



Audit fee pressure and audit risk: evidence from the financial crisis of 2008

Catherine Heyjung Sonu, Hyejin Ahn & Ahrum Choi

To cite this article: Catherine Heyjung Sonu, Hyejin Ahn & Ahrum Choi (2017) Audit fee pressure and audit risk: evidence from the financial crisis of 2008, *Asia-Pacific Journal of Accounting & Economics*, 24:1-2, 127-144, DOI: [10.1080/16081625.2016.1208574](https://doi.org/10.1080/16081625.2016.1208574)

To link to this article: <http://dx.doi.org/10.1080/16081625.2016.1208574>



Published online: 15 Jul 2016.



Submit your article to this journal [↗](#)



Article views: 169



View related articles [↗](#)



View Crossmark data [↗](#)

Audit fee pressure and audit risk: evidence from the financial crisis of 2008*

Catherine Heyjung Sonu^a, Hyejin Ahn^b and Ahrum Choi^c

^aPrime College, Korea National Open University, Seoul, South Korea; ^bCollege of Business Administration, Seoul National University, Seoul, South Korea; ^cSchool of Business, Hong Kong Baptist University, Kowloon, Hong Kong

ABSTRACT

This paper investigates whether the downward pressure on audit fees during crisis affects the audit fee structure. The empirical results reveal the following: First, audit fees dropped significantly during the financial crisis period. Second, auditors respond differently to small clients and risky clients when facing downward pressure on audit fees. Finally, the above mentioned findings are more pronounced when the client is under high pressure to reduce expenses. Collectively, the above results provide useful insights into how auditors behave when they are under pressure to reduce audit fees.

ARTICLE HISTORY

Received 14 April 2015

Accepted 29 June 2016

KEYWORDS

Audit fee; audit risk; financial crisis; fee pressure

1. Introduction

To survive the global financial crisis in 2008, firms used reduction of audit fees as part of their cost saving strategies. Firms requested auditors to share the economic pain and exerted significant pressure on auditors to reduce audit fees during the crisis period (Ettredge et al. 2014).¹ The downward fee pressure is a great concern for the regulators. Public Company Accounting Oversight Board (PCAOB 2010) commented that the board is 'aware that as a result of the economic crisis and other factors, auditors might be pressured to significantly reduce their audit fees.' Subsequently, PCAOB (2010) expressed its concern on the potential detrimental effect of the downward fee pressure on auditor's behavior by stating that 'there is an obvious risk that the result will be declining audit quality.'

To address the above concern, a few recent studies have examined the issue of audit fee reduction and document that lower than normal level of audit fees leads to decreases in audit quality (Asthana and Boone 2012; Blankley, Hurtt, and MacGregor 2012). However, there is no clear, systematic evidence on how auditors respond to the downward fee pressure during crisis in adjusting their audit fees. This study aims to provide answers for three important, but unanswered, questions related to this issue: (1) How do the auditors respond to the interplay between downward fee pressure and the resultant higher audit risk due to low audit quality in the current audit environment of high regulatory intervention? (2) If audit fee is reduced, does it subsequently alter the audit fee structure? (3) If yes, does the auditor's reaction to fee pressure and audit risk vary with client types that are subject to differential financial situation?

We first examine how auditors reflect the downward fee pressure and the resultant higher audit risk due to low audit quality in their pricing decisions. On one hand, auditors are under pressure to reduce

CONTACT Hyejin Ahn  ahnhyejin@gmail.com

*Accepted by Hong Hwang. We have received helpful comments from seminar participants at Seoul National University and the Korean Accounting Association's annual conference. All remaining errors and omissions are our own.

audit fees when auditors are expected to share economic pain with clients during crisis by reducing audit fees. On the other hand, reduced audit fees, thus low audit quality, may increase the chances that the auditor will not detect a material misstatement due to the lack of effective audit procedures and due professional care.² Therefore, it is an empirical question whether auditors acquiesce to the downward fee pressure despite the high audit risk.

Of more interest, to unveil the effect of crisis on the individual determinants of audit fees, we examine how the downward audit fee pressure during the crisis period affect the audit fee structure. Prior studies on the determinants of audit fee show that auditors need to exert greater audit effort in auditing clients with large size, complex operations, and high audit risk. Ettredge, Fuerherm, and Li (2014) demonstrate that the downward fee pressure during crisis reduced the level of general audit fees. However, they do not specifically examine how the coefficients on individual determinants of audit fees change in the crisis period relative to the pre-crisis period. This paper aims to investigate the effect of crisis on the individual determinants of audit fees.

We further explore whether auditor's tendency to acquiesce to the downward fee pressure despite the higher audit risk is more prevalent among client types that are subject to poor financial performance and more financial constraints. A client may have stronger incentives to reduce expenses including audit fees during crisis if the client's financial performance is poor or if the client is under financial constraints relative to clients with stable performance or clients with no financial constraints.

We begin our empirical analysis with a sample of 3462 firm-year observations, using Korean audit fee and financial data collected over the period from 2005 to 2010, which covers both the pre-crisis and crisis periods. Crisis represents an exogenous shock (Watts and Zuo 2011)³ that is not directly related to audit fee or auditor choice decision. Also, exploiting the 2008 financial crisis, which originated from financial industries, allows us to disentangle the effect of crisis on audit fee structure for nonfinancial firms. Thus, we are able to focus on the audit fee structure changes due to an exogenous shock, while avoiding any potential endogeneity issue related to auditors.

Our empirical results are summarized as follows. First, as documented in the US (Ettredge, Fuerherm, and Li 2014), we find that audit fee dropped significantly in the Korean audit market during the crisis period. This finding supports that the general audit market condition in Korea is not much different from that in the other countries. Second, we find that, among the determinants of audit fees, the importance of client size decreased while that on audit risk increased during the crisis period. The latter finding is consistent with findings in the US when risk-based audit approach was adopted (Doogar, Sivadasan, and Solomon 2010). Third, we find that the downward audit fee pressure is reflected only when the client is under poor financial situation. The documented results are robust to various sensitivity checks.

We acknowledge that unknown measurement errors or other correlated omitted variables may potentially influence our empirical findings. Despite these caveats, this study contributes to the literature in the following ways. This study extends the literature on the effect of crisis on auditor behavior (Ettredge, Fuerherm, and Li 2014). We show that macro-level variable such as the financial crisis can affect not only the audit fee itself but also the audit fee structure. While there are several papers that examine the cross-sectional determinants of audit fees, only a few studies investigate the inter-temporal variation in audit fee. This paper complements the existing audit fee literature by showing the structural change of audit fee determinants in the crisis period.

Second, this study has various contributions to several interested parties. For regulators, our findings provide empirical evidence on how auditors respond to the downward fee pressure during the crisis period. This study highlights the need to consider auditor's behaviors and the cost-cutting pressures that poor-performing clients face in times of financial difficulty when developing policies. Third, our findings also hold important implications for investors and practicing auditors in identifying clients with potentially poor financial situation.

The remainder of this paper is structured as follows. In Section 2, we introduce the institutional background, review the literature, and develop research hypotheses. In Section 3, we discuss our research design and specify our empirical models. Section 4 describes our sample and presents

descriptive statistics. In Section 5, we present empirical results and perform robustness tests. Lastly, Section 6 sets forth our conclusion.

2. Institutional background and hypotheses development

2.1. Institutional background

To survive the financial crisis of 2008, companies took numerous actions including reduction of expenses. Expecting auditors to share in the economic pain, companies exerted significant pressure on auditors to reduce audit fees (Ettredge, Fuerherm, and Li 2014). This phenomenon is so widespread that many voiced about the potential negative effect of the audit fee reduction (Chasan 2014; Reason 2010).⁴ For example, PCAOB (2010) expressed its concern on the potential detrimental effect of the downward fee pressure on audit performance. Specifically, PCAOB (2010) stated that the pressures of a reduced budget could lead to audit deficiencies such as reduced audit efforts or inappropriate operation of audit firm-level quality control programs. Others also expressed a similar concern on the detrimental effect of audit fee pressure (Chasan 2014; Reason 2010). Within the framework that views crisis as a market-wide exogenous shock which affects all firms, reduced audit fees may not lead to reduced audit effort in some cases, indicating that auditors may still exert adequate audit effort for a subset of firms. In normal times, auditors have incentives to direct their resources to clients that pay higher audit fees. However, during crisis, to the extent that all firms exert pressure on auditors to reduce audit fees, auditors may not accordingly reduce audit effort for all firms. They would rather concentrate and redirect their idle audit effort on important or risky clients (e.g. smaller size, higher audit risk) to reduce audit risk and maintain reputation. Thus, in such cases, audit fee reduction may not necessarily lead to the decrease of audit effort.

Thus, it remains an empirical question whether auditors acquiesce to the downward pressure on audit fees despite concerns on impaired audit quality and whether the downward pressure influences the audit fee structure. We study the role of macro-level financial difficulty on the audit fee structure by comparing nonfinancial firms before and during the 2008 financial crisis using Korean data.⁵ Given the nature of the crisis, the change in the audit fee structure during crisis is likely to be exogenous to the pre-crisis period and other unobserved factors that would affect both the audit fee and determinants of audit fee in normal times. Thus, we are able to focus on the audit fee structure changes due to an exogenous shock (Watts and Zuo 2011), while avoiding any potential endogeneity issue.

Furthermore, the Korean situation provides an ideal setting to investigate the issue. In the US in which the financial crisis was originated, the financial condition and operating performance of client, which are generally used as the proxy of audit risk, could be influenced by the onset of crisis. Also, in Korea where the legal liability for auditors is weak (La Porta, Lopez-de-Silanes, and Shleifer 2006), auditor behavior is more likely to be influenced by the negotiation between auditors and clients (Ng and Tan 2003; Wang and Tuttle 2009). Thus, we can more clearly observe the internal negotiation process between auditors and clients in the Korean institutional setting than other developed countries. The unique institutional feature in this study provides us with a powerful setting in which to examine the effect of financial crisis on the audit fee structure.

2.2. Hypotheses development

There exist two competing views on how auditors will respond to the downward pressure on audit fees during the crisis period. First, auditors have incentives to increase audit fees during crisis because of higher 'inherent risk' and 'control risk', both of which increase audit risk. This occurs at a time when the same economic conditions are adding to higher possibility of bankruptcy or firm failures (Kane, Richardson, and Graybeal 1996), earnings manipulation (Das, Shroff, and Zhang 2009), and fraud (Association of Certified Fraud Examiners 2009).⁶ These effects are expected to increase the client's inherent risk and control risk. For instance, the unexpected liquidity shock could magnify

risks embedded in significant trade and exposure in complex derivative instruments, increasing the scope of inherent risk. Also, the crisis could magnify control risk, defined as the risk that a material misstatement occurs due to an error or a fraud, which will not be prevented or detected timely by the client's internal control. Auditors can respond to this by requiring higher audit fees to compensate for the heightened risk.

Moreover, auditing standards require auditors to expand their audit scope when auditing riskier clients (PCAOB 2010) to reduce detection risk to an acceptable level. Specifically, PCAOB (2010) requires auditors to consider the economic conditions when conducting audit planning and to acquire more concrete audit evidence. Such requirements imply that auditors need to increase their audit effort, which ultimately leads to higher audit fees. Consistent with this prediction, prior studies suggest that, for risky clients, auditors require higher planned level of audit evidence collection (Bedard and Johnstone 2004) and more audit hours (Bell, Doogar, and Solomon 2008), thus leading to higher audit fees (Simunic 1984). Doogar, Sivadasan, and Solomon (2010) document audit fee increased significantly (about 11%) for high-risk clients after Auditing Standard No. 5(AS5) was implemented in the US⁷ These studies, combined together, suggest that auditors are likely to charge higher fees in the recession period to compensate for the heightened audit risk.

However, moving away from the perspective of auditors who consider auditing profession's risk in the pricing decisions, clients have strong incentives to reduce audit fees and place pressures of a reduced budget. For example, Ettredge, Fuerherm, and Li (2014) document a significant drop in audit fees in 2008 relative to 2007 in response to the downward pressure on fee during recession. Subsequent studies investigate whether the reduced audit fee leads to poor audit quality and document that low audit fees are associated with lower audit quality (Asthana and Boone 2012; Blankley, Hurtt, and MacGregor 2012).⁸ Based on the premise that clients are more concerned about meeting earnings benchmarks and increasing their reported earnings during crisis, clients will impose stronger pressure on auditors to reduce their audit fees. Using the financial crisis of 2008, Ettredge, Fuerherm, and Li (2014) identify clients that significantly reduced audit fees in 2008 and that such clients are more likely to restate their financial statement. In sum, this line of literature suggests that auditors are likely to charge lower fees in the crisis period than in the pre-crisis period by responding to the fee pressure.⁹

Given the two countervailing forces that influence audit fees in the crisis period in opposite directions, prior studies find that the latter force dominates the former, resulting in decreased audit fees during the crisis period. From the viewpoint of the clients, management may be under enormous pressure to reduce audit fees as a way of saving costs and surviving the crisis. However, from the viewpoint of auditors, the reduction in audit fees comes at the expense of impaired audit quality as argued in several prior studies. Since the probability of material misstatement and the probability of an audit failure increases during the crisis period (Ettredge, Fuerherm, and Li 2014), audit fee is likely to increase during crisis, especially for risky clients. However, it is noteworthy that none of above-mentioned prior studies have directly investigated the audit fee structure changes in the crisis period nor examined the effect of downward fee pressure by various client types. Thus, we next examine how each determinant of the audit fees changes during the crisis period.

Auditors need to exert greater audit effort and thereby require higher fees to the clients with large size, complex operations, and audit risk (Choi et al. 2008; Simunic 1984). However, the magnitude of reflecting these factors on audit fees depends on whether it is in the crisis period or not. With respect to client size, we expect client size to have a significant relation with fee pressure. To the extent that large clients have greater bargaining power than small clients when negotiating audit fees (Casterella et al. 2004), auditors may fear losing large clients from which they can generate greater audit or non-audit revenues compared to small clients.¹⁰ Thus, auditors are more likely to acquiesce to the downward pressure on audit fee, if exists, for large clients in the crisis period. As a result, we expect that, among the determinants of audit fees, the coefficient on client size becomes smaller in the crisis period than in the pre-crisis period.

Next, we focus on audit risk as the key determinant of audit fees. A recent study by Doogar, Sivadasan, and Solomon (2010) provides an important implication for the pricing of risk in audit fees

under the downward fee pressure. They find that high-risk clients pay about 11% higher audit fees than low-risk clients after the implementation of AS5 in 2007. The AS5 was adopted by US regulators to lower the skyrocketed audit fees after the introduction of SOX (Doogar, Sivadasan, and Solomon 2010). SOX implemented various mechanisms to strengthen governance mechanism and audit quality, which resulted in a significant increase in audit fees (Ghosh and Pawlewicz 2009). Due to strong complaints to the US Securities and Exchange Commission and PCAOB about high audit costs, US regulators adopted AS5 to reduce unnecessary audit costs. If the implementation of AS5 serves as an effective mechanism to lower audit fees, it will have a similar effect as the downward fee pressure induced by financial crisis. Based on the findings of Doogar, Sivadasan, and Solomon (2010), we expect that auditors charge higher fees for risky clients. Thus, among the determinants of audit fees, we expect that the coefficients on the variables representing audit risk should increase in the crisis period than in the pre-crisis period.¹¹ We formulate these predictions as our first hypothesis in an alternative form as follows:

HYPOTHESIS 1 (H1): Audit fees decrease for clients with large size and increase for clients with high audit risk in the crisis period compared to the pre-crisis period.

While auditors may acquiesce to client's request by reducing audit fees, each client faces different financial situation, which may result in differential reaction to the downward fee pressure by client type. To the extent that the downward fee pressure is induced by client's expectation to share the economic pain by agreeing to fee reductions, such pressure is likely to be more prevalent among clients with poor financial performance or high financial constraints. Thus, from the viewpoint of clients, clients with financial challenges during the recession are more likely to demand audit fee reduction relative to clients with financial stability. In contrast, clients with no such financial challenges are less likely to ask for fee reduction even in the crisis period.

From the viewpoint of the auditors, however, low audit fees are associated with high audit risk and auditors have an incentive to avoid making such pricing decisions especially for clients with financial difficulty. By denying audit fee reduction for financially challenged clients, auditors are able to somewhat lower the risk that a material misstatement occurs due to errors or improper internal control (i.e. control risk) which is potentially caused by the lack of client's financial resources, and the risk that a material misstatement goes undetected due to lack of audit. Thus, auditors can protect their reputational capital by maintaining an appropriate level of audit effort for high-risk clients. As a result, auditors are less likely to allow fee reduction to clients with financial troubles.

In summary, it is difficult to predict how the fee structure of clients with financial troubles changes, given the conflicting incentives of clients and auditors. Thus, we present the following hypothesis in a null form:

HYPOTHESIS 2a (H2a): For clients with financial constraint or deteriorating financial performance, the magnitude of the audit fee reduction in the crisis period compared to the pre-crisis period is not different.

We extend our investigation into examining the effect of the interplay between downward fee pressure initiated by clients and auditor's incentive to maintain an appropriate level of audit fees on the audit fee structure. Since clients with deteriorating performance or with financial constraint have stronger incentives to reduce expenses in fear of credit crunch, such clients with large size are more likely to utilize their bargaining power in the audit fee negotiation process (Casterella et al. 2004). However, for clients with high audit risk coupled with poor performance or lack of financial resources, auditor business risk (i.e. reputation, litigation, and regulation risks) is likely to increase (Simunic 1984) in the crisis period. Thus auditors are less likely to acquiesce to the pressure of audit fee reduction from such clients. We present the following hypothesis in an alternative form

HYPOTHESIS 2b (H2b): For clients with financial constraint or deteriorating financial performance, audit fees decrease for clients with large size and increase for clients with high audit risk in the crisis period compared to the pre-crisis period.

3. Research design

3.1. Tests of H1

To demonstrate the existence of the downward pressure on audit fee during the financial crisis period, we first estimate the following benchmark model adopted from prior studies (Choi et al. 2008; Ghosh and Lustgarten 2006; Ghosh and Pawlewicz 2009; Simunic 1984).

$$\begin{aligned} AUDFEE_{jt} = & \alpha + \beta_1 CRISIS_t + \gamma_1 SIZE_{jt} + \gamma_2 ZSCORE_t + \gamma_3 NONCL_{jt} + \gamma_4 CGI_{jt} + \gamma_5 BIG4_{jt} \\ & + \gamma_6 LIQ_{jt} + \gamma_7 MB_{jt} + \gamma_8 AC_{jt} + \gamma_9 EXPORT_{jt} + \gamma_{10} NSUB_{jt} + \gamma_{11} ISSUE_{jt} \\ & + \gamma_{12} INVREC_{jt} + Industry\ dummy + \varepsilon_{jt} \end{aligned} \quad (1)$$

where for firm j and year t , $AUDFEE$ is a natural logarithm of the audit fee in thousands of Korean won; $CRISIS$ is an indicator variable having a value of 1 if the fiscal year is 2008, 2009, or 2010, and 0 otherwise (2005–2007); $SIZE$ is the natural logarithm of total assets; $ZSCORE$ is Zmijewski's (1984) financial distress score; $NONCL$ is an indicator variable having a value of 1 if the client receives a non-clean opinion, and 0 otherwise; CGI is corporate governance index provided by Korea Corporate Governance Service¹²; $BIG4$ is an indicator variable having a value of 1 if clients are audited by one of the Big 4 auditors; LIQ is the liquidity ratio measured by current assets divided by current liabilities; MB is the market-to-book ratio; AC is an indicator variable for auditor change; $EXPORT$ is the proportion of foreign sales, $NSUB$ is the number of business segments; $ISSUE$ is an indicator variable for debt or equity issuance; $INVREC$ is the sum of inventories and receivables divided by total assets. Detailed definitions of all variables used in the Equation (1) are provided in Appendix A.

Based on the findings in prior literature (Ettredge, Fuerherm, and Li 2014), we expect that the coefficient on $CRISIS$ (i.e. β_1) to be negative, suggesting that audit fees dropped during the financial crisis period.

Next, we estimate Equation (2) to formally test H1.

$$\begin{aligned} AUDFEE_{jt} = & \alpha + \gamma_1 SIZE_{jt} + \gamma_2 ZSCORE_{jt} + \gamma_3 NONCL_{jt} + \gamma_4 CGI_{jt} + \gamma_5 BIG4_{jt} \\ & + \gamma_6 LIQ_{jt} + \gamma_7 MB_{jt} + \gamma_8 AC_{jt} + \gamma_9 EXPORT_{jt} + \gamma_{10} NSUB_{jt} + \gamma_{11} ISSUE_{jt} \\ & + \gamma_{12} INVREC_{jt} + Industry\ dummy + \varepsilon_{jt} \end{aligned} \quad (2)$$

where for firm j and year t . Given the downward fee pressure during the financial crisis period, we examine the changes in the determinants of audit fees between the pre-crisis period and the crisis period using Equation (2). We perform regression analyses for the pre-crisis period and the crisis period separately. We then compare the coefficients of each independent variable to test whether the coefficients change significantly after the start of the financial crisis. Specifically, we look into the coefficients on firm size ($SIZE$) and two risk-related variables ($ZSCORE$ and $NONCL$). If the coefficient on $SIZE$ using the crisis years is smaller than that using the pre-crisis years and the difference is statistically significant, then it indicates that large clients pay relatively lower audit fees to their auditors during crisis.

3.2. Tests of H2

H2 investigates whether the magnitude of audit fee reduction and the changes in audit fee structure during the crisis period differ by client type subject to different financial situation. We classify clients as having poor (good) financial performance if the current-year return on asset is lower (higher) than prior-year return on asset, and classify clients as being under financial constraints (no financial constraints) if the free cash flow is below the median (above the median). The free cash flow is defined as cash from operating activities minus capital expenditure, scaled by lagged total asset. We partition our sample into clients under poor financial situation (poor-performing firms or firms with financial constraints) and clients under good financial situation (good-performing firms or firms without financial

constraints) and estimate the regression in Equations (1) and (2) for each of the partitioned samples. In Equation (1), if the coefficient on *CRISIS* (i.e. β_7) is negative for the clients under poor financial situation and the negative effect is less pronounced for the clients under good financial situation, then it suggests that auditor's tendency to acquiesce to the downward fee pressure is more prevalent among the clients with adverse financial condition. In Equation (2), by performing regression analysis separately for the pre-crisis and crisis period, we are able to capture the change in the determinants of audit fees by client types, if any, for the two subsamples of clients. For clients with adverse financial condition, we expect that the coefficient on *SIZE* using the crisis years to be smaller than that using the pre-crisis years and the coefficients on risk-related variables (*ZSCORE* and *NONCL*) to be greater in the crisis period compared to the pre-crisis period. On the other hand, for clients with financial stability, we predict that there was no significant change in the determinants of audit fees.

4. Data and descriptive statistics

4.1. Data

The financial data are obtained from Korea Information Service (KIS) database, which is the largest provider of financial and stock market information of Korean firms. The crisis period begins in 2008, the point at which global markets reached their nadir, and ends in 2010. We define the pre-crisis period to be from 2005 to 2007 to match the 3-year crisis period.

The final sample size comprises 3462 firm-year observations for our tests. The yearly distribution shows that the sample size is smallest in year 2005 (558 observations) and largest in year 2008 (591 observations). This indicates that the sample size is fairly even across our sample period. The total number of firms included in our data during our sample period is 657. It is noteworthy that almost the same firms are included in our data-set for both the pre- and crisis periods, which implies that the empirical findings in this study are not likely due to the change in sample composition.

4.2. Descriptive statistics

Table 1 presents the descriptive statistics of the variables employed in our analyses. The mean and median of the audit fee (*AUDFEE*) is 11.313 and 11.184, respectively, which are approximately US\$ 82,000 and US\$ 72,000. The mean value of client size (*SIZE*) measured by total assets is about US\$ 273 million. The mean financial distress score (*ZSCORE*) is -1.919 and around 0.3% of our sample firms received a non-clean opinion (*NONCL*) during the sample period of 2005–2010. For corporate governance variables, we find that the mean (median) value of the raw scores for *CGI* is 0.351 (0.343). Additionally, the proportion of clients that are audited by high quality auditors (*BIG4*) is about 67% of our sample. We omit further discussion on the descriptive statistics for brevity.

5. Empirical results

5.1. Results of H1

Table 2 reports the multivariate results for our tests. Column (1) shows the baseline regression results of the audit fee determinants, excluding the crisis indicator variable (*CRISIS*). Client size (*SIZE*) and client risk factors (*ZSCORE* and *NONCL*) are positively related to audit fees. In addition, the results show that good governance clients (*CGI*) pay higher audit fees and high-quality auditors (*BIG4*) enjoy the fee premium. Growth opportunities (*MB*) and operating complexity (*EXPORT* and *NSUB*) have a positive effect on audit fees. Clients issuing debt or equity (*ISSUE*) also pay more audit fees. On the other hand, clients with higher liquidity ratio (*LIQ*) pay less audit fees. Negative coefficient on auditor change (*AC*) indicates initial fee discount phenomenon (Ghosh and Pawlewicz 2009). Note that the coefficients on the fee determinants have signs consistent with prior research (Choi et al. 2008; Ghosh

Table 1. Descriptive statistics.

Variables	N	Mean	Std. Dev.	Q1	Median	Q3
AUDFEE	3,462	11.313	0.651	10.861	11.184	11.653
CRISIS	3,462	0.508	0.500	0.000	1.000	1.000
SIZE	3,462	19.426	1.341	18.464	19.220	20.214
ZSCORE	3,462	-1.919	1.328	-2.934	-1.944	-1.024
NONCL	3,462	0.003	0.051	0.000	0.000	0.000
CGI	3,462	0.351	0.085	0.297	0.343	0.393
BIG4	3,462	0.668	0.471	0.000	1.000	1.000
LIQ	3,462	2.042	2.310	0.975	1.372	2.151
MB	3,462	1.142	0.995	0.527	0.816	1.341
AC	3,462	0.237	0.426	0.000	0.000	0.000
EXPORT	3,462	0.137	0.257	0.000	0.000	0.121
NSUB	3,462	1.973	2.745	0.000	1.000	2.000
ISSUE	3,462	0.226	0.418	0.000	0.000	0.000
INVREC	3,462	0.296	0.160	0.180	0.292	0.404

Notes: This table presents the descriptive statistics of variables used in the empirical analyses. All variables are defined in Appendix A.

and Pawlewicz 2009), suggesting that the characteristics of our samples are not much different from those used in prior studies.

Column (2) presents the regression result of Equation (1), which shows the change in audit fees during crisis. The coefficient on *CRISIS* is -0.043 and it is significant at $p < 0.01$. A negative sign indicates that the general level of audit fees is lower during the crisis period than the pre-crisis period. The estimated marginal effect suggests that, during crisis ($CRISIS = 1$), audit fees are reduced by US\$ 3446, on average, which is about 4.21% of audit fees.¹³ Consistent with Ettredge, Fuerherm, and Li (2014), it supports the downward audit fee pressure during the financial crisis period, indicating that the general audit market condition in Korea is not much different from that in the other countries.

Next, we investigate whether the determinants of audit fees change during the crisis period. Table 3 shows the regression results of Equation (2) for the pre-crisis and crisis periods separately. Column (1) of Table 3 reports the results of using pre-crisis period, while Column (2) reports the results using the crisis period. We also include the interaction terms between *CRISIS* and each of the independent variables in Equation (2) and report the results in Column (3). A statistically significant coefficient on the interaction terms indicates that the variable is significantly different between the pre-crisis and crisis periods. The coefficient on client size (*SIZE*) decreases from 0.361 to 0.326. The difference between the two coefficients is -0.035 and it is statistically significant at $p < 0.01$. In economic terms, *ceteris paribus*, a one-standard deviation increase in *SIZE* during crisis (pre-crisis) increases audit fees by US\$ 46,549 (48,511).¹⁴ Smaller coefficient on client size during the crisis period supports the argument that auditors who fear losing large client are more likely to yield to the downward fee pressure for their large clients.

To examine whether auditors charge higher fees for their risky clients during the financial crisis period, we shift focus to the coefficients on *ZSCORE* and *NONCL*. The coefficient on *ZSCORE* during the pre-crisis period is 0.036, which increases to 0.057 during the crisis period. The difference between the two coefficients is 0.021 and significant at $p < 0.10$. While the coefficient on *NONCL* is insignificant during the pre-crisis period (coefficient = 0.077, p -value = 0.679), it becomes significant and turn positive during crisis (coefficient = 0.675, p -value = 0.000). The stronger impact of audit risk on audit fees during the crisis period indicates that auditors charge higher fees during the period to their risky clients to compensate for the increased audit risk. These effects are economically significant as a one-standard deviation increase in *ZSCORE* during crisis increases the audit fees by US\$ 6791 (8.07%) on average. Given that the same increase in *ZSCORE* leads to an average increase in audit fees of US\$ 3794 (4.76%) during the pre-crisis period, the combined effects of crisis and high audit risk are substantial. Similarly, the coefficient on *NONCL* indicates that, a one-standard deviation increase in *NONCL* leads to higher audit fees of US\$ 3101 during crisis compared to the non-crisis period. These

Table 2. The effect of downward audit fee pressure induced by financial crisis on the determinants of audit fees.

Variables	(1)	(2)
	AUDFEE	AUDFEE
<i>CRISIS</i>		-0.043*** (0.001)
<i>SIZE</i>	0.347*** (0.000)	0.345*** (0.000)
<i>ZSCORE</i>	0.045*** (0.000)	0.046*** (0.000)
<i>NONCL</i>	0.474*** (0.002)	0.486*** (0.002)
<i>CGI</i>	0.742*** (0.000)	0.818*** (0.000)
<i>BIG4</i>	0.095*** (0.000)	0.095*** (0.000)
<i>LIQ</i>	-0.013*** (0.010)	-0.013** (0.011)
<i>MB</i>	0.074*** (0.000)	0.069*** (0.000)
<i>AC</i>	-0.054*** (0.000)	-0.056*** (0.000)
<i>EXPORT</i>	0.083* (0.060)	0.068 (0.140)
<i>NSUB</i>	0.010*** (0.006)	0.010*** (0.005)
<i>ISSUE</i>	0.036** (0.032)	0.035** (0.036)
<i>INVREC</i>	0.120 (0.154)	0.109 (0.197)
Constant	3.872*** (0.000)	3.885*** (0.000)
Observations	3,462	3,462
Industry FE	YES	YES
Clustered by	Firm	Firm
Adjusted R^2	0.724	0.725

Notes: This table presents the multivariate regression results of H1, investigating the effect of downward audit fee pressure induced by financial crisis on the determinants of audit fees. All variables are defined in Appendix A. To adjust for heteroskedasticity, standard errors are clustered at the firm-level. p -values are reported in the parenthesis. ***, **, and * denote statistical significance at the 1, 5 and 10% levels, respectively.

results are consistent with prior literature which suggests that audit fee is an increasing function of audit risk (Choi et al. 2008; Simunic 1984).^{15,16}

5.2. Results of H2

Table 4 presents the regression results of H2a which investigate whether auditor's tendency to acquiesce to the downward fee pressure despite the higher audit risk is more prevalent among client types that are subject to poor financial situations. We estimate Equation (1) for clients under poor financial situation (firms with poor financial performance or with financial constraints) and for clients under good financial situation (firms with good financial performance or without financial constraints) separately.

Column (1) of Table 4 shows the results using the subsample of poor-performing clients and Column (3) shows the results using clients with financial constraints. For subsamples which are subject to poor financial condition, the coefficient on *CRISIS* is -0.043 (significant at $p < 0.05$) and -0.060 (significant at $p < 0.01$), respectively. The results indicate that audit fees decrease by US\$ 3491 (4.21%) and US\$ 4688 (5.82%) in each subsample during the crisis period, on average.¹⁷ The significantly and consistently negative coefficients on *CRISIS* indicate that audit fee reduction is evident for the clients under poor financial condition. Column (2) and Column (4) show the results of clients with good

Table 3. The effect of downward audit fee pressure on the determinants of audit fees (pre-crisis periods versus crisis periods).

Variables	(1)	(2)	(3) = (2) – (1)
	Pre-crisis periods	Crisis periods	Difference
	<i>AUDFEE</i>	<i>AUDFEE</i>	
<i>SIZE</i>	0.361*** (0.000)	0.326*** (0.000)	-0.035*** (0.009)
<i>ZSCORE</i>	0.036*** (0.001)	0.057*** (0.000)	0.021* (0.074)
<i>NONCL</i>	0.077 (0.679)	0.675*** (0.000)	0.598** (0.012)
<i>CGI</i>	0.777*** (0.000)	0.953*** (0.000)	0.176 (0.362)
<i>BIG4</i>	0.093*** (0.001)	0.097*** (0.002)	0.004 (0.896)
<i>LIQ</i>	-0.015** (0.019)	-0.011** (0.049)	0.003** (0.019)
<i>MB</i>	0.066*** (0.000)	0.081*** (0.000)	0.015 (0.237)
<i>AC</i>	-0.055*** (0.001)	-0.059*** (0.001)	-0.004 (0.882)
<i>EXPORT</i>	0.078 (0.103)	0.063 (0.322)	-0.015 (0.788)
<i>NSUB</i>	0.010** (0.016)	0.009** (0.025)	-0.001 (0.800)
<i>ISSUE</i>	0.032 (0.121)	0.039* (0.084)	0.007 (0.815)
<i>INVREC</i>	0.098 (0.293)	0.119 (0.214)	0.021 (0.803)
<i>Constant</i>	3.237*** (0.000)	4.507*** (0.000)	
Observations	1,705	1,757	
Industry FE	YES	YES	
Clustered by	Firm	Firm	
Adjusted <i>R</i> ²	0.731	0.720	

Notes: This table presents the multivariate regression results of H1, investigating the effect of downward audit fee pressure induced by financial crisis on the determinants of audit fees. Column (1) reports the results of using pre-crisis years of 2005–2007, while Column (2) reports the results using the crisis years of 2008–2010. Column (3) shows the differences in each coefficient and the significance of interaction terms. All variables are defined in Appendix A. To adjust for heteroskedasticity, standard errors are clustered at the firm-level. *p*-values are reported in the parenthesis. ***, **, and * denote statistical significance at the 1, 5 and 10% levels, respectively.

performance and clients without financial constraints, respectively. While the coefficient on *CRISIS* is negative (coefficient = -0.039) and significant at $p < 0.1$ in Column (2)¹⁸, that on *CRISIS* in Column (4) is insignificant (coefficient = -0.022, p -value = 0.255). We predict clients without strong incentive to save costs are less likely to demand lower audit fees, which may explain why some of our findings on the effect of downward fee pressure for clients with good financial condition are mixed. As a whole, the results in Table 4 are consistent with the notion that auditors are more likely to acquiesce to the downward fee pressure despite the higher audit risk when their clients have strong incentives to reduce fees, supporting H2a.

Table 5 reports regression results of H2b which examines the changes in audit fee structure during the crisis period by client types. Panel A and B show the regression results for the subsamples partitioned by financial performance and Panel C and D show the regression results for the subsamples partitioned by financial constraints. In each Panel, Column (1) and Column (2) present the results for the pre-crisis period and the crisis period, respectively and Column (3) compares the coefficient on each of the fee determinants between the pre-crisis and crisis periods.

In Panel A, for the subsample of poor-performing clients which experience negative return on assets change, the coefficient on firm size (*SIZE*) decreases from 0.370 to 0.329. The difference between the two coefficients is statistically significant. The smaller magnitude of the coefficient on client size

Table 4. The effect of downward audit fee pressure induced by financial crisis by client types.

Variables	Whether the client has deteriorating performance		Whether the client is under financial constraints	
	(1)	(2)	(3)	(4)
	Firms with poor performance	Firms with good performance	Firms with financial constraints	Firms without financial constraints
	<i>AUDFEE</i>	<i>AUDFEE</i>	<i>AUDFEE</i>	<i>AUDFEE</i>
<i>CRISIS</i>	-0.043** (0.013)	-0.039* (0.053)	-0.060*** (0.003)	-0.022 (0.255)
<i>SIZE</i>	0.352*** (0.000)	0.343*** (0.000)	0.322*** (0.000)	0.366*** (0.000)
<i>ZSCORE</i>	0.045*** (0.000)	0.039*** (0.003)	0.053*** (0.000)	0.037*** (0.007)
<i>NONCL</i>	0.051 (0.771)	0.645** (0.010)	0.302** (0.017)	0.438 (0.418)
<i>CGI</i>	0.705*** (0.000)	0.893*** (0.000)	0.822*** (0.000)	0.780*** (0.000)
<i>BIG4</i>	0.068** (0.011)	0.120*** (0.000)	0.105*** (0.000)	0.074** (0.012)
<i>LIQ</i>	-0.014** (0.019)	-0.014** (0.013)	-0.009 (0.195)	-0.019*** (0.001)
<i>MB</i>	0.083*** (0.000)	0.065*** (0.000)	0.058*** (0.000)	0.080*** (0.000)
<i>AC</i>	-0.082*** (0.000)	-0.039** (0.044)	-0.067*** (0.000)	-0.052*** (0.004)
<i>EXPORT</i>	0.088* (0.070)	0.060 (0.289)	-0.002 (0.965)	0.142** (0.014)
<i>NSUB</i>	0.009** (0.028)	0.013*** (0.007)	0.016*** (0.001)	0.005 (0.242)
<i>ISSUE</i>	0.018 (0.403)	0.067*** (0.007)	0.066*** (0.002)	0.026 (0.305)
<i>INVREC</i>	0.123 (0.159)	0.162 (0.111)	0.099 (0.322)	0.197* (0.061)
<i>Constant</i>	3.731*** (0.000)	4.316*** (0.000)	4.756*** (0.000)	3.478*** (0.000)
Observations	1,709	1,570	1,672	1,620
Industry FE	YES	YES	YES	YES
Clustered by	Firm	Firm	Firm	Firm
Adjusted <i>R</i> ²	0.727	0.724	0.709	0.742

Notes: This table presents the multivariate regression results which test the effect of downward audit fee pressure induced by financial crisis by client types. Column (1) and (2) report the results for the subsamples partitioned by financial performance and Column (3) and (4) show the regression results for the subsamples divided by financial constraints. Column (1)/(2) is the results for poor/good performance where the changes in return on asset is negative/positive. Column (3)/(4) is the results for the firms with/without financial constraints where the free cash flow is below/above the median. All variables are defined in Appendix A. To adjust for heteroskedasticity, standard errors are clustered at the firm-level. *p*-values are reported in the parenthesis. ***, **, and * denote statistical significance at the 1, 5 and 10% levels, respectively.

indicates that large clients with deteriorating performance pay lower audit fees to their auditors during the crisis period compared to the pre-crisis period. The interpretation is such that large clients have superior bargaining power than small clients in negotiating audit fees (Casterella et al. 2004) and that large clients which suffered deteriorating earnings are more likely to use their negotiation power to demand lower audit fees during crisis although it may result in lower audit quality. These results are consistent with H2b.

The coefficient on *ZSCORE* during the pre-crisis period is 0.027, which increases to 0.062 during the crisis period. The coefficient on *NONCL* is insignificant during the pre-crisis period, however, it becomes significant and turns positive during the crisis period. It suggests that, entering the crisis, audit risk increases and auditors pay more attention to risky clients which suffered deteriorating performance. The results are consistent with Doogar, Sivadasan, and Solomon (2010), who argue that auditors charge higher fees for risky clients which are exposed to higher financial statement

Table 5. The changes in audit fee structure during crisis by client types.

Variables	(1)	(2)	(3) = (2) – (1)
	Pre-crisis periods	Crisis periods	Difference
	AUDFEE	AUDFEE	AUDFEE
Panel A: Firms with poor performance			
SIZE	0.370*** (0.000)	0.329*** (0.000)	–0.042** (0.016)
ZSCORE	0.027** (0.034)	0.062*** (0.000)	0.035** (0.016)
NONCL	–0.103 (0.511)	0.441*** (0.000)	0.545*** (0.001)
Control Variables	Included	Included	
Observations	836	873	
Industry FE	YES	YES	
Clustered by	Firm	Firm	
Adjusted R ²	0.753	0.711	
Panel B: Firms with good performance			
SIZE	0.355*** (0.000)	0.328*** (0.000)	–0.027 (0.207)
ZSCORE	0.051*** (0.001)	0.034** (0.049)	–0.017 (0.381)
NONCL	N/A	0.619** (0.010)	N/A
Control Variables	Included	Included	
Observations	762	808	
Industry FE	YES	YES	
Clustered by	Firm	Firm	
Adjusted R ²	0.721	0.730	
Panel C: Firms with financial constraints			
SIZE	0.342*** (0.000)	0.297*** (0.000)	–0.045** (0.033)
ZSCORE	0.049*** (0.000)	0.062*** (0.000)	0.012 (0.463)
NONCL	–0.006 (0.908)	0.392*** (0.001)	0.399*** (0.002)
Control Variables	Included	Included	
Observations	751	921	
Industry FE	YES	YES	
Clustered by	Firm	Firm	
Adjusted R ²	0.712	0.712	
Panel D: Firms without financial constraints			
SIZE	0.378*** (0.000)	0.355*** (0.000)	–0.023 (0.214)
ZSCORE	0.026 (0.136)	0.048*** (0.003)	0.022 (0.277)
NONCL	–0.321*** (0.000)	1.143*** (0.000)	1.464*** (0.000)
Control Variables	Included	Included	
Observations	854	766	
Industry FE	YES	YES	
Clustered by	Firm	Firm	
Adjusted R ²	0.762	0.730	

Notes: This table presents the multivariate regression results which test the effect of downward audit fee pressure induced by financial crisis on the determinants of audit fees by client types. Panel A and B show the regression results for the subsamples partitioned by financial performance and Panel C and D show the regression results for the subsamples partitioned by financial constraints. Panel A/B is the results for poor/good performance firms. Poor/good performance firms are defined as firms with negative/positive changes in return on. Panel C/D is the results for the firms with/without financial constraints. If free cash flow is below/above the median, it is classified as firms with/without financial constraints. In Each panel, Column (1) reports the results of using pre-crisis years of 2005–2007, while Column (2) reports the results using the crisis years of 2008–2010. Column (3) shows the differences in each coefficient. All variables are defined in Appendix A. To adjust for heteroskedasticity, standard errors are clustered at the firm-level. *p*-values are reported in the parenthesis. ***, **, and * denote statistical significance at the 1, 5 and 10% levels, respectively.

manipulation risk.¹⁹ We do not observe any statistically significant differences for the coefficients of other control variables (untabulated).

Panel B of Table 5 shows the regression results using a subsample of clients with good financial performance. *NONCL* is omitted in Column (1) because none of the good-performing clients in our sample received a non-clean opinion during the pre-crisis period. Unlike the results based on poor-performing clients, the audit fee structure of clients with good performance is not likely to change because these clients do not have strong incentive to reduce audit fees and also because the stable financial condition lowers audit risk.

Panel C of Table 5 reports results of the same tests using financially constrained clients. They present similar results for clients with poor performance. The coefficient on firm size (*SIZE*) decreases from 0.342 to 0.297. The coefficient on *ZSCORE* increases from 0.049 to 0.062, but the difference is not significantly significant. The coefficient on *NONCL* is positively significant only during the crisis period. The results indicate that large clients (risky clients) with financial constraints pay lower (higher) audit fees to their auditors during the crisis period compared to the pre-crisis period.

Panel D of Table 5 shows the results using a subsample of clients without financial constraints. Although the coefficient on firm size (*SIZE*) decreases from 0.378 to 0.355, the difference between the two coefficients is not statistically significant (p -value = 0.214). Unlike the results shown in Panel B, we find significant difference in *NONCL* for clients without financial constraints between the pre-crisis and crisis periods. The results may be suggestive of auditors' assessment on the receipt of a non-clean opinion as an indication of highly severe condition and thus reflecting it in their pricing decision during the crisis period even for firms without financial constraints. Except for the results on *NONCL*, other results generally support H2b.

5.3. Robustness tests

5.3.1. Financial crisis in the US

To generalize the findings of our study, we extend the analyses using US data. Similar to the main analysis, we use firm-year observations during 2005–2010. All of the variables used in the analysis are the same as the main analysis except for the inclusion of *CGI*. We exclude *CGI* because there is no comparable variable in the US data to capture corporate governance.

Although untabulated,²⁰ the coefficient on *CRISIS* is -0.019 (p -value = 0.017), indicating that audit fee decreases by US\$ 14,418 during the crisis period, on average, which is about 1.88% of audit fees. We then conduct subsample analyses by non-crisis and crisis period, and the results reveal that the coefficient on *SIZE* significantly decreases while that on *ZSCORE* increases during the crisis period, indicating that auditors charge lower fees for large clients and higher fees for riskier client during the crisis period. Next, using subsample partitioned by client type measured by negative or positive changes in return on assets, the coefficient on *CRISIS* is significantly negative only for clients experiencing negative changes in their performance, indicating that such clients are more likely to induce auditors to reduce audit fees during the crisis period.²¹ In general, the empirical results using US data are consistent with our main results. Thus, we can conclude that auditors behave in a similar way in the US as well when they are under pressure to reduce audit fees. By providing more generalized evidence, this paper has broader implications on the effect of economic downturns.

5.3.2. Alternative measure of audit fee

We use abnormal audit fee as the alternative measure of audit fee. Ettredge, Fuerherm, and Li (2014) define fee pressure as the difference between normal audit fees and actual audit fees, which is usually referred to as abnormal audit fee. Following Ettredge, Fuerherm, and Li (2014), abnormal audit fees are defined as actual audit fees minus predicted audit fees. To calculate the predicted audit fees, we first estimate the coefficients using observations in the pre-crisis period. Then, the predicted audit fees for the crisis period are computed by interacting the estimated coefficients from pre-crisis period with all the firm-year specific values.

Untabulated results show that larger clients pay lower abnormal audit fees and riskier clients pay higher abnormal audit fees during the crisis period. Additionally, we add the interaction terms between client size and audit risk with an indicator that captures poor-performing firms (*PP*). While we find that the results on client size to be consistent with our expectation (negative coefficient on *SIZE*PP*), the coefficient on *ZSCORE*PP* is not statistically significant.

5.3.3. Excluding year 2008

In this study, we use *CRISIS* indicator which has a value of 1 if the fiscal year is 2008, 2009, or 2010. However, audit fees are usually determined at the beginning of the fiscal year. Thus, audit fee determined in year 2008 may not be affected by the onset of crisis because the global financial crisis occurred in late 2008. To avoid the undue influence of such effect, we exclude observations from year 2008 and test H1 and H2.

The (untabulated) results support the downward audit fee pressure during the financial crisis period. We also find that, under the audit fee pressure, firm size is less relevant while audit risk is more relevant in determining audit fees during the crisis period. When examining the effect of client performance on the audit fee determination process, the results are consistent with the main results. Large clients with poor performance are more likely to take advantage of their negotiation power during the crisis period and induce auditors to reduce audit fees. The results also show that auditors are likely to charge higher fees to riskier clients with poor performance in the recession period to compensate for the increased audit risk.

5.3.4. Constant set of firms

During the crisis period, many firms are being forced to merge, are bought out by other firms, or experience collapses. To the extent that a sizable number of firms drop out of the sample during crisis, it may affect the composition of sample firms, distorting the results. To address this issue, we use a sample that includes the same firms before and during the crisis period for which we have complete data over the 6-year period from 2005 to 2010. The sample which includes a constant set of firms comprises 470 firms and 2820 firm-years.

The (untabulated) results show that the coefficient on *CRISIS* remains significantly negative (coefficient = -0.040). Also, firm size is less relevant in determining audit fees during the crisis period, while audit risk is more relevant under the audit fee pressure. The differences in the coefficients on *SIZE*, *ZSCORE*, and *NONCL* between the two periods are -0.032 , 0.022 , and 0.700 , respectively, all of which are statistically significant. When we test the effect of client performance on the audit fee determination process using this sample, we find that large clients with poor performance are more likely to take advantage of their negotiation power during the crisis period. In addition, auditors are likely to charge higher fees to riskier clients with poor performance in the crisis period. We find that our main findings are not affected by limiting our comparison to the same firms before and during the crisis period.²²

6. Conclusion

This study examines the change in audit fee structure by nonfinancial firms affected by the recent financial crisis. While previous literature documents a significant drop in audit fees during crisis, there is no clear, systematic evidence on how auditors respond to the downward fee pressure during the financial crisis period in adjusting their audit fees. Our research focus is deliberately on the impact of the downward fee pressure during a financial shock because using the crisis as a natural experiment allows us to sidestep typical endogeneity concerns and directly observe the impact of pressure on auditor behavior.

Our empirical results are summarized as follows. First, as documented in the US (Ettredge, Fuerherm, and Li 2014), we find that audit fees dropped significantly in the Korean audit market during the crisis period. This finding supports that the general audit market condition in Korea is not

much different from that in other countries. In our next set of main analyses, we find that, among the determinants of audit fees, the importance of client size decreased while that on audit risk increased during the crisis period. The former finding implies that large clients are more likely to utilize their bargaining power in the audit fee negotiation process during the crisis period. The latter finding is consistent with findings based on US setting when risk-based audit approach was adopted (Doogar, Sivadasan, and Solomon 2010). It implies that auditors are wary of risky clients. Furthermore, we find that the drop in audit fees occurs only for clients with poor financial condition. This finding suggests that auditors respond to the downward fee pressure differently depending on the financial condition of their clients. In summary, this paper reveals interesting findings on how auditors behave when they face fee pressure.

We acknowledge that our findings are subject to some limitations such as unknown measurement errors or other correlated omitted variables. Despite these caveats, this study has various contributions to related parties. This study extends the literature on the effect of crisis on auditor behavior by investigating the effect of macro-level variable such as financial crisis on the audit fee structure. Furthermore, this study complements the existing audit fee literature by showing the structural change of audit fee determinants in the crisis period. Second, this study has various contributions to several interested parties. For regulators, our findings highlight the need to consider auditor's behaviors and the enormous pressures that poor-performing clients face to reduce costs in times of financial difficulty when developing policies. For investors and practicing auditors, our findings also hold important implications by emphasizing the need to properly identify clients with poor financial reporting quality.

Notes

1. See Reason (2010) for audit-firm level statistics on audit fee changes in year 2008 and various anecdotal evidences on the downward audit fee pressure exerted to auditors. According to the statistics reported in Reason (2010), audit fee dropped by an average 5–8% in 2008.
2. Given that crisis is an exogenous shock which affects all firms, the reduced audit fees may not unilaterally lead to reduced audit effort. It is possible that, despite the reduced audit fees, auditors may still exert adequate audit effort to maintain reputation and more effectively allocate resources during crisis for a subset of firms.
3. Watts and Zuo (2011) explain that the financial crisis is an exogenous shock that is not related to most individual firms. However, we acknowledge that it may be related to country-level economic situation, which may affect firm performance.
4. For example, in year 2008 alone, audit fee dropped by an average of 11.4, 11.2, 3.3, and 9.0% for the clients of PwC, Ernst & Young, Deloitte & Touche, and KPMG, respectively (Reason 2010).
5. The financial crisis greatly influenced the Korean economy. For instance, the Korean won fell by around 25% against the US dollar by the end of 2008. The stock price index also collapsed by 27% during the same period. It took about 3 years for Korean economy to fully recover from the crisis and get back to normal. Korea also experienced a similar audit fee reduction during the period and many voiced against the downward trend.
6. Consistent with this view, Whitehouse (2012) explains that the number of identified deficiencies in 2010 increased substantially in PCAOB's audit firm inspection report.
7. In a similar vein, Choi et al. (2008) report that audit fee increases monotonically as the country-level legal liability that auditors face, which determines the audit risk in each country, increases.
8. Prior studies show the positive relation between audit fee and audit effort, which may not hold true in crisis case. Since crisis affects all firms to reduce expenses, including audit fees, auditors may have incentives to exert adequate audit effort despite the reduced audit fees because of the potential idle audit hours.
9. Another possibility is that auditors absorb the fee pressure by reducing engagement profitability. However, such reasoning is based on a conjecture as Beck and Mauldin (2014) explain that it is not likely to be a widespread phenomenon.
10. It is documented that large clients pay greater audit fees and purchase more non-audit services from auditors (e.g. Ashbaugh, LaFond, and Mayhew 2003; DeFond, Raghunandan, and Subramanyam 2002; Frankel, Johnson, and Nelson 2002).
11. The determinants of audit fees can be broadly summarized as the following three factors: size, complexity, and audit risk of the firm (Choi et al. 2008; Simunic 1984). In H1, we include only firm size and audit risk. We do not include complexity in the hypothesis because we are not able to delineate the effect of downward fee pressure on the coefficients on the variables related to complexity. It is possible that auditors may charge higher fees for clients with more complex operations due to the increased audit hours required to obtain a certain level of confidence

- in the riskier period. However, it is also possible that auditors absorb the increased level of effort related to complexity (Menon and Williams 2001). To investigate these effects, we examine the change of coefficients on the variables related to complexity in our empirical analyses, along with variables capturing firm size and risk.
12. Korea Corporate Governance Service is a non-for-profit organization, aimed at improving the level of corporate governance in Korea. *CGI* is constructed from detailed surveys of companies listed on the Korean Stock Exchange in five different aspects: protection of shareholders' rights, board structure, corporate disclosure, audit committee activities, and dividend policy. The higher the value of *CGI*, the stronger the level of corporate governance. The variable *CGI* has been widely used by various Korean studies (e.g. Choi and Yoon 2006).
 13. The marginal effect of crisis on audit fees is estimated as follows: $\exp(11.313) - \exp(11.313 - 0.043) = \text{US\$ } 81,879 - 78,433 = \text{US\$ } 3446$.
 14. The mean value of *AUDFEE* during pre-crisis (crisis) is 11.285 (11.340). The coefficient on *SIZE* during pre-crisis is 0.361 and a standard deviation of *SIZE* is 1.318. Thus, a one-standard deviation increase in *SIZE* is computed as $0.361 \times 1.318 = 0.476$. The marginal effect of a one-standard deviation increase in *SIZE* on audit fees during pre-crisis is estimated as $\exp(11.285 + 0.476) - \exp(11.285) = \text{US\$ } 128,130 - 79,619 = \text{US\$ } 48,511$. In a similar way, the marginal effect of a one-standard deviation increase in *SIZE* on audit fees during crisis period is estimated as $\exp(11.340 + 0.440) - \exp(11.340) = \text{US\$ } 130,669 - 84,120 = \text{US\$ } 46,549$. Thus, there is a $\text{US\$ } 48,511 - \text{US\$ } 46,549 = \text{US\$ } 1962$ difference in the effect of *SIZE* on audit fees between pre-crisis and crisis period.
 15. Other coefficients do not show any significant differences between the pre-crisis period and the crisis period with the exception of *LIQ*. However, we do not provide additional explanation on the significance of the coefficient on *LIQ* because subsequent analyses show that the change of coefficient on *LIQ* is not significant.
 16. We additionally assess the statistical difference in the regression coefficients between the two periods using the Wald test. Following the methodology used in Haw, Lee, and Lee (2014), we employ a seemingly unrelated regression system combining the two periods. The (un-tabulated) results suggest that the differences in the coefficient on *SIZE*, *ZSCORE*, and *NONCL* between the two periods are statistically significant.
 17. The mean values of *AUDFEE* for poor-performing firms and financially constraint firms are 11.326 and 11.296, respectively.
 18. While the coefficient on *CRISIS* is not significantly different in the poor- and good-performing firms, the level of significance is higher for clients with poor performance, lending some support to H2a.
 19. Assessing the statistical difference in the regression coefficients using a seemingly unrelated regression system shows similar results. The differences in the coefficient on *SIZE* and *NONCL* between the two periods are statistically significant at $p < 0.01$ and at $p < 0.01$, respectively. However, the p -value of the differences in the coefficients on *ZSCORE* between the two periods is 0.592.
 20. While we do not tabulate the results for simplicity, we can provide the results upon request.
 21. We also conduct analysis using the subsample partitioned by financial constraints. When we run Equation (1) using each subsample, the coefficient on *CRISIS* is -0.021 and is statistically significant at $p < 0.10$ for firms with financial constraints, while it is insignificant for firms without financial constraints. That is, the general level of audit fees is lower during the crisis period than the pre-crisis period only for firms with financial constraints.
 22. During the crisis period in Korea, the government temporarily allowed firms to adopt the asset revaluation model as a way out of crisis (Kim and Kim and Kim 2012). In the revaluation model, an asset is initially recorded at cost but subsequently its carrying amount is increased (or decreased) to account for any changes in the market value. The revaluation model enabled many firms to write up their fixed assets to reflect the increased market value. However, even though the carrying amount is increased to the market value through asset revaluation, the intrinsic value of the asset remains the same. Thus, for such cases, measuring firm size using total asset may not be a proper representation. To avoid the confounding effect of asset revaluation on the changes in audit fees, we measure firm size using total sales instead of total assets and find that our previous results remain unchanged when measuring size with total sales.

Disclosure statement

No potential conflict of interest was reported by the authors.

References

- Ashbaugh, H., R. LaFond, and B. W. Mayhew. 2003. "Do Non-audit Services Compromise Auditor Independence? Further Evidence." *The Accounting Review* 78 (3): 611–639.
- Association of Certified Fraud Examiners 2009. *Report to the Nation: Occupational Fraud and Abuse*. Austin, TX: Association of Certified Fraud Examiners.
- Asthana, S. and J. Boone. 2012. "Abnormal Audit Fee and Audit Quality." *Auditing: A Journal of Practice & Theory* 31 (3): 1–22.

- Beck, M., and E. Mauldin. 2014. "Who's Really in Charge? Audit Committee versus CFO Power and Audit Fees." *The Accounting Review* 89 (6): 2057–2085.
- Bedard, J. C., and K. M. Johnstone. 2004. "Earnings Manipulation Risk, Corporate Governance Risk, and Auditors' Planning and Pricing Decisions." *The Accounting Review* 79 (2): 277–304.
- Bell, T. B., R. Doogar, and I. Solomon. 2008. "Audit Labor Usage and Fees under Business Risk Auditing." *Journal of Accounting Research* 46: 729–760.
- Blankley, A. I., D. N. Hurtt, and J. E. MacGregor. 2012. "Abnormal Audit Fees and Restatements." *Auditing: A Journal of Practice & Theory*, 31 (1), 76–96.
- Casterella, J., J. Francis, B. Lewis, and P. Walker. 2004. "Auditor Industry Specialization, Client Bargaining Power, and Audit Pricing." *Auditing: A Journal of Practice & Theory* 23 (1): 123–140.
- Chasan, E. 2014. "Surprise! Audits Dig Deeper." *The Wall Street Journal*. January 14: B6.
- Choi, H. -D., and J.-W. Yoon. 2006. "The Effect of Corporate Governance on Conservativeness of Accounting Information." *Korean Accounting Review* 31 (4): 145–174. [Printed in Korean]
- Choi, J.-H., J.-B. Kim, X. Liu, and D. Simunic. 2008. "Audit Pricing, Legal Liability Regimes, and Big 4 Premiums: Theory and Cross-country Evidence." *Contemporary Accounting Research* 25 (1): 1–49.
- Das, S., P. K. Shroff, and H. Zhang. 2009. "Quarterly Earnings Patterns and Earnings Management." *Contemporary Accounting Research* 26 (3): 797–831.
- DeFond, M., K. Raghunandan, and K. R. Subramanyam. 2002. "Do Non-audit Service Fees Impair Auditor Independence? Evidence from Going Concern Audit Opinions." *Journal of Accounting Research* 40: 1247–1274.
- Doogar, R., P. Sivasadan, and I. Solomon. 2010. "The Regulation of Public Company Auditing: Evidence from the Transition to AS5." *Journal of Accounting Research* 48 (4): 795–814.
- Ettredge, M., E. E. Fuerherm, and C. Li. 2014. "Fee Pressure and Audit Quality." *Accounting, Organizations and Society* 39: 247–263.
- Frankel, R. M., M. F. Johnson, and K. K. Nelson. 2002. "The Relation between Auditors' Fees for Nonaudit Services and Earnings Management." *The Accounting Review* 77 (4): 71–105.
- Ghosh, A., and S. Lustgarten. 2006. "Pricing of Initial Audit Engagements by Large and Small Audit Firms." *Contemporary Accounting Research* 23 (2): 333–368.
- Ghosh, A., and R. Pawlewicz. 2009. "The Impact of Regulation on Auditor Fees: Evidence from the Sarbanes-Oxley Act." *Auditing: A Journal of Practice & Theory* 28 (2): 171–197.
- Haw, I. M., J. J. Lee, and W. J. Lee. 2014. "Debt Financing and Accounting Conservatism in Private Firms." *Contemporary Accounting Research* 31 (4): 1220–1259.
- Kane, G., F. Richardson, and P. Graybeal. 1996. "Recession-induced Stress and the Prediction of Corporate Failure." *Contemporary Accounting Research* 13 (2): 631–650.
- Kim, H. A., and M. T. Kim. 2012. "Differential Market Reaction and Firm Value for the Motives of Asset Revaluation." *Korean Accounting Review* 37 (3): 81–109.
- La Porta, R., F. Lopez-de-Silanes, and A. Shleifer. 2006. "What Works in Securities Laws?" *Journal of Finance* 61 (1): 1–32.
- Menon, K., and D. Williams. 2001. "Long-term Trends in Audit Fees." *Auditing: A Journal of Practice & Theory* 20 (1): 115–136.
- Ng, B.-P., and H.-T. Tan. 2003. "Effects of Authoritative Guidance Availability and Audit Committee Effectiveness on Auditors' Judgments in an Auditor-client Negotiation Context." *The Accounting Review* 78 (3): 801–818.
- Public Company Accounting Oversight Board (PCAOB) 2010. Report on Observations of PCAOB Inspectors Related to Audit Risk Areas Affected by the Economic Crisis. Release No. 2010-006 (29.09.10).
- Reason, T. 2010. "Auditing Your Auditor." <http://ww2.cfo.com/accounting-tax/2010/04/auditing-your-auditor/>.
- Simunic, D. A. 1984. "Auditing, Consulting, and Auditor Independence." *Journal of Accounting Research* 22 (2): 679–702.
- Wang, K. J., and B. M. Tuttle. 2009. "The Impact of Auditor Rotation on Auditor-client Negotiation." *Accounting, Organizations and Society* 34 (2): 222–243.
- Watts, L., and L. Zuo. 2011. "Accounting Conservatism and Firm Value: Evidence from the Global Financial Crisis." Working Paper. MIT Sloan School.
- Whitehouse, T. 2012. "PCAOB Forewarns: No Inspection Improvements in 2011." *Compliance Week*, September 18. <http://www.complianceweek.com/pcaob-forewarns-no-inspection-improvements-in-2011/article/259471/>.
- Zmijewski, M. 1984. "Methodological Issues Related to the Estimation of Financial Distress Prediction Models." *Journal of Accounting Research* 22 (Supplement): 59–82.

Appendix A. Variable definitions.

Variables	Definition
Dependent variables	
<i>AUDFEE</i> =	The natural logarithm of audit fees (in thousand Korean won)
<i>ABAUDFEE</i> =	Actual audit fees minus predicted audit fees, estimated using observations in the pre-crisis period
Test variables	
<i>CRISIS</i> =	Equals 1 if fiscal year is 2008, 2009, or 2010, and 0 otherwise
<i>SIZE</i> =	The natural logarithm of total assets
<i>ZSCORE</i> =	Zmijewski's (1984) bankruptcy score
<i>NONCL</i> =	Equals 1 if audit opinion is non-clean opinion, and 0 otherwise
<i>CGI</i> =	The composite score of corporate governance index issued by the Korean Corporate Governance Service
<i>PP</i> =	Equals 1 if the current-year return on asset is lower than prior-year return on assets, and 0 otherwise
Other control variables	
<i>BIG4</i> =	Equals 1 if the client's auditor is one of the Big 4 auditors, 0 otherwise
<i>LIQ</i> =	Liquidity measured by current assets divided by current liabilities
<i>MB</i> =	Ratio of market value of equity to book value of equity
<i>AC</i> =	Equals 1 if the client changes its auditor, and 0 otherwise
<i>EXPORT</i> =	The importance of foreign operation measured by foreign sales divided by total sales
<i>NSUB</i> =	Number of business segments
<i>ISSUE</i> =	Equals 1 if the firm issues debt or equity
<i>INVREC</i> =	The sum of inventory and receivables divided by total assets