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Abstract

Using the reforms to audit committees mandated by the Sarbanes-Oxley Act of 2002 and the difference-in-difference approach, we examine the impact of changes in audit committee attributes (financial expertise, size, and independence) on firms' audit inputs and financial reporting quality. Firms directly affected by the reforms experienced a larger improvement in audit inputs (measured by audit fees and the appointment of an industry specialist auditor) and a larger increase in financial reporting quality (measured by restatements of financial reports) relative to firms that were already compliant. Importantly, we find that the decline in restatements is not related to the improvement in audit inputs. This suggests that larger, more independent, and more competent audit committees are better able to detect misstatements or deter opportunistic reporting by management, independent of the level of audit input quality. The results therefore provide justification for the audit committee reforms.

1. Introduction

The role of audit committees in the oversight of financial reporting and audit processes continues to be of importance to regulators, academics, the accounting profession, and investors alike (e.g., Blue Ribbon Committee 1999; Dhaliwal et al. 2010; Sarbanes-Oxley Act 2002). While many studies document a positive association between audit committee (AC hereafter) attributes and both audit inputs and financial reporting quality, the validity of the evidence is often questioned because of the endogenous nature of the associations. Moreover, because the evidence suggests that AC attributes are positively associated with both audit inputs and financial reporting quality, it is unclear whether the relation between AC characteristics and financial reporting quality is driven indirectly by the impact of AC attributes on audit effort and auditor quality, or directly by the impact of AC attributes on the ability and incentives of management to manipulate accounting information.

We bridge these gaps in the literature using the AC reforms mandated by the Sarbanes-Oxley Act (SOX) in 2002. The exogenously mandated reforms allow us to examine the *causal* impact of changes in AC attributes (financial expertise, size, and independence) on both audit inputs (measured by audit fees and the appointment of an industry specialist auditor) and financial reporting quality (measured by restatement of financial reports).[1] Further, since the reforms potentially affected both audit inputs and financial reporting quality, this setting provides an opportunity to examine the direct impact of AC characteristics on financial reporting quality by testing whether the effect of the reforms on financial reporting quality, if any, exists after controlling for changes in audit inputs. This analysis provides evidence on the benefits of strengthening AC attributes vis-à-vis the ability of the AC not only to detect potential manipulation through the audit process itself, but also to deter management from engaging in such manipulation. If an AC is perceived by management to be competent and independent, then the likelihood of low financial reporting quality may be reduced *ex ante*.

Most prior studies typically examine the relation between AC attributes and either audit inputs or financial reporting outcomes. The general conclusion is that AC attributes are positively associated with audit inputs and financial reporting quality.

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[1] We use restatements to identify substandard financial reporting because restatements are an acknowledgement that prior financial statements are not in accordance with generally accepted accounting principles (Palmrose and Scholz 2004). Outside directors and auditors of restating firms thus face a high risk of turnover and reputational penalties (Srinivasan 2005; Hennes et al. 2011).

The evidence suggests that ACs with more independent directors or financial experts are associated with higher audit fees in the US (Abbott et al. 2003; Carcello et al. 2002) and the UK (Collier and Gregory 1996). Further, more independent and active ACs are more likely to appoint an industry specialist auditor (Abbott and Parker 2000). Studies also show that firms with more independent ACs have higher accruals quality (Klein 2002; Jenkins 2002) and are less likely to engage in fraudulent financial reporting (Dechow et al. 1996; Abbott et al. 2004; Beasley et al. 2000) or misstate financial reports (Abbott et al. 2004; Agrawal and Chandra 2005). In addition, firms with financial experts in the AC are less likely to restate financial reports (Cohen et al. 2010) and have better accruals quality (Dhaliwal et al. 2010).

Notwithstanding the evidence on the association between AC attributes and both audit inputs and reporting quality, much of the extant research assumes implicitly that AC governance variables are exogenous. However, failure to consider the endogenous nature of AC governance characteristics is often a threat to a study's internal validity (Carcello et al. 2011), which makes it hard to draw inferences on the causal impact of AC attributes on audit inputs or financial reporting quality. In particular, the relation between AC attributes and audit inputs or financial reporting quality is typically gauged based on the sign of the coefficients on the AC attributes in regressions where the dependent variable is either an audit input or financial reporting quality. To the extent that the AC attributes are correlated with unobservable variables that are also correlated with the dependent variable, the estimated coefficients are likely to be biased. For instance, in a regression of audit fees on AC attributes, both the dependent and independent variables are affected by unobservable exogenous determinants such as the level of agency costs and managerial bargaining power.[2] Hence, a positive association between audit fees and AC characteristics can be spurious due to the failure to control for the unobserved exogenous determinants. The standard textbook solution to this problem is to implement a two-stage least-squares estimation procedure, which requires instrumental variables that are correlated with the endogenous repressor but uncorrelated with the error in the structural equation.

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[2] When managerial power is high, ACs can be less competent and less independent because management would choose AC members that are relatively weak and less likely to prevent management from engaging in earnings manipulation. At the same time, management is likely to demand lower audit fees so that they are less constrained to manipulate. In such instances the positive association between audit fees and governance is simply attributed to managerial power, and thus failing to control for this variable would lead to the erroneous conclusion of a positive association between audit fees and the competence and independence of the committee.

However, it is not easy to adopt this procedure in most applied settings because such instrumental variables are extremely difficult to identify (Maddala 1977; Larcker and Rusticus 2010).

Another possible endogeneity problem is reverse causality. A key issue in any empirical work on the effect of board characteristics on firms is whether such characteristics are in fact an outcome of the equilibrium in the market for directors (Hermalin and Weisbach 1998). For example, Rubin and Segal (2012) find that reputable directors choose to serve on boards of companies with lower levels of discretionary accruals and higher innate earnings quality. In this case the positive association between corporate governance and financial reporting quality may be explained by reverse causality – that is, governance characteristics are determined by reporting quality. To establish the causal effect of ACs on audit inputs and accounting outcomes, the issue of endogeneity must therefore be addressed.

This study uses the reforms to ACs mandated by SOX to examine the causal impact of changes in AC attributes on audit inputs and financial reporting quality. In response to accounting scandals in 2001 and 2002, the US Congress enacted SOX on July 29, 2002. Several requirements of the Act have a direct impact on the composition of ACs. In particular, Section 301 requires that all AC members be independent directors, that is, they must not receive compensation from the company other than a director or committee fee, or be affiliated with the company or any of its subsidiaries. Section 407 requires that the Securities and Exchange Commission (SEC) issue rules whereby ACs include at least one financial expert. Following the enactment of SOX, on January 15, 2003 the SEC issued Rule 10A-3, which mirrors SOX 301 and SOX 407 by requiring that firms have only independent directors and include at least one financial expert on their audit committees. In line with this Rule, Section 303A of the NYSE's Listed Company Manual mandates that all listed firms meet the requirements of Rule 10A-3. In addition, the NYSE stipulated that the AC include at least three independent directors by October 2004.[3] NASDAQ imposed similar guidelines.

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[3] Prior to the adoption of these policies, listed firms were subject to the three-member and independence requirements. However, the exchanges allowed for exceptions, which resulted in a large number of non-compliance cases. Specifically, in December 1999, the NYSE and NASDAQ mandated listed companies to maintain ACs with at least three directors, "all of whom have no relationship to the company that may interfere with the exercise of their independence from management and the company." However, NASDAQ Rule 4310(c)(26)(B)(ii) allowed the board under "limited circumstances" to appoint any non-current employee or family member to the audit committee, and

The new rules primarily affected firms that were not compliant ('non-compliant firms') with one or more of the requirements described above and were thus obliged to change the composition of their AC. This setting provides a natural experiment to investigate the impact of changes in the composition of ACs on audit inputs and financial reporting quality for three reasons. First, the AC is directly responsible for the hiring, performance evaluation, and compensation of external auditors. The committee also oversees financial reporting and disclosure by monitoring the choice of accounting policies and principles as well as the internal control process (Blue Ribbon Committee 1999; DeZoort 1997). Second, because the reform was exogenously mandated, changes to AC composition under this reform can be attributed largely to the rulings rather than to unobservable firm or CEO characteristics, thereby mitigating endogeneity concerns. Third, because a relatively large number of firms were affected by the new regulation, we have a reasonable sample size for empirical tests.[4]

We investigate the impact of the AC reform using the difference-in-difference approach for compliant and non-compliant firms. The non-compliant sample includes all firms that did not meet any of the three new AC requirements in 2002 but became compliant by 2005. The compliant sample comprises all firms that were compliant with all three requirements in both 2002 and 2005, namely, (1) at least one financial expert, (2) at least three members, and (3) only independent directors. We examine audit fees, the likelihood of industry specialist auditor (ISA) appointment,[5] and the likelihood of restatement in the pre- and post-reform periods for each non-compliant subsample along with its matched compliant sample obtained from a match design analysis.

NYSE Section 303.01(B)(3)(b) gave the board broader discretion in appointing directors with business relationships to the firm. If the board determines that the independence of the director is not compromised by the business relationship, then that director may serve on the board's AC. Thus, some firms maintained an AC that consists of less than three independent members, while others already met the requirements related to three-member independence of the AC prior to the adoption of the new rule.
[4] SOX includes several other provisions that are also likely to affect financial reporting quality such as the prohibition of certain auditor non-audit services (Section 201), the assessment of internal controls (Sections 302 and 404), and CEO/CFO certification (Section 906). However, because these provisions affected all firms, and because we use the difference-in-difference approach, we expect that the effects of these provisions would cancel out.
[5] We define an auditor as an ISA if the auditor has the largest market share in a two-digit SIC industry in a particular year at both the city level and the national level. Recent research suggests that city-specific office-level industry leadership, when combined with national-level leadership, generates significantly higher audit quality and audit fee premiums, while national-level industry leadership alone has little effect (e.g., Francis et al. 2005; Reichelt and Wang 2010).

Our results reveal that non-compliant firms experienced a greater increase in audit fees and were more likely to appoint an ISA relative to their matched compliant firms in the post-SOX period. Specifically, firms that were non-compliant with the financial expert or three-member requirement exhibited a greater increase in audit fees relative to their matched compliant sample. All three non-compliant subsamples experienced a significantly greater increase in ISA appointments. Further, non-compliant firms experienced a greater increase in financial reporting quality in the post-SOX period as evidenced by the greater decline in the likelihood of restatement relative to their matched compliant firms. Taken together, these findings suggest that firms directly affected by the AC reform are associated with greater improvements in audit inputs and financial reporting quality. Hence, the evidence suggests that AC attributes have a causal impact on audit inputs and financial reporting quality.

The greater reduction in restatements for non-compliant firms in the post-SOX period could be attributed to improved competence and independence of the AC, which would increase the detection of misstatements through more effective internal controls and thus constrain opportunistic reporting by managers. Alternatively, it could be attributed to greater auditing effort and higher auditor quality (as evidenced by the increases in audit fees and ISA appointments) subsequent to the AC reforms. We disentangle these two effects by examining whether the reduction in restatements in the post-reform period is related to the change in audit fees and ISA appointments. Our findings suggest that the reduction in restatements for non-compliant firms is largely independent of the changes in audit fees and ISA appointments, which suggests that it is mainly driven by enhanced monitoring capabilities as a result of improvements to the committee's competence and independence. We also find that our results are robust to several alternative research design choices.

Our study contributes to the literature on the effects of AC attributes on audit inputs and accounting outcomes (e.g., Abbott et al. 2004; Agrawal and Chandra 2005; Dechow et al. 1996). While prior studies document a positive association between AC attributes and both audit inputs and financial reporting quality, the evidence is often criticized as inconclusive since the structure of the committee is an endogenous variable. This study alleviates endogeneity concerns by analyzing a regulatory event that causes an exogenous change to ACs. Moreover, our difference-in-difference approach controls for any confounding economic events that occurred during the legislation event and hence could have affected audit inputs and reporting outcomes

in all firms. The evidence provided by our study therefore sheds light on the role of ACs in the oversight of the financial reporting and audit processes.

Our study also contributes to the literature on the efficacy of SOX requirements in relation to the committee's composition. While recent studies (e.g., Cohen et al. 2010; Dhaliwal et al. 2010; Goh 2009) examine this issue using post-SOX data, existing research has yet to describe the extent to which AC attributes are linked to audit inputs and restatements. Our findings suggest that the AC reforms improved audit quality and the reliability of financial reporting, lending support to view that the SOX requirements have enhanced financial reporting quality. Thus, the results of our study will be of interest to shareholders and policymakers.

Finally, this study enhances our understanding of the role played by ACs in detecting and deterring financial misstatements. While prior research documents a negative relation between the effectiveness of an AC and the likelihood of misstatement (Abbott et al. 2004; Agrawal and Chandra 2005), it is unclear whether this result is driven by the monitoring capacity of a more competent and independent AC, improved auditing effort, or higher quality auditors (Caramanis and Lennox 2008; Chin and Chi 2009). Our findings indicate that the characteristics of the AC play an important role in mitigating substandard financial reporting, even after controlling for the increase in audit fees and auditor selection, suggesting that the effect of the former is largely independent of the effect of the latter.

The remainder of the study proceeds as follows. In Section 2 we develop the hypotheses. In Section 3 we describe the data and report univariate results. Section 4 presents the main empirical results. In Section 5 we discuss sensitivity analyses and Section 6 concludes.

2. Literature and Hypothesis Development

2.1 Audit Committee, Auditing, and Financial Reporting Failure

Since ownership and control are separate for most public firms, managers may have an incentive to misreport financial results for opportunistic purposes (Jensen and Meckling 1976). Research suggests that independent directors who serve on the AC have a strong incentive to detect and prevent such opportunistic reporting behavior by management to avoid possible litigation and protect their reputation capital (Fama 1980; Fama and Jensen 1983). Financial reporting failure has a significant negative

impact on the reputation capital of directors and consequently on the likelihood of obtaining additional board seats, especially if the director serves on the AC (Srivivasan 2005). Hence, AC members have an even greater incentive to reduce the risk of financial reporting failure.

Stressing the role of both the AC and the auditor in deterring financial reporting failure, Elifsen and Messier (2000) argue that the following four conditions should be met for the restatement of financial reports. First, there is a material misstatement that can be attributed to opportunistic manipulation by management or weak internal controls. Second, the misstatement is not detected by internal controls, which include AC monitoring. Third, it is also not detected by the external auditor. Fourth, the misstatement is subsequently discovered. Based on these criteria and holding management opportunism constant, the risk of financial reporting failure can be reduced either by increasing the competence and independence of the AC and/or by a improving the auditing process of the external auditor.

The AC reforms mandated by SOX can affect the likelihood of restatement through two channels. First, improved audit inputs potentially reduce the likelihood of restatement by enhancing auditing quality. Second, the change in the competence, size, and independence of the AC increases the probability that substandard reporting will be detected, which should deter management from engaging in opportunistic reporting behavior in the first place.

We first develop our hypothesis on the relation between AC attributes and audit inputs. We then discuss our hypothesis on the relation between AC attributes and restatements. Finally, we discuss whether the impact of the AC reforms on accounting restatements can be attributed to the change in audit inputs, the change in the competence, size and independence of the AC, or both.

2.2 Relation between Audit Committee Attributes and Audit Inputs

The reforms imposed by SOX were aimed to enhance the competence (through the requirement of at least one financial expert) and independence of ACs (through the requirement of at least three members, all of which are independent). While these reforms were expected to reduce the likelihood of financial reporting failures *ex ante* (as discussed in Section 2.3), the impact on audit inputs is less clear, although a majority of studies find that improved AC attributes are associated with a greater commitment to audit assurance.

A more competent and independent AC is likely to require greater auditing effort and higher quality auditors for three reasons. First, such a committee is likely to demand stronger corporate governance, prompting the firm to devote more resources to the auditing process and thereby reducing the likelihood of governance failure in the form of misstatements *ex ante*. Second, as the AC's competence improves, the AC members are likely to better understand management opportunism and the negative consequences of a financial reporting failure, and hence to require greater audit inputs that aim to alleviate such concerns. Third, a larger and more independent AC has greater bargaining power, which allows the committee to demand and obtain greater auditing effort and higher quality auditors.

Previous findings are largely consistent with a positive association between AC competence and independence and audit inputs. Abbott and Parker (2000) find that firms with ACs comprised exclusively of independent directors that meet at least twice a year are more likely to appoint an ISA. Chen and Zhou (2007) find that companies with more independent directors and financial experts in the AC terminated their relationship with Andersen sooner after its failure at Enron; they also document that firms with ACs that have more members, more meetings, and higher independence were more likely to select a Big 4 successor auditor. Lennox and Park (2007) find that firms with a more independent AC are less likely to appoint an audit firm where key officers are alumni of that audit firm in an effort to promote auditor independence.

Consistent with more competent and independent ACs demanding greater auditing effort from auditors (Simunic and Stein 1996), prior literature shows that ACs with more independent directors or financial experts are associated with higher audit fees in the US (Abbott et al. 2003) and the UK (Collier and Gregory 1996). Carcello et al. (2002) also find that board and AC independence, diligence, and expertise are positively related to audit fees. In sum, using key AC characteristics such as independence, diligence, expertise, and size as measures of effectiveness, the literature documents that more effective ACs seek a higher level of audit assurance by appointing a higher quality auditor and demanding greater auditing effort.

Although the vast majority of the evidence points to a positive association between AC competence and independence and audit inputs, some studies report a negative association, arguing that enhanced competence and independence can result in fewer resources being allocated to auditing because improved governance can

reduce the inherent control risk. For example, Bedard and Johnston (2004) find evidence that auditors consider earnings management risk and governance risk when planning their auditing effort and billing rates. In particular, they document an increase in auditing effort when earnings management and governance risk are high. Similarly, Griffin et al. (2008) and Tsui et al. (2001) report a negative association between better governance and audit fees.

Given that the requirements of SOX – that the AC include at least one financial expert, that the AC have a minimum of three members, and that all members of the AC be independent directors – primarily affected firms that were non-compliant with any one of these requirements, the impact of the reforms on audit inputs can be gauged relative to the sample of compliant firms, since these firms experienced no change in AC governance. Accordingly, we compare the changes in audit inputs, that is, audit fees and the likelihood of appointing an ISA, between the pre- and post-SOX period for a sample of compliant and non-compliant firms. Our hypotheses on the relation between the AC reform and the changes in audit inputs are thus as follows (stated in null form):

> **H1a**: Non-compliant and compliant firms experience a similar change in audit fees from the pre- to the post-SOX period.

> **H1b**: Non-compliant and compliant firms experience a similar change in the likelihood of appointing an ISA from the pre- to the post-SOX period.

2.3 Relation between Audit Committee Attributes and Financial Reporting Failure

Given that ACs primarily oversee the financial reporting process and its quality, another stream of research examines the link between AC characteristics and financial reporting outcomes such as earnings management, accruals quality, and restatements. In general, the evidence suggests that a more independent and competent AC reduces the likelihood of financial reporting failure and is associated with better earnings and accruals quality. Specifically, AC independence is associated with a reduced likelihood of fraudulent financial reporting (Dechow et al. 1996; Abbott et al. 2000; Beasley et al. 2000), better accruals quality (Klein 2002; Jenkins 2002), and a reduced likelihood of restatement (Abbott et al. 2004; Agrawal and Chandra 2005). Similarly, firms with more competent ACs whose members include a financial expert are less likely to have internal control deficiencies (Zhang et al. 2007), financial reporting problems (McMullen and Raghunandan 1996), or restatements

(Cohen et al. 2010). Using post-SOX data, Dhaliwal et al. (2010) find that accruals quality is positively related to accounting expertise on the AC.

Our second hypothesis relates changes in AC competence and independence to the likelihood of financial reporting failure. Similar to above, we posit that the improvement in financial reporting quality (i.e., the reduction in the likelihood of restatement) in the post-SOX period is greater for non-compliant firms than compliant firms (stated in null):

H2: Non-compliant and compliant firms experience a similar change in the likelihood of restatement from the pre- to the post-SOX period.

2.4 Disentangling the Impacts of Changes in Governance and Audit Inputs on Financial Reporting Failure

Although we expect the AC reforms to reduce the likelihood of restatement, it is unclear whether this decline would be driven by improved governance *per se,* enhanced audit inputs, or a combination of the two. In other words, there is ambiguity as to whether the reduction in financial reporting failures (if any) can be attributed to improved AC competence and independence, greater auditing effort by higher quality auditors, or both.

The relation between audit fees and restatements is likely endogenous, hence it is not clear whether audit fees are positively or negatively associated with the likelihood of restatement. On the one hand, higher fees are likely to be associated with better audit quality (Caramanis and Lennox 2008), and thus misstatements are more likely to be detected, which suggests a negative relation between fees and restatements.[6] On the other hand, audit fees may reflect an auditor's assessment of the *ex ante* probability of financial reporting failure, which suggests a positive association. In addition, higher fees may increase the auditor's desire to retain the client and in turn harm auditor independence, which would increase the probability of financial reporting failure (Choi et al. 2010). Studies on the relation between audit inputs and restatements provide mixed results. Empirical findings based on pre-SOX data are broadly consistent with a positive association between audit fees and restatements (Kinney et al. 2004; Stanley and DeZoort 2007; Li and Lin 2007). In contrast, after controlling for the quality of internal controls, Blankley et al. (2012) find that

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[6] While Chin and Chih (2010) document a negative association between restatement and ISA, this relation can be endogenous as well.

abnormal audit fees are negatively associated with restatements in the post-SOX period. Our third hypothesis (stated in null) relates the change in the likelihood of restatement to the change in audit inputs:

> **H3a**: The greater decline in restatements from the pre- to the post-SOX period for non-compliant firms relative to compliant firms, if any, is not associated with the change in audit inputs.

Prior studies suggest that the impact of AC attributes on the likelihood of restatement can be small. The managerial power hypothesis (e.g., Cohen et al. 2007) posits that if managers simply invite their friends to serve as passive directors, the AC will be purely symbolic as it will be consistently supportive of management. Similarly, institutional theory (e.g., Scott 1987; Barreto and Baden-Fuller 2006) emphasizes the symbolic and ceremonial role of governance, arguing that most firms' governance structures become similar as a result of regulation or the mimicking of other firms. Based on these theories, nominal compliance with the AC reforms is unlikely to affect the likelihood of restatement.

However, to the extent that changes to the AC yield a real improvement in competence and independence, one would expect to observe a decline in the likelihood of misstatement, regardless of changes in audit inputs, for two reasons. First, a more competent AC is more likely to detect opportunistic financial reporting by facilitating more effective internal controls. Second, the increase in competence and independence is expected to affect management's assessment of the likelihood of detection of accounting manipulation – in particular, it is likely to increase the perception of manipulation detection *ex ante*. This increase in the perception of detection is expected to constrain management's fraudulent financial reporting motives. Hence, the increase in competence and independence will reduce the likelihood of substandard reporting unconditionally, that is, regardless of the change in audit inputs. Our final hypothesis (stated in null) relates the reduction in the likelihood of restatement to the changes in AC attributes and the change in audit inputs:

> **H3b**: Irrespective of the change in audit inputs, the change in restatements from the pre- to the post-SOX period for non-compliant firms relative to compliant firms is not associated with the change in the competence and independence of the AC.

3. Data and Univariate Analyses

Director data for the period 2001-2006 come from RiskMetrics, a provider of corporate governance data. The data cover primarily S&P 1500 firms and include a range of variables related to individual director characteristics such as age, tenure, committee membership, and independence. Using these data we compute for each firm-year the number of members in the AC and the proportion of independent directors among the AC members.

We obtain data on individual directors' financial expertise from their profiles in Corporate Library. The SEC defines as a financial expert a director who has accounting financial expertise (as evidenced by experience as certified public accountant, auditor, chief financial officer, chief accounting officer, or controller) or non-accounting financial expertise (as evidenced by experience as chief executive officer or chairman). Based on this definition, we classify a director as a financial expert if the director's bio describes a previous or current position as an accounting or non-accounting financial expert. Combining the financial expert data with the RiskMetrics data, we determine for each firm-year whether the AC includes at least one financial expert.

To identify firms affected by the AC reform, we require that each firm have, at a minimum, data in 2002 and 2005, resulting in an initial sample of 860 firms. Excluding firms in the financial sector (SIC codes 60-69) and utility sector (SIC codes 49-50) reduces the sample to 672 firms. We next obtain a sample of non-compliant firms for each of the AC requirements – financial expert, three members, full independence – by evaluating whether firms met the requirements in 2002 and 2005. Specifically, the 'Financial Expert' non-compliant sample includes all firms that did not have a financial expert on the AC in 2002 but became compliant (i.e., added a financial expert to the AC) by 2005. Similarly, the 'Three-Member' and 'Independence' non-compliant samples include firms that had less than three AC members and at least one non-independent AC director in 2002 but became compliant by 2005. The sample of compliant firms includes those that were compliant with all three requirements in both 2002 and 2005. We initially identify 136 firms that were non-compliant for any reason. Of these, 33 were non-compliant with the financial-expert requirement, 65 with the three-members requirement, and 93 with the full-

independence requirement; 61 firms were non-compliant for any two requirements, and six were non-compliant for all three reasons.

We obtain financial data from Compustat and CRSP, and audit-related information and restatements from the Audit Analytics database.[7] To facilitate the analysis, we require non-missing data for audit fees, restatements, industry specialist auditors, and other control variables. These restrictions result in a final sample of non-compliant firms consisting of 108 unique firms, where the Financial Expert, Three-Member, and Independence non-compliant samples comprise 26, 52, and 72 firms, respectively. Of these, 34 (4) firms were non-compliant for two (three) categories while 70 firms were non-compliant with a single category. Table 1 shows the distribution of non-compliant firm-years by category of non-compliance.

(Insert Table 1 about here)

We examine the impact of changes in AC composition on audit inputs and restatements relative to a sample of compliant firms. We use a matched sample research design to control for the possibility that the non-compliant samples differ in audit risk and complexity. This research design also controls for concerns regarding time-series effects and potential correlated omitted variables. We match each non-compliant firm-year with a firm-year from the compliant sample using propensity score matching. For each year we estimate the propensity score using proxies for size, audit risk, operational complexity, and audit engagement attributes, which are the main determinants of audit fees and restatements. Given the limited sample size, we use the most important proxies for audit fees and restatement determinants. In particular, we match based on size (natural log of total assets), profitability (return on assets), level of inventory and receivables relative to total assets, equity return volatility, number of business segments, and a Big N auditor indicator variable.[8] Untabulated tests indicate that the compliant and non-compliant firms within each of the three matched samples have similar attributes; none of the differences in the matching determinants is statistically significant at conventional levels.

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[7] Audit Analytics includes restatements made by public companies to correct accounting that does not conform to GAAP. It excludes restatements due to changes in accounting principles, GAAP-to-GAAP changes, and changes in estimates.

[8] Ideally one conducts the match based on industry and year, but our limited sample size does not allow us to do so. In many industry-years, the number of observations is not sufficient to facilitate the matching methodology, and the resulting sample is significantly smaller.

Table 2 reports the mean of the variables used in this study for each of the matched samples.[9] The Appendix describes how the variables used in this study were computed. Although the mean of most variables is similar across the three samples, there are notable differences. The mean audit fee is about $2 million for the Financial Expert and Three-Member samples, but much higher – $3.75 million – for the Independence sample. One reason for the difference is firm size: while the Financial Expert and Three-Member sample firms are of comparable average size (mean total assets of $2,444 million and $3,099 million, respectively), the average firm size for the Independence sample is much larger (mean total assets of $7,549 million). Mean ISA is around 27-28% for the Financial Expert and Independence samples but lower for the Three-Member sample (20%). The likelihood of restatement is lowest for the Independence sample (0.175) and around 0.23 for the other samples. The Independence sample has the highest profitability (ROA) and likelihood of discontinued operations, and the lowest equity return volatility, book-to-market ratio, and likelihood of reporting a loss. Overall, Table 2 indicates that the three samples are not homogenous, providing further justification for the use of the matching research design.

(Insert Table 2 about here)

Table 3 reports the mean audit fee, the proportion of firms appointing an ISA, and restated firm-years in the pre- and post-periods for the non-compliant and compliant firms in each of the samples. We define 2001 through 2003 as the pre period and 2004 through 2006 as the post period.[10] Panel A reports the results for the Financial Expert non-compliant and matched compliant samples. The mean audit fee is similar in the pre period, and both samples experienced an economically and statistically significant (p-value<0.01) increase in audit fees in the post period relative to the pre period.[11] Although the increase in audit fees for the two samples is not

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[9] All continuous variables are winsorized at 1% and 99% to mitigate the impact of outliers.

[10] Note that years here refer to fiscal years. RiskMetrics data, which we use to identify the compliant and non-compliant firms, report the board structure as of the annual meeting, and this board structure applies for the following year. For example, a firm with December 31 fiscal year-end would have an annual meeting to discuss the 2002 fiscal year in April 2003. Any changes to the board would then apply through April 2004. For our purposes, since the SOX requirements became mandatory in January 2003, we use RiskMetrics data in 2002 to determine non-compliance. In addition, the first fiscal year that is affected by the new SOX requirements is fiscal year 2004, because any changes to the board following SOX took place during fiscal year 2003, and hence affected primarily 2004 onwards. Section 5 reports sensitivity analyses related to the choice of pre- and post-periods.

[11] For example, the mean audit fee for the Financial Expert non-compliant firms increased from $1,070,120 in the pre-period to $2,795,720 in the post-period.

statistically different (p-value=0.308), the mean audit fee for the non-compliant sample is statistically lower (p-value<0.1) in the post period. The industry specialist auditor panel indicates that the mean ISA in the pre and post periods is similar for compliant and non-compliant firms. Although the mean ISA is higher (lower) in the post period for non-compliant (compliant) firms, the difference in the change is not statistically significant. The restatement panel shows that the mean likelihood of restatement for non-compliant firms is higher in the pre period in comparison to compliant firms (0.31 compared to 0.19) and the difference is statistically significant (p-value<0.1). Both groups experienced a reduction in the likelihood of restatement – the mean restatement in the post period is 0.24 and 0.18 for the non-compliant and compliant firms, respectively, but the change in the likelihood of restatement is not statistically significant. Finally, the difference in the likelihood of restatement between the two groups in the post period is not statistically significant.

In sum, we find that the level of audit fees and the likelihood of appointing an ISA in the pre and post periods are similar for the Financial Expert compliant and non-compliant firms. However, there is some evidence of improvement in financial reporting quality: in comparison to compliant firms, non-compliant firms are more likely to restate in the pre period but as likely to restate in the post period. While this is consistent with the Financial Expert reform reducing substandard reporting without having an impact on audit inputs, we defer to our multivariate analysis to formally test our hypotheses.

Panel B provides results for the Three-Member non-compliant and matched samples. Similar to the financial expert results, audit fees are similar across the two samples in both the pre and the post periods, and are significantly higher in the post period for both samples. The results for ISA indicate that while the mean ISA is not different for the compliant sample in the post period, it is significantly higher (p-value<0.01) in the post period for the non-compliant sample. Further, the mean ISA for compliant firms is significantly greater in the pre period (p-value<0.1), but following the greater increase in ISA appointments by non-compliant firms, the difference in ISA appointments in the post period is not significant. The restatement panel shows that the likelihood of restatement in the pre and post periods is similar for compliant and non-compliant firms, and that the change in the likelihood of restatement for both samples from the pre to the post period is not statistically significant. Overall, Panel B indicates that the level of audit fees and the likelihood of

restatement are similar for the Three-Member compliant and non-compliant samples, but the increase in ISA appointments is significantly higher for the non-compliant sample.

Panel C presents the results for the Independence sample. Mean audit fees and ISA are comparable for the compliant and non-compliant samples in both the pre and the post periods, and the mean audit fee (mean ISA) for both is significantly higher (not different) in the post period. The restatement panel shows that non-compliant firms were significantly more likely to restate in the pre period, but just as likely to restate in the post period, although the change in the likelihood of restatement is not statistically significant for both samples.

Taken together, the univariate statistics indicate that audit fees are similar in the pre and post periods for the non-compliant and compliant samples, and that all firms experienced a significant increase in audit fees in the post period. The similar increase in audit fees is consistent with the requirements of SOX, primarily Section 404 on internal controls, which resulted in a significant increase in the effort and risk of the auditors of public firms. Mean ISA is significantly greater in the post period for the Three-Member non-compliant firms, indicating that these firms increased audit quality following the increase in the size of the AC. The results also indicate improvements in financial reporting quality for the Financial Expert and Independence non-compliant firms relative to their matched compliant firms; these non-compliant firms were more likely to restate in the pre period but as likely to restate in the post period.

(Insert Table 3 about here)

4. Empirical Results

This section reports the results of multivariate tests. We first discuss the impact of the AC reforms on audit inputs, in particular the level of audit fees and the likelihood of appointing an ISA, and then turn to the impact of the reforms on the likelihood of restatement.

Following Chhaochharia and Grinstein (2009), Guthrie et al. (2010), and Rubin and Segal (2012), we examine the impact of the AC reforms using the difference-in-difference approach for each matched sample of compliant and non-compliant firms. Given that we use a matched sample design, we perform the analysis

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on differenced data within each matched pair. In particular, we compute the differences in the dependent and independent variables between non-compliant and matched compliant firm-years, and regress the difference in the dependent variable on the differenced independent variables. For example, to estimate the impact of the financial expert requirement on audit fees, we regress the difference in audit fees between the Financial Expert non-compliant and matched compliant firm-year on the differences in the independent variables and a post period indicator variable. More specifically, we estimate the following model:

$$\textit{Difference in Dependent Variable}_{it} = a0 + a1 \times \textit{Dummy(Post)}_t + [\textit{Difference in Controls}_{it}] + \textit{Industry and Year Effects}_i + \varepsilon_{it}, \tag{1}$$

where the dependent variables are audit fees, the likelihood of appointing an ISA, and the likelihood of restatement. We estimate the regression separately for each of the non-compliant samples. The post indicator variable equals one if the period is 2004-2006, and zero otherwise. In the above specification the coefficient $a0$ captures the conditional average difference (i.e., average difference after controlling for the determinants of the dependent variable) in the dependent variable between non-compliant and compliant firms in the pre period, $a1$ captures the difference in the change in the dependent variable from the pre to the post periods between non-compliant and compliant firms, and the sum of the coefficients $a0$ and $a1$ captures the conditional average difference in the dependent variable in the post period. The control variables include the variables used in the matching procedure. We include additional control variables depending on the analysis. The regressions are estimated using OLS or Logit; the standard errors are corrected for clustering by year.[12]

4.1 Audit Fees

This section reports the results of the audit fee regressions. We examine whether audit fees are associated with the AC reforms, controlling for other factors shown to affect audit fees in the literature (e.g., Simunic 1980; Whisenant et al. 2003;

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[12] We do not correct for clustering by firm because the observations used in our main regressions are in differenced form. Given this design, the time-series correlation within each cross-section is likely to be low because a non-compliant firm can be matched with a different compliant firm over time. In sensitivity analyses (Section 5.1) for the full sample of non-compliant firms, we report the results using clustering by firm and year.

Ashbaugh et al. 2003). Specifically, we control for firm size (assets), audit complexity (number of segments, foreign operations, discontinued operations, and reporting lag), audit risk (current ratio, level of inventory and receivables relative to assets, incidence of losses, operating volatility, book to market, and profitability), and audit engagement attributes (first year of engagement, Big N auditor, non-audit fees, and going concern opinion indicator).

Table 4 reports the audit fee regressions for each of the non-compliance samples. The results for the Financial Expert, Three-Member, and Independence samples are reported in columns 1 through 3, respectively. The post variable is positive and significant for the Financial Expert and Three-Member samples, indicating that the increase in audit fees from the pre to the post period for these non-compliant firms is greater in comparison to the matched compliant firms. The coefficient on post for the Independence sample is negative but not statistically significant. The Financial Expert regression shows that the mean audit fee for non-compliant firms is lower in the pre and post periods (p-value<0.05), although the difference in audit fees is smaller (in absolute terms) in the post period following the greater increase in audit fees for the non-compliant firms. In contrast, the mean audit fee for the Three-Member non-compliant firms is higher in both the pre and the post periods (p-value<0.01). Column 3 shows that there is no significant difference in audit fees between the Independence non-compliant and compliant firms in the pre and post periods.

Overall, the results show that Financial Expert and Three-Member non-compliant firms experienced a greater increase in audit fees from the pre to the post period relative to their matched compliant firms. These results suggest that the addition of a financial expert to the AC and the increase in the number of AC members result in an increase in audit fees in an effort to improve external monitoring.

The coefficients on the control variables are by and large consistent with the evidence in the literature. In particular, we find that the difference in audit fees is positively associated with differences in firm size, number of segments, foreign operations, the ratio of inventory and receivables to total assets, and the incidence of losses. The difference in audit fees is negatively associated with differences in profitability, the current ratio, and the incidence of initial audit engagements.

(Insert Table 4 about here)

4.2 Industry Specialist Auditor

The previous section indicates that meeting the requirements of a financial expert and a minimum of three members in the AC results in greater commitment to audit assurance through an increase in audit fees. In this section we replicate the analysis using ISA appointments as another proxy for audit input.

Table 5 presents the results from the ISA regressions. Following Abbott and Parker (2000) and Chen et al. (2005), we control for insider ownership, natural log of total sales, leverage, new financing, the proportion of non-audit fees relative to total fees paid to the auditor, and the proportion of reputable directors in the model. The regressions are estimated using Logit with year fixed effects.[13,14]

The coefficient on the post dummy is positive and highly significant (p-value<0.01) for the three samples, indicating that non-compliant firms experienced a greater increase in ISA appointments from the pre to the post period in comparison to their matched compliant firms. The negative and significant intercept in all three regressions implies that the mean ISA for non-compliant firms in the pre period is significantly smaller than that for their matched compliant firms. Further, F-tests at the bottom of the panel show that the mean ISA in the post period is still lower for the Three-Member and Independence non-compliant firms. Hence, with the exception of the Financial Expert non-compliant firms in the post period, we find that non-compliant firms tend to have lower quality audit inputs, as proxied by ISA appointments, in both the pre and the post periods. However, these firms significantly increased the use of ISAs following the AC reform, thereby increasing the quality of audit inputs relative to matched compliant firms.

Taken together, the results in this section suggest that the AC reform had a positive effect on the inputs for audit assurance. Non-compliant firms experienced greater increases in both audit fees and ISA appointments from the pre to the post

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[13] Under the difference-in-difference approach the dependent variable can take the values of 1, 0, and -1. We set the dependent variable to 1 if the value of ISA for a non-compliant firm is greater than that for its matched compliant firm and 0 otherwise. In other words, the dependent variable is 1 if a non-compliant firm hires an ISA and its matched compliant firm does not, and 0 otherwise. In sensitivity analysis we do not change the values of the dependent variable and estimate the regression using ordered Logit. The results are very similar to those reported.

[14] Some observations have a perfect correlation between the industry dummy and the dependent variable. Hence, we report the results without controlling for industry. The results are similar when we control for industry (with a reduced sample).

period relative to compliant firms. When we compare the levels of audit inputs in the pre and post periods, we obtain mixed results: non-compliant firms are less likely to hire an ISA in the pre and post periods, but there is no such discernible pattern with respect to audit fees.

(Insert Table 5 about here)

4.3 Likelihood of Financial Statement Restatement

This section reports regression results on the impact of the AC reforms on the likelihood of restatement. We define the restatement indicator as 1 if the firm restated its financial reports for a given year and 0 otherwise. The regressions are estimated using Logit with year and industry fixed effects.[15] The regressions include controls that are commonly used in the literature (e.g., Cao et al. 2011; DeFond et al. 2012).

Table 6 presents the results of the regressions for each non-compliance category. The coefficient on the post dummy is negative and significant (p-value<0.01) for the Financial Expert and Independence regressions, implying that the likelihood of restatement decreased more significantly in the post period for the respective non-compliant firms relative to their matched compliant firms. The coefficient on post in the Three-Member regression is negative but not statistically significant. Interestingly, the intercept in all three regressions is negative and significant (p-value<0.01), indicating that the likelihood of restatement in the pre period is lower for non-compliant firms. This result is surprising because it suggests that having a large, competent, and independent AC is not associated with higher financial reporting quality. Given the further decrease in the likelihood of restatement relative to compliant firms, non-compliant firms remain less likely to restate in the post period (p-value<0.01) as indicated by F-tests at the bottom of the panel.

The signs on the control variables are broadly consistent with the findings in the extant literature, although the significance level varies across samples. Specifically, the difference in the likelihood of restatement is negatively associated with the differences in profitability and the incidence of mergers, and is positively associated with the differences in the number of segments and the issuance of large capital.

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[15] Similar to the dependent variable in the ISA regressions, the dependent variable in these regressions takes the value of 1 if the non-compliant firm-year is restated and the compliant matched firm-year is not restated, and 0 otherwise. Again, we obtain similar results using ordered Logit.

Overall, we find that non-compliant firms experienced a greater improvement in financial reporting quality after becoming compliant with the AC reforms. The evidence also suggests that although these firms were non-compliant in the pre period, their likelihood of restatement was not higher in comparison to compliant firms.

(Insert Table 6 about here)

4.4 Disentangling Changes in Governance from Changes in Audit Inputs

The previous sections show that relative to matched compliant firms, non-compliant firms experienced a greater improvement in the inputs to audit assurance, i.e., larger increases in audit fees and ISA appointments, and with the exception of the Three-Member non-compliant firms a greater decrease in the likelihood of restatement. Hence, we find an overall improvement in both audit inputs and financial reporting quality from the pre to the post period for non-compliant firms.

The improvement in financial reporting quality can therefore be attributed to two factors. First, a larger, more competent, and independent AC can positively impact financial reporting quality through its increased ability to detect manipulation on the one hand and deter manipulation through the greater likelihood of detection on the other hand. Second, improved audit assurance inputs, that is, greater audit effort and the hiring of an ISA, can lead to fewer restatements because any errors and manipulation in financial statements are more likely to be detected with enhanced audit input quality.

To examine which of these two factors exerts a more dominant effect on the likelihood of restatement, we classify non-compliant firms into two groups based on the change in audit inputs. In the first analysis, we define 'high change firms' as those firms that switch their auditors from a non-ISA in the pre period to an ISA in the post period. In the second analysis, we define 'high change firms' as those firms for which the change in audit fees scaled by total assets from the pre to the post period is greater than the sample median change. We estimate the following model:

Difference in Likelihood of Restatement$_{it}$=a0 +a1✗Dummy(Post)$_t$ +
a2✗Dummy(High Change)$_t$+ a3✗ Dummy(Post)$_t$✗Dummy(High Change)$_t$+
[Difference in Controls$_{it}$]+ Industry and Year Effects$_i$+ε$_{it}$,   (2)

where the High Change indicator equals 1 if the firm is classified as a 'high change firm' and 0 otherwise. In the above specification, the coefficient *a1* measures the

unconditional (relative to the change in audit inputs) change in the likelihood of restatement from the pre to the post period for the non-compliant firms relative to the matched compliant firms, and *a3* captures the incremental impact of a high change in audit inputs on the likelihood of restatement. Hence, *a1* captures the impact of the AC reform on the likelihood of restatement irrespective of the change in audit inputs, *a3* captures the incremental impact of the change in audit inputs in the post period, and *a0+a1* (*a0+a1+a3*) captures the conditional difference in the likelihood of restatement in the post period for low change firms (high change firms). We estimate the model using Logit; the standard errors correct for clustering by year.

Table 7, Panel A reports the results of regressions where the model is estimated conditional on the change to an ISA. Specifically, the High Change dummy takes the value of 1 if a non-compliant firm did not hire an ISA in the pre period and switched to an ISA in the post period, and 0 otherwise. Similar to the results in Table 6, the coefficient on the post dummy (*a1*) is negative and significant for the Financial Expert and Independence samples. The coefficient on the interaction between the High Change and post period dummies (*a3*) is not significant for any of the non-compliance category regressions. These results therefore imply that the decrease in the likelihood of restatement for the Financial Expert and Independence non-compliant firms is independent of the impact of switching from a non-ISA to an ISA; these non-compliant firms experienced an improvement in financial reporting quality regardless of whether they switched to an ISA. Further, the coefficient on the High Change dummy (*a2*) is not significantly different from zero, indicating that changing to an ISA does not affect the likelihood of restatement for our sample firms.

Table 7, Panel B presents the results of regressions where a high change in audit input is based on the change in audit fees. Here, the High Change dummy takes the value of 1 if the change in audit fees scaled by total assets from the pre to the post period is greater than the sample median change. The results are similar to those reported in Panel A. The coefficient on the post period dummy in the Financial Expert column is negative and significant, whereas the coefficient on the interaction between the High Change and post dummies is not significant in any of the regressions. Again, these results imply that the decrease in the likelihood of restatement applies to all Financial Expert non-compliant firms, regardless of the change in audit fees. The result for the Independence sample is weaker and under this specification we find no change in the likelihood of restatement.

In sum, the results of Table 7 suggest that the change in the likelihood of restatement can be attributed to the change in the competence and independence of the AC, rather than to the change in audit inputs experienced by these firms. Although the Financial Expert and Independence non-compliant firms exhibit greater increases in audit fees and ISA appointments relative to their matched compliant firms, the decrease in restatements appears to not be related to the change in audit inputs. Rather, the decrease in restatements applies to all non-compliant firms independent of the change in audit inputs. Hence, the decrease in the likelihood of restatement can be attributed to improved competence and independence of ACs. These improvements are likely to affect the ability of ACs to detect manipulation on the one hand, and to deter management from manipulation on the other hand, thereby reducing the overall likelihood of restatement.

(Insert Table 7 about here)

5. Sensitivity Analyses

5.1 Full Sample

In this section we report the results when we replicate the analyses using all available compliant firm observations (1,913 firms-years) without using the matching procedure. The non-compliant sample is identical to the sample used in the matching analysis. We estimate the following model for each of the samples:

$$Dependent\ Variable_{it} = a0 + a1 \times Dummy(Non\text{-}compliant)_i + a2 \times Dummy(Post)_t$$
$$+ a3 \times Dummy(Non\text{-}compliant)_i \times Dummy(Post)_i + [Controls_{it}] + Industry\ and$$
$$Year\ Effects + \varepsilon_{it}, \tag{3}$$

where the dependent variable is either the natural log of audit fees, the ISA indicator, or the restatement indicator. In the above specification, $a1$ captures the average of the dependent variable for non-compliant firms relative to the compliant sample, $a2$ captures the average dependent variable in the post period, and $a3$ captures the incremental change in the dependent variable for non-compliant firms in the post period relative to compliant firms. The regressions are estimated either using OLS or Logit, and the standard errors correct for clustering by firm and year. To conserve space, in the tables we report the main variables of interest only.

Table 8, Panel A reports the results of the audit fee regressions. The

coefficient on the post dummy ($a2$) is positive and significant (p-value<0.01) in all regressions, indicating that both compliant and non-compliant firms experienced a significant increase in audit fees in the post period. The results for the Financial Expert sample (column 1) show a positive coefficient on the interaction between the non-compliant and post dummies, which implies that the change in audit fees for the Financial Expert non-compliant firms is significantly greater compared to the compliant firms. The results also show that the audit fees of the non-compliant firms are significantly lower (p-value<0.01) in the pre period, but an F-test (untabulated) shows that following the greater increase in the post period, audit fees of Financial Expert non-compliant firms are comparable to those of compliant firms in the post period. Similar to Financial Expert non-compliant firms, Three-Member non-compliant firms (column 2) experienced a significantly greater (p-value<0.01) increase in audit fees in the post period. However, the level of audit fees is similar to compliant firms both in the pre and post periods. Similar to the results of Table 4, we find that the increase in audit fees and the level of audit fees in the pre and post period for Independence non-compliant firms are not significantly different from those for compliant firms (column 3).

Table 8, Panel B presents the results of ISA regressions. With the exception of the Independence regression, the post indicator variable is not different from 0, indicating that the likelihood of ISA in the post period is similar to that in the pre period. The Independence regression (column 3) shows that the likelihood of an ISA in the post period is significantly lower (p-value<0.05). However, the coefficient on the interaction between the non-compliant and post dummies is positive and significant for all three regressions, indicating that non-compliant firms are more likely to appoint an ISA in the post period. The non-compliant dummy for the Three-Member sample is negative and significant (p-value<0.05), implying that these non-compliant firms are less likely to hire an ISA in the pre period. F-tests (untabulated) show that the likelihood of appointing an ISA in the post period for each non-compliant sample is similar to that of the compliant sample.

Overall, the results indicate that non-compliant firms experienced a greater improvement in the commitment to audit assurance in the post period. The increases in audit fees and ISA appointments are significantly greater for non-compliant firms relative to compliant firms. Hence, these results are similar to those reported using the matching design.

Table 8, Panel C reports the results of the restatement regressions.The results suggest that the likelihood of restatement in the post period is significantly lower for all sample firms, and that Financial Expert and Three-Member non-compliant firms are more likely to restate on average. The coefficient on the interaction between the non-compliant and post indicators is negative in all three regressions but only marginally significant with one-tailed test in the Financial Expert regression.

Panels D and E of Table 8 report the results of restatement regressions where we control for a 'high change' in audit fees and ISA appointment, respectively. Panel D shows that Financial Expert non-compliant firms experienced a significant decrease in restatements (p-value<0.05) after we control for a high change in audit fees. However, Panel E indicates that the significant decrease in restatements for the Financial Expert non-compliant firms is conditional upon whether those firms switched their auditors to an ISA.

Taken together, the full-sample results indicate that non-compliant firms exhibit greater increases in audit fees and ISA appointments in the post period. We find some evidence that Financial Expert non-compliant firms experienced a greater decrease in restatements in the post period. These results are largely consistent with those of our matching analyses.

(Insert Table 8 about here)

5.2 Excluding Transition Years (2003-2004)

The corporate scandals of 2001 and 2002 resulted in increased scrutiny from investors. For example, firms were subject to scoring schemes that evaluated firm governance. Firms that were not compliant with any of the AC reforms were likely to face stronger scrutiny from investors because of their perceivably weaker governance, especially after the publication of the SOX report in mid-2002. Hence, these firms would have been expected to invest more in audit assurance and increase financial reporting quality even before the new regulation came into effect. However, untabulated results indicate that most non-compliant firms became compliant in fiscal year 2004. It is therefore possible that the impact of the AC reforms on audit inputs and financial reporting quality occurred only after fiscal year 2004. Hence, because 2003 and 2004 can be considered transition years, we repeat the analysis excluding observations in these two years and examine whether the results are sensitive to the inclusion of this transition period.

The results presented in Table 9 are very similar to those reported earlier. Specifically, the Financial Expert and Three-Member non-compliant firms experienced greater increases in audit fees and ISA appointments in the post period relative to their matched compliant firms. All three non-compliant samples of firms experienced a greater decrease in restatements irrespective of the change in audit fees or ISA appointments. We also find that Financial Expert non-compliant firms that switched to an ISA experienced an even greater decrease in restatements, whereas Three-Member non-compliant firms that switched to an ISA experienced an increase in restatements. Overall, we conclude that the results are not sensitive to the exclusion of the transition years.

(Insert Table 9 about here)

5.3 Excluding Income-Increasing or Income-Neutral Restatements

In this section, we repeat the restatement analyses after setting the restatement indicator variable to 1 if earnings for a given year are subsequently restated downward (i.e., "income-decreasing" restatements), and 0 otherwise. We use only income-decreasing restatements in defining the restatement indicator because they are more likely to be associated with opportunistic reporting and thus harm shareholders relatively more than income-neutral or income-increasing restatements (Palmrose et al. 2004; Srinivasan 2005; Agrawal and Cooper 2009). Table 10 presents the regression results. Panel A shows that the decrease in income-decreasing restatements in the post period is significantly greater for all non-compliant firms. Panels B indicates that the decrease in restatements is not related to the change in audit fees. Panel C shows that all non-compliant firms experienced a significant decrease in restatements regardless of whether they switched to an ISA. Overall, these results are consistent with the results using all restatements.

(Insert Table 10 about here)

5.4 Alternative Definition of Industry Specialist Auditor

We next examine whether our results are sensitive to alternative measures of ISA. First, following the definition of Mayhew and Wilkins (2003) and Reichelt and Wang (2010), we define an ISA as an auditor who has the largest market share in a two-digit SIC industry both at the city and at the national level and whose market share is at least 10 percentage points higher than the second largest auditor. This

measure is based on the idea that the largest auditor with a sufficiently higher market share than the second largest auditor is more likely to be dominant in the industry. Second, following Neal and Riley (2004) and Lim and Tan (2008), an ISA is defined as an auditor who has a market share greater than 24% for 2001 and 30% for the years from 2002 to 2006 both at the city and at the national level. This definition takes into consideration the demise of Andersen in 2002 and assumes that an auditor's expertise is sufficiently high if its industry market share is higher than a certain percentage.

The results (untabulated) using these two alternative measures of ISA are very similar to those reported. Specifically, we continue to find that all non-compliant firms experience a greater increase in the appointment of an ISA in the post period.

6. Conclusions

Following the enactment of SOX in 2002, the SEC and major stock exchanges issued rulings requiring audit committees to include a minimum of three directors, all of whom are independent, and at least one financial expert. These changes to the composition of the AC provide a natural experimental setting to investigate the impact of changes in the committee's competence and independence on audit inputs and financial reporting quality.

Using a difference-in-difference approach for a sample of firms that were not compliant with any of the requirements together with a matched sample of compliant firms, we find that the changes in AC governance are associated with improvements in both audit inputs and financial reporting quality. Specifically, firms directly affected by the new requirements experienced a significantly greater increase in audit fees and ISA appointments in comparison to matched firms not affected by the regulatory changes. These results imply that the increase in competence and independence of ACs resulted in greater commitment to audit assurance.

We also find that these firms experienced a significantly greater decrease in the likelihood of restatement, consistent with evidence in the literature on the relation between the competence and independence of ACs and financial reporting quality. Furthermore, we find that the decrease in restatements is independent of the change in audit inputs. This evidence is consistent with a more competent and independent AC being better able to detect misstatements or deter potential management manipulation by enhancing the *ex-ante* probability of detection.

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Appendix: Variable Definitions

Variable	Definition
POST	An indicator variable that takes a value of 1 in 2004 through 2006, and 0 otherwise.
Natural Log of Audit Fees	The natural logarithm of audit fees in thousand dollars.
Industry Specialist Auditor	An indicator variable that takes a value of 1 if an auditor has the largest market share in a two-digit SIC industry in a particular year both at the city level and at the national level, and 0 otherwise.
Restatement Indicator	An indicator variable that takes a value of 1 if the financial statements for a given year are restated, and 0 otherwise.
Natural Log of Total Assets	The natural logarithm of total assets (COMPUSTAT data item AT).
Return on Assets	Operating income (COMPUSTAT data item OIADP) divided by total assets (COMPUSTAT data item AT).
Inventories and Receivables to Total Assets	Inventory (COMPUSTAT data item INVT) plus accounts receivable (COMPUSTAT data item RECT), divided by total assets (COMPUSTAT data item AT).
Segments	The square root of the number of segments provided by the COMPUSTAT segment database.
Return Volatility	The variance of the residual from the market model based on daily returns during the fiscal year, multiplied by 100.
Natural Log of Non-Audit Fees	The natural logarithm of total non-audit fees in thousand dollars.
Current Ratio	Current assets (COMPUSTAT data item ACT) divided by current liabilities (COMPUSTAT data item LCT).
Book-to-Market	Book-to-market ratio, measured as the book value of equity (COMPUSTAT data item CEQ) divided by the market value of equity (COMPUSTAT data item CSHO multiplied by PRCC_F). This variable is winsorized at 0 and 4.
Reporting Lag	Number of days from the fiscal year-end to the earnings announcement date (COMPUSTAT data item RDQ).
Insider Ownership	Percentage of shares owned by insiders at the end of the current year, where insiders include corporate executives and directors.
Natural Log of Sales	The natural logarithm of sales (COMPUSTAT data item SALE).
Leverage	Total liabilities (COMPUSTAT data item LT) divided by total assets (COMPUSTAT data item AT).
Capital Issuance	The amount of stock and debt issuance (COMPUSTAT data item SSTK plus COMPUSTAT data item DLTIS), divided by total assets (COMPUSTAT data item AT).
Reputable Directors	The number of board directors with at least one additional board, divided by the total number of directors on the board.

Natural Log of Non-audit Fees to Natural Log of Total Fees	The natural logarithm of non-audit fees divided by the natural logarithm of total fees paid to the auditor in the fiscal year.
Big N Indicator	An indicator variable that takes a value of 1 if the auditor is a member of the Big 4 or 5 auditors, and 0 otherwise.
Foreign Operations Indicator	An indicator variable that takes a value of 1 if the firm has foreign operations in the fiscal year (based on COMPUSTAT data item FCA), and 0 otherwise.
Loss Indicator	An indicator variable that takes a value of 1 if the firm reports negative net income (COMPUSTAT data item NI) in the previous two fiscal years, and 0 otherwise.
Initial Auditor Engagement Indicator	An indicator variable that takes a value of 1 if the audit engagement is in either the first or the second year, and 0 otherwise.
Going Concern Indicator	An indicator variable that takes a value of 1 if the firm receives a going-concern modified audit opinion in either the current or the previous fiscal year, and 0 otherwise.
Discontinued Operations Indicator	An indicator variable that takes a value of 1 if the firm reports extraordinary items or discontinued operations (based on COMPUSTAT data item XIDO), and 0 otherwise.
Merger Indicator	An indicator variable that takes a value of 1 if the firm engages in a merger or acquisition (based on COMPUSTAT data item SALE_FN) during the year, and 0 otherwise.
Negative ROA Indicator	An indicator variable that takes a value of 1 if ROA is negative, and 0 otherwise.
Large Capital Issuance Indicator	An indicator variable that takes a value of 1 if the sum of equity and debt issued (COMPUSTAT data item SSTK plus COMPUSTAT data item DLTIS) during the past three years is more than five percent of total assets (COMPUSTAT data item AT), and 0 otherwise.

Table 1: Sample Distribution

Non-Compliance Category	Number of firms	Number of firm-year observations		
		2001 – 2003	2004 - 2006	Total
Financial Expert	26	70	78	148
Three-Member	52	141	156	297
Independence	72	197	214	411
Any Reason	150	408	448	856
Unique Firm	108	296	322	618
Non-compliant with				
All three categories	4	11	12	23
Only two categories	34	90	102	192
Only one category	70	195	208	403

This table shows the distribution of non-compliant firms by the three categories of non-compliance: (i) financial expertise, (ii) three members, and (iii) independence. The first column shows the number of firms, and the second and third columns show the number of firm-year observations in the pre- and post-regulation periods (i.e., from 2001 to 2003 and from 2004 to 2006, respectively). The Financial Expert category includes all firms that were not compliant with the requirement of having at least one financial expert on the AC in 2002 but became compliant by 2005. The Three-Member and Independence categories include all firms that were not compliant with the requirement of having at least three members and all independent directors on the AC, respectively, in 2002 and became compliant by 2005.

Table 2: Descriptive Statistics

Variable	Financial Expert (N= 296) Mean	Three-Member (N=594) Mean	Independence (N=822) Mean
Audit Fees (in thousands)	2,063	2,139	3,752
Industry Specialist Auditor	0.267	0.202	0.281
Restatement Indicator	0.230	0.236	0.175
Total Assets (in millions)	2,444	3,099	7,549
Return on Assets	0.085	0.088	0.102
Inventories and Receivables to Total Assets	0.253	0.248	0.246
Segments	1.582	1.546	1.591
Return volatility	0.067	0.061	0.047
Natural Log of Non-Audit Fees	5.842	5.884	6.585
Current Ratio	2.706	2.786	2.399
Book-to-Market	0.459	0.441	0.397
Reporting Lag	41.324	39.082	35.048
Insider Ownership (%)	5.170	5.263	4.417
Natural Log of Sales	6.962	7.023	7.781
Leverage	0.458	0.449	0.483
Capital Issuance	0.092	0.086	0.084
Reputable Directors	0.212	0.224	0.275
Natural Log of Non-Audit Fees to Natural Log of Total Fees	0.784	0.777	0.811
Big N Indicator	0.973	0.965	0.982
Foreign Operations Indicator	0.280	0.367	0.349
Loss Indicator	0.277	0.300	0.230
Initial Auditor Engagement Indicator	0.152	0.150	0.119
Going Concern Indicator	0.003	0.005	0.005
Discontinued Operations Indicator	0.267	0.261	0.303
Merger Indicator	0.270	0.269	0.313
Negative ROA indicator	0.125	0.109	0.061
Large Capital Issuance Indicator	0.861	0.800	0.788

This table reports the means of the main variables used in this study for each of the three samples of non-compliant firms along with their matched compliant firm-year over the period from 2001 to 2006. Each non-compliant firm-year is matched with a firm-year from the compliant sample based on the closest propensity score estimated using size (natural log of total assets), profitability (return on assets), level of inventories and receivables relative to total assets, equity return volatility, number of business segments, and an indicator variable for a Big N auditor. Variable definitions are provided in the Appendix.

Table 3: Univariate Difference-in-Difference Analysis

Panel A: Financial Expert

(A) Audit Fees

	Pre	Post	Diff (Pre vs. Post)	p-value
Compliant	6.3786	7.7088	1.3302	<.0001
Non-Compliant	6.3507	7.4611	1.1104	<.0001
Diff (Non_Compliant-Compliant)	-0.0278	-0.2477	-0.2198	0.3078
p-value	0.8587	0.0953		

(B) Industry Specialist Auditor

	Pre	Post	Diff (Pre vs. Post)	p-value
Compliant	0.2857	0.2564	-0.0293	0.6888
Non-Compliant	0.2143	0.3077	0.0934	0.2023
Diff (Non_Compliant-Compliant)	-0.0714	0.0513	0.1227	0.2362
p-value	0.3420	0.4713		

(C) Restatement

	Pre	Post	Diff (Pre vs. Post)	p-value
Compliant	0.1857	0.1795	-0.0062	0.9283
Non-Compliant	0.3143	0.2436	-0.0707	0.3076
Diff (Non_Compliant-Compliant)	0.1286	0.0641	-0.0645	0.5103
p-value	0.0712	0.3414		

Panel B: Three-Member

(A) Audit Fees

	Pre	Post	Diff (Pre vs. Post)	p-value
Compliant	6.4915	7.5119	1.0204	<.0001
Non-Compliant	6.5436	7.6557	1.1121	<.0001
Diff (Non_Compliant-Compliant)	0.0522	0.1438	0.0917	0.5628
p-value	0.6496	0.1878		

(B) Industry Specialist Auditor

	Pre	Post	Diff (Pre vs. Post)	p-value
Compliant	0.1986	0.2244	0.0258	0.5786
Non-Compliant	0.1135	0.2628	0.1493	0.0014
Diff (Non_Compliant-Compliant)	-0.0851	0.0385	0.1236	0.0601
p-value	0.0739	0.3951		

(C) Restatement

	Pre	Post	Diff (Pre vs. Post)	p-value
Compliant	0.2270	0.1987	-0.0282	0.5677
Non-Compliant	0.2766	0.2436	-0.0330	0.5041
Diff (Non_Compliant-Compliant)	0.0496	0.0449	-0.0048	0.9455
p-value	0.3270	0.3514		

Panel C: Independence

(A) Audit Fees

	Pre	Post	Diff (Pre vs. Post)	p-value
Compliant	7.0784	8.0209	0.9425	<.0001
Non-Compliant	7.0518	8.0209	0.9691	<.0001
Diff (Non_Compliant-Compliant)	-0.0266	0.0000	0.0266	0.8604
p-value	0.8075	0.9999		

(B) Industry Specialist Auditor

	Pre	Post	Diff (Pre vs. Post)	p-value
Compliant	0.2690	0.2710	0.0020	0.9643
Non-Compliant	0.2690	0.3131	0.0440	0.3220
Diff (Non_Compliant-Compliant)	0.0000	0.0421	0.0421	0.5037
p-value	1.0000	0.3342		

(C) Restatement

	Pre	Post	Diff (Pre vs. Post)	p-value
Compliant	0.1320	0.1542	0.0222	0.5533
Non-Compliant	0.2183	0.1963	-0.0220	0.5571
Diff (Non_Compliant-Compliant)	0.0863	0.0421	-0.0442	0.4041
p-value	0.0243	0.2521		

This table presents the results of difference-in-difference analyses between non-compliant firms and their matched compliant firms from the pre- to the post-regulation period related to (i) the natural log of audit fees, (ii) the likelihood of using an ISA, and (ii) the likelihood of restatement. Pre (Post) is the period from 2001 to 2003 (2004 to 2006). Panels A, B, and C report the results for the Financial Expert, Three-Member, and Independence sample, respectively.

Table 4: Audit Fees Regressions

Variables		Pred. Sign	Financial Expert		Three-Member		Independence	
			Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
POST	$a1$	?	0.249**	0.036	0.055**	0.028	-0.066	0.123
Natural Log of Total Assets		+	0.531***	0.000	0.554***	0.000	0.446***	0.000
Return on Assets		-	-0.576	0.593	-1.191	0.101	-2.062***	0.001
Inventories and Receivables to Total Assets		+	1.448***	0.003	0.219	0.162	0.894***	0.009
Big N Indicator		+	-0.023	0.962	-0.133	0.361	-0.060	0.669
Segments		+	0.001	0.992	0.269***	0.005	0.175*	0.053
Return Volatility		+	-0.096	0.890	-1.350	0.206	0.027	0.975
Natural Log of Non-Audit Fees		+	0.180*	0.058	0.132***	0.001	0.145***	0.003
Current Ratio		-	-0.019	0.475	-0.087***	0.001	-0.094**	0.011
Foreign Operations Indicator		+	0.196	0.198	0.235**	0.021	0.214	0.034
Loss Indicator		+	0.103	0.602	0.116	0.281	-0.006	0.896
Book-to-Market		-	0.064	0.411	-0.081	0.367	-0.620***	0.005
Discontinued Operations Indicator		+	0.065	0.481	0.097	0.129	0.091	0.156
Initial Auditor Engagement Indicator		-	0.062	0.741	-0.100**	0.044	-0.090	0.160
Going Concern Indicator		+	-0.140	0.728	0.086	0.802	-0.463***	0.002
Reporting Lag		+	0.007	0.133	0.008***	0.005	0.003	0.163
Intercept	$a0$	?	-0.909**	0.031	0.828***	0.005	0.318	0.216
Year Fixed Effects			Included		Included		Included	
Industry Fixed Effects			Included		Included		Included	
F-test:$a0 + a1 = 0$		?	-0.660**	0.040	0.883***	0.005	0.252	0.353
N			148		297		411	
R^2			0.757		0.737		0.635	

This table presents results of OLS regressions of the difference in the natural log of audit fees between the non-compliant firm-year and its matched compliant firm-year. The Financial Expert

Table 5: Industry Specialist Regressions

Variables		Pred. Sign	Financial Expert		Three-Member		Independence	
			Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
POST	a1	?	0.500***	0.001	0.482***	0.000	0.269***	0.000
Natural Log of Total Assets		+	0.454	0.424	-0.112	0.747	0.593***	0.003
Return on Assets		-	-3.942	0.173	-2.418	0.186	-0.147	0.837
Inventories and Receivables to Total Assets		+	2.342	0.200	0.260	0.867	0.324	0.757
Big N Indicator		+	0.470	0.257	-0.139	0.653	0.650	0.116
Segments		+	-0.058	0.878	0.504***	0.000	0.560***	0.000
Return Volatility		+	0.901	0.912	-2.491	0.494	-3.692	0.114
Insider Ownership		+	0.021	0.209	-0.023	0.181	0.000	0.995
Natural Log of Sales		-	-0.216	0.633	0.164	0.687	-0.193	0.259
Leverage		+	-1.291**	0.029	-1.145	0.346	0.519	0.227
Capital Issuance		+	3.652**	0.017	0.590	0.662	-1.334***	0.008
Reputable Directors		-	-1.544	0.198	1.388	0.127	0.113	0.732
Natural Log of Non-audit Fees to Natural Log of Total Fees		+	3.529	0.121	0.187	0.729	-0.832**	0.026
Intercept	a0	?	-2.641***	0.000	-2.146***	0.000	-1.651***	0.000
Year Fixed Effects			Included		Included		Included	
Industry Fixed Effects			No		No		No	
F-test: a0 + a1 = 0		?	-2.141	0.563	-1.664***	0.000	-1.382***	0.000
N			148		297		411	
Pseudo R^2			0.164		0.090		0.048	

This table presents results from Logit regressions of the difference in the likelihood of using an ISA between non-compliant and compliant firms. The dependent variable takes the value of 1 if the non-compliant firm uses an ISA and the compliant firm does not use an ISA, and 0 otherwise. With the exception of the POST indicator, the independent variables in the regressions are computed as the difference between the non-compliant observation and the matched compliant observation. Variable definitions are provided in the Appendix. ***, **, and * denote two-tailed significance at the 1%, 5%, and 10% level, respectively. P-values are based on standard errors adjusted for clustering by year.

Table 6: Restatement Analysis

Variables		Pred. Sign	Financial Expert		Three-Member		Independence	
			Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
POST	a1	?	-1.199***	0.000	-0.102	0.327	-0.158***	0.001
Natural Log of Total Assets		?	0.164	0.338	-0.171	0.276	-0.103	0.464
Return on Assets		-	-5.834**	0.017	-2.133	0.365	-1.509	0.421
Inventories and Receivables to Total Assets		+	-0.528	0.561	1.119	0.184	0.921	0.239
Big N Indicator		-	-0.903	0.266	1.067	0.233	1.148	0.106
Segments		+	0.845**	0.040	0.035	0.881	-0.138	0.214
Return Volatility		+	2.148	0.386	-1.132	0.727	3.290	0.196
Merger Indicator		+	-0.163	0.603	-0.193	0.499	-0.641**	0.035
Large Capital Issuance Indicator		+	0.974	0.141	0.424*	0.068	0.025	0.860
Foreign Operations Indicator		+	0.416	0.112	0.059	0.799	-0.241	0.135
Book-to-Market		?	0.095	0.824	0.445	0.331	1.717**	0.011
Leverage		+	-0.006	0.997	0.255	0.488	0.188	0.675
Negative ROA Indicator		+	-0.773	0.250	-0.813*	0.080	-0.891	0.116
Natural Log of Non-Audit Fees		?	-0.286	0.120	0.093	0.295	-0.099	0.554
Intercept	a0	?	-1.123***	0.000	-1.233***	0.000	-1.305***	0.000
Year Fixed Effects			Included		Included		Included	
Industry Fixed Effects			No		No		No	
F-test:a0 + a1 = 0		?	-2.322***	0.000	-1.335***	0.000	-1.463***	0.000
N			148		297		411	
Pseudo R^2			0.139		0.063		0.098	

This table presents results from Logit regressions of the difference in the likelihood of restatement between non-compliant and compliant firms. The dependent variable takes the value of 1 if the non-compliant firm-year is restated and the compliant firm-year is not restated, and 0 otherwise. With the exception of the POST indicator, the independent variables in the regressions are computed as the difference between the non-compliant observation and the matched compliant observation. Variable definitions are provided in the Appendix. ***, **, and * denote two-tailed significance at the 1%, 5%, and 10% level, respectively. P-values are based on standard errors adjusted for clustering by year.

Table 7: Restatement Analysis Conditional on Change in Audit Inputs

Panel A. Conditional on Change to Industry Specialist Auditor

Variables		Pred. Sign	Financial Expert		Three-Member		Independence	
			Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
POST	a1	?	-0.964***	0.005	-0.247	0.200	-0.227***	0.008
High Change	a2	?	0.500	0.163	-0.491	0.461	-0.336	0.638
POST*High Change	a3	?	-1.116	0.202	0.709	0.231	0.507	0.483
Natural Log of Total Assets		?	0.166	0.338	-0.166	0.289	-0.095	0.476
Return on Assets		-	-5.435**	0.022	-2.163	0.362	-1.403	0.433
Inventories and Receivables to Total Assets		+	-0.475	0.599	1.064	0.269	0.907	0.245
Big N Indicator		-	-0.741	0.369	1.059	0.249	1.155	0.102
Segments		+	0.915**	0.022	0.036	0.877	-0.132	0.271
Return Volatility		+	2.418	0.352	-0.987	0.752	3.466	0.158
Merger Indicator		+	-0.142	0.665	-0.203	0.469	-0.643**	0.034
Large Capital Issuance Indicator		+	0.985	0.169	0.423*	0.072	0.023	0.867
Foreign Operations Indicator		+	0.415*	0.094	0.060	0.800	-0.235	0.139
Book-to-Market		?	0.125	0.769	0.417	0.381	1.696**	0.012
Leverage		+	0.142	0.913	0.291	0.341	0.195	0.645
Negative ROA Indicator		+	-0.735	0.277	-0.834*	0.075	-0.871	0.121
Natural Log of Non-Audit Fees		?	-0.285	0.138	0.086	0.306	-0.103	0.537
Intercept	a0	?	-1.240***	0.000	-1.136***	0.000	-1.261***	0.000
Year Fixed Effects			Included		Included		Included	
Industry Fixed Effects			No		No		No	
F-test:								
a0 + a1 = 0		?	-2.204***	0.000	-1.383***	0.000	-1.488***	0.000
a0 + a1 + a3 = 0		?	-3.319***	0.000	-0.674	0.267	-0.982	0.182
N			148		297		411	
Pseudo R^2			0.145		0.066		0.099	

Panel B. Conditional on Change in Audit Fees

Variables		Pred. Sign	Financial Expert Coefficient	p-value	Three-Member Coefficient	p-value	Independence Coefficient	p-value
POST	*a1*	?	-0.921**	0.026	-0.161	0.657	-0.019	0.909
High Change	*a2*	?	0.463	0.432	0.606	0.107	1.090***	0.000
POST*High Change	*a3*	?	-0.333	0.504	0.081	0.844	-0.291	0.299
Natural Log of Total Assets		?	0.168	0.368	-0.117	0.513	-0.037	0.816
Return on Assets		-	-5.815**	0.016	-2.203	0.362	-1.912	0.304
Inventories and Receivables to Total Assets		+	-0.671	0.561	0.817	0.290	0.647	0.395
Big N Indicator		-	-0.864	0.303	0.948	0.327	0.960	0.168
Segments		+	0.820*	0.050	0.011	0.963	-0.060	0.581
Return Volatility		+	1.670	0.530	-1.301	0.693	2.660	0.314
Merger Indicator		+	-0.165	0.611	-0.191	0.509	-0.662**	0.035
Large Capital Issuance Indicator		+	0.982	0.135	0.404*	0.074	0.046	0.770
Foreign Operations Indicator		+	0.465*	0.077	0.125	0.582	-0.196	0.187
Book-to-Market		?	-0.009	0.986	0.443	0.361	1.457**	0.027
Leverage		+	0.093	0.947	0.090	0.800	0.057	0.897
Negative ROA Indicator		+	-0.845	0.225	-0.805	0.104	-0.886	0.146
Natural Log of Non-Audit Fees		?	-0.298	0.133	0.087	0.339	-0.069	0.686
Intercept	*a0*	?	-1.452***	0.000	-1.636***	0.000	-1.830***	0.000
Year Fixed Effects			Included		Included		Included	
Industry Fixed Effects			No		No		No	
F-test:								
a0 + a1 = 0		?	-2.373***	0.000	-1.797***	0.000	-1.849***	0.000
a0+ a1 + a3 = 0		?	-2.706***	0.000	-1.716***	0.000	-2.140***	0.000
N			148		297		411	
Pseudo R^2			0.142		0.074		0.127	

This table presents results from Logit regressions of the difference in the likelihood of restatement between non-compliant and compliant firms. The dependent variable takes the value of 1 if the non-compliant firm-year is restated and the compliant firm-year is not restated, and 0 otherwise. Panel A reports results where High Change takes the value of 1 if the non-compliant firm changed to an ISA in the post period, and 0 otherwise. Panel B reports results where High Change takes the value of 1 if the change in audit fees scaled by total assets in the post period for the non-compliant firm is greater than the median change, and 0 otherwise. With the exception of the POST indicator, all other independent variables are computed as the difference between the non-compliant observation and the matched compliant observation. Variable definitions are provided in the Appendix. ***, **, and * denote two-tailed significance at the 1%, 5%, and 10% level, respectively. P-values are based on standard errors adjusted for clustering by year.

Table 8. Sensitivity Analysis Based on Full Sample

Panel A. Audit Fees

Variables	Pred. Sign	Financial Expert		Three-Member		Independence	
		Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Non-Compliant	?	-0.158***	0.009	-0.034	0.585	0.063	0.334
POST	?	1.008***	0.000	1.017***	0.000	1.026***	0.000
POST*Non-Compliant	?	0.144***	0.000	0.102***	0.001	-0.009	0.859
Intercept	?	-3.255***	0.000	-3.077***	0.000	-3.181***	0.000
Controls		Included		Included		Included	
N		2,061		2,210		2,324	
R^2		0.831		0.828		0.832	

Panel B. Industry Specialist Auditor

Variables	Pred. Sign	Financial Expert		Three-Member		Independence	
		Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Non-Compliant	?	0.012	0.969	-0.762**	0.027	0.150	0.498
POST	?	-0.189	0.511	-0.359	0.109	-0.408**	0.041
POST*Non-Compliant	?	0.566**	0.030	1.075***	0.000	0.211**	0.035
Intercept	?	-8.007***	0.002	-8.712***	0.001	-7.676***	0.001
Controls		Included		Included		Included	
N		2,061		2,210		2,324	
Pseudo R^2		0.054		0.058		0.064	

Panel C. Restatements

Variables	Pred. Sign	Financial Expert		Three-Member		Independence	
		Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Non-Compliant	?	0.579*	0.084	0.445*	0.084	0.373	0.119
POST	?	-0.621***	0.002	-0.364*	0.068	-0.320**	0.050
POST*Non-Compliant	?	-0.119	0.178	-0.057	0.717	-0.104	0.592
Intercept	?	0.830	0.508	-0.159	0.902	0.263	0.842
Controls		Included		Included		Included	
N		2,061		2,210		2,324	
Pseudo R^2		0.055		0.055		0.057	

Panel D. Restatement Analysis Conditional on Change in Audit Fee

Variables	Pred. Sign	Financial Expert		Three-Member		Independence	
		Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Non-Compliant	?	0.559	0.102	0.440*	0.089	0.379	0.109
POST	?	-0.620***	0.002	-0.366*	0.091	-0.349**	0.043
POST*Non-Compliant	?	-0.596**	0.038	-0.614	0.142	-0.552	0.191
High Change	?	0.136	0.549	0.173	0.429	0.194	0.363
POST*Non-Compliant*High Change	?	0.607	0.211	0.841	0.106	0.820*	0.090
Intercept	?	0.563	0.667	-0.414	0.754	-0.176	0.897
Controls		Included		Included		Included	
N		2,061		2,210		2,324	
Pseudo R^2		0.056		0.059		0.061	

Panel E. Restatement Analysis Conditional on Change to ISA

Variables	Pred. Sign	Financial Expert		Three-Member		Independence	
		Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Non-Compliant	?	0.557*	0.093	0.426	0.104	0.365	0.128
POST	?	-0.651***	0.001	-0.369*	0.073	-0.330**	0.047
POST*Non-Compliant	?	0.105	0.216	-0.080	0.659	-0.148	0.532
High Change	?	0.407	0.149	0.267	0.336	0.306	0.267
POST*Non-Compliant*High Change	?	-1.319**	0.030	0.092	0.873	0.285	0.650
Intercept	?	0.727	0.564	-0.179	0.890	0.241	0.856
Controls		Included		Included		Included	
N		2,061		2,210		2,324	
Pseudo R^2		0.059		0.057		0.059	

This table replicates the analyses in Tables 4 through 7 using the entire sample of non-compliant firms. Non-Compliant takes the value of 1 if the firm was not compliant with a particular requirement and zero otherwise. For example, in the Financial Expert column, Non-Compliant takes the value of 1 if the firm was not compliant with the financial expert requirement and 0 otherwise. Panel A reports OLS regressions of the natural logarithm of audit fees. Panels B and C report results from Logit regressions of the likelihood of using an ISA and the likelihood of restatement, respectively. Panel D reports Logit regression results of restatements conditional on the change to an ISA in the post period. High Change is an indicator variable that takes the value of 1 if the firm did not use an ISA in the pre period and switched to an ISA in the post period. Panel E reports results where High Change is an indicator equal to 1 if the change in audit fees scaled by total assets from the pre to the post period is greater than the median. Variable definitions are provided in the Appendix. ***, **, and * denotes two-tailed significance at the 1%, 5%, and 10% level, respectively. P-values are based on standard errors adjusted for clustering by firm and year.

Table 9: Excluding Transition Years (2003 and 2004)

Panel A. Audit Fees

Variables		Pred. Sign	Financial Expert		Three-Member		Independence	
			Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
POST	$a1$	?	0.303*	0.054	0.074*	0.091	0.005	0.772
Intercept	$a0$	?	0.666	0.120	-0.970**	0.028	-0.397**	0.025
Controls			Included		Included		Included	
F-test								
$a0 + a1 = 0$		?	0.969*	0.097	-0.896**	0.028	-0.392**	0.022
N				96		193		267
R^2				0.762		0.743		0.698

Panel B. Industry Specialist Auditor

Variables		Pred. Sign	Financial Expert		Three-Member		Independence	
			Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
POST	$a1$	?	1.438***	0.001	0.951***	0.000	0.117	0.111
Intercept	$a0$	?	-2.864***	0.000	-2.346***	0.000	-1.345***	0.000
Controls			Included		Included		Included	
F-test								
$a0 + a1 = 0$		?	-1.426***	0.000	-1.395***	0.000	-1.229***	0.000
N				96		193		267
R^2				0.247		0.110		0.059

Panel C. Restatements

Variables		Pred. Sign	Financial Expert		Three-Member		Independence	
			Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
POST	*a1*	**?**	-0.621***	0.002	-0.439***	0.000	-0.415**	0.028
Intercept	*a0*	**?**	-0.923***	0.000	-1.487***	0.000	-1.759***	0.000
Controls			Included		Included		Included	
F-test								
a0 + a1 = 0		**?**	-1.543***	0.000	-1.926***	0.000	-2.174***	0.000
N			96		193		267	
R²			0.192		0.067		0.087	

Panel D. Restatement Analysis Conditional on Change in Audit Fees

Variables		Pred. Sign	Financial Expert		Three-Member		Independence	
			Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
POST	*a1*	**?**	-1.424***	0.000	-0.893***	0.000	-0.490*	0.076
High Change	*a2*	**?**	0.528	0.175	0.397	0.107	1.139***	0.000
POST*High Change	*a3*	**?**	-0.568	0.229	0.636***	0.000	0.014	0.972
Intercept	*a0*	**?**	-1.220***	0.000	-1.750***	0.000	-2.309***	0.000
Controls			Included		Included		Included	
F-test								
a0 + a1 = 0		**?**	-2.644***	0.000	-2.643***	0.000	-2.799***	0.000
a0 + a1 + a3 = 0		**?**	-3.212***	0.000	-2.008***	0.000	-2.785***	0.000
N			96		193		267	
Pseudo R²			0.196		0.085		0.126	

Panel E. Restatement Analysis Conditional on Change to Industry Specialist Auditor

Variables		Pred. Sign	Financial Expert		Three-Member		Independence	
			Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
POST	$a1$	?	-1.308***	0.002	-0.704***	0.000	-0.552**	0.014
High Change	$a2$	?	1.387**	0.019	-1.564***	0.000	-1.213	0.317
POST*High Change	$a3$	?	-2.843***	0.000	1.649***	0.000	1.428	0.182
Intercept	$a0$	?	-1.204***	0.000	-1.227***	0.000	-1.635***	0.000
Controls			Included		Included		Included	
F-test								
$a0 + a1 = 0$		?	-2.512***	0.000	-1.932***	0.000	-2.188***	0.000
$a0 + a1 + a3 = 0$		?	-5.355***	0.000	-0.282	0.423	-0.760	0.489
N			96		193		267	
Pseudo R^2			0.225		0.082		0.094	

This table presents the results from the match-sample tests that exclude fiscal years 2003 and 2004. With the exception of the POST and High Change indicator variables, the dependent and independent variables are computed as the difference between the non-compliant observation and the matched compliant observation. Panel A reports OLS regressions of the difference in audit fees while Panels B and C report results from Logit regressions of the difference in likelihood of using an ISA (Panel B) and the likelihood of restatement (Panel C). Panels D and E report Logit regression results of the likelihood of restatement conditioning on the change to an ISA and the change in audit fees, respectively. Variable definitions are provided in the Appendix. ***, **, and * denote two-tailed significance at the 1%, 5%, and 10% level, respectively. P-values are based on standard errors adjusted for clustering by year.

Table 10: Restatement Analysis Excluding Restatements with a Positive Net Income Effect

Panel A. Restatement Analysis

Variables		Pred. Sign	Financial Expert		Three-Member		Independence	
			Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
POST	$a1$	?	-2.500**	0.043	-0.591***	0.001	-0.977***	0.000
Intercept	$a0$	?	-1.391***	0.000	-1.618***	0.000	-1.502***	0.000
Controls			Included		Included		Included	
F-test								
$a0 + a1 = 0$		?	-3.891***	0.002	-2.209***	0.000	-2.480***	0.000
N			148		297		411	
R^2			0.170		0.048		0.095	

Panel B. Restatement Analysis Conditional on Change in Audit Fees

Variables		Pred. Sign	Financial Expert		Three-Member		Independence	
			Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
POST	$a1$	?	-2.668*	0.069	-1.668***	0.000	-1.839***	0.000
High Change	$a2$	?	-0.115	0.797	0.039	0.934	0.538***	0.009
POST*High Change	$a3$	?	0.275	0.622	1.468***	0.000	1.275***	0.005
Intercept	$a0$	?	-1.313***	0.000	-1.678***	0.000	-1.733***	0.000
Controls			Included		Included		Included	
F-test								
$a0 + a1 = 0$		?	-3.981***	0.006	-3.346***	0.000	-3.572***	0.000
$a0 + a1 + a3 = 0$		?	-3.706***	0.001	-1.878***	0.001	-2.297***	0.000
N			148		297		411	
Pseudo R^2			0.170		0.075		0.140	

Panel C. Restatement Analysis Conditional on Change to ISA

Variables		Pred. Sign	Financial Expert		Three-Member		Independence	
			Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
POST	a1	?	-2.657*	0.051	-0.798***	0.001	-1.149***	0.000
High Change	a2	?	-0.856*	0.094	-0.651	0.193	-0.510	0.309
POST* High Change	a3	?	0.326	0.697	0.928*	0.074	1.052	0.100
Intercept	a0	?	-1.241***	0.000	-1.489***	0.000	-1.437***	0.000
Controls			Included		Included		Included	
F-test								
a0 + a1 = 0		?	-3.898***	0.005	-2.287***	0.000	-2.585***	0.000
a0 + a1 + a3 = 0		?	-3.572***	0.000	-1.359***	0.007	-1.533***	0.009
N			148		297		411	
Pseudo R^2			0.178		0.053		0.100	

This table presents the results from Logit regressions of the difference in the likelihood of restatement between non-compliant and compliant firms, where only those restatements with a negative net income effect are considered. The dependent variable takes the value of 1 if the non-compliant firm-year is restated and the compliant firm-year is not restated, and 0 otherwise. With the exception of the POST indicator, the independent variables in the regressions are computed as the difference between the non-compliant observation and the matched compliant observation. Panel A reports unconditional regressions of the difference in the likelihood of restatement. Panels B and C report regression results of the likelihood of restatement conditioning on the change to an ISA and the change in audit fees, respectively. Variable definitions are provided in the Appendix. ***, **, and * denote two-tailed significance at the 1%, 5%, and 10% level, respectively. P-values are based on standard errors adjusted for clustering by year.

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