Material Weakness Discovery Lag and Misstatement Risk in a Constrained Control Testing Environment

by

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Dissertation submitted in partial fulfillment of
the requirements for the degree of Doctor
of Philosophy in the Department of
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ABSTRACT

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Abstract

In this study, I explore whether archival evidence is consistent with auditors conforming to auditing standards when discovering and responding to internal control weaknesses, and whether conforming has adverse consequences for financial misstatement risk. My study is motivated by two sources: The first is Public Company Accounting Oversight Board member Jeanette Franzel, who in 2015 tasked academics with exploring whether all material weaknesses in internal controls over financial reporting are being properly discovered and disclosed by auditors, as trends in financial misstatement and internal control opinion data suggested otherwise. The second is prior research which suggests that auditors fail to discover most material weaknesses in internal controls; and when auditors do discover a material weakness in internal controls, they often fail to sufficiently adjust their audit procedures over financial statement assertions to negate the misstatement risk resulting from the discovered weakness. An inference from this research is that auditors do not behave in accordance with auditing standards with respect to the discovery of and response to material control weaknesses.

I propose and infer from my findings that the combined effect of auditor time constraints, auditor resource constraints, and auditing standards that require the auditor to exercise professional judgment regarding whether and how to perform unplanned control testing procedures leads to a temporal lag in auditors' discovery of material weaknesses in internal controls, and that the discovery lag results in increased financial misstatement risk. While my results are consistent with auditors failing to discover most material weaknesses in the first year of existence, they also suggest that the discovery failure may be a joint result of auditors following auditing standards while also being constrained by the environment in which they operate.

To my wife, Jessica, for supporting me throughout this journey.

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1. Introduction

Public Company Accounting Oversight Board (PCAOB) member Jeanette Franzel, speaking at the 2015 American Accounting Association (AAA) annual meeting, presented a series of trends in recent auditing data that suggested auditors were both improving in their detection of material weaknesses (MWs) in their clients' internal controls over financial reporting (ICFR) while simultaneously failing to identify a greater number of MWs that resulted in financial misstatement (Franzel 2015), relative to past performance. Seeing these trends as contradictory with respect to whether auditors perform control testing in accordance with applicable auditing standards, Ms. Franzel tasked academics with answering several questions to assist in explaining these trends and their apparent contradiction. Among the questions were whether "the current level of management and auditor disclosure of material weaknesses reasonably reflects the state of ICFR among issuers" and whether all MWs are "being properly identified and disclosed." In this study, I explore whether auditors' discovery and disclosure of MWs conforms to auditing standards (a benchmark for the auditor taking proper action), and whether conforming has adverse consequences for financial misstatement risk (and thus whether proper identification and disclosure reasonably reflects the true state of ICFR among issuers).

Existing research finds that the majority of financial misstatements, which are indicators for the existence of MWs (PCAOB 2007-005a), are not associated with an MW that was disclosed during the misstatement period (Rice and Weber 2012). This finding suggests that auditors are not identifying and disclosing MWs when they present a risk to the accuracy of the financial statements, inconsistent with the expectations of Auditing Standard No. 2 (AS 2) and Auditing Standard No. 5

(AS 5)[1]. Archival research also finds that the disclosure of MWs is associated with increased financial misstatement risk (Li and Wang 2006), while experimental research finds that a significant minority of auditors make improper adjustments to their substantive testing procedures over financial statement assertions in response to the discovery of an MW (Mauldin and Wolfe 2014); regulatory inspections support this result (PCAOB 2008; PCAOB 2012). Together, these findings suggest that even when auditors discover MWs in a timely manner, their subsequent actions are often inconsistent with the expectations of AS 2 and AS 5.

Adding to these findings, I propose that the average auditor responds to MWs as prescribed by AS 2 and AS 5, and doing so may give rise to increased financial misstatement risk. Specifically, I propose that auditors discover a portion of existing MWs with a lag of at least one year, and these lagged discoveries are responsible for the association between disclosed MWs and financial misstatement risk documented in previous research. I propose that auditor time and resource constraints increase the likelihood of MW discovery lag. Furthermore, I propose that lagged MW discovery is consistent with auditors complying with AS 2 and AS 5, which require auditors to exercise judgment about whether to expand control testing procedures to uncover additional MWs once an initial MW is discovered.

Using a sample of 8,648 firm-years from 2004 to 2013, I first show that MWs in year t, measured as the auditor's disclosure of an adverse ICFR opinion in year t, are positively associated with the disclosure of previously unidentified MWs in year t+1. This finding is consistent with auditors deferring control testing adjustments until the subsequent year's audit once an initial MW is identified. I then show that new MWs identified in year t+1 are positively associated with

[1] Note that the original PCAOB auditing standard numbering system was in place during the time period covered in this study (2004-2013), thus I reference the original auditing standards rather than the reorganized standards, which became effective on December 31, 2016.

financial misstatements in year t, implying the new MWs existed in year t even though they were not identified in year t. Using a path analysis, I find that controlling for these associations reduces the strength of the previously documented association between MWs in year t and financial misstatements in year t. Together, these results provide evidence that the inference that auditors do not respond to the discovery of MWs with sufficient substantive procedures over financial statement assertions as required by AS 2 and AS 5 is partly due to a delay in performing additional control testing procedures, as permitted within the scope of auditors' professional judgment under AS 2 and AS 5.

I also investigate 1) whether auditors' control testing adjustment delays expand beyond t+1, increasing the temporal lag in MW discovery, 2) whether the financial accounts misstated in year t match the financial accounts affected by MWs in year t, consistent with improper substantive testing responses, and/or in years t+n, consistent with delayed, permissible control testing responses, 3) whether MW discovery lag increases as auditor testing environments become more time and resource constrained, and 4) whether auditors delay ICFR testing which could lead to MW discovery, rather than the disclosure of an MW discovered by current year ICFR testing, until subsequent years.

I find that the proportion of the association between MWs discovered in year t and financial misstatements in year t explained by additional MWs discovered in year t+n is greatest when n=1 and declines in both magnitude and significance through n=3. This result suggests that auditors delay expanded control testing in response to the discovery of an MW for up to three years. It also suggests that auditors resolve most of the delay in additional MW discovery during the audit immediately following the one in which they discovered an initial MW. Using a reduced sample of firms which filed financial restatements, I also find that MWs disclosed by auditors in year t are in the same financial areas as material misstatements in year t in only 3.5%-4% of observations.

Additional MWs disclosed by auditors during year t+n are in the same financial areas as material misstatements in year t in 15%-23% (first year), 9% (second year), and 6.5% (third year) of observations. This result suggests that auditors perform sufficient substantive procedures over financial statement assertions for areas in which an MW is identified during the current audit 96% of the time, but that auditors experience a delay in MW discovery of up to three years 30% of the time, and beyond three years 66% of the time.

Using one proxy for time constraints (clients with seventy-five days vs. sixty days to file their financial statements) and two proxies for resource constraints (remediated MWs vs. unremediated MWs[2], account-level MWs vs. entity-level MWs[3]), I show that the proportion of the association between MWs discovered in year t and financial misstatements in year t explained by additional MWs discovered in year t+n is larger when auditors have less time to complete the audit or have a higher burden on the resources available to complete the audit. This result suggests that MW discovery lag results from auditors exercising judgment whether to expand control testing in the year an MW is discovered, subject to time and resource constraints. Lastly, I show that the discovery of an MW in year t is a determinant of year t+1 audit effort, measured using audit fees, audit lag, and an effort factor score, suggesting that, on average, auditors delay some control testing expansions until the year following an initial MW discovery.

Taken together, my findings suggest that auditors discover a portion of existing MWs with lag of one to three years, that MW discovery lag results in increased financial misstatement risk, and that the delay in auditors' expanded control testing procedures in response to the discovery of

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[2] Remediated MWs are those corrected by the client in time to receive a clean internal control opinion from the auditor in the subsequent fiscal year, while unremediated MWs are those which continue to receive adverse internal control opinions in the subsequent fiscal year. I discuss these proxies further in section 4.2

[3] MWs that involve controls over year-end adjustments, training, account reconciliations, information technology, segregation of duties, non-routine transactions, journal entries, consolidations, and intercompany transactions are entity-level MWs. They have a broader impact to the financial reporting environment than account-level MWs, which involve controls over specific accounts (e.g. revenue, payroll, fixed assets, etc.). I discuss these proxies further in section 4.2.

an initial MW is consistent with expected auditor actions as prescribed by AS 2 and AS 5 when auditors are subject to time and resource constraints. My results highlight regulatory and environmental factors that cause auditors' identification and disclosure of MWs to inaccurately reflect the true state of ICFR among issuers, even if auditors comply with auditing standards. Regulators have the ability to reduce the lag in auditors' MW discovery by removing the option under AS 5 to delay expanded control testing once an MW is discovered or by extending financial statement filing deadlines. Furthermore, auditors and client management can collectively change the timing of planned control testing procedures to accommodate possible expansions, should they wish to be reduce MW discovery lag in expectation of time and resources constraints.

My study contributes to the financial misstatement and ICFR academic literature by identifying an omitted correlated variable in analyses that relate MWs to contemporaneous financial misstatements. My results alter the inferences obtained from such analyses. My study also complements contemporaneous work by Aobdia et al. (2016) that uses PCAOB inspection data to conclude auditors fail to properly test the full set of a client's ICFR and thus fail to identify weaknesses in those ICFR. My findings suggest that auditors perform some ICFR testing, and thus discover some MWs, with temporal lag.

The rest of this dissertation is organized as follows: Chapter 2 describes the auditing standards and prior research relevant to the actions auditors take with respect to ineffective ICFR during an integrated audit; Chapter 3 describes my predictions and research design; Chapter 4 describes the results of my empirical and descriptive matching tests; and Chapter 5 concludes.

2. Background and Literature Review

2.1 The Financial Statement Audit

The Securities Act of 1933 and Securities Exchange Act of 1934 established the requirement that every publicly traded company in the United States receive an independent audit of its annual financial statements. The results of such an audit are communicated to investors through an audit opinion which states whether the independent auditor believes the financial statements "present fairly, in all material respects, the financial position, results of operations, and cash flows of the entity in conformity with generally accepted accounting principles" (Auditing Section 508). If the auditor believes the financial statements are fairly presented, its opinion is considered unqualified. If the auditor believes the financial statements are fairly presented except for an isolated deviation, it will qualify its opinion with the details of the deviation. If the auditor does not believe the financial statements are fairly presented, it will issue an adverse opinion. Finally, if the auditor must excuse itself from issuing an opinion due to independence concerns, conflicts of interest, scope limitations, and other factors which impede its ability to conduct an objective audit, it will issue a disclaimer of opinion. The Securities and Exchange Commission (SEC) does not allow corporations to file their financial statements if they receive a disclaimer of opinion or adverse opinion, and requires corporations to request and receive a waiver to file financial statements that receive a qualified opinion (SEC 2008). As a result, managers adjust their financial statements at the behest of auditors in order to receive unqualified audit opinions.

2.2 Integrated Audits

The Sarbanes-Oxley Act of 2002 (SOX) requires corporate managers to annually assess the effectiveness of their company's ICFR in preventing or detecting material financial misstatements (SOX 404a), and requires independent auditors of firms with over $75M in market

capitalization to provide an opinion over management's assessment (SOX 404b). The PCAOB, formed as part of SOX to oversee the activities of SEC registrants, expanded this requirement by requiring independent auditors to additionally perform their own annual assessments of their client's ICFR and to issue an opinion on those assessments (PCAOB 2004).

These assessments were expected to increase costs. In her statement in favor of the adoption of AS 2, PCAOB Member Kayla J. Gillan said "Let there be no mistake. Requiring auditors to audit a company's internal controls over financial reporting will require the auditor to do things – to evaluate systems and perform tests – which the auditor has not done before. This additional work will result in increased audit fees. These additional costs, when coupled with the resources which companies are having to directly dedicate to perform their own assessments of (and improvements in) internal controls, are not insignificant" (Gillan 2004). Because the independent auditor's ICFR assessment would impose new costs on companies, and in turn their shareholders, AS 2 suggested that independent auditors perform an integrated audit. In this type of audit, auditors test the effectiveness of ICFR simultaneously with their substantive tests of financial statement balances, with the results of each set of procedures informing the other for increased effectiveness and efficiency.[1]

2.3 The Impact of Control Testing on Substantive Procedures

Auditing Section 350 (AU 350) requires auditors to determine the nature, timing, and extent of substantive testing procedures required to gain reasonable assurance that financial statements are presented fairly in accordance with generally accepted accounting principles (GAAP) by following the audit risk model: Audit Risk = Inherent Risk x Control Risk x Detection Risk. Substantive procedures involve collecting financial transaction evidence, confirming

[1] PCAOB Release 2004-001 Section E states that "each audit provides the auditor with information relevant to the auditor's evaluation of the results of the other audit."

existence and ownership of assets and liabilities, and recalculating amounts for a sample of financial statement inputs, as well as performing analytical analyses of financial statement data. The audit risk model expresses the risk that the auditor erroneously issues an unqualified audit opinion on materially misstated financial statements (audit risk) as a conceptual function of the auditor's assessment of the client's susceptibility to financial misstatement based on the client's innate characteristics (inherent risk), the effectiveness of the client's control environment (control risk), and the risk that the auditor's substantive procedures fail to detect material misstatements (detection risk).[2]

The auditor's target audit risk is a fixed auditor characteristic; that is, it should be assessed using a consistent methodology across each client of a particular auditor. Inherent risk, which is assessed by the auditor prior to performing substantive procedures based on client characteristics during the period to be audited, should be assessed similarly for a given client in a given year by auditors of equivalent quality. Subsequent changes to client characteristics would affect the assessment of inherent risk in future audits rather than in the audit in progress. Control risk is assessed by the auditor both at the beginning of the audit engagement and throughout the audit engagement as tests of ICFR, which involve inquiring about, inspecting, observing, and/or reperforming the processes in place to convert economic activity into financial statement transactions, are conducted. Following the initial assessment of inherent risk and control risk, the auditor chooses the initial nature, extent, and timing of substantive procedures to perform, which in turn determines the initial level of detection risk, to achieve the target level of audit risk. If ICFR testing reveals that true control risk is higher than assessed control risk (i.e. an MW is discovered),

[2] I use the terms audit risk and misstatement risk interchangeably, as they represent the same concept. The former is typically used when referring to misstatement risk in the audit risk model, while the latter is typically used when referring to financial statement audit outcomes.

the auditor is required to adjust the nature, extent, and timing of substantive procedures to keep true audit risk in line with target audit risk (AU 350, AS 2, AS 5). For example, if control testing reveals that management has ineffective controls in place to verify the reasonableness of an inventory reserve, the audit risk model requires the auditor to select a larger sample of inventory items for which to collect detailed evidence with respect to whether the items should be included in that reserve than it would if management had effective controls in place.

2.4 Auditing Standard No. 5

On June 12, 2007, the PCAOB replaced AS 2 with AS 5 to alleviate capital market concerns that audits of ICFR were too costly. PCAOB Chairman Mark Olson commented that "we remain troubled by the issue of cost and overall burden. To that end, I believe the proposals that we are considering today will help bring about a better alignment between the costs and benefits of the internal control audit" (Olson 2006). Among the changes from AS 2 to AS 5 to achieve this better alignment of costs and benefits was the requirement for auditors to use a "top-down" approach to ICFR testing. Under this approach, independent auditors focus their efforts on entity-level controls, which impact a large breadth of financial areas, and test account-level controls, each of which impacts a single financial area, to the extent that auditors determine entity-level controls do not prevent or detect material misstatements in those areas on a timely basis. AS 5 also explicitly requires auditors to incorporate the results of prior years' ICFR testing into the planning stage of subsequent years' ICFR audits. AS 2 required auditors to evaluate their knowledge of ICFR obtained during other engagements, control deficiencies previously communicated to the audit committee or management, and preliminary judgments about the effectiveness of ICFR when planning an ICFR audit. AS 5 added to this a requirement in a new section entitled "Special Considerations for Subsequent Years' Audits" that one of the factors affecting control risk assessment in subsequent years is the result of the previous years' ICFR testing. The goal of both

AS 5 changes in an auditor's assessment of its client's ICFR was to increase ICFR testing efficiency and reduce the level of ICFR-related audit fees while maintaining the same level of ICFR audit effectiveness as under AS 2. The requirement for independent auditors to adjust the nature, extent, and timing of their substantive procedures to align true audit risk with target audit risk following the identification of MWs through ICFR testing remained unchanged by AS 5.

2.5 Ineffective Controls and Audit Risk

Under both AS 2 and AS 5, if independent auditors follow the audit risk model and make successful adjustments to substantive testing procedures in response to heightened control risk, then all financial statements for which they issue unqualified audit opinions should have a similar frequency of material misstatements (misstatement risk), regardless of whether a client's ICFR were determined to be operating effectively. The implication of this is that the auditor's disclosure of ineffective ICFR should not be informative about financial reporting quality, since it is simultaneously disclosed with the unqualified audit opinion. Prior research, however, finds the disclosure of ineffective ICFR to be informative about a client's financial reporting quality. Asare and Wright (2012) present experimental evidence that investors have lower confidence in unqualified standard audit reports accompanied by the disclosure of ineffective ICFR than in those with effective ICFR. Schneider and Church (2008) present experimental evidence that lenders assign less importance to financial statements receiving an unqualified audit opinion when assessing credit risk if those financial statements are accompanied by ineffective ICFR. Brown and Lim (2012) find that the association between earnings and executive pay is lower when ICFR are ineffective, consistent with the earnings not being truthfully representative of performance. Clinton et al. (2014) find that analyst forecast accuracy is lower and analyst forecast dispersion is greater for clients reporting ineffective ICFR, consistent with financial reports being less reliable. Ashbaugh-Skaife et al. (2009) and Gordon and Wilford (2012) find the disclosure of ineffective

ICFR to be associated with higher cost of equity. Finally, Beneish et al. (2008) find the disclosure of ineffective ICFR to be associated with negative stock price reactions while Dhaliwal et al. (2011) and Kim et al. (2011) find ineffective ICFR to be associated with higher debt spreads and tighter debt covenant requirements.

These studies identifying adverse capital market responses to the disclosure of MWs suggest a breakdown in the link between the independent auditor's ICFR opinion and the auditor's financial statement audit opinion. More specifically, they suggest that capital market participants believe the disclosure of MWs indicates greater risk of material misstatement than the unqualified audit opinion indicates. In support of this suggestion, several studies document a negative association between disclosed MWs and financial reporting quality. Bedard et al. (2012) find disclosed MWs are associated with larger abnormal accruals while Chan et al. (2008) find disclosed MWs are associated with larger positive discretionary accruals and larger absolute discretionary accruals. Meanwhile, Doyle et al. (2007) find disclosed MWs are associated with accruals that are not recognized as cash flows. With respect to financial misstatement risk, several studies find that disclosed MWs are positively associated with higher risk of material financial misstatement (Li and Wang 2006; Myllymaki 2014; Lin and Thammasiri 2015). In addition, some studies of restatements include an indicator for disclosed MWs as a control variable, based on the view that MW disclosures are associated with financial misstatements (Blankley et al. 2012; Czerney et al. 2014).

An inference from the positive association between disclosed MWs and financial misstatement risk is that auditors do not sufficiently adjust their substantive testing procedures to align actual audit risk with target audit risk after they detect heightened control risk. Lu et al. (2011) support this inference by showing that auditors' substantive effort has little effect on a positive association between disclosed MWs and poor accruals quality. Mauldin and Wolfe (2014) and Hammersley et al. (2011) provide experimental evidence that a significant number of auditors fail

to make appropriate substantive adjustments to mitigate the financial misstatement risk associated with planted MWs. Finally, the PCAOB's 2004-2007 inspection teams noted engagements in which audit firms "failed to appropriately alter their assessments of control risk and reconsider the nature, timing, and extent of their substantive procedures" in part because they "relied on controls that they had identified as ineffective" (PCAOB 2008), and the PCAOB's 2010 inspection teams noted engagements in which auditors "failed to determine…the effect that identified control deficiencies had on the nature, timing, and extent of their substantive procedures…" (PCAOB 2012).

2.6 Audit Risk and Auditor Effort

Despite the previously discussed findings, research on audit effort suggests that auditors take actions consistent with the application of the audit risk model. Hogan and Wilkins (2008) find that audit fees increase contemporaneously with the disclosure of MWs in a pattern consistent with additional auditor effort being exerted. Munsif et al. (2012) find that firms with ineffective ICFR have greater audit report lag (time between fiscal year end and the audit report date) than those with effective ICFR, and that the increase in lag declines following remediation of the ineffective ICFR. Hammersley et al. (2012) and Goh et al. (2013) find that the disclosure of MWs is associated with a greater likelihood of receiving a going concern modification to the audit report. Since Czerney et al. (2014) show that auditors use audit report modifications to communicate higher financial misstatement risk, these latter results imply that auditors are willing to acknowledge when they believe the impact of discovered MWs on audit risk cannot be offset by additional substantive procedures.

Taken together, existing evidence suggests that auditors exert effort in response to ineffective ICFR and acknowledge when exerting that effort would not be sufficient to address increased audit risk (through a modified audit report or opinion). The evidence also suggests that capital market participants believe disclosed MWs are associated with higher audit risk, even when

auditors communicate they are not (through the issuance of an unqualified audit opinion without report modification). Evidence further suggests that these beliefs are justified based on archival data, experimental evidence, and PCAOB inspection findings that imply auditors do not perform sufficient substantive testing adjustments in response to discovered MWs to maintain the original level of target audit risk. This last finding is not consistent with incentives of both the auditor and client to maximize profits, as it implies auditors and clients incur the cost of additional substantive effort in response to discovered MWs without receiving the benefit of aligning true audit risk with target audit risk so as to avoid capital market, reputational, and financial penalties.

With respect whether auditors' disclosures of MWs reflect the true state of ICFR among issuers and whether all MWs are properly identified and disclosed, Rice and Weber (2012) and Aobdia et al. (2016) suggest that the majority of MWs are not properly identified nor disclosed, while the previously discussed research suggests that disclosed MWs reflect the true state of ICFR among issuers, since disclosed MWs are associated with lower financial reporting quality. In the following section, I refine these interpretations by considering auditors' responsibility to expand ICFR testing in response to the discovery of MWs, and exploring 1) whether delays in expansions of control testing, rather than failures in substantive testing, are responsible for the previously observed association between disclosed MWs and low financial reporting quality, and 2) whether these delays are consistent with the expectations of auditing standards when auditors operate in a time and resource constrained environment.

3. Predictions and Research Design

3.1 Auditing Standard Responsibilities

Both AS 2 and AS 5 permit auditors to exercise judgment with respect to when to expand control testing procedures in response to discovered MWs. An auditor's decision to delay expanded procedures to the next audit may in turn delay additional MW discovery and contribute to higher financial misstatement risk that is unrelated to the MWs that an auditor detects and discloses in the current year (i.e. the disclosure does not represent the true state of ICFR).

PCAOB Rule 3101, proposed by the PCAOB in 2003 and approved by the SEC in 2004, establishes definitions for common terminology used in auditing standards (PCAOB 2003). The PCAOB defines the word "should" as a descriptor of a "presumptively mandatory responsibility," or one that is mandatory unless the auditor can demonstrate it has taken an alternate action that equally achieves the goal of the responsibility. The PCAOB defines "may," "might," and "could" as descriptors of "responsibilities to consider," or responsibilities for which the auditor must exercise professional judgement in determining whether and how to implement. AS 2 and AS 5 state that auditors "should" adjust their substantive testing procedures to align true audit risk with target audit risk upon discovering that a control is ineffective at preventing or detecting material financial misstatements (i.e. an MW exists). Thus, the adjustment of substantive procedures after an auditor detects an MW is a presumptively mandatory responsibility (AS 2.156; AS 5.B6). AS 2 and AS 5 also state that auditors "may" and "can" expand control testing procedures upon discovering that a control is ineffective at preventing or detecting material financial misstatements, making this a responsibility to consider and implement at the behest of the auditor's professional judgment (AS 2.151; AS 5.B5; AS 5.23).

Both AS 2 and AS 5 state that an auditor "should" consider ICFR knowledge from other engagements and MWs previously communicated to the audit committee and management during

the initial planning of each year's ICFR audit (AS 2.39; AS 5.9). AS 5 additionally requires that an auditor "should" incorporate the results of previous years' ICFR testing into the subsequent year's initial assessment of control risk (AS 5.58). Taken together, AS 2 and AS 5 make it presumptively mandatory that, in response to the discovery of an MW in year t, auditors adjust year t's substantive testing procedures and year t+1's ICFR audit plan, but make it a responsibility to consider whether and how to expand year t's ICFR testing procedures.

In its comment letter dated February 26, 2007, the New York Bar Financial Reporting Committee (NYBFRC) suggested that the PCAOB's use of language in the AS 5 proposal draft that implies a responsibility to consider, rather than a mandatory responsibility, could compromise the goals of the PCAOB. Nonetheless, the PCAOB maintained the use of such language in the final version of AS 5. Capital market participants have criticized the PCAOB for proposing too many mandatory responsibilities in auditing standards, expressing concern that these responsibilities might cause excessive documentation and unnecessary procedures, and the PCAOB has acknowledged adjusting standards in response to this concern (PCAOB 2007-005a). The PCAOB also acknowledged the importance of balancing the costs and benefits of auditor responsibilities with the need for capital market assurances when proposing both AS 2 and AS 5.[1] Since the PCAOB replaced AS 2 with AS 5 with a goal of reducing the costs of ICFR testing, it is not surprising that the PCAOB retained language in AS 5 that requires the auditor to consider taking action based on its professional judgment, which allows the auditor to determine whether incurring cost is beneficial, rather than language that requires the auditor to take a prescribed action, which could lead to unnecessary costs.

[1] PCAOB members Kayla Gillan and Daniel Goelzer, during the issuance of AS 2, and PCAOB members Kayla Gillan and Mark Olson, during the issuance of AS 5, have emphasized the importance of balancing the costs and benefits of audit procedures (Gillan 2004, Goelzer 2004, Gillan 2006, Olson 2006).

The PCAOB permits auditors that discover an MW in year t to consider whether and how to expand year t's ICFR testing procedures, but requires that they adjust year t substantive procedures. The latter strict requirement is necessary to maintain consistency with the audit risk model's specification that the auditor's required substantive procedures are a function of the client's control risk. The former more permissive language clarifies that auditors should determine how best to balance the costs and benefits of ICFR testing procedures. The reason behind this differential treatment, as inferred from the PCAOB's briefing paper on Rule 3101, is that the PCAOB does not feel it is possible or desirable to supplant the auditor's judgment pertaining to ICFR testing expansions by prescribing a specific ICFR testing response following the discovery of an MW (PCAOB 2003).

3.2 Constrained Testing Environment

Auditors may face time and/or resource constraints that make it impracticable for them to conduct all desired ICFR expanded testing procedures within a single audit cycle. That is, auditors choose their levels of substantive and control testing procedures as a function of auditing standards as well as their incentives and constraints. Since they face potential reputation, litigation, monetary, and market share damages if financial statements for which they issue an unqualified audit opinion are later discovered to be materially misstated (Palmrose 1987; Hennes et al. 2014; Swanquist and Whited 2015), auditors have incentives to voluntarily adjust contemporaneous ICFR testing procedures in response to the discovery of an MW to reveal additional MWs that could increase financial misstatement risk. However, auditors also face constraints in resource allocation and time to complete the integrated audit. Per SEC reporting requirements, clients must file their audited financial statements within 60-90 days of their fiscal year ends, depending on their market capitalization; and research shows that clients who miss their filing deadlines are more likely to dismiss their auditors (Grothe and Weirich 2007).

While it is theoretically possible that an auditor fired by client i could "swap" clients with an auditor fired by client j, resulting in no economic loss to either auditor, and thus no incentive to be bound by time constraints, a necessary condition for this to be the case is that audit fees are equal for clients i and j are constant before and after the swap. However, audit fees are a function of client and auditor characteristics, including auditor quality (Craswell and Francis 1999). Even if clients i and j share equivalent audit pricing characteristics, both dismissed auditors have been revealed to be lower quality by their respective client dismissals; that is, the auditors are at least partly to blame for missing the required SEC filing deadlines. Thus, neither auditor would be able to command the same audit fees before and after the dismissals, resulting in each experiencing economic loss when dismissed for missing a client's filing deadline.

In addition, Cassell et al. (2016) suggest that auditors cannot infinitely scale their resource allocation to achieve incentivized levels of effort when those resources are unexpectedly burdened. Specifically, they show that auditor turnover later within a company's fiscal cycle is associated with lower financial reporting quality (an indicator that the incentivized level of audit effort was not achieved) than auditor turnover occurring earlier within a company's fiscal cycle. A late fiscal cycle client acquisition by an auditor is an unexpected burden to the auditor's resources, just as the discovery of an MW is an unexpected burden to the auditor's resources by creating greater demand for substantive testing procedures.

Therefore, although auditors have incentives to voluntarily adjust contemporaneous ICFR testing procedures after the discovery of an MW, time and resource constraints may prevent them from doing so. Auditor survey evidence from Johnson et al. (2016) lends additional support to this idea, as respondents indicated they believe completing financial statement audits is more important than completing ICFR audits, suggesting that if auditors are unable to perform all procedures they would perform in an unconstrained environment, they are more likely to waive control testing

procedures than substantive testing procedures. Deloitte and Touch LLP, in its AS 5 comment letter to the PCAOB, expressed a similar view, stating that when ICFR with broad financial impact are found to be ineffective, it does not believe "requiring the auditor to complete the [ICFR] audit would contribute further to the quality of the financial statement audit" and that "spending the time necessary to complete the [ICFR] audit would provide no additional benefit to management or investors." However, even if auditors waive additional control testing procedures in the year in which an initial MW is discovered, AS 2 and AS 5 still make it presumptively mandatory that they not waive these procedures in the subsequent year.

3.3 Research Predictions

My prediction is that the results of a year t+1 ICFR audit will reveal MWs linked to year t misstatement risk when auditors delay expanding their control testing procedures after finding an initial MW in year t. I further predict that the MWs revealed in year t+1 explain a proportion of the association between MWs discovered in year t and year t misstatement risk documented in prior research. Stated formally:

Prediction 1: Ineffective ICFR disclosed in year t are indirectly associated with a contemporaneous increase in financial misstatement risk because they are correlated with the year t+1 discovery of additional ineffective ICFR that existed in year t.

My prediction relies on the assumption that ICFR testing adjustments made in response to the discovery of an MW in year t will lead to the discovery of additional MWs that exist in year t, implying the ineffective ICFR share a common auditable element. There are several forms the common auditable element may take. One such form could be poor “tone at the top,” in which management does not place appropriate emphasis on the importance of internal controls, leading to random failure in the execution of control activities throughout the company. Another such form could be a company-wide common application, such as a poorly implemented information

technology system. Across company functions, a common element could take the form of a tool or procedure among controls of a similar style (e.g. reconciliation spreadsheet for accounts payable and reconciliation spreadsheet for accounts receivable). Finally, within a company function, a common element could take the form of a tool or procedure shared by controls of different styles (e.g. the same manager could serve as second-level approver for a cash disbursement control and serve as the reviewer for a bank reconciliation control).

My prediction that the discovery of an MW in year t will lead to the discovery of additional MWs in year t+1, and that the MWs discovered in year t+1 will explain a proportion of year t financial misstatement risk, is based on results in Klamm et al. (2012), who find that ineffective ICFR reported in one year predict ineffective ICFR reported in subsequent years, and in Rice and Weber (2012), who find that the majority of financial restatements referencing ineffective ICFR did not report a related ineffective ICFR at the time of the original financial statement filing. Klamm et al.'s result is consistent with the guidance of AS 2 and AS 5 that auditors consider their prior knowledge of ICFR effectiveness in planning each year's ICFR audit, increasing the likelihood that they discover additional MWs in the year subsequent to discovering an initial MW. Rice and Weber's result is consistent with auditors using the judgment allowed by AS 2 and AS 5 to delay adjustments to ICFR testing to subsequent years, as a financial misstatement is an indicator that an MW exists and Rice and Weber show that auditors do not discover these MWs when the misstatement occurs.

Combined, the results in Klamm et al., results in Rice and Weber, and substantive and ICFR testing guidance in AS 2 and AS 5 suggest that material financial misstatements in year t are more likely to be associated with MWs disclosed in year t+1 than those disclosed in year t.[2] As

[2] For example, in 2004 KPMG noted an MW in SunEdison's financial close process. The following year, KPMG noted additional MWs in several more processes, including statement of cash flow classification. In 2006, SunEdison restated

such, I expect ineffective ICFR disclosed in the subsequent year to mediate the association between current year ineffective ICFR and contemporaneous financial misstatement risk documented in prior research. However, since PCAOB inspections and experimental research show that some auditors insufficiently adjust substantive testing procedures in response to increased control risk, I predict partial, rather than full, mediation.

Since auditors have incentives to discover all control risk that could increase the likelihood of material misstatements in their client's financial reports, they would only postpone expanded ICFR testing procedures in response to the discovery an initial MW until the subsequent year, as permitted by AS 2 and AS 5, if they were constrained from performing that testing in the year of initial MW discovery. Stated formally, my second prediction is thus:

Prediction 2: The indirect association between ineffective ICFR disclosed in year t and financial misstatement risk in year t through additional ineffective ICFR disclosed in year t+1 is stronger when auditors face greater time and/or resource constraints.

3.4 Sample Selection

To test my prediction about the direct and indirect associations between ineffective ICFR and financial misstatement risk, I first identify 99,724 firm years between November 2004 (when AS 2 first became effective) and September 2013 in the Compustat North America Annual database. Consistent with prior research, I end my sample period in September 2013 to allow two full years for financial misstatements to be discovered (Czerney et al. 2014; Files et al. 2014). From these, I drop 47,144 observations that cannot be matched to Audit Analytics audit engagement data based on common company identifiers. I drop 6,740 observations without unqualified audit opinions because the issuance of any other type of audit opinion implies that financial statements

its 2004 financial reports, but the restatement was due to the MW in statement of cash flow classification discovered in 2005, and not the MW in SunEdison's financial close process discovered in 2004.

do not meet the target audit risk threshold established by the audit risk model. I drop 15,793 observations without SOX 404b ICFR audit opinions due to compliance exemptions, 21,271 observations without three consecutive years of sufficient data to conduct all empirical analyses, and 128 observations with a material financial misstatement in year t that was discovered in year t+1. This final restriction ensures that any association I find between subsequently discovered ICFR deficiencies and current financial misstatements is not due to reverse causality. My final sample contains 8,648 firms years representing 1,773 unique audit clients. Sample attrition details are presented in Table 1.

Table 1: Sample Selection

This table presents the construction of my primary sample. The starting dataset of Compustat firm years was obtained from the Compustat North America Annual database. From this dataset, firm years without Audit Analytics auditor and fee data, before the SOX 404b effective date, with adverse or otherwise qualified audit opinions, without an auditor internal control opinion, or missing three consecutive years of other regression variables were removed. Firm years in which a misstatement for that year was discovered in the following year were also removed, resulting in a primary sample of 8,648 firm years representing 1,773 firms.

Starting Dataset:	
Compustat Firm Years (Nov 2004 - Sept 2013)	99,724
Less:	
Firm years not matched to Audit Analytics	47,144
Firm years without unqualified audit opinions	6,740
Firm years without a SOX 404(b) internal control opinion	15,793
Firm years without 3 consecutive years regression data	21,271
Firm years with year t misstatement discovery in t+1	128
Primary Sample	**8,648**

3.5 Sample Descriptive Analysis

Summary statistics for my sample, presented in Table 2, reveal that approximately 5% of firm-year observations have ineffective ICFR (MW (t)) and approximately 3% have materially

misstated financial statements (CurMisstate). Approximately 3% of observations have ineffective ICFR in the year subsequent to the observation (MW (t+1)). The average age (ClientAge) of audit clients in my sample is approximately 23 years, the average return on assets (ROA) for audit clients in my sample is 7%, audit clients have an average of 74% institutional ownership (InstOwn), 88% of clients have leases (Lease) and 44% have pensions (Pension), while 22% reported losses (Loss) in the year of observation. 80% of audit clients have a December year-end (DecYrEnd), 16% miss their financial statement filing deadlines (Miss10K), and on average auditors use 92% of their clients' filing window (either sixty or seventy-five days, depending on market capitalization) to complete audit procedures (AudLagPercent). Audit clients in my sample pay on average 2.8M in audit fees (TotAudFee), .28M in assurance fees (AssureFee), and .38M in tax fees (TaxFee) to their independent auditors. Full definitions for all variables are presented in Appendix A.

Table 3 presents summary means for my sample, the comparable Compustat population, the portions of my sample with effective ICFR and ineffective ICFR, and a breakdown of means among the three ineffective ICFR groups (entity-level, account-level, and both). This comparison reveals that, relative to a comparable Compustat population, audit clients in my sample are slightly older (ClientAge), have lower book to market ratios (BTM), smaller year over year changes in cash sales (DeltaCashSale) and receivables (DeltaReceivable), less negative discretionary accruals (DiscAcc), lower interest coverage (Coverage), higher institutional ownership (InstOwn), less liquidity (Liquid), more income from foreign operations (ForeignOps), lower price-to-earnings ratios (PEratio), higher return on assets (ROA), and a lower incidence of losses (Loss). The comparison also reveals that audit clients in my sample are similar to a comparable Compustat population on several audit-related dimensions, including: percentage of financial misstatements (CurMisstate), percentage of current and subsequent year ineffective ICFR (MW (t), MW (t+1)),

Table 2: Summary Statistics

This table presents sample summary statistics for all regression variables (and raw variables for those that have been log transformed). All continuous variables have been winsorized at the 1% and 99% levels. All variables are defined in Appendix A.

variable	mean	sd	min	p25	p50	p75	max
CurMisstate	0.030	0.160	0.000	0.000	0.000	0.000	1.000
BTM	0.480	0.510	-9.690	0.250	0.420	0.640	16.790
ClientAge	23.360	16.960	4.000	11.000	17.000	34.000	61.000
Complex	0.220	0.160	0.010	0.090	0.200	0.320	0.690
Debt	0.190	0.190	0.000	0.000	0.150	0.300	0.910
DiscAcc	-0.050	3.000	-14.670	-0.130	0.020	0.250	14.300
DeltaCashSale	0.140	0.320	-0.680	0.010	0.100	0.230	1.800
DeltaEBIT	0.070	1.590	-7.960	-0.180	0.100	0.360	7.690
DeltaReceivable	0.180	0.480	-0.660	-0.040	0.090	0.280	2.930
Coverage	0.390	0.660	0.000	0.030	0.110	0.280	2.000
MfgFactor	0.020	0.120	-0.120	-0.080	-0.060	0.170	0.180
InstOwn	0.740	0.240	0.130	0.590	0.780	0.910	1.200
Issue	0.700	0.460	0.000	0.000	1.000	1.000	1.000
Lease	0.880	0.330	0.000	1.000	1.000	1.000	1.000
Liquid	2.650	2.130	0.480	1.330	1.980	3.140	12.770
ForeignOps	2.010	2.360	0.000	0.000	0.830	3.800	8.360
LnIntangibles	4.460	2.620	0.000	2.650	4.650	6.390	10.030
Loss	0.220	0.410	0.000	0.000	0.000	0.000	1.000
Pension	0.440	0.500	0.000	0.000	0.000	1.000	1.000
PEratio	0.320	1.040	-3.780	0.030	0.160	0.440	6.100
PosAccrual	0.670	0.470	0.000	0.000	1.000	1.000	1.000
ROA	0.070	0.140	-0.590	0.040	0.080	0.130	0.360
TradeRec	0.130	0.100	0.000	0.060	0.120	0.180	0.470
Size	7.020	1.690	3.630	5.730	6.890	8.150	11.150
SoftAssets	0.540	0.240	0.060	0.350	0.560	0.740	0.950
SqEmp	2.360	2.280	0.160	0.870	1.610	2.970	12.370
TotalAccruals	0.040	0.130	-0.390	-0.020	0.030	0.090	0.520
ExtraDiscOps	0.220	0.410	0.000	0.000	0.000	0.000	1.000
MW (t)	0.050	0.210	0.000	0.000	0.000	0.000	1.000
DecYrEnd	0.800	0.400	0.000	1.000	1.000	1.000	1.000
ClientImportance	0.000	0.020	0.000	0.000	0.000	0.000	0.120
LnAssureFee	8.320	5.350	0.000	0.000	10.700	12.210	15.070
LnTaxFee	9.120	5.210	0.000	8.470	11.280	12.640	15.390
AbnAudFee	0.060	0.490	-1.170	-0.270	0.070	0.380	1.260
AudLagPercent	0.920	0.180	0.000	0.850	0.950	1.000	1.470
Miss10K	0.160	0.360	0.000	0.000	0.000	0.000	1.000
Cur402	0.040	0.190	0.000	0.000	0.000	0.000	1.000
CurRestate	0.070	0.260	0.000	0.000	0.000	0.000	1.000
SECoffice	0.600	0.490	0.000	0.000	1.000	1.000	1.000
CARForecastEarn	0.010	0.110	-0.310	-0.050	0.010	0.060	0.310
EarnSurprise	0.000	0.010	-0.090	0.000	0.000	0.000	0.050
USAR	0.520	0.500	0.000	0.000	1.000	1.000	1.000
MW (t+1)	0.030	0.170	0.000	0.000	0.000	0.000	1.000
TotAudFee	2855899	4412579	76877	775154	1411795	2870900	83334000
FutRestate	0.060	0.240	0.000	0.000	0.000	0.000	1.000
LnAudFee	14.260	1.020	12.140	13.560	14.160	14.870	17.010
AssureFee	283433	1096577	0	0	44144	200000	30000000
TaxFee	378181	999310	0	4771	79153	309000	26900000
EffortFactor	0.08	0.72	-1.86	-0.36	0.08	0.53	2.12
Observations	8648						

Table 3: Summary Statistic Comparison

This table presents a comparison of means for all regression variables (and raw variables for those that have been log transformed) for the full sample, observations with effective ICFR, with ineffective ICFR, with only ineffective entity-level ICFR, with only ineffective account-level ICFR, and with both ineffective entity-level and ineffective account-level ICFR. For comparative purposes, the leftmost column presents summary statistics for the Compustat population that coincides with the sample period and for which data are available. All continuous variables have been winsorized at the 1% and 99% levels. All variables are defined in Appendix A.

variable	Compustat	Full Sample	NoMW	MW	EntityMW	AccountMW	BothMWs
CurMisstate	0.030	0.030	0.020	0.090	0.130	0.090	0.090
BTM	0.600	0.480	0.480	0.450	0.440	0.430	0.450
ClientAge	18.420	23.360	23.580	18.800	17.580	17.000	19.080
Complex	0.270	0.220	0.220	0.240	0.320	0.220	0.240
Debt	0.170	0.190	0.190	0.170	0.200	0.170	0.160
DiscAcc	-0.170	-0.050	-0.020	-0.640	-0.010	-0.220	-0.730
DeltaCashSale	1.870	0.140	0.140	0.190	0.280	0.220	0.170
DeltaEBIT	-0.090	0.070	0.090	-0.300	-0.480	0.130	-0.330
DeltaReceivable	2.520	0.180	0.180	0.230	0.380	0.380	0.200
Coverage	0.900	0.390	0.380	0.620	0.600	0.510	0.630
MfgFactor	0.010	0.020	0.020	0.030	0.050	0.020	0.020
InstOwn	0.470	0.740	0.740	0.680	0.650	0.630	0.680
Issue	0.570	0.700	0.700	0.620	0.580	0.810	0.610
Lease	0.640	0.880	0.880	0.910	0.940	0.840	0.910
Liquid	3.540	2.650	2.640	2.730	2.630	2.760	2.740
ForeignOps	1.000	2.010	2.030	1.500	0.940	1.350	1.570
LnIntangibles	3.390	4.460	4.480	3.930	4.000	3.790	3.940
Loss	0.310	0.220	0.210	0.410	0.550	0.380	0.400
Pension	0.270	0.440	0.450	0.290	0.290	0.310	0.290
PEratio	0.740	0.320	0.310	0.470	0.510	0.510	0.460
PosAccrual	0.610	0.670	0.670	0.590	0.610	0.690	0.570
ROA	0.030	0.070	0.070	0.020	0.000	0.030	0.020
TradeRec	0.130	0.130	0.130	0.150	0.180	0.120	0.150
Size	6.580	7.020	7.060	6.190	5.650	6.270	6.240
SoftAssets	0.570	0.540	0.540	0.560	0.700	0.530	0.550
SqEmp	1.930	2.360	2.400	1.690	1.580	1.590	1.710
TotalAccruals	0.030	0.040	0.040	0.030	0.060	0.070	0.030
ExtraDiscOps	0.180	0.220	0.220	0.220	0.100	0.280	0.220
MW (t)	0.060	0.050	0.000	1.000	1.000	1.000	1.000
DecYrEnd	0.710	0.800	0.800	0.760	0.710	0.750	0.760
ClientImportance	0.030	0.000	0.000	0.010	0.020	0.000	0.000
LnAssureFee	6.670	8.320	8.380	7.210	6.200	8.310	7.200
LnTaxFee	7.840	9.120	9.160	8.240	6.520	9.770	8.250
AbnAudFee	0.000	0.060	0.030	0.500	0.400	0.400	0.520
AudLagPercent	0.760	0.920	0.910	1.120	1.070	1.100	1.120
Miss10K	0.170	0.160	0.140	0.540	0.450	0.590	0.550
Cur402	0.030	0.040	0.030	0.200	0.030	0.090	0.220
CurRestate	0.070	0.070	0.060	0.280	0.060	0.190	0.310
SECoffice	0.600	0.600	0.600	0.680	0.740	0.500	0.690
CARForecastEarn	0.010	0.010	0.010	-0.010	-0.030	0.000	-0.010
EarnSurprise	-0.040	0.000	0.000	0.000	0.000	0.000	0.000
USAR	0.690	0.520	0.530	0.470	0.580	0.410	0.460
MW (t+1)	0.040	0.030	0.020	0.200	0.160	0.060	0.220
TotAudFee	1816211	2855899	2836374	3261692	1794686	2185379	3500971
FutRestate	0.060	0.060	0.050	0.330	0.060	0.660	0.320
LnAudFee	13.260	14.260	14.260	14.360	13.930	14.230	14.410
AssureFee	215509	283433	289355	160366	66436	177956	167398
TaxFee	233964	378181	384979	236893	84124	275232	247399
Effort	0.000	0.080	0.040	1.010	0.810	0.880	1.040
Observations	63150	8648	8251	397	31	32	334

percentage of clients located near SEC regional offices (SECoffice), and the audit effort factor score (EffortFactor). Clients in my sample have higher audit (TotAudFee), assurance (AssureFee), and tax fees (TaxFee), along with greater audit lag (AudLagPercent), than those in the comparable Compustat population.

Comparing the subset of my sample with effective ICFR to the subset with ineffective ICFR reveals that the ineffective ICFR subset has a higher percentage of financial misstatements (CurMisstate), a higher percentage of future ineffective ICFR (MW (t+1)), larger audit fees (TotAudFee), and a higher audit effort factor score (EffortFactor). Pearson and Spearman correlations between key variables, presented in Table 4, show that ineffective ICFR (MW (t)) are positively correlated with abnormal audit fees (AbnAudFee), audit lag (AudLagPercent), the audit effort factor score (EffortFactor), and financial misstatements (CurMisstate), and are negatively correlated with the receipt of an unqualified standard audit report (USAR). Univariate results also show that ineffective ICFR in the year subsequent to the observation (MW (t+1)) are positively correlated with financial misstatements (CurMisstate) and ineffective ICFR in the year of the observation (MW (t)). These correlations are consistent with prior literature and my research predictions. A full correlation matrix of all regression variables is presented in Appendix B.

3.6 Sample Validation

I report the results of four validation tests to ensure my sample is broadly representative of samples used in prior ICFR studies. The first of test follows Beneish et al. (2008), Ashbaugh-Skaife et al. (2009), and Gordon and Wilford (2012), who find ineffective ICFR are associated with negative stock price reactions and higher cost of equity:

$$\boldsymbol{CARForecastEarn_{i,t} = \alpha + B_1 MW_{i,k,t} + B_2 EarnSurprise_{i,t} + FE + \epsilon} \quad (1)$$

CARForecastEarn is the client's cumulative abnormal return between the latest analyst consensus earnings forecast and the day after the earnings announcement.[3] Although the auditor's SOX 404(b) ICFR opinion does not get disclosed to the public until the client's 10-K is filed, a 2009 SEC study found that investors view the official SOX 404(b) opinion as untimely, as the ICFR opinion is typically disclosed through an earlier client filing, such as an 8-K, or through the client's earnings announcement (SEC 2009). Based on the SEC study, I assume the existence of ineffective ICFR is known to the market on or before the earnings announcement date. To control for other news in the earnings announcement, I include EarnSurprise, which is the difference between the client's reported earnings per share and the latest analyst consensus forecast. Material weaknesses in ICFR (MW) is the variable of interest, and is an indicator equal to one if the client's ICFR were originally deemed ineffective by the independent auditor, and equal to zero otherwise. [4] The model includes industry and year fixed effects to control for unobserved industry characteristics and time effects. The model is estimated using ordinary least squares (OLS) with standard errors clustered by audit client.

The second validation test follows from Li and Wang (2006), Myllymaki (2014), and Lin and Thammasiri (2015), who find that the negative capital market reactions to MWs identified in other studies are justified by a positive association between ineffective ICFR and contemporaneous financial misstatement risk:

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[3] I use subscript i to refer to the audit client, subscript t to refer to time, and subscripts k,l,m,n to refer to MWs disclosed in the auditor's SOX 404(b) report.

[4] I use the ICFR opinion variable from the Audit Analytics sox404 database, which distinguishes management's ICFR opinion from the auditor's ICFR opinion and includes a variable identifying whether the opinion was restated or is the originally issued opinion. The Compustat North America database also has an ICFR opinion variable; however, it is unclear whether this opinion is the auditor's original opinion or a restated opinion. I contacted Capital IQ about discrepancies between the Compustat North America ICFR opinion variable and the Audit Analytics ICFR opinion variable. Capital IQ acknowledged that the discrepancies were errors in the Compustat North America database. Given the potential for additional errors in the Compustat ICFR opinion data, I use only Audit Analytics ICFR opinion data.

$$CurMisstate_{i,t} = \alpha + B_1 MW_{i,k,t} + B_2 USAR_{i,t} + \sum_{a=3}^{24} B_a \, InherentRisk_{i,t}$$

$$+ \sum_{b=25}^{34} B_b \, DetectionRisk_{i,t} + FE + \epsilon \qquad (2)$$

In the above model, MW is measured as previously described. CurMisstate is an indicator variable equal to one if the current (year t) financial statements were restated in year t+2 or later, and equal to zero otherwise. I restrict misstatement discovery to year t+2 or later to avoid reverse causality in subsequent analyses. CurMisstate contains only non-technical misstatements (those not due to changes in standards or similar activity that would not be considered erroneous, inappropriate, or misleading). I focus on restatements in this and subsequent analyses of financial reporting quality because financial misstatements are the outcome that auditors have a regulatory mandate to prevent. Auditing standards are silent on other measures of financial reporting quality such as discretionary accruals or earnings response coefficients. Furthermore, Aobdia (2015) shows that restatements have the best predictive power of audit quality, relative to other measures, using PCAOB inspection data as an audit quality benchmark. I include an indicator variable equal to one if the auditor issued a standard audit report without an explanatory language modification (USAR) since Czerney et al. (2014) find that explanatory language accompanying unqualified audit opinions is associated with higher misstatement risk.

The category InherentRisk includes variables that capture the client's innate risk of material misstatement in a given year, such as proxies for firm size, complexity, and ownership structure, among others adapted from prior literature. The category DetectionRisk includes variables that capture the auditor's effort or incentive and ability to exert effort to detect material misstatements in a given year. This category includes proxies for client importance, client-auditor economic bonds, and financial reporting red flags, among others adapted from prior literature. Appendix A lists the variables included in InherentRisk and DetectionRisk with detailed

Table 4: Pearson and Spearman Correlations

This table presents the Pearson (bottom half) and Spearman (top half) correlations between variables of interest, basic client characteristics, and basic audit characteristics used in regression analysis. A full correlation matrix containing all variables used in regression analysis is available in Appendix B. All variables are defined in Appendix A. The symbols ***, **, and * are used to denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	BTM	1.000	0.113***	0.064***	-0.016	0.031***	0.015	-0.274***	0.109***	0.004	0.001	-0.087***	-0.035***	-0.019*	-0.021**	0.001
2	ClientAge	0.037***	1.000	0.145***	-0.011	0.048***	-0.087***	0.130***	0.434***	0.047***	0.008	-0.080***	-0.012	0.060***	-0.026**	0.061***
3	Complex	0.069***	0.084***	1.000	-0.104***	0.088***	-0.092***	0.236***	-0.121***	0.025**	0.205***	-0.028***	0.174***	0.015	0.026**	0.018*
4	DecYrEnd	-0.016	-0.041***	-0.161***	1.000	-0.031***	0.024**	-0.037***	0.067***	-0.030***	0.019*	0.026**	0.006	-0.008	0.005	0.003
5	InstOwn	0.043***	0.054***	0.077***	-0.037***	1.000	-0.091***	0.150***	0.249***	-0.017	-0.047***	-0.033***	-0.051***	0.011	-0.094***	-0.029***
6	Loss	0.052***	-0.175***	-0.125***	0.056***	-0.140***	1.000	-0.437***	-0.180***	0.025**	-0.018*	0.005	-0.022**	0.013	-0.008	0.005
7	ROA	-0.044***	0.150***	0.200***	-0.061***	0.228***	-0.616***	1.000	0.190***	-0.047***	-0.052***	-0.033***	-0.053***	-0.010	0.016	-0.016
8	Size	0.053***	0.498***	-0.136***	0.084***	0.254***	-0.266***	0.287***	1.000	-0.039***	-0.091***	-0.025**	-0.085***	0.003	-0.110***	-0.024**
9	MW (t)	-0.012	-0.059***	0.024**	-0.020*	-0.054***	0.101***	-0.073***	-0.107***	1.000	0.055***	0.078***	0.095***	0.022**	-0.009	0.037***
10	AbnAudFee	-0.007	0.045***	0.172***	-0.006	-0.050***	-0.033***	-0.021*	-0.095***	0.201***	1.000	0.109***	0.881***	0.006	-0.038***	0.038***
11	AudLagPercent	-0.072***	-0.026**	-0.002	0.009	-0.031***	0.002	-0.021**	-0.038***	0.234***	0.128***	1.000	0.492***	0.021*	-0.044***	0.054***
12	EffortFactor	-0.041***	0.020*	0.137***	0.001	-0.052***	-0.026**	-0.027**	-0.094***	0.282***	0.872***	0.582***	1.000	0.013	-0.054***	0.055***
13	CurMisstate	-0.018*	-0.049***	-0.016	0.007	-0.029***	0.039***	-0.046***	-0.054***	0.089***	0.016	0.076***	0.006	1.000	-0.000	0.051***
14	USAR	-0.006	-0.088***	0.025**	0.016	-0.124***	0.015	-0.012	-0.157***	-0.024**	-0.050***	-0.056***	-0.050***	0.003	1.000	-0.006
15	MW (t+1)	-0.009	-0.062***	0.002	-0.004	-0.053***	0.042***	-0.046***	-0.093***	0.228***	0.118***	0.119***	0.042***	0.201***	0.008	1.000

descriptions. The model includes industry fixed effects as an additional inherent risk variable. It also includes auditor fixed effects to control for variation in auditors' risk appetites, which could in turn cause variation in target audit risk. Finally, it includes year fixed effects to control for differences in the amount of time between the years of any two observations and the final year of the sample, which determines the window during which misstatements may be discovered. The model is estimated using logistic regression with standard errors clustered by auditor.

My third validation test follows from Hogan and Wilkins (2008) and Munsif et al. (2012), who find that, consistent with AS 2, AS 5, and AU 350, ineffective ICFR are associated with higher auditor effort as measured by audit fees and audit lag:

$$\boldsymbol{AbnAudFee_{i,t} = \alpha + B_1 MW_{i,k,t} + \sum_{a=2}^{23} B_a\, InherentRisk_{i,t} + FE + \epsilon} \quad (3)$$

$$\boldsymbol{AudLagPercent_{i,t} = \alpha + B_1 MW_{i,k,t} + \sum_{a=2}^{23} B_a\, InherentRisk_{i,t} + FE + \epsilon} \quad (4)$$

$$\boldsymbol{EffortFactor_{i,t} = \alpha + B_1 MW_{i,k,t} + \sum_{a=2}^{23} B_a\, InherentRisk_{i,t} + FE + \epsilon} \quad (5)$$

MW and the group InherentRisk in these models are measured as previously defined. AbnAudFee is the residual from an audit fee determinant model adapted from Ghosh and Lustgarten (2006) and Craswell and Francis (1999).[5] AudLagPercent is the number of days between the client's fiscal year end and the signature date on the audit report, if available, or the filing date of the financial statements with the SEC, if the signature date is not available, scaled by the client's allowed days to file. EffortFactor is the factor score obtained from a principal-

[5] Hribar et al. (2014) identify abnormal audit fees as a measure of the client's accounting quality, which could drive an association with ineffective ICFR. However, Hribar et al. explain their use of abnormal audit fees as a proxy for accounting quality as follows: "We adopt a neoclassical perspective of the audit market, which assumes that auditors will increase fees to compensate for the additional risk and additional audit hours required for firms with poor quality accounting systems." Thus, abnormal audit fees viewed as a proxy for accounting quality still capture, at least in part, auditor effort.

component factor analysis on AbnAudFee and AudLagPercent.[6] Each model includes industry, year, and auditor fixed effects, and is estimated using OLS with standard errors clustered by auditor.

My fourth validation test follows from Jiang and Son (2015), who find that ineffective ICFR are associated with audit fee premiums in excess of those determined by auditor effort. Jiang and Son interpret this finding as evidence that auditors believe ineffective ICFR will be associated with higher misstatement risk (and thus future litigation risk) even after exerting effort to align true audit risk with target audit risk following the discovery of the ineffective ICFR:

$$\boldsymbol{AbnAudFee_{i,t} = \alpha + B_1 MW_{i,k,t} + B_2 AudLagPercent_{i,t} + \sum_{a=3}^{24} B_a\, InherentRisk_{i,t} + FE + \epsilon} \quad (6)$$

$$\boldsymbol{TotAudFee_{i,t} = \alpha + B_1 MW_{i,k,t} + B_2 AudLagPercent_{i,t} + \sum_{a=3}^{24} B_a\, InherentRisk_{i,t} + FE + \epsilon} \quad (7)$$

In these models, TotAudFee is the natural log of one plus the client's reported audit fees. All other variables are measured as previously defined. AbnAudFee is used as a dependent variable in one of the audit fee premium regressions (6) and one of the audit effort regressions (3). For the audit effort regression (3), AudLagPercent is not included as a control variable to allow the association between AbnAudFee and MW to capture auditor effort. For the audit fee premium regression (6), AudLagPercent is included as a control variable to remove the effect of auditor effort in response to ineffective ICFR from the association between AbnAudFee and MW. All models are estimated using OLS with standard errors clustered by auditor.

Results from the four sample validity tests are presented in Table 5. Consistent with prior

[6] See Appendix C for details. Results are not sensitive to using principal-factor analysis instead of principal-component factor analysis to construct the factor score.

Table 5: Sample Validity Tests

This table presents results from seven models designed to test whether my sample behaves similarly to those used in prior research. The variable of interest in all models is an indicator for the disclosure of ineffective ICFR (MW). The outcome variables are 1) the cumulative abnormal return from the day of the latest consensus analyst forecast through the day after the earnings announcement (to capture market reaction), 2) current misstatements identified in future years (to capture financial reporting quality), 3) abnormal audit fees (first proxy for audit effort), 4) audit lag percentage (second proxy for audit effort), 5) an effort factor score derived from abnormal audit fees and audit lag percentage (third proxy for audit effort), 6) abnormal audit fees after controlling for audit lag (first proxy for audit fee premium), and 7) total audit fees after controlling for audit lag (second proxy for audit fee premium). Results show that ineffective ICFR are associated with a -1.8% stock price reaction after controlling for earnings news. Odds ratio computation also shows that ineffective ICFR are associated with 95% higher odds of current financial misstatement, which translates to a 91% higher probability using the likelihood of financial misstatement absent ineffective ICFR for the sample as a baseline (1,128 observations are excluded from the misstatement test due to perfect predictability). Results show that the disclosure of ineffective ICFR is associated with a 26% increase in abnormal audit fees, a 16% increase in audit lag, and a 55% increase in the effort factor. Results also show that the disclosure of ineffective ICFR is associated with a 29% increase in the audit fee premium (the portion of audit fees unrelated to additional effort) using an abnormal audit fee model, and a 3% increase in the audit fee premium when using a total audit fee model. All variables are defined in Appendix A. All regressions use clustered standard errors. T-statistics are presented in brackets. The symbols ***, **, and * are used to denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	Market Reaction	Reporting Quality	Auditor Effort			Audit Risk Premium	
	CARForecastEarn	CurMisstate	AbnAudFee	AudLagPercent	EffortFactor	AbnAudFee	LnAudFee
MW	**-0.018*** **	**0.669*** **	**0.327*** **	**0.144*** **	**0.755*** **	**0.271*** **	**0.293*** **
	[-3.295]	**[2.777]**	**[14.650]**	**[26.696]**	**[50.439]**	**[14.052]**	**[14.128]**
AudLagPercent		1.024				0.382***	0.409***
		[1.003]				[5.869]	[6.070]
EarnSurprise	1.050***						
	[8.289]						
USAR		-0.211					
		[-1.373]					
BTM		0.092	-0.001	-0.007**	-0.016	0.001	-0.011
		[0.723]	[-0.084]	[-2.147]	[-1.026]	[0.102]	[-0.765]
ClientAge		-0.001	0.000	-0.000***	-0.000	0.001	0.000
		[-0.139]	[0.736]	[-3.507]	[-0.082]	[0.865]	[0.512]
Complex		-1.311**	0.041	0.012	0.069	0.036	0.466**
		[-1.964]	[0.275]	[0.254]	[0.628]	[0.218]	[2.282]
Debt		1.313***	0.008	0.003	0.010	0.007	0.087
		[3.659]	[0.104]	[0.206]	[0.090]	[0.094]	[1.042]
DiscAcc		0.013	-0.005***	-0.000	-0.007***	-0.005***	-0.005***
		[0.992]	[-5.628]	[-0.887]	[-7.268]	[-5.323]	[-5.163]
DeltaCashSale		0.621***	0.020	0.015***	0.060***	0.014	0.021
		[3.579]	[1.382]	[3.895]	[2.746]	[1.031]	[1.647]
DeltaEBIT		-0.052*	-0.008***	-0.001	-0.012***	-0.007***	-0.008***
		[-1.749]	[-2.881]	[-1.300]	[-3.324]	[-2.786]	[-2.710]
DeltaReceivable		-0.210***	-0.037***	0.007***	-0.031***	-0.040***	-0.037***
		[-2.647]	[-3.568]	[4.297]	[-2.664]	[-3.756]	[-3.212]

Coverage		0.064	0.010	-0.000	0.010	0.010	0.017
		[0.546]	[0.677]	[-0.116]	[0.499]	[0.704]	[1.288]
InstOwn		-0.031	-0.044**	-0.028***	-0.115***	-0.034	-0.020
		[-0.213]	[-2.016]	[-3.885]	[-3.028]	[-1.655]	[-1.050]
Issue		-0.004	-0.001	0.005*	0.009	-0.003	-0.009
		[-0.024]	[-0.068]	[1.686]	[0.750]	[-0.180]	[-0.561]
Lease		-0.076	0.063**	0.012*	0.109***	0.059**	0.055*
		[-0.189]	[2.572]	[1.670]	[3.614]	[2.254]	[1.861]
Liquid		-0.020	-0.023***	-0.001	-0.029***	-0.023***	-0.013***
		[-0.745]	[-8.684]	[-1.034]	[-7.125]	[-8.915]	[-5.809]
ForeignOps		0.076	0.078***	0.000	0.095***	0.078***	0.083***
		[0.806]	[13.896]	[0.007]	[12.702]	[14.167]	[14.416]
LnIntangibles		0.024	0.050***	0.003	0.068***	0.048***	0.048***
		[0.213]	[15.161]	[1.401]	[8.898]	[18.786]	[27.146]
Loss		0.066	-0.116***	0.004	-0.136***	-0.117***	0.081***
		[0.240]	[-8.075]	[0.863]	[-12.080]	[-7.440]	[5.286]
Pension		-0.420	0.090***	-0.004	0.103***	0.091***	0.081***
		[-1.269]	[5.245]	[-0.760]	[5.886]	[5.030]	[4.027]
PEratio		0.042	0.003	0.002	0.007	0.003	0.002
		[1.044]	[0.852]	[1.619]	[1.398]	[0.694]	[0.743]
PosAccrual		0.018	-0.036*	-0.005**	-0.055**	-0.035*	-0.041**
		[0.061]	[-1.838]	[-2.461]	[-2.162]	[-1.751]	[-2.094]
ROA		-0.923*	-0.458***	-0.027***	-0.634***	-0.448***	-0.466***
		[-1.876]	[-6.779]	[-4.328]	[-7.392]	[-6.592]	[-6.727]
TradeRec		0.839	0.694***	-0.016	0.831***	0.700***	0.570***
		[0.425]	[5.854]	[-0.232]	[5.345]	[5.237]	[3.469]
Size		-0.098	-0.176***	-0.001	-0.216***	-0.175***	0.310***
		[-0.546]	[-20.193]	[-0.342]	[-10.698]	[-23.502]	[33.015]
SoftAssets		0.058	-0.001	-0.008	-0.007	0.002	-0.119*
		[0.109]	[-0.019]	[-0.724]	[-0.085]	[0.032]	[-1.799]
SqEmp		-0.139*	0.002	-0.008***	-0.015	0.005	0.073***
		[-1.805]	[0.144]	[-4.539]	[-1.054]	[0.415]	[8.688]
TotalAccruals		0.875*	0.194**	0.051***	0.346***	0.175**	0.139*
		[1.796]	[2.394]	[7.227]	[2.993]	[2.172]	[1.899]
ExtraDiscOps		-0.016	0.149***	0.008*	0.200***	0.146***	0.150***
		[-0.072]	[7.048]	[1.925]	[5.706]	[7.382]	[8.003]
DecYrEnd		-0.256					
		[-1.225]					
ClientImportance		-22.309					
		[-0.820]					
LnAssureFee		0.001					
		[0.077]					
LnTaxFee		0.031*					
		[1.902]					
AbnAudFee		-0.187**					
		[-2.288]					
Miss10K		0.144					
		[0.674]					
Cur402		0.137	0.098***	0.019*	0.181***	0.091***	0.090***
		[0.360]	[4.193]	[1.994]	[3.404]	[4.266]	[3.908]
CurRestate		0.284	0.073***	0.031***	0.167***	0.061***	0.064***
		[1.097]	[3.665]	[4.836]	[4.565]	[3.480]	[3.208]
SECoffice		0.068					
		[0.344]					
Constant	0.005	-1.769	1.268***	0.894***	1.378***	0.926***	10.910***
	[0.328]	[-1.185]	[7.628]	[27.978]	[4.775]	[6.162]	[69.166]
Observations	8648	7520	8648	8648	8648	8648	8648
Auditor FE	N	Y	Y	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y	Y
R-Squared	0.0358	0.166	0.282	0.162	0.271	0.291	0.810

literature, ineffective ICFR in my sample are negatively associated with cumulative abnormal returns between the latest consensus analyst forecast and the day after the earnings announcement (t-stat: -3.30).[7] Also consistent with prior literature, odds ratio computation reveals that ineffective ICFR in my sample are associated with 95% higher odds (91% higher probability) of a contemporaneous financial misstatement (z-stat: 2.78).[8] Consistent with prior literature, ineffective ICFR in my sample are positively associated with proxies for audit effort and an audit fee premium. Specifically, they are associated with a 26% increase in abnormal audit fees, a 16% increase in audit lag, and a 55% increase in the effort factor score derived from the other two measures (t-stats: 14.65, 26.70, and 50.44, respectively). They are also associated with a 29% increase in abnormal audit fees and a 3% increase in total audit fees after controlling for audit effort (t-stats: 14.05 and 14.13, respectively). These results suggest that my sample behaves similarly to samples used in prior ICFR studies.

3.7 Primary Research Design

I design three primary analyses to tests my prediction that ineffective ICFR are indirectly associated with higher contemporaneous financial misstatement risk through their association with subsequently discovered ICFR.

The first analysis is restricted to firm-years with material financial misstatements. I match the financial areas identified as being misstated in year t to the financial areas impacted by ineffective ICFR in years t, t+1, t+2, and t+3, and then compare the density of observations matched

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[7] Results are weaker, but still statistically significant at the 10% level, when using a three-day CAR window centered on the earnings announcement, likely due to more measurement error in the release date of the MW disclosure. See Appendix D.

[8] I present results in terms of both odds and probabilities. The odds results are derived from logistic regression analysis. The probability results are calculated by first determining the probability of the outcome of interest absent the treatment of interest in my sample, converting this probability to odds, multiplying by the odds ratio derived from regression analysis, and converting the resulting treatment odds back to a treatment probability. While the odds results may be extrapolated to a larger population, the probability results are valid only within my sample, but are presented to assist with ease of interpretation.

to future years to the density of observations matched to year t. In analyses that include years t+2 and t+3, I restrict the sample to year t misstatements that remain undiscovered until year t+4 or later to control for reverse causality. I expect the density of misstatement observations matched to future year MWs to be significantly greater than the density of misstatement observations matched to year t MWs. Furthermore, I expect the greatest difference in density to arise in year t+1, as adjustments to ICFR testing in year t+1 in accordance with AS 2 and AS 5 guidance should identify additional ineffective ICFR most likely to have existed in year t and thus most likely to be associated with a misstatement in year t. I perform the matching using misstatement codes and ICFR codes as defined in the Audit Analytics nonreliance and sox404 databases. My full matching table, including the misstatement code, the mapped ineffective ICFR codes, and a description of the impacted financial areas as defined by Audit Analytics, is presented in Appendix E.

The second primary analysis adapts the model used in Eq. 2 into a path analysis in which financial misstatements are modeled as a function of MWs discovered in year t and newly discovered MWs in year t+1, while newly discovered MWs in year t+1 are modeled as a function of the initially discovered MWs in year t:

$$\begin{aligned} \boldsymbol{CurMisstate_{i,t}} = {} & \boldsymbol{\alpha + B_1 MW_{i,k,t} + B_2 MW_{i,l,t+1} + B_3 USAR_{i,t}} \\ & \boldsymbol{+ \sum_{a=4}^{25} B_a\, InherentRisk_{i,t} + \sum_{b=26}^{35} B_b\, DetectionRisk_{i,t}} \\ & \boldsymbol{+ FE + \epsilon} \end{aligned} \tag{8}$$

$$\begin{aligned} \boldsymbol{MW_{i,l,t+1}} = {} & \boldsymbol{\alpha + \gamma_1 MW_{i,k,t} + \gamma_2 Cur402_{i,t+1} + \gamma_3 CurRestate_{i,t+1}} \\ & \boldsymbol{+ \sum_{a=4}^{25} \gamma_a\, InherentRisk_{i,t+1} + FE + \epsilon} \end{aligned} \tag{9}$$

This design allows for the measurement of both the direct and indirect associations between ineffective ICFR and contemporaneous financial misstatements. All variables are measured as previously defined. The model includes industry, year, and auditor fixed effects. Both paths of the model are estimated using logistic regression with standard errors clustered by auditor. I expect a

positive association between ineffective ICFR in year t and ineffective ICFR in year t+1, as well as a positive association between ineffective ICFR in year t+1 and financial misstatements in year t. While I expect these associations to mediate the direct association between ineffective ICFR in year t and financial misstatements in year t, I have no expectation regarding the magnitude of the mediation.

The last primary analysis extends the path analysis in Eq. 8 and Eq. 9 to include associations between MWs discovered in year t and MWs discovered in years t+2 and t+3, as well as associations between MWs discovered in year t+2 and year t+3, and financial misstatements in year t:

$$\begin{aligned} \boldsymbol{CurMisstate_{i,t}} = {} & \boldsymbol{\alpha + B_1 MW_{i,k,t} + B_2 MW_{i,l,t+1} + B_3 MW_{i,m,t+2} + B_4 MW_{i,n,t+3}} \\ & \boldsymbol{+ B_5 USAR_{i,t} + \sum_{a=6}^{27} B_a\, InherentRisk_{i,t} + \sum_{b=28}^{37} B_b\, DetectionRisk_{i,t}} \\ & \boldsymbol{+ FE + \epsilon} \end{aligned} \tag{10}$$

$$\begin{aligned} \boldsymbol{MW_{i,l,t+1}} = {} & \boldsymbol{\alpha + \gamma_1 MW_{i,k,t} + \gamma_2 Cur402_{i,t+1} + \gamma_3 CurRestate_{i,t+1}} \\ & \boldsymbol{+ \sum_{a=4}^{25} \gamma_a\, InherentRisk_{i,t+1} + FE + \epsilon} \end{aligned} \tag{11}$$

$$\begin{aligned} \boldsymbol{MW_{i,m,t+2}} = {} & \boldsymbol{\alpha + \delta_1 MW_{i,k,t} + \delta_2 MW_{i,l,t+1} + \delta_3 Cur402_{i,t+2} + \delta_4 CurRestate_{i,t+2}} \\ & \boldsymbol{+ \sum_{a=5}^{26} \delta_a\, InherentRisk_{i,t+2} + FE + \epsilon} \end{aligned} \tag{12}$$

$$\begin{aligned} \boldsymbol{MW_{i,n,t+3}} = {} & \boldsymbol{\alpha + \Theta_1 MW_{i,k,t} + \Theta_2 MW_{i,l,t+1} + \Theta_3 MW_{i,m,t+2} + \Theta_4 Cur402_{i,t+3}} \\ & \boldsymbol{+ \Theta_5 CurRestate_{i,t+3} + \sum_{a=6}^{27} \Theta_a\, InherentRisk_{i,t+3} + FE + \epsilon} \end{aligned} \tag{13}$$

As previously discussed, ineffective ICFR identified in year t+1 are more likely to have existed in year t than those identified in years t+2 or t+3 due to the expectations in AS 2 and AS 5 of year over year ICFR testing adjustments. Thus, MWs discovered in year t and financial misstatements in year t are more likely to be associated with MWs discovered in year t+1 than those

discovered in years t+2 or t+3. Therefore, I expect the mediated paths between MWs discovered in year t and financial misstatements in year t to decline in magnitude and significance as the time between MWs discovered in year t and MWs discovered in year t+n increases.

4. Results and Extensions

4.1 Prediction 1 Test Results

Results from my first primary analysis of the association between financial misstatements in year t and contemporaneously disclosed and future disclosed ineffective ICFR are presented in Figure 1. The first cross tabulation represents a two-by-two density analysis of materially misstated financial areas descriptively matched to ineffective ICFR in year t, year t+1, both year t and year t+1, or neither year t nor year t+1. Results show that 3.5% of misstatements match ineffective ICFR in year t, but not t+1, while 15% of misstatements match ineffective ICFR in year t+1, but not t. The difference in these densities is significant at the 1% level (t-stat: 4.15; chi-sq: 16.10). The second cross tabulation represents a two-by-two density analysis of materially misstated financial areas descriptively matched to ineffective ICFR in year t, years t+1 to t+3, both year t and years t+1 to t+3, or neither year t nor years t+1 to t+3. Results show that 4% of misstatements match ineffective ICFR in year t, but not t+1 to t+3, while 39% of misstatements match ineffective ICFR in years t+1 to t+3, but not t.[1] The difference in these densities is significant at the 1% level (t-stat: 6.94; chi-sq: 34.89). The third cross tabulation represents a two-by-four density analysis of materially misstated financial areas descriptively matched to ineffective ICFR in years t, t+1, t+2, and t+3 separately, both year t and years t+1, t+2, or t+3 separately, or neither year t nor years t+1 to t+3. Results show that 4% of misstatements match ineffective ICFR in year t, but not t+1 to t+3, while 23.5%, 9%, and 6.5% of misstatements respectively match ineffective ICFR in years t+1,

[1] The difference in the percentage of materially misstated financial areas matched to year t between the first cross tabulation (3.5%) and the second cross tabulation (4%) is due to the removal of 101 misstatements from the sample in which the misstatement was discovered prior to the MW in the misstated financial area when performing the t+1 to t+3 analysis.

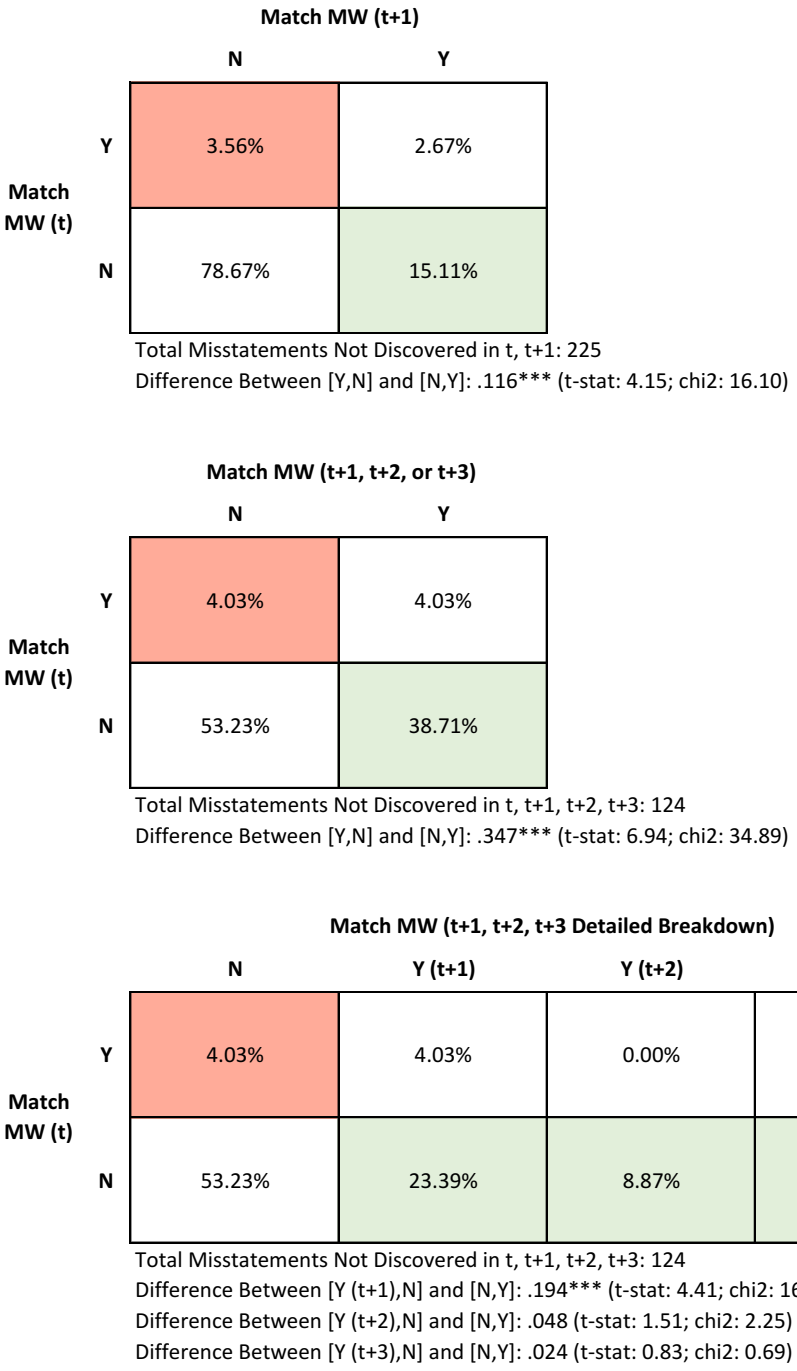


Figure 1: Matching Analysis Between Misstatements in Year t and Ineffective ICFR in Years t, t+n

This figure presents results from a matching analysis of financial reporting areas misstated in year t and financial reporting areas affected by ineffective ICFR disclosed in years t, t+1, t+2, and t+3.

Cells in columns or rows labeled as "Y" represent the percentage of misstatements in year t which match the same financial reporting area as an ineffective ICFR disclosed in year t or t+n. The first table, restricted to years t and t+1, includes 225 misstatements that were not discovered until year t+2 or later to control for reverse causality. Likewise, the second and third tables, restricted to years t through t+3, only include 124 misstatements that were not discovered until year t+4 or later. Results show that 15%-24% of misstatements match the same financial reporting area as ineffective ICFR disclosed in year t+1, while only 3%-4% match ineffective ICFR disclosed in year t. The differences between these years are statistically significant at the 1% level. Results also show that approximately 39% of misstatements match the same financial reporting area as ineffective ICFR disclosed during t+1, t+2, or t+3, though the percentages matched to years t+2 and t+3 are not statistically different from those matched to year t when compared individually. A full matching table of misstatements to ineffective ICFR is available in Appendix E.

t+2, or t+3, but not t. The difference in the density between the year t and t+1 matching is significant at the 1% level (t-stat: 4.41; chi-sq: 16.94). The differences in density between the t, t+2, and t+3 matchings are not statistically significant at conventional levels. Results from all three cross tabulations provide preliminary evidence that, consistent with my prediction, financial misstatements are most likely to be associated with ineffective ICFR that are not disclosed until at least one year after the misstatement.

Results from my second primary analysis of the association between financial misstatements in year t and contemporaneous and future ineffective ICFR are presented in a path diagram in Figure 2.[2] The top portion of the diagram represents the result from prior literature and Table 5 that ineffective ICFR are associated with 95% higher odds (91% higher probability) of a contemporaneous financial misstatement. The bottom portion of the diagram represents the direct and indirect paths between ineffective ICFR and contemporaneous financial misstatements. In all path analyses throughout the paper, I compute the statistical significance of mediated paths following Sobel (1982). In addition, for all path analyses that include a logistic regression due to dichotomous mediators and/or outcomes, I calculate standardized path coefficients following MacKinnon and Dwyer (1993) to determine the proportion of the effect that is mediated. In support

[2] Fully tabulated results are available in Appendix E.

of my prediction, results reveal that ineffective ICFR in year t are positively associated with ineffective ICFR in year t+1, and ineffective ICFR in year t+1 are positively associated with financial misstatements in year t. Odds ratio calculation reveals the total indirect effect from ineffective ICFR in year t, to those in year t+1, to financial misstatements in year t is a 45% increase

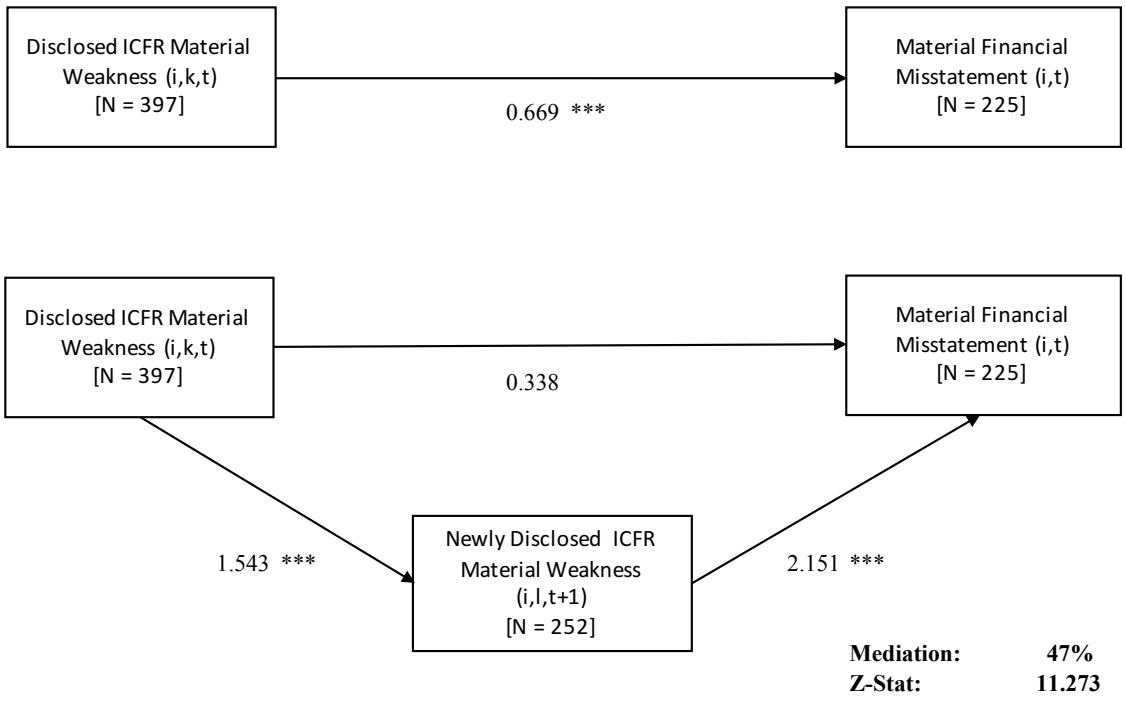


Figure 2: Path Analysis of Current Ineffective ICFR, Future Ineffective ICFR, and Current Misstatements

This figure presents the results of a path analysis measuring the direct and indirect associations between ineffective ICFR and current financial misstatements identified at a later date using a sample of 8,648 firm years with unqualified audit opinions from 2004-2013. Controls for client inherent risk, auditor detection risk, explanatory language, restatement identification, and the year of observation have been omitted from the diagram for brevity. Fully tabulated results are available in Appendix F. Odds ratio computation in a single equation regression shows that ineffective ICFR are associated with 95% higher odds of current financial misstatement, which translates to a 91% higher probability using the likelihood of financial misstatement absent ineffective ICFR for the sample as a baseline. Path analysis using a system of equations shows that 47% of this effect (45% higher odds; 43% higher probability) is mediated through additional ineffective ICFR reported in the subsequent year. All regressions use clustered standard errors. The symbols ***, **, and * are used to denote statistical significance at the 1%, 5%, and 10% levels, respectively.

in the odds (43% higher probability) of financial misstatement risk. This represents a mediation magnitude of 47% (z-stat: 11.27) and suggests that approximately half of the association between ineffective ICFR and contemporaneous financial misstatement risk documented in prior research is due to a one-year lag in MW discovery.

Results from my third primary analysis of the association between financial misstatements in year t and contemporaneous and future ineffective ICFR are presented in a path diagram in Figure 3.[3] The top portion of the diagram is consistent with results from prior literature and Table 5, that ineffective ICFR are associated with 133% higher odds (129% higher probability) of contemporaneous financial misstatement. The bottom portion of the diagram represents the direct and multi-year indirect associations between year t ineffective ICFR and contemporaneous financial misstatements.

In support of AS 2 and AS 5 guidance allowing auditors discretion to delay ICFR testing adjustments until the subsequent year being the reason for my previous two results, the magnitude of the association between MWs discovered in year t and MWs discovered in year t+n is largest for those discovered in year t+1, with both the magnitude and significance of the association declining from t+1 to t+3. Similarly, the magnitude of the association between financial misstatements and MWs discovered in year t+n is largest for those discovered in year t+1, with the magnitude of the association declining from t+1 to t+3. Odds ratio calculation reveals that the total indirect effect from MWs discovered in year t, to those discovered in year t+1, t+2, and t+3, to financial misstatements in year t is a 69%, 25%, and 8% increase in the odds (67%, 24%, and 8% increase in the probability) of financial misstatement risk, respectively. This represents a mediation

[3] Fully tabulated results are available in Appendix G.

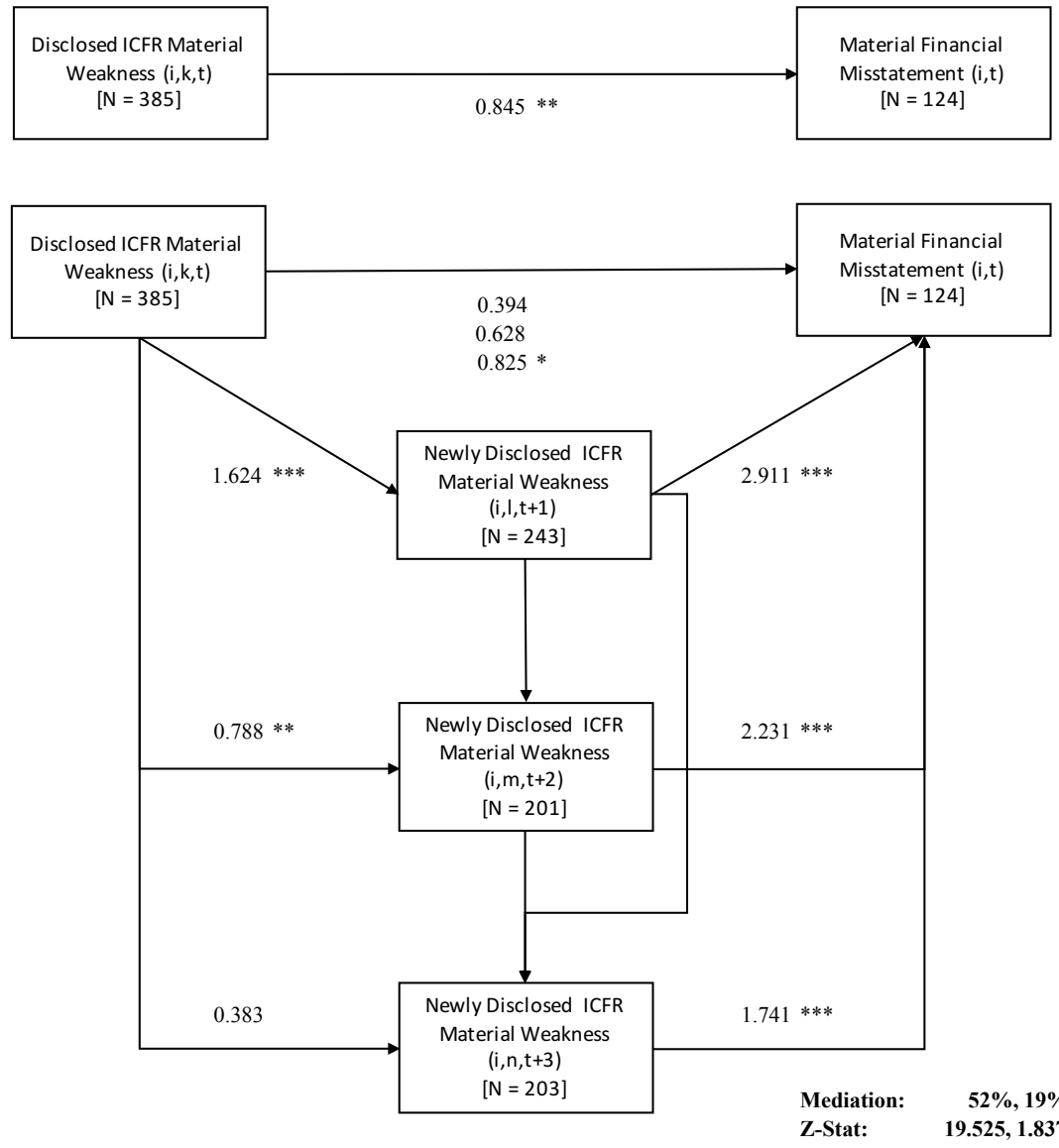


Figure 3: Declining Association Between Misstatements in Year t and Ineffective ICFR in Year t+n

This figure presents the results of a multi-year path analysis measuring the direct and indirect associations between ineffective ICFR and current financial misstatements identified at a later date using a sample of 8,547 firm years with unqualified audit opinions from 2004-2013 (an additional 101 observations are excluded from this test because I restrict the timing of misstatement discovery to t+4 or later). Controls for client inherent risk, auditor detection risk, explanatory language, restatement identification, and the year of observation have been omitted from the diagram for brevity. Fully tabulated results are available in Appendix G. Odds ratio computation in a single

equation regression shows that ineffective ICFR are associated with 133% higher odds of current financial misstatement, which translates to a 129% higher probability using the likelihood of financial misstatement absent ineffective ICFR for the sample as a baseline. Path analysis using a system of equations shows that 52%, 19%, and 6% of this effect (69%, 25%, 8% higher odds; 67%, 24%, 8% higher probability) is mediated through additional ineffective ICFR reported in the subsequent first, second, and third year, respectively. All regressions use clustered standard errors. The symbols ***, **, and * are used to denote statistical significance at the 1%, 5%, and 10% levels, respectively.

magnitude of 52%, 19%, and 6% (z-stats: 19.53, 1.84, and 1.67) for years t+1, t+2, and t+3, respectively. The sum of these magnitudes suggests that approximately three-fourths of the previously documented association between ineffective ICFR and contemporaneous financial misstatement risk is due to lag in MW discovery of up to three years.

In total, the results of my three primary analyses support Prediction 1 that ineffective ICFR are indirectly associated with a contemporaneous increase in financial misstatement risk through their association with new ineffective ICFR discovered in a later year. Furthermore, the magnitudes of the mediated paths provide evidence that the majority of the previously documented association between MWs in year t and financial misstatement risk in year t is due to control risk that exists in year t, but is not discovered until years t+1 through t+3.

4.2 Prediction 2 Test Results

To test whether time and resource constraints are linked to an auditor's decision, under AS 2 and AS 5, to postpone expanded control testing following the discovery of an MW until the subsequent year, I reperform the one year path analysis detailed in Eq. 8 and Eq. 9 after splitting my sample on two proxies for resource constraints and one proxy for time constraints.

My proxies for resource constraints are indicators for whether an MW discovered in year t is remediated by year t+1 and whether an MW discovered in year t is related to account-level controls or entity-level controls. I classify MWs in ICFR as entity-level or account-level based on classifications adapted from prior research and the descriptions of their related controls in AS 2 and

AS5. The full classification table is presented in Appendix H. Regarding the mediation indicator, MWs discovered in year t which are not remediated by year t+1 are a signal of one of two scenarios: either the MWs were more complicated to resolve, in which case they would have placed a higher burden on auditor resources; or the client, who is responsible for MW remediation, has poor tone at the top with respect to controls, in which case there is an overall higher likelihood of control risk, which again places a higher burden on auditor resources. Regarding the control type indicator, prior academic studies show auditors have greater difficulty making adjustments to substantive financial statement procedures when entity-level ICFR are ineffective than when account-level ICFR are ineffective (Doyle et al. 2007), suggesting that entity-level MWs are more burdensome on auditor resources than account-level MWs. Entity-level MWs are more burdensome on auditor resources because they are pervasive throughout a company, rather than being applicable to a single account, thus when one is ineffective, it could potentially impact many financial areas. The pervasive effects of entity-level MWs have two effects. First, they make it unclear where an auditor should focus its substantive testing adjustments. Second, they increase the size of the pool of potential controls that share a common failed element with the ineffective control, making it unclear where an auditor should focus control testing expansions.

My proxy for time constraints is an indicator for whether the auditor's client has sixty days (large accelerated filers after December 15, 2006) or seventy-five days (large accelerated filers prior to December 15, 2006 and all accelerated filers) to file its financial reports. Large accelerated filers are those with a market capitalization of over $700M, while accelerated filers are those with a market capitalization between $75M and $700M. Lambert et al. (2016) suggest that differences in inherent characteristics of large accelerated filers and accelerated filers merit a difference in the allocation of internal and external audit resources, where large accelerated filers are allocated resources better able to adjust testing procedures in response to the discovery of an MW by both

management and the engaged audit firm. Considering this, I divide my seventy-five day filer and sixty day filer samples into quintiles based on market capitalization and perform my path analysis comparison between seventy-five day filers in the top two quintiles of market capitalization and sixty day filers in the bottom two quintiles of market capitalization.[4] This ensures the two types of filers have similar audit resource needs.

Results from my first resource constraint path analysis, which divides my sample on the remediation status of MWs discovered in year t, are presented in path diagrams in Figure 4 (remediated sample) and Figure 5 (unremediated sample).[5] In support of my prediction, the mediation magnitude for remediated MWs is -76% (z-stat: -2.36) while the mediation magnitude for unremediated MWs is 114% (z-stat: 8.25). These results show that not only is there no positive mediation effect for remediated MWs, there is actually a reverse mediation effect. In other words, when auditors discover an MW in year t that requires low burden to resolve, they are more likely to perform expanded control procedures in year t, but in doing so they decrease the likelihood that their substantive testing adjustments in response to every MW discovered will be sufficient. This result highlights a potential drawback should auditing standards mandate that auditors spend whatever time is necessary to identify all MWs in any given year, as doing so would reduce the resources available for sufficient substantive testing adjustments in response to the discovery of those weaknesses. This result is also in opposition to that from the analysis of unremediated MWs, which carry a greater resource burden to resolve and lead to full mediation of the association between MWs discovered in year t and financial misstatement risk in year t through additional

[4] Ideally, I would compare only the closest quintile in market capitalization between sixty day and seventy-five day filers; however, these samples were not large enough to facilitate model convergence.
[5] Fully tabulated results are available in Appendix I and Appendix J.

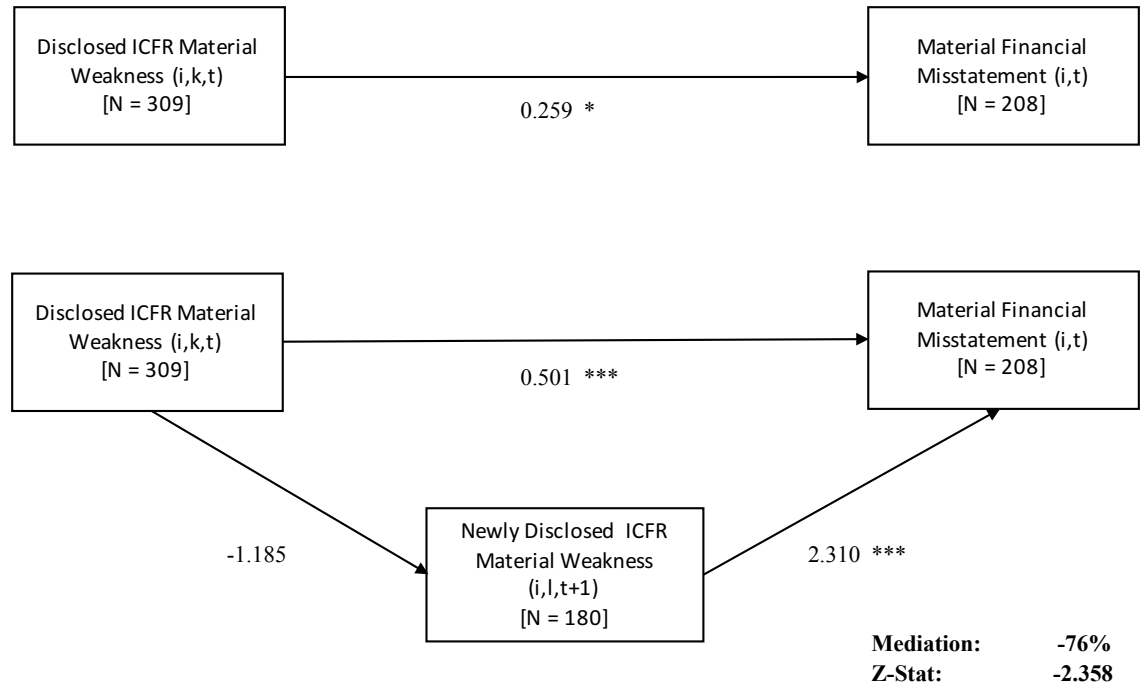


Figure 4: Path Analysis of Current Ineffective ICFR, Future Ineffective ICFR, and Current Misstatements (Remediated MWs)

This figure presents the results of a path analysis measuring the direct and indirect associations between ineffective ICFR that are remediated within a year and current financial misstatements identified at a later date using a sample of 8,560 firm years with unqualified audit opinions from 2004-2013. Controls for client inherent risk, auditor detection risk, explanatory language, restatement identification, and the year of observation have been omitted from the diagram for brevity. Fully tabulated results are available in Appendix I. Odds ratio computation in a single equation regression shows that ineffective ICFR are associated with 30% higher odds of current financial misstatement, which translates to a 29% higher probability using the likelihood of financial misstatement absent ineffective ICFR for the sample as a baseline. Path analysis using a system of equations shows that none of the direct effect is mediated through additional ineffective ICFR reported in the subsequent year. Rather, the mediation effect increases the direct odds by an additional 32%. All regressions use clustered standard errors. The symbols ***, **, and * are used to denote statistical significance at the 1%, 5%, and 10% levels, respectively.

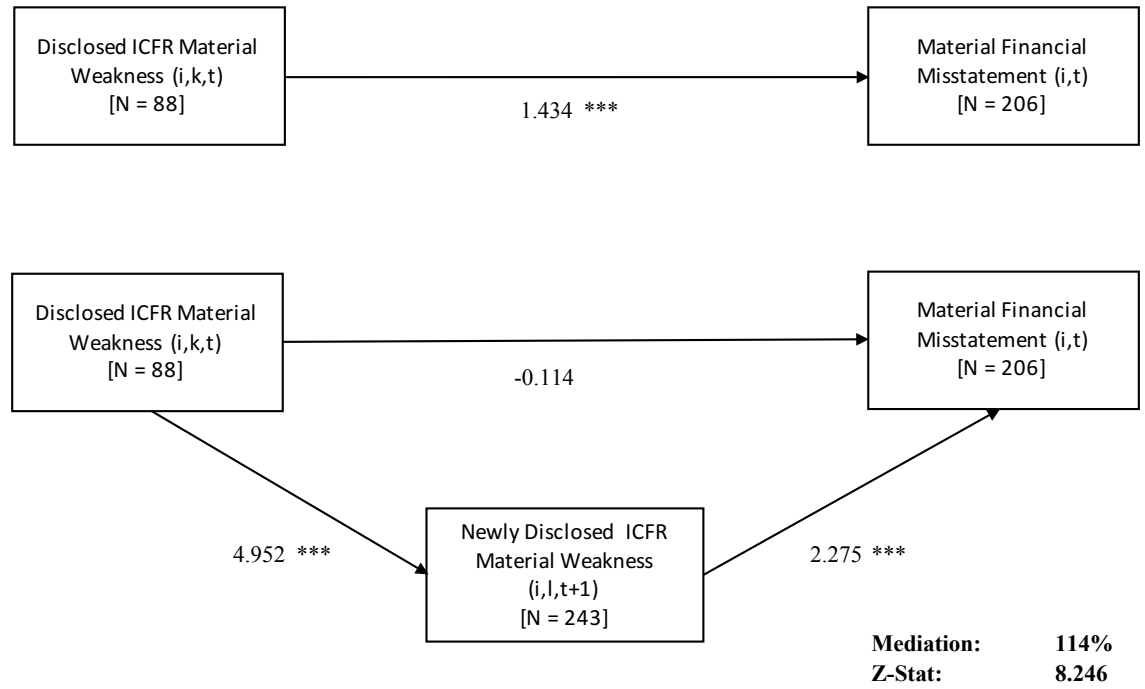


Figure 5: Path Analysis of Current Ineffective ICFR, Future Ineffective ICFR, and Current Misstatements (Unremediated MWs)

This figure presents the results of a path analysis measuring the direct and indirect associations between ineffective ICFR that are not remediated within a year and current financial misstatements identified at a later date using a sample of 8,339 firm years with unqualified audit opinions from 2004-2013. Controls for client inherent risk, auditor detection risk, explanatory language, restatement identification, and the year of observation have been omitted from the diagram for brevity. Fully tabulated results are available in Appendix J. Odds ratio computation in a single equation regression shows that ineffective ICFR are associated with 320% higher odds of current financial misstatement, which translates to a 291% higher probability using the likelihood of financial misstatement absent ineffective ICFR for the sample as a baseline. Path analysis using a system of equations shows that all of this effect is mediated through additional ineffective ICFR reported in the subsequent year. All regressions use clustered standard errors. The symbols ***, **, and * are used to denote statistical significance at the 1%, 5%, and 10% levels, respectively.

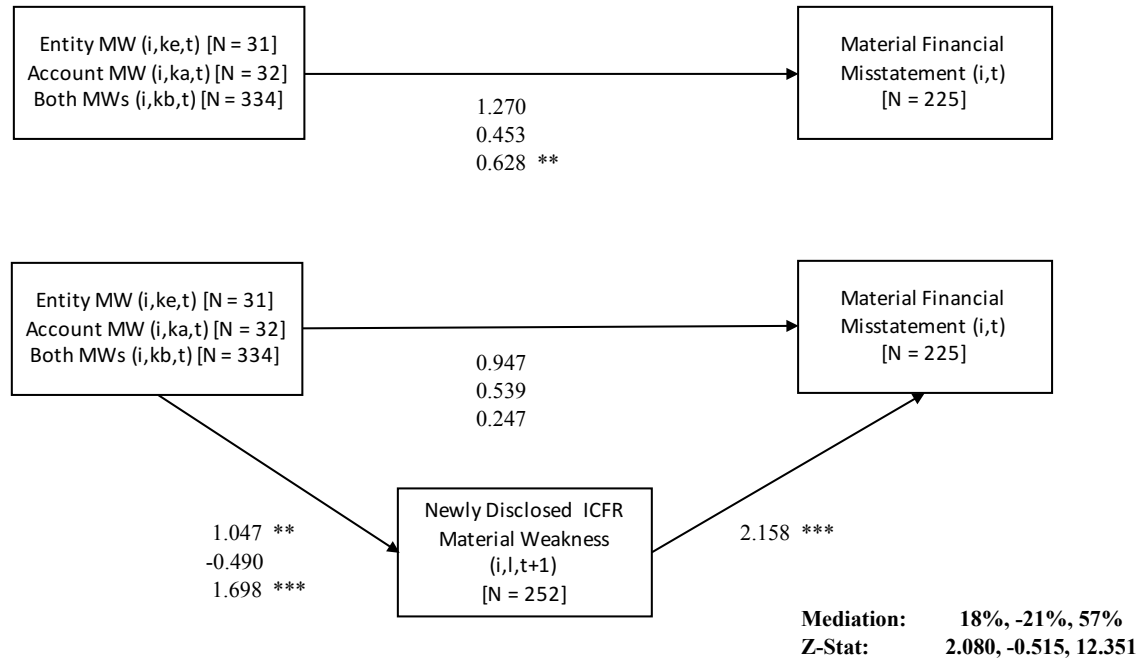


Figure 6: Path Analysis of Current Ineffective ICFR, Future Ineffective ICFR, and Current Misstatements (MW Severity)

This figure presents the results of a path analysis measuring the direct and indirect associations between ineffective ICFR of different severities and current financial misstatements identified at a later date using a sample of 8,648 firm years with unqualified audit opinions from 2004-2013. Controls for client inherent risk, auditor detection risk, explanatory language, restatement identification, and the year of observation have been omitted from the diagram for brevity. Fully tabulated results are available in Appendix K. Odds ratio computation in a single equation regression shows that ineffective ICFR are associated with 256%, 57%, and 87% higher odds of current financial misstatement for ineffective entity-level, account-level, and combined entity-level and account-level ICFR, respectively. This translates to a 234%, 55%, and 84% higher probability using the likelihood of financial misstatement absent ineffective ICFR for the sample as a baseline. Note that the effect is statistically significant only for ineffective combined entity-level and account-level ICFR. Path analysis using a system of equations shows that 18%, 0%, and 57% of this effect is mediated through additional ineffective ICFR reported in the subsequent year. The mediated path is not statistically significant for ineffective account-level ICFR. All regressions use clustered standard errors. The symbols ***, **, and * are used to denote statistical significance at the 1%, 5%, and 10% levels, respectively.

MWs discovered in year t+1, consistent with auditors being constrained from expanding control testing procedures in year t.

Results from my second resource constraint path analysis, which separates my MW variable into the variables EntityMW, AccountMW, and BothMW, representing observations with only entity-level MWs, only account-level MWs, and both entity-level and account-level MWs, respectively, are presented in a path diagram Figure 6.[6] In support of my prediction, positive mediation occurs when the MWs discovered in year t are entity-level only (proportion: 18%; z-stat: 2.08) or a combination of entity-level and account-level (proportion: 57%; z-stat: 12.35). The mediation effect when MWs discovered in year t are account-level only (i.e. low resource burden) is negative, but not significant (magnitude: -21%; z-stat: -0.52).

Results from the time constraint path analysis, which divides my sample on the number of days permitted for an auditor's client to file its financial reports, are presented in path diagrams in Figure 7 (seventy-five day filers) and Figure 8 (sixty day filers).[7] In support of my prediction, the mediation magnitude for seventy-five day filers is 31% (z-stat: 2.45) while the mediation magnitude for sixty day filers is 89% (z-stat: 1.39). The indirect path is not statistically different from zero at traditional levels for sixty day filers, due to the small number of MWs discovered in years t and t+1 and financial misstatements in year t. Results using the full population of sixty day filers rather than a reduced population, presented in Appendix N, show that the indirect path is significant (z-stat: 2.17) when using a larger number of discovered MWs. Furthermore, consistent with different filer types warranting different levels of audit resource allocation, increasing the regression samples to include the third quintiles of seventy-five day filers and sixty day filers reduces the difference in mediation magnitudes (32% for seventy-five day filers and 44% for sixty

[6] Fully tabulated results are available in Appendix K.
[7] Fully tabulated results are available in Appendix L and Appendix M.

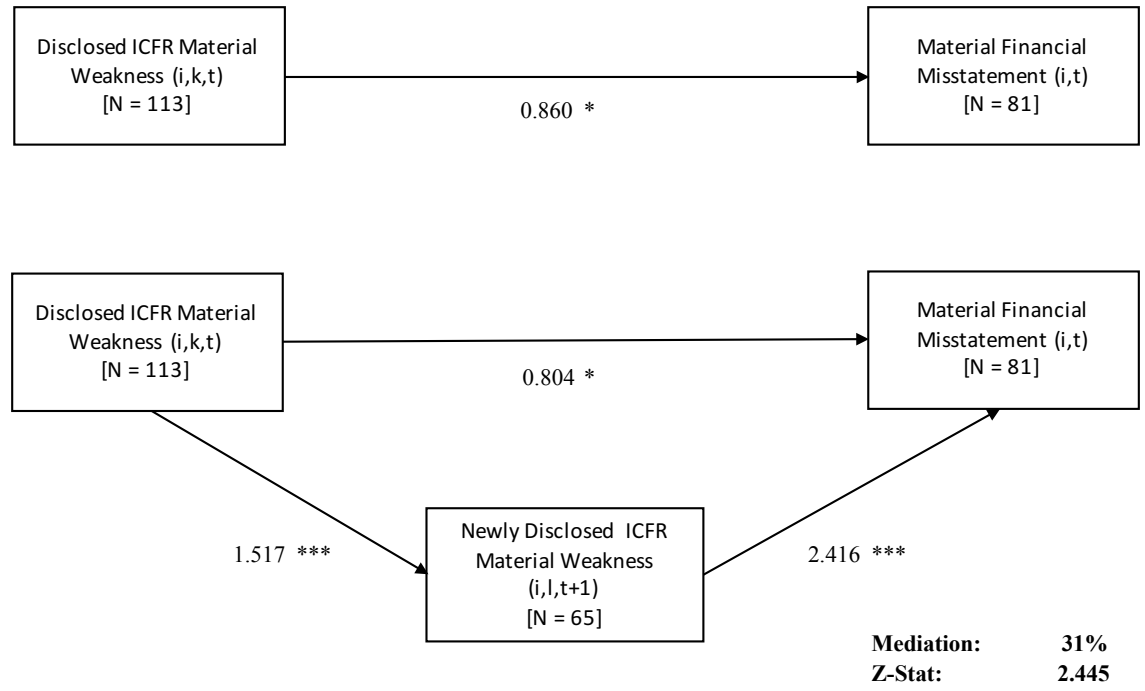


Figure 7: Path Analysis of Current Ineffective ICFR, Future Ineffective ICFR, and Current Misstatements (Seventy-Five Day Filers - Top Two Quintiles Market Cap)

This figure presents the results of a path analysis measuring the direct and indirect associations between ineffective ICFR and current financial misstatements identified at a later date using a sample of 1,808 firm years for seventy-five day filers with unqualified audit opinions from 2004-2013. Controls for client inherent risk, auditor detection risk, explanatory language, restatement identification, and the year of observation have been omitted from the diagram for brevity. Fully tabulated results are available in Appendix L. Odds ratio computation in a single equation regression shows that ineffective ICFR are associated with 136% higher odds of current financial misstatement, which translates to a 124% higher probability using the likelihood of financial misstatement absent ineffective ICFR for the sample as a baseline. Path analysis using a system of equations shows that 31% of this effect (43% higher odds; 39% higher probability) is mediated through additional ineffective ICFR reported in the subsequent year. All regressions use clustered standard errors. The symbols ***, **, and * are used to denote statistical significance at the 1%, 5%, and 10% levels, respectively.

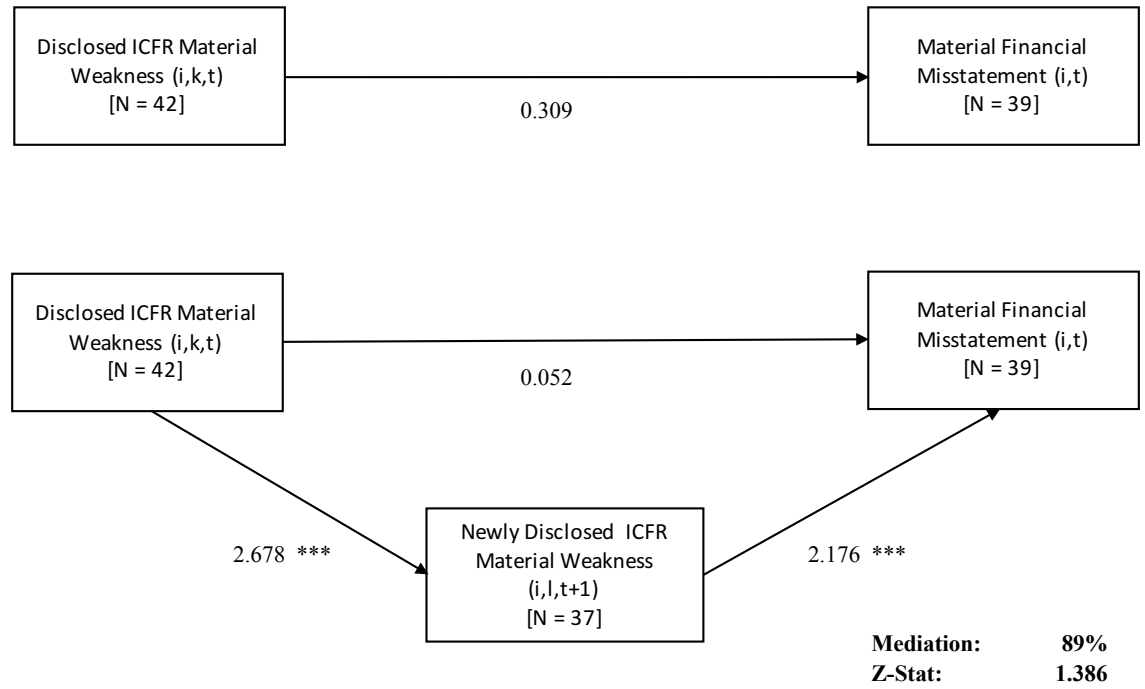


Figure 8: Path Analysis of Current Ineffective ICFR, Future Ineffective ICFR, and Current Misstatements (Sixty Day Filers - Lower Two Quintiles Market Cap)

This figure presents the results of a path analysis measuring the direct and indirect associations between ineffective ICFR and current financial misstatements identified at a later date using a sample of 1,602 firm years for sixty day filers with unqualified audit opinions from 2004-2013. Controls for client inherent risk, auditor detection risk, explanatory language, restatement identification, and the year of observation have been omitted from the diagram for brevity. Fully tabulated results are available in Appendix M. Though the analysis lacks power to show statistical significance in several expected associations, I confirm that the expected associations are statistically significant in the full sample of large accelerated filers (see Appendix N), and thus I compute the two quintile association magnitudes for comparison purposes. Odds ratio computation in a single equation regression shows that ineffective ICFR are associated with 36% higher odds of current financial misstatement, which translates to a 35% higher probability using the likelihood of financial misstatement absent ineffective ICFR for the sample as a baseline. Path analysis using a system of equations shows that 89% of this effect (32% higher odds; 31% higher probability) is mediated through additional ineffective ICFR reported in the subsequent year. All regressions use clustered standard errors. The symbols ***, **, and * are used to denote statistical significance at the 1%, 5%, and 10% levels, respectively.

day filers). Results are presented in Figure 9 (seventy-five day filers) and Figure 10 (sixty day filers).[8]

I next consider the impact that the change from AS 2 to AS 5 that occurred during my sample period had on MW discovery. The PCAOB replaced AS 2 with AS 5 to alleviate excessive costs associated with SOX 404b reporting while maintaining a similar level of audit quality as that which had been established under AS 2. In his introduction of the draft proposal of AS 5, PCAOB chairman Mark Olson stated that "the goal... is to eliminate unnecessary costs associated with internal control reporting, while obtaining the best possible assurance that a company's internal control will lead to financial statements that are accurately stated" (Olson 2006). The top-down ICFR testing approach of AS 5 should allow for greater audit efficiency, which in turn could ease the burden on constrained auditor resources and reduce MW discovery lag. However, the inclusion of a reinforced mandate in AS 5 for auditors to consider year t MWs when planning the year t+1 ICFR audit could increase auditors' propensity to postpone control testing expansions upon discovering an initial MW, and in turn increase MW discovery lag. While it is unclear which of these opposing effects will dominate, Acito et al. (2014) study the transition from AS 2 to AS 5 and their result suggest it will be the latter.

I reperform my primary three year matching analysis for audits subject to AS 2 and audits subject to AS 5 separately. The results are presented in Figure 11. AS 2 results show that 6.5% of misstatements match ineffective ICFR in year t, but not t+1 to t+3, while 27%, 8%, and 2.5% of misstatements respectively match ineffective ICFR in years t+1, t+2, or t+3, but not t. The difference in the density between the year t and t+1 matching is significant at the 1% level (t-stat:

[8] Fully tabulated results are available in Appendix O and Appendix P.

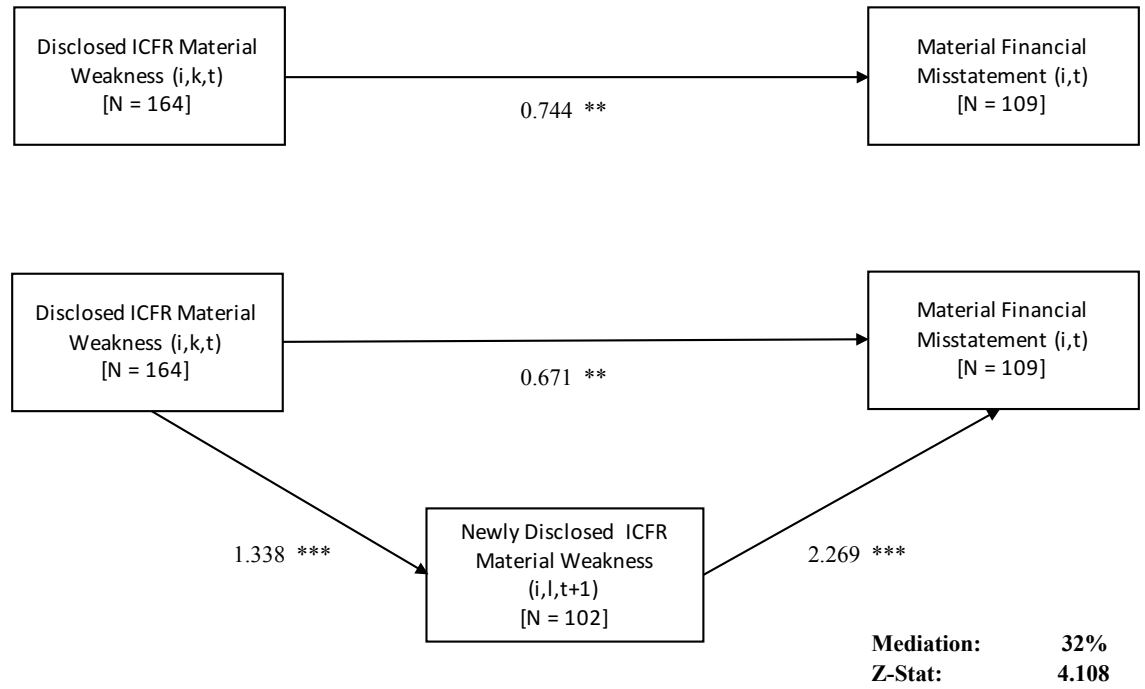


Figure 9: Path Analysis of Current Ineffective ICFR, Future Ineffective ICFR, and Current Misstatements (Seventy-Five Day Filers - Top Three Quintiles Market Cap)

This figure presents the results of a path analysis measuring the direct and indirect associations between ineffective ICFR and current financial misstatements identified at a later date using a sample of 2,712 firm years for seventy-five day filers with unqualified audit opinions from 2004-2013. Controls for client inherent risk, auditor detection risk, explanatory language, restatement identification, and the year of observation have been omitted from the diagram for brevity. Fully tabulated results are available in Appendix O. Odds ratio computation in a single equation regression shows that ineffective ICFR are associated with 110% higher odds of current financial misstatement, which translates to a 103% higher probability using the likelihood of financial misstatement absent ineffective ICFR for the sample as a baseline. Path analysis using a system of equations shows that 32% of this effect (35% higher odds; 33% higher probability) is mediated through additional ineffective ICFR reported in the subsequent year. All regressions use clustered standard errors. The symbols ***, **, and * are used to denote statistical significance at the 1%, 5%, and 10% levels, respectively.

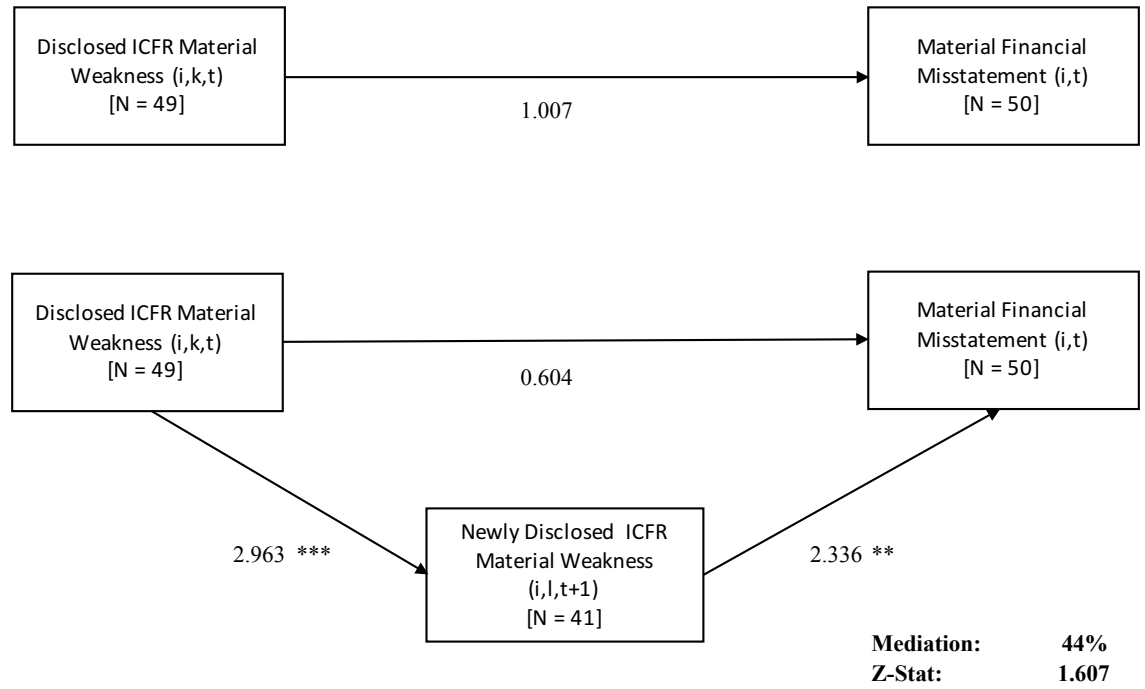


Figure 10: Path Analysis of Current Ineffective ICFR, Future Ineffective ICFR, and Current Misstatements (Sixty Day Filers - Lower Three Quintiles Market Cap)

This figure presents the results of a path analysis measuring the direct and indirect associations between ineffective ICFR and current financial misstatements identified at a later date using a sample of 2,403 firm years for sixty day filers with unqualified audit opinions from 2004-2013. Controls for client inherent risk, auditor detection risk, explanatory language, restatement identification, and the year of observation have been omitted from the diagram for brevity. Fully tabulated results are available in Appendix P. Though the analysis lacks power to show statistical significance in several expected associations, I confirm that the expected associations are statistically significant in the full sample of large accelerated filers (see Appendix N), and thus I compute the three quintile association magnitudes for comparison purposes. Odds ratio computation in a single equation regression shows that ineffective ICFR are associated with 174% higher odds of current financial misstatement, which translates to a 165% higher probability using the likelihood of financial misstatement absent ineffective ICFR for the sample as a baseline. Path analysis using a system of equations shows that 44% of this effect (77% higher odds; 73% higher probability) is mediated through additional ineffective ICFR reported in the subsequent year. All regressions use clustered standard errors. The symbols ***, **, and * are used to denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Auditing Standard No. 2
Match MW (t+1, t+2, t+3 Detailed Breakdown)

Match MW (t)	N	Y (t+1)	Y (t+2)	Y (t+3)
Y	6.49%	6.49%	0.00%	0.00%
N	49.35%	27.27%	7.79%	2.60%

Total Misstatements Not Discovered in t, t+1, t+2, t+3: 77
Difference Between [Y (t+1),N] and [N,Y]: .208*** (t-stat: 3.338; chi2: 9.846)
Difference Between [Y (t+2),N] and [N,Y]: .013 (t-stat: .300; chi2: .091)
Difference Between [Y (t+3),N] and [N,Y]: -.039 (t-stat: -1.136; chi2: 1.286)

Auditing Standard No. 5
Match MW (t+1, t+2, t+3 Detailed Breakdown)

Match MW (t)	N	Y (t+1)	Y (t+2)	Y (t+3)
Y	0.00%	0.00%	0.00%	0.00%
N	59.57%	17.02%	10.64%	12.77%

Total Misstatements Not Discovered in t, t+1, t+2, t+3: 47
Difference Between [Y (t+1),N] and [N,Y]: .170*** (t-stat: 3.072; chi2: 7.000)
Difference Between [Y (t+2),N] and [N,Y]: .106** (t-stat: 2.340; chi2: 4.000)
Difference Between [Y (t+3),N] and [N,Y]: .128*** (t-stat: 2.595; chi2: 5.000)

Figure 11: Matching Analysis Between Misstatements in Year t and Ineffective ICFR in Years t, t+n (AS 2 vs. AS 5 Windows)

This figure presents results from a matched analysis of financial reporting areas misstated in year t and financial reporting areas affected by ineffective ICFR disclosed in years t, t+1, t+2, and t+3, with observations under Auditing Standard No. 2 and observations under Auditing Standard No. 5 reported separately. Cells in columns or rows labeled as "Y" represent the percentage of misstatements in year t which match the same financial reporting area as an ineffective ICFR disclosed in year t or t+n. The first table, restricted to years t through t+3 under Auditing Standard No. 2, includes 77 misstatements that were not discovered until year t+4 or later to control for reverse causality. Results show that 27% of misstatements match the same financial reporting area as ineffective ICFR disclosed in year t+1, while only 6% match ineffective ICFR disclosed in year t. The differences between these years are statistically significant at the 1% level. Results also show that a total 38% of misstatements match the same financial reporting area as ineffective ICFR disclosed during t+1, t+2, or t+3, though the percentages matched to years t+2 and t+3 are not

statistically different from those matched to year t when compared individually. The second table, restricted to years t through t+3 under Auditing Standard No. 5, includes 47 misstatements that were not discovered until year t+4 or later to control for reverse causality. Results show that 17% ,11%, and 13% of misstatements match the same financial reporting area as ineffective ICFR disclosed in year t+1, t+2, and t+3, respectively, while none match ineffective ICFR disclosed in year t. The differences between these years are statistically significant at the 1%, 5%, and 1% levels, respectively. A full matching table of misstatements to ineffective ICFR is available in Appendix E.

3.34; chi-sq: 9.85). The differences in density between the t, t+2, and t+3 matchings are not statistically significant at traditional levels. AS 5 results show that 0% of misstatements match ineffective ICFR in year t, but not t+1 to t+3, while 17%, 10.5%, and 13% of misstatements respectively match ineffective ICFR in years t+1, t+2, or t+3, but not t. The differences in the density between the year t and t+1, t+2, and t+3 matchings are significant at the 1%, 5%, and 1% levels (t-stat: 3.07, chi-sq: 7.00; t-stat: 2.34, chi-sq: 4.00; t-stat: 2.60, chi-sq: 5.00), respectively. Taken together, these results suggest that AS 5 alleviated the burden on auditor resources, but auditors used their new constraint slack to perform additional substantive procedures, effectively reducing the number of misstatements due to insufficient substantive responses to MW discovery to zero. They also suggest that while the portion of MWs discovered with lag is still greatest in year t+1, a larger portion of lagged discoveries are persisting into years t+2 and t+3. This result is consistent with a lower number of MWs being discovered in year t, therefore requiring the passage of more time before auditors expand their year over year control testing enough to reveal the full set of MWs they didn't originally discover. A one year path analysis comparing AS 2 to AS 5, presented in Figure 12 and Figure 13, supports the matching analysis results. A three year path analysis is not possible due to the low number of MWs and financial misstatements during years t+2 and t+3 in the AS 5 period.

4.3 Discussion of Results

Taken in their totality, my findings provide new insight about auditors' identification and

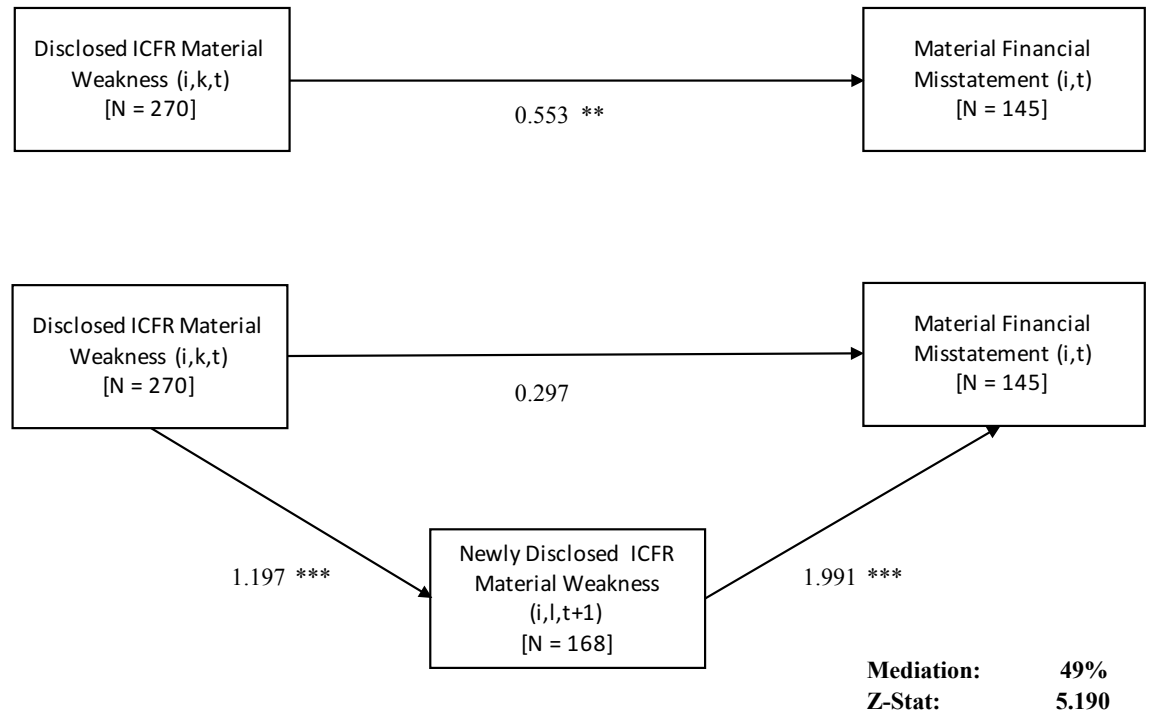


Figure 12: Path Analysis of Current Ineffective ICFR, Future Ineffective ICFR, and Current Misstatements (AS 2 Window)

This figure presents the results of a path analysis measuring the direct and indirect associations between ineffective ICFR and current financial misstatements identified at a later date using a sample of 3,203 firm years with unqualified audit opinions from 2004-2007 (the AS 2 window). Controls for client inherent risk, auditor detection risk, explanatory language, restatement identification, and the year of observation have been omitted from the diagram for brevity. Fully tabulated results are available in Appendix Q. Odds ratio computation in a single equation regression shows that ineffective ICFR are associated with 74% higher odds of current financial misstatement, which translates to a 69% higher probability using the likelihood of financial misstatement absent ineffective ICFR for the sample as a baseline. Path analysis using a system of equations shows that 49% of this effect (36% higher odds; 34% higher probability) is mediated through additional ineffective ICFR reported in the subsequent year. All regressions use clustered standard errors. The symbols ***, **, and * are used to denote statistical significance at the 1%, 5%, and 10% levels, respectively.

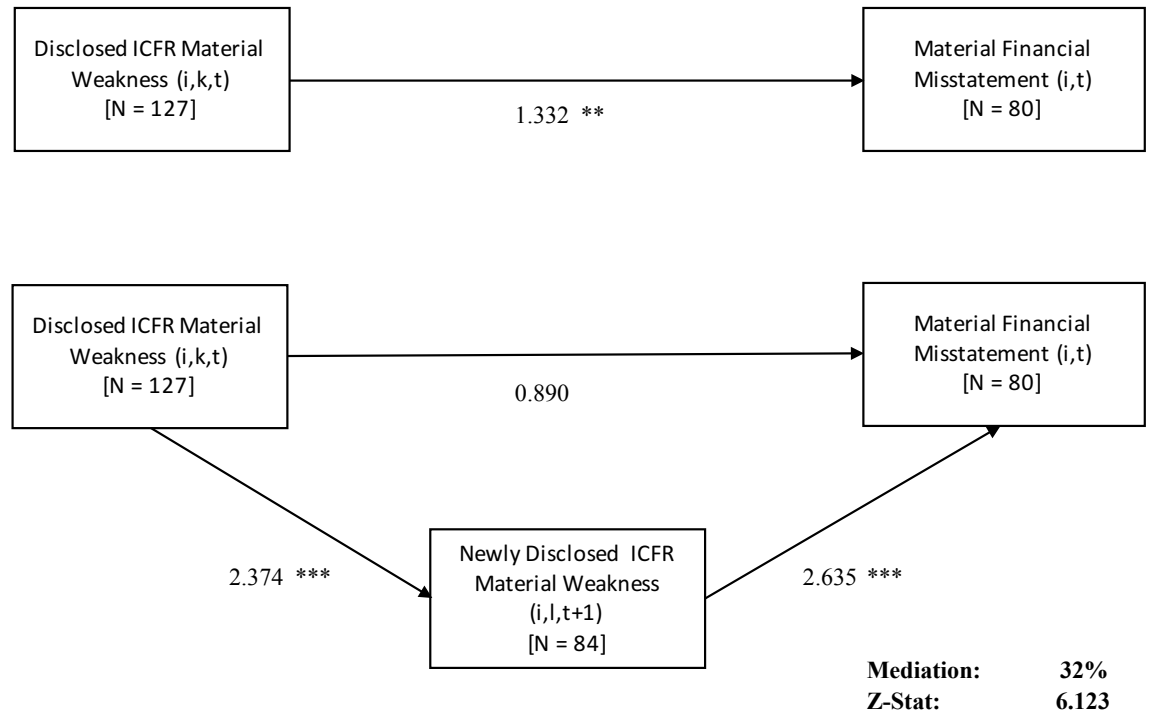


Figure 13: Path Analysis of Current Ineffective ICFR, Future Ineffective ICFR, and Current Misstatements (AS 5 Window)

This figure presents the results of a path analysis measuring the direct and indirect associations between ineffective ICFR and current financial misstatements identified at a later date using a sample of 5,445 firm years with unqualified audit opinions from 2007-2013 (the AS 5 window). Controls for client inherent risk, auditor detection risk, explanatory language, restatement identification, and the year of observation have been omitted from the diagram for brevity. Fully tabulated results are available in Appendix R. Odds ratio computation in a single equation regression shows that ineffective ICFR are associated with 279% higher odds of current financial misstatement, which translates to a 265% higher probability using the likelihood of financial misstatement absent ineffective ICFR for the sample as a baseline. Path analysis using a system of equations shows that 32% of this effect (89% higher odds; 84% higher probability) is mediated through additional ineffective ICFR reported in the subsequent year. All regressions use clustered standard errors. The symbols ***, **, and * are used to denote statistical significance at the 1%, 5%, and 10% levels, respectively.

disclosure of MWs by showing that MW disclosures may not accurately represent the true state of ICFR for issuers by 1) reflecting MWs in financial areas for which the average auditor has sufficiently adjusted substantive procedures to mitigate the increased financial misstatement risk these MWs would otherwise cause; and 2) failing to reflect additional MWs that exist in other financial areas, but have not yet been discovered, and are a threat to the accuracy of the financial statements. Furthermore, my findings suggest that standards that permit auditors to delay control testing expansions following the discovery of higher than expected control risk, constraints on auditors' time to complete the audit, and constraints on the resources available to the auditor to complete the audit, are collectively responsible for this inaccurate representation. Finally, I show that the most recent large-scale change to auditing standards governing the performance of integrated audits (AS 5 implementation) increased this misrepresentation. These insights are directly informative to the questions proposed by the PCAOB at the AAA 2015 annual meeting and to other regulatory bodies such as the SEC should they wish to reduce MW discovery lag by adjusting the underlying standards that affect the causes of such lag. They are also informative to auditors and their clients, who may be able to voluntarily reduce MW discovery lag by being proactive with the timing of control testing procedures to accommodate possible expansions that time and resources constraints may otherwise delay, in order to reduce the adverse consequence of such lag.

My insights inform academics interested in the relation between internal controls, auditor actions, and financial reporting quality by identifying an omitted correlated variable (ineffective ICFR in the subsequent year) in existing financial misstatement models, such as that used by Li and Wang (2006), that updates the interpretation of results from those models with respect to contemporaneous control risk. Additionally, my results partially explain the apparent inconsistency between the actions of the auditor and profit-maximizing incentives of both the auditor and client

in response to ineffective ICFR. The results from existing studies suggest that auditors and clients incur costs from increased effort exertion following the discovery of ineffective ICFR without obtaining the expected benefit of true and target audit risk alignment that this effort should generate (Li and Wang 2006; Hogan and Wilkins 2008; Munsif et al. 2012; Myllymaki 2014; Lin and Thammasiri 2015). My results suggest that most of the misalignment between true and target audit risk arises from ineffective ICFR that the auditor does not discover, and therefore cannot respond to, until subsequent years. Finally, my findings provide evidence that the disclosure of MWs serve as a valid market signal that increased financial misstatement risk may exist, but this risk is due to additional undiscovered MWs rather than the disclosed MW. This finding helps explain the associations between ineffective ICFR and negative capital market reactions documented in prior research (Beneish et al. 2008; Ashbaugh-Skaife et al. 2009; Dhaliwal et al. 2011), as well as less reliance placed on audit reports by capital market participants documented in prior research (Asare and Wright 2012; Clinton et al. 2014).

4.4 Extended Analyses

In this section, I discuss tests designed to validate my results and inferences. I first explore whether evidence suggests auditors exercise the option to delay control testing expansions in response to the discovery of an MW into the subsequent year. Auditors are required to exert additional effort in the year an MW is identified, and are similarly required to exert additional effort when planning the subsequent year's audit. However, the amount of effort required for substantive testing adjustments and control testing adjustments in the year of MW identification should be significantly greater than the amount of marginal effort required to plan the subsequent year's audit. Thus, while a year t MW may be predictive of year t+1 audit effort, it should be less predictive than a year t+1 MW. I test this prediction using the following model:

$$AbnAudFee_{i,t+1} = \alpha + B_1 MW_{i,k,t} + B_2 MW_{i,l,t+1} + \sum_{a=3}^{24} B_a\, InherentRisk_{i,t+1} + FE + \epsilon \quad (14)$$

$$AudLagPercent_{i,t+1} = \alpha + B_1 MW_{i,k,t} + B_2 MW_{i,l,t+1} + \sum_{a=3}^{24} B_a\, InherentRisk_{i,t+1} + FE + \epsilon \quad (15)$$

$$EffortFactor_{i,t+1} = \alpha + B_1 MW_{i,k,t} + B_2 MW_{i,l,t+1} + \sum_{a=3}^{24} B_a\, InherentRisk_{i,t+1} + FE + \epsilon \quad (16)$$

The results of this test, presented in Table 6, show that MWs discovered in year t are associated with a 24% increase in year t+1 abnormal audit fees, a 3% increase in year t+1 audit lag, and a 35% increase in the year t+1 effort factor score derived from the other two measures (t-stats: 15.81, 3.15, and 13.46, respectively). For comparison, MWs discovered in year t+1 are associated with a 24% increase in year t+1 abnormal audit fees, a 15% increase in year t+1 audit lag, and a 55% increase in the year t+1 effort factor score derived from the other two measures (t-stats: 8.18, 13.82, and 13.54, respectively). Collectively, these results suggest that year t MWs impact year t+1 auditor effort to a lesser extent than year t+1 MWs, but in excess of an amount that could reasonably be attributed to extra planning alone.

I next explore a key assumption underlying my primary tests, that auditor disclosures of MWs (which are observable in archival data) are a valid proxy for auditor discoveries of MWs (which are not observable in archival data). I perform a collection of tests to provide evidence whether auditors were aware, in year t, of ineffective ICFR disclosed in year t+1, based on their actions in year t. I adapt the three audit effort models and two audit fee premium models used in my sample validation tests (Eq. 3 – Eq. 7) into path analyses in which the audit effort proxies and

Table 6: Association Between Discovered MWs and Future Audit Effort

This table presents results from three models designed to test whether the disclosure of ineffective ICFR (MW) in year t is associated with increased auditor effort in year t+1, where auditor effort is proxied by 1) abnormal audit fees, 2) audit lag percentage, and 3) an effort factor score derived from abnormal audit fees and audit lag percentage. Results show that ineffective ICFR in year t are associated with a 24% increase in t+1 abnormal audit fees, a 3% increase in t+1 audit lag, and a 35% increase in the t+1 effort factor. All variables are defined in Appendix A. All regressions use clustered standard errors. T-statistics are presented in brackets. The symbols ***, **, and * are used to denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	AbnAudFee (t+1)	AudLagPercent (t+1)	EffortFactor (t+1)
MW (t)	**0.280*** **	**0.024*** **	**0.396*** **
	[15.805]	**[3.145]**	**[13.459]**
MW (t+1)	0.273***	0.130***	0.622***
	[8.176]	[13.823]	[13.542]
BTM (t+1)	0.001	-0.010*	-0.021
	[0.057]	[-1.924]	[-1.391]
ClientAge (t+1)	0.001	-0.000**	0.001
	[1.180]	[-2.399]	[0.810]
Complex (t+1)	0.055	-0.014	0.042
	[0.463]	[-0.243]	[0.673]
Debt (t+1)	-0.012	-0.007	-0.032
	[-0.125]	[-0.579]	[-0.244]
DiscAcc (t+1)	-0.001	0.000	-0.001
	[-1.139]	[0.230]	[-1.025]
DeltaCashSale (t+1)	0.008	0.018***	0.051***
	[0.467]	[3.573]	[4.143]
DeltaEBIT (t+1)	-0.009***	-0.000	-0.011***
	[-3.071]	[-0.163]	[-2.660]
DeltaReceivable (t+1)	-0.040***	0.012***	-0.026
	[-3.145]	[3.797]	[-1.494]
Coverage (t+1)	0.013	-0.003	0.009
	[0.779]	[-0.688]	[0.376]
InstOwn (t+1)	-0.025	-0.030***	-0.094**
	[-0.980]	[-3.987]	[-2.255]
Issue (t+1)	0.001	0.008**	0.019
	[0.044]	[2.646]	[1.006]

Lease (t+1)	0.055***	0.011**	0.097***
	[2.685]	[2.516]	[3.589]
Liquid (t+1)	-0.028***	-0.001	-0.036***
	[-9.128]	[-1.243]	[-7.603]
ForeignOps (t+1)	0.078***	-0.001	0.092***
	[14.846]	[-0.864]	[13.080]
LnIntangibles (t+1)	0.049***	0.002	0.064***
	[14.372]	[0.994]	[9.929]
Loss (t+1)	-0.131***	0.004	-0.155***
	[-6.496]	[0.789]	[-7.335]
Pension (t+1)	0.089***	-0.000	0.108***
	[6.201]	[-0.027]	[6.390]
PEratio (t+1)	0.002	0.002**	0.006
	[0.331]	[2.550]	[0.938]
PosAccrual (t+1)	-0.044**	-0.003	-0.058**
	[-2.585]	[-0.908]	[-2.508]
ROA (t+1)	-0.517***	-0.018*	-0.692***
	[-5.957]	[-1.758]	[-5.689]
TradeRec (t+1)	0.658***	0.023	0.876***
	[7.856]	[0.278]	[4.919]
Size (t+1)	-0.171***	0.001	-0.207***
	[-20.887]	[0.219]	[-10.758]
SoftAssets (t+1)	-0.006	-0.007	-0.016
	[-0.128]	[-1.064]	[-0.238]
SqEmp (t+1)	0.001	-0.007***	-0.014
	[0.090]	[-4.010]	[-1.047]
TotalAccruals (t+1)	0.240***	0.040***	0.385***
	[3.941]	[2.715]	[5.615]
ExtraDiscOps (t+1)	0.133***	0.004	0.175***
	[6.545]	[0.758]	[4.962]
Cur402 (t+1)	-0.013	0.000	-0.007
	[-0.508]	[0.055]	[-0.177]
CurRestate (t+1)	0.052***	0.028***	0.134***
	[3.128]	[6.244]	[5.913]

Constant	1.152***	0.844***	1.135***
	[8.253]	[26.290]	[4.827]
Observations	8648	8648	8648
Auditor FE	Y	Y	Y
Industry FE	Y	Y	Y
Year FE	Y	Y	Y
R-Squared	0.292	0.129	0.266

audit fee premium proxies are modeled as functions of ineffective ICFR in both year t and year t+1, while ineffective ICFR in year t+1 are modeled as a function of ineffective ICFR in year t:

$$\boldsymbol{AuditEffort_{i,t}/FeePremium_{i,t} = \alpha + B_1 MW_{i,k,t} + B_2 MW_{i,l,t+1} + B_3 USAR_{i,t} + \sum_{a=4}^{25} B_a\, InherentRisk_{i,t} + \sum_{b=26}^{35} B_b\, DetectionRisk_{i,t} + FE + \epsilon} \quad (17)$$

$$\boldsymbol{MW_{i,l,t+1} = \alpha + \gamma_1 MW_{i,k,t} + \gamma_2 Cur402_{i,t+1} + \gamma_3 CurRestate_{i,t+1} + \sum_{a=4}^{25} \gamma_a\, InherentRisk_{i,t+1} + FE + \epsilon} \quad (18)$$

The direct associations between ineffective ICFR and the proxies for audit effort and audit fee premiums provide baseline measurements of how known ICFR deficiencies affect these auditor choices. If auditors know in year t about ineffective ICFR that aren't disclosed until year t+1, I expect the indirect associations between ineffective ICFR and proxies for audit effort and audit fee premiums to be similar in magnitude to that of the direct associations. This is because known control risk updates auditors' beliefs about financial misstatement risk, even if not disclosed to the public. Since auditors have incentives to protect themselves from future penalties associated with failing to identify MW-related increases in misstatement risk, they will either expand audit procedures to mitigate the risk or charge the client a premium to cover the expected penalty from not mitigating the risk, regardless of whether the MW was disclosed.

Results from these tests are presented in path diagrams in Figure 14 and Figure 15.[9] Similar to the findings of my sample validation tests, MWs discovered in year t are directly associated with a 26%, 16%, and 53% increase in abnormal audit fees, audit lag, and the effort factor score, respectively. The corresponding indirect associations, while statistically significant at the 1% level, result in only a 2%, 1%, and 3% increase in abnormal audit fees, audit lag, and the effort factor score, respectively. This implies that auditors exert effort in year t related to ineffective ICFR that aren't disclosed until t+1 in magnitude that is only 4%-7% of the effort they exert with respect to ineffective ICFR that are disclosed at time t. Regarding the proxies for an audit fee premium, ineffective ICFR are directly associated with a 29% increase in abnormal audit fees after controlling for audit effort, and a 3% increase in total audit fees. The corresponding indirect associations, while statistically significant at the 1% level, result in only a 2% increase in abnormal audit fees after controlling for audit effort, and a 0.20% increase in total audit fees. This implies that auditors charge an audit fee premium in year t related to ineffective ICFR that aren't disclosed until t+1 in magnitude that is only 7% of the audit fee premium they charge with respect to ineffective ICFR that are known at time t. Together, these findings suggest that auditors don't treat MWs that are disclosed in year t+1 as if they are known at time t, thus providing support that my assumption is reasonable.

Finally, I explore whether my findings are a mechanical result of the associations between consecutive year MWs. To show that this is not the case, I perform a placebo three year path analysis in which I allow the association between MWs discovered in year t and financial misstatements in year t to be mediated by MWs that were discovered in years t-1, t-2, and t-3:

[9] Full tabulations are presented in Appendix S.

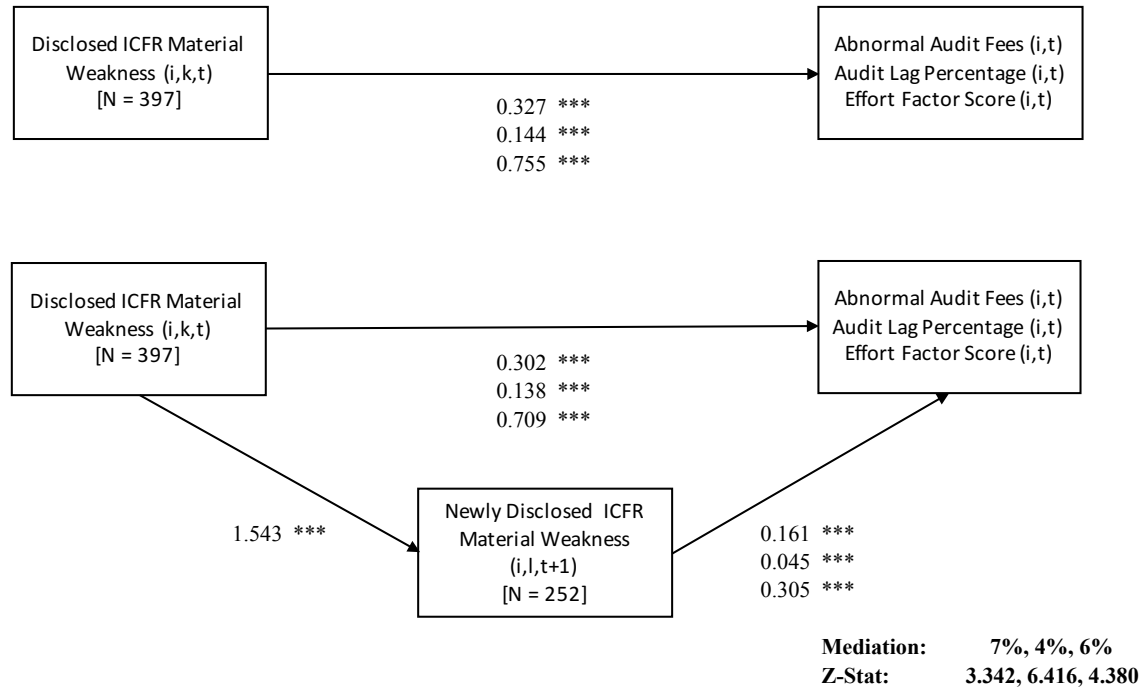


Figure 14: Path Analysis of Current Ineffective ICFR, Future Ineffective ICFR, and Current Audit Effort

This figure presents the results of a path analysis measuring the direct and indirect association between ineffective ICFR and proxies for audit effort using a sample of 8,648 firm years with unqualified audit opinions from 2004-2013. Controls for client inherent risk, auditor detection risk, explanatory language, restatement identification, and the year of observation have been omitted from the diagram for brevity. Fully tabulated results are available in Appendix S. Regression analysis shows ineffective ICFR directly increase abnormal audit fees, audit lag, and the audit effort factor by 26%, 16%, and 53%, respectively. Path analysis using a system of equations shows that 7%, 4%, and 6% of this effect (2%, 1%, and 3% higher magnitude) is mediated through additional ineffective ICFR reported in the subsequent year. All regressions use clustered standard errors. All variables are defined in Appendix A. The symbols ***, **, and * are used to denote statistical significance at the 1%, 5%, and 10% levels, respectively.

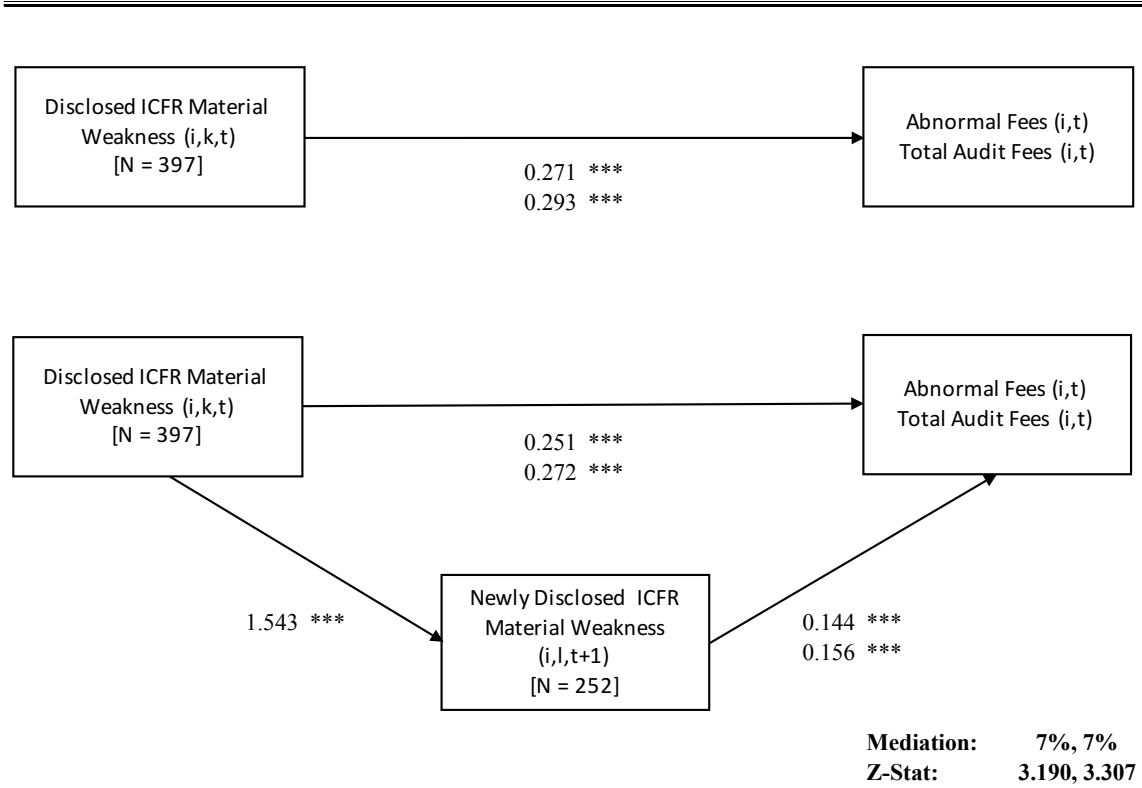


Figure 15: Path Analysis of Current Ineffective ICFR, Future Ineffective ICFR, and Current Audit Fee Premiums

This figure presents the results of a path analysis measuring the direct and indirect association between ineffective ICFR and proxies for an audit fee premium using a sample of 8,648 firm years with unqualified audit opinions from 2004-2013. Controls for client inherent risk, restatement identification, and the year of observation have been omitted from the diagram for brevity. Fully tabulated results are available in Appendix S. Regression analysis shows ineffective ICFR directly increase the audit fee premium by 29% when using an abnormal audit fee model and 3% when using a total audit fee model. Path analysis using a system of equations shows that 7% of this effect (2% higher magnitude using an abnormal audit fee model and .20% higher magnitude using a total audit fee model) is mediated through additional ineffective ICFR reported in the subsequent year. All regressions use clustered standard errors. All variables are defined in Appendix A. The symbols ***, **, and * are used to denote statistical significance at the 1%, 5%, and 10% levels, respectively.

$$CurMisstate_{i,t} = \alpha + B_1 MW_{i,k,t} + B_2 MW_{i,l,t-1} + B_3 MW_{i,m,t-2} + B_4 MW_{i,n,t-3} + B_5 USAR_{i,t} + \sum_{a=6}^{27} B_a\, InherentRisk_{i,t} + \sum_{b=28}^{37} B_b\, DetectionRisk_{i,t} + FE + \epsilon \quad (19)$$

$$MW_{i,l,t-1} = \alpha + \gamma_1 MW_{i,k,t} + \gamma_2 Cur402_{i,t-1} + \gamma_3 CurRestate_{i,t-1} + \sum_{a=4}^{25} \gamma_a\, InherentRisk_{i,t-1} + FE + \epsilon \quad (20)$$

$$MW_{i,m,t-2} = \alpha + \delta_1 MW_{i,k,t} + \delta_2 MW_{i,l,t-1} + \delta_3 Cur402_{i,t-2} + \delta_4 CurRestate_{i,t-2} + \sum_{a=5}^{26} \delta_a\, InherentRisk_{i,t-2} + FE + \epsilon \quad (21)$$

$$MW_{i,n,t-3} = \alpha + \Theta_1 MW_{i,k,t} + \Theta_2 MW_{i,l,t-1} + \Theta_3 MW_{i,m,t-2} + \Theta_4 Cur402_{i,t-3} + \Theta_5 CurRestate_{i,t-3} + \sum_{a=6}^{27} \Theta_a\, InherentRisk_{i,t-3} + FE + \epsilon \quad (22)$$

The placebo test results are presented in a path diagram in Figure 16.[10] The top portion of the diagram shows that MWs in year t are associated with 202% higher odds (191% higher probability) of contemporaneous financial misstatement. The bottom portion of the diagram represents the direct and multi-year indirect placebo mediation of the association between year t ineffective ICFR and contemporaneous financial misstatements. Odds ratio calculation reveals that the total indirect placebo effect from MWs discovered in year t, to those discovered in year t-1, t-2, and t-3, to financial misstatements in year t is a 22%, 6%, and 0% increase in the odds (21%, 5%, and 0% increase in the probability) of financial misstatement risk, respectively. This represents a mediation magnitude of 11%, 3%, and 0% (z-stats: 2.09, 0.98, and 1.03) for years t-1, t-2, and t-3 respectively. Though the t-1 mediation is statistically different from zero, the results from the

[10] Full tabulations are presented in Appendix T.

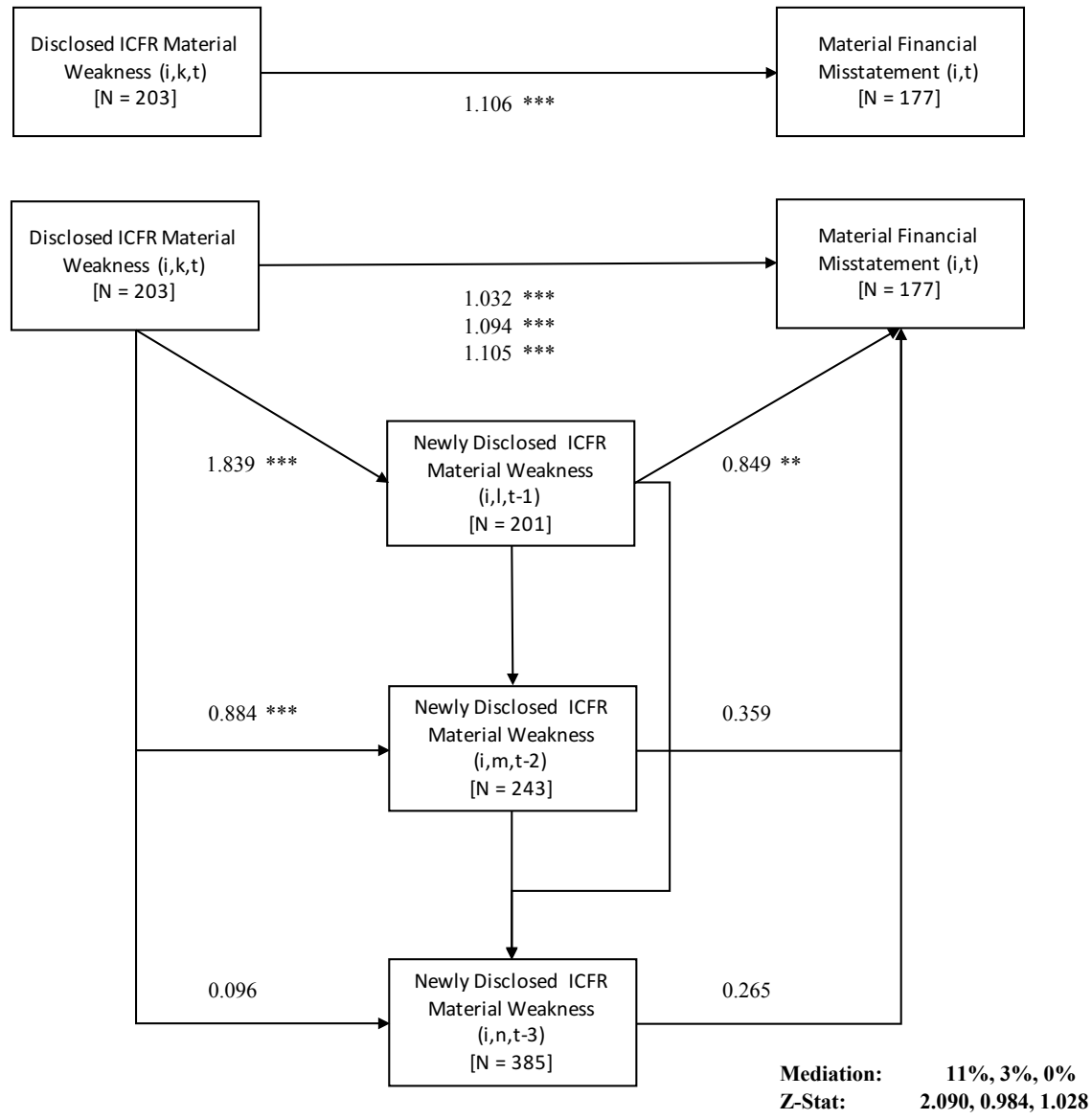


Figure 16: Placebo Test of Association Between Misstatements in Year t and Ineffective ICFR in Year t-n

This figure presents the results of a multi-year placebo path analysis measuring the direct and indirect associations between ineffective ICFR and current financial misstatements identified at a later date using a sample of 8,547 firm years with unqualified audit opinions from 2004-2013. Controls for client inherent risk, auditor detection risk, explanatory language, restatement identification, and the year of observation have been omitted from the diagram for brevity. Fully tabulated results are available in Appendix T. Odds ratio computation in a single equation regression shows that ineffective ICFR are associated with 202% higher odds of current financial

misstatement, which translates to a 191% higher probability using the likelihood of financial misstatement absent ineffective ICFR for the sample as a baseline. Path analysis using a system of equations shows that 11%, 3%, and 0% of this effect (22%, 6%, 0% higher odds; 21%, 5%, 0% higher probability) is mediated through additional ineffective ICFR reported in the previous first, second, and third year, respectively. Of these results, only the t-1 mediation is statistically significant at traditional levels. All regressions use clustered standard errors. The symbols ***, **, and * are used to denote statistical significance at the 1%, 5%, and 10% levels, respectively.

placebo path analysis as a whole do not mirror those of my primary tests in either magnitude or significance, providing support that my primary results are not mechanical.

4.5 Robustness Checks

To ensure my findings are not sensitive to my design choices, I perform a series of robustness tests using alternate specifications. The first of these robustness tests relates to the initial implementation of SOX 404b testing. Hogan and Wilkins (2008) suggest dropping the years 2004-2005 in tests involving audit fees and ICFR testing, as measures for these years may be confounded by initial SOX 404b implementation activities in addition to normal audit activities. Results, presented in Appendix U, show that excluding these years from my study does not affect the inferences from my primary tests. The second of my robustness tests relates to my measurement of audit lag. The majority of prior literature measures audit lag as the days between the client's fiscal year end and the audit report signature date, left unscaled. I re-perform my sample validity tests, including re-measuring the effort factor, with unscaled audit lag and find that results, presented in Appendix V, yield the same inferences as my original tests.

My third robustness test addresses the use of an indicator variable to represent ineffective ICFR, which treats the existence of one control weakness the same as the existence of many control weaknesses. In practice, a collection of control weaknesses could have a greater impact on contemporaneous misstatement risk than a single control weakness. To ensure this has not biased my results, I replace the indicator variable for a material weakness in ICFR with a count of the number of financial accounts with control weaknesses. Results, presented in Appendix W, yield

similar inferences as my primary tests. Since financial service companies and utility companies may have different financial reporting environments than companies in other industries, my fourth robustness test excludes these companies from my primary analyses by eliminating observations with two-digit SICs from 60-69 and 49 (Beck et al. 2016). Results, presented in Appendix X, show that the inferences from these analyses remain unchanged. My fifth and final robustness test ensures my choice of empirical model estimators is not responsible for my findings. My primary tests use maximum likelihood estimation, but re-performing these tests using three stage least squares estimation yields similar inferences. Results are presented in Appendix Y.

4.6 Other Considerations

Because the non-timely discovery of MWs and the misstatement risk that accompanies it is undesirable from the standpoint of all parties involved (regulators, auditors, clients, and investors) my findings could be viewed as evidence of unintended consequences of permitting auditors to exercise judgment regarding whether and how to expand control testing procedures upon the discovery of an initial MW. However, there are costs associated with requiring auditors to perform a prescribed level of control testing procedures upon the discovery of an initial MW. Since the existence of one MW increases the likelihood of, but does not guarantee, the existence of additional MWs, auditors adhering to a prescribed level of control testing procedures upon the discovery of the initial MW would often increase audit costs while yielding no benefit. In structuring AS 2 and AS 5, the PCAOB may have determined that the costs of mandatory control testing expansion outweighed the costs of MW discovery lag, in which case permitting such lag to occur would be the rational choice to incorporate into standards and represent an intended consequence.

Similarly, my findings do not indicate whether auditors are behaving optimally, or whether auditing standards induce optimal behavior. Benchmarking optimal behavior with respect to ICFR

testing goes far beyond the scope of this study, which provides evidence about the underlying reasons auditors' MW disclosures may not accurately represent the true state of ICFR among issuers, as well as the adverse consequence of these misrepresentations, but does not provide evidence whether these adverse consequences are non-optimal.

Finally, it is possible that MW discovery lag could be explained by a temporal auditor learning mechanism, rather than a postponement of actions the auditor already knows how to do. Regarding this possibility, experimental evidence suggests the majority of auditors know how to make appropriate adjustments, at least substantively, in response to the discovery of an MW (Mauldin and Wolfe 2014). For the minority of auditors who make inappropriate adjustments, there is no evidence that they are aware the adjustments are inappropriate. This means that without a feedback mechanism to point out their mistakes, these auditors will continue to make the same inappropriate adjustments year after year. The three most likely ways an auditor will receive feedback regarding inappropriate adjustments are 1) from a supervisor reviewing his or her work, 2) from the client restating its financial reports due to a misstatement in the area which received testing adjustments, and 3) from an external inspector, such as the PCAOB.

Regarding the first possibility, supervisors review auditors' work during the course of the audit, so any learning will take place prior to the audit's completion rather than during the following year's audit. Regarding the second possibility, my research design ensures misstatements have not yet been revealed at the time control testing is expanded to find lagged MWs. Regarding the third possibility, survey evidence suggests that PCAOB inspection findings for a year t audit are not sufficiently timely or sufficiently prescriptive to implement in year t+1 (Johnson et al. 2016). Also, audit firm response memos to inspection findings indicate that auditors often disagree when the

PCAOB findings involve an activity, such as the decision of whether and how to expand control testing procedures, that requires the auditor to exercise professional judgment.[11]

[11] See PCAOB inspection response memos for Ernst & Young's 2003 inspection, PricewaterhouseCoopers' 2007 inspection, and Deloitte & Touche's 2009 inspection for examples of disagreement.

5. Conclusion

In this study, I use a series of path analyses to provide new insights about the association between control risk and contemporaneous financial misstatement risk. I propose and find that the previously documented positive association between MWs in year t and financial misstatements in year t is mediated by MWs which exist in year t, but remain undiscovered for up to three additional years. I show that this MW discovery lag results from a combination of factors, including auditors adhering to auditing standards that allow them to delay control testing expansions upon the discovery of an initial MW until the subsequent year, and auditors operating in a time and resource constrained environment.

My findings are informative to the PCAOB, which tasked academics in 2015 with exploring whether "the current level of management and auditor disclosure of material weaknesses reasonably reflect(s) the state of ICFR among issuers" and whether all MWs are "being properly identified and disclosed." My results suggest that, consistent with prior literature, not all MWs are properly identified and disclosed, and, as a new contribution, those which are disclosed do not accurately reflect the true state of ICFR among issuers. Instead, disclosed MWs reflect control risk which will not have an adverse impact on the financial statements on average, as it has been mitigated by the auditor through expanded substantive testing procedures. Meanwhile, disclosed MWs do not reflect additional control risk that exists, but will be discovered with lag, leaving the financial statements susceptible to material error.

My findings are also relevant to auditors and their clients, who may wish to reduce MW discovery lag and avoid the negative reputational and financial penalties such lag could foster. Finally, my findings should be of interest to academics, as they identify an omitted correlated variable in existing financial misstatement models that refines the inferences of results from those models. They also open the door for future research to explore other ways in which the differential

classification of auditor actions by the PCAOB as presumptively mandatory responsibilities or responsibilities to consider can affect integrated audit and financial reporting outcomes.

Appendix A: Variable Definitions

This appendix defines the variables used in regression analysis. Financial and client characteristic variables were obtained from the Compustat North America Annual database. Audit engagement and auditor characteristic variables were obtained from the Audit Analytics Audit and Compliance databases. Market variables were obtained from the CRSP daily and CRSP monthly databases. Institutional ownership information was obtained from Thompson-Reuters.

	Category: InherentRisk
BTM	The client's book to market ratio.
ClientAge	The number of years since a client's first Compustat observation.
Complex	Client complexity, calculated as the sum of inventory and receivables, scaled by total assets.
Coverage	The client's interest coverage, calculated as total interest expense scaled by operating income. Negative values and values greater than two are set equal to two, consistent with Zhao et al. (2015).
Debt	The client's total debt scaled by total assets.
DeltaCashSale	The year over year change in the client's cash sales.
DeltaEBIT	The year over year change in the client's reported EBIT.
DeltaReceivable	The year over year change in the client's receivables.
DiscAcc	The client's discretionary accruals, calculated using a Dechow et al. (1995) modified Jones model.
ExtraDiscOps	An indicator variable equal to one if the client reported extraordinary items or discontinued operations, and equal to zero otherwise.
ForeignOps	The natural log of the client's income from foreign operations plus one.
InstOwn	The client's average institutional ownership percentage in a given year.
Issue	An indicator variable equal to one if the client issued stock in excess of $10 M or debt in excess of $1 M, and equal to zero otherwise.
Lease	An indicator variable equal to one if the client reports capital lease obligations on its balance sheet (Compustat variable mrct), and equal to zero otherwise.
Liquid	The client's liquidity, calculated as the ratio of current assets to current liabilities.
LnIntangibles	The natural log of the client's intangible assets plus one.
Loss	An indicator variable equal to one if the client had negative net income, and equal to zero otherwise.
Pension	An indicator variable equal to one if the client has pension plan asset or pension benefit obligation values greater than zero in the Compustat Pension Annual Update File, and equal to zero otherwise.
PEratio	The client's year-end price to earnings ratio.
PosAccrual	An indicator variable equal to one if the client's net accruals are greater than zero, and equal to zero otherwise.
ROA	The client's return on assets.
Size	The client's size, calculated as the natural log of total assets plus one.
SoftAssets	The sum of the client's assets other than PPE, cash, and short term investments, scaled by total assets.
SqEmp	The square root of the client's number of employees.
TotalAccruals	The client's total accruals, measured as the year over year change in the net of total assets other than cash and the sum of total liabilities plus preferred stock, all scaled by average total assets.
TradeRec	The client's trade receivables, scaled by total assets.
	Category: DetectionRisk
AbnAudFee	Abnormal audit fees, calculated as the residual from an audit fee determinant model adapted from Ghosh and Lustgarten (2006) and Craswell and Francis (1999).

AudLagPercent	Audit lag, calculated as the days between the client's fiscal year end and the signature date on the audit report, if available, or the filing date of the financial statements with the SEC, if the signature date is not available, scaled by the client's allowed days to file (60 days for large accelerated filers after December 15, 2006, 75 days for accelerated filers and large accelerated filers after December 15, 2003 (and before December 15, 2006 for large accelerated filers), and 90 days for non-accelerated filers and accelerated/large accelerated filers prior to December 15, 2003).
ClientImportance	The proportion of a specific client's audit fees to the total audit fees received by the client's auditor in a given year.
Cur402	An indicator variable equal to one if an Item 4.02 financial restatement was filed in the current year per the Audit Analytics non-reliance database, and equal to zero otherwise. I include indicators for any restatement identified and specifically Item 4.02 restatements identified in my models as these may result in additional scrutinization of controls by the auditor (Hoitash et al. 2008).
CurRestate	An indicator variable equal to one if any financial restatement was filed in the current year per the Audit Analytics non-reliance database, and equal to zero otherwise. I include indicators for any restatement identified and specifically Item 4.02 restatements identified in my models as these may result in additional scrutinization of controls by the auditor (Hoitash et al. 2008).
DecYrEnd	An indicator variable equal to one if the client has a December fiscal year end, and equal to zero otherwise.
LnAssureFee	The natural log of assurance (non-audit, non-tax) fees per the Audit Analytics audit fee database plus one.
LnTaxFee	The natural log of tax fees per the Audit Analytics audit fee database plus one.
Miss10K	An indicator variable equal to one if the client did not file its annual financial statements by its filing deadline (60 days for large accelerated filers, 75 days for accelerated filers, and 90 days for non-accelerated filers following the fiscal year end), and equal to zero otherwise.
SECoffice	An indicator variable equal to one if the client's headquarters are located in a state with an SEC regional office, and equal to zero otherwise.
	Other
CARForecastEarn	The client's cumulative abnormal returns between the latest analyst consensus earnings forecast and the day after the earnings announcement (the window during which an MW is likely to be disclosed to the market according to SEC 2009 survey data).
CurMisstate	An indicator variable equal to one if the current financial statements were restated in year t+2 or later per the Audit Analytics non-reliance database, and equal to zero otherwise. Technical restatements (those related to changes in accounting standards, revisions, etc.) are excluded from this measure. Note that in analyses which include MWs up to year t+3, restatements are further restricted to year t+4 or later to control for reverse causality.
EarnSurprise	The differences between reported earnings and the latest analyst consensus forecast.
EffortFactor	The factor score obtained from performing a factor analysis on AbnAudFee and AudLag (see Appendix C).
	An indicator variable equal to one if the client's internal controls were originally deemed ineffective by the independent auditor, and equal to zero otherwise. When measured at time t+n, only reflects new internal control weaknesses (i.e. those not identified in year t).
MW	The parent of three subcategories: entity-level MWs, account-level MWs, and combined entity-level and account-level MWs. Entity-level MWs are those related to controls over year-end adjustments, training, account reconciliations, information technology, segregation of duties, non-routine transactions, journal entries, consolidations, and intercompany transactions. Account-level MWs are those related to controls over specific accounts (e.g. revenue, payroll, fixed assets, etc.) and exclude MWs for reasons other than errors and irregularities, such as those arising from changes in GAAP or the adoption of new standards. Combined MWs are those comprised of at least one entity-level MW and at least one account-level MW occurring in tandem. See Appendix H for additional details.
TotAudFee	The natural log of audit fees per the Audit Analytics audit fee database plus one.
USAR	An indicator variable equal to one if the auditor issued a standard audit report without explanatory language, and equal to zero otherwise.

Appendix B: Pearson and Spearman Correlations (Complete)

This table presents the Pearson (bottom half) and Spearman (top half) correlations between the primary variables of interest, client characteristics, and audit characteristics used in regression analysis. All variables are defined in Appendix A. The symbols ***, **, and * are used to denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	variables	1	2	3	4	5	6	7	8	9
1	CurMisstate	1.000	-0.012	0.062***	0.006	0.022**	0.009	0.004	0.008	-0.005
2	BTM	-0.018*	1.000	0.114***	0.064***	0.013	-0.017	-0.195***	-0.147***	-0.170***
3	ClientAge	-0.049***	0.037***	1.000	0.144***	0.150***	0.034***	-0.202***	-0.016	-0.153***
4	Complex	-0.016	0.069***	0.084***	1.000	-0.194***	0.017	0.016	0.029***	0.047***
5	Debt	0.016	-0.134***	0.077***	-0.221***	1.000	-0.002	-0.093***	-0.005	-0.071***
6	DiscAcc	-0.008	0.001	0.020*	-0.013	0.044***	1.000	0.011	0.005	0.019*
7	DeltaCashSale	0.047***	-0.096***	-0.163***	-0.017	-0.050***	-0.030***	1.000	0.387***	0.499***
8	DeltaEBIT	-0.016	-0.044***	0.007	0.010	0.004	-0.015	0.102***	1.000	0.244***
9	DeltaReceivable	0.030***	-0.103***	-0.152***	-0.029***	-0.014	0.001	0.362***	0.068***	1.000
10	Coverage	0.041***	-0.054***	-0.196***	-0.123***	-0.005	0.026**	-0.005	-0.065***	0.059***
11	MfgFactor	0.011	-0.037***	-0.019*	0.230***	-0.207***	0.084***	0.044***	-0.020*	0.040***
12	InstOwn	-0.029***	0.043***	0.054***	0.077***	0.046***	-0.010	-0.040***	0.012	-0.076***
13	Issue	-0.005	-0.031***	0.188***	-0.101***	0.326***	0.009	0.060***	0.049***	0.055***
14	Lease	0.009	-0.023**	-0.210***	0.150***	-0.031***	-0.017	0.010	0.006	0.010
15	Liquid	0.024**	0.009	-0.247***	-0.025**	-0.290***	0.045***	0.051***	-0.021*	0.074***
16	ForeignOps	-0.037***	-0.035***	0.316***	0.158***	-0.014	-0.004	-0.051***	0.032***	-0.080***
17	LnIntangibles	-0.028**	0.009	0.277***	-0.008	0.220***	-0.057***	-0.083***	0.036***	-0.097***
18	Loss	0.039***	0.052***	-0.175***	-0.125***	0.078***	0.059***	-0.070***	-0.134***	0.034***
19	Pension	-0.050***	0.047***	0.534***	0.129***	0.165***	0.003	-0.130***	0.020*	-0.139***
20	PEratio	0.005	-0.021*	-0.064***	0.069***	-0.108***	-0.024**	0.031***	0.035***	0.024**
21	PosAccrual	0.006	-0.012	-0.004	0.075***	-0.079***	-0.021**	0.155***	0.065***	0.149***
22	ROA	-0.046***	-0.044***	0.150***	0.200***	-0.019*	-0.073***	0.050***	0.088***	-0.098***
23	TradeRec	-0.012	-0.015	0.027**	0.780***	-0.247***	-0.053***	0.014	0.018*	0.011
24	Size	-0.054***	0.053***	0.498***	-0.136***	0.315***	-0.012	-0.097***	0.038***	-0.109***
25	SoftAssets	-0.008	0.035***	0.075***	0.534***	-0.055***	-0.091***	-0.050***	0.021*	-0.063***
26	SqEmp	-0.044***	-0.017	0.460***	0.061***	0.119***	-0.014	-0.108***	0.032***	-0.108***
27	TotalAccruals	0.022**	-0.022**	-0.079***	0.039***	-0.144***	0.007	0.252***	0.083***	0.252***
28	ExtraDiscOps	-0.008	0.052***	0.223***	-0.029***	0.143***	0.003	-0.124***	-0.005	-0.101***
29	MW (t)	0.089***	-0.012	-0.059***	0.024**	-0.027**	-0.043***	0.030***	-0.052***	0.021*
30	DecYrEnd	0.007	-0.016	-0.041***	-0.161***	0.129***	0.025**	0.043***	-0.015	0.052***
31	ClientImportance	0.020*	0.004	-0.030***	0.043***	-0.039***	0.019*	0.039***	-0.014	0.047***
32	LnAssureFee	0.001	-0.026**	0.286***	-0.010	0.135***	-0.013	-0.040***	0.044***	-0.038***
33	LnTaxFee	0.021*	-0.006	0.204***	0.042***	0.072***	-0.021**	-0.052***	0.011	-0.048***
34	AbnAudFee	0.016	-0.007	0.045***	0.172***	-0.062***	-0.056***	-0.007	-0.024**	-0.034***
35	AudLagPercent	0.076***	-0.072***	-0.026**	-0.002	0.033***	-0.034***	0.086***	0.008	0.075***
36	Miss10K	0.087***	-0.070***	-0.077***	-0.025**	0.009	-0.041***	0.100***	0.017	0.093***
37	Cur402	0.038***	-0.014	-0.060***	-0.001	0.014	0.002	0.017	0.012	0.008
38	CurRestate	0.043***	0.001	-0.052***	-0.007	0.014	0.003	0.014	0.004	0.008
39	SECoffice	0.012	-0.007	-0.143***	-0.013	-0.101***	-0.030***	0.057***	-0.015	0.031***
40	CARForecastEarn	-0.005	0.044***	-0.011	0.047***	0.001	-0.007	0.028***	0.048***	0.022**
41	EarnSurprise	-0.011	-0.018	0.017	-0.012	-0.085***	0.004	0.027**	0.052***	0.023**
42	USAR	0.003	-0.006	-0.088***	0.025**	-0.059***	-0.023**	0.025**	0.003	0.023**
43	MW (t+1)	0.201***	-0.009	-0.062***	0.002	-0.009	-0.030***	0.026**	-0.024**	0.045***
44	EffortFactor	0.048***	-0.041***	0.020*	0.137***	-0.035***	-0.063***	0.037***	-0.016	0.009

	variables	10	11	12	13	14	15	16	17	18
1	CurMisstate	0.026**	0.004	0.000	0.021*	0.017	-0.010	0.009	0.004	0.016
2	BTM	0.075***	-0.107***	0.031***	-0.028***	-0.049***	0.016	-0.034***	0.058***	0.019*
3	ClientAge	-0.029***	-0.139***	0.048***	0.175***	-0.015	-0.217***	0.263***	0.262***	-0.063***
4	Complex	-0.169***	0.273***	0.088***	-0.068***	0.122***	0.187***	0.252***	0.010	-0.084***
5	Debt	0.460***	-0.358***	0.083***	0.331***	-0.028***	-0.404***	0.009	0.318***	0.007
6	DiscAcc	-0.007	0.012	-0.035***	0.007	0.024**	0.046***	0.035***	-0.031***	-0.015
7	DeltaCashSale	-0.137***	0.077***	-0.010	0.051***	0.024**	0.060***	-0.036***	-0.071***	-0.129***
8	DeltaEBIT	-0.130***	-0.006	0.029***	0.069***	0.018*	-0.016	0.037***	0.053***	-0.182***
9	DeltaReceivable	-0.105***	0.067***	-0.030***	0.058***	-0.003	0.051***	-0.039***	-0.045***	-0.074***
10	Coverage	1.000	-0.114***	-0.072***	0.085***	-0.032***	-0.188***	-0.114***	0.028**	0.259***
11	MfgFactor	0.120***	1.000	0.067***	-0.137***	0.103***	0.473***	0.148***	0.012	0.116***
12	InstOwn	-0.171***	0.027**	1.000	0.081***	0.088***	0.016	0.194***	0.241***	-0.076***
13	Issue	-0.124***	-0.107***	0.105***	1.000	0.005	-0.261***	0.136***	0.284***	-0.042***
14	Lease	0.025**	0.101***	0.138***	-0.024**	1.000	0.068***	0.129***	0.099***	0.018*
15	Liquid	0.181***	0.343***	-0.040***	-0.268***	0.057***	1.000	-0.015	-0.359***	0.082***
16	ForeignOps	-0.189***	0.135***	0.210***	0.221***	0.172***	-0.151***	1.000	0.424***	-0.086***
17	LnIntangibles	-0.241***	-0.059***	0.255***	0.321***	0.144***	-0.361***	0.495***	1.000	-0.133***
18	Loss	0.459***	0.162***	-0.140***	-0.078***	0.061***	0.142***	-0.169***	-0.204***	1.000
19	Pension	-0.230***	-0.008	0.111***	0.208***	-0.099***	-0.289***	0.370***	0.336***	-0.195***
20	PEratio	-0.141***	0.017	0.012	-0.122***	-0.008	0.080***	-0.093***	-0.125***	-0.207***
21	PosAccrual	-0.135***	-0.050***	-0.011	0.037***	-0.044***	-0.033***	-0.014	0.006	-0.300***
22	ROA	-0.521***	-0.207***	0.228***	0.033***	0.007	-0.170***	0.228***	0.257***	-0.616***
23	TradeRec	-0.115***	0.080***	0.056***	-0.125***	0.141***	-0.096***	0.121***	0.021*	-0.126***
24	Size	-0.291***	-0.218***	0.254***	0.436***	-0.079***	-0.419***	0.541***	0.693***	-0.266***
25	SoftAssets	-0.183***	0.128***	0.192***	0.049***	0.207***	-0.240***	0.244***	0.548***	-0.167***
26	SqEmp	-0.213***	-0.065***	0.159***	0.275***	0.080***	-0.317***	0.541***	0.616***	-0.193***
27	TotalAccruals	-0.118***	-0.014	-0.027**	0.022**	-0.011	-0.004	-0.026**	-0.002	-0.239***
28	ExtraDiscOps	-0.040***	-0.091***	0.079***	0.128***	-0.023**	-0.155***	0.075***	0.194***	-0.024**
29	MW (t)	0.077***	0.016	-0.054***	-0.035***	0.018*	0.009	-0.047***	-0.044***	0.101***
30	DecYrEnd	0.027**	-0.068***	-0.037***	0.077***	-0.024**	-0.051***	-0.030***	-0.005	0.056***
31	ClientImportance	0.049***	0.004	-0.153***	-0.043***	-0.040***	0.059***	-0.044***	-0.097***	0.044***
32	LnAssureFee	-0.138***	-0.070***	0.137***	0.213***	0.010	-0.217***	0.300***	0.379***	-0.120***
33	LnTaxFee	-0.142***	0.033***	0.140***	0.141***	0.037***	-0.135***	0.334***	0.303***	-0.114***
34	AbnAudFee	0.015	0.055***	-0.050***	-0.028**	0.083***	-0.087***	0.169***	0.077***	-0.033***
35	AudLagPercent	0.030***	0.012	-0.031***	0.045***	0.008	-0.027**	-0.021*	-0.023**	0.002
36	Miss10K	0.037***	-0.007	-0.018*	0.058***	0.022**	-0.020*	-0.039***	0.013	0.001
37	Cur402	0.047***	0.008	-0.011	-0.012	0.019*	-0.001	-0.033***	-0.019*	0.070***
38	CurRestate	0.054***	-0.007	-0.025**	-0.017	0.005	-0.010	-0.042***	-0.022**	0.077***
39	SECoffice	0.099***	0.054***	-0.004	-0.044***	0.086***	0.126***	0.012	-0.005	0.094***
40	CARForecastEarn	-0.052***	-0.001	0.022**	0.016	0.011	-0.031***	0.023**	0.018*	-0.043***
41	EarnSurprise	-0.102***	0.023**	0.018*	-0.013	-0.014	0.027**	0.028***	0.014	-0.166***
42	USAR	0.033***	0.023**	-0.124***	-0.090***	0.022**	0.093***	-0.097***	-0.112***	0.015
43	MW (t+1)	0.054***	0.009	-0.053***	-0.019*	0.003	0.025**	-0.051***	-0.045***	0.042***
44	EffortFactor	0.027**	0.049***	-0.052***	-0.000	0.074***	-0.078***	0.124***	0.053***	-0.026**

	variables	19	20	21	22	23	24	25	26	27
1	CurMisstate	0.012	-0.010	-0.000	-0.002	0.010	0.005	0.006	0.013	0.005
2	BTM	0.081***	0.014	0.014	-0.274***	-0.029***	0.109***	0.086***	0.063***	-0.045***
3	ClientAge	0.423***	-0.108***	0.041***	0.130***	0.090***	0.434***	0.084***	0.431***	-0.086***
4	Complex	0.148***	0.206***	0.069***	0.236***	0.829***	-0.121***	0.527***	0.189***	0.076***
5	Debt	0.226***	-0.177***	-0.036***	-0.036***	-0.233***	0.457***	0.004	0.298***	-0.117***
6	DiscAcc	0.024**	-0.026**	0.037***	0.018*	-0.006	-0.008	-0.041***	-0.007	0.066***
7	DeltaCashSale	-0.121***	0.148***	0.172***	0.167***	0.066***	-0.098***	-0.020*	-0.131***	0.318***
8	DeltaEBIT	0.020*	0.099***	0.130***	0.312***	0.054***	0.055***	0.049***	0.051***	0.196***
9	DeltaReceivable	-0.104***	0.115***	0.197***	0.072***	0.102***	-0.080***	0.017	-0.094***	0.336***
10	Coverage	0.013	-0.292***	-0.087***	-0.458***	-0.225***	0.069***	-0.079***	-0.025**	-0.165***
11	MfgFactor	-0.137***	-0.001	-0.043***	-0.090***	0.209***	-0.296***	0.329***	-0.182***	0.009
12	InstOwn	0.068***	0.082***	-0.007	0.150***	0.078***	0.249***	0.174***	0.254***	-0.012
13	Issue	0.162***	-0.137***	0.046***	0.063***	-0.071***	0.375***	0.062***	0.287***	0.027**
14	Lease	-0.000	0.001	-0.015	0.041***	0.113***	-0.005	0.132***	0.075***	-0.000
15	Liquid	-0.235***	0.146***	-0.034***	-0.034***	0.095***	-0.479***	-0.113***	-0.384***	0.035***
16	ForeignOps	0.292***	-0.130***	-0.004	0.194***	0.220***	0.416***	0.254***	0.455***	-0.029***
17	LnIntangibles	0.302***	-0.229***	0.008	0.186***	0.043***	0.707***	0.530***	0.683***	-0.036***
18	Loss	-0.123***	-0.304***	-0.179***	-0.423***	-0.096***	-0.174***	-0.106***	-0.170***	-0.204***
19	Pension	1.000	-0.089***	0.035***	0.130***	0.068***	0.451***	0.133***	0.434***	-0.054***
20	PEratio	-0.067***	1.000	0.128***	0.238***	0.236***	-0.344***	0.101***	-0.220***	0.189***
21	PosAccrual	0.006	0.049***	1.000	0.164***	0.062***	0.009	0.087***	0.005	0.663***
22	ROA	0.184***	0.135***	0.182***	1.000	0.250***	0.190***	0.206***	0.291***	0.218***
23	TradeRec	0.016	0.080***	0.071***	0.206***	1.000	-0.156***	0.506***	0.164***	0.088***
24	Size	0.504***	-0.177***	0.004	0.287***	-0.169***	1.000	0.122***	0.784***	-0.079***
25	SoftAssets	0.153***	0.012	0.088***	0.260***	0.493***	0.121***	1.000	0.323***	0.100***
26	SqEmp	0.398***	-0.125***	-0.035***	0.220***	0.070***	0.728***	0.237***	1.000	-0.079***
27	TotalAccruals	-0.065***	0.074***	0.654***	0.191***	0.051***	-0.051***	0.097***	-0.070***	1.000
28	ExtraDiscOps	0.184***	-0.050***	-0.057***	0.032***	-0.038***	0.236***	0.083***	0.203***	-0.073***
29	MW (t)	-0.067***	0.033***	-0.037***	-0.073***	0.042***	-0.107***	0.023**	-0.065***	-0.005
30	DecYrEnd	0.029***	-0.051***	-0.012	-0.061***	-0.095***	0.084***	-0.143***	0.025**	0.007
31	ClientImportance	-0.083***	0.036***	0.009	-0.070***	0.032***	-0.133***	-0.007	-0.061***	0.034***
32	LnAssureFee	0.289***	-0.055***	0.004	0.138***	0.001	0.449***	0.166***	0.391***	-0.007
33	LnTaxFee	0.237***	-0.048***	-0.007	0.121***	0.012	0.333***	0.141***	0.300***	-0.019*
34	AbnAudFee	0.092***	0.034***	0.018*	-0.021*	0.192***	-0.095***	0.183***	-0.010	0.038***
35	AudLagPercent	-0.008	0.011	0.049***	-0.021**	0.007	-0.038***	-0.044***	-0.055***	0.067***
36	Miss10K	-0.031***	0.002	0.048***	-0.000	-0.009	-0.024**	0.011	-0.048***	0.065***
37	Cur402	-0.048***	0.006	-0.021**	-0.049***	-0.006	-0.051***	0.011	-0.039***	-0.027**
38	CurRestate	-0.037***	0.003	-0.024**	-0.052***	-0.009	-0.046***	0.007	-0.051***	-0.022**
39	SECoffice	-0.153***	-0.012	0.001	-0.095***	0.012	-0.083***	0.013	-0.106***	0.023**
40	CARForecastEarn	0.023**	0.006	0.027**	0.068***	0.047***	0.018	0.039***	0.017	0.008
41	EarnSurprise	0.005	0.042***	0.100***	0.073***	0.020*	0.017	-0.007	0.010	0.101***
42	USAR	-0.122***	0.059***	-0.009	-0.012	0.025**	-0.157***	-0.021*	-0.104***	-0.006
43	MW (t+1)	-0.070***	0.031***	0.000	-0.046***	0.022**	-0.093***	0.012	-0.065***	0.026**
44	EffortFactor	0.070***	0.033***	0.038***	-0.027**	0.158***	-0.094***	0.131***	-0.039***	0.064***

	variables	28	29	30	31	32	33	34	35	36
1	CurMisstate	0.028***	0.032***	-0.014	0.013	-0.004	0.016	0.001	0.030***	0.032***
2	BTM	0.052***	-0.006	-0.018*	0.056***	-0.011	0.002	0.001	-0.086***	-0.050***
3	ClientAge	0.205***	0.068***	0.000	0.289***	0.294***	0.231***	0.008	-0.079***	0.012
4	Complex	0.005	0.033***	-0.096***	0.126***	-0.026**	0.095***	0.205***	-0.028***	0.000
5	Debt	0.133***	-0.018*	0.088***	0.146***	0.224***	0.151***	-0.043***	0.022**	0.018
6	DiscAcc	0.012	0.013	0.008	-0.000	0.012	-0.016	-0.020*	-0.010	-0.025**
7	DeltaCashSale	-0.117***	0.007	0.010	-0.061***	-0.042***	-0.054***	0.001	0.125***	0.073***
8	DeltaEBIT	-0.008	-0.017	-0.004	0.008	0.042***	0.033***	-0.021*	0.037***	0.030***
9	DeltaReceivable	-0.082***	-0.006	0.018*	-0.049***	-0.015	-0.029***	-0.011	0.120***	0.058***
10	Coverage	0.095***	0.008	0.059***	0.038***	0.022**	-0.027**	0.053***	0.039***	0.018*
11	MfgFactor	-0.077***	0.020*	-0.070***	-0.020*	-0.086***	0.040***	0.080***	-0.009	0.008
12	InstOwn	0.068***	-0.010	-0.016	0.021*	0.118***	0.142***	-0.047***	-0.033***	-0.003
13	Issue	0.107***	0.008	0.045***	0.157***	0.225***	0.174***	-0.010	0.055***	0.041***
14	Lease	0.006	0.013	-0.029***	0.024**	0.024**	0.056***	0.048***	0.006	0.006
15	Liquid	-0.145***	-0.008	-0.066***	-0.227***	-0.288***	-0.140***	-0.027**	-0.008	-0.013
16	ForeignOps	0.054***	0.015	-0.028***	0.373***	0.302***	0.408***	0.196***	-0.030***	-0.004
17	LnIntangibles	0.163***	-0.005	0.013	0.443***	0.488***	0.423***	0.075***	-0.007	0.026**
18	Loss	0.007	0.045***	0.038***	-0.064***	-0.088***	-0.097***	-0.021*	-0.008	-0.004
19	Pension	0.135***	0.013	0.033***	0.262***	0.308***	0.276***	0.079***	-0.048***	-0.000
20	PEratio	-0.054***	0.007	-0.081***	-0.167***	-0.220***	-0.139***	0.046***	0.046***	0.021**
21	PosAccrual	-0.014	-0.004	-0.001	0.001	0.013	0.000	0.018	0.041***	0.032***
22	ROA	-0.012	-0.031***	-0.030***	0.084***	0.101***	0.135***	-0.052***	-0.034***	0.002
23	TradeRec	-0.016	0.038***	-0.058***	0.111***	-0.003	0.074***	0.226***	0.004	0.011
24	Size	0.191***	-0.030***	0.070***	0.436***	0.557***	0.450***	-0.091***	-0.025**	0.014
25	SoftAssets	0.075***	0.030***	-0.087***	0.227***	0.185***	0.205***	0.176***	-0.022**	0.026**
26	SqEmp	0.189***	-0.001	0.029***	0.441***	0.500***	0.438***	0.014	-0.044***	0.024**
27	TotalAccruals	-0.047***	-0.019*	0.011	-0.021*	-0.028***	-0.043***	0.037***	0.087***	0.046***
28	ExtraDiscOps	1.000	0.038***	0.007	0.138***	0.155***	0.092***	0.081***	0.029***	0.042***
29	MW (t)	-0.001	1.000	0.010	0.047***	0.006	0.015	0.075***	0.079***	0.071***
30	DecYrEnd	0.035***	-0.020*	1.000	0.028***	0.047***	0.001	0.016	0.016	-0.010
31	ClientImportance	-0.035***	0.026**	-0.017	1.000	0.346***	0.233***	0.431***	0.000	0.027**
32	LnAssureFee	0.153***	-0.046***	0.027**	-0.049***	1.000	0.394***	0.073***	-0.001	0.034***
33	LnTaxFee	0.087***	-0.037***	-0.033***	-0.124***	0.293***	1.000	0.118***	0.014	0.027**
34	AbnAudFee	0.114***	0.201***	-0.006	0.047***	0.022**	0.055***	1.000	0.109***	0.072***
35	AudLagPercent	0.035***	0.234***	0.009	-0.026**	-0.012	0.018*	0.128***	1.000	0.397***
36	Miss10K	0.027**	0.233***	-0.030***	-0.017	0.026**	0.030***	0.126***	0.580***	1.000
37	Cur402	0.027**	0.188***	-0.018*	0.006	-0.029***	-0.017	0.105***	0.123***	0.115***
38	CurRestate	0.041***	0.175***	-0.013	0.004	-0.018*	-0.010	0.104***	0.130***	0.122***
39	SECoffice	-0.082***	0.035***	0.021**	0.029***	-0.079***	-0.084***	0.126***	0.028***	0.021*
40	CARForecastEarn	-0.007	-0.042***	-0.009	-0.016	0.009	-0.001	0.003	-0.020*	-0.005
41	EarnSurprise	-0.013	-0.044***	-0.018	-0.025**	-0.007	0.019*	-0.013	-0.026**	-0.021**
42	USAR	-0.117***	-0.024**	0.016	0.064***	-0.079***	-0.060***	-0.050***	-0.056***	0.006
43	MW (t+1)	-0.001	0.228***	-0.004	0.025**	-0.045***	-0.022**	0.118***	0.119***	0.107***
44	EffortFactor	0.108***	0.282***	0.001	0.025**	0.016	0.055***	0.872***	0.582***	0.391***

	variables	37	38	39	40	41	42	43	44
1	CurMisstate	0.014	0.002	0.005	0.007	-0.008	0.017	0.029***	-0.003
2	BTM	-0.006	0.001	-0.011	0.015	0.016	-0.019*	0.006	-0.035***
3	ClientAge	0.050***	0.036***	-0.107***	-0.008	-0.003	-0.042***	0.050***	-0.012
4	Complex	0.006	0.012	-0.006	0.068***	0.031***	0.017	0.027**	0.175***
5	Debt	0.005	0.004	-0.104***	0.007	-0.051***	-0.073***	-0.010	-0.020*
6	DiscAcc	0.000	0.008	-0.028***	0.024**	0.006	-0.025**	-0.006	-0.020*
7	DeltaCashSale	-0.011	-0.004	0.050***	0.059***	0.037***	0.032***	0.003	0.050***
8	DeltaEBIT	-0.004	0.008	-0.002	0.070***	0.095***	0.019*	-0.007	-0.000
9	DeltaReceivable	-0.012	-0.008	0.023**	0.052***	0.055***	0.024**	0.017	0.035***
10	Coverage	0.001	0.019*	-0.008	-0.033***	-0.078***	-0.039***	-0.021**	0.061***
11	MfgFactor	-0.005	-0.007	0.096***	0.005	0.065***	0.044***	0.026**	0.061***
12	InstOwn	0.014	0.000	-0.004	0.026**	0.019*	-0.103***	-0.011	-0.051***
13	Issue	0.011	-0.005	-0.029***	0.015	-0.015	-0.074***	0.015	0.005
14	Lease	0.001	0.003	0.035***	0.017	0.016	-0.017	0.010	0.024**
15	Liquid	-0.004	-0.021*	0.110***	-0.001	0.034***	0.099***	0.008	-0.021*
16	ForeignOps	0.002	-0.003	0.009	0.039***	0.057***	-0.062***	0.000	0.163***
17	LnIntangibles	-0.013	-0.003	-0.012	0.015	0.027**	-0.112***	-0.013	0.055***
18	Loss	0.001	0.011	0.068***	-0.038***	-0.072***	0.019*	0.004	-0.036***
19	Pension	0.003	-0.000	-0.108***	0.030***	0.018	-0.077***	0.003	0.069***
20	PEratio	-0.007	0.014	-0.024**	0.046***	0.029***	0.072***	0.027**	0.060***
21	PosAccrual	-0.006	0.004	0.003	0.026**	0.022**	-0.001	0.022**	0.039***
22	ROA	-0.013	-0.021*	-0.064***	0.069***	0.072***	0.017	0.002	-0.053***
23	TradeRec	0.011	0.003	0.008	0.065***	0.058***	0.008	0.021*	0.197***
24	Size	0.005	-0.013	-0.083***	0.020*	0.014	-0.140***	-0.023**	-0.085***
25	SoftAssets	-0.015	0.007	0.014	0.046***	0.027**	-0.026**	0.019*	0.133***
26	SqEmp	0.012	-0.007	-0.133***	0.040***	0.033***	-0.096***	-0.012	-0.003
27	TotalAccruals	-0.021**	-0.005	0.018*	0.028***	0.032***	-0.003	0.008	0.070***
28	ExtraDiscOps	0.027**	0.028***	-0.054***	-0.011	-0.007	-0.081***	0.003	0.072***
29	MW (t)	0.038***	0.046***	0.001	-0.025**	-0.012	-0.012	0.020*	0.085***
30	DecYrEnd	-0.001	-0.014	0.014	-0.014	-0.013	-0.003	-0.005	0.012
31	ClientImportance	0.011	0.027**	0.024**	0.008	0.007	-0.061***	0.018*	0.360***
32	LnAssureFee	-0.005	-0.005	-0.061***	0.007	-0.002	-0.101***	-0.002	0.057***
33	LnTaxFee	0.011	0.000	-0.079***	0.016	0.035***	-0.068***	-0.011	0.105***
34	AbnAudFee	0.011	0.069***	0.100***	0.004	0.018	-0.045***	0.022**	0.881***
35	AudLagPercent	0.035***	0.047***	0.024**	-0.024**	-0.048***	-0.034***	0.025**	0.492***
36	Miss10K	0.038***	0.031***	-0.000	-0.018*	-0.020*	0.002	0.012	0.216***
37	Cur402	1.000	0.103***	0.010	-0.007	-0.004	-0.012	0.034***	0.018*
38	CurRestate	0.688***	1.000	-0.015	0.005	0.003	-0.007	0.029***	0.082***
39	SECoffice	0.015	-0.002	1.000	-0.000	-0.001	-0.007	0.012	0.106***
40	CARForecastEarn	-0.008	-0.001	0.003	1.000	0.276***	0.004	0.003	-0.006
41	EarnSurprise	-0.016	-0.008	0.000	0.149***	1.000	0.004	0.011	0.001
42	USAR	-0.035***	-0.030***	0.012	0.012	0.030***	1.000	0.023**	-0.052***
43	MW (t+1)	0.062***	0.083***	0.028***	-0.026**	-0.035***	0.008	1.000	0.023**
44	EffortFactor	0.150***	0.152***	0.121***	-0.008	-0.025**	-0.067***	0.155***	1.000

Appendix C: Effort Factor Analysis

This appendix presents results of a principal-component factor analysis to construct the variable "Effort", which captures the commonality between Abnormal Audit Fees and Audit Report Lag. The factor retained as "Effort" is the only one which had an eigenvalue greater than one.

	Factor Loadings	Eigenvalue	Variance Explained
AbnAudFee	0.7277	1.059	0.5295
AudLagPercent	0.7277		

Appendix D: Sample Validity Test Using Three Day CAR

This table presents results from an alternate version of my sample validity test of market reactions to MWs using three day cumulative abnormal returns (-1,1) as the outcome variable. Results show that ineffective ICFR are associated with a -1% stock price reaction after controlling for earnings news. All regressions use clustered standard errors. T-statistics are presented in brackets. The symbols ***, **, and * are used to denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	Market Reaction
	CAR3Earn
MW	**-0.009***
	[-1.788]
EarnSurprise	0.732***
	[6.311]
Constant	-0.005
	[-0.302]
Observations	8648
Auditor FE	N
Industry FE	Y
Year FE	Y
R-Squared	0.0304

Appendix E: Misstatement to Ineffective ICFR Matching Table

This table shows the matching of misstated financial reporting areas to financial reporting areas affected by ineffective ICFR based on the taxonomies utilized in Audit Analytics. The table also identifies misstatements for which there is no equivalent ineffective ICFR category. The numbers in braces correspond to the misstatement and ineffective ICFR codes as reported in Audit Analytics.

Misstatement Code	Ineffective ICFR Code(s)	Description
|14|	|15| |57|	Accounts Receivable, Investments, and Cash
|10|	|35| |56|	Mergers & Acquisitions, Disposals, and
|45|	n/a	(subcategory of code 10)
|71|	|81|	Asset Retirements
|29|	|23|	Asset Classification
|23|	|14|	Expenditure Classification
|19|	|10|	Statement of Cash Flows Classification
|35|	unmapped	Accumulated Other Comprehensive Income
|13|	|24|	Consolidation
|26|	|25|	Debt Classification
|4|	|47|	Debt and Equity Computation
|17|	|27|	Compensation
|48|	n/a	(subcategory of code 17)
|39|	n/a	(subcategory of code 17)
|1|	|28|	Deprectiation and Amortization
|9|	|36|	Income Statement Classification and Computation
|7|	|29|	Expense Computation
|36|	|9| |64| |50|	Financial Statement Disclosures
|8|	|30|	Derivatives
|11|	|38|	Related Party Disclosures
|44|	n/a	(subcategory of code 11)
|38|	|40|	GAAP Conversion Errors
|22|	|31|	Gain and Loss Recognition
|24|	|8|	Intercompany Transactions
|43|	n/a	(subcategory of code 24)
|20|	|32|	Inventory and Cost of Goods Sold
|21|	|3|	Leases
|42|	n/a	(subcategory of code 21)
|12|	|33|	Liability Accruals
|69|	|80|	Pensions
|3|	|16|	Tangible and Intangible Asset Valuation
|46|	n/a	(subcategory of code 3)
|6|	|39|	Revenue Recognition
|18|	|41|	Taxes
|32|	n/a	(reason not specified)
|47|	unmapped	Recording of Auditor Adjustments
|31|	n/a	(subcategory of code 47)
|15|	unmapped	Financial Ratios
|27|	|34|	Convenant Violation Disclosures
|16|	|37|	Security Issuances

Appendix F: Figure 2 Path Analysis (Full Tabulation)

This table presents the fully tabulated results of a path analysis measuring the direct and indirect associations between ineffective ICFR and current financial misstatements identified at a later date using a sample of 8,648 firm years with unqualified audit opinions from 2004-2013 (1,128 observations are excluded from the single equation model due to perfect predictability). Odds ratio computation in a single equation regression shows that ineffective ICFR are associated with 95% higher odds of current financial misstatement, which translates to a 91% higher probability using the likelihood of financial misstatement absent ineffective ICFR for the sample as a baseline. Path analysis using a system of equations shows that 47% of this effect (45% higher odds; 43% higher probability) is mediated through additional ineffective ICFR reported in the subsequent year. All regressions use clustered standard errors. Z-statistics are presented in brackets. The symbols ***, **, and * are used to denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	Single Equation	Path Analysis	
	CurMisstate	MW (t+1)	CurMisstate
MW	**0.669*** **	**1.543*** **	**0.338**
	[2.777]	**[14.997]**	**[1.188]**
MW (t+1)			**2.151*** **
			[13.562]
USAR	-0.211		-0.180
	[-1.373]		[-1.176]
BTM (t+1, t)	0.092	0.157**	0.080
	[0.723]	[2.002]	[0.564]
ClientAge (t+1, t)	-0.001	-0.004	-0.001
	[-0.139]	[-1.036]	[-0.170]
Complex (t+1, t)	-1.311**	0.545	-1.276*
	[-1.964]	[0.805]	[-1.905]
Debt (t+1, t)	1.313***	0.672	1.282***
	[3.659]	[1.319]	[3.715]
DiscAcc (t+1, t)	0.013	-0.019	0.013
	[0.992]	[-0.678]	[0.864]
DeltaCashSale (t+1, t)	0.621***	0.392*	0.653***
	[3.579]	[1.718]	[3.882]
DeltaEBIT (t+1, t)	-0.052*	-0.119*	-0.049
	[-1.749]	[-1.756]	[-1.381]
DeltaReceivable (t+1, t)	-0.210***	-0.076	-0.294***
	[-2.647]	[-0.520]	[-2.916]
Coverage (t+1, t)	0.064	0.089	0.031
	[0.546]	[0.859]	[0.252]
InstOwn (t+1, t)	-0.031	-0.181	0.049
	[-0.213]	[-0.442]	[0.262]
Issue (t+1, t)	-0.004	0.097	-0.048
	[-0.024]	[0.369]	[-0.294]
Lease (t+1, t)	-0.076	-0.137	-0.047
	[-0.189]	[-0.434]	[-0.124]

Liquid (t+1, t)	-0.020	-0.074*	-0.042**
	[-0.745]	[-1.759]	[-2.286]
ForeignOps (t+1, t)	0.076	0.066	0.084
	[0.806]	[1.206]	[1.027]
LnIntangibles (t+1, t)	0.024	-0.038	0.048
	[0.213]	[-0.758]	[0.447]
Loss (t+1, t)	0.066	0.346**	0.037
	[0.240]	[2.040]	[0.141]
Pension (t+1, t)	-0.420	-0.457***	-0.349
	[-1.269]	[-2.751]	[-1.044]
PEratio (t+1, t)	0.042	0.072	0.028
	[1.044]	[1.592]	[0.747]
PosAccrual (t+1, t)	0.018	-0.799***	0.058
	[0.061]	[-2.595]	[0.207]
ROA (t+1, t)	-0.923*	-0.416	-1.126**
	[-1.876]	[-0.973]	[-2.490]
TradeRec (t+1, t)	0.839	-0.089	0.639
	[0.425]	[-0.098]	[0.295]
Size (t+1, t)	-0.098	-0.160	-0.134
	[-0.546]	[-1.622]	[-0.763]
SoftAssets (t+1, t)	0.058	0.709	-0.161
	[0.109]	[0.986]	[-0.292]
SqEmp (t+1, t)	-0.139*	-0.112*	-0.143*
	[-1.805]	[-1.805]	[-1.941]
TotalAccruals (t+1, t)	0.875*	2.206***	0.777
	[1.796]	[3.413]	[1.557]
ExtraDiscOps (t+1, t)	-0.016	0.203	-0.002
	[-0.072]	[1.023]	[-0.008]
DecYrEnd (t+1, t)	-0.256		-0.212
	[-1.225]		[-1.141]
ClientImportance	-22.309		-15.039
	[-0.820]		[-0.540]
LnAssureFee	0.001		0.007
	[0.077]		[0.540]
LnTaxFee	0.031*		0.030
	[1.902]		[1.608]
AbnAudFee	-0.187**		-0.358***
	[-2.288]		[-6.441]
AudLagPercent	1.024		0.710
	[1.003]		[0.702]
Miss10K	0.144		0.010
	[0.674]		[0.050]
Cur402 (t+1, t)	0.137	0.519	0.181
	[0.360]	[1.120]	[0.490]
CurRestate (t+1, t)	0.284	0.235	0.222
	[1.097]	[0.678]	[0.753]

SECoffice	0.068		0.054
	[0.344]		[0.238]
Intercept	-1.769	-0.513	-1.636
	[-1.185]	[-0.842]	[-0.991]
Observations	7520	8648	8648
Auditor Fixed Effects	Y	Y	Y
Industry Fixed Effects	Y	Y	Y
Year Fixed Effects	Y	Y	Y

Appendix G: Figure 3 Path Analysis (Full Tabulation)

This table presents the fully tabulated results of a multi-year path analysis measuring the direct and indirect associations between ineffective ICFR and current financial misstatements identified at a later date using a sample of 8,547 firm years with unqualified audit opinions from 2004-2013 (an additional 101 observations are discarded for this test due to restricting the timing of misstatement discovery to t+4 or later; 2,247 observations are excluded from the single equation model due to perfect predictability). Odds ratio computation in a single equation regression shows that ineffective ICFR are associated with 133% higher odds of current financial misstatement, which translates to a 129% higher probability using the likelihood of financial misstatement absent ineffective ICFR for the sample as a baseline. Path analysis using a system of equations shows that 52%, 19%, and 6% of this effect (69%, 25%, 8% higher odds; 67%, 24%, 8% higher probability) is mediated through additional ineffective ICFR reported in the subsequent first, second, and third year, respectively. Z-statistics are presented in brackets. All regressions use clustered standard errors. The symbols ***, **, and * are used to denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	Single Equation	Path Analysis					
	CurMisstate	MW (t+1)	MW (t+2)	MW (t+3)		CurMisstate	
MW	**0.845****	**1.624*****	**0.788****	**0.383**	**0.394**	**0.628**	**0.825***
	[1.989]	**[17.155]**	**[2.061]**	**[1.197]**	**[0.926]**	**[1.630]**	**[1.914]**
MW (t+1)			**1.440*****	**0.681****	**2.911*****		
			[5.433]	**[2.462]**	**[28.649]**		
MW (t+2)				**1.226*****		**2.231*****	
				[3.841]		**[7.736]**	
MW (t+3)							**1.741*****
							[7.480]
USAR	-0.335				-0.364	-0.393	-0.285
	[-1.496]				[-1.425]	[-1.521]	[-1.359]
BTM (t+n, t)	0.107	0.155*	0.229***	0.062	0.096	0.114	0.117
	[1.133]	[1.953]	[3.566]	[1.479]	[0.825]	[1.345]	[1.420]
ClientAge (t+n, t)	-0.012	-0.005	-0.005	-0.008	-0.011	-0.010	-0.012
	[-0.925]	[-1.209]	[-0.899]	[-0.768]	[-0.844]	[-0.853]	[-0.998]
Complex (t+n, t)	-0.567	0.580	0.361	-0.918	-0.612	-0.440	-0.626
	[-0.497]	[0.727]	[0.400]	[-0.703]	[-0.549]	[-0.464]	[-0.505]
Debt (t+n, t)	1.190*	0.689	1.117***	0.792**	1.054	0.940	1.018*
	[1.670]	[1.438]	[6.613]	[2.140]	[1.277]	[1.560]	[1.764]
DiscAcc (t+n, t)	0.010	-0.016	-0.005	-0.016	0.008	0.010	0.008
	[0.402]	[-0.563]	[-0.417]	[-1.560]	[0.295]	[0.452]	[0.342]
DeltaCashSale (t+n, t)	0.522**	0.375*	0.043	0.008	0.558***	0.598**	0.548**
	[2.325]	[1.770]	[0.202]	[0.028]	[2.955]	[2.555]	[2.269]
DeltaEBIT (t+n, t)	-0.071***	-0.121*	-0.047	-0.053	-0.072**	-0.079**	-0.079***
	[-3.049]	[-1.818]	[-0.778]	[-1.606]	[-2.171]	[-2.451]	[-3.640]
DeltaReceivable (t+n, t)	-0.341	-0.069	-0.074	0.020	-0.523*	-0.393*	-0.378
	[-1.308]	[-0.451]	[-0.562]	[0.133]	[-1.831]	[-1.712]	[-1.469]
Coverage (t+n, t)	0.012	0.147	0.226**	0.144	-0.042	-0.017	0.032
	[0.105]	[1.378]	[2.425]	[1.399]	[-0.278]	[-0.132]	[0.299]
InstOwn (t+n, t)	-0.026	-0.104	-0.570	-0.061	0.088	0.151	-0.042
	[-0.074]	[-0.267]	[-1.605]	[-0.234]	[0.291]	[0.398]	[-0.137]
Issue (t+n, t)	0.316	0.183	-0.216*	-0.180	0.281	0.336*	0.297
	[1.406]	[0.725]	[-1.768]	[-1.329]	[1.298]	[1.742]	[1.305]

Lease (t+n, t)	-0.342	-0.121	-0.290	0.108	-0.315	-0.318	-0.353
	[-0.936]	[-0.361]	[-1.229]	[0.548]	[-1.178]	[-1.290]	[-1.119]
Liquid (t+n, t)	-0.011	-0.072*	-0.016	-0.043	-0.058	-0.057	-0.017
	[-0.221]	[-1.744]	[-0.464]	[-0.970]	[-1.195]	[-1.204]	[-0.367]
ForeignOps (t+n, t)	0.063	0.062	0.105***	0.096	0.084	0.069	0.061
	[0.790]	[1.180]	[4.007]	[1.433]	[1.313]	[0.876]	[0.791]
LnIntangibles (t+n, t)	-0.127	-0.044	-0.017	-0.023	-0.094	-0.106	-0.134
	[-1.110]	[-0.903]	[-0.395]	[-0.702]	[-0.931]	[-0.981]	[-1.217]
Loss (t+n, t)	0.211	0.352*	0.147	0.206	0.204	0.256	0.185
	[0.367]	[1.828]	[0.812]	[1.162]	[0.327]	[0.517]	[0.344]
Pension (t+n, t)	-0.691	-0.420**	-0.462**	-0.006	-0.604	-0.599	-0.626
	[-1.392]	[-2.519]	[-2.128]	[-0.024]	[-1.092]	[-1.172]	[-1.262]
PEratio (t+n, t)	0.144*	0.069	0.076	0.141***	0.153**	0.124	0.160**
	[1.885]	[1.458]	[1.439]	[6.460]	[2.574]	[1.439]	[2.309]
PosAccrual (t+n, t)	-0.050	-0.782**	-0.776***	-0.316*	0.066	-0.186	-0.097
	[-0.167]	[-2.540]	[-5.647]	[-1.662]	[0.215]	[-0.594]	[-0.371]
ROA (t+n, t)	-1.250	-0.084	-0.704	-0.533	-1.741**	-1.112	-1.168
	[-1.584]	[-0.256]	[-1.174]	[-0.952]	[-1.965]	[-1.323]	[-1.645]
TradeRec (t+n, t)	-0.357	-0.200	0.042	1.032	-0.227	-1.103	-0.492
	[-0.204]	[-0.192]	[0.034]	[0.606]	[-0.105]	[-0.615]	[-0.260]
Size (t+n, t)	0.140	-0.182*	-0.181**	-0.337***	0.119	0.092	0.181
	[1.041]	[-1.898]	[-2.117]	[-3.096]	[0.701]	[0.604]	[1.159]
SoftAssets (t+n, t)	0.825	0.746	0.538	1.369***	0.399	0.790	0.784
	[0.951]	[1.052]	[1.104]	[3.355]	[0.388]	[0.923]	[0.960]
SqEmp (t+n, t)	-0.129	-0.101*	-0.060	-0.053	-0.155	-0.161	-0.150
	[-1.237]	[-1.677]	[-1.193]	[-0.668]	[-1.326]	[-1.492]	[-1.434]
TotalAccruals (t+n, t)	1.368*	2.101***	2.507***	0.717	1.166	1.421**	1.614**
	[1.726]	[3.472]	[3.308]	[1.075]	[1.286]	[2.118]	[2.078]
ExtraDiscOps (t+n, t)	-0.040	0.231	0.199	0.236**	-0.020	-0.056	-0.030
	[-0.174]	[1.176]	[1.177]	[2.242]	[-0.080]	[-0.227]	[-0.120]
DecYrEnd (t+n, t)	-0.327				-0.285	-0.352**	-0.335*
	[-1.536]				[-1.642]	[-1.978]	[-1.705]
ClientImportance	-52.063				-49.380	-51.973*	-51.665*
	[-1.548]				[-1.275]	[-1.700]	[-1.830]
LnAssureFee	0.016				0.025	0.019	0.020
	[0.661]				[1.142]	[0.918]	[0.858]
LnTaxFee	0.050***				0.042**	0.052***	0.047***
	[3.736]				[2.106]	[3.314]	[4.079]
AbnAudFee	-0.131				-0.442**	-0.316*	-0.178
	[-0.619]				[-2.546]	[-1.657]	[-0.829]
AudLagPercent	1.607**				0.997	1.431*	1.515*
	[2.010]				[1.138]	[1.947]	[1.904]
Miss10K	0.087				-0.097	0.080	0.021
	[0.325]				[-0.425]	[0.319]	[0.078]
Cur402 (t+n, t)	0.171	0.335	0.455*	0.412	0.289	0.143	0.021
	[0.387]	[0.694]	[1.924]	[0.945]	[0.625]	[0.314]	[0.044]
CurRestate (t+n, t)	0.224	0.227	0.465*	0.883***	0.044	0.308	0.383*
	[1.050]	[0.640]	[1.859]	[3.616]	[0.166]	[1.416]	[1.802]
SECoffice	-0.088				-0.129	-0.079	-0.120
	[-0.237]				[-0.284]	[-0.222]	[-0.345]

Intercept	-4.375***	-0.510	-1.811**	-1.303	-4.116***	-3.778***	-4.694***
	[-4.708]	[-0.792]	[-2.306]	[-0.975]	[-3.724]	[-4.199]	[-5.753]
Observations	6300	8547	8547	8547	8547	8547	8547
Auditor Fixed Effects	Y	Y	Y	Y	Y	Y	Y
Industry Fixed Effects	Y	Y	Y	Y	Y	Y	Y
Year Fixed Effects	Y	Y	Y	Y	Y	Y	Y

Appendix H: Ineffective ICFR Classification

This table shows the classification of ineffective ICFR into account-level and entity-level ICFR based on the taxonomy used in Audit Analytics. It also shows the ineffective ICFR that were excluded from my analyses due to lack of information or non-applicability with respect to my study. The numbers in braces correspond to the ineffective ICFR codes reported in Audit Analytics.

Entity Level	Account Level	Excluded from Analysis
|4| Year End Adjustments	|15| AR / Investments / Cash	|17| A "catch-all" category
|44| Training	|81| |23| |28| Assets (General)	|48| |68| Insufficient information
|12| Reconciliations	|14| Expense Capitalization	|87| Incomplete SOX 302 Assessment
|22| |52| IT	|37| |47| |25| Debt and Equity Securities	|86| No control assertion made
|42| |51| Segregation of Duties	|27| Executive Compensation	|69| |6| |7| |54| |60| No specific weakness disclosed
|10| |35| |53| |77| |56| Non-Routine Transactions	|29| Payroll	|61| Control of financial records handled by third party
|76| Journal Entries	|30| Derivatives	|45| |62| SOX 404 opinion disclaimer
|24| Consolidation	|38| Related Parties and Subsidiaries	|65| Unaudited Disclosures
|8| Intercompany Transactions	|31| |36| |39| Income Recognition and Classification	|55| Statement of Remediation
|83| General Entity Level Weaknesses	|32| Inventory and COGS	|49| Past or Pending Financial Restatement
|11| |70| Corporate Governance	|3| |73| Leases	|43| |59| |72| IC Opinion Revised / Reissued
|66| Size, Financial Constraint, Etc.	|33| Liabilities	|63| Previous MW
|21| |84| |85| Ethics and Fraud	|34| Loan Covenants	|20| |26| Scope Limitation
|40| |50| Financial Close & Statement Preparation	|80| Pensions	|1| |2| Exemptions from Opinion
|58| Management Review	|16| PPE / Long Term Assets	|79| Disagreement b/w management and auditor
|13| |67| Tone at the Top	|41| Taxes	|74| Voluntary Assessment
|82| Whistleblower Policy	|57| Treasury (Cash) Transactions	|71| Multiple 404 Filings
|9| |64| Disclosure Controls		|46| Reliance on other auditor
|19| Regulatory Compliance		|78| Unusual SOX 404 Filing
|18| Insufficient Internal Audit Function		|5| |75| ICW related to Financial Restatement / Revision

Appendix I: Figure 4 Path Analysis (Full Tabulation)

This table presents the fully tabulated results of a path analysis measuring the direct and indirect associations between ineffective ICFR that are remediated within a year and current financial misstatements identified at a later date using a sample of 8,560 firm years with unqualified audit opinions from 2004-2013 (1,123 observations are excluded from the single equation model due to perfect predictability). Odds ratio computation in a single equation regression shows that ineffective ICFR are associated with 30% higher odds of current financial misstatement, which translates to a 29% higher probability using the likelihood of financial misstatement absent ineffective ICFR for the sample as a baseline. Path analysis using a system of equations shows that none of the direct effect is mediated through additional ineffective ICFR reported in the subsequent year. Rather, the mediation effect increases the direct odds by an additional 32%. All regressions use clustered standard errors. Z-statistics are presented in brackets. The symbols ***, **, and * are used to denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	Single Equation	Path Analysis	
	CurMisstate	MW (t+1)	CurMisstate
MW	**0.259***	**-1.185*****	**0.501*****
	[1.725]	**[-2.833]**	**[3.147]**
MW (t+1)			**2.310*****
			[12.250]
USAR	-0.141		-0.124
	[-1.109]		[-0.881]
BTM (t+1, t)	0.101	0.239**	0.088
	[0.795]	[1.971]	[0.630]
ClientAge (t+1, t)	0.005	0.004	0.003
	[0.712]	[0.586]	[0.539]
Complex (t+1, t)	-0.753	1.388	-0.883
	[-1.186]	[1.343]	[-1.379]
Debt (t+1, t)	1.260***	0.879*	1.235***
	[3.962]	[1.846]	[3.674]
DiscAcc (t+1, t)	0.013	0.005	0.009
	[1.018]	[0.150]	[0.712]
DeltaCashSale (t+1, t)	0.604***	0.356	0.643***
	[3.843]	[1.537]	[3.958]
DeltaEBIT (t+1, t)	-0.064*	-0.118**	-0.054
	[-1.824]	[-2.243]	[-1.324]
DeltaReceivable (t+1, t)	-0.172**	-0.018	-0.250**
	[-2.154]	[-0.108]	[-2.441]
Coverage (t+1, t)	0.006	0.045	-0.016
	[0.052]	[0.363]	[-0.134]
InstOwn (t+1, t)	0.025	-0.073	0.099
	[0.106]	[-0.212]	[0.427]
Issue (t+1, t)	-0.004	0.092	-0.075
	[-0.026]	[0.382]	[-0.482]

Lease (t+1, t)	-0.223	-0.252	-0.172
	[-0.597]	[-0.859]	[-0.471]
Liquid (t+1, t)	-0.037	-0.116**	-0.052***
	[-1.218]	[-2.419]	[-2.666]
ForeignOps (t+1, t)	0.060	0.015	0.074
	[0.588]	[0.296]	[0.821]
LnIntangibles (t+1, t)	0.030	-0.024	0.043
	[0.234]	[-0.537]	[0.357]
Loss (t+1, t)	0.103	0.618***	0.087
	[0.402]	[3.670]	[0.356]
Pension (t+1, t)	-0.506	-0.357**	-0.436
	[-1.576]	[-2.009]	[-1.328]
PEratio (t+1, t)	0.034	0.090**	0.029
	[0.757]	[2.171]	[0.844]
PosAccrual (t+1, t)	0.023	-0.772**	0.056
	[0.078]	[-2.543]	[0.209]
ROA (t+1, t)	-1.108**	-0.471	-1.336***
	[-1.987]	[-0.902]	[-2.679]
TradeRec (t+1, t)	-0.363	-0.470	-0.182
	[-0.179]	[-0.312]	[-0.078]
Size (t+1, t)	-0.096	-0.170	-0.098
	[-0.501]	[-1.359]	[-0.553]
SoftAssets (t+1, t)	0.246	0.589	0.136
	[0.376]	[0.680]	[0.236]
SqEmp (t+1, t)	-0.210**	-0.219***	-0.205***
	[-2.368]	[-3.415]	[-2.711]
TotalAccruals (t+1, t)	0.682	2.258***	0.563
	[1.292]	[3.456]	[1.023]
ExtraDiscOps (t+1, t)	-0.099	0.019	-0.054
	[-0.395]	[0.085]	[-0.208]
DecYrEnd (t+1, t)	-0.287		-0.230
	[-1.077]		[-0.964]
ClientImportance	-10.643		-5.283
	[-0.299]		[-0.175]
LnAssureFee	0.007		0.009
	[0.496]		[0.653]
LnTaxFee	0.031		0.030
	[1.502]		[1.279]
AbnAudFee	-0.198***		-0.346***
	[-3.082]		[-6.476]
AudLagPercent	0.965		0.768
	[0.944]		[0.751]
Miss10K	0.152		0.081
	[1.056]		[0.755]
Cur402 (t+1, t)	0.541	1.004***	0.598
	[0.937]	[4.064]	[1.033]

CurRestate (t+1, t)	-0.066	0.479	-0.118
	[-0.153]	[1.495]	[-0.273]
SECoffice	0.121		0.074
	[0.742]		[0.377]
Intercept	-1.516	0.080	-2.007
	[-0.862]	[0.123]	[-1.072]
Observations	7437	8560	8560
Auditor Fixed Effects	Y	Y	Y
Industry Fixed Effects	Y	Y	Y
Year Fixed Effects	Y	Y	Y

Appendix J: Figure 5 Path Analysis (Full Tabulation)

This table presents the fully tabulated results of a path analysis measuring the direct and indirect associations between ineffective ICFR that are not remediated within a year and current financial misstatements identified at a later date using a sample of 8,339 firm years with unqualified audit opinions from 2004-2013 (1,098 observations are excluded from the single equation model due to perfect predictability). Odds ratio computation in a single equation regression shows that ineffective ICFR are associated with 320% higher odds of current financial misstatement, which translates to a 291% higher probability using the likelihood of financial misstatement absent ineffective ICFR for the sample as a baseline. Path analysis using a system of equations shows that all of this effect is mediated through additional ineffective ICFR reported in the subsequent year. All regressions use clustered standard errors. Z-statistics are presented in brackets. The symbols ***, **, and * are used to denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	Single Equation	Path Analysis	
	CurMisstate	MW (t+1)	CurMisstate
MW	**1.434*** **	**4.952*** **	**-0.114**
	[2.581]	**[18.151]**	**[-0.186]**
MW (t+1)			**2.275*** **
			[11.467]
USAR	-0.241*		-0.245*
	[-1.780]		[-1.661]
BTM (t+1, t)	0.114	0.249**	0.101
	[0.933]	[2.474]	[0.765]
ClientAge (t+1, t)	-0.000	0.001	-0.001
	[-0.022]	[0.094]	[-0.160]
Complex (t+1, t)	-1.551**	1.243	-1.586*
	[-2.055]	[1.067]	[-1.864]
Debt (t+1, t)	1.486***	1.042**	1.423***
	[3.866]	[2.350]	[3.625]
DiscAcc (t+1, t)	0.015	-0.002	0.012
	[1.076]	[-0.047]	[0.776]
DeltaCashSale (t+1, t)	0.569***	0.311	0.616***
	[3.190]	[1.325]	[3.705]
DeltaEBIT (t+1, t)	-0.053	-0.131*	-0.046
	[-1.435]	[-1.800]	[-1.042]
DeltaReceivable (t+1, t)	-0.252***	-0.102	-0.333***
	[-3.568]	[-0.515]	[-3.900]
Coverage (t+1, t)	0.045	0.106	0.005
	[0.280]	[0.808]	[0.031]
InstOwn (t+1, t)	0.144	-0.157	0.242*
	[1.095]	[-0.398]	[1.757]
Issue (t+1, t)	-0.030	0.089	-0.072
	[-0.204]	[0.353]	[-0.475]

Lease (t+1, t)	-0.106	-0.197	-0.063
	[-0.241]	[-0.628]	[-0.148]
Liquid (t+1, t)	-0.011	-0.098**	-0.023
	[-0.470]	[-2.325]	[-1.390]
ForeignOps (t+1, t)	0.052	0.019	0.060
	[0.552]	[0.402]	[0.744]
LnIntangibles (t+1, t)	0.061	-0.025	0.080
	[0.612]	[-0.604]	[0.849]
Loss (t+1, t)	0.045	0.277	0.073
	[0.219]	[1.359]	[0.375]
Pension (t+1, t)	-0.379	-0.458**	-0.289
	[-1.050]	[-2.237]	[-0.798]
PEratio (t+1, t)	0.061	0.075	0.046
	[1.524]	[1.214]	[1.305]
PosAccrual (t+1, t)	-0.006	-0.924***	0.037
	[-0.023]	[-2.815]	[0.146]
ROA (t+1, t)	-0.580	-0.280	-0.813*
	[-1.218]	[-0.508]	[-1.910]
TradeRec (t+1, t)	1.169	-0.872	1.356
	[0.649]	[-0.636]	[0.624]
Size (t+1, t)	-0.181	-0.200	-0.189
	[-1.044]	[-1.629]	[-1.141]
SoftAssets (t+1, t)	-0.152	0.526	-0.312
	[-0.337]	[0.697]	[-0.705]
SqEmp (t+1, t)	-0.132	-0.178***	-0.132*
	[-1.639]	[-3.352]	[-1.808]
TotalAccruals (t+1, t)	0.994**	2.786***	0.928**
	[2.312]	[5.170]	[2.131]
ExtraDiscOps (t+1, t)	-0.115	0.163	-0.089
	[-0.534]	[0.731]	[-0.386]
DecYrEnd (t+1, t)	-0.248		-0.207
	[-1.338]		[-1.289]
ClientImportance	-14.034		-10.097
	[-0.460]		[-0.368]
LnAssureFee	0.006		0.008
	[0.417]		[0.595]
LnTaxFee	0.036		0.036
	[1.644]		[1.448]
AbnAudFee	-0.112*		-0.274***
	[-1.738]		[-4.620]
AudLagPercent	1.045		0.838
	[0.902]		[0.741]
Miss10K	0.138		0.059
	[0.615]		[0.276]
Cur402 (t+1, t)	0.122	1.287***	0.172
	[0.345]	[3.315]	[0.395]

CurRestate (t+1, t)	0.334	0.276	0.272
	[1.099]	[0.685]	[0.779]
SECoffice	0.113		0.084
	[0.637]		[0.393]
Intercept	-1.411	0.192	-1.644
	[-0.797]	[0.219]	[-0.922]
Observations	7241	8339	8339
Auditor Fixed Effects	Y	Y	Y
Industry Fixed Effects	Y	Y	Y
Year Fixed Effects	Y	Y	Y

Appendix K: Figure 6 Path Analysis (Full Tabulation)

This table presents the results of a path analysis measuring the direct and indirect associations between ineffective ICFR of different severities and current financial misstatements identified at a later date using a sample of 8,648 firm years with unqualified audit opinions from 2004-2013 (1,128 observations are omitted from the single equation regression due to perfect predictability). Odds ratio computation in a single equation regression shows that ineffective ICFR are associated with 256%, 57%, and 87% higher odds of current financial misstatement for ineffective entity-level, account-level, and combined entity-level and account-level ICFR, respectively. This translates to a 234%, 55%, and 84% higher probability using the likelihood of financial misstatement absent ineffective ICFR for the sample as a baseline. Note that the effect is statistically significant only for ineffective combined entity-level and account-level ICFR. Path analysis using a system of equations shows that 18%, 0%, and 57% of this effect is mediated through additional ineffective ICFR reported in the subsequent year. The mediated path is not statistically significant for ineffective account-level ICFR. All regressions use clustered standard errors. Z-statistics are presented in brackets. The symbols ***, **, and * are used to denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	Single Equation	Path Analysis	
	CurMisstate	MW (t+1)	CurMisstate
EntityMW	**1.270**	**1.047****	**0.947**
	[1.436]	**[2.348]**	**[0.919]**
AccountMW	**0.453**	**-0.490**	**0.539**
	[0.679]	**[-0.752]**	**[0.749]**
BothMW	**0.628****	**1.698*****	**0.247**
	[2.564]	**[19.161]**	**[0.881]**
MW (t+1)			**2.158*****
			[14.126]
USAR	-0.217		-0.181
	[-1.491]		[-1.225]
BTM (t+1, t)	0.093	0.157*	0.078
	[0.721]	[1.950]	[0.557]
ClientAge (t+1, t)	-0.001	-0.004	-0.001
	[-0.142]	[-1.045]	[-0.160]
Complex (t+1, t)	-1.283*	0.748	-1.284*
	[-1.806]	[1.187]	[-1.752]
Debt (t+1, t)	1.300***	0.693	1.272***
	[3.578]	[1.355]	[3.647]
DiscAcc (t+1, t)	0.013	-0.020	0.012
	[0.970]	[-0.706]	[0.810]
DeltaCashSale (t+1, t)	0.623***	0.418*	0.652***
	[3.542]	[1.936]	[3.867]
DeltaEBIT (t+1, t)	-0.054*	-0.124*	-0.051
	[-1.838]	[-1.839]	[-1.424]

DeltaReceivable (t+1, t)	-0.213***	-0.054	-0.293***
	[-2.608]	[-0.344]	[-2.897]
Coverage (t+1, t)	0.069	0.075	0.038
	[0.599]	[0.700]	[0.311]
InstOwn (t+1, t)	-0.040	-0.179	0.038
	[-0.262]	[-0.452]	[0.201]
Issue (t+1, t)	-0.003	0.106	-0.053
	[-0.018]	[0.404]	[-0.329]
Lease (t+1, t)	-0.081	-0.140	-0.045
	[-0.195]	[-0.439]	[-0.116]
Liquid (t+1, t)	-0.020	-0.079*	-0.042**
	[-0.752]	[-1.805]	[-2.309]
ForeignOps (t+1, t)	0.078	0.059	0.086
	[0.839]	[1.101]	[1.064]
LnIntangibles (t+1, t)	0.023	-0.039	0.046
	[0.210]	[-0.807]	[0.435]
Loss (t+1, t)	0.056	0.346**	0.024
	[0.198]	[2.341]	[0.090]
Pension (t+1, t)	-0.427	-0.473***	-0.349
	[-1.290]	[-2.909]	[-1.044]
PEratio (t+1, t)	0.042	0.067	0.026
	[1.008]	[1.558]	[0.693]
PosAccrual (t+1, t)	0.013	-0.815***	0.048
	[0.043]	[-2.783]	[0.170]
ROA (t+1, t)	-0.912*	-0.385	-1.126**
	[-1.911]	[-0.953]	[-2.513]
TradeRec (t+1, t)	0.818	-0.340	0.673
	[0.401]	[-0.348]	[0.299]
Size (t+1, t)	-0.097	-0.154*	-0.129
	[-0.540]	[-1.763]	[-0.736]
SoftAssets (t+1, t)	0.043	0.719	-0.168
	[0.080]	[1.022]	[-0.310]
SqEmp (t+1, t)	-0.143**	-0.115*	-0.147**
	[-2.021]	[-1.860]	[-2.208]
TotalAccruals (t+1, t)	0.879*	2.188***	0.791
	[1.783]	[3.387]	[1.553]
ExtraDiscOps (t+1, t)	-0.016	0.220	0.000
	[-0.070]	[1.167]	[0.002]
DecYrEnd (t+1, t)	-0.255		-0.209
	[-1.226]		[-1.141]
ClientImportance	-21.952		-14.170
	[-0.865]		[-0.561]

LnAssureFee	0.001		0.007
	[0.117]		[0.528]
LnTaxFee	0.031*		0.030
	[1.889]		[1.586]
AbnAudFee	-0.185**		-0.351***
	[-2.435]		[-6.054]
AudLagPercent	0.985		0.685
	[0.980]		[0.678]
Miss10K	0.164		0.029
	[0.858]		[0.163]
Cur402 (t+1, t)	0.139	0.634	0.189
	[0.364]	[1.260]	[0.535]
CurRestate (t+1, t)	0.289	0.250	0.233
	[1.095]	[0.665]	[0.800]
SECoffice	0.069		0.054
	[0.355]		[0.242]
Intercept	-1.702	-0.397	-1.660
	[-1.152]	[-0.765]	[-0.999]
Observations	7520	8648	8648
Auditor Fixed Effects	Y	Y	Y
Industry Fixed Effects	Y	Y	Y
Year Fixed Effects	Y	Y	Y

Appendix L: Figure 7 Path Analysis (Full Tabulation)

This table presents the fully tabulated results of a path analysis measuring the direct and indirect associations between ineffective ICFR and current financial misstatements identified at a later date using a sample of 1,808 firm years for seventy-five day filers with unqualified audit opinions from 2004-2013 (701 observations are excluded from the single equation model due to perfect predictability). Odds ratio computation in a single equation regression shows that ineffective ICFR are associated with 136% higher odds of current financial misstatement, which translates to a 124% higher probability using the likelihood of financial misstatement absent ineffective ICFR for the sample as a baseline. Path analysis using a system of equations shows that 31% of this effect (43% higher odds; 39% higher probability) is mediated through additional ineffective ICFR reported in the subsequent year. All regressions use clustered standard errors. Z-statistics are presented in brackets. The symbols ***, **, and * are used to denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	Single Equation	Path Analysis	
	CurMisstate	MW (t+1)	CurMisstate
MW	**0.860***	**1.517*****	**0.804***
	[1.838]	**[5.367]**	**[1.880]**
MW (t+1)			**2.415*****
			[3.551]
USAR	-0.099		-0.064
	[-0.969]		[-0.673]
BTM (t+1, t)	0.684	0.698	0.706
	[1.139]	[0.969]	[1.205]
ClientAge (t+1, t)	0.002	-0.014	0.001
	[0.224]	[-1.080]	[0.177]
Complex (t+1, t)	-2.062	1.917	-1.736
	[-0.822]	[0.470]	[-0.685]
Debt (t+1, t)	1.874***	0.165	2.230***
	[7.037]	[0.150]	[4.500]
DiscAcc (t+1, t)	0.044	-0.044	0.061
	[1.448]	[-0.756]	[1.580]
DeltaCashSale (t+1, t)	0.938*	0.118	1.192**
	[1.745]	[0.187]	[2.505]
DeltaEBIT (t+1, t)	-0.037	-0.259**	-0.034
	[-0.858]	[-2.158]	[-0.960]
DeltaReceivable (t+1, t)	-0.072	0.618**	-0.235***
	[-0.444]	[2.102]	[-3.289]
Coverage (t+1, t)	-0.125	-0.114	-0.163
	[-0.943]	[-0.727]	[-1.600]
InstOwn (t+1, t)	-0.438	0.582	-0.384
	[-1.427]	[1.155]	[-0.975]
Issue (t+1, t)	-0.082	0.410	-0.220
	[-0.178]	[1.147]	[-0.678]

Lease (t+1, t)	-0.955**	-0.462	-1.001**
	[-2.008]	[-0.551]	[-2.368]
Liquid (t+1, t)	-0.060	-0.113	-0.128
	[-1.007]	[-0.693]	[-1.397]
ForeignOps (t+1, t)	0.249	-0.136	0.275*
	[1.284]	[-1.430]	[1.712]
LnIntangibles (t+1, t)	-0.075	-0.106	-0.042
	[-0.695]	[-0.738]	[-0.327]
Loss (t+1, t)	0.360	0.929**	0.201
	[1.010]	[2.231]	[0.582]
Pension (t+1, t)	-0.514	-0.750***	-0.472
	[-0.902]	[-5.534]	[-0.909]
PEratio (t+1, t)	-0.250**	0.104	-0.164
	[-2.061]	[1.007]	[-1.142]
PosAccrual (t+1, t)	-0.292	-0.519	-0.232
	[-1.115]	[-1.159]	[-1.012]
ROA (t+1, t)	-0.969	-0.254	-1.813
	[-0.610]	[-0.169]	[-1.113]
TradeRec (t+1, t)	1.691	-2.487	1.495
	[0.353]	[-0.502]	[0.368]
Size (t+1, t)	-0.062	-0.222	-0.001
	[-0.309]	[-0.826]	[-0.005]
SoftAssets (t+1, t)	0.300	1.085	-0.109
	[0.210]	[1.371]	[-0.105]
SqEmp (t+1, t)	-0.499***	0.072	-0.550***
	[-3.412]	[0.329]	[-3.639]
TotalAccruals (t+1, t)	2.620***	1.178	2.548***
	[4.199]	[0.527]	[3.512]
ExtraDiscOps (t+1, t)	-0.227	-0.010	-0.147
	[-0.572]	[-0.060]	[-0.431]
DecYrEnd (t+1, t)	-0.274		-0.242
	[-0.785]		[-0.872]
ClientImportance	226.285*		166.759
	[1.702]		[1.530]
LnAssureFee	-0.019		-0.008
	[-1.340]		[-0.749]
LnTaxFee	0.083***		0.104***
	[3.181]		[4.532]
AbnAudFee	-0.066		-0.169
	[-0.242]		[-0.524]
AudLagPercent	0.746		0.368
	[0.668]		[0.374]
Miss10K	0.061		-0.667*
	[0.092]		[-1.658]

Cur402 (t+1, t)	1.138***	1.828*	0.972*
	[2.851]	[1.895]	[1.766]
CurRestate (t+1, t)	-0.184	-0.993	-0.306
	[-0.501]	[-0.819]	[-0.822]
SECoffice	-0.359		-0.321
	[-1.058]		[-0.921]
Intercept	-0.703	0.013	-1.713
	[-0.384]	[0.008]	[-0.997]
Observations	1107	1808	1808
Auditor Fixed Effects	Y	Y	Y
Industry Fixed Effects	Y	Y	Y
Year Fixed Effects	Y	Y	Y

Appendix M: Figure 8 Path Analysis (Full Tabulation)

This table presents the fully tabulated results of a path analysis measuring the direct and indirect associations between ineffective ICFR and current financial misstatements identified at a later date using a sample of 1,602 firm years for sixty day filers with unqualified audit opinions from 2004-2013 (876 observations are excluded from the single equation model due to perfect predictability). Though the analysis lacks power to show statistical significance in several expected associations, I confirm in untabulated results that the expected associations are statistically significant in the full sample of large accelerated filers, and thus I compute the two quintile association magnitudes for comparison purposes. Odds ratio computation in a single equation regression shows that ineffective ICFR are associated with 36% higher odds of current financial misstatement, which translates to a 35% higher probability using the likelihood of financial misstatement absent ineffective ICFR for the sample as a baseline. Path analysis using a system of equations shows that 89% of this effect (32% higher odds; 31% higher probability) is mediated through additional ineffective ICFR reported in the subsequent year. All regressions use clustered standard errors. Z-statistics are presented in brackets. The symbols ***, **, and * are used to denote statistical significance at the 1%, 5%, and 10% levels, respectively.

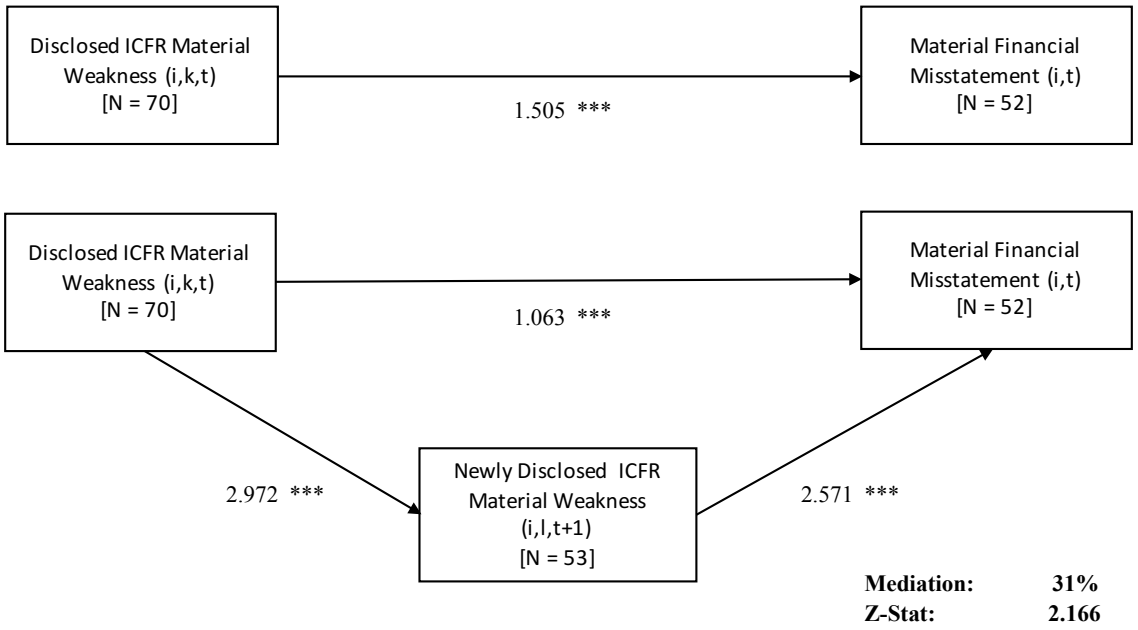
	Single Equation	Path Analysis	
	CurMisstate	MW (t+1)	CurMisstate
MW	**0.309**	**2.678*** **	**0.052**
	[0.209]	**[4.011]**	**[0.052]**
MW (t+1)			**2.176*** **
			[2.787]
USAR	-0.411		-0.321
	[-0.624]		[-0.621]
BTM (t+1, t)	-0.224	0.013	-0.302
	[-0.873]	[0.059]	[-1.466]
ClientAge (t+1, t)	-0.007	0.013	-0.007
	[-0.675]	[0.804]	[-0.679]
Complex (t+1, t)	-3.482	4.188***	-2.805
	[-0.511]	[2.838]	[-0.517]
Debt (t+1, t)	1.295	2.086**	1.005
	[0.594]	[2.435]	[0.467]
DiscAcc (t+1, t)	-0.032	-0.096*	-0.048
	[-0.441]	[-1.905]	[-0.834]
DeltaCashSale (t+1, t)	0.775	1.988**	0.629
	[1.537]	[2.377]	[1.173]
DeltaEBIT (t+1, t)	0.023	0.070	0.009
	[0.176]	[0.370]	[0.073]
DeltaReceivable (t+1, t)	0.529***	-1.823**	0.624***
	[3.637]	[-2.118]	[6.102]
Coverage (t+1, t)	0.099	-0.647**	0.100
	[0.792]	[-2.090]	[0.528]

InstOwn (t+1, t)	-1.459***	0.446	-1.488***
	[-4.717]	[0.356]	[-2.902]
Issue (t+1, t)	-0.032	0.664	-0.062
	[-0.054]	[1.036]	[-0.139]
Lease (t+1, t)	-0.965	0.202	-0.935
	[-1.058]	[0.115]	[-1.264]
Liquid (t+1, t)	-0.091	-0.202	-0.090
	[-0.459]	[-1.223]	[-0.494]
ForeignOps (t+1, t)	0.111	0.131	0.085
	[0.442]	[1.103]	[0.377]
LnIntangibles (t+1, t)	0.034	0.057	0.032
	[0.188]	[1.013]	[0.220]
Loss (t+1, t)	-0.406	0.967	-0.340
	[-1.399]	[1.348]	[-1.436]
Pension (t+1, t)	-0.341	-0.413	-0.335
	[-0.639]	[-0.642]	[-0.604]
PEratio (t+1, t)	0.431***	0.190**	0.420***
	[5.232]	[2.304]	[5.897]
PosAccrual (t+1, t)	-0.721**	-2.570***	-0.642**
	[-2.311]	[-7.405]	[-2.483]
ROA (t+1, t)	-3.302**	-6.428***	-2.462*
	[-2.515]	[-3.065]	[-1.909]
TradeRec (t+1, t)	0.296	0.609	-1.219
	[0.050]	[0.332]	[-0.293]
Size (t+1, t)	0.745	-0.450***	0.749*
	[1.409]	[-2.668]	[1.837]
SoftAssets (t+1, t)	0.236	-1.557	0.432
	[0.373]	[-1.497]	[0.737]
SqEmp (t+1, t)	0.349	-0.157	0.344*
	[1.541]	[-0.478]	[1.826]
TotalAccruals (t+1, t)	1.185	6.668***	1.082
	[1.021]	[10.382]	[1.089]
ExtraDiscOps (t+1, t)	-0.325	0.540*	-0.364
	[-0.463]	[1.811]	[-0.574]
DecYrEnd (t+1, t)	-0.271		-0.282
	[-0.489]		[-0.586]
ClientImportance	-3,058.466***		-2,547.496***
	[-7.249]		[-4.395]
LnAssureFee	0.039		0.032
	[0.954]		[0.874]
LnTaxFee	0.155**		0.171*
	[2.048]		[1.842]

AbnAudFee	1.018**		0.649
	[1.973]		[0.981]
AudLagPercent	-3.646*		-4.343***
	[-1.839]		[-3.054]
Miss10K	0.962		0.931
	[1.296]		[1.574]
Cur402 (t+1, t)	1.498	1.083	1.315
	[0.734]	[0.812]	[0.699]
CurRestate (t+1, t)	-0.799	0.982	-0.614
	[-0.611]	[0.743]	[-0.508]
SECoffice	0.841		0.878
	[0.971]		[1.136]
Intercept	-4.421	0.273	-20.013***
	[-1.179]	[0.166]	[-5.370]
Observations	726	1602	1602
Auditor Fixed Effects	Y	Y	Y
Industry Fixed Effects	Y	Y	Y
Year Fixed Effects	Y	Y	Y

Appendix N: Path Analysis of Current Ineffective ICFR, Future Ineffective ICFR, and Current Misstatements (Sixty Day Filers - Full Population)

This figure and table presents the results of a path analysis measuring the direct and indirect associations between ineffective ICFR and current financial misstatements identified at a later date using the full sample of 4,005 firm years for sixty day filers with unqualified audit opinions from 2004-2013 (1,975 observations are excluded from the single equation model due to perfect predictability). Odds ratio computation in a single equation regression shows that ineffective ICFR are associated with 350% higher odds of current financial misstatement, which translates to a 331% higher probability using the likelihood of financial misstatement absent ineffective ICFR for the sample as a baseline. Path analysis using a system of equations shows that 31% of this effect (107% higher odds; 101% higher probability) is mediated through additional ineffective ICFR reported in the subsequent year. All regressions use clustered standard errors. Z-statistics are presented in brackets. The symbols ***, **, and * are used to denote statistical significance at the 1%, 5%, and 10% levels, respectively.



	Single Equation	Path Analysis	
	CurMisstate	MW (t+1)	CurMisstate
MW	**1.505*** **	**2.972*** **	**1.063*** **
	[2.987]	**[6.020]**	**[18.177]**

MW (t+1)			**2.571*** [3.995]**
Observations	2030	4005	4005
Controls	Y	Y	Y
Auditor Fixed Effects	Y	Y	Y
Industry Fixed Effects	Y	Y	Y
Year Fixed Effects	Y	Y	Y

Appendix O: Figure 9 Path Analysis (Full Tabulation)

This table presents the fully tabulated results of a path analysis measuring the direct and indirect associations between ineffective ICFR and current financial misstatements identified at a later date using a sample of 2,712 firm years for seventy-five day filers with unqualified audit opinions from 2004-2013 (218 observations are excluded from the single equation model due to perfect predictability). Odds ratio computation in a single equation regression shows that ineffective ICFR are associated with 110% higher odds of current financial misstatement, which translates to a 103% higher probability using the likelihood of financial misstatement absent ineffective ICFR for the sample as a baseline. Path analysis using a system of equations shows that 32% of this effect (35% higher odds; 33% higher probability) is mediated through additional ineffective ICFR reported in the subsequent year. All regressions use clustered standard errors. Z-statistics are presented in brackets. The symbols ***, **, and * are used to denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	Single Equation	Path Analysis	
	CurMisstate	MW (t+1)	CurMisstate
MW	**0.743****	**1.338*****	**0.671****
	[2.071]	**[6.848]**	**[2.040]**
MW (t+1)			**2.269*****
			[5.584]
USAR	0.011		0.030
	[0.042]		[0.192]
BTM (t+1, t)	0.155	0.364	0.282
	[0.392]	[0.880]	[0.671]
ClientAge (t+1, t)	0.007	-0.013	0.008
	[0.674]	[-1.196]	[1.380]
Complex (t+1, t)	-1.519	2.378	-1.573
	[-0.752]	[0.884]	[-1.260]
Debt (t+1, t)	0.630	0.481	0.678
	[0.908]	[0.986]	[0.919]
DiscAcc (t+1, t)	0.028	-0.019	0.045*
	[0.758]	[-0.489]	[1.834]
DeltaCashSale (t+1, t)	0.443	0.125	0.610**
	[1.181]	[0.244]	[2.305]
DeltaEBIT (t+1, t)	-0.044	-0.170*	-0.043
	[-0.739]	[-1.857]	[-1.532]
DeltaReceivable (t+1, t)	-0.092	0.166	-0.165
	[-0.367]	[0.767]	[-0.884]
Coverage (t+1, t)	0.223	-0.061	0.214*
	[1.191]	[-0.484]	[1.928]
InstOwn (t+1, t)	-0.230	-0.034	-0.195
	[-0.454]	[-0.128]	[-0.715]
Issue (t+1, t)	-0.069	0.155	-0.116
	[-0.237]	[0.521]	[-0.345]

Lease (t+1, t)	-0.529	-0.487	-0.550
	[-1.320]	[-0.990]	[-1.343]
Liquid (t+1, t)	-0.053	-0.159*	-0.109***
	[-0.719]	[-1.878]	[-3.557]
ForeignOps (t+1, t)	0.210**	-0.029	0.244**
	[2.401]	[-0.318]	[2.344]
LnIntangibles (t+1, t)	-0.001	0.030	0.027
	[-0.010]	[0.226]	[0.179]
Loss (t+1, t)	-0.036	0.448	-0.058
	[-0.096]	[1.397]	[-0.170]
Pension (t+1, t)	-0.665*	-0.900***	-0.541
	[-1.881]	[-5.986]	[-1.193]
PEratio (t+1, t)	-0.158	0.101	-0.137
	[-1.532]	[1.335]	[-1.414]
PosAccrual (t+1, t)	-0.198	-0.512	-0.136
	[-0.593]	[-1.482]	[-0.292]
ROA (t+1, t)	-1.708	-0.518	-2.147***
	[-1.242]	[-0.543]	[-4.021]
TradeRec (t+1, t)	2.174	-2.480	2.261
	[0.771]	[-1.181]	[0.977]
Size (t+1, t)	0.198	-0.272	0.169
	[0.892]	[-1.380]	[1.036]
SoftAssets (t+1, t)	-0.121	0.631	-0.450
	[-0.130]	[0.560]	[-0.757]
SqEmp (t+1, t)	-0.462***	-0.034	-0.512***
	[-3.187]	[-0.242]	[-4.960]
TotalAccruals (t+1, t)	1.902*	1.081	1.588**
	[1.950]	[1.585]	[1.994]
ExtraDiscOps (t+1, t)	0.094	0.172	0.117
	[0.311]	[0.598]	[0.592]
DecYrEnd (t+1, t)	0.225		0.281
	[0.593]		[1.148]
ClientImportance	-4.995		3.469
	[-0.132]		[0.053]
LnAssureFee	-0.008		-0.007
	[-0.294]		[-0.544]
LnTaxFee	0.049		0.058***
	[1.559]		[2.832]
AbnAudFee	0.106		-0.099
	[0.374]		[-0.452]
AudLagPercent	1.589		1.392***
	[1.331]		[2.638]
Miss10K	0.098		-0.478*
	[0.208]		[-1.929]

Cur402 (t+1, t)	1.004*	0.783*	1.197***
	[1.717]	[1.706]	[2.857]
CurRestate (t+1, t)	0.107	0.199	-0.033
	[0.237]	[0.334]	[-0.090]
SECoffice	-0.321		-0.331
	[-1.243]		[-1.535]
Intercept		1.170	-4.244***
		[1.067]	[-4.435]
Observations	2494	2712	2712
Auditor Fixed Effects	Y	Y	Y
Industry Fixed Effects	Y	Y	Y
Year Fixed Effects	Y	Y	Y

Appendix P: Figure 10 Path Analysis (Full Tabulation)

This table presents the fully tabulated results of a path analysis measuring the direct and indirect associations between ineffective ICFR and current financial misstatements identified at a later date using a sample of 2,403 firm years for sixty day filers with unqualified audit opinions from 2004-2013 (1,274 observations are excluded from the single equation model due to perfect predictability). Though the analysis lacks power to show statistical significance in several expected associations, I confirm that the expected associations are statistically significant in the full sample of large accelerated filers (see Appendix N), and thus I compute the three quintile association magnitudes for comparison purposes. Odds ratio computation in a single equation regression shows that ineffective ICFR are associated with 174% higher odds of current financial misstatement, which translates to a 165% higher probability using the likelihood of financial misstatement absent ineffective ICFR for the sample as a baseline. Path analysis using a system of equations shows that 44% of this effect (77% higher odds; 73% higher probability) is mediated through additional ineffective ICFR reported in the subsequent year. All regressions use clustered standard errors. Z-statistics are presented in brackets. The symbols ***, **, and * are used to denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	Single Equation	Path Analysis	
	CurMisstate	MW (t+1)	CurMisstate
MW	**1.007**	**2.963*** **	**0.604**
	[1.209]	**[5.584]**	**[1.584]**
MW (t+1)			**2.336** **
			[2.503]
USAR	-0.136		-0.073
	[-0.228]		[-0.148]
BTM (t+1, t)	0.145	0.180*	0.086
	[0.280]	[1.729]	[0.222]
ClientAge (t+1, t)	0.010	0.016	0.013
	[0.482]	[1.161]	[0.657]
Complex (t+1, t)	-2.299	5.048**	-2.111
	[-0.340]	[2.365]	[-0.396]
Debt (t+1, t)	2.142	2.259***	1.888
	[1.121]	[2.587]	[1.073]
DiscAcc (t+1, t)	-0.001	-0.056	-0.019
	[-0.017]	[-1.210]	[-0.323]
DeltaCashSale (t+1, t)	0.407*	1.406**	0.234
	[1.946]	[2.325]	[1.043]
DeltaEBIT (t+1, t)	-0.008	-0.000	-0.017
	[-0.083]	[-0.002]	[-0.195]
DeltaReceivable (t+1, t)	0.496*	-1.387*	0.590**
	[1.707]	[-1.787]	[2.507]
Coverage (t+1, t)	-0.240**	-0.566**	-0.254**
	[-2.248]	[-2.108]	[-2.386]

InstOwn (t+1, t)	-0.884**	0.068	-0.875***
	[-2.257]	[0.062]	[-3.610]
Issue (t+1, t)	0.194	0.673	0.194
	[0.322]	[1.197]	[0.466]
Lease (t+1, t)	0.050	0.450	0.105
	[0.052]	[0.481]	[0.126]
Liquid (t+1, t)	-0.110	-0.137	-0.105
	[-1.351]	[-1.106]	[-1.382]
ForeignOps (t+1, t)	-0.031	0.140***	-0.046
	[-0.169]	[4.374]	[-0.272]
LnIntangibles (t+1, t)	0.087	-0.009	0.084
	[0.472]	[-0.068]	[0.569]
Loss (t+1, t)	0.447	0.987	0.604
	[0.801]	[1.527]	[1.103]
Pension (t+1, t)	-0.521	-0.302	-0.590
	[-1.418]	[-0.663]	[-1.609]
PEratio (t+1, t)	0.383***	0.153*	0.364***
	[4.567]	[1.816]	[5.387]
PosAccrual (t+1, t)	-0.241	-2.591***	-0.106
	[-0.806]	[-4.635]	[-0.477]
ROA (t+1, t)	-2.217	-5.547***	-1.460
	[-1.591]	[-3.327]	[-0.839]
TradeRec (t+1, t)	1.431	-2.242	0.843
	[0.296]	[-0.602]	[0.246]
Size (t+1, t)	0.467*	-0.657*	0.465**
	[1.696]	[-1.728]	[2.523]
SoftAssets (t+1, t)	-0.275***	-0.620	-0.025
	[-3.436]	[-0.665]	[-0.203]
SqEmp (t+1, t)	0.228*	-0.049	0.225**
	[1.934]	[-0.257]	[2.284]
TotalAccruals (t+1, t)	0.719	6.335***	0.532*
	[1.060]	[5.683]	[1.686]
ExtraDiscOps (t+1, t)	-0.762	0.387	-0.759
	[-1.054]	[1.297]	[-1.171]
DecYrEnd (t+1, t)	-0.725		-0.732
	[-1.066]		[-1.274]
ClientImportance	-3,975.561***		-3,640.998***
	[-11.897]		[-15.224]
LnAssureFee	0.041		0.036
	[1.140]		[1.189]
LnTaxFee	0.153***		0.161***
	[2.875]		[2.845]
AbnAudFee	0.533		0.311
	[1.443]		[0.876]

AudLagPercent	-2.138*		-2.716**
	[-1.818]		[-2.362]
Miss10K	0.684		0.597
	[0.752]		[0.759]
Cur402 (t+1, t)	0.887	0.558	0.796
	[0.462]	[0.568]	[0.472]
CurRestate (t+1, t)	-0.587	0.619	-0.522
	[-0.478]	[0.545]	[-0.493]
SECoffice	0.574		0.588
	[0.735]		[0.812]
Intercept	-5.457***	1.395	-19.988***
	[-3.395]	[0.567]	[-7.540]
Observations	1129	2403	2403
Auditor Fixed Effects	Y	Y	Y
Industry Fixed Effects	Y	Y	Y
Year Fixed Effects	Y	Y	Y

Appendix Q: Figure 12 Path Analysis (Full Tabulation)

This table presents the fully tabulated results of a path analysis measuring the direct and indirect associations between ineffective ICFR and current financial misstatements identified at a later date using a sample of 3,203 firm years with unqualified audit opinions from 2004-2007 (the AS 2 window) (688 observations are omitted from the single equation regression due to perfect predictability). Odds ratio computation in a single equation regression shows that ineffective ICFR are associated with 74% higher odds of current financial misstatement, which translates to a 69% higher probability using the likelihood of financial misstatement absent ineffective ICFR for the sample as a baseline. Path analysis using a system of equations shows that 49% of this effect (36% higher odds; 34% higher probability) is mediated through additional ineffective ICFR reported in the subsequent year. All regressions use clustered standard errors. Z-statistics are presented in brackets. The symbols ***, **, and * are used to denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	Single Equation	Path Analysis	
	CurMisstate	MW (t+1)	CurMisstate
MW	**0.553****	**1.197*****	**0.297**
	[2.221]	**[5.730]**	**[0.913]**
MW (t+1)			**1.991*****
			[8.326]
USAR	-0.168		-0.112
	[-0.910]		[-0.607]
BTM (t+1, t)	0.378**	0.411	0.380*
	[2.340]	[1.130]	[1.771]
ClientAge (t+1, t)	-0.004	-0.001	-0.004
	[-0.927]	[-0.174]	[-0.954]
Complex (t+1, t)	-2.212	1.171	-2.152
	[-1.382]	[1.382]	[-1.383]
Debt (t+1, t)	1.267**	0.991**	1.287**
	[2.498]	[2.392]	[2.281]
DiscAcc (t+1, t)	0.003	-0.041***	0.001
	[0.096]	[-2.696]	[0.029]
DeltaCashSale (t+1, t)	0.645**	0.284	0.645**
	[2.185]	[0.775]	[2.246]
DeltaEBIT (t+1, t)	-0.033	-0.146**	-0.033
	[-0.938]	[-2.078]	[-0.982]
DeltaReceivable (t+1, t)	-0.160	0.060	-0.244
	[-0.915]	[0.288]	[-1.343]
Coverage (t+1, t)	-0.090	0.055	-0.133
	[-0.522]	[0.390]	[-0.786]
InstOwn (t+1, t)	-0.299	-0.528	-0.167
	[-1.115]	[-1.340]	[-0.686]

Issue (t+1, t)	0.081	0.094	0.035
	[0.304]	[0.359]	[0.154]
Lease (t+1, t)	-0.420	-0.228	-0.428
	[-0.879]	[-0.436]	[-0.938]
Liquid (t+1, t)	0.018	-0.069	-0.010
	[0.371]	[-1.225]	[-0.228]
ForeignOps (t+1, t)	0.211	0.069	0.216*
	[1.483]	[0.897]	[1.682]
LnIntangibles (t+1, t)	-0.008	-0.047	0.028
	[-0.053]	[-0.420]	[0.187]
Loss (t+1, t)	0.497	0.502***	0.454
	[1.135]	[2.896]	[1.224]
Pension (t+1, t)	-0.525	-0.305	-0.450
	[-0.890]	[-1.428]	[-0.744]
PEratio (t+1, t)	0.027	0.125***	0.017
	[0.393]	[2.974]	[0.258]
PosAccrual (t+1, t)	-0.022	-0.773***	-0.041
	[-0.048]	[-2.593]	[-0.099]
ROA (t+1, t)	-0.488	0.011	-0.875
	[-0.820]	[0.018]	[-1.470]
TradeRec (t+1, t)	2.404	-0.969	2.217
	[0.929]	[-0.944]	[0.811]
Size (t+1, t)	0.143	-0.098*	0.108
	[0.701]	[-1.742]	[0.578]
SoftAssets (t+1, t)	0.159	0.944	-0.118
	[0.177]	[1.026]	[-0.130]
SqEmp (t+1, t)	-0.334***	-0.131***	-0.329***
	[-3.571]	[-2.849]	[-3.162]
TotalAccruals (t+1, t)	1.151	2.449***	1.115
	[1.329]	[3.564]	[1.288]
ExtraDiscOps (t+1, t)	0.118	0.140	0.144
	[0.629]	[0.807]	[0.861]
DecYrEnd (t+1, t)	-0.250		-0.186
	[-1.067]		[-0.837]
ClientImportance	2.715		6.240
	[0.062]		[0.136]
LnAssureFee	-0.015		-0.011
	[-1.136]		[-0.761]
LnTaxFee	0.025**		0.026*
	[2.502]		[1.878]
AbnAudFee	0.175		-0.021
	[1.179]		[-0.124]

AudLagPercent	0.449		0.348
	[0.435]		[0.309]
Miss10K	-0.123		-0.402**
	[-0.685]		[-2.160]
Cur402 (t+1, t)	0.404	1.639**	0.363
	[1.527]	[2.242]	[1.255]
CurRestate (t+1, t)	0.166	-0.549	0.127
	[1.509]	[-1.083]	[0.768]
SECoffice	0.071		0.039
	[0.393]		[0.172]
Intercept	-2.578	-1.039	-2.631
	[-1.466]	[-1.146]	[-1.508]
Observations	2515	3203	3203
Auditor Fixed Effects	Y	Y	Y
Industry Fixed Effects	Y	Y	Y
Year Fixed Effects	Y	Y	Y

Appendix R: Figure 13 Path Analysis (Full Tabulation)

This table presents the fully tabulated results of a path analysis measuring the direct and indirect associations between ineffective ICFR and current financial misstatements identified at a later date using a sample of 5,445 firm years with unqualified audit opinions from 2007-2013 (the AS 5 window) (377 observations are omitted from the single equation regression due to perfect predictability). Odds ratio computation in a single equation regression shows that ineffective ICFR are associated with 279% higher odds of current financial misstatement, which translates to a 265% higher probability using the likelihood of financial misstatement absent ineffective ICFR for the sample as a baseline. Path analysis using a system of equations shows that 32% of this effect (89% higher odds; 84% higher probability) is mediated through additional ineffective ICFR reported in the subsequent year. All regressions use clustered standard errors. Z-statistics are presented in brackets. The symbols ***, **, and * are used to denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	Single Equation	Path Analysis	
	CurMisstate	MW (t+1)	CurMisstate
MW	**1.332****	**2.374*****	**0.889**
	[2.550]	**[10.359]**	**[1.457]**
MW (t+1)			**2.635*****
			[9.525]
USAR	-0.283		-0.293
	[-0.975]		[-0.638]
BTM (t+1, t)	0.031	-0.033	-0.039
	[0.141]	[-0.168]	[-0.102]
ClientAge (t+1, t)	0.003	-0.014	0.003
	[0.316]	[-1.317]	[0.177]
Complex (t+1, t)	0.536	-0.097	1.111
	[0.239]	[-0.055]	[1.178]
Debt (t+1, t)	2.199***	0.123	2.064***
	[3.212]	[0.135]	[5.387]
DiscAcc (t+1, t)	0.046	0.013	0.046**
	[0.888]	[0.315]	[1.996]
DeltaCashSale (t+1, t)	0.481	0.340	0.617***
	[1.386]	[0.849]	[3.309]
DeltaEBIT (t+1, t)	-0.061	-0.102	-0.067
	[-0.884]	[-0.837]	[-0.880]
DeltaReceivable (t+1, t)	-0.284	-0.261	-0.242
	[-1.038]	[-0.856]	[-0.759]
Coverage (t+1, t)	0.336	0.158	0.357***
	[1.552]	[1.338]	[4.275]
InstOwn (t+1, t)	-0.075	0.202	-0.125
	[-0.122]	[0.315]	[-0.206]

Issue (t+1, t)	-0.068	0.136	-0.082
	[-0.230]	[0.380]	[-0.348]
Lease (t+1, t)	0.492	-0.319	0.601
	[0.958]	[-0.845]	[1.056]
Liquid (t+1, t)	-0.021	-0.073	-0.044
	[-0.254]	[-1.104]	[-0.683]
ForeignOps (t+1, t)	-0.003	0.100*	0.008
	[-0.029]	[1.805]	[0.097]
LnIntangibles (t+1, t)	0.131	-0.057	0.127
	[1.133]	[-0.617]	[1.058]
Loss (t+1, t)	-0.529	0.357	-0.589
	[-1.332]	[0.964]	[-1.620]
Pension (t+1, t)	-0.424	-0.633**	-0.370
	[-1.140]	[-2.425]	[-1.081]
PEratio (t+1, t)	0.040	-0.039	0.058
	[0.348]	[-0.324]	[0.431]
PosAccrual (t+1, t)	0.103	-0.866**	0.242
	[0.290]	[-2.228]	[0.857]
ROA (t+1, t)	-0.382	-0.722	-0.374
	[-0.331]	[-1.085]	[-0.725]
TradeRec (t+1, t)	-1.005	1.904	-2.206
	[-0.324]	[0.797]	[-0.661]
Size (t+1, t)	-0.610***	-0.254	-0.585**
	[-2.673]	[-1.078]	[-2.395]
SoftAssets (t+1, t)	-0.930	0.471	-0.806*
	[-0.839]	[0.482]	[-1.877]
SqEmp (t+1, t)	-0.005	-0.122	-0.017
	[-0.040]	[-0.919]	[-0.359]
TotalAccruals (t+1, t)	0.612	1.745	0.185
	[0.534]	[1.488]	[0.290]
ExtraDiscOps (t+1, t)	-0.420	0.416	-0.433**
	[-1.058]	[1.603]	[-2.246]
DecYrEnd (t+1, t)	-0.656*		-0.691
	[-1.895]		[-1.631]
ClientImportance	-34.236		-50.584**
	[-0.526]		[-2.001]
LnAssureFee	0.034		0.039***
	[1.323]		[2.953]
LnTaxFee	0.041		0.043
	[1.452]		[1.113]
AbnAudFee	-0.878***		-1.004**
	[-2.651]		[-2.207]

AudLagPercent	1.055		0.746
	[0.813]		[0.822]
Miss10K	0.563		0.490*
	[1.249]		[1.945]
Cur402 (t+1, t)	-0.524	-1.736*	-0.187
	[-0.632]	[-1.956]	[-0.377]
CurRestate (t+1, t)	0.374	0.916**	0.088
	[0.662]	[2.545]	[0.138]
SECoffice	0.289		0.249
	[1.002]		[1.119]
Intercept		-1.121	-0.324
		[-0.582]	[-0.118]
Observations	5068	5445	5445
Auditor Fixed Effects	Y	Y	Y
Industry Fixed Effects	Y	Y	Y
Year Fixed Effects	Y	Y	Y

Appendix S: Figure 14 and Figure 15 Path Analysis (Full Tabulation)

This table presents the fully tabulated results of path analyses measuring the direct and indirect association between ineffective ICFR and proxies for audit effort and an audit risk premium using a sample of 8,648 firm years with unqualified audit opinions from 2004-2013. Regression analysis shows ineffective ICFR directly increase abnormal audit fees, audit lag, and the audit effort factor by 26%, 16%, and 53%, respectively. Path analysis using a system of equations shows that 7%, 4%, and 6% of this effect (2%, 1%, and 3% higher magnitude) is mediated through additional ineffective ICFR reported in the subsequent year. Regression analysis also shows ineffective ICFR directly increase the audit fee premium by 29% when using an abnormal audit fee model and 3% when using a total audit fee model. Path analysis using a system of equations shows that 7% of this effect (2% higher magnitude using an abnormal audit fee model and .20% higher magnitude using a total audit fee model) is mediated through additional ineffective ICFR reported in the subsequent year. All regressions use clustered standard errors. All variables are defined in Appendix A. T-statistics and Z-statistics are presented in brackets. The symbols ***, **, and * are used to denote statistical significance at the 1%, 5%, and 10% levels, respectively.

		Auditor Effort						**Audit Risk Premium**			
	MW (t+1)	AbnAudFee		AudLagPercent		Effort		AbnAudFee		TotAudFee	
MW	**1.543*** **	**0.327*** **	**0.302*** **	**0.144*** **	**0.137*** **	**0.755*** **	**0.709*** **	**0.271*** **	**0.251*** **	**0.293*** **	**0.272*** **
	[14.997]	**[14.650]**	**[16.910]**	**[26.696]**	**[22.858]**	**[50.439]**	**[34.198]**	**[14.052]**	**[14.168]**	**[14.128]**	**[14.460]**
MW (t+1)			**0.160*** **		**0.045*** **		**0.305*** **		**0.144*** **		**0.156*** **
			[3.346]		**[6.488]**		**[4.445]**		**[3.233]**		**[3.332]**
AudLagPercent								0.382***	0.370***	0.409***	0.396***
								[5.869]	[6.056]	[6.070]	[6.253]
BTM (t+1, t)	0.157**	-0.001	-0.002	-0.007**	-0.007**	-0.016	-0.018	0.001	0.001	-0.011	-0.012
	[2.002]	[-0.084]	[-0.154]	[-2.147]	[-2.254]	[-1.026]	[-1.150]	[0.102]	[0.037]	[-0.765]	[-0.842]
ClientAge (t+1, t)	-0.004	0.000	0.000	-0.000***	-0.000***	-0.000	-0.000	0.001	0.001	0.000	0.000
	[-1.036]	[0.736]	[0.736]	[-3.507]	[-3.537]	[-0.082]	[-0.069]	[0.865]	[0.862]	[0.512]	[0.508]
Complex (t+1, t)	0.545	0.041	0.039	0.012	0.012	0.069	0.064	0.036	0.034	0.466**	0.463**
	[0.805]	[0.275]	[0.260]	[0.254]	[0.239]	[0.628]	[0.588]	[0.218]	[0.207]	[2.282]	[2.296]
Debt (t+1, t)	0.672	0.008	0.004	0.003	0.001	0.010	0.003	0.007	0.004	0.087	0.084
	[1.320]	[0.104]	[0.055]	[0.206]	[0.121]	[0.090]	[0.025]	[0.094]	[0.050]	[1.042]	[0.989]
DiscAcc (t+1, t)	-0.019	-0.005***	-0.005***	-0.000	-0.000	-0.007***	-0.007***	-0.005***	-0.005***	-0.005***	-0.005***
	[-0.678]	[-5.628]	[-5.513]	[-0.887]	[-0.835]	[-7.268]	[-7.752]	[-5.323]	[-5.204]	[-5.163]	[-5.039]

DeltaCashSale (t+1, t)	0.392*	0.020	0.020	0.015***	0.015***	0.060***	0.060***	0.014	0.014	0.021	0.021*
	[1.718]	[1.382]	[1.395]	[3.895]	[3.928]	[2.746]	[2.743]	[1.031]	[1.060]	[1.647]	[1.670]
DeltaEBIT (t+1, t)	-0.119*	-0.008***	-0.007***	-0.001	-0.001	-0.012***	-0.011***	-0.007***	-0.007***	-0.008***	-0.007***
	[-1.756]	[-2.881]	[-2.807]	[-1.300]	[-1.189]	[-3.324]	[-3.241]	[-2.786]	[-2.722]	[-2.710]	[-2.627]
DeltaReceivable (t+1, t)	-0.076	-0.037***	-0.038***	0.007***	0.007***	-0.031***	-0.033***	-0.040***	-0.040***	-0.037***	-0.038***
	[-0.520]	[-3.568]	[-3.761]	[4.297]	[4.185]	[-2.664]	[-2.909]	[-3.756]	[-3.933]	[-3.212]	[-3.365]
Coverage (t+1, t)	0.089	0.010	0.009	-0.000	-0.001	0.010	0.009	0.010	0.009	0.017	0.016
	[0.859]	[0.677]	[0.654]	[-0.116]	[-0.170]	[0.499]	[0.466]	[0.704]	[0.683]	[1.288]	[1.277]
InstOwn (t+1, t)	-0.181	-0.044**	-0.042**	-0.028***	-0.028***	-0.115***	-0.111***	-0.034	-0.032	-0.020	-0.018
	[-0.442]	[-2.016]	[-1.997]	[-3.885]	[-3.845]	[-3.028]	[-3.021]	[-1.655]	[-1.634]	[-1.050]	[-0.990]
Issue (t+1, t)	0.097	-0.001	-0.002	0.005*	0.005	0.009	0.008	-0.003	-0.003	-0.009	-0.010
	[0.369]	[-0.068]	[-0.124]	[1.686]	[1.612]	[0.750]	[0.616]	[-0.180]	[-0.225]	[-0.561]	[-0.609]
Lease (t+1, t)	-0.137	0.063**	0.064***	0.012*	0.012*	0.109***	0.110***	0.059**	0.060**	0.055*	0.056*
	[-0.434]	[2.572]	[2.679]	[1.670]	[1.785]	[3.614]	[3.936]	[2.254]	[2.340]	[1.861]	[1.934]
Liquid (t+1, t)	-0.074*	-0.023***	-0.023***	-0.001	-0.001	-0.029***	-0.030***	-0.023***	-0.023***	-0.013***	-0.013***
	[-1.759]	[-8.684]	[-8.776]	[-1.034]	[-1.133]	[-7.125]	[-7.332]	[-8.915]	[-8.959]	[-5.809]	[-5.910]
ForeignOps (t+1, t)	0.066	0.078***	0.078***	0.000	-0.000	0.095***	0.094***	0.078***	0.078***	0.083***	0.082***
	[1.206]	[13.896]	[13.728]	[0.007]	[-0.095]	[12.702]	[12.338]	[14.167]	[14.042]	[14.416]	[14.369]
LnIntangibles (t+1, t)	-0.038	0.050***	0.050***	0.003	0.003	0.068***	0.068***	0.048***	0.049***	0.048***	0.048***
	[-0.758]	[15.161]	[15.910]	[1.401]	[1.434]	[8.898]	[9.246]	[18.786]	[19.649]	[27.146]	[28.663]
Loss (t+1, t)	0.346**	-0.116***	-0.115***	0.004	0.004	-0.136***	-0.135***	-0.117***	-0.116***	0.081***	0.082***
	[2.040]	[-8.075]	[-7.885]	[0.863]	[0.924]	[-12.080]	[-11.484]	[-7.440]	[-7.317]	[5.286]	[5.267]
Pension (t+1, t)	-0.457***	0.090***	0.091***	-0.004	-0.003	0.103***	0.106***	0.091***	0.092***	0.081***	0.082***
	[-2.751]	[5.245]	[5.373]	[-0.760]	[-0.667]	[5.886]	[6.044]	[5.030]	[5.148]	[4.027]	[4.095]
PEratio (t+1, t)	0.072	0.003	0.003	0.002	0.001	0.007	0.007	0.003	0.002	0.002	0.002
	[1.592]	[0.852]	[0.713]	[1.619]	[1.618]	[1.398]	[1.190]	[0.694]	[0.581]	[0.743]	[0.614]
PosAccrual (t+1, t)	-0.799***	-0.036*	-0.035*	-0.005**	-0.005**	-0.055**	-0.053**	-0.035*	-0.034*	-0.041**	-0.040**
	[-2.595]	[-1.838]	[-1.785]	[-2.461]	[-2.368]	[-2.162]	[-2.076]	[-1.751]	[-1.707]	[-2.094]	[-2.046]
ROA (t+1, t)	-0.416	-0.458***	-0.455***	-0.027***	-0.026***	-0.634***	-0.627***	-0.448***	-0.445***	-0.466***	-0.463***
	[-0.974]	[-6.779]	[-6.727]	[-4.328]	[-4.129]	[-7.392]	[-7.289]	[-6.592]	[-6.554]	[-6.727]	[-6.718]
TradeRec (t+1, t)	-0.089	0.694***	0.694***	-0.016	-0.016	0.831***	0.831***	0.700***	0.700***	0.570***	0.570***
	[-0.098]	[5.854]	[5.962]	[-0.232]	[-0.233]	[5.345]	[5.469]	[5.237]	[5.336]	[3.469]	[3.531]

Size (t+1, t)	-0.160	-0.176***	-0.175***	-0.001	-0.001	-0.216***	-0.214***	-0.175***	-0.174***	0.310***	0.311***
	[-1.622]	[-20.193]	[-20.240]	[-0.342]	[-0.290]	[-10.698]	[-10.752]	[-23.502]	[-23.394]	[33.015]	[33.392]
SoftAssets (t+1, t)	0.709	-0.001	-0.004	-0.008	-0.009	-0.007	-0.013	0.002	-0.001	-0.119*	-0.122*
	[0.986]	[-0.019]	[-0.075]	[-0.724]	[-0.848]	[-0.085]	[-0.169]	[0.032]	[-0.018]	[-1.799]	[-1.897]
SqEmp (t+1, t)	-0.112*	0.002	0.002	-0.008***	-0.008***	-0.015	-0.014	0.005	0.005	0.073***	0.073***
	[-1.805]	[0.144]	[0.163]	[-4.539]	[-4.504]	[-1.054]	[-1.022]	[0.415]	[0.424]	[8.688]	[8.694]
TotalAccruals (t+1, t)	2.206***	0.194**	0.188**	0.051***	0.049***	0.346***	0.334***	0.175**	0.170**	0.139*	0.133*
	[3.414]	[2.394]	[2.289]	[7.227]	[6.545]	[2.993]	[2.841]	[2.172]	[2.086]	[1.899]	[1.798]
ExtraDiscOps (t+1, t)	0.203	0.149***	0.149***	0.008*	0.008*	0.200***	0.199***	0.146***	0.146***	0.150***	0.150***
	[1.023]	[7.048]	[7.105]	[1.925]	[1.926]	[5.706]	[5.754]	[7.382]	[7.432]	[8.003]	[8.057]
Cur402 (t+1, t)	0.519	0.098***	0.101***	0.019*	0.019**	0.181***	0.186***	0.091***	0.094***	0.090***	0.093***
	[1.120]	[4.193]	[4.713]	[1.994]	[2.181]	[3.404]	[3.779]	[4.266]	[4.783]	[3.908]	[4.426]
CurRestate (t+1, t)	0.235	0.073***	0.068***	0.031***	0.029***	0.167***	0.157***	0.061***	0.057***	0.064***	0.060***
	[0.678]	[3.665]	[3.623]	[4.836]	[4.769]	[4.565]	[4.644]	[3.480]	[3.402]	[3.208]	[3.132]
Intercept	-0.513	1.268***	1.280***	0.894***	0.903***	1.378***	1.414***	0.926***	0.946***	10.910***	10.977***
	[-0.841]	[7.628]	[7.967]	[27.978]	[28.967]	[4.775]	[5.030]	[6.162]	[6.519]	[69.166]	[72.215]
Observations	8648	8648	8648	8648	8648	8648	8648	8648	8648	8648	8648
Auditor Fixed Effects	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Industry Fixed Effects	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Year Fixed Effects	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Appendix T: Figure 16 Path Analysis (Full Tabulation)

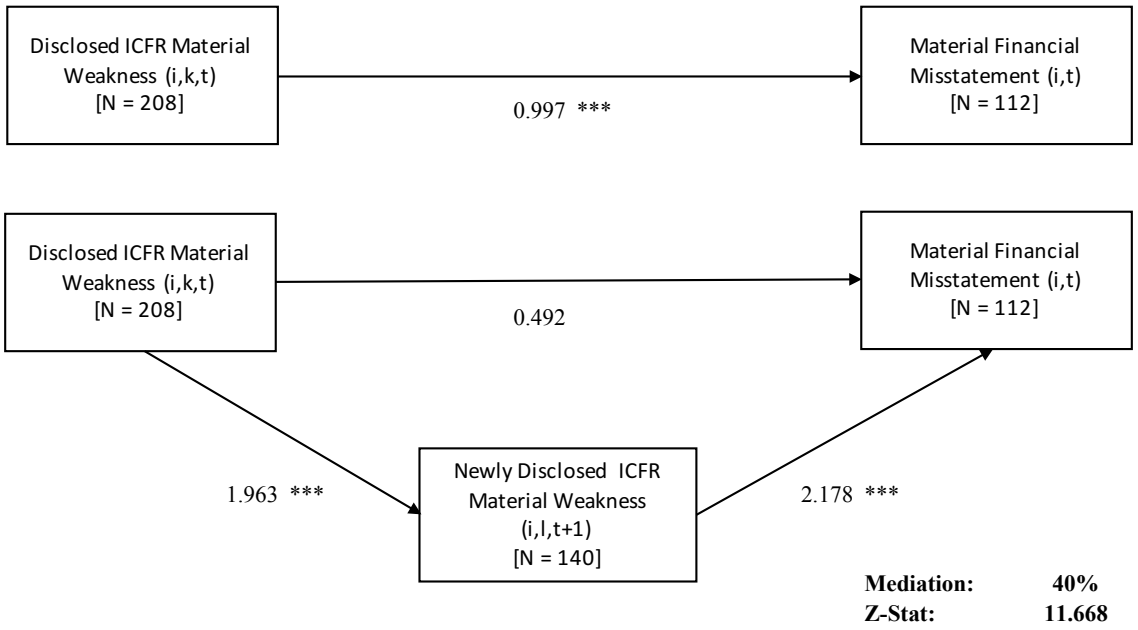
This table presents the fully tabulated results of a multi-year placebo path analysis measuring the direct and indirect associations between ineffective ICFR and current financial misstatements identified at a later date using a sample of 8,547 firm years with unqualified audit opinions from 2004-2013 (an additional 302 observations are excluded from the single equation model due to perfect predictability). Odds ratio computation in a single equation regression shows that ineffective ICFR are associated with 202% higher odds of current financial misstatement, which translates to a 191% higher probability using the likelihood of financial misstatement absent ineffective ICFR for the sample as a baseline. Path analysis using a system of equations shows that 11%, 3%, and 0% of this effect (22%, 6%, 0% higher odds; 21%, 5%, 0% higher probability) is mediated through additional ineffective ICFR reported in the previous first, second, and third year, respectively. Of these results, only the t-1 mediation is statistically significant at traditional levels. Z-statistics are presented in brackets. All regressions use clustered standard errors. The symbols ***, **, and * are used to denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	Single Equation	Path Analysis					
	CurMisstate	MW (t-1)	MW (t-2)	MW (t-3)	CurMisstate		
MW	**1.106*** **	**1.839*** **	**0.884*** **	**0.096**	**1.032*** **	**1.094*** **	**1.105*** **
	[3.275]	**[7.109]**	**[3.623]**	**[0.348]**	**[3.135]**	**[3.045]**	**[3.128]**
MW (t-1)			**1.815*** **	**0.684** **	**0.849** **		
			[10.953]	**[1.999]**	**[2.233]**		
MW (t-2)				**1.555*** **		**0.395**	
				[9.828]		**[1.112]**	
MW (t-3)							**0.265**
							[1.314]
USAR	-0.336				-0.333**	-0.335**	-0.343**
	[-1.594]				[-2.017]	[-2.168]	[-2.265]
BTM (t-n, t)	0.187	0.176*	0.107	0.130***	0.194*	0.196*	0.188*
	[1.500]	[1.667]	[1.428]	[2.782]	[1.676]	[1.675]	[1.650]
ClientAge (t-n, t)	0.003	-0.004	-0.003	0.009**	0.003	0.004	0.003
	[0.442]	[-0.499]	[-0.733]	[2.070]	[0.406]	[0.396]	[0.378]
Complex (t-n, t)	-1.305	0.319	1.100*	2.133***	-1.319*	-1.295*	-1.317*
	[-0.918]	[0.493]	[1.880]	[2.765]	[-1.741]	[-1.681]	[-1.716]
Debt (t-n, t)	1.800***	0.886**	0.452	-0.078	1.764***	1.796***	1.806***
	[3.815]	[2.190]	[1.230]	[-0.279]	[4.559]	[4.935]	[5.029]
DiscAcc (t-n, t)	-0.008	-0.012	-0.013	-0.021	-0.008	-0.007	-0.008
	[-0.320]	[-1.031]	[-0.723]	[-1.220]	[-0.287]	[-0.260]	[-0.284]
DeltaCashSale (t-n, t)	0.769**	0.103	0.439***	0.292	0.764**	0.781***	0.770***
	[2.257]	[0.537]	[4.056]	[1.295]	[2.550]	[2.637]	[2.651]
DeltaEBIT (t-n, t)	-0.029	-0.055	-0.109***	-0.115***	-0.031	-0.028	-0.029
	[-0.616]	[-0.695]	[-2.578]	[-2.976]	[-1.112]	[-1.045]	[-1.134]
DeltaReceivable (t-n, t)	-0.075	-0.137	-0.087	-0.137*	-0.068	-0.074	-0.075
	[-0.351]	[-0.989]	[-0.741]	[-1.937]	[-0.387]	[-0.431]	[-0.439]
Coverage (t-n, t)	0.348**	0.203*	0.073	0.051	0.344***	0.347***	0.351***
	[2.352]	[1.802]	[0.667]	[0.419]	[3.695]	[3.644]	[3.779]
InstOwn (t-n, t)	1.006**	-0.588*	0.001	-0.032	1.024*	1.026*	1.018*
	[2.335]	[-1.850]	[0.004]	[-0.114]	[1.828]	[1.887]	[1.849]
Issue (t-n, t)	-0.217	-0.146	0.164	0.068	-0.207	-0.214	-0.217
	[-1.093]	[-0.764]	[0.684]	[0.673]	[-0.749]	[-0.793]	[-0.797]

Lease (t-n, t)	0.489	-0.233	-0.062	0.007	0.502	0.491	0.473
	[1.315]	[-1.276]	[-0.274]	[0.033]	[1.139]	[1.147]	[1.095]
Liquid (t-n, t)	-0.133**	-0.016	-0.091**	-0.062	-0.137	-0.133	-0.134
	[-2.082]	[-0.460]	[-2.167]	[-1.517]	[-1.603]	[-1.621]	[-1.614]
ForeignOps (t-n, t)	0.059	0.107*	0.057	0.069	0.058	0.059	0.061
	[0.992]	[1.768]	[1.145]	[1.220]	[0.886]	[0.955]	[0.970]
LnIntangibles (t-n, t)	0.030	-0.022	-0.035	0.123*	0.034	0.032	0.032
	[0.415]	[-0.618]	[-0.755]	[1.810]	[0.389]	[0.369]	[0.363]
Loss (t-n, t)	-0.091	0.296**	0.517**	0.649***	-0.092	-0.097	-0.091
	[-0.372]	[1.989]	[2.057]	[3.045]	[-0.387]	[-0.408]	[-0.377]
Pension (t-n, t)	0.028	-0.454**	-0.381**	-0.193	0.050	0.044	0.031
	[0.118]	[-2.346]	[-2.092]	[-1.426]	[0.154]	[0.135]	[0.093]
PEratio (t-n, t)	0.006	0.091**	0.069*	0.094***	0.003	0.006	0.007
	[0.086]	[2.066]	[1.702]	[4.218]	[0.050]	[0.099]	[0.116]
PosAccrual (t-n, t)	-0.328	-0.823***	-0.804***	-0.554***	-0.338**	-0.334**	-0.319**
	[-1.404]	[-10.556]	[-4.719]	[-3.475]	[-2.502]	[-2.446]	[-2.275]
ROA (t-n, t)	0.270	-0.659*	-0.135	-0.658*	0.270	0.219	0.253
	[0.317]	[-1.906]	[-0.302]	[-1.937]	[0.333]	[0.267]	[0.312]
TradeRec (t-n, t)	1.922	0.557	-0.100	-0.377	1.994	1.933	1.922
	[0.980]	[0.738]	[-0.080]	[-0.309]	[1.191]	[1.191]	[1.175]
Size (t-n, t)	-0.680***	-0.132**	-0.142**	-0.233**	-0.682***	-0.681***	-0.684***
	[-4.711]	[-2.230]	[-2.045]	[-2.525]	[-3.388]	[-3.515]	[-3.528]
SoftAssets (t-n, t)	0.907	0.416	0.548	-0.400	0.905	0.907	0.911
	[1.367]	[0.630]	[0.913]	[-0.455]	[1.446]	[1.438]	[1.424]
SqEmp (t-n, t)	0.044	-0.096	-0.148***	-0.108*	0.039	0.042	0.043
	[0.569]	[-1.499]	[-2.647]	[-1.647]	[0.580]	[0.639]	[0.671]
TotalAccruals (t-n, t)	0.777	2.377***	1.814***	0.902	0.844	0.802	0.751
	[0.907]	[3.138]	[3.582]	[1.614]	[1.451]	[1.413]	[1.442]
ExtraDiscOps (t-n, t)	0.062	0.223	0.337	-0.046	0.059	0.051	0.052
	[0.293]	[0.940]	[1.567]	[-0.193]	[0.372]	[0.355]	[0.378]
DecYrEnd (t-n, t)	-0.508**				-0.503*	-0.496*	-0.500*
	[-2.370]				[-1.774]	[-1.743]	[-1.810]
ClientImportance	33.726				35.677	34.918	34.424
	[1.580]				[1.471]	[1.458]	[1.432]
LnAssureFee	0.020				0.020	0.020	0.020
	[1.165]				[0.752]	[0.744]	[0.749]
LnTaxFee	0.045**				0.046	0.046	0.046
	[2.331]				[1.371]	[1.330]	[1.325]
AbnAudFee	-1.014***				-1.079***	-1.043***	-1.039***
	[-4.437]				[-2.652]	[-2.911]	[-2.794]
AudLagPercent	0.784				0.745	0.783	0.771
	[0.915]				[1.434]	[1.455]	[1.477]
Miss10K	0.670**				0.667***	0.676***	0.675***
	[2.303]				[2.926]	[2.943]	[2.937]
Cur402 (t-n, t)	-0.339	0.901***	0.743*	1.079***	-0.474	-0.347	-0.335
	[-0.653]	[3.263]	[1.665]	[2.616]	[-1.024]	[-0.845]	[-0.816]
CurRestate (t-n, t)	0.633**	0.766***	0.589**	0.828**	0.536**	0.620**	0.631***
	[2.070]	[3.473]	[2.048]	[2.543]	[2.412]	[2.442]	[2.651]
SECoffice	0.395**				0.396	0.395	0.392
	[2.064]				[1.215]	[1.219]	[1.223]
Intercept		-1.887***	-0.743	-0.402	-0.530	-0.646	-0.583
		[-2.661]	[-1.621]	[-0.571]	[-0.257]	[-0.311]	[-0.287]
Observations	8245	8547	8547	8547	8547	8547	8547
Auditor Fixed Effects	Y	Y	Y	Y	Y	Y	Y
Industry Fixed Effects	Y	Y	Y	Y	Y	Y	Y
Year Fixed Effects	Y	Y	Y	Y	Y	Y	Y

Appendix U: Path Analysis of Current Ineffective ICFR, Future Ineffective ICFR, and Current Misstatements (Excluding 2004-2005)

This figure and table presents the results of a path analysis measuring the direct and indirect associations between ineffective ICFR and current financial misstatements identified at a later date using a sample of 6,806 firm years with unqualified audit opinions from 2006-2013 (1,459 observations are excluded from the single equation model due to perfect predictability). Odds ratio computation in a single equation regression shows that ineffective ICFR are associated with 171% higher odds of current financial misstatement, which translates to a 164% higher probability using the likelihood of financial misstatement absent ineffective ICFR for the sample as a baseline. Path analysis using a system of equations shows that 40% of this effect (68% higher odds; 66% higher probability) is mediated through additional ineffective ICFR reported in the subsequent year. All regressions use clustered standard errors. Z-statistics are presented in brackets. The symbols ***, **, and * are used to denote statistical significance at the 1%, 5%, and 10% levels, respectively.



	Single Equation	Path Analysis	
	CurMisstate	MW (t+1)	CurMisstate
MW	**0.997*** **	**1.963*** **	**0.492**
	[2.723]	**[11.518]**	**[1.313]**

MW (t+1)			**2.178*** [18.826]**
Observations	5347	6806	6806
Controls	Y	Y	Y
Auditor Fixed Effects	Y	Y	Y
Industry Fixed Effects	Y	Y	Y
Year Fixed Effects	Y	Y	Y

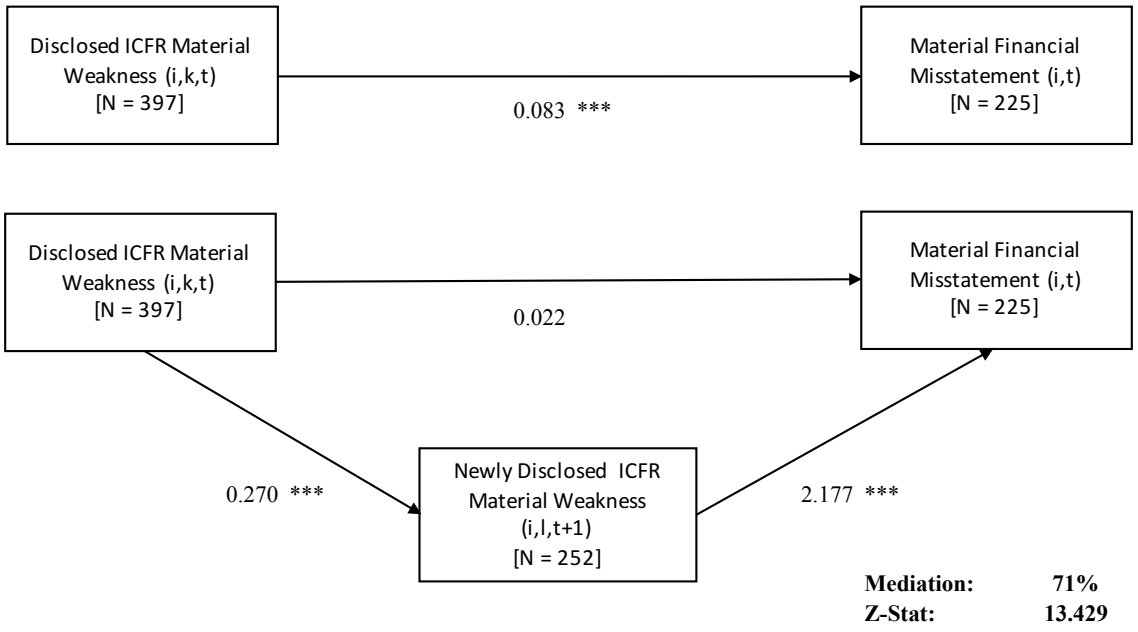
Appendix V: Sample Validity Tests Using Unscaled Audit Lag

This table presents results from an alternate version of my sample validity tests using unscaled audit lag instead of audit lag scaled by the client's required filing window. Odds ratio computation also shows that ineffective ICFR are associated with 86% higher odds of current financial misstatement, which translates to an 82% higher probability using the likelihood of financial misstatement absent ineffective ICFR for the sample as a baseline (1,128 observations are excluded from the misstatement test due to perfect predictability). Results show that the disclosure of ineffective ICFR is associated with a 12% increase in audit lag and 38% increase in the effort factor. Results also show that the disclosure of ineffective ICFR is associated with a 38% increase in the audit fee premium (the portion of audit fees unrelated to additional effort) using an abnormal audit fee model, and a 3% increase in the audit fee premium when using a total audit fee model. All regressions use clustered standard errors. T-statistics are presented in brackets. The symbols ***, **, and * are used to denote statistical significance at the 1%, 5%, and 10% levels, respectively.

	Reporting Quality	Auditor Effort		Audit Risk Premium	
	CurMisstate	AudLag	EffortFactor (unscaled	AbnAudFee	LnAudFee
MW	**0.623*** **	**9.978*** **	**0.734*** **	**0.255*** **	**0.276*** **
	[0.207]	**[37.991]**	**[38.258]**	**[13.418]**	**[13.227]**
AudLag	0.021***			0.007***	0.008***
	[0.006]			[5.940]	[6.200]
Observations	7520	8648	8648	8648	8648
Controls	Y	Y	Y	Y	Y
Auditor FE	Y	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y
R-Squared	0.167	0.380	0.337	0.296	0.811

Appendix W: Path Analysis of Current Ineffective ICFR, Future Ineffective ICFR, and Current Misstatements (Using MW Counts)

This figure and table presents the results of a path analysis measuring the direct and indirect associations between counts of areas impacted by ineffective ICFR and current financial misstatements identified at a later date using a sample of 8,648 firm years with unqualified audit opinions from 2004-2013 (1,128 observations are excluded from the single equation model due to perfect predictability). Odds ratio computation in a single equation regression shows that counts of areas impacted by ineffective ICFR are associated with 9% higher odds of current financial misstatement, which translates to an 8% higher probability using the likelihood of financial misstatement absent ineffective ICFR for the sample as a baseline. Path analysis using a system of equations shows that 71% of this effect (6% higher odds; 6% higher probability) is mediated through additional ineffective ICFR reported in the subsequent year. All regressions use clustered standard errors. Z-statistics are presented in brackets. The symbols ***, **, and * are used to denote statistical significance at the 1%, 5%, and 10% levels, respectively.

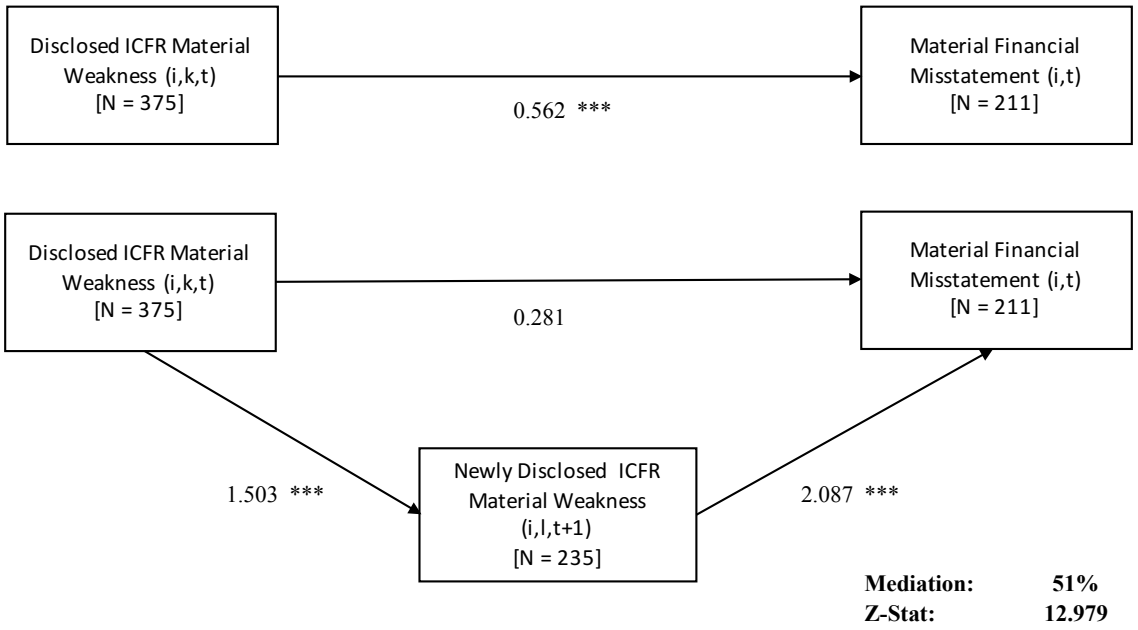


	Single Equation	Path Analysis	
	CurMisstate	MW (t+1)	CurMisstate
MW	**0.083*** **	**0.270*** **	**0.022**
	[3.103]	**[11.124]**	**[0.812]**

MW (t+1)			**2.177*** [14.345]**
Observations	7520	8648	8648
Controls	Y	Y	Y
Auditor Fixed Effects	Y	Y	Y
Industry Fixed Effects	Y	Y	Y
Year Fixed Effects	Y	Y	Y

Appendix X: Path Analysis of Current Ineffective ICFR, Future Ineffective ICFR, and Current Misstatements (Excluding Financials and Utilities)

This figure and table presents the results of a path analysis measuring the direct and indirect associations between ineffective ICFR and current financial misstatements identified at a later date using a sample of 7,819 firm years with unqualified audit opinions from 2004-2013, excluding financial and utility firms (979 observations are excluded from the single equation model due to perfect predictability). Odds ratio computation in a single equation regression shows that ineffective ICFR are associated with 75% higher odds of current financial misstatement, which translates to a 72% higher probability using the likelihood of financial misstatement absent ineffective ICFR for the sample as a baseline. Path analysis using a system of equations shows that 51% of this effect (39% higher odds; 37% higher probability) is mediated through additional ineffective ICFR reported in the subsequent year. All regressions use clustered standard errors. Z-statistics are presented in brackets. The symbols ***, **, and * are used to denote statistical significance at the 1%, 5%, and 10% levels, respectively.

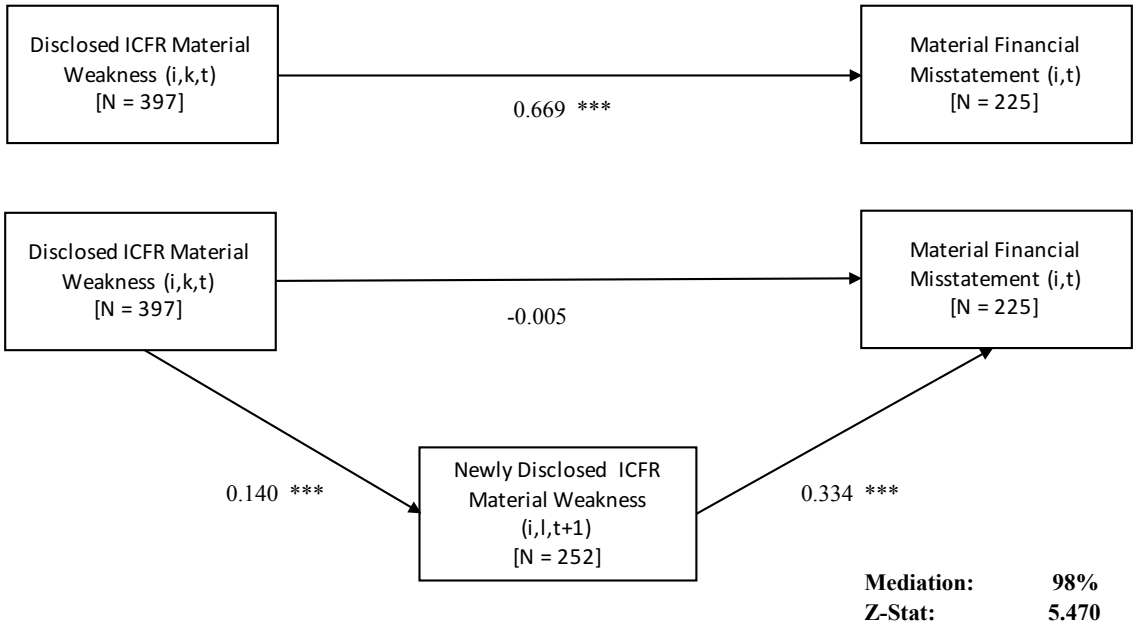


	Single Equation	Path Analysis	
	CurMisstate	MW (t+1)	CurMisstate
MW	**0.562*** **	**1.503*** **	**0.281**
	[2.801]	**[13.921]**	**[1.144]**

MW (t+1)			**2.087*** [16.390]**
Observations	6840	7819	7819
Controls	Y	Y	Y
Auditor Fixed Effects	Y	Y	Y
Industry Fixed Effects	Y	Y	Y
Year Fixed Effects	Y	Y	Y

Appendix Y: Path Analysis of Current Ineffective ICFR, Future Ineffective ICFR, and Current Misstatements (Using Three Stage Least Squares)

This figure and table presents the results of a path analysis measuring the direct and indirect associations between ineffective ICFR and current financial misstatements identified at a later date using a sample of 8,648 firm years with unqualified audit opinions from 2004-2013 (1,128 observations are excluded from the single equation model due to perfect predictability). Odds ratio computation in a single equation regression shows that ineffective ICFR are associated with 95% higher odds of current financial misstatement, which translates to a 91% higher probability using the likelihood of financial misstatement absent ineffective ICFR for the sample as a baseline. Path analysis using a system of equations shows that 98% of this effect (93% higher odds; 89% higher probability) is mediated through additional ineffective ICFR reported in the subsequent year. All regressions use clustered standard errors. Z-statistics are presented in brackets. The symbols ***, **, and * are used to denote statistical significance at the 1%, 5%, and 10% levels, respectively.



	Single Equation	Path Analysis	
	CurMisstate	MW (t+1)	CurMisstate
MW	**0.669*** **	**0.140*** **	**-0.005**
	[2.777]	**[15.520]**	**[-0.413]**

MW (t+1)			**0.334*** [5.450]**
Observations	7520	8648	8648
Controls	Y	Y	Y
Auditor Fixed Effects	Y	Y	Y
Industry Fixed Effects	Y	Y	Y
Year Fixed Effects	Y	Y	Y

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