to current liabilities; OPN_{it} = 1 if a qualified opinion and 0 otherwise; BIG_{it} = 1 if the firm's auditor is a Big 4 auditor and 0 otherwise; $INITIAL_{it}$ = 1 if an audit is the first-year audit and 0 otherwise; $EXCH_{it}$ = 1 if listed on KSE and 0 if listed on Korean Securities Dealers Automated Quotations (KOSDAQ); FRN_{it} = the percentage of shares held by foreign investors; IND_k = dummy variables controlling for fixed effects of industries; and $YEAR_t$ = a control variable based on the calendar year.

Our research design employs the ordinary least squares (OLS) method with the natural log of total audit hours as the dependent variable. We take the natural log of the audit hours because of its skewness. The test variables are accruals quality metrics (*AQ*). The higher the *AQ*, the lower the accruals quality. Thus, we predict a positive relationship between *AQ* and audit hours (audit fees). For example, a positive coefficient would indicate that auditors adjusted their audit effort and demanded a risk premium for increased cash flow risk from poor accruals quality.

We later replace the variable *AQ* by two decomposed factors—innate accruals quality (*InnateAQ*) and discretionary accruals quality (*DiscAQ*)—to examine whether the effect of accruals quality varies with the source of uncertainty. We expect that the coefficients of *InnateAQ* and *DiscAQ* be positive but that the coefficient of *InnateAQ* be higher than that of *DiscAQ*.

Our control variables are similar to those in previous research. We include the size of the client firm (*SIZE*) based on O'Keefe, Simunic, and Steini (1994), who document that firm size is one of the most important determinants of audit hours. We take the natural log of total assets to reduce the skewness in the distribution of client firms' total assets. We use the variables *SUB* and *INVREC* as proxies for the scope and complexity of a client firm's business. We expect that audit hours be positively related to these variables. We use the variables *ROA, LEV*, and *LIQ* as proxies for a client's risk characteristics. Because auditors spend more audit hours for riskier clients (Ashbaugh, LaFond, & Mayhew, 2003), we predict that the coefficients of the variables *LEV* and *LIQ* be positive but that the coefficient of *ROA* be negative.

We include three auditor-related variables *OPN, BIG*, and *INITIAL*. Auditors need to make more effort to obtain evidence if they issue a qualified opinion, which implies a positive coefficient for *OPN*. Big 4 auditors typically spend more audit hours than non–Big 4 auditors because Big 4 audit firms are more likely to be exposed to litigation risk (Simunic & Stein, 1996). We include the initial audit engagement (*INITIAL*) because new auditors typically spend more audit hours to understand the business of their new client.

We include one control variable *EXCH* to control for client firms' response to the demand for disclosure. *EXCH* is coded 1 if the firm is listed on KSE, and 0 if listed on KOSDAQ. We expect the coefficient of *EXCH* to be positive because the disclosure requirement of KSE is stricter than that of KOSDAQ. We include one ownership variable: the percentage of ownership by foreign investors (*FRN*). We expect a positive coefficient for *FRN* because foreign investors play an effective monitoring role, resulting in high audit quality. We include the industry variable (*IND*) and the year variable (*YEAR*) to control for potential confounding effects of industry and year variations in accounting regulations on results.

Audit fee model with accruals quality. Our audit fee model employs the natural log of total audit fees as the dependent variable:

$$\begin{aligned} LAF_{it} = {} & \beta_0 + \beta_1 AQ_{it-1} + \beta_2 SIZE_{it-1} + \beta_3 SUB_{it} + \beta_4 INVREC_{it-1} + \beta_5 ROA_{it-1} \\ & + \beta_6 LEV_{it-1} + \beta_7 LIQ_{it-1} + \beta_8 OPN_{it-1} + \beta_9 BIG_{it} + \beta_{10} INITIAL_{it} \\ & + \beta_{11} EXCH_{it} + \beta_{12} FRN_{it} + \sum_{k=1}^{K} \varphi_k IND_k + \sum_{t=1}^{T} \phi_t YEAR_t + \varepsilon, \end{aligned} \tag{6}$$

where LAF_{it} = the natural log of total audit fees.

The definitions of the other variables are presented in the audit hour model in Equation 5. Note that all the client-related variables are measured at $t - 1$ because audit fees are determined based on the characteristics of firms in the previous period. We include *SIZE* because it is one of the most significant determinants of audit fees (Simunic, 1980). We take the log of audit fees to reduce the skewness in the distribution of audit fees and client firms' total assets. The rest of the variables have been discussed in the audit hour model.

Sample Selection and Descriptive Statistics

Sample Selection

The sample includes 12,480 firm-year observations for audit hour data and 12,184 firm-year observations for audit fee data for the 2000-2012 periods.[9] All the firms are publicly traded in KSE or KOSDAQ. We collect the audit fee and audit hour data from the Data Analysis, Retrieval and Transfer System (DART) of the Korean Financial Supervisory Service and the financial variables from Korea Information Service (KIS)-Value III or TS 2000 or DataGuide 5.[10]

For the sample, we include only those firms with no missing observations for audit hours, audit fees, type of auditors, accruals quality variables, and control variables. We exclude those firms reporting the number of audit days instead of the number of daily audit hours because the manual conversion of audit days into audit hours may introduce a measurement error. Following previous research, we exclude financial institutions. To avoid

Table 1. Summary of the Sample Selection Process.

Panel A: Sample Selection Criteria.

Summary of the sample selection process	Audit hour	Audit fee
Audit hour and audit fee data	18,742	18,742
Less: Observations with fiscal-year-end change	126	126
Less: Observations disclosed by the number of days audited	2,904	2,904
Less: Observations with no measure of accruals quality	3,177	3,471
Less: Observations with missing financial data	55	57
Final sample	12,480	12,184

Note. Refer to the appendix for definitions of variables.

Panel B: Distribution of Audit Hour, Audit Fee Variables by Year.

Year	Audit hour	Audit fee / audit fees per hour
2000	224	221
2001	268	246
2002	400	388
2003	1,012	791
2004	1,187	1,143
2005	1,271	1,246
2006	1,324	1,311
2007	1,373	1,358
2008	1,343	1,371
2009	1,341	1,369
2010	1,360	1,363
2011	1,377	1,377
Total	12,480	12,184

outliers, we winsorize 1% extreme values of audit hour, audit fee, accruals quality variables, and other control variables. Panel A of Table 1 describes the sample selection process, and Panel B shows the yearly sample distribution. As shown in Panel B, the number of observations is substantially lower in the first 2 years than in the later years. The results obtained from excluding those years with a small number of observations reveal no qualitative changes.

Descriptive Statistics

Table 2 reports the descriptive statistics. Panels A and B present the descriptive statistics for the audit hour sample and the audit fee sample, respectively. As shown in Panel A, auditors, on average, spend approximately 899 hours, according to the mean (median) value of 6.44 (6.39) for log-transformed audit hours (*LAH*). As shown in Panel B, the average audit fee is approximately KRW 77 million, with a mean (median) value of 10.98 (10.87) for log-transformed audit fees (*LAF*). Also, the average audit fee per hour is approximately KRW 111,000, with a mean (median) value of 4.53 (4.48) for log-transformed audit price (*LAFH*). The mean (median) value of the standard deviation of the modified Dechow and Dichev's model residuals (*AQ*) is 0.10 (0.07). Approximately 1% of the

Table 2. Descriptive Statistics for Study Variables.

Panel A: Audit Hour (N = 12,480).

Variables	*M*	*SD*	Minimum	Median	Maximum
$AH(raw)_t$	899.194	1,068.528	72.000	600.000	7,325.700
LAH_t	6.443	0.801	4.277	6.397	8.899
AQ_t	0.102	0.079	0.012	0.078	0.415
$InnateAQ_t$	0.104	0.032	0.045	0.104	0.176
$DiscAQ_t$	−0.002	0.073	−0.116	−0.018	0.289
$SIZE_t$	18.515	1.422	16.011	18.246	23.268
ROA_t	−0.009	0.184	−0.991	0.032	0.264
LEV_t	0.431	0.208	0.052	0.429	0.990
LIQ_t	2.439	2.739	0.242	1.528	17.775
OPN_t	0.010	0.098	0	0	1
BIG_t	0.552	0.497	0	1	1
$INITIAL_t$	0.186	0.389	0	0	1

Panel B: Audit Fee (n = 12,184).

Variables	*M*	*SD*	Minimum	Median	Maximum
$AF(raw)_t$[a]	77.643	84.297	19.000	53.000	580.000
$AFH(raw)_t$[b]	111.546	93.948	31.730	88.319	650.000
LAF_t	10.989	0.641	9.852	10.878	13.271
$LAFH_t$	4.534	0.536	3.457	4.481	6.477
AQ_{t-1}	0.103	0.080	0.012	0.079	0.417
$InnateAQ_{t-1}$	0.105	0.032	0.045	0.105	0.176
$DiscAQ_{t-1}$	−0.002	0.074	−0.118	−0.019	0.291
$SIZE_{t-1}$	18.454	1.415	16.020	18.182	23.146
ROA_{t-1}	−0.001	0.178	−0.922	0.034	0.295
LEV_{t-1}	0.435	0.207	0.053	0.434	0.990
LIQ_{t-1}	2.411	2.610	0.244	1.533	16.439
OPN_{t-1}	0.008	0.088	0	0	1
BIG_t	0.548	0.498	0	1	1
$INITIAL_t$	0.192	0.394	0	0	1

Note. Refer to the appendix for definitions of variables.
[a]In million Korean won.
[b]In thousand Korean won.

observations are from firms with a qualified audit opinion. In addition, approximately 55% of the sample firms have Big 4 auditors.

Table 3 reports the Pearson correlation coefficients. Below the diagonal are correlation coefficients for the audit hour sample, and above the diagonal are correlation coefficients for the audit fee sample. Audit hours are negatively related with AQ (−.16) at significant levels. Audit hours have a significant negative relationship with $InnateAQ$ (−.20) and $DiscAQ$ (−.08). The negative correlations with AQ measures are puzzling in that poor accruals quality (high AQ) is expected to induce more audit hours. However, when omitted variables are not taken into account, the correlation coefficient between accruals quality and audit hours is negative. For example, O'Keefe et al. (1994) document that firm size is the most dominant variable for explaining audit hours. As shown in Table 3, accruals

Table 3. Correlation Matrix of Study Variables.

	LAH	*AQ*	*InnateAQ*	*DiscAQ*	*SIZE*	*ROA*	*LEV*	*LIQ*	*OPN*	*BIG*	*INITIAL*
LAF	.74***	−.19***	−.22***	−.11***	.80***	.07***	.20***	−.21***	.00	.33***	−.04***
AQ	−.16***		.38***	.92***	−.32***	−.22***	−.08***	.24***	.08***	−.11***	.06***
InnateAQ	−.20***	.38***		−.02**	−.37***	−.33***	.11***	.02**	.07***	−.12***	.05***
DiscAQ	−.08***	.92***	−.01		−.18***	−.10***	−.13***	.25***	.06***	−.07***	.04***
SIZE	.65***	−.32***	−.39***	−.18***		.25***	.16***	−.21***	−.05***	.36***	−.07***
ROA	.09***	−.23***	−.36***	−.10***	.28***		−.29***	.10***	−.20***	.17***	−.13***
LEV	.12***	−.07***	.13***	−.14***	.15***	−.30***		−.61***	.11***	.04***	.07***
LIQ	−.15***	.23***	.02*	.25***	−.21***	.10***	−.60***		−.03***	−.07***	−.01
OPN	−.04***	.10***	.09***	.07***	−.07***	−.26***	.13***	−.02**		−.04***	.07***
BIG	.37***	−.09***	−.11***	−.05***	.35***	.15***	.03***	−.07***	−.04***		−.09***
INITIAL	.00	.06***	.04***	.05***	−.05***	−.07***	.05***	−.01	.02**	−.10***	

Note. The left-lower columns from the diagonal present the correlations of audit hour sample (N = 12,480), and the right-upper columns from the diagonal present the correlations of audit fees (audit fee per hour) sample (n = 12,184). Refer to the appendix for the definitions of variables.
*, **, *** represent significance at the 10%, 5%, and 1% levels, respectively.

quality is negatively related to firm size (*SIZE*). The coefficient of *AQ* is −.32. That is, the simple correlation coefficient between accruals quality and audit hours is negative even when the true correlation coefficient is positive because of omitted variables such as *SIZE*, which is negatively related to accruals quality.[11] Thus, we conduct a multivariate analysis to allow the interactions among the explanatory variables.

Audit fees are negatively related to *AQ* (−.19) at 1% level. As in the case of audit hours, when omitted variables such as *SIZE* are not considered, the negative relationship between accruals quality and firm size (−.32) leads to a negative coefficient for accruals quality even when the underlying correlation coefficient of accruals quality is positive. Audit fees have a significant negative relationship with *InnateAQ* (−.22) and with *DiscAQ* (−.11). Again, the seemingly unexpected relationship between innate accruals quality and audit fees is driven by the correlated omitted variables such as *SIZE*.

Several control variables have strong relationships with audit fees and audit hours. Audit fees and audit hours have significantly positive relationships with *SIZE*, with correlation coefficients exceeding .50. This result is consistent with the argument that auditors take more time and make more effort auditing larger, more complicated firms. In addition, Big 4 auditors spend more time and charge higher fees for firms.

Empirical Results

The Effects of Accruals Quality on Audit Hours and Audit Fees

Hypothesis 1.1 predicts that auditors spend more time auditing firms with a high level of cash flow risk. Because our accruals quality measures (AQ_t, $InnateAQ_t$, and $DiscAQ_t$) decrease as accruals quality increases or cash flow risk decreases, they are expected to have a positive relationship with audit hours. Table 4 reports the regression results for Hypothesis 1.1. The results for Model 1 indicate that the coefficient of *AQ* is positive and significant (0.302) at the 1% level of significance. Model 1 provides a good fit to the data in that their adjusted R^2 values exceed 50%. Thus, the results provide strong support for

Table 4. The Effects of Accruals Quality on Audit Hours.

Variables	Predicted sign	Model 1	Model 2
Intercept	+/−	−0.145	−0.314
		(−0.589)	(−1.255)
AQ_t	+	0.302**	
		(2.527)	
$InnateAQ_t$	+		1.231***
			(3.387)
$DiscAQ_t$	+		0.212*
			(1.741)
$SIZE_t$	+	0.290***	0.295***
		(21.774)	(22.208)
SUB_t	+	0.073***	0.073***
		(8.690)	(8.720)
$INVREC_t$	+	−0.000	0.011
		(−0.005)	(0.165)
ROA_t	−	−0.301***	−0.274***
		(−6.075)	(−5.495)
LEV_t	+	0.152**	0.129**
		(2.446)	(2.081)
LIQ_t	+	0.000	0.000
		(0.054)	(0.066)
OPN_t	+	−0.043	−0.037
		(−0.591)	(−0.500)
BIG_t	+	0.297***	0.296***
		(15.074)	(15.098)
$INITIAL_t$	+	0.043***	0.042***
		(3.769)	(3.663)
$EXCH_t$	+	−0.017	−0.024
		(−0.661)	(−0.908)
FRN_t	+	0.004***	0.004***
		(3.967)	(3.988)
Industry dummy		Included	Included
Year dummy		Included	Included
$\beta_1 = \beta_2$			$F = 7.70^{***}$ ($p = .00$)
N		12,480	12,480
Adjusted R^2 (%)		55.3	55.4
F value		122.768***	120.148***

Note. Refer to the appendix for definitions of variables. We use robust standard errors adjusted for clustering at the firm level.

*, **, *** denote significance at the 10%, 5%, and 1% levels, respectively.

Hypothesis 1.1 and show that auditors increase audit hours to reduce cash flow risk for high-risk firms.

Consistent with the correlation coefficients in Table 3, the coefficients of *SIZE, SUB, BIG*, and *FRN* are positive and significant. The coefficient of *ROA* is negative (−0.301) and significant, indicating that auditors spend more time for less profitable firms. This result is intuitive in that auditors tend to have more difficulty auditing unprofitable firms, which typically have more transitory items associated with losses. As shown in Table 4, auditors spend more time for highly leveraged firms (*LEV*). This indicates that auditors

paid more attention to highly leveraged firms because their financial statements are more likely to be strictly monitored by creditors. In addition, the results indicate that auditors spend more audit hours for firms in the first year of audit engagement (*INITIAL*).

To examine the economic significance of these results, we rank *AQ* and form 10 portfolios by giving a score of 10 for the largest values of *AQ* and 1 for the smallest. We repeat our tests by using the decile rankings of the *AQ* variables. The untabulated results show that the coefficients on *AQ* = 10 and *AQ* = 1 are 0.08 and 0.008, respectively. Thus, the difference between two portfolios is 7.46% ($=e^{(0.08-0.008)} - 1$). As the average of audit hours is 899 hr, 7.46% increase implies about 67 audit hours increase (i.e., 8 ~ 9 working days).

Hypotheses 1 and 2 posit that auditors charge more for firms with a high level of cash flow risk. We expect positive coefficients for the accruals quality measures in the regression of audit fees. As shown in Table 5, audit fees (*LAF*) are positively related to $AQ1_{t-1}$ (0.293) at the 1% level, which is expected. In addition, adjusted R^2 values exceed 70%, indicating that the models provide a good fit to the data.

The coefficients of *SIZE, SUB, ROA, LEV, BIG*, and *FRN* in Table 5 are consistent with those in Table 4. Auditors charge lower audit fees for new clients (*INITIAL*), which is consistent with the findings of previous studies reporting that auditors tend to set audit fees low in the first year to obtain audit engagements in the competitive audit market. The coefficient of *OPN* is positive because auditors charge higher audit fees in compensation for the audit risk associated with firms with qualified audit opinions in the previous year.

Overall, the results provide strong support for Hypotheses 1 and 2, suggesting that auditors charge more when they face a high level of cash flow risk because they have to make more effort and allocate more resources to reduce the risk.

The Effects of Innate Versus Discretionary Accruals Quality on Audit Hours and Audit Fees

We investigate the differential effects of the two components of *AQ* on audit efforts (Hypotheses 2.1, 2.2, and 2.3). As shown in Table 4, the results for Model 2 indicate that the coefficients of *InnateAQ* (1.231) and *DiscAQ* (0.212) are positive and significant, and that the coefficient of *InnateAQ* is higher than that of *DiscAQ* (*F*-Statistic = 7.70), which is expected. Overall, innate accruals are more likely to influence audit hours than discretionary accruals.

Table 5 also documents that both innate accruals quality and discretionary accruals quality are related to audit fees. In Model 2, the coefficients of $InnateAQ_{t-1}$ and $DiscAQ_{t-1}$ are positive (0.968 and 0.226, respectively), and both are significant at the 1% level. In addition, the coefficient of $InnateAQ_{t-1}$ is significantly higher than that of $DiscAQ_{t-1}$ (*F* value = 9.90), which is expected. Overall, these results provide support for Hypotheses 2.1, 2.2, and 2.3. Auditors make more effort and charge higher fees when cash flow risk is associated with business fundamentals than with managers' discretionary choices.

The Effects of Accruals Quality on the Audit Fee per Audit Hour

The results indicate that audit fees increase as accruals quality decreases, but they do not distinguish the scenario in which auditors charge more because they spend more audit hours for firms with a high level of cash flow risk from the scenario in which auditors just charge a risk premium for high-risk firms. To determine which scenario is the underlying driver of the negative relationship between audit fees and accruals quality, we examine the effects of accruals quality on the audit fee per audit hour.

Table 5. The Effects of Prior Year's Accruals Quality on Audit Fees.

Variables	Predicted sign	Model 1	Model 2
Intercept	+/−	4.254***	4.143***
		(25.467)	(23.887)
AQ_{t-1}	+	0.293***	
		(3.861)	
$InnateAQ_{t-1}$	+		0.968***
			(4.171)
$DiscAQ_{t-1}$	+		0.226***
			(2.952)
$SIZE_{t-1}$	+	0.327***	0.330***
		(35.791)	(35.663)
SUB_t	+	0.054***	0.054***
		(9.101)	(9.087)
$INVREC_{t-1}$	+	0.047	0.056
		(1.028)	(1.207)
ROA_{t-1}	−	−0.352***	−0.333***
		(−11.397)	(−10.841)
LEV_{t-1}	+	0.216***	0.200***
		(5.347)	(4.915)
LIQ_{t-1}	+	−0.002	−0.002
		(−0.577)	(−0.549)
OPN_{t-1}	+	0.134***	0.138***
		(2.638)	(2.698)
BIG_t	+	0.087***	0.086***
		(6.940)	(6.834)
$INITIAL_t$	+	−0.026***	−0.026***
		(−3.429)	(−3.420)
$EXCH_t$	+	0.020	0.016
		(1.103)	(0.846)
FRN_t	+	0.005***	0.005***
		(7.277)	(7.325)
Industry dummy		Included	Included
Year dummy		Included	Included
$\beta_1 = \beta_2$			$F = 9.90$ ($p = .00$)***
n		12,184	12,184
Adjusted R^2 (%)		71.6	71.7
F value		185.979***	182.125***

Note. Refer to the appendix for definitions of variables. We use robust standard errors adjusted for clustering at the firm level.

*, **, *** denote significance at the 10%, 5%, and 1% levels, respectively.

Because audit hours are a good proxy for audit efforts, we define the audit fee per audit hour as the audit fee per unit of audit effort. On one hand, if the audit fee per audit hour does not vary according to the level of cash flow risk, then auditors charge similar fees across audit hours, even though the level of cash flow risk varies. In this case, audit fees increase as the level of cash flow risk increases because auditors spend more time auditing high-risk firms and charge more for increased audit efforts. On the other hand, if the audit fee per audit hour systematically increases with the level of cash flow risk, then auditors charge more per audit hour for high-risk firms by adding a risk premium.

Table 6. Relationship Between Accruals Quality and the Audit Fee per Hour.

Variables	Predicted sign	Model 1	Model 2
Intercept	+/−	4.574***	4.610***
		(22.404)	(21.889)
AQ_{t-1}	+	−0.017	
		(−0.150)	
$InnateAQ_{t-1}$	+		−0.235
			(−0.700)
$DiscAQ_{t-1}$	+		0.004
			(0.037)
$SIZE_{t-1}$	+	0.027**	0.026**
		(2.528)	(2.402)
SUB_t	+	−0.015**	−0.015**
		(−2.009)	(−2.008)
$INVREC_{t-1}$	+	0.074	0.071
		(1.131)	(1.089)
ROA_{t-1}	−	−0.106**	−0.112**
		(−2.279)	(−2.428)
LEV_{t-1}	+	0.051	0.056
		(0.883)	(0.966)
LIQ_{t-1}	+	−0.002	−0.002
		(−0.601)	(−0.608)
OPN_{t-1}	+	0.120	0.119
		(1.301)	(1.285)
BIG_t	+	−0.202***	−0.202***
		(−10.623)	(−10.636)
$INITIAL_t$	+	−0.074***	−0.074***
		(−6.660)	(−6.662)
$EXCH_t$	+	0.014	0.016
		(0.574)	(0.630)
FRN_t	+	0.001	0.001
		(0.618)	(0.603)
Industry dummy		Included	Included
Year dummy		Included	Included
$\beta_1 = \beta_2$			$F = 0.50$ ($p = .47$)
n		12,184	12,184
Adjusted R^2 (%)		9.5	9.5
F value		16.423***	15.928***

Note. Refer to the appendix for definitions of variables. We use robust standard errors adjusted for clustering at the firm level.

*, **, *** denote significance at the 10%, 5%, and 1% levels, respectively.

As shown in Table 6, the audit fee per audit hour (*LAFH*) is not related to the accruals quality measures (AQ_{t-1}, $InnateAQ_{t-1}$, and $DiscAQ_{t-1}$). The results in Table 6 provide support for the scenario in which auditors make more effort for high-risk firms and thus charge more.[12]

Additional Analyses

We conduct additional analyses to determine alternative explanations for the results. We also explore whether there are systematic differences between Big 4 and non–Big 4 audit firms in terms of the effects of accruals quality on audit hours and fees.

Effects of Discretionary Accruals Driven by Earnings Management on Audit Hours, Audit Fees, and Audit Fee per Hour

Previous studies (Becker, Defond, Mark, Jiambalvo, & Subramanyam, 1998; Bradshaw et al., 2001) have focused on the total magnitude of discretionary accruals, not on the quality of accruals, to determine how auditors react to accrual information. In the following analyses, we replace the accrual quality measures with discretionary accruals and repeat the analyses to determine whether the magnitude of discretionary accruals influences audit hours, fees, and audit fee per hour. We measure discretionary accruals by using performance-adjusted model (Kothari, Leone, & Wasley, 2005).

Table 7 presents the results for the effects of discretionary accruals driven by earnings management on audit hours, fees, and audit fee per hour. Model 1 includes performance-adjusted discretionary accruals (PDA_{t-1}) in the prior period, and Model 2 employs the same measure in the current period (PDA_t) to examine their effects on audit hours. The coefficients of PDA_{t-1} and PDA_t are not significant. Model 3 uses PDA_{t-1} to examine their effects on audit fees. The coefficient is positive and significant, supporting the results of Antle, Gordon, Narayanamoorthy, and Ling (2006). Model 4 uses PDA_{t-1} to examine their effects on audit fee per hour. The coefficient is not significant. Overall, these results, together with those in Tables 4 to 6, suggest that the quality of accruals, not the magnitude and/or weight of total (discretionary) accruals out of total assets, influences audit hours, while both the quality and magnitude of accruals influence audit fees. Meanwhile, both the quality and magnitude of accruals do not influence audit fee per hour.

To examine whether the effect of accruals quality on audit hours, audit fees, and audit fee per hour differs from that of discretionary accruals, Table 8 presents the results when both *AQ* and *DA* variables are included in the regressions. *HPDA* is denoted as 1 if performance-adjusted *DA* is above the median of the sample firms, and 0 otherwise. The results show that the coefficients of *AQ* are positive and significant when dependent variables are log of audit hours or audit fees, while the coefficients of *HPDA* are not significant. This suggests that *AQ* affects audit hours and fees even after controlling discretionary accruals. When dependent variable is log of audit fee per hour, both *AQ* and *HPDA* are not significant. The interaction term of *AQ* with the dummy variable *HPDA* (1 if *PDA* $>$ median and 0 otherwise) has no discernible pattern in all models.

Alternative Explanations by Effects of Audit Hours on Accruals Quality

In this study, we focus on the effects of accruals quality on audit hours and find that poor accruals quality induces auditors to work longer (i.e., a negative relationship between audit hours and audit quality). However, if audit hours in previous periods influence audit quality, then a positive relationship is expected. Previous studies have provided evidence that audit hours can limit earnings management (Caramanis & Lennox, 2008; Kwon, Shin, & Jung, 2006). If an increase in audit hours in the previous period reduces the likelihood of earnings management, then audit quality and thus accruals quality may increase because earnings management becomes less likely, resulting in a positive relationship between audit hours and accruals quality.

Another explanation is that if clients with poor accruals quality anticipate that hard-working auditors are more likely to identify their high cash flow risk, then such clients may be inclined to choose auditors who are likely to spend fewer audit hours, also inducing a positive relationship between audit hours and accruals quality.

Table 7. The Effects of Discretionary Accruals Driven by Earnings Management on Audit Hours, Audit Fees, and Audit Fees per Hour.

		Dependent variable = *LAH*		Dependent variable = *LAF*	Dependent variable = *LAFH*
	Predicted sign	Model 1	Model 2	Model 3	Model 4
Intercept	+/−	−0.075	−0.052	4.308***	4.555***
		(−0.310)	(−0.212)	(25.847)	(22.543)
$PDA_{t(t-1)}$	+	0.048	−0.078	0.110***	0.060
		(0.840)	(−1.215)	(3.063)	(1.084)
$SIZE_{t(t-1)}$	+	0.288***	0.287***	0.325***	0.028***
		(21.672)	(21.611)	(35.533)	(2.614)
SUB_t	+	0.072***	0.072***	0.054***	−0.015**
		(8.666)	(8.601)	(9.131)	(−1.986)
$INVREC_{t(t-1)}$	+	−0.016	−0.015	0.030	0.074
		(−0.229)	(−0.219)	(0.659)	(1.139)
$ROA_{t(t-1)}$	−	−0.313***	−0.333***	−0.347***	−0.094**
		(−6.290)	(−6.478)	(−11.107)	(−1.968)
$LEV_{t(t-1)}$	+	0.160***	0.164***	0.222***	0.047
		(2.581)	(2.647)	(5.479)	(0.830)
$LIQ_{t(t-1)}$	+	0.002	0.002	0.000	−0.002
		(0.588)	(0.631)	(0.099)	(−0.666)
$OPN_{t(t-1)}$	+	−0.036	−0.029	0.137***	0.117
		(−0.496)	(−0.401)	(2.698)	(1.264)
BIG_t	+	0.298***	0.298***	0.087***	−0.202***
		(15.094)	(15.088)	(6.944)	(−10.627)
$INITIAL_t$	+	0.045***	0.047***	−0.025***	−0.074***
		(3.933)	(4.076)	(−3.280)	(−6.676)
$EXCH_t$	+	−0.014	−0.012	0.023	0.013
		(−0.519)	(−0.449)	(1.249)	(0.535)
FRN_t	+	0.004***	0.004***	0.005***	0.001
		(4.043)	(4.097)	(7.285)	(0.576)
Industry dummy		Included	Included	Included	Included
Year dummy		Included	Included	Included	Included
n		12,480	12,480	12,184	12,184
Adjusted R^2 (%)		55.2	55.2	71.5	9.5
F value		121.901***	121.745***	185.813***	16.577***

Note. Refer to the appendix for definitions of variables. We use robust standard errors adjusted for clustering at the firm level.

*, **, *** denote significance at the 10%, 5%, and 1% levels, respectively.

We can immediately refute these two explanations because both predict a positive relationship between audit hours and accruals quality, whereas the results of this study indicate a negative relationship. Thus, the effects of prior accruals quality on current audit hours are not likely to drive our results. However, we perform a formal test by regressing audit hours in the current period (LAH_t) on accruals quality in the previous period (AQ_{t-1}) to verify the lead–lag relationship between accruals quality and audit hours.

As shown in Table 9, the coefficient of the AQ measure for the previous period (AQ_{t-1}, inverse measures of audit quality) is positive and significant at the 5% level, indicating a negative relationship between audit hours and accruals quality in the previous period. The

Table 8. Association Between Audit Hours (Audit Fees, Audit Fees per Hour), Accruals Quality, and Discretionary Accruals: Analyses Using Interaction Term.

Variables	Predicted sign	Dependent variable = *LAH*	Dependent variable = *LAF*	Dependent variable = *LAFH*
Intercept	+/−	−0.163	4.241***	4.586***
		(−0.663)	(25.337)	(22.381)
$HPDA_{t(t-1)}$	+	0.023	0.017	−0.014
		(1.280)	(1.453)	(−0.822)
$AQ_{t(t-1)}$	+	0.416***	0.278***	−0.104
		(2.888)	(2.783)	(−0.735)
$AQ_{t(t-1)} \times HPDA_{t(t-1)}$	+	−0.187	0.006	0.138
		(−1.454)	(0.071)	(1.076)
$SIZE_{t(t-1)}$	+	0.291***	0.327***	0.027**
		(21.806)	(35.841)	(2.512)
SUB_t	+	0.073***	0.054***	−0.015**
		(8.714)	(9.145)	(−2.020)
$INVREC_{t(t-1)}$	+	0.000	0.044	0.073
		(0.005)	(0.972)	(1.114)
$ROA_{t(t-1)}$	−	−0.304***	−0.349***	−0.103**
		(−6.130)	(−11.330)	(−2.229)
$LEV_{t(t-1)}$	+	0.152**	0.213***	0.050
		(2.448)	(5.292)	(0.879)
$LIQ_{t(t-1)}$	+	0.000	−0.002	−0.002
		(0.045)	(−0.552)	(−0.577)
$OPN_{t(t-1)}$	+	−0.041	0.132***	0.119
		(−0.561)	(2.602)	(1.286)
BIG_t	+	0.297***	0.087***	−0.202***
		(15.065)	(6.951)	(−10.617)
$INITIAL_t$	+	0.043***	−0.026***	−0.074***
		(3.776)	(−3.378)	(−6.663)
$EXCH_t$	+	−0.018	0.019	0.015
		(−0.697)	(1.022)	(0.590)
FRN_t	+	0.004***	0.005***	0.001
		(3.970)	(7.255)	(0.626)
Industry dummy		Included	Included	Included
Year dummy		Included	Included	Included
n		12,480	12,184	12,184
Adjusted R^2 (%)		55.3	71.6	9.5
F value		115.389***	174.805***	15.485***

Note. Refer to the appendix for definitions of variables. We use robust standard errors adjusted for clustering at the firm level.

*, **, *** denote significance at the 10%, 5%, and 1% levels, respectively.

coefficients of $InnateAQ_{t-1}$ and $DiscAQ_{t-1}$ are positive, but only the coefficient of $InnateAQ_{t-1}$ is statistically significant. In addition, the difference between $InnateAQ_{t-1}$ and $DiscAQ_{t-1}$ is statistically significant with the *F*-statistic of 6.48 (p value = .01). This indicates that auditors exert more effort (more hours) for firms with a high level of cash flow risk to reduce the risk. Therefore, our results provide no support for the two scenarios discussed above.

Table 9. The Effects of Accruals Quality in the Previous Period on Audit Hours in the Current Period.

Variables	Predicted sign	Model 1	Model 2
Intercept	+/−	−0.158	−0.294
		(−0.643)	(−1.178)
AQ_{t-1}	+	0.283**	
		(2.344)	
$InnateAQ_{t-1}$	+		1.115***
			(3.120)
$DiscAQ_{t-1}$	+		0.196
			(1.592)
$SIZE_t$	+	0.291***	0.295***
		(21.715)	(22.072)
SUB_t	+	0.075***	0.074***
		(8.799)	(8.816)
$INVREC_t$	+	−0.012	−0.003
		(−0.172)	(−0.036)
ROA_t	−	−0.298***	−0.282***
		(−5.990)	(−5.659)
LEV_t	+	0.173***	0.153**
		(2.730)	(2.423)
LIQ_t	+	0.000	0.000
		(0.070)	(0.086)
OPN_t	+	−0.030	−0.026
		(−0.399)	(−0.347)
BIG_t	+	0.291***	0.290***
		(14.591)	(14.617)
$INITIAL_t$	+	0.045***	0.045***
		(3.886)	(3.823)
$EXCH_t$	+	−0.016	−0.021
		(−0.592)	(−0.801)
FRN_t	+	0.004***	0.004***
		(3.830)	(3.858)
Industry dummy		Included	Included
Year dummy		Included	Included
$\beta_1 = \beta_2$			$F = 6.48(p = .01)$**
n		11,938	11,938
Adjusted R^2 (%)		55.5	55.6
F value		116.660***	114.190***

Note. Refer to the appendix for definitions of variables. We use robust standard errors adjusted for clustering at the firm level.
*, **, *** denote significance at the 10%, 5%, and 1% levels, respectively.

Controlling for Endogeneity of Accruals Quality

It could be argued that firms with higher accruals quality may be good performers, with little accounting gimmicks, which requires fewer audit hours, and thus the observed positive association between accruals quality (*AQ*) and audit hours/fees may be due to self-selection of good companies. To address the potential endogeneity problems in our main tests associated with accruals quality, we use two-stage least squares (2SLS) estimation

procedures following Antle et al. (2006). Our results (untabulated) show that our findings remain unchanged qualitatively even after controlling for endogeneity.

Effects of Accruals Quality on Audit Hours and Audit Fees for Big 4 Versus Non–Big 4 Auditors

Previous studies (e.g., Becker et al., 1998; Simunic, 1980) have documented that auditors from large accounting firms have better auditing skills because such firms provide more rigorous training and have more talented recruits. Therefore, auditors may have different skill sets in understanding cash flow risk, and their reaction to the risk may vary. Thus, we investigated whether the effects of accruals quality on audit hours and fees would vary according to the type of audit firm (i.e., Big 4 vs. non–Big 4 audit firms).

Table 10 reports the regression results for the three models with respect to audit hours and fees for Big 4 and non–Big 4 audit firms Panel A presents whether the effects of accruals quality on audit hours vary with the type of auditors. Noteworthy that Model 1 shows that BIG 4 audit firms have significant coefficients for AQ_t and $InnateAQ_t$, whereas non–BIG 4 audit firms do not have any significant AQ variables in all models. This result indicates that BIG 4 auditors take into account accruals quality (especially, innate accruals quality) when determining their audit effort, whereas non–BIG 4 auditors do not adjust their audit effort according to the cash flow risk. The reason why Big 4 auditors are more responsive to accruals quality than non–Big 4 auditors is that Big 4 auditors cannot lightly treat the information which may adversely affect their reputation and increase litigation risk.

Panel B presents whether the effects of accruals quality on audit fees vary with the type of auditors. The coefficients of AQ variables (AQ_{t-1}, $InnateAQ_{t-1}$, $DiscAQ_{t-1}$) are positive and significant for both Big 4 and non–Big 4 audit firms. In addition, the results for Model 2 indicate that both Big 4 and non–Big 4 audit firms are sensitive to innate risk as well as discretionary risk. This result shows a negative relation between accruals quality and audit fees regardless of whether they are Big 4 audit firms or not and whether the source of accruals quality is either innate or discretionary.

Finally, Panel C presents whether the effects of accruals quality on audit fee per hour vary with the type of auditors. The coefficients of AQ variables are not significant except for $InnateAQ_{t-1}$ for BIG 4 auditors. As shown in Panels A and B, BIG 4 auditors increase both audit effort and fees as innate accruals quality decreases. Therefore, the negative coefficient of $InnateAQ$ for BIG 4 auditors indicates that BIG 4 auditors charge audit fees at a diminishing rate for their additional audit hours.

Taken together, these results indicate that both Big 4 and non–Big 4 audit firms require higher audit fees for poor accruals quality. That is, they charge risk premium for the risk associated with fundamental business operations as well as the risk associated with managerial discretion. However, Big 4 audit firms are likely to incorporate cash flow risk into their audit efforts, whereas non–Big 4 audit firms are not. The reasons for these results are that Big 4 audit firms are more likely to increase audit effort due to reputation and litigation risk.

Effects of the First Two Years on Results

As shown in Panel B of Table 1, the first 2 years after firms were required to disclose audit hours and fees provided fewer observations than later years do because firms, auditors, and

Table 10. Comparison of Effects of Accruals Quality on Audit Hours/Price Between BIG 4 and Non–BIG 4 Auditors.

Panel A: Audit Hours.

		Model 1		Model 2	
Variables	Predicted sign	Big 4	Non–Big 4	Big 4	Non–Big 4
Intercept	+/−	−0.595**	2.144***	−0.768***	2.037***
		(−2.107)	(5.522)	(−2.696)	(5.045)
AQ_t	+	0.387**	0.137		
		(2.327)	(0.922)		
$InnateAQ_t$	+			1.559***	0.584
				(3.395)	(1.113)
$DiscAQ_t$	+			0.282	0.091
				(1.629)	(0.620)
$Controls_t$		Included	Included	Included	Included
Industry dummy		Included	Included	Included	Included
Year dummy		Included	Included	Included	Included
$\beta_1 = \beta_2$				$F = 7.41$ ($p = .00$)***	$F = 0.88$ ($p = .34$)
n		6,885	5,595	6,885	5,595
Adjusted R^2 (%)		57.5	30.4	57.6	30.4
F value		88.243***	30.137***	85.843***	29.211***

Panel B: Audit Fees.

		Model 1		Model 2	
Variables	Predicted sign	Big 4	Non–Big 4	Big 4	Non–Big 4
Intercept	+/−	3.734***	6.068***	3.666***	5.927***
		(19.232)	(25.362)	(18.315)	(23.677)
AQ_{t-1}	+	0.255**	0.261***		
		(2.567)	(2.666)		
$InnateAQ_{t-1}$	+			0.784***	0.897***
				(2.666)	(2.808)
$DiscAQ_{t-1}$	+			0.203**	0.198**
				(1.966)	(2.039)
$Controls_{t(t-1)}$		Included	Included	Included	Included
Industry dummy		Included	Included	Included	Included
Year dummy		Included	Included	Included	Included
$\beta_1 = \beta_2$				$F = 3.58$ ($p = .05$)*	$F = 4.76$ ($p = .02$)**
n		6,676	5,508	6,676	5,508
Adjusted R^2 (%)		77.0	42.8	77.0	42.9
F value		167.921***	52.197***	164.795***	56.732***

(*continued*)

regulators did not have a clear understanding of the requirements in the early years. For example, many firms in the early years disclosed audit hours in the number of days, not in the number of hours. Thus, data for early years can be noisy. To determine the effects of early data on our results, we repeat the tests by excluding early years. The untabulated results indicate that the coefficients of the AQ measures remain positive and significant,

Table 10. (continued)

Panel C: Audit Fee per Hour.

Variables	Predicted sign	Model 1		Model 2	
		Big 4	Non–Big 4	Big 4	Non–Big 4
Intercept	+/−	4.547***	4.035***	4.626***	3.976***
		(20.035)	(10.345)	(20.028)	(9.580)
AQ_{t-1}	+	−0.134	0.122		
		(−0.885)	(0.771)		
$InnateAQ_{t-1}$	+			−0.745*	0.385
				(−1.935)	(0.702)
$DiscAQ_{t-1}$	+			−0.079	0.096
				(−0.498)	(0.613)
$Controls_{t(t-1)}$		Included	Included	Included	Included
Industry dummy		Included	Included	Included	Included
Year dummy		Included	Included	Included	Included
$\beta_1 = \beta_2$				$F = 2.96$ ($p = .08$)*	$F = 0.28$ ($p = .59$)
n		6,676	5,508	6,676	5,508
Adjusted R^2 (%)		7.6	8.2	7.7	8.2
F value		7.665***	7.284***	7.479***	7.051***

Note. Refer to the appendix for definitions of variables. We use robust standard errors adjusted for clustering at the firm level.
*, **, *** denote significance at the 10%, 5%, and 1% levels, respectively.

and that the coefficient of *InnateAQ* is higher than that of *DiscAQ*. Overall, the results reveal no qualitative changes.

Effects of Earnings Variability on the Relationship Between Accruals Quality and Audit Hours

It may be argued that accruals quality measures are captured by audit risk measures used in previous studies (e.g., O'Keefe et al., 1994), such as earnings variability. To address this concern, we measure earnings variability by the standard deviation of earnings over the past 10 years and divide the sample into two groups: the ''high earnings variability'' group if earnings variability exceeds the median of the sample and the ''low earnings variability'' group otherwise.

We conduct the analyses for the two groups separately. The untabulated results reveal no changes and indicate positive coefficients for the accruals quality metrics for both groups. Therefore, accruals quality captures more than earnings variability does in explaining the negative relationship between accruals quality and audit hours.

Summary and Conclusions

We examine the effects of accruals quality on audit hours and fees. Accruals quality measures the likelihood that current accruals are converted into future operating cash flows. Poor accruals quality weakens this mapping and thus increases cash flow risk. The auditing standards (AU §316.31, AU §316.85) expect auditors to detect both intentional fraud and unintentional errors. Thus, auditors may be expected to assess accruals quality and allocate

audit hours and limited resources to achieve audit effectiveness and efficiency, demanding appropriate audit fees for their audit effort.

The results indicate that audit hours and fees increase as accruals quality decreases. That is, auditors make more effort (i.e., spend more audit hours) and demand higher audit fees for firms with poor accruals quality (i.e., firms with a high level of cash flow risk). Thus, auditors take accruals quality into account in their audit planning, implementation, and pricing.

We also investigate whether the pricing of accruals quality varies with the source of accruals quality: innate versus discretionary components. The results indicate that both innate accruals quality and discretionary accrual quality are negatively related to audit hours and fees. However, auditors are more likely to respond to innate accruals quality than to discretionary accruals quality. These results provide support for the view that auditors focus more on the cash flow risk driven by firm-specific operating and environmental characteristics than that driven by managers' discretionary decisions. The results of the additional analyses verify that the relationship between accruals quality and audit hours/fees is not driven by earnings management, selection bias, or auditor reputation.

This study contributes to the auditing literature by demonstrating a systematic relationship between audit efforts and the cash flow risk reflected in accruals quality. The availability of audit hour data in Korea provides a unique opportunity for a better understanding of contract-level audit efforts, which is difficult to obtain using U.S. data. The results have important implications for financial statement users, practitioners, and policymakers. By understanding accruals quality, financial statement users can better evaluate audit and financial reporting quality. Given that accruals quality can directly address the risk factors specified in the auditing standards, auditors should grasp the concept of accruals quality for more effective auditing. In addition, it may be useful for policymakers in the United States and elsewhere to assess not only accruals quality but also auditor's audit hours/fees associated with accruals quality as such assessment is likely to help financial statement users better understand auditors' resource allocation, pricing decisions, and audit quality.

Appendix

Variable	Definition
AH(raw)	Actual audit hours
AF(raw)	Actual audit fees (in thousand won)
AFH(raw)	Actual audit fees per hour (in thousand won)
LAH	Logarithm of actual audit hours
LAF	Logarithm of actual audit fees (in thousand won)
LAFH	Logarithm of actual audit fees per hour (in thousand won)
AQ	Standard deviation of residuals from Dechow–Dichev regressions
InnateAQ	Innate accruals quality
DiscAQ	Discretionary accruals quality
PDA	Absolute value of performance-matched discretionary accruals by Kothari, Leone, and Wasley (2005)
HPDA	1 if the absolute value of discretionary accruals is greater than the median of the sample and 0 otherwise
SIZE	Logarithm of total assets (in thousand KRW)
SUB	Logarithm of consolidated subsidiaries
INVREC	(Inventories + accounts receivable) / total assets
ROA	Net income / average assets
LEV	Total liabilities / total assets
LIQ	Current assets / current liabilities
OPN	1 if the audit opinion is unqualified and 0 otherwise
BIG	1 if an auditor is a Big 4 auditor and 0 otherwise
INITIAL	1 if the audit is the first-year audit and 0 otherwise
EXCH	1 if the firm is traded on KOSDAQ and 0 otherwise
FRN	Foreign investors' equity ownership
CFO	Operating cash flows / beginning of period total assets

Note. KOSDAQ = Korean Securities Dealers Automated Quotations.

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Notes

1. Thus, auditors are expected to identify events or conditions that indicate managers' incentives or pressure to perpetrate fraud, opportunities to commit fraud, and attitudes/rationalizations to justify their fraudulent action (AU §316.31). Such events or conditions are referred to as ''fraud risk factors.''

2. All of the publicly traded firms in Korea are required to disclose audit hour data in the annual reports filed with the Financial Supervisory Services (Securities Issuance and Disclosure Rules §72j).
3. To determine whether auditors properly understand the property of accruals, previous studies have typically examined whether auditors signal future earnings problems associated with high accruals through audit opinions (Bradshaw, Richardson, & Sloan, 2001). However, auditors' assessment of accruals quality per se may not necessarily influence audit opinions except in the case of extremely high or low accruals quality.
4. Another risk that auditors need to consider is business risk, which refers to a firm's perception that inflation will rise, taxes will increase, customers will buy from competitors, government grants will be lost, employees will go on strike, and the like. Auditors do not directly influence a firm's business risk.
5. For example, a lower-than-average accounts receivable or inventory turnover ratio signals the possibility of false sales or embezzlement. Additional audit procedures are needed to confirm receivables and observe inventories for firms with poor accruals quality.
6. Core, Guay, and Verdi (2008) and Mashruwala and Mashruwala (2011) argue that accruals quality is not an independently priced risk factor. However, they show that accruals quality has a high contemporaneous correlation with a variety of risk measures that are economically important, such as firm beta. More recently, Ogneva (2012) argues that Core et al. (2008) are unable to find a positive association between accruals quality and future realized returns because they do not consider that firms with low (high) accruals quality experience more negative (positive) cash flow shocks in the future. Due to this correlation, the higher (lower) expected returns associated with poor (good) accrual quality firms are systematically offset by negative (positive) cash flow shocks, thereby leading to no association between future realized returns and accruals quality. After excluding cash flow shocks, she finds that accruals quality is priced.
7. From the viewpoint of demand side, firms that have more noisy accruals may have weaker internal information systems making them more willing to pay for more external audits.
8. As an additional test (untabulated), we consider one alternative proxy for accruals quality, which is the absolute value of residuals from Dechow–Dichev regressions. While the results with this alternative proxy generally show smaller effects than those based on the standard deviation of residuals, they are not qualitatively different from our main findings.
9. Our sample period is 2000-2012. As shown in Equation 1, the modified Dechow–Dichev model regresses total current accruals in year t on lagged, current, and future operating cash flows. As the model requires operating cash flows in year $t + 1$ to estimate AQ in year t, we calculated values of AQ for the 12-year period t = 2000-2011.
10. National Information and Credit Evaluation, Inc. (NICE) provides Korea Information Service (KIS)-Value III, which is the largest database of financial statements, market data, and industry analysis in Korea. We obtain consolidated subsidiaries data from the Total Solution (TS) 2000 database, which is provided by the Korea Listed Companies Association (KLCA). We obtain the holdings of foreign investors from DataGuide 5 provided by FnGuide.
11. Suppose that audit hours are a function of accruals quality and size, such that $LAH = \alpha_0 + \alpha_1 AQ + \alpha_2 SIZE + u$, where $\alpha_1 > 0$ and $\alpha_2 > 0$. Because this function is unobservable to the researcher, he or she estimates the following model: $LAH = a_0 + a_1 AQ + v$. Then, $E(\hat{a}_1) = \alpha_1 + \alpha_2 \rho_{12}$, where ρ_{12} is the simple correlation coefficient between AQ and $SIZE$. The term $\alpha_2 \rho_{12}$ reflects the magnitude of the bias associated with the correlated omitted variable $SIZE$. The expected signs of α_1 and α_2 are positive, but that of ρ_{12} is negative (i.e., high accruals quality for large firms). As shown in Table 3, $E(\hat{a}_1)$ is -0.16; $\alpha_2 = .65$; $\rho_{12} = -.32$. Thus, we can infer that the unbiased estimate of α_1 was .05 (i.e., $\alpha_1 + .65 \times [-.32] = -.16$).
12. In Table 6, the coefficient of BIG is negative and significant at the 1% level. This appears counterintuitive. But this result is observed due to audit fee anti-stickiness and audit hour stickiness analogous to cost stickiness in managerial accounting. That is, audit fee increase less for

increases in client size than they decrease for decrease in client size. This is because the auditors cannot charge audit fees in proportion to client size. However, audit hours decrease less for decreases in client size than they increase for increases in client size. This is because auditors need to ensure the minimum requirement to avoid litigation risk. Audit fee per hour starts to decrease beyond US$4,850 million. In fact, firms with total assets above the trigger point are audited by Big 4. It appears that this is the reason for the negative coefficient estimate of BIG with the dependent variable of audit fee per hour.

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