The effect of the type and number of internal control weaknesses and their remediation on audit fees

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Abstract

Purpose – The implementation of compliance procedures associated with the Sarbanes-Oxley Act of 2002 came at a great cost to most publicly-traded firms, largely due to the internal control disclosures required by Section 404 of the Act. The purpose of this paper is to contribute to the inquiry on internal control effectiveness by examining the impact of the type (same or different) and number of internal control weaknesses on audit fees. The paper also examines whether firms that remediate continue to incur higher audit fees compared to firms that never disclosed a weakness.

Design/methodology/approach – The authors evaluate the impact of internal control weaknesses and their remediation on audit fees using ordinary least squares regression for 9,122 firm year observations (3,096 unique firms) over the time period 2004-2007.

Findings – The authors find: an incremental impact on audit fees of additional material weakness disclosures; firms that report the same material weakness pay higher fees than firms reporting a different material weakness in consecutive years; and audit fees remain high one, two, and three years following remediation compared to a firm that never disclosed an internal control weakness.

Originality/value – In contrast with prior studies, the sample includes firms that remediated weaknesses, firms that failed to remediate weaknesses, and firms that did not have prior weaknesses. The results suggest that the failure to remediate has greater risk implications than new weaknesses and that material weaknesses are associated with higher audit fees several years after remediation.

Keywords United States of America, Sarbanes-Oxley, Auditing, Fees, Internal control, Internal control weaknesses, Remediation, Audit fees

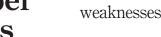**Paper type** Research paper

1. Introduction

In response to the accounting scandals that occurred in 2001, Congress passed the Sarbanes-Oxley Act of 2002 (SOX) to help instill confidence in the financial statements of publicly-traded companies. Section 302 of the Act requires management to disclose

significant deficiencies in internal control when they certify quarterly or annual financial statements. Unlike Section 302, Section 404 of the Act requires all publicly-traded firms to assert as to the effectiveness of the internal controls and additionally requires accelerated filers to have a public accounting firm express an opinion on the effectiveness of internal control over financial reporting[1].

The Securities and Exchange Commission (SEC) created the Public Company Accounting Oversight Board (PCAOB) to provide oversight of public companies and their auditors, including establishing audit standards (SEC, 2009). These standards include the process that companies and accounting firms are required to follow in determining the effectiveness of a firm's controls. Under Auditing Standard No. 2 (PCAOB, 2004), the standard for audits of internal control during most of the period included in this study, a material weakness must be disclosed if there is more than a remote likelihood that internal controls will not prevent or detect a material misstatement in annual or interim financial statements.

Prior research examines the effect of auditor and firm characteristics on audit fees (including Simunic, 1980; O'Keefe *et al.*, 1994; Craswell *et al.*, 1995; Houston *et al.*, 1999; Carcello *et al.*, 2002; Abbott *et al.*, 2003; Francis *et al.*, 2005; Houston *et al.*, 2005; Lowensohn *et al.*, 2007). Mitra (2009) examines audit fees for firms that remediate an internal control weakness and firms that do not remediate and finds that fees decline for firms that remediate. In contrast, we examine firms that disclose and do not disclose internal control weaknesses. We find fees of remediating firms do not decline to the level of fees the firm would have paid if they had never disclosed an internal control weakness. Thus, the firm continues to pay for the weakness despite remediation efforts. We test several years after remediation and find that fees remain higher for firms that disclosed an internal control weakness. Our findings are consistent with the view that auditors build a risk premium into the audit fee at the time of disclosure[2].

We analyze 9,122 firm-year observations covering the years 2004 through 2007. We find that incremental material weaknesses identified have a positive effect on audit fees. Though audit effort should not increase significantly due to a disclosure in the second year, we find that firms that report the same or different material weaknesses in consecutive years pay higher audit fees. Further, we find that firms reporting the same material weakness pay significantly higher audit fees than firms that report a different material weakness in consecutive years. These findings support the view that auditors charge a risk premium for firms with consistently ineffective internal controls, and this premium is greater when the firm fails to remediate a previously identified weakness. We find that firms continue to pay higher than normal audit fees one, two, and three years following remediation as compared to firms that do not report an internal control weakness. This result is consistent with the argument that a portion of the increase in fees in response to the disclosure is due to the existence of a risk premium, rather than solely due to an increase in auditor effort.

Our paper contributes to several streams of research. First, we contribute to research examining the impact of internal control weaknesses. Ashbaugh-Skaife *et al.* (2009) and Doyle *et al.* (2007) find that firms with internal control weaknesses have lower accruals quality. Other research finds that internal control weaknesses are positively related to firm risk and cost of equity capital (Ashbaugh-Skaife *et al.*, 2009; Ogneva *et al.*, 2007). We find that there is an incremental impact to disclosure of additional material

weaknesses on audit fees, and firms that remediate continue to incur higher audit fees than firms that do not disclose a weakness, even three years after remediation.

We also contribute to research examining the impact of internal control weaknesses on audit fees. Elder *et al.* (2009) find that firms with internal control weaknesses are charged higher fees by their auditor and that the fee premium for company-level weaknesses is higher than for account-level weaknesses in the first year of SOX 404. Ghosh and Pawlewicz (2009) find that the increased responsibility placed on auditors due to the internal control opinions required by SOX results in a significant increase in audit fees. Prior research finds that internal control weaknesses represent risk that is meaningful to financial statement users and audit fees are higher for these firms in the first year following the implementation of SOX (Ashbaugh-Skaife *et al.*, 2009; Hoitash *et al.*, 2008; Raghunandan and Rama, 2006).

The remainder of the paper is organized as follows. Section 2 describes the related literature and develops the testable hypotheses. Section 3 describes the sample selection and the research design. Section 4 discusses the results and Section 5 summarizes and concludes the paper.

2. Related literature and hypothesis development
Our study addresses the impact of the type (same versus different) and number of internal control weaknesses and their remediation on audit fees in the implementation year of Section 404 and three subsequent years.

2.1 Incremental impact of additional internal control weaknesses on audit fees
An auditor is required to expand the nature or extent of testing on the account balances of a company deemed to have ineffective controls (Auditing Standard No. 5, 2007). If during the testing of a control, it is determined that the control is deficient, a firm can identify another control that mitigates the risk of a material misstatement. Since most firms test controls at an interim date, a firm can also remediate, and retest closer to the balance sheet date[3]. Assuming the compensating control was not previously included in the audit program, either of these methods of remediation will result in additional hours of testing by the auditor. If the deficiencies cannot be remediated or mitigated, and are determined to enable a potential material misstatement, then a material weakness must be disclosed (Auditing Standard No. 5, 2007).

In an integrated audit of both the internal controls and the financial statements of a client, if internal controls are deemed effective, then the auditor should be able to reduce testing and audit hours[4]. If instead, the controls around the financial reporting process are deemed ineffective, then the auditor cannot reduce work. Ghosh and Pawlewicz (2009) find that the increased responsibility placed on auditors, due to the internal control opinions required by SOX, result in an increase in audit fees. Prior studies also find that internal control weaknesses represent risk that is meaningful to financial statement users and that audit fees are higher for these firms in the first year following the implementation of SOX (Ashbaugh-Skaife *et al.*, 2009; Hoitash *et al.*, 2008; Raghunandan and Rama, 2006).

Allen *et al.* (2006, p. 168) argue that research has shown "client risk factors are not associated with differences in extent of testing or with justification of extent of testing decisions." However, most of the previous research reviewed by Allen *et al.* (2006) is before SOX, periods in which auditors faced different incentives and did not involve audits of internal control over financial reporting. As the auditor identifies more material

weaknesses, additional procedures and hours are likely incurred to investigate the effectiveness of compensating controls and to assess the ineffective results of the audit tests. The added hours of testing will be priced into the audit fees charged to the client. As firms disclose additional internal control weaknesses, the auditor assesses more risk, increases testing, and charges higher audit fees. This leads to the first hypothesis, stated as follows:

H1. Additional internal control weaknesses are associated with higher audit fees.

2.2 Impact of remediation on audit fees

Hogan and Wilkins (2008) investigate the relation between audit fees and internal control deficiencies as disclosed under SOX Section 302 certifications prior to a requirement for firms to comply with Section 404 of the Act. The authors find that auditors increase effort in response to an internal control weakness, assuming that audit fees are a proxy for auditor effort. An alternative explanation for an increase in fees proposed by the authors is that a risk premium is priced into the audit. If a firm's internal controls are effective, then the auditor is expected to reduce the extent of substantive testing (scopes, sample sizes, etc.) on account balances during the audit of the financial statements, therefore reducing the audit hours incurred on the integrated audit. However, if a firm's controls are deemed ineffective as of the end of the year, the auditor will likely deem the controls as ineffective to start the following year for the purposes of auditing the financial statements. Thus, the auditor cannot reduce testing, and additional audit hours are incurred. If the firm remediated by the end of the current year, the auditor is not likely to reduce the extent of testing for the substantive audit of the financial statements and auditor effort will remain high in the year of remediation (Auditing Standard No. 5, 2007). If audit fees are a proxy for auditor effort, then audit fees will remain high.

Hoitash *et al.* (2008) examine firms that disclose an internal control weakness in the Section 302 period and do not report a material weakness in the Section 404 period and find that firms continue to pay higher fees in the subsequent year. We extend their analysis in several ways. First, we examine firms that disclose and firms that never disclose an internal control weakness, allowing us to compare whether fees decline for firms that remediate an internal control weakness to the level of fees for firms that never disclosed a weakness. Second, both disclosures and remediation in the sample occur in the Section 404 period, when an auditor's opinion on internal control is required, allowing us to examine the impact of remediation on audit fees during one regulatory regime. This is an important distinction because under Section 302, the unaudited executive certifications could disclose control deficiencies that would not have been considered material weaknesses under Section 404. Therefore, firms in the Hoitash *et al.* (2008) sample could be incorrectly classified as remediators when comparing across regimes. Third, Hoitash *et al.* (2008) suggest that the impact of remediation on audit fees is because the auditor leaves the control assessment as "high" for the financial statement audit in the year of remediation because controls are not effective throughout the year. Examining the impact of remediation on audit fees within one regulatory regime allows us to examine whether this explanation is plausible. In addition, our longer sample period allows us to examine the impact of remediation on audit fees one, two, and three years after remediation.

Audit fee studies in existing accounting literature assume that the audit fee changes freely with audit fee determinants (Simunic, 1980; Francis, 1984). Using data from Australia and the UK and economic theory on competition as support, Ferguson *et al.* (2005) show that audit fees are "sticky", especially in a downward direction.

Economic theory also suggests that prices can be "sticky" (Barro, 1972; Bhaduri and Falkinger, 1990; Ferguson *et al.*, 2005). Barro (1972) shows that price rigidity exists in an imperfectly competitive market if it is costly for the seller to change the price. Economic theory also predicts that prices are stickier when markets are characterized by imperfect information (Bhaduri and Falkinger, 1990; Ferguson *et al.*, 2005). The assumption of imperfect information applies to auditing because the auditor does not know the price level that will make the buyer consider switching to another auditor.

We examine the impact of remediation on audit fees two and three years after disclosure of a material weakness. In the years following remediation, auditors would likely focus their effort on testing the effective controls that remediated the weakness around a specific process, in addition to gaining the opportunity to reduce risk assessments for the purpose of the financial statement audit (Auditing Standard No. 5, 2007). Auditor effort related to a client two (three) years after the disclosure of ineffective internal control should not be materially different from a client that never disclosed ineffective internal controls. Thus, audit fees should decrease two (three) years after remediation. However, if audit fees of a firm remain high two or more years after remediation, a portion of the increase in fees is likely due to the existence of a risk premium in response to the disclosure, rather than solely to an increase in auditor effort. This leads to hypothesis two, stated as follows:

H2. Audit fees remain higher up to three years after the remediation of a material weakness.

2.3 Impact of disclosure of ineffective controls in consecutive years on audit fees
Elder *et al.* (2009, p. 3) find that "auditors price audit risk and client business risk into the audit fee." A firm with disclosures of ineffective internal controls in consecutive years is expected to have higher perceived client business risk. Hoitash *et al.* (2008) compare audit fees for firms that disclose a material weakness during the last year of Section 302 to firms that continue to disclose an internal control weakness in the first year of Section 404 and find that audit fees remain high. We extend their analysis and examine the impact of consecutive internal control weaknesses on audit fees within the Section 404 time period, when internal control disclosures are audited. We differentiate between ineffective controls in consecutive years by examining whether firms that report the same material weakness in consecutive years have higher audit fees. Firms that report the same material weakness in the subsequent year should have a higher level of audit fees because although the company had the opportunity to remediate, the company either chose not to or was unable to remediate, indicating a more substantial problem with their overall control environment. We also examine whether firms that report different material weaknesses in consecutive years have higher audit fees. A firm that reports a new internal control weakness should have higher audit fees since a new risk needs to be addressed by the auditors. The third hypothesis is stated as follows:

H3a. The disclosure of different ineffective controls in consecutive years is positively related to audit fees.

H3b. The disclosure of the same ineffective controls in consecutive years is positively related to audit fees.

We next empirically evaluate these predictions.

3. Sample selection and research design

To empirically evaluate the impact of internal control weaknesses and their remediation on audit fees, we identify firms in *Audit Analytics* with available data on audit fees and internal control disclosures. *Audit Analytics* includes the number of internal control weaknesses for each firm and a description of each type of weakness. Financial information is obtained from *Compustat* to calculate control variables relevant to our study. We exclude observations missing necessary *Compustat* data. There are 15,494 firm-year observations between 2004 and 2007 with internal control information in *Audit Analytics*, of which no audit fee information is available for 307 firm-year observations. After merging with *Compustat* data necessary for the independent variables, the final sample consists of 9,122 firm-year observations involving 3,096 unique firms[5].

We use ordinary least squares (OLS) regression to test the relation between internal control weaknesses and their remediation on audit fees. We estimate the following model:

$$
\begin{aligned}
LNAUDITFEES_{it} = {} & \beta_0 + \beta_1 ICW_{it} + \beta_2 BIG4_{it} + \beta_3 ICW*BIG4_{it} \\
& + \beta_4 CONSECUTIVE_{it} + \beta_5 REMEDYYR1_i \\
& + \beta_6 REMEDYYR2_i + \beta_7 REMEDYYR3_i + \beta_8 DTACC_{it} \\
& + \beta_9 LEVERAGE_{it} + \beta_{10} ROA_{it} + \beta_{11} LOSS_{it} \\
& + \beta_{12} LNASSETS_{it} + \beta_{13} SALESGR_{it} + \beta_{14} LNSEGS_{it} \\
& + \beta_{15} FY2004_{it} + \beta_{16} FY2005_{it} + \beta_{17} FY2006_{it} \\
& + \sum INDUSTRY_{it} + \varepsilon_{it}
\end{aligned}
\tag{1}
$$

3.1 Dependent variable
LNAUDITFEES, the dependent variable, is defined as the natural logarithm of audit fees.

3.2 Test variables
CONSECUTIVE measures the disclosure of ineffective internal controls in consecutive years. *CONSECUTIVE* is an indicator variable equal to 1 if the firm disclosed an internal control weakness in the previous year and again in the current year; zero otherwise. We expect the continued existence of internal control weaknesses to indicate greater audit risk. The auditor will respond to the increased risk with an increase in audit testing and a subsequent increase in audit fees. Thus, we expect a positive coefficient on *CONSECUTIVE.*

We further examine consecutive weaknesses by differentiating between firms with the same material weakness in consecutive years (*REPEATSAME)* and firms with different material weaknesses in consecutive years *(REPEATDIFFERENT)*. Firms with the same material weakness in consecutive years chose not to remediate or were unable to remediate. We expect *REPEATSAME* firms to have greater audit risk, leading to more audit testing and higher fees. We expect firms with different material weaknesses in consecutive years to also have high risk because the firm has two (or more) problems with their internal controls in a relatively short window of time. We expect the auditor will respond by increasing testing and charging higher fees. Thus, we expect positive coefficients on both *REPEATSAME* and *REPEATDIFFERENT*. In addition we expect differential fee pricing by the auditor depending on whether the

material weakness is the same or different in consecutive years. Specifically, we expect that audit risk is higher for firms with the same material weakness as the firm had the opportunity to remediate. Thus, we expect the coefficient on *REPEATSAME* to be significantly higher than the coefficient on *REPEATDIFFERENT*.

REMEDYYR1 is an indicator variable equal to 1 if a firm previously disclosed ineffective internal controls and remediated and it is the first year after the disclosure, and zero otherwise. If a firm remediates, auditors may be able to reduce their effort surrounding the audit of a client's internal controls and reduce fees. However, in the first year after disclosure, the internal controls will be ineffective at the beginning of the year, and the auditor may not elect to rely on the internal controls throughout the year. Though the firm remediated, the auditor may not reduce testing. Due to the contradictory arguments, we do not make a sign prediction on the coefficient on *REMEDYYR1*.

REMEDYYR2 equals 1 if a firm previously disclosed ineffective internal controls and remediated, and it is the second year after disclosure. *REMEDYYR3* equals 1 if a firm previously disclosed ineffective internal controls and remediated and it is the third year after disclosure. In the second and third year after a firm remediates, auditor effort may decline and audit fees are expected to decrease. Alternatively, a risk premium may be built into the audit fee at the time of disclosure and we would expect audit fees to remain high even in years subsequent to remediation. Thus, we do not make a sign prediction on *REMEDYYR2 or REMEDYYR3*.

3.3 Control variables

We include control variables that prior literature posits are relevant in determining auditor fees. Following prior research, we include the number of internal control weaknesses, *ICW* (Elder *et al.*, 2009). *ICW* is measured as the number of material weaknesses a firm discloses on Form 10-K[6]. An auditor of a firm with more internal control weaknesses will perform additional testing, thus, we predict a positive coefficient on *ICW*. We include discretionary accruals, *DTACC*, to measure financial reporting quality. *DTACC* controls for inherent risk, a component of audit risk, and is calculated using the modified-Jones approach (as defined in the Appendix). We expect firms with higher discretionary accruals, thus lower financial reporting quality, to have higher audit fees. Thus, we expect a positive coefficient on *DTACC*. Several prior studies suggest that the former Big 8 firms are able to charge higher audit fees for the perceived higher quality of their services (including Francis, 1984; Francis and Stokes, 1986; Palmrose, 1986). We predict a positive coefficient on *BIG4*, measured as a dichotomous variable that equals one if the firm is audited by a Big 4 firm, zero otherwise.

Following prior research, we include several variables to control for client business risk, "the risk that the client's economic condition will deteriorate in either the short term or long term" (Johnstone, 2001, p. 27). Specifically, we include leverage (*LEVERAGE*), return on assets (*ROA*), and loss (*LOSS*) (Elder *et al.*, 2009; Francis *et al.*, 2005)[7]. We expect that loss firms and firms with higher leverage are riskier and pay higher audit fees. Thus, we predict a positive coefficient on *LEVERAGE* and *LOSS*. Firms with better performance have a higher *ROA* and less risk and are expected to have lower audit fees. Therefore, we expect a negative coefficient on *ROA*.

We also control for other variables that are related to audit fees. Prior literature suggests that higher fees are expected for larger clients (Elder *et al.*, 2009; Hay *et al.*, 2006; Francis *et al.*, 2005). We control for size with *LNASSETS*, measured as the natural

logarithm of a firm's assets and predict a positive coefficient. Firms with strong sales growth have better performance, are less risky and are expected to pay lower audit fees. Alternatively, firms with strong sales growth may have more audit work and pay higher fees due to additional hours of testing. *SALESGR* is measured as the difference in sales growth from year t to year t − 1 divided by sales growth in year t − 1 (Elder *et al.*, 2009). We do not make a sign prediction on *SALESGR*. Prior literature suggests that more complex firms have higher audit fees (Elder *et al.*, 2009; Francis *et al.*, 2005). We proxy for firm complexity with *LNSEGS*, measured as the natural log of the number of business segments. We expect a positive coefficient on *LNSEGS*. Following prior research we control for macroeconomic factors related to time and industry (Elder *et al.*, 2009; Francis *et al.*, 2005). The dichotomous year variables, *FY2004*, *FY2005*, and *FY2006*, control for macroeconomic effects that may change from year to year. We control for industry effects using industry classifications, *INDUSTRY* (Fama and French, 1997).

4. Results

Table I provides a distribution of firm-years by the number of weaknesses that were disclosed in that firm-year. The table also presents the average size of the firm-years, in terms of total assets (in millions).

Table II provides descriptive statistics for our sample. The mean statistics indicate that the natural log of audit fees (*LNAUDITFEES*) is $14.06, similar to Francis *et al.* (2005). The mean audit fee is $2.64 million, similar to Elder *et al.* (2009). The mean number of internal control weaknesses is 0.25, reflecting that nearly half of the observations with material weaknesses report more than one weakness. 2 percent of firm-years involve the disclosure of consecutive internal control weaknesses in each of the previous two years. 5 percent of firm-years are in the first year after a disclosed internal control weakness is remediated. 3 (one) percent of firm-years are in the second (third) year after remediation. Table II also provides descriptive statistics for the control variables. The mean firm size measured by total assets is $7.64 billion.

Table III provides the Pearson correlation coefficients among the dependent, test, and control variables. We expect the disclosure of consecutive internal control weaknesses, *CONSECUTIVE*, to indicate greater audit risk and that the auditor will increase audit testing and audit fees. The correlation between *LNAUDITFEE* and *CONSECUTIVE* is positive and significant as expected. Further, we expect that when a firm discloses the same material weakness in the previous and current year, *REPEATSAME*, that the auditor will assess greater risk, increase audit testing and increase fees. The correlation between *LNAUDITFEE* and *REPEATSAME* is positive

	No. of firm-years	Average firm assets (in millions)
Firms disclosing no internal control weaknesses	8,125	7,102
Firms disclosing 1 internal control weakness	539	12,353
Firms disclosing 2 internal control weaknesses	204	2,257
Firms disclosing 3 internal control weaknesses	92	10,494
Firms disclosing 4 internal control weaknesses	48	1,560
Firms disclosing at least 5 internal control weaknesses	114	33,425
	9,122	7,638

Table I.
Internal control weakness distribution

Variable	Mean	Q1	Median	Q3	SD
Dependent variable					
LNAUDITFEES	14.058	13.341	13.962	14.706	1.099
AUDITFEES (in millions)	2.641	0.622	1.158	2.436	5.987
Audit risk variables					
ICW	0.246	0.000	0.000	0.000	1.019
ICWCOMP	0.047	0.000	0.000	0.000	0.212
ICWACCT	0.062	0.000	0.000	0.000	0.241
BIGX*ICW	0.183	0.000	0.000	0.000	0.878
CONSECUTIVE	0.023	0.000	0.000	0.000	0.151
REPEATSAME	0.017	0.000	0.000	0.000	0.128
REPEATDIFFERENT	0.007	0.000	0.000	0.000	0.082
REMEDYYR1	0.054	0.000	0.000	0.000	0.227
REMEDYYR2	0.032	0.000	0.000	0.000	0.177
REMEDYYR3	0.009	0.000	0.000	0.000	0.097
DTACC	0.023	− 0.027	0.011	0.059	0.120
Client business risk variables					
LEVERAGE	0.180	0.001	0.126	0.285	0.200
ROA	0.007	0.001	0.044	0.090	0.180
LOSS	0.250	0.000	0.000	0.000	0.433
Control variables					
BIGX	0.859	1.000	1.000	1.000	0.348
LN ASSETS	20.550	19.230	20.388	21.708	1.809
TOTAL ASSETS (in millions)	7,638.1	224.7	715.1	2,678.2	54,687.7
SALESGR	0.219	0.029	0.121	0.272	0.474
LNSEGS	0.663	0.000	0.693	1.386	0.699
FY2004	0.159	0.000	0.000	0.000	0.365
FY2005	0.244	0.000	0.000	0.000	0.429
FY2006	0.282	0.000	0.000	1.000	0.450
n	9,122				

Note: All variable definitions are in the Appendix

Table II.
Descriptive statistics for the 2004-2007 sample

and significant suggesting that auditors assess higher risk for firms that chose not to or were unable to remediate. We also examine the relationship between *LNAUDITFEE* and *REPEATDIFFERENT*. We expect that the auditor of a firm disclosing different material weaknesses in consecutive years will assess higher risk, increase testing and subsequently increase audit fees because the client has two (or more) internal control issues in a relatively short period of time. The correlation between *LNAUDITFEE* and *REPEATDIFFERENT* is positive and significant.

Another primary interest is in the relationship between audit fees, *LNAUDITFEE*, and remediation. If a firm's controls are ineffective at the end of the prior year, the controls are ineffective at the start of the current fiscal year, the auditor is not likely to reduce substantive testing and audit fees should remain high. Alternatively, remediation may reduce auditor effort and result in a decrease in audit fees. The correlations between *LNAUDITFEE* and the remediation variables (*REMEDYYR1*, *REMEDYYR2*, and *REMEDYYR3*) are not significant. However, the univariate analysis does not account for other factors that can impact the relationship between audit fees and remediation. We utilize multivariate analysis to address these issues.

Table III.
Pearson correlation coefficients

	LNAUDITFEES	ICW	ICWCOMP	ICWACCT	BIGX*ICW	CONSECUTIVE
LNAUDITFEES	1.000					
ICW	0.085***	1.000				
ICWCOMP	0.067***	0.739***	1.000			
ICWACCT	0.006	0.241***	-0.057***	1.000		
BIGX*ICW	0.139***	0.849***	0.634***	0.211***	1.000	
CONSECUTIVE	0.088***	0.385***	0.356***	0.258***	0.287***	1.000
REPEATSAME	0.088***	0.303***	0.286***	0.229***	0.244***	0.842***
REPEATDIFFERENT	0.024**	0.236***	0.210***	0.118***	0.148***	0.531***
REMEDYYR1	0.004	-0.058***	-0.053***	-0.062***	-0.050***	-0.037***
REMEDYYR2	0.004	-0.044***	-0.041***	-0.047***	-0.038***	-0.028***
REMEDYYR3	-0.002	-0.024**	-0.022**	-0.025**	-0.020*	-0.015
DTACC	-0.253***	-0.009	-0.013	0.013	-0.052***	-0.027***
LEVERAGE	0.165***	-0.002	-0.016	-0.014	0.023**	-0.022***
ROA	0.225***	0.063***	-0.067***	-0.023**	-0.036***	-0.029***
LOSS	-0.191***	0.128***	0.123***	0.058***	0.094***	0.089***
BIGX	0.357***	-0.080***	-0.068***	-0.059***	0.084***	-0.084***
LNASSETS	0.784***	-0.056***	-0.061***	-0.065***	0.004	-0.026**
SALESGR	-0.152***	-0.014	-0.009	-0.013	-0.031***	-0.032***
LNSEGS	0.432***	0.019*	0.018*	-0.016	0.039***	0.018*
FY2004	-0.004	0.068***	0.063***	0.037***	0.074***	-0.067***
FY2005	-0.019*	0.042**	0.038***	0.031***	0.039***	0.014
FY2006	0.026**	-0.026**	-0.022**	-0.012	-0.031***	0.030***

	REPEATSAME	REPEATDIFFERENT	REMEDYYR1	REMEDYYR2	REMEDYYR3
LNAUDITFEES					
ICW					
ICWCOMP					
ICWACCT					
BIGX*ICW					
CONSECUTIVE					
REPEATSAME	1.000				
REPEATDIFFERENT	-0.011	1.000			
REMEDYYR1	-0.031***	-0.020*	1.000		
REMEDYYR2	-0.024**	-0.015	-0.044***	1.000	
REMEDYYR3	-0.013	-0.008	-0.023**	-0.018*	1.000
DTACC	-0.017	-0.023**	-0.006	-0.021**	-0.030***

(continued)

Table III. — Correlation matrix (lower-triangular portion)

	DTACC	LEV	ROA	LOSS	BIGX	LNASSETS	SALESGR	LNSEGS	FY2004	FY2005	FY2006
DTACC	1.000										
LEV	−0.119 ***	1.000									
ROA	0.132 ***	−0.052 ***	1.000								
LOSS	−0.145 ***	0.061 ***	−0.695 ***	1.000							
BIGX	−0.193 ***	0.097 ***	0.095 ***	−0.116 ***	1.000						
LNASSETS	−0.261 ***	0.257 ***	0.357 ***	−0.341 ***	0.351 ***	1.000					
SALESGR	0.153 ***	−0.011	−0.123 ***	0.079 ***	−0.062 ***	−0.134 ***	1.000				
LNSEGS	−0.045 ***	0.084 ***	0.181 ***	−0.193 ***	0.119 ***	0.405 ***	−0.118 ***	1.000			
FY2004	0.021 *	0.018	−0.012	0.002	0.073 ***	−0.006	0.016	0.023 **	1.000		
FY2005	0.010	−0.024 **	0.013	−0.015	0.030 *	−0.030 ***	0.019 *	−0.001	−0.247 ***	1.000	
FY2006	0.001	−0.018 *	0.013	−0.025 **	−0.017 *	0.023 **	−0.011	0.007	−0.272 ***	−0.356 ***	1.000

Second set of correlations reported in the table (values associated with each variable, rows LEV through FY2006):

	DTACC	LEV	ROA	LOSS	BIGX
LEV	−0.015	−0.019 *	−0.016	−0.009	0.033 ***
ROA	−0.042 ***	−0.007	−0.019	0.008	−0.007
LOSS	0.077 ***	0.043 ***	0.063 ***	−0.005	0.015
BIGX	−0.068 ***	−0.048 ***	−0.095 ***	−0.078 ***	−0.065 ***
LNASSETS	−0.018 *	−0.020 *	−0.059 ***	−0.028 ***	−0.011
SALESGR	−0.025 **	−0.020 *	−0.024 **	−0.042 ***	−0.028 ***
LNSEGS	0.032 ***	−0.018 *	−0.007	0.007	−0.001
FY2004	−0.057 ***	−0.036 ***	−0.104 ***	−0.079 ***	−0.042 ***
FY2005	0.010	0.010	0.026 ***	−0.104 ***	−0.055 ***
FY2006	0.027 **	0.014	0.060 ***	0.044 ***	−0.061 ***

Notes: Significant at: *10, **5 and ***1 percent levels, respectively; all variable definitions are in the Appendix

Table III.

4.1 Incremental impact of internal control weaknesses

Next, we analyze the incremental impact of each additional internal control weakness on the audit fee by replacing *ICW* with indicator variables that represent a specified number of disclosed material weaknesses for each firm. For example, the variable *ICW1* equals 1 if the firm discloses one material weakness and zero otherwise; the variable *ICW2* equals 1 if the firm discloses two material weaknesses and zero otherwise; and so forth. The sample size remains 9,122 firm-year observations. The adjusted R^2 in Table IV is 0.738. The variance inflation factors for each coefficient are less than five, suggesting that multicollinearity is not a significant problem. The coefficients on the number of weaknesses are positive and significant and generally increase as the number of weaknesses increase. The results suggest that as the auditor identifies additional material weaknesses, additional hours are incurred to investigate compensating controls and to assess the ineffective results of audit testing, and audit fees increase. Thus, our results suggest that as the number of weakness disclosures increase, auditors assess more risk, increase testing, and increase fees.

Table V reports the regression results from the OLS estimation of equation (1) to address the type of material weakness, and whether consecutive weaknesses are due to repeated or different weaknesses. We report White (1980) heteroskedasticity-consistent *t*-statistics. The variance inflation factors for each coefficient are less than five, suggesting that multicollinearity is not a significant problem. Before proceeding to the discussion of the results it is useful to discuss the goodness-of-fit statistics for the model. The model explains audit fees well, with an adjusted R^2 of 0.738, which is similar to previous audit fee studies (Elder *et al.*, 2009; Francis *et al.*, 2005).

Variable	Predicted sign	*LNAUDITFEES*	Variable	Predicted sign	*LNAUDITFEES*
Intercept		3.535 (34.56)***	*Client business risk variables*		
Audit risk variables			LEVERAGE	+	0.043 (1.19)
ICW1	+	0.257*** (9.15)	ROA	−	− 0.257*** (− 4.95)
ICW2	+	0.321*** (6.65)	LOSS	+	0.111*** (5.60)
ICW3	+	0.416*** (5.96)	*Control variables*		
ICW4	+	0.371*** (3.48)	BIGX	+	0.307*** (15.46)
ICW5ORMORE	+	0.716*** (9.36)	LNASSETS	+	0.495*** (97.73)
CONSECUTIVE		0.410*** (8.02)	SALESGR	+/−	− 0.026* (− 1.93)
REMEDYYR1		0.306*** (10.83)	LNSEGS	+	0.172*** (17.34)
REMEDYYR2		0.233*** (7.24)	FY2004	+	0.003 (0.17)
REMEDYYR3		0.188*** (3.69)	FY2005		− 0.012 (− 0.76)
DTACC		− 0.010 (− 0.16)	FY2006		0.009 (0.61)
Adj. R^2		0.738			
F-value		283.99			
n		9,122			

Notes: Significant at: *10, **5 and ***1 percent levels, respectively; this table presents the regression results between the natural logarithm of audit fees and the incremental impact of a material internal control weakness, client business risk variables and control variables for firm-years in 2004-2007; the White (1980) heteroskedasticity-consistent *t*-statistics are reported in the parentheses below the parameter estimates; the variance inflation factors for each coefficient are not greater than 5, suggesting that multicollinearity is not a significant problem; in our regression models, we control for industry dummies, but do not report the coefficients on these variables for brevity; the industry classification follows Fama and French (1997); all variable definitions are in the Appendix

Table IV.
Regression analysis on the relation between audit fees and material weakness disclosures

Variable	Predicted sign	LNAUDITFEES	LNAUDITFEES	LNAUDITFEES	LNAUDITFEES
Intercept		3.591*** (35.09)	3.528*** (34.37)	3.593*** (35.14)	3.532*** (34.42)
Audit risk variables					
ICW	+	0.071*** (4.63)		0.074*** (5.05)	
ICWCOMP	+		0.470*** (12.34)		0.472*** (12.42)
ICWACCT	+		0.241*** (8.74)		0.239*** (8.71)
BIGX*ICW	+	0.045** (2.64)	0.422*** (8.14)	0.042** (2.55)	
CONSECUTIVE	+	0.491*** (9.89)			
REPEATSAME				0.567*** (10.42)	0.493*** (8.58)
REPEATDIFFERENT				0.291*** (3.12)	0.243*** (2.63)
REMEDYYR1		0.291*** (10.32)	0.306*** (10.83)	0.292*** (10.33)	0.306*** (10.83)
REMEDYYR2		0.221*** (6.86)	0.234*** (7.24)	0.221*** (6.87)	0.234*** (7.24)
REMEDYYR3		0.175*** (3.43)	0.188*** (3.68)	0.175*** (3.43)	0.187*** (3.68)
DTACC		-0.008 (-0.13)	-0.006 (-0.10)	-0.012 (-0.19)	-0.009 (-0.14)
Client business risk variables					
LEVERAGE	+	0.039* (1.07)	0.048 (1.33)	0.039 (1.82)	0.048 (1.33)
ROA	-	-0.258*** (-4.98)	-0.259*** (-4.98)	-0.254*** (-4.90)	-0.255*** (-4.90)
LOSS	+	0.113*** (5.71)	0.113*** (5.64)	0.113*** (5.72)	0.113*** (5.65)
Control variables					
BIGX	+	0.286*** (14.01)	0.305*** (15.28)	0.287*** (14.09)	0.304*** (15.28)
LNASSETS	+	0.493*** (97.50)	0.495*** (97.61)	0.493*** (97.52)	0.495*** (97.66)
SALESGR	+/-	-0.026*** (-1.96)	-0.026** (-1.97)	-0.026** (-1.97)	-0.026** (-1.98)
LNSEGS	+	0.172*** (17.31)	0.172*** (17.38)	0.171*** (17.20)	0.172*** (17.28)
FY2004		0.011 (0.58)	0.005 (0.27)	0.011 (0.57)	0.005 (0.28)
FY2005		-0.007 (-0.42)	-0.011 (-0.66)	-0.007 (-0.42)	-0.011(-0.65)
FY2006		0.012 (0.80)	0.010 (0.63)	0.012 (0.79)	0.010 (0.63)
Adj. R^2		0.738	0.738	0.738	0.738
F-value		292.95	292.75	290.07	289.8
n		9,122	9,122	9,122	9,122

Notes: Significant at: *10, **5 and ***1 percent levels, respectively; this table presents the regression results between the natural logarithm of audit fees and type of consecutive internal control weaknesses, remediation, client business risk variables and control variables for firm-years in 2004-2007; the White (1980) heteroskedasticity-consistent t-statistics are reported in the parentheses below parameter estimates; the variance inflation factors for each coefficient are not greater than 5, suggesting that multicollinearity is not a significant problem; in our regression models, we control for industry dummies, but do not report the coefficients on these variables for brevity; the industry classification follows Fama and French (1997); all variable definitions are in the Appendix

Table V.
Regression analyses on
the relation between audit
fees and type of material
weakness disclosures

Recent research suggests that audit and client business risk are priced into audit fees (Elder *et al.*, 2009). We account for firms that disclose ineffective internal controls in both of the previous two years, with the variable *CONSECUTIVE*. The coefficient on *CONSECUTIVE* is positive and significant, suggesting that audit fees are higher for firms that disclose ineffective controls in consecutive years[8]. Since audit effort should not increase significantly due to the material weakness disclosure in the second year, this finding supports the view that auditors charge a risk premium for firms with consistent ineffective internal controls. We further examine consecutive material weaknesses by differentiating between firms that disclose the same material weakness in consecutive years (*REPEATSAME*) and firms that disclose a different material weakness in consecutive years (*REPEATDIFFERENT*). The coefficient on *REPEATSAME* is positive and significant suggesting that firms that disclose the same material weakness in consecutive years pay higher audit fees. The coefficient on *REPEATDIFFERENT* is also positive and significant which provides evidence that firms that report different material weaknesses in consecutive years also pay higher audit fees. We compare the coefficient on *REPEATSAME* to the coefficient on *REPEATDIFFERENT* and find that firms that report the same control weakness pay higher audit fees than firms that report a different material weakness in consecutive years ($F = 10.29$, $p = 0.00$). This finding suggests that auditors assess higher risk if the firm repeats the same material weakness than if the firm discloses a different material weakness in the second year, perhaps because in the former case the firm had the opportunity to remediate which may suggest a more substantial problem with the overall control environment.

We include three additional variables to account for the impact of remediation. A firm can remediate by taking actions to either repair their existing control functions or implement a new or mitigating control in order to ensure that their control system is sufficient to prevent or detect a material misstatement. The coefficient on *REMEDYYR1* is positive and significant, suggesting that auditor effort remains high in the first year following the disclosure of ineffective internal controls even though the firm remediated.

The coefficients on *REMEDYYR2* and *REMEDYYR3* are positive and significant. Though the auditor should be able to rely on the controls and reduce testing and effort, we find that firms are still paying higher audit fees two and three years after the initial disclosure as compared to firms that never disclose an internal control weakness. This finding supports the argument that auditors build a risk premium into the audit fee at the time of disclosure. A possible explanation for the presence of higher audit fees in years subsequent to remediation suggests that the audit fee is "sticky" and once the auditor increases their fee in response to ineffective internal controls, the auditor resists reducing the fee. One explanation for the "stickiness" is that the auditor did not reduce their perceived risk at the time of remediation. Another explanation is that though the firm remediated and receives a clean audit opinion on the effectiveness of their internal controls, the firm's internal controls are not as effective as a company that never reported a material weakness.

The coefficients on *ICW*, *LEVERAGE*, *LOSS*, *BIG4*, *LNASSETS*, and *LNSEGS* are positive and significant suggesting that firms with more internal control weaknesses, high leverage, loss firms, firms with a Big 4 auditor, larger firms, and firms with more business segments have higher audit fees[9]. The coefficient on the interaction term, *BIG4*ICW*, in Table V is positive and significant suggesting that Big 4 auditors are

able to capture an additional fee premium on engagements with material weakness disclosures as compared to non-Big 4 auditors. The coefficients on *ROA* and *SALESGR* are negative and significant, suggesting that firms with better performance and higher sales growth are less risky and incur lower audit fees. The coefficient on discretionary accruals, *DTACC*, is statistically insignificant. The control variables in Table V are significant in the predicted directions and consistent with Elder *et al.* (2009) with the exception of the leverage variable (*LEVERAGE)* that has a positive and significant coefficient. Our finding that more highly levered firms have higher audit fees is consistent with Francis *et al.* (2005).

We replace *ICW* with two variables that measure the type of internal control weakness (Elder *et al.*, 2009). Specifically, *ICWCOMP (ICWACCT)* equals one for a company-wide (account-specific) internal control weakness, and zero otherwise. Prior research suggests that company-wide issues are more severe than account-specific issues, based on greater association with accruals quality (Doyle *et al.*, 2007) and auditor realignments (Ettredge *et al.*, 2011). The coefficients on *ICWCOMP* and *ICWACCT* are positive and significant. We find that the coefficient on company-wide weaknesses is significantly higher than the coefficient on account-specific weaknesses, which suggests that auditors charge higher fees for company-wide weaknesses[10].

The coefficients on *CONSECUTIVE, REPEATSAME, REPEATDIFFERENT*, *REMEDYYR1, REMEDYYR2, REMEDYYR3* and *BIG4*ICW* remain positive and significant after including indicator variables for type of internal control weakness. Coefficients on the control variables are similar to those reported in Table V, column 1.

4.2 Audit fee change

The results reported in Table V suggest that the audit fee of a firm with a prior disclosure of a material weakness remains high even in the years following remediation. To further examine the effect of remediation on audit fees, we analyze how auditors change fees in response to changes in the client's internal controls. Specifically, we use OLS regression to examine the effect of remediation on change in audit fees and estimate the following model:

$$
\begin{aligned}
AUDITFEECG_{it} = {} & \beta_0 + \beta_1 ICWNEW_{it} + \beta_2 REMEDYYR1_i + \beta_3 REMEDYYR2_i \\
& + \beta_4 REMEDYYR3_i + \beta_5 DTACCCG_{it} + \beta_6 LEVERAGECG_{it} \\
& + \beta_7 ROACG_{it} + \beta_8 LOSSCG_{it} + \beta_9 ASSETSCG_{it} \\
& + \beta_{10} SALESGRCG_{it} + \beta_{11} SEGSCG_{it} + \beta_{12} FY2004_{it} \\
& + \beta_{13} FY2005_{it} + \beta_{14} FY2006_{it} + \sum INDUSTRY_{it} + \varepsilon_{it}
\end{aligned} \tag{2}
$$

Change in audit fees from the prior year, *AUDITFEECG*, is the dependent variable. The independent variables measure changes in audit risk. We include, *ICWNEW*, to measure disclosure of a material weakness in the current year where no such disclosures were made in the prior year. We include *REMEDYYR1*, to measure firms that remediate material weaknesses disclosed in the prior year. We include *REMEDYYR2* and *REMEDYYR3* to measure firms that remediate material weaknesses disclosed two and three years prior, respectively. Finally, we include change in client business risk, and change in a set of control variables as discussed earlier and defined in the Appendix. The sample size for the model is 5,806 firm-years.

We next discuss the goodness-of-fit measures in the audit fee change model. The adjusted R^2 for the model in Table VI, column 1 is 0.050, similar to Elder *et al.* (2009). The variance inflation factors for each coefficient are less than five suggesting that multicollinearity is not a significant problem. The coefficient on *ICWNEW* is positive and significant, which suggests that firms with newly identified internal control weaknesses have a greater increase in audit fees, due to additional testing and higher risk. The coefficients on the remediation variables, *REMEDYYR1*, *REMEDYYR2*, and *REMEDYYR3* are not significant. This finding provides further support that auditors do not reduce audit fees for clients that disclosed and subsequently remediate. Similar to Elder *et al.* (2009) the coefficients on *LOSSCG*, change in the loss indicator variable, and *ASSETSCG*, change in total assets are positive and significant. These findings suggest that larger firms and profitable firms that change to a loss position experience an increase in fees. The coefficients on *SALESGRCG* and *SEGSCG* are also positive and significant suggesting that firms that have more sales or become more complex experience an increase in audit fees. Results are robust to replacing *ICWNEW* with *ICWCOMPNEW* and *ICWACCTNEW* as shown in Table VI, column 2.

In Table VI, column 3 we include a variable to indicate whether the firm switched auditors, AUDSWITCH. The coefficient on AUDSWITCH is negative and significant suggesting that firms that switch auditors have lower audit fees perhaps due to the new auditor pricing the initial audit below cost, or "low-balling" (DeAngelo, 1981). We include an interaction term between REMEDYYR1 and AUDSWITCH and find that the coefficient on the term is not significant. This result suggests that the change in audit fees for a firm that switches auditors is not different for a firm that remediates as compared to a firm that does not have a current remediation. The coefficients on the remediation variables remain insignificant. Results on the other variables in the model are robust to inclusion of AUDSWITCH and the interaction term. In addition, results are robust to replacing *ICWNEW* with *ICWCOMPNEW* and *ICWACCTNEW* as shown in Table VI, column 4. Thus, this model provides further support that auditors do not reduce audit fees for clients that remediate.

5. Conclusion

This paper examines the impact of internal control weaknesses and their remediation on audit fees and contributes to the literature examining the effect of a client's disclosure of ineffective internal controls on fees. We analyze the impact of additional internal control weaknesses on audit fees and find that there is a significant incremental impact for additional disclosed material weaknesses. The results suggest that as the number of weaknesses disclosed increases, auditors assess more risk, increase testing, and subsequently increase fees. We also find that persistently ineffective internal controls have a positive effect on audit fees, indicating that auditors may use disclosure in consecutive years as a signal of client-related risk and price it into the audit fee. In addition, our results suggest that firms that report the same material weakness in consecutive years pay higher audit fees than firms that report different material weaknesses. Further, we find that firms that remediate continue to pay higher audit fees in the year of remediation compared to firms that did not report an internal control weakness. This finding suggests that the auditor is not able to rely on the client's controls despite their effectiveness in the current disclosure year, and is unable to

Variable	Predicted sign	AUDITFEECG	AUDITFEECG	AUDITFEECG	AUDITFEECG
Intercept		0.044 (0.86)	0.043 (0.85)	0.048 (0.93)	0.046 (0.91)
Audit risk variables					
ICWNEW	+	0.266*** (7.55)		0.272*** (7.75)	
ICWCOMPNEW	+		0.429*** (8.07)		0.433*** (8.15)
ICWACCTNEW	+		0.143*** (3.95)		0.156*** (4.28)
REMEDYYR1		−0.007 (−0.27)	−0.003 (−0.12)	0.024 (0.83)	0.029 (0.98)
REMEDYYR2		−0.043 (−1.19)	−0.040 (−1.11)	−0.039 (−1.10)	−0.036 (−1.01)
REMEDYYR3		−0.103 (−1.61)	−0.100 (−1.57)	−0.102 (−1.60)	−0.099 (−1.56)
AUDSWITCH				−0.134*** (−3.42)	−0.139*** (−3.53)
REMEDYYR1*AUDSWITCH				−0.126 (−1.49)	−0.122 (−1.44)
DTACCCG		0.000 (−1.17)	0.000 (−1.19)	0.000 (−1.21)	0.000 (−1.23)
Client business risk variables					
LEVCG	+	0.000 (−0.10)	0.000 (−0.12)	0.000 (−0.14)	0.000 (−0.16)
ROACG	−	0.000 (0.02)	0.000 (0.00)	0.000 (0.01)	0.000 (−0.01)
LOSSCG	+	0.089*** (4.52)	0.084*** (4.27)	0.090*** (4.58)	0.085*** (4.32)
Control variables					
ASSETSCG	+	0.270*** (14.38)	0.271*** (14.44)	0.272 (14.48)	0.272*** (14.54)
SALESGRCG	+/−	0.000** (2.12)	0.000** (2.13)	0.000** (2.13)	0.000** (2.14)
SEGSCG	+	0.055** (2.30)	0.052** (2.19)	0.055** (2.30)	0.052** (2.19)
FY2005		0.029 (1.46)	0.026 (1.31)	0.030 (1.53)	0.027 (1.37)
FY2006		0.060*** (3.47)	0.060*** (3.45)	0.061*** (3.54)	0.061*** (3.53)
Adj. R^2		0.050	0.053	0.053	0.057
F-value		4.61	4.82	4.80	5.01
n		5,806	5,806	5,806	5,806

Notes: Significant at: *10, **5 and ***1 percent levels, respectively; this table presents the regression results between the changes in audit fees and changes in audit risk variables, client business risk variables, and control variables for firm-years in 2005-2007; *t*-statistics are reported in the parentheses below parameter estimates; the sample size for Table VI is 5,806 because we require auditing and financial information for consecutive years; from our full sample of 9,122 firms, we exclude the 1,447 data items from 2004, since audits from the prior year were not conducted according to the provisions of Section 404 of the Sarbanes-Oxley Act of 2002; an additional 1,869 firms were excluded for not having sufficient auditing and financial information for the previous year; the variance inflation factors for each coefficient are not greater than 5, suggesting that multicollinearity is not a significant problem; in our regression models, we control for industry dummies, but do not report the coefficients on these variables for brevity; the industry classification follows Fama and French (1997); all variable definitions are in the Appendix

Table VI.
Regression analyses on
the relation between audit
fee change and change in
material weakness
disclosures

reduce testing. We also find that audit fees continue to remain high two and three years after remediation, despite the auditor's ability to rely on controls and reduce testing. The findings are consistent with the contention that a portion of the increase in fees in response to the disclosure of ineffective internal controls is due to the existence of a risk premium, rather than solely to an increase in auditor effort. An analysis of change in audit fees provides further support that auditors do not reduce audit fees for clients that remediate. Prior research finds that internal governance factors such as audit committee and board structure are determinants of remediation; however, remediation is not associated with external governance factors such as the nature of the auditor, analyst following or institutional ownership (Li *et al.*, 2011). Future studies can shed light on other determinants of remediation. Future research can also examine whether the relationship between audit fees and remediation differs for accelerated versus non-accelerated filers.

Notes

1. SEC Release No. 33-8124, Section 302 (August 29, 2002), required management to disclose significant deficiencies in internal control when they certify quarterly or annual financial statements. SOX Section 404 was enacted to emphasize the importance of internal controls and to bolster investor confidence in the financial markets. On June 5, 2003, SEC Release No. 33-8238 required all publicly-traded firms 1) to assert as to the effectiveness of the internal controls around their financial reporting process and 2) to have a public accounting firm express an opinion on the appropriateness of management's assertion. Upon the passage of SOX, the SEC created the PCAOB to provide oversight of public companies and their auditors. The PCAOB established that a material weakness must be disclosed if controls around a significant financial reporting process are not sufficient to ensure that a material misstatement will be detected. SEC Release Nos. 33-9142 and 34-62914 require that effective September 21, 2010, pursuant to Section 989G of the Dodd-Frank Act, "non-accelerated filers" are not required to include an attestation report of the filer's registered public accounting firm in their annual report. A "non-accelerated filer" is an issuer with an aggregate worldwide market value of the voting and non-voting equity held by its non-affiliates of less than $75 million.

2. Ferguson *et al.* (2005) show that audit fees are "sticky", especially in a downwards direction. Our results indicate the presence of higher audit fees in years subsequent to remediation, suggesting that the audit fee may be "sticky" and once the auditor increases their fee in response to ineffective internal control over financial reporting, the auditor resists reducing the fee. It is difficult however to disentangle whether the audit fee is sticky from a change in auditor effort or client-related risk.

3. The ability to remediate in the current year depends on the frequency with which the control is performed. For example, if the internal control weakness is an ineffective footnote disclosure, it may only be remediated after another year since the control occurs once a year.

4. An argument against Auditing Standard No. 2 was that in the early years of Section 404 auditors were performing two audits, which in part led to the issuance of Auditing Standard No. 5. To alleviate concern that our results are driven by this earlier time period, we exclude 2004 data from our analysis as a sensitivity test. Our results remain robust.

5. The sample breakdown of firm-year observations by year is 1,447, 2,224, 2,575 and 2,876 from fiscal years 2004, 2005, 2006 and 2007, respectively.

6. Form 10-K, Item 9A, Controls and Procedures includes management's assessment on the effectiveness of the firm's internal controls over financial reporting, and if necessary, describes any material internal control weaknesses identified.

7. We also test beta and idiosyncratic risk, measured as the natural log of the standard deviation of the residuals from a market model, as additional measures of risk in our model. The reported results hold after including these additional risk measures. We thank an anonymous reviewer for the suggestion to address the effects of alternative risk measures.

8. We repeat the analysis excluding 2004 since CONSECUTIVE and REMEDYYR1 are equal to 0 in 2004. Results (untabulated) are qualitatively similar.

9. Elder *et al.* (2009) find a positive relationship between an internal control weakness and audit fees in the first year of SOX Section 404. We examine individual regressions by year (untabulated) and find evidence that the positive relationship between number of internal control weaknesses and audit fees exists in the SOX Section 404 implementation year and in the subsequent years studied.

10. Elder *et al.* (2009) find that audit fees are higher if a firm has a company-wide weakness than an account-specific weakness in the first year of SOX Section 404. We estimate the regression model by year (untabulated) and find evidence that this relationship exists in the SOX Section 404 implementation year and in each of the three years after.

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(The Appendix follows overleaf.)

Appendix

Variable names	Variable definitions
Dependent variables	
LNAUDITFEES	The natural logarithm of total audit fees
AUDITFEECG	The difference in audit fees between year t and year t − 1, divided by the audit fees from year t − 1
Audit risk variables	
ICW	The number of weaknesses identified by the auditor in the Auditor's Report
ICWCOMP	An indicator variable that takes on a value of one if the firm has either weaknesses related to "ineffective control environment" or "management override" or weaknesses related to at least three account-specific problems; 0 otherwise
ICWACCT	An indicator variable that takes on a value of one if the firm discloses less than three account-specific weaknesses; 0 otherwise
CONSECUTIVE	An indicator variable equal to 1 if the firm disclosed an internal control weakness in both of the previous two years; 0 otherwise
REPEATSAME	An indicator variable equal to 1 if the firm disclosed an internal control weakness in both of the previous two years and the weakness is the same in both years; 0 otherwise
REPEATDIFFERENT	An indicator variable equal to 1 if the firm disclosed an internal control weakness in both of the previous two years and the weakness is not the same in both years; 0 otherwise
REMEDYYR1	An indicator variable equal to 1 if the firm previously disclosed an ineffective internal control environment, the firm remediated the internal control weaknesses and it is the first year after the disclosure of the ineffective control environment; 0 otherwise
REMEDYYR2	An indicator variable equal to 1 if the firm previously disclosed an ineffective internal control environment, the firm remediated the internal control weaknesses and it is the second year after the disclosure of the ineffective control environment; 0 otherwise
REMEDYYR3	An indicator variable equal to 1 if the firm previously disclosed an ineffective internal control environment, the firm remediated the internal control weaknesses and it is the third year after the disclosure of the ineffective control environment; 0 otherwise
DTACC	The residual from the following regression (following Kothari *et al.* (2005)): $\mathrm{TOTACC}_{i,t} = B_0(1/\mathrm{TA}_{i,t-1}) + B_1(\Delta\mathrm{SALES}_{i,t} - \Delta\mathrm{AR}_{i,t})/\mathrm{TA}_{i,t-1} + B_2(\mathrm{PPE}_{i,t}/\mathrm{TA}_{i,t-1})$ where: $\mathrm{TOTACC}_{i,t} = (\mathrm{OpInc}_{i,t} - (\mathrm{CFO}_{i,t} - \mathrm{ExtraIncDiscOp}_{i,t}))/\mathrm{TA}_{i,t-1}$ (following Hribar and Collins (2002)), $\Delta\mathrm{SALES}$ is the change in a firm's sales revenue; $\Delta\mathrm{AR}$ is the change in accounts receivable; PPE is gross property, plant, and equipment and TA is total assets. The regression is estimated for firms in a given two-digit SIC code each year
Client business risk variables	
LEVERAGE	The ratio of long-term debt to total assets
ROA	The ratio of income before extraordinary items divided by average total assets
LOSS	An indicator variable equal to 1 if the firm incurred a loss in the current fiscal year; 0 otherwise
Control variables	
LNASSETS	The natural logarithm of total as sets

Table AI.

(*continued*)

Variable names	Variable definitions
SALESGR	The difference in sales from year $t-1$ to year t divided by sales in year $t-1$. If a firm has zero sales in the prior year and sales in the current year, sales growth is set to 100 percent
LNSEGS	The natural logarithm of the number of business segments
BIG4	An indicator variable equal to 1 if the auditor was one of the Big 4 auditors; 0 otherwise
FY2004	An indicator variable equal to 1 if the firm-year is 2004, or the first year that Section 404 was effective; 0 otherwise
FY2005	An indicator variable equal to 1 if the firm-year is 2005; 0 otherwise
FY2006	An indicator variable equal to 1 if the firm-year is 2006; 0 otherwise

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