



Fee pressure and audit quality[☆]



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A B S T R A C T

This study investigates the association of audit fee pressure with an inverse measure of audit quality, misstatements in audited data, during the recent recession. Fee pressure in a year is measured as the difference between benchmark “normal” audit fees and actual audit fees. We find fee pressure is positively and significantly associated with accounting misstatements in 2008, the center of the recession. Our results suggest that auditors made fee concessions to some clients in 2008, and that fee pressure was associated with reduced audit quality in that year.

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Introduction

We investigate the existence of downward audit fee pressure, and the consequences of that fee pressure on audit quality, during the economic downturn that is often referred to as the “Great Recession”. The Recession began in the U.S. in December of 2007 and officially ended in June of 2009 (NBER, 2010). It was longer than any other since World War II, and had more severe negative effects on gross domestic product, private sector jobs, and retail sales than preceding recessions. With regard to auditors, the severity of the Recession likely increased misstatement risk due to reduced client profitability and potential asset impairments. During and after the Recession, regulators repeatedly expressed concerns that audit fee pressure from clients could reduce audit effort and thus affect audit quality.¹ For example, Daniel

Goelzer, acting chairman of the Public Company Accounting Oversight Board (PCAOB), warned audit firms that although clients expect auditors to share the economic pain by agreeing to fee reductions, the PCAOB would be closely watching to see whether the fee pressure tempted audit firms to ease up on the rigor of audits (Goelzer, 2010). SEC chief accountant James Kroeker emphasized auditors shouldn’t even consider curtailing necessary audit work as a way to cope with falling revenue (Kroeker, 2010).

Despite the stated concerns of regulators, it is not clear that auditors would respond to fee pressure by reducing audit quality given the litigious climate in which they operate. Although client managers might have demanded reduced fees during the Recession, auditors arguably have incentives to maintain or increase audit effort when faced with increased engagement risk (Beck & Mauldin, 2013). One conceivable outcome is that auditors maintained audit effort and quality during the Recession despite granting fee concessions. Due to the conflicting incentives of managers vs. auditors, large sample empirical evidence about whether auditors experienced fee pressure and decreased audit quality in the face of increased misstatement risks is an important topic to consider.

Although regulators and practitioners claim that auditors experienced significant pressure to restrain or reduce audit fees during the Recession (Cheffers & Whalen,

[☆] Data Availability: All data used in this study are publicly available from the sources identified in the text.

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¹ There is some prior evidence that auditor decisions are affected by broad economic conditions. Leone, Rice, Weber, and Willenborg (2013) find that auditors exhibited a reduced propensity to give going concern modified opinions to financially stressed internet IPO companies during the period of the “dot com bubble.”

2010; PCAOB, 2010, 4), the concept of fee pressure to which these claims refer is undeveloped. Given the lack of an accepted proxy for fee pressure, we devise our own. We compare each client's actual audit fee in the test year (2008) with a benchmark audit fee for that year. We use 2007 as the pre-recession year to calculate our benchmark audit fees.² The benchmark audit fees are intended to represent normal levels of audit effort by controlling for changes in audit fees that correspond with changes in fee cost drivers. Specifically, we regress log of audit fees in 2007 on various fee cost drivers to obtain the estimated parameter for each client's individual cost driver.³ We then multiply the vector of 2007 estimated model parameters by the vector of that client's 2008 model variable values to obtain the 2008 benchmark audit fee for each client. Because a new shock to fee pressure is reflected in current year actual audit fees, but not in the benchmark fees, a comparison of each client's 2008 benchmark fee with its 2008 actual fee determines whether the client has successfully exerted fee pressure. We find approximately 47 percent of clients experienced fee pressure during 2008. The median fee pressure experienced by firms is \$163,000, which represents 29 percent of median audit fees of clients that successfully exerted fee pressure.

We also validate our fee pressure metric by comparing the extent of fee pressure in 2008, the center of the Recession, with fee pressure in both 2006 and 2007, the more normal, pre-recession years. We find significantly greater median fee pressure in 2008 than in both 2006 and 2007 and significantly greater mean fee pressure in 2008 than in 2006. These differences suggest that our fee pressure metric is valid. Our hypothesis is that client-specific fee pressure in 2008 is positively associated with client misstatements in that year. If clients successfully exerted downward pressure on audit fees, audit firms might have responded in ways that reduced audit quality. Previous research suggests that misstatements of audited data reflect lower enforcement of the correct application of GAAP by the auditor. A high-quality audit should, *ceteris paribus*, be more likely to detect material misstatements at a higher rate than would a lower quality audit (Francis, Michas, & Yu, 2013; Palmrose & Scholz, 2004). Therefore, the existence of a client misstatement provides more compelling evidence of low-quality audits than do earnings quality metrics such as discretionary accruals. In addition, both theoretical and empirical studies show that misstatements are negatively associated with audit effort, which is a direct measure of audit quality (Lobo & Zhao, 2013; Shibano, 1990). If auditors decrease audit quality for clients that exert fee pressure, there should be an increase in the incidence of misstatements for those clients. Thus, we

² Treating 2007 as a pre-recession year is consistent with a concurrent fee pressure study by Beck and Mauldin (2013). Given that fee negotiations occur in the first quarter of the fiscal year, 2008 should be the first recession year in which managers had time to press for fee concessions. Our results remain qualitatively the same if we use 2006 as the pre-recession year to calculate our benchmark audit fees.

³ We employ a standard log–log form audit fee model and refer to our fee pressure metric as the *Fee Pressure* metric. We modify our estimation method to incorporate the recommendations of Picconi and Reynolds (2012).

investigate whether fee pressure in 2008 is positively associated with misstatements of 2008 financial statements.⁴

Based on a sample of 3039 firms, we find a significant, positive association between the fee pressure metric and financial misstatements in 2008. This suggests that clients successfully exerting fee pressure in 2008 had lower audit quality, as measured by misstatements. Economically, a one standard deviation increase in our *Fee Pressure* metric is associated with a 1.1 percent increase in the likelihood of misstatements. This impact is large given that the mean misstatements rate in our sample is 5.8 percent for 2008.

We conduct additional analyses to investigate the effects of fee pressure in pre-recession years 2006–2007 and in the year that the recession eased and ended, 2009. Conceptually audit fee pressure could harm audit quality in any year, although we expect the impact of fee pressure on audit quality is the strongest in the Recession year of 2008. Studying those years also offers an additional benefit. Client firms that exert fee pressure could have certain characteristics that are associated with misstatements but are not controlled in our model explaining misstatements (i.e. the model is characterized by omitted variables). If our fee pressure measure proxies for stable, omitted client characteristics rather than for fee pressure, it should be positively and significantly associated with misstatements in years 2006, 2007 and 2009 as well as in 2008. The results show that such is not the case. Specifically, the association between the fee pressure measure and misstatements does not differ from zero in both 2007 and 2009, is only marginally significant in 2006, but is strongly significant in 2008. These results therefore suggest that omitted variable problems are unlikely to be the main driver of our results for 2008, and that the decrease in audit quality in that Recession year is related to fee pressure.

Finally we investigate whether differences in audit suppliers, audit clients, and misstatement characteristics affect our results. First, we examine whether the effects of fee pressure on audit quality in 2008 differ for large vs. small auditors, with size measured by Big 4 vs. non-Big 4 auditor type and by auditor office size. The results suggest that the impact of fee pressure does not differ for larger vs. smaller audit firms or audit offices. Second, we find no difference in the association between fee pressure and misstatements for larger vs. smaller clients. Third, we find that fee pressure in 2008 is positively associated with occurrence of severe misstatements, but not with less severe misstatements. This result indicates that fee pressure during the Recession was associated with serious decreases in audit quality, not just with small errors in the financial statements.

Our study makes several contributions. Although the business press reported that global and U.S. accounting firms initiated several rounds of layoffs and experienced slower receivables collections throughout the Recession (Wall Street Journal (WSJ), 2008, Accounting Today., 2009), large sample studies documenting whether clients successfully exerted fee pressure on auditors during the Recession are lacking. We develop a metric to represent

⁴ A client misstatement in a sample year is identified by a subsequent restatement specifying that the audited financial statements were misstated in that year.

fee pressure. We provide archival evidence that a large proportion (47 percent) of engagements during the Recession year of 2008 were characterized by positive fee pressure, and we demonstrate that fee pressure was associated with lower audit quality during the Recession. We are not aware of any published paper that comprehensively examines a major economic shock to audit fee pressure and the associated consequences for audit quality. This study provides such evidence.

The PCAOB has been closely monitoring whether audit quality has been compromised due to reduced revenues in auditing firms (PCAOB, 2010, 25), so our findings should be informative to regulators. Specifically, we document that fee pressure was pervasive during the Recession year of 2008 and median fee pressure equaled 29 percent of fees for those clients that successfully exerted fee pressure. More importantly, such pressure is associated with evidence of reduced audit quality on an important dimension, financial reporting misstatements. Our results suggest that auditors who experienced fee pressure from clients during the Recession were not able to maintain or increase audit effort in line with client risks due to pressure on audit fees.

The remainder of the paper is organized as follows. In Section ‘Background and hypothesis’ we provide background on concerns about the effects of the Recession on audit fees, and the resulting threat to audit quality, measured by misstatements. We also state our hypothesis. Section ‘Sample selection and methodology’ discusses the sample, variables, and models. Section ‘Empirical results’ provides major results. Section ‘Additional analyses’ includes additional analyses, and Section ‘Conclusion’ concludes.

Background and hypothesis

In this section we discuss the effects of the Recession on the audit market and possible implications for audit quality. We also state our hypothesis.

Downward pressure on audit fees in the recession

As discussed above, the Recession was longer and more severe than any other since World War II. It imposed significant financial pressures on many companies. For instance, the number of U.S. commercial bankruptcies for the first eleven months of 2008 was 35 percent greater than the number filed in the entire year of 2007 (Pugh, 2008). Companies expected auditors to share the economic pain by agreeing to fee reductions (Goelzer et al., 2010). If fee reductions occurred, such decreases would be in sharp contrast to the fee increases in the years following the passage of the Sarbanes Oxley Act of 2002 (Cheffers & Whalen, 2010; Ettredge, Li, & Scholz, 2007). In addition, Global and U.S. accounting firms had several rounds of layoffs throughout the recession (Accounting Today, 2009; WSJ, 2008). Accounting firms also experienced slower receivables collections (Accounting Today, 2009), potentially leading to cash flow problems. Thus, accounting firms as well as their clients appear to have experienced financial challenges during the Recession. Regulators have stated concerns that increased fee pressure might have threatened audit quality.

Hypothesis: downward fee pressure and reduced audit quality

The PCAOB issued Staff Audit Practice Alert (SAPA) No. 3, *Audit Considerations in the Current Economic Environment*, to remind auditors that increased misstatement risks arising from the Recession likely required modifications to audit procedures: “Higher risk may cause the auditor to expand the extent of procedures applied, apply procedures closer to or as of yearend . . . or modify the nature of procedures to obtain more persuasive evidence” (PCAOB, 2008, 3). In essence, higher risk requires greater auditor effort, which normally results in higher audit fees. However, as noted above, auditors arguably experienced fee pressure from clients and faced financial challenges during the Recession. These circumstances suggest that audit firms might not have increased their audit effort in the Recession to the extent needed to ensure satisfactorily low audit risk. Auditors likely find it difficult to fit additional procedures into engagement budgets when budgets are impacted by fee pressure. If clients are successful in obtaining fee concessions, it is less likely that their auditors will have the resources required to increase audit effort, thus audit quality is compromised.⁵

In its Report on *Observations of PCAOB Inspectors Related to Audit Risk Areas Affected by the Economic Crisis* (PCAOB, 2010, 2) the PCAOB stated: “PCAOB inspectors identified instances where auditors sometimes failed to comply with PCAOB auditing standards in connection with audit areas that were significantly affected by the economic crisis.” The PCAOB attributed these failures, at least in part, to fee pressure arising from the Recession:

“The Board’s inspection staff is aware that as a result of the economic crisis and other factors, auditors might be pressured to significantly reduce their audit fees. Confronted with reduced revenues, some auditors might make inappropriate reductions in the extent of audit procedures in order to achieve cost savings. The Board’s inspection staff continues to monitor whether audit quality and the [audit] firms’ quality control systems have been compromised due to reduced revenues.” (PCAOB, 2010, 25–26).

Some prior research supports the PCAOB’s concern that fee pressure can lead to reduced audit quality.⁶ On the other hand, auditors currently may hesitate to reduce audit quality in response to fee pressure because of reputation concerns and fear of litigation in the post-SOX regulatory climate. This could lead to auditors exerting the necessary

⁵ An audit firm could subsidize unprofitable engagements using fees from profitable engagements. We doubt this often occurs because audit firms treat individual engagements as profit centers. Engagement teams are under substantial pressure to complete engagements on or under budget to ensure profitability on each job (Ettredge, Bedard, & Johnstone, 2008a; Ettredge, Bedard, & Johnstone, 2008b).

⁶ Such studies typically employ behavioral experiments or small samples provided by a single audit firm (e.g. Coram et al., 2004, Ettredge et al. 2008b). Our study adds to this literature by investigating this phenomenon on a larger scale using archival methodology. This research complements studies in other methodologies which often have contextually rich, but necessarily smaller samples. Consistent results across studies provides theoretical and methodological triangulation in the auditing literature.

effort and simply “eating hours” to hide engagement unprofitability, although the findings noted in the PCAOB inspection cycles (PCAOB, 2010, 25–26) suggest this may not have been the case for some engagements.⁷ The above discussions lead to our hypothesis, stated in alternate form:

H1. Downward pressure on audit fees is positively associated with decreased audit quality in 2008.

We use financial reporting misstatements as an inverse proxy for audit quality. Higher quality audits should detect more errors and result in fewer misstatements (Kinney, Palmrose, & Scholz, 2004; Lobo & Zhao, 2013; Romanus, Maher, & Fleming, 2008; Stanley & DeZoort, 2007). In the challenging economic environment of the Recession, auditors may not have been able to fully respond to increased client risks by increasing audit procedures.⁸ Thus, client managers that successfully exerted fee pressure may have had more ability to willingly or unintentionally misstate results while their auditors may have been less likely to detect the existence of such accounting errors.⁹ We test H1 by regressing a dependent variable representing existence or non-existence of misstatements against variables often used to explain these occurrences, plus our proxy for fee pressure, which we will explain in detail in the next section. H1 is supported if the coefficient on the fee pressure metric is positive and significant.

Sample selection and methodology

Sample

We obtain a sample of all public companies that are covered by both Audit Analytics and Compustat in 2008. The initial sample is 7539 firms. Consistent with prior literature, we exclude all financial services firms due to their unique operating and regulatory nature. We then exclude 503 firms without the necessary audit fee data in 2008 as well as the necessary lagged audit fee data in 2007. We exclude an additional 1,461 firms missing the necessary financial and audit data in 2008 as well as the lagged data

⁷ Alternatively, auditors could have increased amounts of audit effort during the Recession, but not to the extent necessary to mitigate the increased risk. We are unable to investigate this possibility due to lack of data on auditor effort.

⁸ The challenging economic environment during the Recession likely increased intentional and unintentional misstatement risk. For example, reduced client profitability could increase potential asset impairments and also pressure management to inflate earnings. This may have increased the risk that client prepared financial statements were misstated prior to audits. However, if auditors fully respond to this increased misstatement risk, the rate of misstatements in audited financial statements should not increase.

⁹ An alternative perspective is offered by recent studies that suggest that abnormally high audit fees threaten auditor independence (Choi, Kim, & Zang, 2010; Kanagaretnam, Krishnan, & Lobo, 2010). If so, it is possible that increases in fees, unaccompanied by commensurate increases in cost drivers, cause auditors to be lax in averting client misstatements and restraining client accruals. This situation would bias against our finding support for H1. However, in the context of the Recession we do not expect audit fees generally increased relative to the costs of performing audits. Furthermore Francis (2011, 138) is skeptical that fee model residuals capture auditor independence.

Table 1
Sample selection.

	2008
Companies covered by Audit Analytics and Compustat	7539
Less: financial services (SIC 6000–6999)	2062
without current year audit fee data	228
without lagged audit fee data	275
without current year financial and audit data to estimate audit fee pressure models	1273
without lagged financial and audit data to estimate audit fee pressure models	188
without necessary additional financial data to estimate the misstatement model	474
Companies with all necessary data to investigate H1	3039

in 2007 necessary to calculate the audit fee and fee pressure model variables. Finally, we exclude 474 firms missing the necessary data for the misstatement model variables. This results in a final sample of 3039 firms in 2008, which is used to estimate the fee models needed to calculate expected audit fees in 2008 and the model used to test our H1. Table 1 summarizes the sample attrition process.

Models and variables

Investigating the existence and effects of fee pressure requires a fee pressure proxy. A company might obtain a fee reduction because it experiences a decrease in size, risk, or complexity. Such a decrease could occur, for example, if a client spins off a piece of its business.¹⁰ A good proxy for fee pressure should control for changes in audit fees that correspond with changes in fee cost drivers. Auditors normally respond to increases in client size, complexity, and financial reporting risk by expending greater audit effort and charging higher audit fees (Raghunandan & Rama, 2006; Simunic, 1980). However, the economic hardship accompanying the Recession suggests auditors likely had difficulty increasing their fees commensurate with increases in client size, complexity, and financial reporting risk in 2008.

Fig. 1 presents a graphic example of the possible effects of client changes on audit fees during the Recession. In 2007 the level of audit cost driver X is “2007 X”. The cost driver maps into that year’s actual fee “2007 Actual” via the “2007 Audit Fee Line,” which has intercept “ α ” and slope “ β ”. In Recession year 2008, the client’s cost driver has increased to level “2008 X”. Based on normal (pre-Recession) fee pricing, that should map into the “2008 Benchmark Fee”:

$$2008 \text{ Benchmark Fee} = \alpha + \beta(2008 X). \quad (1)$$

¹⁰ Our concept allows for the fact that some fee reductions arise for reasons that do not threaten audit quality. This was acknowledged by the chief auditor of the PCAOB, who told a conference of the AICPA that he hoped auditors were not cutting the number of hours they spend on audits “unless they are doing so because of an identifiable decrease in audit risk or other commensurate changes in circumstances” (Whitehouse, 2010).

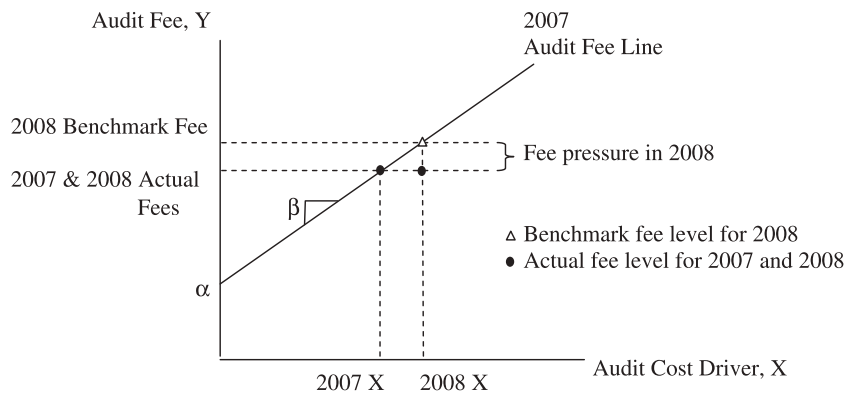


Fig. 1. A Graphic Example of Fee Pressure. This graph represents a simplified example of the effects of client change on audit fee during the Recession. In 2007, the level of audit cost driver X is “2007 X”. The cost driver maps into that year’s Actual Fee “2007 Actual Fee” via the “2007 Audit Fee Line”. In Recession year 2008, the client’s cost driver has increased to level “2008 X”. Based on pre-Recession fee pricing, that should map into the “2008 Benchmark Fee”. If the 2008 actual fee equals or exceeds the “2008 Benchmark Fee”, it indicates that there is no fee pressure. Suppose instead that the client successfully resists a fee increase so that the actual fee for 2008 is the “2008 Actual Fee” in the diagram. Since the 2008 Actual Fee is less than the 2008 Benchmark Fee in that case, fee pressure occurs. Although the example shows no change from 2007 to 2008 in actual fee level, fee pressure also would exist in the case of a fee cut (i.e. a 2008 actual fee less than the 2007 actual fee) if there was no corresponding decrease in cost driver X.

If the 2008 actual fee equals or exceeds the “2008 Benchmark Fee”, there is no fee pressure. Suppose instead that the client successfully resists a fee increase so that the 2008 actual fee is less than the 2008 benchmark fee. In that case, fee pressure occurs. Although the example shows no change from 2007 to 2008 in the actual fee level, fee pressure still exists because of the increase in the audit cost driver. Fee pressure also would exist in the case of a fee reduction (i.e. a 2008 actual fee less than the 2007 actual fee) if there was no corresponding decrease in cost driver X.

In the simple model of Fig. 1, audit fees have only one cost driver. In reality, there are multiple cost drivers. For a given client some cost drivers could increase and others might decrease from 2007 to 2008. A multivariate model based on 2007 estimated parameters can map the various cost driver levels for 2008 into a single benchmark audit fee for each client in 2008. A comparison of each client’s 2008 benchmark fee with its 2008 actual fee determines whether we define the client as having successfully exerted fee pressure. Therefore, we employ a multivariate model, discussed below, to derive benchmark fees that control for the changes in client and engagement characteristics. Appendix A provides a detailed discussion of the audit fee setting process and how it links to the multivariate fee model.

Our primary fee pressure proxy, the *Fee Pressure* metric, is derived from the log–log audit fee model. The model is:

$$\begin{aligned}
 \ln \text{AUDITFEE} = & b_0 + b_1 \text{LnAT} + b_2 \text{LOSS} + b_3 \text{CRATIO} \\
 & + b_4 \text{ZSCORE} + b_5 \text{CFO} + b_6 \text{ARIN} \\
 & + b_7 \text{SEG} + b_8 \text{FOREIGN} + b_9 \text{SQEMPLOY} \\
 & + b_{10} \text{RLAG} + b_{11} \text{GC} + b_{12} \text{ACCELERATE} \\
 & + b_{13} \text{ICMW} + b_{14} \text{RESTATE} + b_{15} \text{BHRET} \\
 & + b_{16} \text{IOS} + b_{17} \text{BIG4} + b_{18} \text{AUDCHG} \\
 & + b_{19} \text{POWER} + b_{20} \text{ACOMP} \\
 & + \text{industry dummies.}
 \end{aligned} \tag{2}$$

Firm and year subscripts are suppressed for simplicity. To obtain a benchmark audit fee for 2008, we estimate the log–log model by asset quintiles using 2007 data.¹¹ For each client, we then multiply the vector of 2007 estimated model parameters by the vector of that client’s 2008 model variable values and sum to obtain the 2008 benchmark logged fee. We subtract the 2008 actual fee from the pre-logged (exponential) 2008 benchmark fee, and scale the difference by total assets, to get our audit *Fee Pressure* measure. Fee pressure exists if the *Fee Pressure* metric is positive. The larger the difference is, the greater the fee pressure.

Model (2) includes determinants of audit fees identified in the prior literature (e.g. Cahan, Godfrey, Hamilton, & Jeter, 2008; Castrella, Francis, Lewis, & Walker, 2004; Francis & Simon, 1987; Hogan & Wilkins, 2008; Newton, Wang, & Wilkins, 2013; Raghunandan & Rama, 2006; Simunic, 1980; Whisenant, Sankaraguruswamy, & Raghunandan, 2003). First, we include variables that relate to the company under audit. We include a proxy for size (*LnAT*) because larger companies require more audit effort and total assets is the most significant predictor of audit fees (Picconi & M., 2012). We include several proxies for financial conditions (*LOSS*, *CRATIO*, *ZSCORE*, *CFO*). Companies that have poor financial conditions have greater risk of bankruptcy and greater impairment risk requiring more audit effort. We also include proxies for complexity (*ARIN*, *SEG*, *FOREIGN*, *SQEMPLOY*). Companies that are more complicated require auditors to increase resources to audit all material or risky components of the business. We also include a variable for stock returns (*BHRET*) because companies with positive stock returns are associated with lower audit fees (Whisenant et al. 2003).

¹¹ Picconi and M. (2012) criticize the log–log model’s functional form and show that it provides biased estimates of actual audit fees. We apply their suggested remedy by estimating the log–log model separately for each size quintile and also include industry dummies.

We also include several variables related to the audit. We include multiple proxies for audit risk factors (*RLAG*, *GC*, *ACCELERATE*, *ICMW*, *RESTATE*). Clients with a longer reporting lag (*RLAG*) may signal that the company is more difficult to audit. Accelerated filers (*ACCELERATE*) are larger with shorter reporting deadlines and may be under greater scrutiny from regulators. In addition, clients with prior issuance of a going concern opinion (*GC*), an internal control material weakness (*ICMW*), or a prior restatement (*RESTATE*) likely will require greater auditor effort in these areas. Next, we include auditor type (*BIG4*) because Big 4 auditors are associated with a fee premium (Whisenant et al. 2003). Finally, we include other audit market factors (*IOS*, *AUDCHG*, *POWER*, *ACOMP*). Clients with a more homogenous industry opportunity set (*IOS*) may enable auditors to specialize within an industry. This specialization may allow auditors to differentiate their services and charge a premium (Cahan et al. 2008). A change in auditor from prior year (*AUDCHG*) will result in a new fee negotiation and may result in fee changes. Clients with greater bargaining power (*POWER*) may be able to pressure their auditors to reduce audit fees (Castrella et al. 2004). Finally, audits in areas with greater auditor competition (*ACOMP*) are associated with lower audit fees (Newton et al., 2013).

We also include industry dummies following the Picconi and M. (2012) method. Industry dummies are based on the updated Fama–French 12 industries (Fama & French, 2011). Variable definitions are provided in Table 2. See Appendix B for model estimation results.¹²

Hypothesis test

In order to test our hypothesis, we investigate whether an inverse measure of audit quality is positively associated with *Fee Pressure* in 2008. Our inverse proxy for audit quality used to investigate H1 is the occurrence of a financial reporting misstatement in 2008. We identify misstatements using the restatement announcements from 2008 to 2012 in Audit Analytics. We argue that misstatements that involve violations of GAAP in audited financial statements are a good proxy for low audit quality because the auditor's duty is to determine whether financial reports are materially presented in accordance with GAAP.

We analyze the determinants of misstatements using the logistic regression model below:

$$\begin{aligned} \text{MISSTATE} = & b_0 + b_1 \text{FeePressure} + b_2 \text{LnAT} \\ & + b_3 \text{GROWTH} + b_4 \text{ARIN} + b_5 \text{ACCRUAL} \\ & + b_6 \text{LEV} + b_7 \text{EXANTE} + b_8 \text{LOSS} + b_9 \text{GC} \\ & + b_{10} \text{MA} + b_{11} \text{VOLATILE} + b_{12} \text{SPECIAL} \\ & + b_{13} \text{NEWDEBT} + b_{14} \text{ICMW} + b_{15} \text{AGE} \\ & + b_{16} \text{ACOMP} + b_{17} \text{NAFEERATIO} \\ & + b_{18} \text{INDSPECIAL} + \text{industry dummies} \end{aligned} \quad (3)$$

¹² The adjusted *R*-squares of the log–log model by quintiles for 2008 are lower than the usual *R*-squares obtained when using the traditional log–log model. This is likely due to the significantly reduced sample size and variable variance in each of five separate audit fee regressions. When we use the traditional procedure of pooling data across all quintiles, the log–log model's adjusted *R*² is 0.85. Our results remain qualitatively the same if we use the traditional log–log model with pooled data.

MISSTATE equals one if the firm has a financial reporting misstatement for year 2008 and zero otherwise. The coefficient of interest is that of the explanatory test variable *Fee Pressure*. If fee pressure is associated with decreased audit quality, hence increased incidence of misstatements, we expect the coefficient on the *Fee Pressure* variable to be positive and significant.

In model (3) we employ control variables based on prior literature (e.g. Kinney et al., 2004; Newton et al., 2013; Romanus et al., 2008; Stanley & DeZoort, 2007). See Table 2 for variable definitions. We control for firm size (*LnAT*) because larger clients may have more developed control systems and more resources to devote to financial reporting. Thus they might be less likely to misstate financial statements (Newton et al., 2013). We include sales growth (*GROWTH*) because prior research suggests that growth is associated with misstatements (Newton et al., 2013). Accruals (*ACCRUAL*) are included because they can be used to manage results and have been associated with misstatements (Richardson, Tuna, & Wu, 2002). We include several proxies for financial condition (*LEV*, *EXANTE*, *LOSS*) because companies that are in financially distressed or highly leveraged may face pressure to misstate financial statements.

Next, we include several controls for additional risk factors. Companies that have received a going concern opinion (*GC*) may be under pressure to manipulate results. We include a dichotomous variable capturing mergers and acquisitions (*MA*) because they are one of the most common causes of non-core account restatements (Palmrose & Scholz, 2004). Companies with volatile earnings (*VOLATILE*) can be more unpredictable and difficult to audit which increases misstatement risk. We also include two measures of complexity (*ARIN*, *SPECIAL*) because more complex companies may be more difficult to audit and have greater misstatement risk. We include financing activity (*NEWDEBT*) because firms that obtain external financing may have greater incentives to manage earnings and are associated with misstatements (Richardson et al., 2002). We include a variable for internal control material weaknesses (*ICMW*) because clients with weak controls may be less likely to prevent or detect a misstatement. We also include firm age (*AGE*) because older firms may have more established internal controls and be less likely to restate.

Finally, we include several controls related to the audit. We include auditor competition (*ACOMP*) because metro areas with higher auditor competition have been shown to have higher incidents of misstatements (Newton et al., 2013). The non-audit fee ratio (*NAFEERATIO*) is included because of concerns about the impact of non-audit fees on auditor independence and audit quality (Stanley & DeZoort, 2007). We include a measure of industry specialist auditors (*INDSPECIAL*) because these auditors may have more industry specific knowledge and be better able to detect misstatements (Stanley & DeZoort, 2007). We also include industry dummies based on the Fama–French 12 industries (Fama & French, 2011).

Table 2
Variable definitions.

Variable	Definition
Log–log model (2)	
<i>LN_AUDITFEE</i>	Equals the logarithm of total audit fees in year <i>t</i>
<i>LnAT</i>	Equals the logarithm of total assets in year <i>t</i>
<i>LOSS</i>	Equals 1 if the company reported a loss in year <i>t</i> , zero otherwise
<i>CRATIO</i>	Equals the current ratio calculated as current assets divided by current liabilities in year <i>t</i>
<i>ZSCORE</i>	Equals the probability of bankruptcy score (Zmijewski, 1984) measured at the end of the year <i>t</i> . The bankruptcy score is calculated as $-4.3 - 4.5 * (\text{net income}/\text{total assets}) + 5.7 * (\text{total debt}/\text{total assets}) - 0.004 * (\text{current assets}/\text{current liabilities})$
<i>CFO</i>	Equals operating cash flow divided by total assets in year <i>t</i>
<i>ARIN</i>	Equals accounts receivable plus inventories, divided by total assets in year <i>t</i>
<i>SEG</i>	Equals natural log of the number of operating and geographic segments in year <i>t</i>
<i>FOREIGN</i>	Equals 1 if the company has foreign transactions in year <i>t</i> , zero otherwise
<i>SQEMPLOY</i>	Equals the square root of the number of employees reported by the company in year <i>t</i>
<i>RLAG</i>	Equals the natural log of the number of days between the company's fiscal year end and the auditor's signing date in year <i>t</i>
<i>GC</i>	Equals 1 if the company received a going concern modified opinion in year <i>t</i> , zero otherwise
<i>ACCELERATE</i>	Equals 1 if the company is an accelerated filer in year <i>t</i> , zero otherwise
<i>ICMW</i>	Equals 1 if the company discloses an internal control material weakness in year <i>t</i> , zero otherwise ^a
<i>RESTATE</i>	Equals 1 if the company announces a restatement in year <i>t</i> , zero otherwise
<i>BHRET</i>	Equals the firm's buy and hold stock return for year <i>t</i>
<i>IOS</i>	Equals the industry investment opportunity set (IOS) as per Cahan et al. (2008). The IOS factor is calculated for each firm in the sample. The industry investment opportunity set equals the standard deviation of the IOS factors for each industry
<i>BIG4</i>	Equals 1 if the signing auditor is a member of the Big 4, zero otherwise
<i>AUDCHG</i>	Equals 1 if the company changes auditors in year <i>t</i> , zero otherwise
<i>POWER</i>	Equals client bargaining power in year <i>t</i> . It is calculated by taking the log of sales divided by the sum of industry sales following Castrella et al. (2004)
<i>ACOMP</i>	Equals the auditor competition a given metropolitan statistical area in year <i>t</i> . It is calculated by ranking the Herfindahl index into quintiles following Newton et al. (2013)
Misstatement model (3): new variables not defined above	
<i>MISSTATE</i>	Equals 1 if the firm misstated the year <i>t</i> financial statements, zero otherwise
<i>GROWTH</i>	Equals the percentage increase in revenues from year <i>t</i> – 1 to year <i>t</i>
<i>ACCRUAL</i>	The change in noncash working capital plus the change in noncurrent operating assets plus the change in net financial assets following Richardson et al. (2002)
<i>LEV</i>	Equals total liabilities divided by total assets in year <i>t</i>
<i>EXANTE</i>	Measures the need for future external financing. Equals 1 if the firm's free cash flow in year <i>t</i> is less than 0.1, zero otherwise. Free cash flow is calculated as net income less accruals (defined above) divided by average of the last three years of capital expenditures following Romanus et al. (2008)
<i>MA</i>	Equals 1 if the firm had a merger or acquisition in year <i>t</i> , zero otherwise
<i>VOLATILE</i>	The standard deviation of earnings in the prior seven years
<i>SPECIAL</i>	Special items divided by total assets.
<i>NEWDEBT</i>	Equals 1 if the firm issued long term debt during year <i>t</i> , zero otherwise
<i>AGE</i>	The natural log of the number of years the firm is in CRSP
<i>NAFEERATIO</i>	Equals non-audit fees divided by total fees in year <i>t</i>
<i>INDSPECIAL</i>	Equals 1 if the auditor is a city level industry expert, zero otherwise. Industry expertise is measured using the portfolio measure at the auditor and city level following Neal and Riley (2004). Industry portfolio share is calculated as the audit fees for each two digit SIC code divided by the auditor's total audit fees in each MSA. Each auditor is defined as an industry expert for the industry in which they have largest portfolio share
Misstatement model (3): sensitivity analysis variables	
<i>ASIZE</i>	Equals 1 if the auditor office revenues are more than the median of total office revenues in the sample, zero otherwise. The median total office revenue in our sample is \$13,415,750
<i>IRREGULARITY</i>	Equals 1 if Audit Analytics codes the misstatement as a fraud or as having an SEC investigation, zero otherwise
<i>CAR</i>	Equals the cumulative abnormal return for the five day window (–2, 2) surrounding the restatement announcement
<i>MAGNITUDE</i>	The magnitude of the misstatement equals the cumulative impact of the restatement on net income scaled by total assets
<i>REV_RELATE</i>	Equals one if the misstatement is coded as revenue related in Audit Analytics, zero otherwise
<i>LENGTH</i>	Equals the natural log of the misstatement length in years

^a The internal control material weakness is obtained from the auditor's Section 404 internal control report. 72% of our sample has Section 404 reports. For firms that do not have auditors' internal control reports, ICMW is set to be zero. In additional analyses, we examine only those firms without auditor Section 404 reports and our results remain similar.

Empirical results

Descriptive statistics for fee pressure

The untabulated results suggest that the *Fee Pressure* measure is positive for 47% of clients in 2008. Thus, almost half of clients successfully exerted fee pressure in that

year. The median of the *Fee Pressure* measure for clients with positive fee pressure is 0.0006, which is about \$163,000 (not tabulated).¹³ Because the median 2008 audit fee for clients with positive *Fee Pressure* values in our sample

¹³ The fee pressure measure is scaled by total assets. Median assets for clients with positive *Log-Log* are \$291,067,500.

Table 3

Descriptive statistics for fee pressure metric.

	2008 N = 3039			2006 N = 3539			Differences in means		Differences in medians	
	Mean	Median	Std. Dev	Mean	Median	Std. Dev	t-Stat	p-Value	z-Score	p-Value
<i>Panel A: Comparison of fee pressure metric for 2008 vs. 2006</i>										
Fee pressure	-0.00077	-0.00003	0.0046	-0.00148	-0.00016	0.0061	-5.29	0.001	-4.87	0.001
	2008 N = 3039			2007 N = 3349			Differences in means		Differences in medians	
	Mean	Median	Std. Dev	Mean	Median	Std. Dev	t-Stat	p-Value	z-Score	p-Value
<i>Panel B: Comparison of fee pressure metric for 2008 vs. 2007</i>										
Fee pressure	-0.00077	-0.00003	0.0046	-0.00091	-0.00008	0.0049	-1.25	0.21	-1.68	0.09

is \$564,090, the ratio of the dollar value of fee pressure to audit fees is approximately 29% for clients with positive fee pressure.

To validate our *Fee Pressure* measure, we compare the mean and median of *Fee Pressure* in 2008 with those in both 2006 and 2007. Because 2008 is the center year of the Recession, the fee pressure should be greater in that year compared to the other years. Thus, if the *Fee Pressure* variable proxies for fee pressure, we expect to find greater means and medians of *Fee Pressure* in 2008 than in both 2006 and 2007. Table 3 reports the results. More positive (less negative) values correspond to greater fee pressure. The results indicate that the median of *Fee Pressure* is significantly less negative in 2008 than in 2006 and 2007, indicating increased fee pressure in 2008. In addition, the mean of *Fee Pressure* is significantly less negative in 2008 than in 2006. Thus, Table 3 provides support that our *Fee Pressure* metric is valid.¹⁴

Descriptive statistics for model variables testing H1

Table 4 reports the descriptive statistics for the model (3) variables impacting misstatements. Both mean and median *Fee Pressure* are significantly greater for misstatement firms than for non-misstatement firms, which provides univariate support to H1. Misstatement firms have higher occurrence of internal control material weaknesses and are younger than non-misstatement firms. Incidence of receiving a going concern opinion is also lower for misstatement firms than non-misstatement firms, before controlling for other firm characteristics.

Regression results for H1

Table 5 reports the logistic regression results for Model (3), the impact of fee pressure in 2008 on financial misstatements. The area under the ROC curve is above 0.70 and the Hosmer and Lemeshow goodness of fit test is not significant, suggesting reasonable model

fit. Importantly, the coefficient on *Fee Pressure* is positive and significant, suggesting that clients that successfully exert fee pressure on their auditors are more likely to have misstatements.¹⁵ This result is consistent with our univariate analysis and supports H1. The effect is economically meaningful as well as statistically significant. Specifically, a one standard deviation increase in *Fee Pressure* is associated with a 1.1 percent increase in the likelihood of misstatements.¹⁶ This impact is economically large given that misstatements occur in our sample at a rate of 5.8 percent for 2008. This suggests that audit quality, on this dimension, suffered due to fee pressure during the Recession.

Results for control variables show that firms with larger accruals, more special items, and firms with internal control weaknesses are more likely to misstate. On the other hand, older firms, firms with higher accounts receivable and inventory ratios, and firms with going concern opinions are less likely to have misstatements.

Fee pressure and audit quality in years surrounding the recession

Regulators have expressed concerns that increased fee pressure might have threatened audit quality during the Recession because the Recession imposed significant financial pressures on many companies and accounting firms. Conceptually, however, audit fee pressure could harm audit quality in any year, although we expect the impact of fee pressure on audit quality is the strongest in the Recession year.

To provide evidence on this, we investigate the effects of fee pressure in several years surrounding the peak recession year of 2008. The first such year is 2006. The Recession

¹⁴ A comparison of the 2006 mean and median with those for 2007 suggest a tendency for fee pressure to increase as the recession approached. The increases in both the mean and median are significant at the 0.01 level.

¹⁵ In untabulated results, we calculate the *Fee Pressure* metric without scaling by total assets. Our results remain qualitatively the same as those presented (positive coefficient with p -value = 0.017). In addition, we calculate fee pressure using total fees, instead of audit fees. Results remain similar to, but slightly weaker than, those presented (positive coefficient with p -value = 0.080).

¹⁶ The economic magnitude for the impact of *Fee Pressure* on misstatements in 2008 equals the coefficient $\times p \times (1 - p) \times$ one standard deviation of *Fee Pressure*.