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Evidence on the Audit Risk Model: Do Auditors Increase Audit Fees in the Presence of Internal Control Deficiencies?

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1. Introduction

Internal controls over financial reporting (ICOFR) should provide reasonable assurance about the reliability of financial statements by setting in place policies and procedures related to maintaining accounting records, authorizations, and safeguarding of assets.[1] For such controls to be effective, they should ensure, to the greatest extent possible, that material financial statement misstatements either cannot occur within a given functional area or will be detected and corrected by management before financial reports are issued. If ICOFR cannot provide this assurance, it is widely assumed that financial reporting quality will suffer. This assumption underlies many of the provisions of the Sarbanes-Oxley Act (SOX) of 2002, including the requirement that managers attest to the effectiveness of ICOFR.

Although it may seem reasonable to assume that internal control deficiencies and "bad accounting" go hand in hand, we contend that strong internal controls are not necessary for reporting to be in compliance with generally accepted accounting principles (GAAP). Stated differently, financial reports are not generated in a vacuum; rather they are a joint product of management and an independent auditor. The audit risk model — which provides a framework for evaluating the relationship between overall audit risk, inherent risk, control risk, and detection risk — proposes that even when internal control deficiencies (ICD) are identified, auditors can still provide an unqualified opinion by increasing their substantive testing. More formally, when either inherent risk or control risk increases, auditors can reduce detection risk by increasing substantive testing (in order to maintain a desired level of overall audit risk). Our purpose in this paper is to determine whether the audit risk model is descriptive of what occurs in practice. In other words, does the relationship between fees and ICDs suggest that audit firms exert more effort in their audits of firms that subsequently disclose internal control deficiencies?

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Prior studies examining the relationship between risk factors and auditor effort find mixed evidence on whether auditors' behavior is actually consistent with the audit risk model. Studies such as Mock and Wright 1993, Mock and Wright 1999, and Bedard 1989 use data from the working papers of actual audit engagements and examine the association between client risks and variations in audit plans. The overall conclusion of this research is that audit plans in practice are not strongly risk-adjusted; however, many of these studies are limited to small sample sizes and evidence from one audit firm. Studies examining the sensitivity of audit hours or audit fees to various risk factors do find evidence of a relationship between audit effort and inherent risk, but no evidence that audit effort is sensitive to reliance on internal controls (Felix, Gramling, and Maletta 2001; Hackenbrack and Knechel 1997; O'Keefe, Simunic, and Stein 1994). It is worth noting that these studies all use data from time periods prior to the most recent round of high-profile accounting scandals, and prior to the Sarbanes-Oxley Act of 2002. It is possible, therefore, that these events have increased auditors' sensitivity to control risk. In addition, whereas the above studies rely on data from one particular audit firm, a benefit of using the SOX disclosures to examine audit fees and internal control weaknesses is that we can provide a comparison of the response across various measures of audit quality.

We examine audit fees in the fiscal year prior to disclosure of internal control deficiencies for a sample of firms that disclosed deficiencies between November 2003 and November 2004, and for a comparison sample that did not report control deficiencies. Our approach differs from studies examining the increase in audit fees as a result of SOX section 404 disclosures (Raghunandan and Rama 2006) in that we use the SOX section 302 disclosures and audit fees in prior periods in an effort to measure the auditor's response to increased control risk rather than incremental audit fees resulting from the documentation and testing efforts related to SOX section 404.

Our tests indicate that, after controlling for various factors known to affect audit fees (including measures of inherent risk and information risk), audit fees in the fiscal year preceding the year in which the internal control problem was disclosed are significantly higher for ICD firms. The fee effect is economically significant as well, because the average firm pays an additional 35 percent in audit fees when internal control deficiencies are present. Finally, we show that audit fees are increasing in the severity of the underlying internal control problems. Thus, audit firms do seem to increase their fees when control deficiencies exist, particularly in cases where the problems are the most severe. To the extent that audit fees proxy for audit effort — which has been found to be the case in studies with data available for both auditor labor hours and audit fees (Bell, Landsman, and Shackleford 2001; Bedard and Johnstone 2006) — our results suggest that auditors increase their effort in the presence of increased control risk. However, we cannot rule out the alternative explanation that the fee increase is due primarily to a risk premium associated with ICD firms.

We provide additional insights into the differences in auditors' responses to control risk across various partitions of audit quality. We find that audit fees are significantly higher for ICD client firms, whether or not they hire a Big 4 auditor,

although the incremental fee for clients of Big 4 auditors is significantly higher than the incremental fee for clients of non–Big 4 auditors. In addition, audit fees are significantly higher for ICD firms that are in the initial or second year with an audit firm, relative to ICD firms that have been with their auditors for more than two years. Finally, the incremental fee is highest for ICD client firms that previously had Arthur Andersen as an auditor in 2000 or 2001. All of these findings suggest that auditor responses to increased control risk vary on the basis of auditor type and tenure.

Our findings are important in light of recent research documenting that firms reporting internal control weaknesses have lower accruals quality (Ashbaugh-Skaife, Collins, Kinney, and LaFond 2007 [ACKL]; Doyle, Ge, and McVay 2007) [DGM]. One interpretation of the lower accruals quality findings relative to the audit process is that auditors may not be detecting and/or correcting the lower earnings quality that potentially results from poor internal controls. An alternative explanation is that auditors do recognize the increased control risk and extend their efforts appropriately, and that the documented accruals are at least in part a manifestation of higher levels of information risk (e.g., Francis, LaFond, Olsson, and Schipper 2005).[2] We include abnormal accruals in our fee model as a measure of information risk and find that audit fees increase significantly with abnormal accruals. Although we cannot draw any conclusions on overall audit quality, our results at least suggest that auditors are sensitive to both increased control risk and increased inherent and/or information risk, and respond by increasing audit fees.

The remainder of the paper is structured as follows. In the next section we discuss background information related to the audit risk model, internal control requirements and disclosures, as well as SOX sections 302 and 404. We then detail our sample selection procedure and present descriptive statistics. In the remaining sections we present our empirical results and discuss our conclusions.

2. Background

The audit risk model

The audit risk model, discussed in *Statement on Auditing Standards* (*SAS*) *No. 47* (American Institute of Certified Public Accountants [AICPA] 1983), is stated as follows:

$$\textit{Audit Risk} = \textit{Inherent Risk} \times \textit{Control Risk} \times \textit{Detection Risk}.$$

Both inherent risk and control risk are documented by the auditor on the basis of an assessment of the client. In order to maintain overall audit risk at an acceptable level in the face of high inherent risk and/or control risk, auditors must reduce detection risk. Detection risk is reduced by increasing substantive testing. Auditing standards specifically provide for additional substantive testing when auditors conclude that internal controls cannot be relied on (see *SAS No. 55* [AICPA 1989] and *SAS No. 78* [AICPA 1996]).

Prior studies focusing on audit programs have found mixed results with respect to whether auditors actually increase substantive testing when risk factors

are present. Mock and Wright (1999) focus on accounts receivable data from actual audit engagements and do not find much evidence of an association between client risks and audit plans (most of the risk factors relate to inherent risk, but the authors do include a numerical measure of control risk). Mock and Wright (1999) document some evidence of variation in the nature of testing, but not the extent of testing, across time in response to changes in risk factors. Their overall conclusion is that in practice, audit plans are not strongly risk-adjusted. These conclusions are consistent with those of earlier studies using data from actual audit engagements (e.g., Bedard 1989; Mock and Wright 1993).

O'Keefe et al. (1994) use data from one audit firm and document that both audit hours and the mix of labor are sensitive to client size, complexity, leverage, and inherent risk. Interestingly, they do not find evidence of an association between audit hours or mix of labor inputs and reliance on internal controls, suggesting that audit effort varies with changes in inherent risk but not control risk. Similarly, Hackenbrack and Knechel (1997) and Felix et al. (2001) do not find a relationship between audit effort and control reliance.

The evidence from previous research is mixed with respect to the relationship between audit effort and inherent risk, and there is very little evidence that audit effort is sensitive to changes in control risk. However, there are several reasons why we might expect things to be different in the current audit and regulatory environment. The accounting scandals at large publicly traded firms (e.g., Enron and Worldcom), the demise of Arthur Andersen, and the passage of the Sarbanes-Oxley Act of 2002 would all be expected to increase auditors' sensitivity to the risk of material financial statement errors and irregularities. For all of these reasons, we believe it is important to revisit the issue of auditors' responses to internal control deficiencies.

Internal control deficiency disclosures and related research

Two sections of the Sarbanes-Oxley Act relate specifically to internal control. SOX section 302, which was finalized and implemented on August 29, 2002, requires management to certify in quarterly and annual reports that disclosure control processes and procedures have been designed and implemented, to conclude on the effectiveness of disclosure controls, and to disclose any material changes to internal control over financial reporting during the quarter (this last requirement was a modification of the original SOX section 302 rule and became effective August 14, 2003). SOX section 404 requires management of publicly traded companies to report on the effectiveness of ICOFR on an annual basis.[3] In addition, section 404 requires external auditors to audit and report on the effectiveness of ICOFR, including management's assessment process. SOX section 404 became effective for fiscal years ending on or after November 15, 2004 for accelerated filers. The Sarbanes-Oxley disclosures allow us to identify a broad sample of clients with high control risk, and thereby allow us to examine the sensitivity of audit fees to the severity of control deficiencies.

Raghunandan and Rama (2006) and Hoitash, Hoitash, and Bedard (2005) document significantly higher audit fees for a sample of accelerated filers for the fiscal

2004 audit relative to the fiscal 2003 audit both for firms disclosing material weaknesses under SOX section 404 and for firms that do not disclose weaknesses. This result would be expected, given the incremental testing and documentation necessary to prepare the SOX section 404 reports. These studies also find that audit fees are significantly higher in fiscal 2004 for firms disclosing material weaknesses.

Another stream of research that has emerged as a result of the Sarbanes-Oxley internal control disclosures examines the characteristics of firms reporting control deficiencies. Both ACKL and DGM provide evidence that accruals quality is lower for firms disclosing control deficiencies. As discussed earlier, there are at least two potential explanations for these findings. One possibility is that poor internal controls result in poor accruals quality, and auditors are either not detecting or not correcting potential errors or misstatements. In this scenario, it is less likely that audit plans are materially risk-adjusted. Another possibility is that auditors do recognize the increased control risk and attempt to adjust their procedures accordingly to increase the likelihood of detecting potential errors or misstatements, which is the relationship of interest in this paper.

3. Sample and descriptive statistics

Sample characteristics

We initially collected a sample of firms highlighted by Compliance Week as disclosing internal control weaknesses and/or significant deficiencies. Compliance Week searches disclosures made in 10Q and 10K filings, 8-K filings, and prospectuses, and distributes the information monthly. The disclosures during our time period are from the SOX section 302 certifications or 8-K disclosures rather than being "early adopters" of SOX section 404, although certainly many of the deficiencies were detected during the SOX section 404 testing phase.[4] We do not use the SOX section 404 disclosures because the audit fees during the 2004 and 2005 time period primarily would reflect documentation and remediation efforts (as shown by Raghunandan and Rama 2006 and Hoitash et al. 2005) rather than increased substantive testing. Thus, we use financial data and audit fees from the period prior to the SOX section 302 disclosure. A maintained assumption in our approach is that the internal control deficiency existed in the fiscal year prior to the disclosure under SOX section 302, which seems likely given our reading of the disclosures.[5] Many firms state that their independent auditors notified management of the deficiency in conjunction with the prior period audit (also see the Glass Lewis & Co. 2005 report).[6]

For the period between November 1, 2003 and November 30, 2004, Compliance Week lists a total of 529 new disclosures or material updates. Of these 529 disclosures, a total of 452 are from firms that are covered by the COMPUSTAT database. After eliminating cases where firms disclosed updates to an original internal control disclosure, the available sample includes a total of 410 unique firms. The disclosure firms come from a broad range of industries. Only five two-digit Standard Industrial Classification (SIC) code industries comprise more than 5 percent of the total observations, with the greatest concentration coming from SIC

code 73 (Business Services, 18 percent of observations) and SIC code 36 (Electronic and Other Electrical Equipment and Components, Except Computer Equipment, 11 percent of observations). The average number of disclosures per month from the set of 410 unique firms is 31.53, with the minimum number being 11 in November 2003 and the maximum being 102 in November 2004. The number of disclosures generally increased each month over this time period as companies performed their SOX section 404 testing. Sample disclosures are included in Appendix 1.

To assess the relationship between internal control problems and audit fees for our sample firms, we benchmark against a set of control firms that are not included in Compliance Week's list of companies disclosing significant deficiencies or material weaknesses. We match each sample observation with all same-two-digit industry observations for the fiscal year preceding the internal control disclosure. To be included in our final sample, both the sample firms and their corresponding industry firms must have sufficient data from COMPUSTAT and Audit Analytics to estimate our multivariate models.[7] After incorporating all of these data restrictions and removing sample and control observations with two-digit SIC codes between 60 and 69, our final sample is reduced from 410 ICD observations to 284 ICD observations having 6,451 matched industry observations.[8] We only allow the matched firms to be included once per year rather than multiple times per year as a match for several firms. Data for approximately 62 percent of these observations are drawn from 2003, with 26 percent and 12 percent coming from 2002 and 2004, respectively, where the 2004 observations are firms with fiscal year-ends in 2004 (e.g., June 30) that report a deficiency prior to November 30, 2004.

Basic financial data

Table 1 presents descriptive statistics for both the ICD firms and the industry comparison firms. Panel A focuses on financial statement data and shows that ICD firms are significantly smaller, less profitable, and less liquid than their industry counterparts and also have lower cash flow from operations. For example, ICD firms have a median return on assets (ROA) of 0.020 (mean of −0.096), compared with 0.041 (mean of −0.046) for industry match firms. Similarly, the median quick ratio for sample firms is 1.179 (mean of 1.847), compared with 1.512 (2.599) for industry match firms. These findings are consistent with performance and size differences documented in Ashbaugh-Skaife, Collins, and Kinney 2007 and Doyle, Ge, and McVay 2007, and suggest that firms disclosing internal control problems do seem to be "worse off" than other firms in their respective industries.

We calculate the absolute value of performance-adjusted abnormal accruals (*ABSAAC*), as defined by ACKL.[9] It is measured as the difference between the firm-specific residual from our accruals model, (1), below, and the median firm-specific residual associated with peer firms in the same corresponding two-digit SIC/ROA decile in year $t - 1$:

$$TotalAccruals/lag1asset = \gamma_0 + \gamma_1(1/lag1asset) + \gamma_2(\Delta REV/lag1asset - \Delta AR/lag1asset) + \gamma_3 PPE/lag1asset + \epsilon \quad (1).$$

In this specification, *TotalAccruals* is COMPUSTAT data item #123 in year t minus COMPUSTAT data item #308 in year t, *lag1asset* is COMPUSTAT data item #6 in year $t-1$, ΔREV is the change in COMPUSTAT data item #12 from year $t-1$ to year t, ΔAR is the change in COMPUSTAT data item #2 from year $t-1$ to year t, and *PPE* is COMPUSTAT data item #8 in year t. The model is estimated separately for each two-digit SIC code/year combination.[10] We also include the five-year variance of *ROA* (*ROAVAR*) as an additional risk proxy.

TABLE 1
Summary statistics for internal control disclosure firms and industry-matched firms

Panel A: Accounting variables

	IC problem firms (n = 284)		Industry matched firms (n = 6,451)		t-statistic	Sign-rank
	Mean	Median	Mean	Median	p-value	p-value
ASSETS	1,628.300	191.871	2,182.070	153.548	0.087	0.452
LNASSETS	5.158	5.257	5.077	5.034	0.577	0.452
LSEG	0.468	0.000	0.420	0.000	0.203	0.176
INVREC	0.287	0.263	0.264	0.231	0.049	0.033
QUICK	1.847	1.179	2.599	1.512	0.001	0.001
DA	0.215	0.130	0.187	0.088	0.086	0.001
ROA	−0.096	0.020	−0.046	0.041	0.059	0.003
ROAVAR	0.259	0.093	0.244	0.084	0.608	0.046
ABSAAC	0.105	0.052	0.089	0.047	0.107	0.416
GROWTH	0.220	0.061	0.352	0.061	0.382	0.681
FOREIGN	0.391	0.000	0.312	0.000	0.005	0.005
MERGER	0.475	0.000	0.421	0.000	0.071	0.071
YE	0.320	0.000	0.378	0.000	0.042	0.049
LOSS	0.585	0.000	0.447	0.000	0.001	0.001
OPINION	0.609	1.000	0.506	1.000	0.001	0.001
BIG4	0.768	1.000	0.765	1.000	0.929	0.929
INITIAL	0.310	0.000	0.263	0.000	0.080	0.080
CFO	−0.031	0.038	0.009	0.068	0.019	0.001

Panel B: Fee variables

	Mean	Median	Mean	Median	t-statistic p-value	Sign-rank p-value
AUDIT	1.215	0.425	0.852	0.254	0.015	0.001
%AUDIT	1.085%	0.256%	0.589%	0.171%	0.108	0.001
NONAUDIT	0.869	0.148	0.656	0.119	0.160	0.068
%NONAUDIT	0.177%	0.072%	0.183%	0.069%	0.789	0.224

Notes:

All p-values are two-tailed.

Variables are as defined in Appendix 2.

Table 1 shows, consistent with ACKL, that ICD firms have higher values of *ABSAAC* than control firms. Our mean values of 0.105 and 0.089, respectively, are almost identical to those reported by ACKL (0.107 and 0.093). The five-year ROA variance for ICD firms (mean of 0.259, median of 0.093) is also higher than it is for industry match firms (mean of 0.244, median of 0.084). Although only the parametric test shows a significant difference for *ABSAAC* and only the nonparametric test shows a significant difference for *ROAVAR*, our findings are generally consistent with ACKL and DGM and suggest that internal control weakness firms are likely to have higher levels of inherent and/or information risk.

Audit fees

In panel B of Table 1 we present a univariate analysis of audit and nonaudit fee data. As with our other variables, the fee data come from the year preceding the ICD disclosure in order to minimize the likelihood that the relationships we do observe might be attributable to ICD documentation or remediation efforts. The mean audit fee (*AUDIT*) of over $1.2 million for internal control problem firms is significantly larger ($p = 0.015$) than the mean of $852,000 for the industry match firms, and the median of $425,000 for internal control problem firms is significantly larger ($p = 0.001$) than the industry median of $254,000. It is important to note that these relationships hold even though panel A of Table 1 shows that internal control problem firms in general are smaller than their industry counterparts. To further illustrate the difference between audit fees among these two sets of firms, we also calculate the audit fee as a percentage of total client assets (*%AUDIT*). The mean value of *%AUDIT* for internal control problem firms is almost double that of the industry match firms, and the median value is significantly higher as well (median of 0.256 percent versus 0.171 percent). In contrast to the relationships for audit fees, no consistent significant differences are observed for either total nonaudit fees (*NONAUDIT*) or nonaudit fees as a percentage of total assets (*%NONAUDIT*). Overall, these data suggest that auditors increase their fees — on both a relative and absolute basis — in audits of firms with internal control problems. However, no consistent significant differences are observed with respect to nonaudit work.

Severity of internal control problems

Material weaknesses versus significant deficiencies

Disclosures of internal control problems made under SOX section 302 vary by type of problem and severity. To the extent that the severity or type of problem also affects audit fees, it is important to examine various subgroups of the sample firms. One of the most important distinctions likely is between firms reporting material weaknesses versus those reporting only significant deficiencies. Hammersley, Myers, and Shakespeare (2008) find that market reactions to the disclosure of a material weakness are significantly more negative than market reactions to the disclosure of a significant deficiency, consistent with investors being more concerned about the potential for material misstatements when material weaknesses are disclosed.

In Table 2, we investigate differences in our summary measures for ICD firms based on whether a material weakness was reported. Table 2 shows that the 178 ICD firms reporting material weaknesses tend to be smaller and less profitable than the 106 ICD firms not reporting material weaknesses (i.e., reporting significant deficiencies or other control deficiencies). Furthermore, audit fees as a percentage of total assets are significantly higher among material weakness firms than among nonmaterial weakness firms. The mean audit fee as a percentage of assets paid by material weakness firms is more than three times as large as the corresponding value for nonmaterial weakness firms (1.487 percent versus 0.410 percent, respectively). Nonaudit fees as a percentage of total assets are also significantly larger for material weakness firms relative to nonmaterial weakness firms, even though the level of nonaudit fees is not significantly different across the two groups, and there were no consistently significant differences in nonaudit fees for the full sample of ICD firms relative to non-ICD firms in Table 1. These findings suggest that distinguishing between the presence of material weaknesses versus significant deficiencies is likely to be important in our multivariate tests.

4. Multivariate analysis of audit fees

Overview

The results from our univariate tests in Table 1 suggest that audit fees are higher for ICD firms than for industry match firms. Our first purpose in this section is to determine whether the observed fee differences hold after controlling for other factors known to influence audit fees. We then extend the model to accommodate the severity of the internal control problems and, ultimately, characteristics of the audit that might be important in evaluating the relationship between ICDs and audit fees. Our maintained hypothesis in these models is that higher fees are likely to exist among ICD firms as auditors attempt to maintain an acceptable overall level of audit risk (see *SAS No. 55* (AICPA 1989) and *SAS No. 78* (AICPA 1996)). If testing is extended, the final figures reported in the income statement and balance sheet should fairly represent (in all material respects) the client's financial position even if weak internal controls originally resulted in errors or irregularities. However, ceteris paribus, the extra procedures should result in higher fees, particularly in cases where internal control deficiencies are most severe.

Basic fee model

To test for the effect of ICD on audit fees, we estimate a standard audit fee model that includes an indicator variable defining firms with disclosures of internal control problems. Our initial model is as follows:

$$\begin{aligned} LNFEE = {} & a_0 + a_1 LNASSETS + a_2 LSEG + a_3 INVREC + a_4 QUICK + a_5 DA \\ & + a_6 ROA + a_7 ROAVAR + a_8 ABSAAC + a_9 GROWTH \\ & + a_{10} FOREIGN + a_{11} MERGER + a_{12} YE + a_{13} LOSS \\ & + a_{14} OPINION + a_{15} BIG4 + a_{16} INITIAL + a_{17} YR03 \\ & + a_{18} YR04 + a_{19} IC + \epsilon \end{aligned} \quad (2).$$

As discussed previously, our analysis uses data for the fiscal year-end closest to but preceding the year in which the internal control problem was disclosed. For example, for a calendar year-end firm disclosing an internal control problem in June 2004, our analysis incorporates fees and other firm-characteristics for the year ended December 31, 2003. We adopt this approach because our tests are aimed at

TABLE 2
Statistics for internal control disclosure firms by material weaknesses versus significant deficiencies

Panel A: Accounting variables

	Material weaknesses (n = 178)		Significant/other control deficiencies (n = 106)		t-statistic p-value	Sign-rank p-value
	Mean	Median	Mean	Median		
ASSETS	1,209.980	145.873	2,230.76	268.704	0.108	0.008
LNASSETS	4.856	4.981	5.666	5.594	0.003	0.008
LSEG	0.435	0.000	0.524	0.000	0.258	0.255
INVREC	0.285	0.260	0.292	0.268	0.773	0.657
QUICK	1.740	1.107	2.025	1.327	0.371	0.108
DA	0.219	0.127	0.204	0.133	0.738	0.988
ROA	−0.136	0.002	−0.030	0.035	0.053	0.007
ROAVAR	0.250	0.106	0.275	0.074	0.693	0.071
ABSAAC	0.120	0.052	0.079	0.048	0.022	0.224
GROWTH	0.165	0.052	0.314	0.072	0.478	0.274
FOREIGN	0.365	0.000	0.434	0.000	0.252	0.252
MERGER	0.483	0.000	0.462	0.000	0.734	0.734
YE	0.337	0.000	0.292	0.000	0.433	0.437
LOSS	0.646	1.000	0.481	0.000	0.006	0.007
OPINION	0.629	1.000	0.575	1.000	0.371	0.371
BIG4	0.742	1.000	0.811	1.000	0.180	0.179
INITIAL	0.337	0.000	0.264	0.000	0.200	0.200
CFO	−0.050	0.032	0.001	0.054	0.161	0.036

Panel B: Fee variables

	Mean	Median	Mean	Median	t-statistic p-value	Sign-rank p-value
AUDIT	1.199	0.367	1.240	0.522	0.886	0.080
%AUDIT	1.487%	0.306%	0.410%	0.179%	0.029	0.002
NONAUDIT	0.766	0.126	1.033	0.222	0.398	0.126
%NONAUDIT	0.213%	0.085%	0.120%	0.063%	0.004	0.096

Notes:

All p-values are two-tailed.

Variables are as defined in Appendix 2.

picking up the fee increment attributable to the additional testing required in pre-disclosure periods rather than increases in fees stemming from documentation or remediation efforts specific to the internal control problems. Our approach provides a conservative test of the relationship between ICD and audit fees. To the extent that audit fees in the year of disclosure — which are not included in our analysis — do reflect the additional substantive tests we seek to capture (i.e., are not purely documentation- or remediation-based), the approach we employ biases against our being able to document a significant relationship between audit fees and internal control problems.

In (2), *LNFEE* is the natural logarithm of the audit fee. *LNASSETS* is the natural logarithm of total assets, and *LSEG* is the natural logarithm of the number of business segments. *INVREC* is inventory and receivables divided by total assets, *QUICK* is the ratio of current assets minus inventories to current liabilities, *DA* is long-term debt divided by total assets, *ROA* is operating cash flow divided by lagged total assets, and *GROWTH* is the one-year percentage growth in sales. Previous research (e.g., Whisenant, Sankaraguruswamy, and Raghunandan 2003) has found that audit fees are increasing in firm size, complexity, and leverage, and are decreasing in profitability and liquidity. Our expectations are the same. Our model also includes *ROAVAR* and *ABSAAC* to control more fully for inherent and/or information risk. By including these measures in the multivariate model — and thereby avoiding the correlated omitted variables problem that would otherwise exist, based on the results presented in Table 1 — we are able to evaluate the impact of internal control deficiencies on audit fees more accurately.

The remaining variables in (2) are indicator variables. *FOREIGN*, which is equal to 1 if foreign currency translation adjustments are present (as in Whisenant et al. 2003), defines firms with international operations, and *MERGER* defines firms having merger activity during the data year. *YE* defines firms with non-December 31 fiscal year-ends, *LOSS* is equal to 1 for firms reporting net losses, and *OPINION* is equal to 1 for firms having nonstandard audit reports.[11] *BIG4* is equal to 1 for firms using Big 4 auditors, *INITIAL* defines firms with an auditor tenure of two or fewer years (as in Whisenant et al. 2003), and *YR03* (*YR04*) controls for general trends in audit fees across the sample period by defining observations occurring during the 2003 (2004) data year. Finally, *IC* is equal to 1 for firms disclosing internal control deficiencies and is equal to 0 for the industry match firms. We expect the coefficient on *IC* to be positive.

The results of estimating regression (2) are presented in Table 3. The first model we estimate serves as a baseline model and does not include *IC*. Consistent with previous research, we find that audit fees are an increasing function of firm size and complexity, and a decreasing function of liquidity and profitability. Fees are also higher for firms experiencing net losses, having foreign operations or merger activity, and using Big 4 audit firms. In contrast, fees are lower for firms with non-December 31 year-ends and for firms that have recently changed auditors. *ROAVAR* and *ABSAAC* are positive and significant as well, suggesting that fees are higher when earnings variance is higher and accruals are more extreme.[12] When we include our test variable, *IC*, it enters positively and is highly significant

($p = 0.001$), in addition to being economically significant. When all of the other variables are entered at their mean values and *IC* is coded as 0, the predicted audit fee is $293,746. When *IC* is coded as 1, the predicted fee increases by over $100,000 to $394,538 consistent with auditors increasing their fees when issues with control risk arise.

Next we turn to a specification of (2) that allows us to investigate how fees are influenced by the severity of the underlying internal control deficiencies. In this model we partition *IC* into *IC_MW* and *IC_SIGNDEF*, representing the material weakness and significant deficiency partitions, respectively. The coefficients for both variables are positive and significant ($p < 0.001$) but the coefficient of 0.347 for *IC_MW* is significantly larger ($p = 0.051$) than the coefficient of 0.207 for *IC_SIGNDEF*. These findings suggest that audit fees are much higher when material weaknesses exist than when they do not.

Auditor size, auditor tenure, and Andersen effects

To provide additional information on auditors' responses to increased control risk, we further examine the relationship between audit fees and internal control weaknesses across various characteristics of the audit. The results of these tests are included in Table 4. We begin by comparing differences across Big 4 firms and non–Big 4 firms. Our final sample of 6,735 observations includes 5,155 audits by Big 4 firms (218 ICD clients and 4,937 match clients) and 1,580 audits by non–Big 4 firms (66 ICD clients and 1,514 match clients). To investigate whether the revision in audit fees for ICD clients differs on the basis of auditor type, we reestimated (2) with an additional variable defined as *IC*BIG4*. In this model, the coefficient for *BIG4* is positive and highly significant ($p < 0.001$), indicating that Big 4 auditors charge a fee premium relative to smaller audit firms in audits of non-ICD clients. The coefficient for *IC* is both positive and significant ($p < 0.02$), suggesting that ICD firms with non–Big 4 audits pay a fee premium relative to non-ICD firms with non–Big 4 audits. Finally, the coefficient for *IC*BIG4* is also positive and significant ($p < 0.07$), supporting the existence of an additional fee premium for ICD firms that employ Big 4 auditors. It is also worth noting that the coefficient for *BIG4* is 0.253, while the coefficient for (*BIG4* + *IC* + *IC*BIG4*) is 0.583. Thus, the evidence with respect to auditor size suggests that (1) Big 4 clients are likely to experience a material increase in fees if they have internal control problems (about 130 percent in the context of our model); and (2) Big 4 auditors are likely to increase their fees more than non–Big 4 auditors in audits of ICD firms.

In a related but nontabulated test, we estimate our models separately for clients of Big 4 and non–Big 4 auditors. *IC* continues to load positively ($p < 0.001$) in all models, as do both *IC_MW* and *IC_SD*. However, in the non–Big 4 model the coefficient identifying material weakness firms is not significantly different ($p = 0.64$) from the coefficient identifying significant deficiency firms. In contrast, the two coefficients are significantly different ($p = 0.01$) for Big 4 clients, with material weakness clients paying a fee premium. This finding suggests that Big 4 audit fees are more sensitive than non–Big 4 fees to the presence of relatively severe internal control problems.

TABLE 3
Multivariate audit fee model results

$$LNFEE = a_0 + a_1 LNASSETS + a_2 LSEG + a_3 INVREC + a_4 QUICK + a_5 DA + a_6 ROA + a_7 ROAVAR + a_8 ABSAAC + a_9 GROWTH + a_{10} FOREIGN + a_{11} MERGER + a_{12} YE + a_{13} LOSS + a_{14} OPINION + a_{15} BIG4 + a_{16} INITIAL + a_{17} YR03 + a_{18} YR04 + a_{19} IC + \epsilon$$

Variable	Coeff.	*t*-stat.	Coeff.	*t*-stat.	Coeff.	*t*-stat.
Intercept	2.399	66.42	2.412	67.05	2.412	67.04
LNASSETS	0.484	107.16	0.484	107.56	0.484	107.60
LSEG	0.112	8.94	0.112	8.96	0.112	8.98
INVREC	0.702	16.73	0.690	16.50	0.691	16.53
QUICK	−0.018	−9.33	−0.018	−9.22	−0.018	−9.21
DA	−0.048	−2.10	−0.049	−2.15	−0.049	−2.15
ROA	−0.268	−9.64	−0.266	−9.61	−0.266	−9.60
ROAVAR	0.110	7.50	0.111	7.62	0.112	7.67
ABSAAC	0.329	4.99	0.322	4.89	0.320	4.86
GROWTH	−0.002	−3.23	−0.002	−3.21	−0.002	−3.21
FOREIGN	0.243	15.17	0.238	14.97	0.239	14.99
MERGER	0.084	5.54	0.082	5.43	0.082	5.40
YE	−0.099	−6.35	−0.098	−6.25	−0.098	−6.27
LOSS	0.163	9.59	0.154	9.09	0.154	9.05
OPINION	0.137	9.00	0.135	8.89	0.135	8.86
BIG4	0.261	12.34	0.259	12.34	0.259	12.33
INITIAL	−0.083	−5.00	−0.085	−5.16	−0.086	−5.19
YR03	0.202	11.95	0.185	10.96	0.186	10.98
YR04	0.598	22.05	0.589	21.77	0.589	21.78
IC	—	—	0.295	8.21	—	—
IC_MW	—	—	—	—	0.347	7.75
IC_SIGNDEF	—	—	—	—	0.207	3.60
Adjusted R^2	0.813		0.815		0.815	
p-value for equality of *IC_MW* and *IC_SIGNDEF* (two-tailed)					0.051	

Notes:

n = 284 sample firms and 6,451 control firms.

IC_MW = 1 if the internal control problem disclosure indicates a material weakness; = 0 otherwise.

IC_SIGNDEF = 1 if the internal control problem disclosure indicates no material weakness, but a significant deficiency; = 0 otherwise.

Other variables are as defined in Appendix 2.

TABLE 4
Fee model results for auditor size, initial audit, and former Andersen client tests

$$LNFEE = a_0 + a_1 LNASSETS + a_2 LSEG + a_3 INVREC + a_4 QUICK + a_5 DA + a_6 ROA + a_7 ROAVAR + a_8 ABSAAC + a_9 GROWTH + a_{10} FOREIGN + a_{11} MERGER + a_{12} YE + a_{13} LOSS + a_{14} OPINION + a_{15} BIG4 + a_{16} INITIAL + a_{17} YR03 + a_{18} YR04 + a_{19} IC + \epsilon$$

Variable	Coeff.	*t*-stat.	Coeff.	*t*-stat.	Coeff.	*t*-stat.
Intercept	2.416	67.05	2.416	67.16	2.410	66.81
LNASSETS	0.484	107.59	0.483	107.52	0.484	107.68
LSEG	0.112	8.94	0.112	8.99	0.112	9.00
INVREC	0.690	16.51	0.690	16.52	0.692	16.57
QUICK	−0.018	−9.22	−0.018	−9.23	−0.018	−9.21
DA	−0.049	−2.18	−0.049	−2.15	−0.047	−2.08
ROA	−0.266	−9.63	−0.267	−9.67	−0.266	−9.60
ROAVAR	0.111	7.62	0.111	7.62	0.111	7.63
ABSAAC	0.324	4.93	0.317	4.82	0.322	4.89
GROWTH	−0.002	−3.22	−0.002	−3.21	−0.002	−3.21
FOREIGN	0.238	14.95	0.239	15.03	0.239	15.00
MERGER	0.081	5.38	0.083	5.47	0.081	5.34
YE	−0.098	−6.27	−0.097	−6.24	−0.097	−6.25
LOSS	0.154	9.09	0.154	9.06	0.153	8.99
OPINION	0.135	8.92	0.136	8.98	0.137	9.02
BIG4	0.253	11.86	0.261	12.42	0.265	12.38
INITIAL	−0.085	−5.12	−0.097	−5.73	−0.065	−3.08
YR03	0.185	10.97	0.185	10.94	0.185	10.98
YR04	0.590	21.81	0.588	21.74	0.591	21.82
IC	0.178	2.41	0.218	5.08	0.234	5.86
*IC*BIG4*	0.152	1.80	—	—	—	—
*IC*INITIAL*	—	—	0.248	3.23	—	—
PREVAND	—	—	—	—	−0.049	−1.99
*IC*PREVAND*	—	—	—	—	0.309	3.46
Adjusted R^2	0.815		0.815		0.815	

Notes:

Our final sample of 6,735 observations includes 5,155 audits by Big 4 firms (218 ICD clients and 4,937 match clients) and 1,580 audits by non–Big 4 firms (66 ICD clients and 1,514 match clients). The variable *INITIAL* is coded as one (auditor tenure ≤ 2 years) for 31 percent of ICD firms and 26.3 percent of match firms, and this difference is significant at $p = 0.08$. The percentage of ICD firms that were former Andersen clients (20 percent) is not significantly different from the percentage of match firms (18 percent) that were former Andersen clients ($p = 0.465$).

PREVAND = 1 if the firm was an Andersen client in 2000 or 2001; = 0 otherwise.

Other variables are as defined in Appendix 2.

We also test the relationship between ICDs, initial audits, and audit fees. When we include *IC*, *INITIAL*, and *IC***INITIAL* in (2), *IC* is positive, *INITIAL* is negative, and the interaction term is positive (p-values for all coefficients are less than 0.01). Table 4 shows that the absolute value of the interaction term is also approximately 2.5 times as large as the absolute value of *INITIAL*. Overall, these results confirm the presence of lowballing for initial audits in general (*INITIAL* is negative), the presence of a fee premium for ICD firms with auditors having tenure of longer than two years (*IC* is positive), and the presence of a significant additional fee premium for ICD firms having *INITIAL* audits that far surpasses the lowballing that ordinarily would exist (*IC***INITIAL* is positive). These findings suggest that the presence of an internal control problem is very important in establishing the fee paid in an initial audit.

In our last test we augment (2) with the addition of *PREVAND* — a binary variable defining firms that were Andersen clients in 2000 or 2001 — and *IC***PREVAND*. The percentage of ICD firms that were former Andersen clients (20 percent) is not significantly different from the percentage of match firms (18 percent) that were former Andersen clients ($p = 0.465$). As is shown in Table 4, the coefficient for *IC* in this model is 0.234 ($p < 0.001$), the coefficient for *PREVAND* is -0.049 ($p < 0.05$) and the coefficient for *IC***PREVAND* is 0.309 ($p < 0.001$). The significant negative coefficient for *PREVAND* is comparable to that of *INITIAL*, in that it is indicative of lower fees following an auditor change. Note that this general tendency for fees to be lower in a relatively new audit engagement holds even for former Andersen clients, provided that no internal control deficiencies exist. When internal control deficiencies do exist among former Andersen clients, however, the fee increment is 0.309 over and above the 0.234 associated with non-Andersen ICD firms (and the -0.049 associated with the Andersen-related non-ICD effect). To put these coefficients in perspective, in the expanded model the predicted fee — using mean values for the other variables — if the firm is not an ICD firm and is not a former Andersen client would be approximately $296,500. If the firm is not an ICD firm but is a former Andersen client, the recent auditor change (i.e., lowballing) causes the predicted fee to decrease to about $282,000. If internal control deficiencies do exist but the firm is not a former Andersen client, the predicted fee is $356,808, and if the firm is a former Andersen client and is also an ICD firm, the predicted fee increases to roughly $486,000.

The conclusions we draw from the results presented in Table 4 are twofold. First, if fees provide an indication of audit effort, auditors do appear to conduct more substantive tests when their clients have internal control deficiencies — particularly in the case of Big 4 auditors and/or audit firms that have recently accepted an engagement. Second, the fees associated with audits of firms that are former Andersen clients appear to be very sensitive to the existence of control risks. We find the latter finding particularly interesting, given that former Andersen clients that do not have internal control deficiencies pay their new auditors significantly lower fees, just like any other client that has recently changed auditors (consistent with DeAngelo 1981 and other research on low-balling). Given the negative coefficient for *PREVAND*, the significant positive coefficient for *PREVAND*IC* cannot strictly

be interpreted as an additional risk/litigation premium associated with auditing former Andersen clients. Rather, we contend that it is evidence of a heightened sensitivity to control risks among clients that may have had audits that were deficient — or that were at least perceived to potentially have been deficient — in previous periods.

Sensitivity tests

SOX section 404 reporting issue and changes in audit fees

One concern in interpreting the coefficients on the internal control deficiency indicator variable in our audit fee model is that fee increases might actually be due to auditors assisting clients in documenting internal controls in preparation for SOX section 404 reporting. On the basis of our reading of the disclosures of the ICD documented by our sample firms, this does not seem to be the case for the majority of the firms. Furthermore, our test period — the year prior to the disclosure of the deficiency — is selected specifically to minimize this possibility. In the interest of completeness, however, we also document the differences in audit fees between sample firms and control firms in the fiscal year preceding our year of interest (i.e., for the fiscal year ending two years before the disclosure of the ICD, predominantly fiscal year 2002). We find that audit fees are significantly higher for the sample firms in this year as well. The mean (median) fee for sample firms is roughly $915,000 ($300,000) versus about $669,000 ($210,000) for control firms. Both differences are statistically significant, and similar relationships also exist for lagged audit fees as a percentage of lagged total assets. These findings strengthen our argument that the fee increase we observe is due to increased control risk, rather than being related to SOX section 404.[13] In addition, in nontabulated results we partition the *IC* coefficient to define accelerated filers and nonaccelerated filers, and we find that both coefficients are positive and significant (and are not significantly different from each other). These results suggest that fees are significantly higher for both groups of firms rather than just for the accelerated filers who were more likely to have been gearing up for SOX section 404.

Age of deficiencies

In a related sensitivity analysis, we try to determine whether auditors were aware of internal control deficiencies in prior years, or whether the deficiency was recently detected. Ideally, we would like to know how long management and the auditors have been aware of the ICD; however, this information obviously is not available. Our classification is made after reading the Compliance Week disclosures and determining whether or not there was an indication that the deficiency existed in the prior year (as an example, see the Foster Wheeler Ltd. disclosure included in Appendix 1, which shows a disclosure indicating that weakness existed in the prior financial statement period). We partition the *IC* variable into two components: *IC_PRIOR* and *IC_NOPRIOR*. The first component identifies ICD firms having a deficiency that is more likely to be long-standing and the second identifies ICD firms having a deficiency that either appears to be recently detected or is ambiguous. We classified 53 percent of ICD firms as *IC_PRIOR* and the remaining 47 percent

as *IC_NOPRIOR*. When we reestimate (2) with these partitions in place, the coefficient for *IC_NOPRIOR* is 0.175 ($p < 0.001$) and the coefficient for *IC_PRIOR* is 0.403 ($p < 0.001$). The coefficient for *IC_PRIOR* is also significantly larger ($p < 0.001$) than the coefficient for *IC_NOPRIOR*. Overall, these findings indicate that even relatively new deficiencies (or those that have ambiguous disclosures) result in higher audit fees; however, deficiencies that were the most likely to have existed in the prior year are associated with much higher fee premiums. It is also worth noting that significantly more *IC_PRIOR* observations than *IC_NOPRIOR* observations involve material weaknesses (75 percent versus 49 percent, respectively) such that problems that appear to be "older" are also more severe.

Correlated omitted variables and/or performance

Another potential concern with respect to our findings is that our test variable of interest (*IC*) may be correlated with variables that are not included in our multivariate model. To allay these concerns, we reestimate the model after including most of the remaining independent variables used by Whisenant et al. 2003. Our initial objective in estimating (2) was to retain some degree of parsimony and to retain as many observations as possible. The latter issue is of particular concern, given that the loss of an ICD firm due to data restrictions also requires the deletion of all of its associated control firm observations. The inclusion of the current year's stock return (*RETURN*), market model residual volatility (*VOLATILITY*), book-to-market ratio (*BTM*), and the number of days between the fiscal year-end and the fourth quarter earnings announcement date (*LAG*), for example, reduces our usable set of observations by about 20 percent (to 234 sample firms and 5,127 industry match firms). With these variables included in the model, the coefficient on *IC* decreases from 0.295 to 0.250, but the *t*-statistic is still 6.70 ($p < 0.001$). Further additions to the model, in the form of square root of employees (*SQEMPLS*), the existence of employee benefit plans (*EMP_PLANS*), and extraordinary items or discontinued operations (*XDOPS*) result in the loss of an additional 3 sample firms and 109 control firms. In this model, the *t*-statistic for *IC* remains at 6.50 ($p < 0.001$), and the coefficients on the control variables are also consistent with those presented by Whisenant et al. 2003. In addition, the coefficient for *IC* remains highly significant ($p < 0.001$) when we include controls for restructuring charges, auditor industry specialization, and industry fixed effects.

We also estimate an additional series of models to ensure that *IC* is not simply proxying for poor financial performance (which would be positively associated with audit fees). Given that a number of the independent variables included in the model are related to performance — for example, *ROA*, *ROAVAR*, and *ABSAAC* — we believe that these effects are being modeled adequately in (2). As an additional test, however, we partition observations that are above- and below-median values of *ROA*, *ROAVAR*, and *ABSAAC* and reestimate (2) separately for each of these six partitions. We also form a comparable partition based on *CFO*, which is shown to be significantly different for ICD and match firms in Table 1; however, this is not included in our (or other) audit fee models. In all of these models, *IC* is positive and highly significant ($p < 0.001$) for both "low" and "high" partitions.

Alternative classification of severity of weaknesses

As an alternative to classifying material weaknesses versus significant deficiencies, we also classify the types of deficiencies reported. Our partitions are based on the nine broad categories of internal control problems described by Ge and McVay 2005.[14] We then divide the sample firms into "high" and "low" problem groups (*IC_HIGH* and *IC_LOW*). We define sample firms as having internal control problems that are relatively "low" if (a) they only report a control problem in one category and (b) the problem they report is account- or subsidiary-specific, or involves account reconciliations. This classification ties closely to Moody's Investors Service 2004 characterization of internal controls that are "auditable". Of the 284 sample firms, 84 meet these criteria and are therefore classified as *IC_LOW*. The remaining 200 sample firms are assumed to have internal control problems that are more severe, either because they have issues in more problematic general areas (e.g., accounting policies, the internal control environment as a whole, or issues with management and personnel) or because they have problems across multiple categories. These firms are classified as *IC_HIGH*.

If we estimate the audit fee regression model and include *IC_HIGH* and *IC_LOW* rather than *IC_MW* and *IC_SIGNDEF* (results not tabulated), the coefficient on *IC_HIGH* is 0.384 and is significant at $p < 0.001$. The coefficient on *IC_LOW* is 0.084 and the *p*-value is 0.192. These results suggest that audit fees are significantly higher for firms with more pervasive weaknesses, or with multiple weaknesses, whereas fees are not significantly higher if the weaknesses are less severe and are relatively isolated (e.g., account-specific or subsidiary-specific).

5. Conclusions

In this study, we investigate how auditors respond to the higher levels of control risk experienced by firms subsequently disclosing internal control deficiencies. Our results show that audit fees are significantly higher for ICD firms after controlling for size, risk, and profitability. Furthermore, the fee increment is highest for firms that have the most substantial internal control problems. Our tests also indicate that internal control deficiency firms have higher levels of inherent risk and information risk than their industry counterparts, and that these risks are positively related to fees as well.

To the extent that audit fees are a proxy for audit effort, our results suggest that auditors are increasing their audit effort where appropriate to maintain an acceptable overall level of audit risk, consistent with the audit risk model. As stated earlier, our ability to draw inferences about audit effort and increased control risk relies on audit fees being an adequate proxy for audit effort, which has been found to be the case both in the pre-Sarbanes-Oxley time period (Bell et al. 2001) and in the post-Sarbanes-Oxley period (Bedard and Johnstone 2006). However, we cannot rule out the alternative explanation that the increased fees we observe are due to the existence of a risk premium for firms with internal control problems rather than to increased testing.

Appendix 1: Sample internal control disclosures

Catalina Marketing Corp. reported on September 15, 2004:

> As a result of the recent audit procedures and our continuing efforts to evaluate the effectiveness of the design and operation of our disclosure controls and procedures and our internal controls over financial reporting, we have concluded that the following internal control deficiencies constituted material weaknesses or significant deficiencies, during the fiscal years ended and as of March 31, 2004, 2003 and 2002 …
>
> > Deficiencies related to the structure and design of certain financial information reporting processes …
> >
> > Deficiencies related to inadequate or ineffective policies for documenting transactions …
> >
> > Deficiencies related to design of policies and execution of processes related to accounting for transactions …
> >
> > Deficiencies related to the internal control environment

RCN Corp. reported on August 26, 2004:

> Company employees identified material weaknesses in internal control surrounding oversight controls over non-routine transactions and the training of existing personnel, who took on additional responsibilities with respect to the use of accounting software.

Foster Wheeler Ltd. reported on July 26, 2004:

> On March 31, 2004, our external auditors notified the audit committee of our board of directors that they believed our lack of a formal process for senior financial management to review assumptions and check calculations on a timely basis relating to our asbestos liability and asset balances represented a "material weakness" in the internal controls for the preparation of our consolidated financial statements for 2003.

Harken Energy Corp. reported on June 30, 2004:

> On June 29, 2004, BDO advised the management and the Audit Committee that a material weakness in internal control over the Company's financial reporting exists. The material weakness relates to the Company's inability to determine the appropriate accounting for non-routine securities transactions on a timely basis.

Appendix 2: Variable definitions

ASSETS = total assets, in millions of dollars (COMPUSTAT data item #6)

LNASSETS = natural logarithm of *ASSETS*

LSEG = natural logarithm of number of business segments

INVREC = inventory and receivables to assets ratio ((COMPUSTAT data item #2 + COMPUSTAT data item #3)/COMPUSTAT data item #6)

QUICK = quick ratio ((COMPUSTAT data item #4 − COMPUSTAT data item #3)/COMPUSTAT item #5)

DA = long-term debt (COMPUSTAT data item #9/COMPUSTAT data item #6)

ROA = return on assets (COMPUSTAT data item #178/COMPUSTAT data item #6 in year $t - 1$)

ROAVAR = five-year variance of *ROA*

ABSAAC = performance-adjusted abnormal unsigned accrual, defined as the absolute value of the difference between the firm-specific residual from the equation [$TotalAccruals = \gamma_0 + \gamma_1(1/lag1asset) + \gamma_2(\Delta REV - \Delta AR) + \gamma_3 PPE + \epsilon$] and the median firm-specific residual from the same two-digit SIC/*ROA* decile in year $t - 1$. *Lag1asset* is COMPUSTAT data item #6 in year $t - 1$, ΔREV is the change in COMPUSTAT data item #12 from year $t - 1$ to year t, scaled by *lag1asset*, ΔAR is the change in COMPUSTAT data item #2 from year $t - 1$ to year t, scaled by *lag1asset*, and *PPE* is COMPUSTAT data item #8 scaled by *lag1asset*.

GROWTH = one-year sales growth ((COMPUSTAT data item #12 − COMPUSTAT data item #12 in year $t - 1$)/COMPUSTAT data item #12 in year $t - 1$)

FOREIGN = 1 if foreign currency translation (COMPUSTAT data item #150) is present; = 0 otherwise

MERGER = 1 if firm was involved in merger activity; = 0 otherwise

YE = 1 if non–December 31 year-end; = 0 otherwise

LOSS = 1 if net loss (COMPUSTAT data item #172) is reported; = 0 otherwise

OPINION = 1 if nonstandard audit report issued (COMPUSTAT data item #149); = 0 otherwise

BIG4 = 1 if Big 4 auditor is used; = 0 otherwise

INITIAL = 1 if auditor tenure $<=$ 2 years; = 0 otherwise

CFO	=	cash flow from operations (COMPUSTAT data item #308/COMPUSTAT data item #6 in year $t - 1$)
AUDIT (*NONAUDIT*)	=	audit (nonaudit) fee, in millions of dollars
%AUDIT (*%NONAUDIT*)	=	audit (nonaudit) fee as a percentage of *ASSETS*

Endnotes

1. Internal control over financial reporting is a subset of internal controls, and is defined in *Public Company Auditing Oversight Board* (*PCAOB*) *Standard No. 2* as "a process designed by, or under the supervision of, the company's principal executive and principal financial officers, or persons performing similar functions, and effected by the company's board of directors, management, and other personnel, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles" (PCAOB 2004, 154). ICOFR also includes policies and procedures related to maintaining accounting records, recording transactions, authorizing receipts and expenditures, and safeguarding assets.
2. Francis et al. (2005, 296) suggest that lower accruals quality increases information risk, which they define as "the likelihood that firm-specific information that is pertinent to investor pricing decisions is of poor quality". They document that lower accruals quality is associated with greater cost of capital.
3. Companies registered with the Securities and Exchange Commission (SEC) have been required to institute and maintain a system of internal controls since the passage of the Foreign Corrupt Practices Act of 1977 (FCPA). Under previous auditing standards, auditors were required to consider internal controls when planning the audit engagement, but were not required to test internal controls if they decided not to rely on them. The only public disclosure requirements related to internal control deficiencies were under *Financial Reporting Release* (*FRR*) *No. 31* (SEC 1988), which requires companies to disclose certain reportable events about internal control and financial statement reliability in an 8-K when an auditor change occurs.
4. Our sample period predates the mandatory SOX section 404 disclosures for accelerated filers. Companies may have been beginning their documentation and testing of controls at this point (many of the November 2004 disclosures state that the ICDs were noted during the process of assessing controls). To the extent that there are control firms included in our regression analysis that had material weaknesses or significant deficiencies of which the auditors were aware during the fiscal year included in our analysis but which had not been reported publicly, this would bias against finding a significant difference in fees between sample and control firms.
5. Of the observations included in our final sample, 53 percent have disclosures indicating that the control weakness existed in the prior fiscal year. We test the sensitivity of our results to including the remaining 47 percent of observations in our tests, and discuss these findings under the heading "Sensitivity Tests", below.
6. Glass Lewis argues, "In our view, the control deficiency probably did not appear overnight. Consequently, we feel that the problem most likely existed in prior quarters, and management failed to properly identify the problem" (2005, 3).

7. In a previous version of the paper, we used a one-to-one matching procedure. Our results under this procedure are directly comparable to the results from our current one-to-many matching procedure, but the latter is preferable because it minimizes potential self-selection problems. In the previous version, we investigated the number of one-to-one control firms that subsequently reported an ICD. Out of the 123 control firms in our initial match that had filed their first SOX section 404 report up through August 2005 (many of the firms are not accelerated filers), 14 disclosed material weaknesses (a rate of 11 percent), while the remaining 109 firms received clean opinions. Removing these 14 pairs from the analysis did not change the original results.
8. Fields, Fraser, and Wilkins (2004) show that audit fee determinants for financial institutions are different from those for other firms. When we leave the 57 financial institution observations (6 sample firms and 51 control firms) in our model, our results are qualitatively unaffected.
9. Kothari, Leone, and Wasley (2005) show that matching on performance enhances the reliability of inferences in earnings management studies.
10. Similar to Dechow and Dichev 2002, we eliminate any firm-year in the top or bottom 1 percent of *ROA*, *CFO*, or *TotalAccruals* before generating the industry/year expected accruals in (1). We also winsorize *ABSAAC* at the top and bottom 1 percent of all observations.
11. Most of the firms with *OPINION* = 1 simply have explanatory language added to their audit report. As such, this variable should not be interpreted as modeling the effect of going-concern modifications on audit fees.
12. As an additional sensitivity test, we also include cash flow volatility and sales volatility in addition to *ABSAAC*, because these measures of inherent risk have been shown to be associated with accruals quality (Francis et al. 2005). After controlling for these additional measures of inherent risk, the coefficient on *ABSAAC* is still positive and significant, suggesting that fees are increasing in absolute value of performance-adjusted discretionary accruals, even after controlling for other inherent risk measures associated with accruals quality. The coefficient on *IC* is still highly significant at $p = 0.001$.
13. We do not report multivariate tests of these relationships due to the changing definition of audit fees across these time periods. We cannot rule out the possibility that a portion of our basic finding stems from fees being associated with the initial identification of an internal control problem. However, both our empirical method (selecting the previous fiscal year) and our additional tests are aimed at ensuring that our results are robust to this and other potentialities.
14. The nine general categories listed by Ge and McVay 2005 are period-end reporting/accounting policies, revenue recognition, senior management, account specific, account reconciliations, subsidiary specific, segregation of duties, training, and technology issues.

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