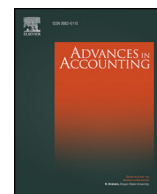




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Misclassification of audit-related fees as a measure of internal control quality

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ABSTRACT

There is an abundance of literature examining the effects of a poor internal control system on financial reporting quality, decision-making and auditing. However, the most commonly used proxy for internal control quality (i.e., a material weakness in the internal controls over financial reporting) occurs relatively infrequently and has declined in occurrence over the past decade (Chasan, 2013). In this study, we attempt to develop an alternative measure for internal control quality using the information reported in the S—K portion of a firm's 10-K. We suggest that a misclassification of audit-related fees in the unaudited disclosures of the annual report is a proxy for low internal control quality. Consistent with lower internal control quality, we find that firms misclassifying audit-related fees are more likely to report a material weakness, are less timely filers (longer report lag) and pay higher audit fees. Our findings suggest that misclassification of audit-related fees correlate with having poor internal control quality.

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1. Introduction

One of the most commonly researched topics in accounting literature is the effects of a poor internal control system. Studies have linked internal control quality to financial reporting quality (Doyle, Ge, & McVay, 2007), auditor effort (Raghunandan & Rama, 2006), decision making (Cheng, Dhaliwal, & Zhang, 2013) and executive tenure and compensation (Hoitash, Hoitash, & Johnstone, 2012; Li, Sun, & Ettredge, 2010). Almost all of these studies use a single proxy for internal control quality: the reporting of a material weakness in the internal controls over financial reporting. However, material weaknesses are relatively uncommon especially among larger corporations and have declined in frequency since the Sarbanes-Oxley Act of 2002 (Chasan, 2013). Further, a material weakness is only reported if management fails to successfully remediate the deficiency in the internal controls by the end of the fiscal year. Material weaknesses may actually be capturing management's incompetence or the absence of integrity rather than the quality of the financial reporting system (Järvinen & Myllymäki, 2016). Thus, identifying an alternative measure of internal control quality may help assure the validity of prior findings.

In this study, we develop an alternative measure of internal control quality using unaudited disclosures in the firm's annual Form 10-K. The Securities and Exchange Commission (SEC) requires public

companies to submit an annual Form 10-K, which consists of (1) unaudited disclosures required under Regulation S—K (Reg. S—K) and (2) audited financial statements required under Regulation S-X (Reg. S-X). Since the same accounting system produces both sets of information, we argue that a Reg. S—K disclosure failure is an indicator of an ineffective control environment. Whereas, the audited financial statements are a product of the process used to generate the financials, the accounting standards chosen by the firm and the quality of the auditing process. We theorize that an error in the Reg. S—K disclosures (misclassification of audit-related fees as audit fees) is an indicator of weak controls related to disclosure of information and suggestive of a poor internal control system.¹

In our study, we identify an inconsistency in the Reg. S—K portion of the 10-K where a firm incurred audit-related fees (i.e., a merger or acquisition) but did not disclose any such fees in its SEC filings. The failure to report audit-related fees by a firm that completed a merger or acquisition (M&A) during the year likely represents a disclosure control failure and may be an indicator of a weak internal control system. We examine whether this inconsistency is associated with characteristics or symptoms of a poor internal control system. Consistent with our

¹ Reg. S—K requires companies to report, in Item 14, the amount of fees for audit and non-audit services (NAS) paid to the independent auditor, with NAS to be categorized as audit-related fees, tax fees, and all other fees. The disclosure may be incorporated by reference to the company's proxy statement [See SEC, 2017 Form 10-K Annual Report Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934 General Instructions for Information to be incorporated by Reference].

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expectations, we find that firms with no audit-related fees are more likely to report a material weakness in their internal controls over financial reporting, are less timely filers (i.e., have a longer report lag), and pay higher audit fees (consistent with greater auditor effort). Overall, our results posit that errors in Reg. S—K disclosures signify a deficient internal control system and are suggestive of poor financial reporting quality.

The results of our study should be of interest to researchers examining measures associated with the quality of an internal control system. Prior literature has consistently used material weaknesses as a sign for a weak internal control system. However, only a small fraction of U.S. firms (2–3%) have reported a material weakness in their internal controls over financial reporting, and the majority of these firms are small and audited by non-Big Four auditors.² Misreporting of audit-related fees occurs almost as frequently as material weaknesses. Further, firms that misreport audit-related fees tend to be larger than material weakness firms and are more likely to be audited by Big Four auditors.³ Thus, misreporting of audit-related fees may be useful in a setting where researchers may not be able to use material weaknesses due to data limitations.

Our study also complements research examining the impact of the financial reporting process on financial reporting quality. While several studies suggest a link between material weaknesses and earnings quality (Chan, Barbara, & Picheng, 2008; Doyle et al., 2007), one cannot completely attribute the findings to issues related to the internal control system. Firms are usually provided an opportunity to remediate deficiencies in the internal control system before they are released to the public. Disclosure of a material weakness may be a signal of a deficiency in the internal control system or a signal of management's incompetence and integrity. Our measure provides an alternative means to avoid potential biases arising from the use of a single methodology.

Finally, we demonstrate that an analysis of non-audit service (NAS) fees can be used for more than identifying auditor independence issues. Prior research in this area has focused almost exclusively on whether NAS fees impair auditors' independence (Ashbaugh, LaFond, & Mayhew, 2003; Reynolds, Deis, & Francis, 2004; Srinidhi & Gul, 2007), whether different types of NAS are more or less likely to impair auditor's independence (Huang, Mishra, & Raghunandan, 2007), and whether recurring or nonrecurring NAS are more or less likely to impair auditors' independence (Patterson & Valencia, 2011). Our findings suggest that there are other potential uses for the NAS information contained in Item 14 of Reg. S—K in the 10-K.

The remainder of this paper is organized as follows. In Section 2, we review the regulatory environment and develop the hypotheses, while Section 3 discusses the research design and data. Section 4 discusses the results, Section 5 discusses the additional test, and Section 6 concludes.

2. Regulatory environment and hypotheses development

2.1. Regulatory environment

A firm's 10-K annual report contains a variety of unaudited disclosures in addition to the audited financial statements. Rules regarding unaudited nonfinancial disclosures are governed by Reg. S—K of the US Securities Act of 1933. Disclosures required under Reg. S—K include risk factors (including market risk), unresolved SEC staff comments, properties, legal proceedings, mine safety, selected financial data, equity securities, management discussion and analysis, information about

directors and officers, executive compensation, equity securities including security ownership, certain relationships and transactions and director independence, and fees paid to auditors. Preparation of the Reg. S—K disclosures requires input from several departments including accounting and tax, finance, legal, human resources, and management (Faegre Baker Daniels' 10-K disclosure checklist). The estimated number of hours to complete an annual Form 10-K is just under 2000 (U.S. Securities and Exchange Commission 2017), and Cazier and Pfeiffer (2016) report that the mean (median) Form 10-K filing length is 55,335 (52,004) words. Thus, the process for generating the Reg. S—K disclosures is complex, encompasses many rules (similar to GAAP) and involves the same personnel that prepare the audited financial statements.

As part of the Reg. S—K disclosure, a firm is required to disclose the aggregate fees paid to their external auditor for audit and non-audit services (NAS) for the last 2 years with NAS fees separated into three subcategories (i.e., audit-related, tax and all other) (SEC, 2003). These disclosures will either be reported in Item 14 of the 10-K or incorporated by reference from the registrant's proxy statement. SEC Rule 33-8183 establishes what "may" be disclosed as audit fees versus what "would" be disclosed as audit-related fees. In addition to fees paid to perform an audit or review in accordance with generally accepted auditing standards (GAAS), audit fees "may include" (emphasis ours) fees for services such as comfort letters, statutory audits, attest services, consents and assistance with documents filed with the SEC. The SEC (2003) indicated that audit-related fees are assurance and related services (e.g., due diligence services) and "would include" (emphasis ours), among others, due diligence related to mergers or acquisitions and accounting consultations and audits in connection with acquisitions. While the SEC provides guidelines regarding classification of expenses, there appears to be some inconsistency regarding the classification of services as audit fees and audit-related fees. For example, the Financial Executives Research Foundation (FERF) surveyed 76 public companies and found that audit-related fees included fees associated with statutory audits and SEC filings which should have been properly classified at audit fees (FERF, 2015). Further, a review of proxy statements from several large firms indicates that many firms chose to disclose auditor fees for due diligence related to mergers or acquisitions and accounting consultation and audits in connection with acquisitions and dispositions as audit-related fees.⁴ Misclassification of audit-related fees may suggest a lack of commitment by the organization to attract, develop and retain competent individuals who understand the SEC filing requirements (i.e., a weak control environment). It may also be a signal that the company lacks the control activities (such as independent checks) necessary to ensure that information is properly organized. Given these established regulations, we believe the failure to properly classify due diligence fees within the audit-related fee subcategory of NAS (e.g., classifying due diligence fees as audit fees) is likely to be a disclosure control failure and a signal of a weak internal control system.

² Data from Audit Analytics suggests that more than half of the companies that received a material weakness between 2008 and 2018 had total assets of less than \$500 million and two-thirds were audited by a non-Big Four auditor.

³ Between 2004 and 2015, 2982 firms reported a section 404 material weakness disclosure (from Audit Analytics) compared to 2217 firms that reported a merger or acquisition and no audit-related fees.

⁴ In its proxy statement dated January 30, 2015, The Cooper Companies disclosed fees in two categories, auditing fees and "all other fees." Included in the audit fees for 2014 was work related to the acquisition of Saflon Pharmaceuticals, fees that likely should have been classified as audit-related fees. BMC Software did not report any audit-related fees for fiscal years 2007 through 2009 even though it acquired companies worth \$1.12 billion over the same period. Given that BMC purchased tax services from E&Y over the same period, it is unlikely that the BMC's audit committee would perceive due diligence services to be an impairment to independence. In its proxy statement dated July 19, 2007, BMC disclosed that it paid Ernst & Young \$10.146 and \$11.012 million in audit fees in 2007 and 2006, respectively. No audit-related fees were reported in 2007 and only \$11 thousand were reported for 2006 for services related to employee benefit plan audits. Tax fees were over \$200,000 for both years. In its proxy statement dated June 24, 2009, BMC reported audit fees of \$6.6 and \$6.8 million in 2009 and 2008, respectively. No audit-related fees were reported for those years while tax fees were \$400,000 and \$200,000 for those two years. For details regarding BMC's acquisitions for fiscal years 2007 to 2009, see Note 2 in the 10-K for fiscal year March 31, 2009.

An auditor is required to review the Reg. S—K disclosures to ensure that they are consistent with the audited financials (Reg. S—X). However, we believe auditors are unlikely to influence the disclosure of audit-related fees for a number of reasons. First, audit-related fees disclosed in the 10-K, unlike the unaudited financial disclosures in other parts of the Reg. S—K, do not have a comparable measure in the audited financial statements and (or) related notes to the financial statements.⁵ The auditor does not have a responsibility to verify whether the information disclosed in Item 14 is materially inconsistent with the information provided in the financial statements (AS 550). Second, most firms incorporate the auditor fees into the 10-K by reference to the registrant's proxy statement. Given that the proxy statement is released 1–2 months following completion of the audit, we believe the auditor is less likely to verify the accuracy of the information. Finally, total non-audit fees typically fall below the auditor's threshold for materiality (i.e., 5% of income before taxes; 1–2% of total assets), suggesting that examining audit-related fees would be beyond the scope of the audit.

2.2. Hypotheses development

We expect that most firms completing an M&A will contract with their external auditor to perform due diligence related to the transaction. While some firms may not purchase NAS from their auditors or may limit the type of NAS that their auditors can provide to maintain auditor independence,⁶ it is unlikely that due diligence fees would fall into this restricted category given their direct bearing on the audit.⁷ This is especially true when an M&A firm discloses that it purchased other types of services from the auditor (i.e., tax, or other NAS services) since it is unlikely that an audit committee would perceive due diligence work to be more of an impairment to independence than tax or other services.⁸ As such, firms that disclose zero audit-related fees and have M&A activities are potentially misclassifying audit-related fees as audit fees.

There are two possible reasons why managers may misclassify due diligence fees. One explanation is that managers intentionally misclassify NAS fees as audit fees to avoid insinuations that the auditor's independence is impaired. However, the more likely explanation is that misclassification of audit-related fees is an unintentional error by the accounting staff given that (1) investors expect firms to perform due diligence (incur audit-related fees) when they merge/acquire another firm and (2) the failure to report such expenses when an M&A occurred may suggest that managers are not upholding their duty to their shareholders to protect the corporation's assets.⁹ Regardless of the intent, if an auditor provides due diligence services, the firm should classify the

charges as audit-related fees. Failure to report audit-related fees is likely an indicator of a weak internal control system.

This leads to our hypothesis stated in alternative form:

Hypothesis. Firms that complete a merger or acquisition and report zero audit-related fees have weak internal control.

3. Research design and sample selection

3.1. Internal control quality analysis

To test whether the misclassification of audit-related fees is a signal of a weak internal control system, we use three measures: material weaknesses (*MWO*), the time between the end of the fiscal year and release of the audit report (*AUDIT_LAG*), and abnormal audit fees paid by the firm (*AB_AFFE*). A material weakness exists when the design or operation of internal controls does not allow for the prevention or detection of a misstatement on a timely basis and can likely result in a material misstatement in the financial statements (Chan et al., 2008). If our measure is a signal of a weak internal control system, we expect firms reporting zero audit-related fees to also report material weaknesses (SOX 302 or SOX 404) in their internal controls over financial reporting. Knechel and Payne (2001) suggest that audit lag is associated with audit effort (i.e., audit hours). If weak internal controls allow accounting errors to occur and to go undetected, auditors will need to extend their scope of work and perform additional substantive tests to compensate for the control weaknesses (Doss, 2004; Leech, 2004). The extended audit effort due to a weak internal control system should delay the release of the audit report for firms that report zero audit-related fees. Finally, we examine whether firms that report zero audit-related fees pay higher than expected audit fees. While we acknowledge that higher abnormal fees may be the result of misclassification of audit-related fees as audit fees, higher audit fees may also be due to additional substantive tests because the auditor cannot rely on the firm's internal control system.

To test whether M&A firms with zero audit-related fees have weaker internal control systems, we estimate the following model as shown below:

$$P(MWO = 1), AUDIT_LAG, AB_AFFE = \beta_0 + \beta_1 ZERO_ARF + Controls + \varepsilon \quad (1)$$

where the dependent variable is one of three measures suggestive of a weaker internal control system. The variable of interest in the model is *ZERO_ARF*, which is equal to one if the firm had M&A activities and reported zero audit-related fees in the current year and zero otherwise.^{10,11} *Controls* is a vector of control variables known to influence the dependent variables. A detailed description of the model and the control variables can be found in the Appendix. If the misclassification error is a sign of a poor accounting system, we expect the coefficient on *ZERO_ARF* to be positive ($\beta_1 > 0$), supporting our hypothesis.¹²

⁵ Legoria, Reichelt, and Soileau (2018) find firms are more likely to disclose their major customers' identity in the unaudited disclosures (Reg. S—K) when audited by a local or national specialist. However, their setting is different from ours because there is a directly similar number in the audited disclosures to compare against the information contained in the Reg. S—K portion of the 10-K.

⁶ In its proxy dated March 2, 2004, GE's audit committee stated "it is the committee's goal that fees which the company pays KPMG for non-audit services should not exceed the audit fees paid to KPMG, a goal which the company achieved in 2003." Pfizer disclosed in its proxy statement dated March 16, 2017, that it does not generally purchase NAS from its auditor (KPMG) in the "all other fees" category and reported no fees in that category for 2015 and 2016. Dr. Pepper-Snapple Group disclosed in its proxy statement dated March 28, 2017, that it did not purchase any NAS from its external auditor (Deloitte) in 2015 and 2016.

⁷ Audit-related services should help the auditor identify areas of risk and plan the subsequent audit. Therefore, the benefits of having the auditor perform M&A due diligence should offset any potential threat to auditor independence.

⁸ Mishra, Raghunandan, and Rama (2005) find that investors are more likely to vote for auditor ratification when audit-related fees are higher and vote against auditor ratification when the "tax fee" and "all other" fee ratio is high.

⁹ Lawsuits are a significant threat during mergers or acquisitions. Cain and Solomon (2015) state that 94.9% of takeovers in 2014 had at least one lawsuit. Failure to disclose audit-related fees may be a red flag for opportunistic lawyers looking to generate income by pursuing class-action lawsuits against a firm.

¹⁰ M&A firms are identified using the Compustat annual database. We classify a company as an M&A firm if it reports any of the following: (1) AA (reflects a merger or acquisition) or AB (reflects a significant merger/acquisition whereby the effects on the prior year's sales constitute 50% or more of the reported sales for that year) in the net sale footnote (SALE_FN), (2) an increase in sales of more than \$10 million due to acquisitions (AQS) or (3) a change in income of more than \$10 million due to acquisitions (AQI).

¹¹ For the audit lag and abnormal audit fee models, we include material weakness as an independent variable to demonstrate that our measure of internal control quality captures information not available to the public in the report on internal controls over financial reporting.

¹² Given that several firms in our sample are included multiple times and the sample period includes multiple regulatory changes and economic events (e.g., the Sarbanes-Oxley Act, SEC Rule 33-8644, the great recession, etc.), we cluster standard errors by firm and year to correct for cross-sectional and time-series dependence.

Table 1
Sample selection.

Sample attrition	Material weakness	Audit lag	Abnormal audit fees
	Firm-years	Firm-years	Firm-years
Compustat firm-year observations with M&A activity from 2004 to 2015	12,812	12,812	12,812
Less: observations without auditor or SOX 302/404 opinion data from Audit Analytics	-5712	-5712	-5712
Less: financial firms and Utilities (SIC codes 6000–6999 and SIC codes 4900–4999)	-1833	-1833	-1833
Less: observations with common missing control variables (i.e., assets, net income, etc.)	-328	-328	-328
Less: observations with insufficient data for abnormal audit fee analysis	0	0	-1071
Less: observations with insufficient data for remaining control variables	-298	-246	-290
Final sample	4641	4693	3578

3.2. Sample selection

Table 1 summarizes the sample selection process. The initial sample consists of 12,812 observations in Compustat with a merger or acquisition between 2004 and 2015.¹³ The data from Compustat was merged with auditor and internal control opinion data from Audit Analytics. Observations with missing auditor or internal control opinion data were excluded from the sample. Financial institutions (SIC codes 6000–6099) and utilities (SIC codes 4900–4999) are also excluded because regulated firms likely face different incentives than nonregulated firms (Ayers, Jiang, & Yeung, 2006). Finally, we exclude any observation with missing data for remaining control variables. This results in a sample of 4641 (4693) [3578] observations for our tests of material weaknesses, (auditor report lag) and [abnormal audit fees].

4. Results

4.1. Descriptive statistics

Table 2 Panels A, B, and C, presents the descriptive statistics (means, medians and standard deviations) for our samples. We present those statistics for the full sample and separate based on the variable of interest (*ZERO_ARF*). Approximately 47% of the M&A firms in our sample (2217 ÷ 4641) did not report any audit-related fees, suggesting that a large portion of the firms in our sample misclassified due diligence fees. One-fifth of the sample reported a material weakness in their internal controls over financial reporting.

Columns (A) and (B) of Panel A present the mean (median) values based on whether the company reported audit-related fees. The number of firms with a material weakness is significantly higher for sample A (M&A firms with no audit-related fees) relative to sample B (M&A firms with audit-related fees) ($p < .01$). This finding is consistent with our hypothesis that M&A firms that misclassify audit-related fees have weak internal control systems. M&A firms that misclassify audit-related fees also tend to be smaller in size (*SIZE*), have fewer business segments (*NUM_SEG*) and foreign operations (*FOR_OPS*), tend to be younger (*FIRM_AGE*) and less profitable (*ROA*). Given the characteristics of the zero audit-related firms, it is unlikely that these firms are conducting the due diligence internally rather than outsourcing it to their auditor.

Table 2 Panel B presents the descriptive statistics for our audit lag sample. Similar to the M&A sample in Panel A, we find that 52.7%

¹³ Again, we limit our sample to firm-year observations that reported M&A activity because there should be a direct relation between M&A activities and fees disclosed in the audit-related fee category. For firms with no M&A activity, it is difficult to determine whether audit-related fees are misclassified. Auditor fees that should be classified as audit-related include fees for internal control reviews, attest services that are not required by statute or regulation, consultation concerning financial accounting and reporting standard, and employee benefit plans. With the exception of employee benefit plans, we cannot observe whether the company contracted its auditor to perform those audit-related services. While all publicly traded companies have employee benefit plans, some may not use their external auditor to perform the compliance audit. For example in 2016, Coca-Cola (E&Y; Banks Finley White & Co.), Chevron (PWC; Morris Davis Chan & Tran LLP) and Ford Motor Co. (PWC; Plante Moran PLLC) used a different auditor for the audit of their employee benefit plans.

(2476 ÷ 4693) of firms do not report audit-related fees and one in five (21%) reported a MWO. Columns (A) and (B) present the means (medians) based on whether the company reported audit-related fees. We find that the lag in the audit report $Ln(AUDIT_LAG)$ is shorter for firms reporting no audit-related fees (sample A) relative to firms that report audit-related fees (sample B) which is inconsistent with hypothesis one. We find a similar result for abnormal audit fees in Table 2 Panel C. However, there are several factors (namely size of the firm) which may explain this inconsistency.

Table 3 presents the correlation table. The Pearson correlations between *ZERO_ARF* and two of our three dependent variables [*MWO* and $Ln(AUDIT_LAG)$] are significantly positive and consistent with expectations. The correlation between *ZERO_ARF* and *AB_AFEE* is positive but not significant. Overall, the correlations analysis provides results consistent with our hypothesis. While we do find some correlations among the variables >0.40 (correlation between *SIZE* and *BIG4* = 0.59; correlation between *SIZE* and *LOSS* = -0.41), we note that none of the variance inflation factors exceeds 6.00, suggesting that multicollinearity is not a serious concern.

4.2. Is misclassification of audit-related fees a sign of weak internal control system?

In Table 4, we present the results for whether M&A firms that misclassify audit-related fees are more likely to report a material weakness in their internal controls over financial reporting. Our model is based on the one used by Ashbaugh-Skaife, Collins, Kinney, and LaFond (2008). Column (1) included all M&A firms regardless of whether the firm purchased tax or NAS from the auditor. Consistent with our hypothesis, the coefficient on *ZERO_ARF* is significantly positive ($\beta_1 = 0.193$; $p < .05$), suggesting that misclassification of audit-related fees is a signal of a poor accounting system. Similar to Ashbaugh-Skaife, Collins, and Kinney (2007) and Chen, Eshleman, and Soileau (2017), we find that a firm is more likely to report a material weakness when it has restated its prior year's financials (*LAG_RESTATE*), when it has more business segments (*NUM_SEG*) or foreign operations (*FOR_OPS*), when it has higher sales growth (*GROWTH*), when it is less profitable (*LOSS* and *ROA*) or more insolvent (*GCO* and *ZSCORE*) or when the firm has greater cash flow volatility. Larger (*SIZE*) and older firms (*FIRM_AGE*) as well as firms in highly litigious industries were less likely to report a material weakness.¹⁴

Column (2) restricts the sample to M&A firms that purchase some type of non-audit services from their auditor. While we see a decline in the β_1 coefficient, it remains significantly positive ($\beta_1 = 0.163$; $p = .10$). None of the control variables change dramatically except *FIRM_AGE* and *ROA* are no longer significant. Overall, the results are consistent with our hypothesis that misclassification of audit-related fees is a signal of a poor accounting system.

Auditors are likely to perform more work after the end of the fiscal year when the firm has a weaker internal control system. This should

¹⁴ Inclusion of corporate governance variables (audit committee size, board independence and number of board members) reduces the sample size by two-thirds. However, we find similar results when the variables are included in the model.

Table 2
Descriptive statistics.

Panel A: Material weakness sample											
Full sample				(A) No audit-related fees			(B) Audit-related fees			Difference in means between (A) and (B)	
N = 4641				N = 2217			N = 2424				
Variable	Mean	Median	Std. Dev.	Mean	Median	Std. Dev.	Mean	Median	Std. Dev.	t-Value	p-Value
MWO	0.21	0.00	0.41	0.30	0.00	0.46	0.13	0.00	0.33	15.06	<.01
BIG4	0.69	1.00	0.46	0.50	1.00	0.50	0.86	1.00	0.35	28.25	<.01
TIER2	0.08	0.00	0.27	0.10	0.00	0.30	0.06	0.00	0.24	5.31	<.01
SPEC_LOC	0.30	0.00	0.46	0.20	0.00	0.40	0.39	0.00	0.49	14.89	<.01
SPEC_NATL	0.20	0.00	0.40	0.13	0.00	0.33	0.26	0.00	0.44	11.45	<.01
SIZE	6.08	6.23	2.23	4.90	4.98	2.24	7.15	7.08	1.59	39.96	<.01
RZSCORE	5.46	6.00	2.51	5.11	5.00	2.78	5.77	6.00	2.19	9.01	<.01
GROWTH	0.26	0.00	0.44	0.30	0.00	0.46	0.23	0.00	0.42	5.08	<.01
NUM_SEG	0.72	0.69	0.73	0.57	0.00	0.68	0.86	1.10	0.74	14.22	<.01
MB	3.39	2.04	6.25	3.67	1.82	7.51	3.15	2.18	4.86	2.83	<.01
LOSS	0.34	0.00	0.47	0.47	0.00	0.50	0.22	0.00	0.42	18.17	<.01
LITG	0.27	0.00	0.45	0.31	0.00	0.46	0.24	0.00	0.43	5.08	<.01
GCO	0.06	0.00	0.24	0.12	0.00	0.32	0.01	0.00	0.10	15.76	<.01
FOR_OPS	0.59	1.00	0.49	0.43	0.00	0.50	0.73	1.00	0.45	21.48	<.01
RESTATE	0.05	0.00	0.21	0.04	0.00	0.21	0.05	0.00	0.21	0.57	.57
LAG_RESTATE	0.04	0.00	0.20	0.04	0.00	0.19	0.04	0.00	0.20	0.75	.45
ROA	-0.15	0.07	1.98	-0.40	0.04	2.86	0.07	0.08	0.15	8.01	<.01
RESTR	0.00	0.00	0.12	0.01	0.00	0.17	0.00	0.00	0.01	0.52	.60
FIRM_AGE	2.64	2.64	0.79	2.37	2.48	0.81	2.89	2.83	0.67	23.78	<.01
COMPLEX	0.45	0.00	0.50	0.47	0.00	0.50	0.42	0.00	0.49	3.66	<.01
α (CFO)	0.20	0.04	0.99	0.36	0.06	1.40	0.06	0.03	0.23	10.51	<.01

Panel B: Audit lag sample											
Full sample				(A) No audit-related fees			(B) Audit-related fees			Difference in means between (A) and (B)	
N = 4693				N = 2476			N = 2217				
Variable	Mean	Median	Std. Dev.	Mean	Median	Std. Dev.	Mean	Median	Std. Dev.	t-Value	p-Value
ln(AUDIT_LAG)	4.22	4.20	0.27	4.12	4.09	0.22	4.32	4.32	0.29	26.82	<.01
BIG4	0.69	1.00	0.46	0.86	1.00	0.35	0.50	0.00	0.50	27.87	<.01
TIER2	0.08	0.00	0.27	0.06	0.00	0.24	0.10	0.00	0.30	5.16	<.01
SPEC_LOC	0.30	0.00	0.46	0.39	0.00	0.49	0.19	0.00	0.40	15.06	<.01
SPEC_NATL	0.20	0.00	0.40	0.26	0.00	0.44	0.13	0.00	0.33	11.61	<.01
TEN_SHORT	0.54	1.00	0.50	0.42	0.00	0.49	0.67	1.00	0.47	17.87	<.01
TEN_LONG	0.10	0.00	0.30	0.13	0.00	0.34	0.06	0.00	0.23	9.32	<.01
SIZE	6.09	6.24	2.23	7.15	7.08	1.59	4.90	4.98	2.23	39.45	<.01
RZSCORE	5.44	6.00	2.52	5.75	6.00	2.21	5.10	5.00	2.79	8.68	<.01
GROWTH	0.26	0.00	0.44	0.23	0.00	0.42	0.29	0.00	0.46	5.03	<.01
NUM_SEG	0.73	0.69	0.73	0.87	1.10	0.74	0.57	0.00	0.68	14.37	<.01
MB	3.38	2.03	6.24	3.14	2.18	4.85	3.66	1.82	7.49	2.81	<.01
MWO	0.21	0.00	0.41	0.13	0.00	0.33	0.30	0.00	0.46	14.97	<.01
LOSS	0.34	0.00	0.47	0.23	0.00	0.42	0.47	0.00	0.50	17.88	<.01
LITG	0.27	0.00	0.45	0.24	0.00	0.43	0.31	0.00	0.46	5.04	<.01
GCO	0.06	0.00	0.24	0.01	0.00	0.10	0.12	0.00	0.32	15.12	<.01
FOR_OPS	0.59	1.00	0.49	0.73	1.00	0.44	0.43	0.00	0.50	21.54	<.01
BUSY	0.73	1.00	0.44	0.74	1.00	0.44	0.73	1.00	0.45	0.78	.44
HIGHTECH	0.22	0.00	0.41	0.21	0.00	0.40	0.23	0.00	0.42	1.77	.08
LAG_RESTATE	0.04	0.00	0.20	0.04	0.00	0.20	0.04	0.00	0.19	0.76	.44

Panel C: Abnormal audit fees sample											
Full sample				(A) No audit-related fees			(B) Audit-related fees			Difference in means between (A) and (B)	
N = 3578				N = 2647			N = 931				
Variable	Mean	Median	Std. Dev.	Mean	Median	Std. Dev.	Mean	Median	Std. Dev.	t-Value	p-Value
AB_AFEE	0.00	0.02	0.44	-0.01	0.01	0.44	0.02	0.05	0.44	1.86	.06
BIG4	0.84	1.00	0.37	0.86	1.00	0.34	0.77	1.00	0.42	6.13	<.01
TIER2	0.07	0.00	0.26	0.06	0.00	0.23	0.12	0.00	0.33	5.46	<.01
SPEC_LOC	0.39	0.00	0.49	0.40	0.00	0.49	0.37	0.00	0.48	1.69	.09
SPEC_NATL	0.25	0.00	0.43	0.26	0.00	0.44	0.21	0.00	0.41	3.11	<.01
TEN_SHORT	0.48	0.00	0.50	0.48	0.00	0.50	0.49	0.00	0.50	0.44	.66
TEN_LONG	0.12	0.00	0.32	0.12	0.00	0.33	0.11	0.00	0.32	0.64	.52
SIZE	6.88	6.74	1.56	7.09	7.02	1.59	6.28	6.23	1.31	15.38	<.01
RZSCORE	5.91	6.00	2.17	5.87	6.00	2.12	6.04	6.00	2.33	1.94	.05
GROWTH	0.21	0.00	0.41	0.20	0.00	0.40	0.23	0.00	0.42	1.50	.13
NUM_SEG	0.82	1.10	0.73	0.86	1.10	0.74	0.72	0.69	0.70	5.19	<.01
MWO	0.15	0.00	0.36	0.14	0.00	0.35	0.18	0.00	0.38	2.69	<.01
LOSS	0.24	0.00	0.43	0.22	0.00	0.42	0.28	0.00	0.45	3.25	<.01
LITG	0.26	0.00	0.44	0.25	0.00	0.43	0.28	0.00	0.45	2.09	.04

(continued on next page)

Table 2 (continued)

Panel C: Abnormal audit fees sample											
Full sample				(A) No audit-related fees			(B) Audit-related fees			Difference in means between (A) and (B)	
N = 3578				N = 2647			N = 931				
Variable	Mean	Median	Std. Dev.	Mean	Median	Std. Dev.	Mean	Median	Std. Dev.	t-Value	p-Value
FOR_OPS	0.70	1.00	0.46	0.73	1.00	0.45	0.62	1.00	0.49	6.00	<.01
RESTR	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.01	2.13	.03
FIRM_AGE	2.83	2.77	0.66	2.87	2.77	0.67	2.71	2.71	0.59	6.65	<.01
COMPLEX	0.42	0.00	0.49	0.41	0.00	0.49	0.45	0.00	0.50	2.09	.04

See Appendix for variable definitions.

Table 3 Correlation matrix.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) ZERO_ARF	1.00												
(2) MWO	0.20	1.00											
(3) ln(AUDIT_LAG)	0.32	0.42	1.00										
(4) AB_AFEE	0.03	0.04	0.00	1.00									
(5) SIZE	-0.50	-0.34	-0.53	-0.01	1.00								
(6) BIG4	-0.38	-0.27	-0.40	0.24	0.59	1.00							
(7) TIER2	0.09	0.03	0.06	-0.07	-0.10	-0.45	1.00						
(8) SPEC_LOC	-0.24	-0.10	-0.19	0.04	0.29	0.27	-0.11	1.00					
(9) SPEC_NATL	-0.16	-0.09	-0.14	0.10	0.25	0.32	-0.15	0.32	1.00				
(10) TEN_SHORT	0.23	0.22	0.29	-0.03	-0.31	-0.24	0.05	-0.13	-0.10	1.00			
(11) TEN_LONG	-0.12	-0.10	-0.18	0.00	0.21	0.16	-0.05	0.09	0.09	-0.37	1.00		
(12) FIRM_AGE	-0.33	-0.24	-0.32	-0.04	0.47	0.27	0.01	0.20	0.17	-0.39	0.25	1.00	
(13) COMPLEX	0.05	0.01	0.07	-0.03	-0.06	-0.02	0.01	-0.13	-0.11	0.02	-0.03	-0.17	1.00

Table above displays the Pearson correlation coefficients. Bolded coefficients are significant at the 5% level. See Appendix for variable definitions.

Table 4 Misclassification of audit-related fees and material weaknesses in internal controls over financial reporting.

Test of hypothesis one					
Variables	Pred. sign	All M&A firms		M&A firms with other NAS fees	
		(1)		(2)	
		Estimate	z-stat	Estimate	z-stat
CONSTANT	?	-0.640	-1.35	0.007	0.01
ZERO_ARF	+	0.193	1.85**	0.163	1.33*
BIG4	-	-0.602	-6.55***	-0.290	-0.92
TIER2	-	-0.110	-0.60	0.028	0.10
SPEC_LOC	-	0.147	1.29	0.317	2.11**
SPEC_NATL	-	-0.081	-0.49	-0.082	-0.45
SIZE	-	-0.235	-6.66***	-0.394	-5.29***
RZSCORE	-	-0.044	-2.41***	-0.120	-3.50***
GROWTH	+	0.312	2.75***	0.431	2.11**
NUM_SEG	+	0.144	2.25**	0.171	1.60*
MB	+	0.006	0.93	0.011	0.95
LOSS	+	0.612	5.52***	0.616	3.43***
LITG	-	-0.328	-2.06**	-0.394	-1.83**
GCO	+	0.793	5.22***	0.792	1.45*
FOR_OPS	+	0.320	2.74***	0.489	2.11**
RESTATE	+	0.121	0.46	0.157	0.34
LAG_RESTATE	+	1.220	5.62***	1.308	5.29***
ROA	?	0.035	1.38	-0.026	-0.06
RESTR	+	1.991	0.45	8.883	1.58
FIRM_AGE	-	-0.327	-4.25***	-0.071	-0.92
COMPLEX	+	0.093	0.22	0.546	1.21
α(CFO)	+	0.123	2.41***	0.369	2.05**
Control for year		Yes		Yes	
Control for industry		Yes		Yes	
Observations		4641		2654	
Pseudo R ²		0.203		0.171	

***, **, * Indicate significance at the .01, .05, and .10 levels, respectively, for one-tailed tests where predicted and two-tailed otherwise. See Appendix for variable definitions.

Table 5 Misclassification of audit-related fees and audit report lag.

Test of hypothesis one					
Variables	Pred. sign	All M&A firms		M&A firms with other NAS fees	
		(1)		(2)	
		Estimate	z-stat	Estimate	z-stat
CONSTANT	?	4.442	127.20***	4.535	93.04***
ZERO_ARF	+	0.035	4.34***	-0.006	-0.51
BIG4	-	-0.071	-4.73***	-0.026	-1.34*
TIER2	-	-0.041	-3.50***	0.022	1.12
SPEC_LOC	-	-0.011	-1.42*	0.001	0.08
SPEC_NATL	-	0.011	1.38	0.011	1.24
TEN_SHORT	+	0.036	3.62***	0.012	0.93
TEN_LONG	-	-0.015	-1.42*	-0.010	-0.72
SIZE	-	-0.040	-8.38***	-0.053	-10.45***
RZSCORE	+	-0.011	-6.98***	-0.016	-10.02***
GROWTH	+	0.012	1.43*	0.006	0.53
NUM_SEG	+	-0.002	-0.29	-0.001	-0.23
MB	-	-0.001	-1.74**	-0.002	-2.00**
MWO	+	0.136	7.55***	0.135	4.72***
LOSS	+	0.047	6.59***	0.028	2.14**
LITG	+	-0.028	-4.57***	-0.008	-0.76
GCO	+	0.048	1.88**	0.092	1.20
FOR_OPS	+	0.003	0.52	0.016	1.63*
BUSY	+	-0.007	-0.65	-0.004	-0.26
HIGHTECH	?	-0.001	-0.08	0.016	0.97
LAG_RESTATE	+	0.037	1.20	0.049	1.72**
Control for year		Yes		Yes	
Control for industry		Yes		Yes	
Observations		4693		2759	
R ²		0.443		0.326	

***, **, * Indicate significance at the .01, .05, and .10 levels, respectively, for one-tailed tests where predicted and two-tailed otherwise. See Appendix for variable definitions.

Table 6
Misclassification of audit-related fees and abnormal audit fees.

Test of hypothesis one					
Variables	Pred. sign	All M&A firms		M&A firms with other NAS fees	
		(1)		(2)	
		Estimate	t-stat	Estimate	t-stat
CONSTANT	?	0.091	0.92	0.277	2.69***
ZERO_ARF	+	0.034	1.63*	0.032	1.30*
BIG4	+	0.500	11.49***	0.558	11.14***
TIER2	+	0.274	5.90***	0.310	6.15***
SPEC_LOC	+	0.026	1.05	0.020	0.79
SPEC_NATL	+	0.070	2.46***	0.073	2.32**
TEN_SHORT	-	0.004	0.10	0.018	0.50
TEN_LONG	+	-0.020	-0.73	-0.017	-0.67
SIZE	-	-0.029	-3.31***	-0.027	-2.63***
RZSCORE	-	-0.017	-2.47***	-0.016	-2.05**
GROWTH	?	0.034	1.44	0.041	1.50
NUM_SEG	+	-0.032	-1.99**	-0.037	-2.25**
MWO	+	0.070	2.51***	0.069	2.53***
LOSS	-	-0.044	-2.53***	-0.045	-1.85**
LITG	-	-0.038	-1.14	-0.046	-1.31*
FOR_OPS	?	-0.129	-5.54***	-0.148	-6.10***
RESTR	?	2.618	4.98***	2.635	4.50***
FIRM_AGE	?	0.004	0.19	0.011	0.57
COMPLEX	-	-0.023	-0.41	-0.034	-0.60
Control for year		Yes		Yes	
Control for industry		Yes		Yes	
Observations		3578		2956	
R ²		0.153		0.157	

***, **, *Indicate significance at the .01, .05, and .10 levels, respectively, for one-tailed tests where predicted and two-tailed otherwise. See Appendix for variable definitions.

lead to a delay in the audit report. In Table 5, we regress our audit report lag on our misclassified audit-related fees model and control variables based on Amin, Eshleman, and Feng (2018). Again, Column (1) included all M&A firms regardless of whether the firm purchased tax or NAS from the auditor. There is a longer delay in the audit report when the auditor was recently appointed (TEN_SHORT), the firm has high growth (GROWTH), the firm has a material weakness in its internal control system (MWO), the firm reported a loss (LOSS) or the firm received a going concern opinion (GCO). There is a shorter delay in the audit report for firms audited by larger auditors (BIG4 and TIER2), local industry-specialist auditors (SPEC_LOC), or auditors with a longer tenure (TEN_LONG). There is also a short delay in the audit report for larger firms (SIZE), more financially stable firms (RZSCORE), firms with a higher market-to-book ratio (MB) and firms in litigious industries (LITG). Consistent with our hypothesis, the coefficient on ZERO_ARF is significantly positive ($\beta_1 = 0.035$; $p < .01$), indicating that misclassified audit-related fees is associated with more audit work. These results are consistent with misclassification of audit-related fees being a signal of a weak internal control system. In Column (2), we restrict the sample to firms that purchase other non-audit services. The coefficient on ZERO_ARF is not statistically significant. The difference in results between Columns (1) and (2) is likely due to a reduction in sample size. The majority of variables that were significant in Column (1) are insignificant in Column (2). Overall, the findings provide some support for our hypothesis.

Table 6 presents the results for the test of our hypothesis using abnormal audit fees as the dependent variable. Auditors are expected to charge higher audit fees when the firm has a weaker internal control environment. To test this prediction, we estimate abnormal audit fees (AB_AFEE) following Doogar, Sivadasan, and Solomon (2015). We then regress AB_AFEE on our measure of internal control quality (ZERO_ARF), audit quality and firm-specific control variables. Abnormal audit fees are lower when the firm is larger (SIZE), more financially stable (RZSCORE), has more business segments (NUM_SEG) and reports a loss (LOSS). Abnormal audit fees are higher when the firm is audited

Table 7
Misclassification of audit-related fees bifurcated by Big Four and Non-Big four auditors.

	Y = MWO		Y = ln(AUDIT_LAG)		Y = AB_AFEE	
	Est.	z-stat	Est.	t-stat	Est.	t-stat
Big four sample						
CONSTANT	0.543	0.84	4.498	96.89***	1.027	8.24***
ZERO_ARF	0.170	1.33*	0.016	1.61**	0.042	1.92**
MWO	N/A		0.146	5.88***	0.076	2.53***
Observations	3141		3226		3004	
R ² /Pseudo R ²	0.141		0.318		0.101	
Non-big four sample						
CONSTANT	-3.014	-2.08**	4.346	113.30***	0.269	0.94
ZERO_ARF	0.326	1.19	0.090	9.13***	0.037	0.72
MWO	N/A		0.121	6.13***	0.059	1.04
Observations	1435		1467		574	
R ² /Pseudo R ²	0.186		0.355		0.242	

***, **, *Indicate significance at the .01, .05, and .10 levels, respectively, for one-tailed tests where predicted and two-tailed otherwise. See Appendix for variable definitions.

by a Big Four, Tier 2 (BIG4 and TIER2) or national industry-specialist auditor or when the firm has a material weakness in its internal control system (MWO). Consistent with our hypothesis, the coefficient on ZERO_ARF is significantly positive ($\beta_1 = 0.034$; $p = .05$), suggesting that M&A firms that misclassify audit-related fees have significantly higher abnormal audit fees. When we limit the sample to firms that purchase non-audit services from their auditor (Column (2)), the coefficient decreases but remains significantly positive ($\beta_1 = 0.032$; $p < .10$). Overall, the results support our claim that misreporting of audit-related fees is a signal of a weak internal control system.

5. Additional tests

5.1. Big Four vs. non-Big Four analysis

In untabulated results, the type of auditor is an important factor in determining whether audit-related fees are misclassified.¹⁵ Smaller auditors may not have the competence or capacity to provide due diligence services to their clients. In this situation, firms would be more likely to use outside third parties for due diligence services rather than their auditors. Given that smaller auditors tend to audit small firms with weaker internal control systems, our measure (misclassification of audit-related fees) may simply be capturing a size effect. To test this theory, we separate the sample into firms audited by Big Four and firms audited by non-Big Four auditors. The results shown in Table 7 suggest that our measure is capturing misclassification of audit-related fees. For our Big Four sample, ZERO_ARF is positively associated with material weaknesses, audit report lag, abnormal audit fees and abnormal accruals. For our non-Big Four sample, ZERO_ARF is only associated with audit report lag and abnormal accruals. Given that firms audited by Big Four auditors are more likely to use their auditor for due diligence services, the results support our conclusion that misclassification audit-related fees is a signal of a weak internal control system.

6. Conclusion

Prior literature suggests that the quality of a firm's internal control system impacts its financial reporting, auditor effort and decision making. The majority of prior research uses material weaknesses as the measure of internal control quality despite the known limitations of the measure. We hypothesize that misclassification errors in the unaudited disclosures portion of the annual 10-K can be used as an alternative proxy for internal control quality given that they are unaudited and come from the same reporting system that produced the audited

¹⁵ The two major determinants of misclassified audit-related fees are size (larger firms are less likely to misclassify) and type of auditor.

financials. Using a sample of M&A firms from 2004 to 2015, we investigate whether M&A firms that misclassify audit-related fees have lower internal control quality. We find evidence that M&A firms that misclassify audit-related fees are more likely to report a material weakness in their control environment, experience a longer delay in receiving their audit report and pay higher audit fees.

Our findings have several important implications. First and foremost, we address the need for an alternative proxy for internal control quality. While our measure is limited to firms that completed an M&A in the past year, future research may identify other errors in the unaudited disclosures that can be used to signal internal control. Further, we believe our measure (unlike material weaknesses) is less likely to be influenced

by auditor independence issues given that misclassification of audit-related fees typically occurs after completion of the audit and would typically be a misstatement by the employee of the company. Finally, our results suggest that Reg. S—K disclosures, such as NAS fee disclosures, can be used to address other research questions besides auditor independence issues.

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Appendix

Models used in study

(COMPUSTAT variables in parentheses)

Material weakness model

$$Prob(MWO = 1) = \alpha + \beta_1 ZERO_ARF + \beta_2 LAG_RESTATE + \beta_3 RESTATE + \beta_4 SIZE + \beta_5 NUM_SEG + \beta_6 FOR_OPS + \beta_7 RESTR + \beta_8 GROWTH + \beta_9 RZSCORE + \beta_{10} LOSS + \beta_{11} FIRM_AGE + \beta_{12} GCO + \beta_{13} LITG + \beta_{14} COMPLEX + \beta_{15} \sigma(CFO) + \beta_{16} ROA + \beta_{17} MB + \beta_{17} BIG4 + \beta_{18} TIER2 + \beta_{19} SPEC_LOC + \beta_{20} SPEC_NATL + \Sigma YEAR + \Sigma INDUSTRY + \epsilon$$

Variable Variable definition

MWO	= an indicator variable set equal to one if the firm disclosed material weakness under SOX302 or received an adverse opinion under SOX404 in the prior, current or subsequent year, and zero otherwise.
ZERO_ARF	= an indicator variable equal to one if the firm had M&A activities in the current year and reported zero audit-related fees.
LAG_RESTATE	= an indicator variable set equal to one if the prior year financial statements were restated, and zero otherwise.
RESTATE	= an indicator variable set equal to one if the current year financial statements were restated, and zero otherwise.
SIZE	= the natural log of total assets (AT).
NUM_SEG	= the log of the number of segments in a given year.
FOR_OPS	= an indicator variable set equal to 1 if the firm reported foreign income taxes (TXFO), zero otherwise.
RESTR	= an indicator variable defined as 1 if the company reported restructuring costs (RCP) during the year, zero otherwise.
GROWTH	= defined as one if the average growth rate in sales over the current year and previous 2 years is in the upper quintile, and zero otherwise.
RZSCORE	= defined as the decile rank of Altman's (1968) z-score measure of bankruptcy risk.
LOSS	= an indicator variable equal to 1 if the firm reported a loss (NI) in the current year, 0 otherwise.
FIRM_AGE	= the natural log of firm age. Firm age is measured by the number of years the firm has data on COMPUSTAT.
GCO	= an indicator variable coded as one if the firm receives a going concern opinion in the current year, zero otherwise.
LITG	= an indicator variable equal to 1 if the firm operates in a high litigation industry (SIC codes 2833–2836, 3570–3577, 3600–3674, 5200–5961, and 7370) and zero otherwise.
COMPLEX	= an indicator variable set equal to one if the firm is in an industry listed in the AICPA audit guide, and zero otherwise.
$\sigma(CFO)$	= standard deviation of cash flows (OANCF) divided by total assets (AT). Three years of data are required to measure this variable.
ROA	= net income (NI) divided by total assets (AT) for the current year.
MB	= the market value of equity divided by the book value of equity.
BIG4	= an indicator variable equal to 1 if the client used a BIG-N auditor, zero otherwise.
TIER2	= an indicator variable equal to 1 if the firm is audited by BDO or Grant Thornton, and zero otherwise.
SPEC_LOC	= an indicator variable for local (MSA) industry specialist auditor, equal to 1 if the company's auditor has at least a 50% market share (based on total sales) in a city-industry, and zero otherwise.
SPEC_NATL	= an indicator variable for national industry specialist auditor, equal to 1 if the company's auditor has at least a 30% market share (based on total sales) in an industry, and zero otherwise.
YEAR	= indicator variables for sample years.
INDUSTRY	= indicator variables for two-digit SIC industries.

Audit report lag model

$$\ln(AUDIT_LAG) = \alpha + \beta_1 ZERO_ARF + \beta_2 BIG4 + \beta_3 TIER2 + \beta_4 SPEC_LOC + \beta_5 SPEC_NATL + \beta_6 TEN_SHORT + \beta_7 TEN_LONG + \beta_8 SIZE + \beta_9 RZSCORE + \beta_{10} GROWTH + \beta_{11} NUM_SEG + \beta_{12} MB + \beta_{13} MWO + \beta_{14} LOSS + \beta_{15} LITG + \beta_{16} GCO + \beta_{17} FOR_OPS + \beta_{18} BUSY + \beta_{19} HIGHTECH + \beta_{20} LAG_RESTATE + \Sigma YEAR + \Sigma INDUSTRY + \epsilon$$

Variable Variable definition

$\ln(AUDIT_LAG)$	= The natural log of the number of days between the company's fiscal year end and the date of the audit report.
ZERO_ARF	= an indicator variable equal to one if the firm had M&A activities in the current year and reported zero audit-related fees.
BIG4	= an indicator variable equal to 1 if the client used a BIG-N auditor, zero otherwise.
TIER2	= an indicator variable equal to 1 if the firm is audited by BDO or Grant Thornton, and zero otherwise.
SPEC_LOC	= an indicator variable for local (MSA) industry specialist auditor, equal to 1 if the company's auditor has at least a 50% market share (based on total sales) in a city-industry, and zero otherwise.
SPEC_NATL	= an indicator variable for national industry specialist auditor, equal to 1 if the company's auditor has at least a 30% market share (based on total sales) in an industry, and zero otherwise.
TEN_SHORT	= an indicator variable equal to 1 if the current auditor has audited the company for 3 years or less, zero otherwise.
TEN_LONG	= an indicator variable equal to 1 if the current auditor has audited the company for more than 8 years, zero otherwise.
SIZE	= the natural log of total assets (AT).
RZSCORE	= defined as the decile rank of Altman's (1968) z-score measure of bankruptcy risk.
GROWTH	= defined as one if the average growth rate in sales over the current year and previous 2 years is in the upper quintile, and zero otherwise.
NUM_SEG	= the log of the number of segments in a given year.

MB	= the market value of equity divided by the book value of equity.
MWO	= an indicator variable set equal to one if the firm disclosed material weakness under SOX302 or received an adverse opinion under SOX404 in the prior, current or subsequent year, and zero otherwise.
LOSS	= an indicator variable equal to 1 if the firm reported a loss (NI) in the current year, 0 otherwise.
LITG	= an indicator variable equal to 1 if the firm operates in a high litigation industry (SIC codes 2833–2836, 3570–3577, 3600–3674, 5200–5961, and 7370) and zero otherwise.
GCO	= an indicator variable coded as one if the firm receives a going concern opinion in the current year, zero otherwise.
FOR_OPS	= an indicator variable set equal to 1 if the firm reported foreign income taxes (TXFO), zero otherwise.
BUSY	= an indicator variable equal to one if the auditee fiscal year ends in December, and zero otherwise.
HIGHTECH	= an indicator variable equal to 1 if the client operates in a high-tech industry (three-digit SIC code 283, 284, 357, 366, 367, 371, 382, 384, or 737), 0 otherwise.
LAG_RESTATE	= an indicator variable set equal to one if the prior year financial statements were restated, and zero otherwise.
YEAR	= indicator variables for sample years.
INDUSTRY	= indicator variables for two-digit SIC industries.

Abnormal audit fees model

$$\begin{aligned}
 AB_AFEE = & a + \beta_1 ZERO_ARF + \beta_2 BIG4 + \beta_3 TIER2 + \beta_4 SPEC_LOC + \beta_5 SPEC_NATL \\
 & + \beta_6 TEN_SHORT + \beta_7 TEN_LONG + \beta_8 SIZE + \beta_9 RZSCORE + \beta_{10} GROWTH \\
 & + \beta_{11} NUM_SEG + \beta_{12} MWO + \beta_{13} LOSS + \beta_{14} LITG + \beta_{15} FOR_OPS + \beta_{16} RESTR \\
 & + \beta_{17} FIRM_AGE + \beta_{18} COMPLEX + \Sigma YEAR + \Sigma INDUSTRY + \varepsilon
 \end{aligned}$$

Variable	Variable definition
AB_AFFEE	= Abnormal audit fees calculated using the Doogar et al. (2015) method
ZERO_ARF	= an indicator variable equal to one if the firm had M&A activities in the current year and reported zero audit-related fees.
BIG4	= an indicator variable equal to 1 if the client used a BIG-N auditor, zero otherwise.
TIER2	= an indicator variable equal to 1 if the firm is audited by BDO or Grant Thornton, and zero otherwise.
SPEC_LOC	= an indicator variable for local (MSA) industry specialist auditor, equal to 1 if the company's auditor has at least a 50% market share (based on total sales) in a city-industry, and zero otherwise.
SPEC_NATL	= an indicator variable for national industry specialist auditor, equal to 1 if the company's auditor has at least a 30% market share (based on total sales) in an industry, and zero otherwise.
TEN_SHORT	= an indicator variable equal to 1 if the current auditor has audited the company for 3 years or less, zero otherwise.
TEN_LONG	= an indicator variable equal to 1 if the current auditor has audited the company for more than 8 years, zero otherwise
SIZE	= the natural log of total assets (AT).
RZSCORE	= defined as the decile rank of Altman's (1968) z-score measure of bankruptcy risk.
GROWTH	= defined as one if the average growth rate in sales over the current year and previous 2 years is in the upper quintile, and zero otherwise.
NUM_SEG	= the log of the number of segments in a given year.
MWO	= an indicator variable set equal to one if the firm disclosed material weakness under SOX302 or received an adverse opinion under SOX404 in the prior, current or subsequent year, and zero otherwise.
LOSS	= an indicator variable equal to 1 if the firm reported a loss (NI) in the current year, 0 otherwise.
LITG	= an indicator variable equal to 1 if the firm operates in a high litigation industry (SIC codes 2833–2836, 3570–3577, 3600–3674, 5200–5961, and 7370) and zero otherwise.
FOR_OPS	= an indicator variable set equal to 1 if the firm reported foreign income taxes (TXFO), zero otherwise.
RESTR	= an indicator variable defined as 1 if the company reported restructuring costs (RCP) during the year, zero otherwise.
FIRM_AGE	= the natural log of firm age. Firm age is measured by the number of years the firm has data on COMPUSTAT.
COMPLEX	= an indicator variable set equal to one if the firm is in an industry listed in the AICPA audit guide, and zero otherwise.

(continued on next page)

YEAR	= indicator variables for sample years.
INDUSTRY	= indicator variables for two-digit SIC industries.

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