

Internal control and financial reporting quality of small firms

A comparative analysis of regulatory regimes

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Financial reporting quality of small firms

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Abstract

Purpose – The Dodd–Frank Act of 2010 exempts small, non-accelerated filers from compliance with Sarbanes–Oxley Act (SOX) Section 404b internal control audits. However, these firms are required to comply with other internal control regulations, namely, SOX Sections 302 and 404a, starting in 2002 and 2007, respectively. A small number of these firms also voluntarily adopted (and sometimes dropped) Section 404b during 2004–2010. The purpose of this study is to investigate the impact of a series of internal control regulations introduced by SOX on the financial reporting quality of small firms.

Design/methodology/approach – The research design for this study is empirical. Using unsigned and signed discretionary accruals as measures of financial reporting quality, the authors compare the financial reporting quality for adopters and non-adopters across four regulation regimes over the period 2000–2010: PRESOX, SOX 302, SOX 404a and SOX 404b.

Findings – The results indicate that most of the adopters and non-adopters benefited from SOX 302 and 404a compared with the PRESOX period. However, only the non-adopters gained incrementally when moving from SOX 302 to SOX 404a. Also, Section 404b benefited firms with material weaknesses, as well as firms without material weaknesses that had the lowest reporting quality, in the PRESOX period.

Research limitations/implications – This study helps inform the important policy debate on whether to increase the threshold that is used for the SOX 404b exemption. It shows incremental benefits for firms that adopted Section 404b audits, even when they were complying with Section 302 and Section 404a. Consequently, extending the exemption to more companies would result in a loss of the reporting quality benefit of 404b.

Originality/value – This study contributes to the literature by focusing exclusively on non-accelerated filers and by examining differences across four regulation regimes over a long window compared to prior studies. It provides evidence that the financial reporting benefit of SOX 404b is not transitional, but rather extends for a few years even after some firms discontinued the 404b audits.

Keywords Dodd–Frank Act, SOX Section 302, SOX Section 404, Material weaknesses

Paper type Research paper



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1. Introduction

The Sarbanes–Oxley Act (SOX) introduced multiple overlapping regulations relating to companies' internal controls. Section 302 of the Act requires management assertions about the effectiveness of disclosure controls. Section 404a requires management reports, based on appropriate documentation and testing, on the effectiveness of internal control over financial reporting (ICFR), and Section 404b requires auditor reports on their clients' internal controls. The regulations were designed to enhance the reliability of financial reporting and to improve investor confidence. In this study, we investigate the impact of a series of internal control regulations introduced by SOX on the financial reporting quality of small firms.

Our investigation is particularly salient because, after several postponements of the effective date for non-accelerated filers to comply with Section 404b, the Dodd–Frank Wall Street Reform and Consumer Protection Act of 2010 (henceforth Dodd–Frank Act) permanently exempted non-accelerated filers (i.e. companies with public float less \$75m) from 404b. There has been controversy over Section 404b ICFR audits, revolving around the assertion that its costs outweigh its benefits, particularly for smaller firms. However, the exemption has also been controversial, with critics arguing that it will result in different levels of protections for investors, “confuse investors and may undermine their confidence in financial reporting” (SEC, 2011)[1].

In this paper, we focus specifically on the exempted firms – non-accelerated filers – and examine trends in their financial reporting quality for the period 2000-2010. Of particular interest to us, a small number of these firms voluntarily adopted Section 404b during this period, while a majority mandatorily adopted Section 302 in 2002 and Section 404a in 2007. This provides us with the opportunity to examine the effects of the different policies, which are associated with increasing costs, as companies move from the PRESOX period to Section 302, Section 404a and Section 404b (Kinney and Shepardson, 2011).

We address the following two research questions. First, did non-accelerated filers benefit differentially from Sections 302, 404a and 404b, and more specifically, were there *incremental* benefits resulting from Section 404b for those that voluntarily adopted it? We compare the financial reporting quality of the latter firms (the “adopters”) before, during and, for some who discontinued these audits, after the period in which the audits were conducted, with that of firms who did not adopt Section 404b (the “non-adopters”).

The second research question is, do the benefits from Section 404b, if any, accrue across the board to all firms? In particular, we examine whether the results differ across “clean” firms that had no material weaknesses throughout our sample period, and “internal control weakness (ICW)” firms, which had some internal control weaknesses during our sample period. This question is important because of the perception that any benefits from Section 404b accrue only to the relatively small proportion of firms that have internal control problems.

Previous research has examined the potential costs of the Dodd–Frank Act exemption by comparing the financial reporting quality of non-accelerated filers that were not subject to SOX 404b with that of small accelerated filers that were subject to it (Nagy, 2010; Krishnan and Yu, 2012; Holder *et al.*, 2013). Similarly Kinney and Shepardson (2011) examine the “relative performance” of Sections 404a and 404b regulations using the disclosure rates of material weaknesses for non-accelerated filers and small accelerated filers as the measure of benefits. Unlike these studies, our study contributes to the literature by focusing exclusively on non-accelerated filers, and by examining differences across four regulation regimes. Unlike Kinney and Shepardson (2011), we use discretionary accruals as a more general measure to capture the financial reporting quality benefits of the regulations. Although the internal control regulations are intended to identify material weaknesses, the broader goal

(stemming from the goal of SOX), stated repeatedly by the Securities and Exchange Commission (SEC) is “improving investor confidence in the reliability of a company’s financial disclosure and system of internal control over financial reporting.” The process of evaluation can help early identification of potential weaknesses, facilitating the “continuous, orderly and timely flow of information within the company and, ultimately, to investors and the marketplace” and early detection of fraudulent financial reporting (SEC, 2003). If the processes involved in the execution of the regulations engenders improvements in overall reporting – even for firms with no reported weaknesses – we would expect to capture it with our measure[2]. Our study also contributes to the literature by examining the impact of SOX 404b audits over a longer window than prior studies (Kinney and Shepardson, 2011; Holder *et al.*, 2013). SEC former Chairman William Donaldson states that despite its large short-term costs, SOX 404 may have “the greatest long-term potential to improve financial reporting by public companies” (Donaldson, 2005). Our evidence suggests that the financial reporting benefit of SOX 404b is not transitional, but rather, it extends for a few years even after some firms discontinued the 404b audits.

Our sample consists of firm-year observations for non-accelerated filers for the period 2000-2010. We compare the financial reporting quality for adopters and non-adopters across four regulation regimes: PRESOX, SOX 302, SOX 404a and SOX 404b. It is important to note that these regimes have multiple regulations. The SOX 404a regime includes Sections 302 and 404a, both of which require management reports that have significant overlaps. The SOX 404b regime includes Sections 302, 404a and 404b.

We use both absolute and signed discretionary accruals as our measure of financial reporting quality. While prior studies (Jones, 1991; Teoh *et al.*, 1998) use signed discretionary accruals to test for earnings management in a particular direction, many recent studies use absolute discretionary accruals to examine the magnitude of earnings management because it captures both upward and downward management. Our full sample results indicate, using both accruals measures, that both adopters and non-adopters benefited from SOX 302 and 404a compared with the PRESOX period. Further, the adopters gained incrementally over SOX 404a when they moved to SOX 404b audits.

To address our second research question, we divide our sample into clean and ICW firms. We find that the benefits of SOX 302 – the least costly regulation alternative – accrue to both clean and ICW firms. However, we see no benefits to either group when SOX 404a was superimposed on SOX 302. Finally, SOX 404b brought benefits only to adopters with material weaknesses. We further examined whether the results for the clean firms differed across levels of PRESOX quality, since firms with ex ante high quality of reporting may not benefit from internal control regulation. We find that a majority of the firms had lower accruals in the SOX 302 period compared with the PRESOX period. However, benefits from SOX 404b were confined to clean firms in the highest quintile of discretionary accruals in the PRESOX period. Overall, we conclude that, in addition to firms with internal control weaknesses, clean firms with the lowest starting reporting quality benefited from SOX 404b audits.

By focusing our analyses of the incremental benefit of SOX 404b audits completely on non-accelerated filers, we contribute to the continuing debate on the threshold that should be used for the SOX 404b exemption. After the passage of the Dodd–Frank Act, legislators continue to consider expanding the exemption to more firms[3]. In May 2019, the SEC proposed amendments to filer definitions that will allow more companies to claim exemption from Section 404b audits (SEC, 2019). The proposed changes have been controversial, even within the SEC. Proponents of expanding exemption, including SEC Chairman Jay Clayton, noted that Section 404b adds significant costs but is unlikely to enhance reporting quality

(Clayton, 2019). Commissioner Elad L. Roisman questioned whether benefits of Section 404b outweigh the costs for the firms in question, especially when they must still comply with Section 302 and Section 404a (Roisman, 2019). Commissioner Robert Jackson Jr. voted against the amendments, arguing that they would exempt high-growth firms “where the risk, and consequences, of fraud are greatest – where the benefits of the auditor’s presence are highest” (Jackson, 2019). Our findings help inform this important policy debate as we show the incremental benefits for firms that adopted Section 404b audits, even when they were complying with Section 302 and Section 404a. Consequently, extending the exemption to more companies would reduce compliance costs but also result in the loss of the reporting quality benefits of 404b.

The rest of the paper is organized as follows. Section 2 describes the regulatory background and research relating to internal controls. Section 3 describes our research questions and research design. Section 4 describes our sample and results. Section 5 provides our conclusions.

2. Background and related research

2.1 Internal control regulation

The landscape pertaining to internal control disclosure and audits expanded significantly with the passage of the SOX. SOX introduced two major sections relating to internal control. Section 302, which became effective on August 29, 2002, requires a company’s CEO and CFO to provide quarterly certifications about their evaluation of disclosure controls (Hermanson and Ye, 2009). Section 404 comprises two parts, Sections 404a and 404b. Section 404a requires management of companies to provide an assessment of internal control and Section 404b requires their auditors to provide an independent assessment of the effectiveness of their clients’ ICFR.

Effective dates for Section 404 were set differently for accelerated filers (companies with public float greater than or equal to \$75m) and non-accelerated files (companies with public float less \$75m)[4]. Accelerated filers were required to comply with Sections 404a and 404b starting for fiscal years ending on or after November 15, 2004 (SEC, 2005). For non-accelerated filers, Section 404a became effective for fiscal years ending on or after December 15, 2007. However, the effective date for non-accelerated filers to comply with the requirements of Section 404b (internal control audits) was set initially for fiscal years ending on or after April 15, 2005, postponed several times, and set finally for fiscal years ending June 15, 2010. However, the Dodd–Frank Wall Street Reform and Consumer Protection Act of 2010 (henceforth Dodd–Frank Act) permanently exempted non-accelerated filers from compliance with Section 404b.

The exemption decision has been controversial. Supporters of the Dodd–Frank Act argue that it protects non-accelerated filers from the potentially high compliance costs of Section 404b[5]. Others argue that there has been a decreasing trend in the cost of compliance with Section 404b, partly because of firms and auditors gaining compliance experience, and partly to the changes to the ICFR process introduced by Auditing Standard 5, which replaced the previous standard (Auditing Standard 2) in 2007 (SEC, 2011). In addition, many believe that compliance with Section 404b has strengthened investor protection and increased investor confidence, and reduced the incidence of financial restatements (SEC, 2011).

Even though non-accelerated filers were never required to comply with 404b, some companies adopted ICFR audits *voluntarily* during the years 2004–2010 in anticipation of mandatory compliance with Section 404b. Following the multiple extensions of the effective dates for complying with Section 404b, and the passage of the Dodd–Frank Act, some of

these non-accelerated filers that had voluntarily adopted ICFR audits decided to discontinue them, possibly due to the high costs of compliance. The availability of voluntary adopters provides us with a unique natural experiment to explore the link between ICFR audits and financial reporting quality.

2.2 Related literature

The large literature on internal control that has emerged since the passage of SOX has some notable features. First, a vast majority of these studies focus on the determinants and consequences of material weaknesses. Because of this focus, several studies combine disclosures from Sections 302 and 404 (and samples using both non-accelerated and accelerated filers), where the latter are Section 404b auditor-discovered weaknesses. Second, again because of the focus on material weaknesses, very few studies (discussed below) have examined the general effects of the regulations on the financial reporting quality of “clean” companies that do not have weaknesses. Third, very few studies present comparisons of different regulation regimes, and to our knowledge, no study has compared the financial reporting quality effects of the Sections 302 and 404a disclosures.

2.2.1 Studies focused on ICW disclosure and difference across regimes[6]. Studies on the determinants of ICWs show that they tend to arise in firms that are small, financially distressed, with complex and fast-changing operations, without sufficient commitment of resources for accounting controls or undergoing restructuring (Doyle *et al.*, 2007a). Several studies document negative associations between material weaknesses and financial reporting quality proxies, such as discretionary accruals, accruals quality, restatements, accounting conservatism, and earnings persistence (Doyle *et al.*, 2007b; Ashbaugh-Skaife *et al.*, 2008; Goh and Li, 2011). Finally, several studies examine the market response to the disclosures of ICWs (Hammersley *et al.*, 2008; Beneish *et al.*, 2008) and the association of ICWs with debt contracting features (Costello and Wittenberg-Moerman, 2011; Kim *et al.*, 2011), cost of equity and cost of debt (Ogneva *et al.*, 2007; Beneish *et al.*, 2008; Ashbaugh-Skaife *et al.*, 2009; Dhaliwal *et al.*, 2011; Kim *et al.*, 2011; Gordon and Wilford, 2012).

While many studies combine data for both Sections 302 and 404, a few studies provide comparisons of the two sections. Doyle *et al.* (2007b) document that Section 302 ICW disclosures are more strongly associated with lower accruals quality than 404 disclosures. Ashbaugh-Skaife *et al.* (2008) find that firms that remediate internal control deficiencies show improvement in accruals quality compared to those that do not report remediation. Corporate governance characteristics such as the quality of audit committee and the board are associated with the existence of 404 disclosures of ICWs, but not 302 disclosures (Hoitash *et al.*, 2009). Beneish *et al.* (2008) document negative market reactions to Section 302 disclosures but not to Section 404 disclosures. Hermanson and Ye (2009) focus on the accelerated filers with adverse initial 404b reports and find that only 27 per cent of the companies provided early warning of material weaknesses through 302 disclosures.

Using the disclosure rates for ICWs as the measure of the benefits from the regulations, Kinney and Shepardson (2011) find similar increases in the disclosure rates for non-accelerated filers providing first-time Section 404a reports and for small accelerated filers providing first-time Section 404b reports. Kinney and Shepardson conclude that the two regimes yield similar benefits, whereas they impose very dissimilar costs. Our study differs from Kinney and Shepardson (2011) in that we examine how a series of internal control regulations affect firms over the years, while they focus on the change in disclosure rates during the first year after an internal control regulation is implemented. In addition, Kinney and Shepardson (2011) measure quality with material weakness disclosure rates,

which implicitly assumes that the underlying quality does not change over time. We employ a more general measure of financial reporting quality that does not require such assumption. This allows us to examine potential benefits of the regulation for a more general population of firms, not just those with material weaknesses.

2.2.2 Other studies on benefits of IC regulation. While all of the above studies have focused on firms with ICWs, two studies examine a general population of firms, those with and without ICWs. [Chen et al. \(2013\)](#) examine the informativeness of clean SOX 404 internal control opinions. They find that the earnings informativeness for accelerated filers was higher for clean internal control reports in the SOX 404 adoption year compared to the previous years. In contrast, there was no change in the earnings informativeness for non-accelerated filers. Using a sample of non-accelerated filers that voluntarily underwent SOX 404 internal control audits, [Cassell et al. \(2013\)](#) document a significantly lower cost of debt and equity for voluntary adopters, especially in the year of adoption compared to those that did not have internal controls audits.

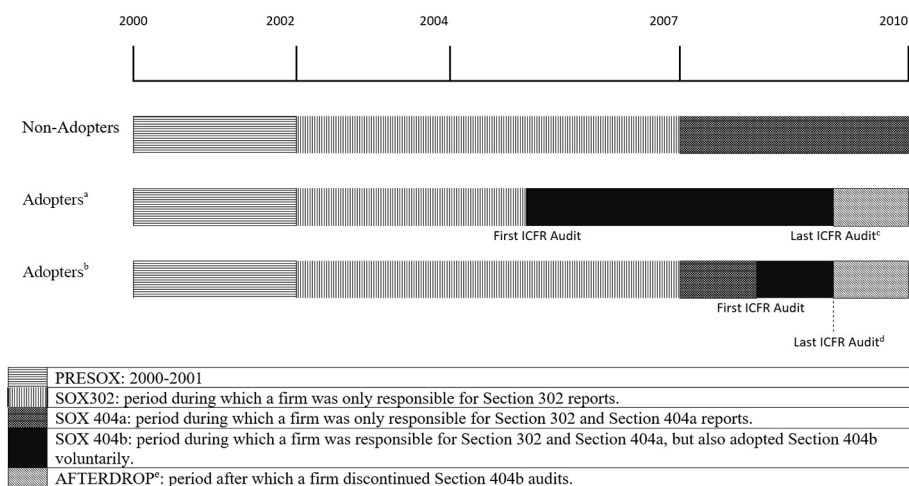
Three other studies ([Nagy, 2010](#); [Krishnan and Yu, 2012](#); [Holder et al., 2013](#)) compare small accelerated filers and non-accelerated filers to examine whether non-accelerated filers will benefit from the requirement of internal control audits. [Nagy \(2010\)](#) provides evidence of a negative association between companies that underwent SOX 404 audits and restatements. [Holder et al. \(2013\)](#) find that the reporting quality of non-accelerated filers compared to that of accelerated filers declined in the post-SOX period. [Krishnan and Yu \(2012\)](#) find that investors perceive small public firms that underwent SOX 404 audits as having higher revenue and earnings quality, relative to firms that are not subject to 404 audits. All of these studies use two groups of companies, small accelerated filers and non-accelerated filers, to conduct their analyses. We focus specifically on the exempted firms – non-accelerated filers – and examine trends in their financial reporting quality over the years.

3. Hypotheses development and research design

We divide our sample period, 2000-2010, into five sub-periods for non-accelerated filers ([Figure 1](#)), four indicating “regulation regimes” and one period for filers that dropped 404b compliance:

- PRESOX: 2000-2001;
- SOX 302: period during which a firm was only responsible for Section 302 reports;
- SOX 404a: period during which a firm was only responsible for Sections 302 and 404a reports;
- SOX 404b: period during which a firm was responsible for Sections 302 and 404a, but also adopted Section 404b *voluntarily*; and
- AFTERDROP: period after which a firm discontinued Section 404b audits.

[Figure 1](#) depicts these regimes. We distinguish between firms that voluntarily adopted Section 404b (“adopters”) and those that did not (“non-adopters”) during the period 2004-2010. Note that, while the first three regimes were required for all non-accelerated filers, the fourth regime is applicable only to the adopters. The actual years for each regime above (following PRESOX) differ for non-adopters and adopters. For non-adopters, the SOX 302 and SOX 404a regimes cover 2002-2006, and 2007-2010 respectively. For adopters however, two possibilities exist. Some adopted Section 404b before 2007 and some after 2007. Thus for those that adopted Section 404b before 2007, there are only three regimes (PRESOX, SOX 302 and SOX 404b). Firms that adopted Section 404b in or after 2007 have all four regimes listed above. In addition to periods corresponding to the regulation regimes, some adopters



Notes: ^{a, b} There are two possibilities for adopters. Some firms adopted Section 404b before 2007 and some after 2007. Thus, for those that adopted Section 404b before 2007, there are only three regulation regimes (PRESOX, SOX 302 and SOX 404b). Firms that adopted Section 404b in or after 2007 have all four regulation regimes (PRESOX, SOX 302, SOX 404a and SOX 404b). ^{c, d, e} In addition to periods corresponding to the regulation regimes, some adopters have a period (AFTERDROP) because they dropped their ICFR audits (Section 404b) after a few years

Figure 1.
Regulation regimes

have an additional period (AFTERDROP) because they dropped their ICFR audits (Section 404b) after a few years. As Figure 1 shows, not all adopters went through all five periods. Some adopters, for example, adopted Section 404b before 2007, and do not have a separate 404a period. Others did not discontinue Section 404b until 2010 and therefore do not have a post404b period.

3.1 Research questions and hypotheses

The distinction between the regulation regimes is important because they impose different costs on the complying firms. Specifically, the effort required of management and auditors, and therefore the total compliance costs, increase from PRESOX to SOX 302, SOX 302 to SOX 404a, and from SOX 404a to SOX 404b (Kinney and Shepardson, 2011). Do the benefits to financial reporting quality also increase as we move from the least to most costly regulation regime? We pose our first research question as follows:

RQ1. Did non-accelerated filers benefit differentially from Sections 302, 404a and 404b?

As we discuss below, while we expect that SOX 302, SOX 404a and SOX 404b would yield incremental financial reporting quality benefits over the PRESOX regime, we do not predict an increasing trend of benefits similar to those discussed for compliance costs above.

Section 302 requires reports on companies' certifying officers' evaluation of the effectiveness of "disclosure controls and procedures." The SEC expects such evaluations to result in "[...] significant benefits by ensuring that information about an issuer's business and financial condition is adequately reviewed by the issuer's principal

executive and financial officers [. . .]” Although this suggests that the SOX 302 regime would yield financial reporting quality benefits over the previous PRESOX regime, such an outcome is not certain because the rule did not provide specific guideline or procedures for management[7]. Lack of clear guidance could also mean that not all material weaknesses were discovered (Hermanson and Ye, 2009; Chen *et al.*, 2013), and therefore any benefits to overall financial reporting quality could vary across firms. Nevertheless, we state the following hypothesis:

H1a. Financial reporting quality is higher in the SOX 302 regime compared with the PRESOX regime.

Unlike Section 302, Section 404a requires “high effort management ICFR reports” (Kinney and Shepardson, 2011). These are based on evaluations of the design of internal controls as well as on tests of controls. Moreover, the company must “[. . .] maintain evidential matter, including documentation, to provide reasonable support for management’s assessment of the effectiveness of the company’s internal control over financial reporting” (SEC, 2003). A priori therefore, we expect the SOX 404a regime to yield a higher degree of financial reporting quality than the SOX 302 regime. This is consistent with Kinney and Shepardson (2011)’s prediction that disclosure rates of material weaknesses by non-accelerated filers in the first year of Section 404a reports would be higher than in the previous (Section 302) year. We hypothesize the following:

H1b. Financial reporting quality is higher in the SOX 404a regime compared with the SOX 302 regime.

Section 404b requires auditor reports on the effectiveness of their clients’ internal control, following procedures described in PCAOB’s Auditing Standard 2 and later (after 2007) in Auditing Standard 5 (Doogar *et al.*, 2010). The procedures require the auditor to obtain “[. . .] sufficient competent evidence about the design and operating effectiveness of controls over all relevant financial statement assertions related to all significant accounts and disclosures in the financial statements” [Public Company Accounting Oversight Board (PCAOB), 2004]. Moreover, the internal control and financial statement audits are to be conducted in an integrated manner. A priori we would expect that the ICFR audits would improve financial reporting quality beyond the Section 302 reporting. Based on reported material weakness rates, Kinney and Shepardson (2011) argue that Section 404b is not incrementally beneficial over Section 404a. However, studies comparing non-accelerated filers with small accelerated filers conclude that the latter (with SOX 404b reporting) have higher reporting quality than the former (with only SOX 404a reporting). We hypothesize the following:

H1c. Financial reporting quality is higher in the SOX 404b regime compared with the SOX 302 regime for non-accelerated filers that voluntarily adopted SOX 404b.

H1d. Financial reporting quality is higher in the SOX 404b regime compared with the SOX 404a regime for non-accelerated filers that voluntarily adopted SOX 404b.

We turn next to differences between clean and ICW firms.

RQ2. Is there a difference in the effect of 404b regime on the financial reporting quality of clean and ICW firms?

As discussed, most of the focus in the literature has been on disclosure of ICWs and the impact on financial reporting quality of these disclosures. Research shows that the firms

with Section 404b material weaknesses benefit from the audits because they subsequently remedy the weaknesses and improve their financial reporting quality (Goh and Li, 2011). One frequently-voiced concern about Section 404b is that it subjects all firms to high compliance costs for these policies, even though the reports reveal that a majority of firms do not have material weaknesses [8]. The SEC and PCAOB however see general benefits for all firms, frequently stating that the internal control audits have resulted in “higher quality financial reporting” [Public Company Accounting Oversight Board (PCAOB), 2006]. An SEC survey of financial executives shows that 49 per cent of respondents felt that Section 404 improved the quality of the company’s financial reporting and 48 per cent felt that it improved the company’s ability to prevent fraud. Alexander *et al.* (2013), based on a survey of 2,901 corporate insiders, report that “the majority of respondents recognize compliance benefits, but they do not perceive these benefits to outweigh the costs, on average” particularly among smaller companies. Recent academic evidence also provides evidence of the benefits of SOX 404 for a more general population of firms. For example, Chen *et al.* (2013) report that earnings informativeness was higher for a more general population of companies (i.e. those with clean reports on internal control) that adopted SOX 404b. Thus, we predict that SOX 404b would bring financial reporting quality benefits to both clean and ICW firms. Whether the benefits would be greater for ICW firms compared to clean firms is an empirical question. Therefore, we present the following hypothesis in null form.

- H2. The difference in financial reporting quality between the SOX 404b and SOX 404a regimes is not different for clean firms compared to firms with internal control weaknesses.

3.2 Research design

We use the following model to test our hypotheses:

$$\begin{aligned}
 DA/ABSDA = & \beta_0 + \beta_1NONADOPT302 + \beta_2NONADOPT404a \\
 & + \beta_3ADOPTPRESOX + \beta_4ADOPT302 + \beta_5ADOPT404a \\
 & + \beta_6ADOPT404b + \beta_7AFTERDROP + \beta_8BIGN + \beta_9MERGER \\
 & + \beta_{10}LITIGATION + \beta_{11}LOSS + \beta_{12}L1ACCRUAL \\
 & + \beta_{13}LEVERAGE + \beta_{14}MB + \beta_{15}LNMVE + \beta_{16}CFO \\
 & + \beta_{17}SDCFO + \beta_{18}SDREV + \beta_{19}\Delta SALES + \text{Time—fixed effects} \\
 & + \varepsilon
 \end{aligned}
 \tag{1}$$

Appendix I contains the variable definitions. The dependent variable, discretionary accruals (DA) or absolute discretionary accruals (ABSDA), proxies for financial reporting quality (Ashbaugh *et al.*, 2003; Kothari *et al.*, 2005). DA (ABSDA) is defined as (the absolute value of) the firm’s predicted discretionary total accruals minus the median discretionary total accruals from its industry- and performance-matched portfolio.

As discussed above, our sample consists of non-accelerated filers, comprising voluntary adopters and non-adopters of Section 404b. We assign the firm-year observations for adopters to five periods, PRESOX, SOX 302, SOX 404a, SOX 404b and AFTERDROP. The firm-year observations for non-adopters are divided into three periods: PRESOX, SOX 302

and SOX 404a. Correspondingly, we define indicator variables for adopters and non-adopters for each period. Equation (1) includes seven of the eight resulting indicator variables. The base group for the comparisons is firm-year observations for non-adopters in the PRESOX period.

NONADOPT302 and NONADOPT404a are indicator variables for non-adopters for the SOX 302 and SOX 404a periods, respectively. A negative and significant β_1 (β_2) implies a reduction in discretionary accruals and thus higher financial accounting quality for the non-adopters after SOX 302 (SOX 404a) became effective. $(\beta_2 - \beta_1)$ captures the incremental improvement in financial accounting quality resulting from SOX 404a, compared to SOX 302. If SOX 404a leads to higher financial reporting quality, then we would expect $(\beta_2 - \beta_1)$ to be negative.

ADOPTPRESOX, ADOPT302, ADOPT404a, ADOPT404b and AFTERDROP are indicator variables for the adopters during the PRESOX, 302, 404a, 404b and post-dropping periods, respectively. The coefficients β_3 through β_7 capture the differences in quality between adopters in the regulation regimes and non-adopters in the PRESOX period. If adopters have higher financial reporting quality in a regulation regime relative to the PRESOX period, then we expect $(\beta_k - \beta_3, k = 4,5,6,7)$ to be negative. If the addition of each regime provides net incremental benefit in terms of improved financial reporting quality, relative to the previous regime, then we expect $(\beta_k - \beta_{k-1}, k = 4,5,6,7)$ to be negative.

3.2.1 Discretionary accruals measure. Following Kothari *et al.* (2005), we calculate DA by first estimating the following regression separately for all firms available on the Compustat database for each year and two-digit standard industrial classification (SIC) code combination:

$$TA_{it} = \beta_0 + \beta_1(1/ASSETS_{it-1}) + \beta_2(\Delta Sales - \Delta AR)_{it} + \beta_3 PPE_{it} + \varepsilon_{it} \quad (2)$$

TA is total accruals, defined as net income before extraordinary items minus cash flow from operations, scaled by lagged total assets. The estimated residual from Equation (2) is the unadjusted DA. Following Ashbaugh *et al.* (2003), we control for the impact of performance on accruals by first partitioning observations into deciles based on their lagged return on assets (ROAs) within each two-digit SIC-year group. We then calculate DA (adjusted for firm performance) as the unadjusted DA minus the median (after excluding the corresponding firm-year observation from the portfolio) unadjusted DA of each portfolio [9].

3.2.2 Control variables. The variables corresponding to β_8 - β_{19} are firm specific controls based on previous research (Ashbaugh *et al.*, 2003; Doyle *et al.*, 2007b) [10]. We include an indicator variable for Big N auditors (BIGN) to control for audit quality. We also control for variables that are shown to be related to accruals based on previous research: market value of equity (LNMVE), cash flow from operations (CFO), loss (LOSS), change in sales ($\Delta SALES$), market-to-book ratio (MB), leverage ratio (LEVERAGE), merger or acquisition activity (MERGER) and high litigation-risk industry (LITIGATION). We include lagged total accruals, L1ACCRUAL, to control for reversal of accruals. We also control for firms' fundamental operating volatility using the standard deviation of CFO (SDCFO) and sales volatility (SDREV) (Hribar and Nichols, 2007). Finally, we include year fixed effects and cluster standard errors at the firm level.

4. Sample and results

The sample selection process is shown in Table I, Panel A. We start with 19,515 firm-years from Audit Analytics for the period 2004-2010. We exclude 13,552 firm-years of accelerated filer firms and firms that switched filing status, leaving us with 5,963 firm-years for non-

<i>Panel A: sample selection</i>		# of firm-year observations										
Unique firms from the Audit Analytics database for fiscal years 2004 to 2010												19,515
Deleted accelerated filers and firms that switched filing status												(13,552)
Non-accelerated filer firms												5,963
Firm-year observations from the Compustat Annual database for fiscal years 2000-2010												106,617
Deleted non-US firms												(17,056)
Deleted financial companies (SIC codes 6000-6999)												(23,939)
Deleted observations without sufficient information to calculate DA and ABSDA												(16,770)
Compustat sample												48,852
After merging the Audit Analytics firm list with Compustat sample												20,051
Deleted observations from year-industry with less than ten observations												(90)
Deleted observations with missing regressors												(4,603)
Final sample (3,148 unique firms)												15,358
<i>Panel B: distribution by year</i>												
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
Non-adopters ^a	1,330	1,329	1,509	1,576	1,569	1,427	1,286	1,220	1,064	954	878	14,142
Adopters ^b	73	85	97	100	102	106	123	120	143	138	129	1,216
<i>Panel C: distribution by internal control regulations</i>												
	# of firms						# of observations					
							SOX404a	SOX404b	AFTERDROP			
Non-adopters ^a	2,888						2,659	4,116	189			
Adopters ^b	260						158	164	239			

Notes: ^aFirms that did not adopt SOX 404b internal control audits during the sample period; ^bFirms that voluntarily adopted SOX 404b internal control audits in one or more years during the sample period

Table I.
Sample selection and distribution

accelerated filers. Next, we collect financial data from the Compustat Annual database for the years 2000 to 2010. After excluding 17,056 non-US observations, 23,939 observations from financial companies (SIC codes 6000-6999) and 16,770 observations lacking sufficient information to compute discretionary accruals, the final Compustat sample consists of 48,852 observations. Merger of the non-accelerated filer sample from Audit Analytics with Compustat financial data yields 20,051 observations (4,304 unique firms). We delete 90 observations from year-industry groups with less than 10 observations and 4,603 observations with missing information for the control variables. Our final sample consists of 15,358 observations for 3,148 unique firms. Panel B provides the distribution of the sample by year. Voluntary adoption of Section 404b occurs more frequently during 2006-2010 than in the previous years. Panel C provides the sample distribution across the regimes.

Table II presents descriptive statistics for the full sample in Panel A, and for the subsamples of adopters and non-adopters in Panel B. Adopters have a lower mean (but not median) for ABSDA than non-adopters. Both the mean and median for DA are lower for adopters compared to non-adopters. In addition, the two samples differ on several dimensions. Adopters are larger and are more likely to be audited by the Big N firms than non-adopters. However, non-adopters are financially less stressed compared with the adopters, as indicated by the means for LOSS and the means and medians for CFO. We examined the correlations (untabulated) for the independent variables. None of the correlations exceed 0.5 suggesting that multicollinearity is not a concern[11].

Table III, Panel A presents our regression results for equation (1). In our descriptions relating to this and succeeding tables, we use the labels in Figure 1 to identify the periods we discuss: PRESOX, SOX 302, SOX 404a, SOX 404b and AFTERDROP.

ABSDA (unsigned discretionary accruals) is the dependent variable in Column 1, and DA (signed discretionary accruals) is the dependent variable in Column 2. For the ABSDA regression in Column 1, all seven test indicator variables have significant negative coefficients, indicating lower levels of accruals compared with the PRESOX levels for non-adopters. The DA regression in Column 2 yields similar results, except the insignificant coefficient for ADOPTPRESOX which suggests the level of signed discretionary accruals is not different between the non-adopters and adopters in the PRESOX period.

Table III, Panel B provides tests of incremental benefit of each regime over PRESOX and over the previous regime (*RQ1*) for the ABSDA analysis. Column 1 indicates that both adopters and non-adopters had lower accruals in the SOX 302 regime relative to the PRESOX period, supporting *H1a* and suggesting both benefited from SOX 302. Column 4 reports the incremental benefit of SOX 404a over SOX 302. Here, we find that only the non-adopters gained from SOX 404a over SOX 302, providing marginal support for *H1b* for the non-adopters. The difference in the incremental benefit for the two groups however is not significant. Finally, discretionary accruals is lower in SOX 404b than in SOX 302 for the adopters (-0.365 versus -0.281 ; p -value < 0.001), supporting *H1c*.

The effect of SOX 404b can only be seen for the adopters. Column 3 indicates that the adopters of SOX 404b benefited compared to the PRESOX period. The coefficient in Column 5 indicates the incremental benefit of SOX 404b over SOX 404a. This coefficient is significantly negative, supporting *H1d* and indicating that the voluntary adopters of SOX 404b benefited from the internal control audit in the form of higher financial reporting quality. Column 6 reports the differences in the accruals after the voluntary adopters drop the SOX 404 audits. The insignificant coefficient suggests that once the voluntary adopters were audited, the discontinuation of the audit did not make a difference, suggesting that the benefit of the audit continued after such discontinuance[12].

Panel A: full sample

Variable	Full sample (N = 15,358)		
	Mean (1)	Median (2)	SD. (3)
ABSDA	0.19	0.08	0.75
DA	0.02	0.01	0.77
LN MVE	3.42	3.50	1.69
BIGN	0.47	0.00	0.50
MERGER	0.0004	0.00	0.02
LITIGATION	0.18	0.00	0.39
LOSS	0.60	1.00	0.49
L1ACCRUAL	-0.19	-0.08	0.88
LEVERAGE	0.66	0.49	0.84
MB	2.63	1.54	9.11
CFO	-0.09	0.01	0.45
SDCFO	0.23	0.10	0.55
SDREV	0.32	0.21	0.36
ΔSALES	1.23	1.04	1.10

Panel B: non-adopters and adopters

Variable	Non-adopters (N = 14,142)			Adopters (N = 1,216)			<i>t</i> -statistic ^a (1) vs (4)	Wilcoxon-Z ^b (2) vs (5)
	Mean (1)	Median (2)	SD (3)	Mean (4)	Median (5)	SD (6)		
ABSDA	0.19	0.08	0.78	0.16	0.08	0.29	-3.22***	-0.59
DA	0.03	0.01	0.80	-0.01	-0.00	0.33	-3.89***	-4.626***
LN MVE	3.36	3.42	1.71	4.13	4.22	1.32	19.18***	17.70***
BIGN	0.46	0.00	0.50	0.59	1.00	0.49	9.09***	8.96***
MERGER	0.0004	0.000	0.02	0.000	0.000	0.00	-2.45**	-0.72
LITIGATION	0.18	0.00	0.39	0.19	0.00	0.39	0.22	0.23
LOSS	0.59	1.00	0.49	0.71	1.00	0.45	9.13***	8.49***
L1ACCRUAL	-0.19	-0.08	0.91	-0.14	-0.09	0.50	2.85***	-2.32**
LEVERAGE	0.67	0.49	0.86	0.63	0.49	0.65	-2.01**	0.13
MB	2.58	1.52	9.04	3.19	1.87	9.85	2.11**	3.97***
CFO	-0.09	0.01	0.45	-0.12	-0.01	0.42	-3.04***	-5.62***
SDCFO	0.24	0.10	0.57	0.18	0.10	0.29	-5.71***	-2.12**
SDREV	0.33	0.21	0.36	0.26	0.17	0.28	-7.72***	-6.81***
ΔSALES	1.23	1.05	1.10	1.27	1.04	1.16	1.19	-0.52

Notes: Variable definitions are in Appendix. *** (***) [*] Significantly different from zero at or below the 0.01 (0.05) [0.1] level (two-tailed). ^a*t*-statistics for the test of differences between the means of the non-adopters and adopters. ^bZ-statistics for the Wilcoxon Ranksum test between the non-adopters and adopters

Table II.
Descriptive statistics

Table III, Panel C presents test results for the DA analysis. The results support *H1a*. Columns 1-3 show that compared to PRESOX, both non-adopters and adopters have lower accruals in SOX 302 and SOX 404a periods, and adopters have lower accruals in SOX 404b period. This suggests that the regulations have improved quality for both groups of firms. Surprisingly, in Column 4 we find that signed discretionary accruals is greater in SOX 404a compared to PRESOX. This is inconsistent with *H1b*. The F-test shows that discretionary accruals is lower in SOX 404b than in SOX 302 (-0.285 versus -0.202; $p < 0.01$), supporting *H1c*. Consistent with results from the ABSDA analysis, Column 5 indicates that adopters have lower level of discretionary accruals in SOX 404b compared to SOX 404a, supporting *H1d* and highlighting the incremental benefits brought about by SOX 404b[13].

Panel A: regression results

Variables		Dependent variable	
		ABSDA (1)	DA (2)
CONSTANT	β_0	0.488*** (0.072)	0.363*** (0.074)
NONADOPT302	β_1	-0.320*** (0.065)	-0.218*** (0.067)
NONADOPT404a	β_2	-0.361*** (0.061)	-0.174*** (0.063)
ADOPTPRESOX	β_3	-0.146*** (0.036)	-0.054 (0.038)
ADOPT302	β_4	-0.281*** (0.064)	-0.202*** (0.068)
ADOPT404a	β_5	-0.296*** (0.065)	-0.162** (0.071)
ADOPT404b	β_6	-0.365*** (0.059)	-0.285*** (0.062)
AFTERDROP	β_7	-0.370*** (0.060)	-0.265*** (0.063)
BIGN		-0.047*** (0.014)	-0.040*** (0.014)
MERGER		0.427* (0.232)	0.720** (0.314)
LITIGATION		-0.030*** (0.011)	-0.003 (0.012)
LOSS		-0.026** (0.013)	-0.126*** (0.015)
LIACCURAL		-0.042* (0.022)	0.025 (0.024)
LEVERAGE		0.020 (0.016)	0.023 (0.017)
MB		0.001 (0.001)	0.001 (0.001)
LNMVE		-0.012*** (0.005)	-0.027*** (0.005)
CFO		-0.224*** (0.037)	-0.117*** (0.043)
SDCFO		0.032 (0.021)	-0.009 (0.022)
SDREV		0.093*** (0.027)	-0.011 (0.027)
ΔSALES		0.021** (0.008)	-0.006 (0.010)
Year FE		Included	Included
N		15,358	15,358
Adj R-squared		0.061	0.018

Panel B: Test of RQ1: Incremental benefit over PRESOX, and compared with previous regime

Dependent Variable – ABSDA	Benefit (compared with PRESOX)			Incremental benefit (compared with previous regime)		
	SOX302 (1)	SOX404a (2)	SOX404b (3)	SOX404a (4)	SOX404b (5)	AFTERDROP (6)
Non-adopters	-0.320*** β_1	-0.361*** β_2		-0.041* $\beta_2 - \beta_1$		
Adopters	-0.135*** $\beta_4 - \beta_3$	-0.150*** $\beta_5 - \beta_3$	-0.219*** $\beta_6 - \beta_3$	-0.015 $\beta_5 - \beta_4$	-0.069** $\beta_6 - \beta_5$	-0.005 $\beta_7 - \beta_6$
Difference (Adopters minus Non-adopters)	0.185*** $\beta_4 - \beta_3 - \beta_1$	0.211*** $\beta_5 - \beta_3 - \beta_2$		0.026 $(\beta_5 - \beta_4) - (\beta_2 - \beta_1)$		

Panel C: Test of RQ1: Incremental benefit over PRESOX, and compared with previous regime

Dependent Variable – DA	Benefit (compared with PRESOX)			Incremental benefit (compared with previous regime)		
	SOX302 (1)	SOX404a (2)	SOX404b (3)	SOX404a (4)	SOX404b (5)	AFTERDROP (6)
Non-adopters	-0.218*** β_1	-0.174*** β_2		0.044** $\beta_2 - \beta_1$		
Adopters	-0.148*** $\beta_4 - \beta_3$	-0.108* $\beta_5 - \beta_3$	-0.231*** $\beta_6 - \beta_3$	0.040 $\beta_5 - \beta_4$	-0.123*** $\beta_6 - \beta_5$	0.02 $\beta_7 - \beta_6$
Difference (Adopters minus Non-adopters)	0.070*** $\beta_4 - \beta_3 - \beta_1$	0.066*** $\beta_5 - \beta_3 - \beta_2$		-0.04 $(\beta_5 - \beta_4) - (\beta_2 - \beta_1)$		

Table III.
Main analyses

Notes: Variable definitions are in Appendix. Standard errors are in parentheses. *** (**) [*] Significantly different from zero at or below the 0.01 (0.05) [0.1] level (two-tailed)

Table IV addresses RQ2. We divide our sample firms into “clean” and ICW firms. We employ a very stringent definition of clean firms, i.e. those that did not have an ICW in any regulation regime. Correspondingly, ICW firms are those that had an ICW in one or more of the years they are in the sample. Panel A, Columns 1 and 2 (Columns 3 and 4) present regression estimates using ABSDA (DA) as the dependent variable. As in Table III Panel A, the coefficients for most of the test variables are negatively significant for both the clean and ICW samples. Panels B and C present, as before, benefits (over the PRESOX regime and incremental benefits of each regime over the previous regime) for the ABSDA and DA analyses, respectively.

Panel B indicates important differences between clean and ICW firms in the benefits from the different regulations. All firms, clean and ICW, adopters and non-adopters, have lower accruals in the SOX 302 period compared with the PRESOX period. Also, consistent with Table III, non-adopters benefited more than adopters for both the clean and ICW samples. All firms have lower accruals in the SOX 404a period relative to PRESOX, and the adopters (both clean and ICW) have lower accruals in the SOX 404b period compared with the PRESOX period. However, the incremental benefits in Columns 4-6 indicate different results for clean and ICW firms. The clean firms (both adopters and non-adopters) show no incremental benefits from SOX 302 to SOX 404a, and the adopters show no incremental benefits from SOX 404a to SOX 404b. For the ICW firms, neither adopters nor non-adopters benefit incrementally from SOX 404a over SOX 302. The only incremental benefit we observe is for the ICW firms that adopted SOX 404b. Accruals for these firms are lower in the SOX 404b period relative to the SOX 404a period. Finally, firms that dropped the SOX 404b audits did not see any change in accruals from the SOX 404b period.

Panel C presents test results using DA as the dependent variable. Consistent with Panel B, it shows that most firms, clean or ICW, have better financial reporting quality in SOX 302, SOX 404a, and SOX 404b compared to PRESOX. Also, consistent with Panel B, ICW firms are the only group that benefited incrementally from SOX 404b. However, Column 4 shows that clean non-adopters have greater accruals moving from SOX 302 to SOX 404a.

Next, we examine whether the results for clean firms differ across firms that began with different reporting quality. The internal control regulations may not have a visible impact on firms that already have good financial reporting quality and have no internal control issues. We partition the clean firms into quintiles based on their average ABSDA in the PRESOX period. We then estimate our model for each quintile and include our results in Table V Panel A. Columns 1-3 present ABSDA analysis regression estimates for the 1st, 3rd and 5th quintiles, and Columns 4-6 present the DA analysis results.

In the ABSDA regression estimates, NONADOPT302 and ADOPT302 have significant negative coefficients for the 1st quintile, indicating that both non-adopters and adopters have lower levels of accruals in the SOX 302 period compared with non-adopters in the PRESOX period. This evidence is consistent with those provided in Cohen *et al.* (2008) that the quality of accruals was lower for the population of firms in the PRESOX period. However, unlike in Tables III and IV, the estimated coefficients for NONADOPT404a and AFTERDROP in the 1st quintile are positive and significant, indicating higher levels of accruals compared with the PRESOX levels for non-adopters. None of the test indicator variables have significant coefficients for the 3rd quintile, implying similar levels of accruals compared with the PRESOX levels for non-adopters. Quintile 5 is the only quintile with negative significant coefficients for all seven test indicator variables. For the DA analysis, firms in the 1st and 5th quintiles have lower accruals in the SOX 302 period compared to the PRESOX period. In the 3rd quintile, adopters are the only group with lower accruals in the SOX 302 period compared to the PRESOX period. Similar to the ABSDA analysis, the

Variables	Dependent Variable			
	ABSDA		DA	
	Clean firms (1)	ICW firms (2)	Clean firms (3)	ICW firms (4)
<i>Panel A: Regression Results</i>				
CONSTANT	β_0 0.414*** (0.073)	0.673*** (0.179)	0.303*** (0.075)	0.542*** (0.184)
NONADOPT302	β_1 -0.275*** (0.065)	-0.468*** (0.173)	-0.171*** (0.064)	-0.357** (0.181)
NONADOPT404a	β_2 -0.361*** (0.056)	-0.519*** (0.170)	-0.113* (0.058)	-0.352** (0.178)
ADOPTPRESOX	β_3 -0.131*** (0.037)	-0.179** (0.087)	-0.054 (0.038)	-0.064 (0.093)
ADOPT302	β_4 -0.249*** (0.064)	-0.375** (0.171)	-0.194*** (0.064)	-0.243 (0.181)
ADOPT404a	β_5 -0.256*** (0.064)	-0.425** (0.168)	-0.175** (0.069)	-0.392** (0.190)
ADOPT404b	β_6 -0.312*** (0.056)	-0.516*** (0.162)	-0.139** (0.058)	-0.506*** (0.168)
AFTERDROP	β_7 -0.312*** (0.057)	-0.549*** (0.170)	-0.156*** (0.060)	-0.450** (0.177)
BIGN	-0.036*** (0.012)	-0.073* (0.039)	-0.027** (0.013)	-0.080** (0.041)
MERGER	0.574** (0.271)	-0.120** (0.061)	-0.833** (0.356)	-0.157** (0.068)
LITIGATION	-0.044*** (0.011)	-0.005 (0.026)	-0.009 (0.012)	0.002 (0.029)
LOSS	-0.001 (0.014)	-0.061** (0.026)	-0.118*** (0.015)	-0.140*** (0.029)
LIACCRAU	-0.027 (0.019)	-0.055 (0.038)	0.007 (0.021)	0.039 (0.042)
LEVERAGE	0.010 (0.009)	0.036 (0.040)	0.003 (0.011)	0.053 (0.041)
MB	0.0003 (0.001)	0.002 (0.001)	0.001 (0.001)	0.001 (0.002)
LNMVE	-0.012** (0.006)	-0.014 (0.012)	-0.024*** (0.006)	-0.035*** (0.013)
CFO	-0.113*** (0.033)	-0.407*** (0.084)	-0.089** (0.041)	-0.158* (0.093)
SDCFO	0.050* (0.030)	0.001 (0.028)	0.015 (0.030)	-0.034 (0.032)
SDREV	0.115*** (0.037)	0.062 (0.040)	0.007 (0.037)	-0.045 (0.042)
SALES	0.032*** (0.007)	-0.002 (0.019)	-0.012 (0.009)	0.003 (0.022)
Year FE	Included	Included	Included	Included
N	10,456	4,902	10,456	4,902
Adj R-squared	0.052	0.085	0.017	0.026

Panel B: Test of RQ2: Incremental benefit over PRESOX, and compared with previous regime

Dependent Variable – ABSDA	Benefit (compared with PRESOX)			Incremental benefit (compared with previous regime)		
	SOX302 (1)	SOX404a (2)	SOX404b (3)	SOX404a (4)	SOX404b (5)	AFTERDROP (6)
<i>Clean Firms</i>						
Non-adopters	-0.275***	-0.307***		0.032		
	β_1	β_2		$\beta_2 - \beta_1$		
Adopters	-0.118**	-0.125**	-0.181***	-0.007	-0.056	0.000
	$\beta_4 - \beta_3$	$\beta_5 - \beta_3$	$\beta_6 - \beta_3$	$\beta_5 - \beta_4$	$\beta_6 - \beta_5$	$\beta_7 - \beta_6$
Difference (Adopters minus Non-adopters)	0.157***	0.182***		0.025		
	$\beta_4 - \beta_3 - \beta_1$	$\beta_5 - \beta_3 - \beta_2$		$\beta_5 - \beta_4 - \beta_2 - \beta_1$		
<i>ICW Firms</i>						
Non-adopters	-0.468***	-0.519***		-0.051		
	β_1	β_2		$\beta_2 - \beta_1$		
Adopters	-0.196*	-0.246**	-0.337***	-0.05	-0.091**	-0.033
	$\beta_4 - \beta_3$	$\beta_5 - \beta_3$	$\beta_6 - \beta_3$	$\beta_5 - \beta_4$	$\beta_6 - \beta_5$	$\beta_7 - \beta_6$
Difference (Adopters minus Non-adopters)	0.272***	0.273***		0.001		
	$\beta_4 - \beta_3 - \beta_1$	$\beta_5 - \beta_3 - \beta_2$		$\beta_5 - \beta_4 - \beta_2 - \beta_1$		

Table IV.
Clean firms and ICW firms

(continued)

Table IV.

Panel C: Test of RQ2: Incremental benefit over PRESOX, and compared with previous regime

	Benefit (compared with PRESOX)			Incremental benefit (compared with previous regime)		
	SOX302 (1)	SOX404a (2)	SOX404b (3)	SOX404a (4)	SOX404b (5)	AFTERDROP (6)
<i>Dependent Variable – DA</i>						
<i>Clean Firms</i>						
Non-adopters	-0.171***	-0.113*		0.058**		
	β_1	β_2		$\beta_2 - \beta_1$		
Adopters	-0.14***	-0.121*	-0.085*	0.019	0.036	-0.017
	$\beta_4 - \beta_3$	$\beta_5 - \beta_3$	$\beta_6 - \beta_3$	$\beta_5 - \beta_4$	$\beta_6 - \beta_5$	$\beta_7 - \beta_6$
Difference (Adopters minus Non-adopters)	0.031***	-0.008		-0.039		
	$\beta_4 - \beta_3 - \beta_1$	$\beta_5 - \beta_3 - \beta_2$		$\beta_5 - \beta_4 - \beta_2 - \beta_1$		
<i>ICW Firms</i>						
Non-adopters	-0.357***	-0.352***		0.005		
	β_1	β_2		$\beta_2 - \beta_1$		
Adopters	-0.179	-0.328**	-0.442***	-0.149	-0.114***	0.056
	$\beta_4 - \beta_3$	$\beta_5 - \beta_3$	$\beta_6 - \beta_3$	$\beta_5 - \beta_4$	$\beta_6 - \beta_5$	$\beta_7 - \beta_6$
Difference (Adopters minus Non-adopters)	0.178***	0.024**		-0.154		
	$\beta_4 - \beta_3 - \beta_1$	$\beta_5 - \beta_3 - \beta_2$		$\beta_5 - \beta_4 - \beta_2 - \beta_1$		

Notes: Variable definitions are in Appendix. Standard errors are in parentheses. *** (***) [*] Significantly different from zero at or below the 0.01 (0.05) [0.1] level (two-tailed)

coefficient on ADOPT404b is negative and significant only for Quintile 5, firms with the worst financial reporting quality in the PRESOX period.

In Panel B of Table V, the ABSDA analysis shows that there are significant variations across the quintiles in the benefits from the different regulation regimes. Quintile 1 comprises firms with the lowest accruals in the PRESOX period. All firms in the 1st quintile, adopters and non-adopters, have lower accruals in the SOX 302 period compared with the PRESOX period, and the change in accruals is similar between the adopters and non-adopters. Columns 2 and 4 exhibit higher accruals in the SOX 404a period relative to both the PRESOX and SOX 302 periods for the non-adopters, indicating (unexpectedly) deterioration in quality for the non-adopters in the SOX 404a period. Adopters also show a deterioration in quality from the SOX 302 to SOX 404a periods, but have similar accruals in the PRESOX and SOX 404a periods (possibly because the incremental gains from SOX 302 are offset by the reduction in quality during the SOX 404a period). Lastly, adopters that dropped SOX 404b audits show no change in accruals from the SOX 404b period.

In Quintile 3, which includes firms with “medium” performance in the PRESOX period, non-adopters have lower accruals in the SOX 302 period relative to the PRESOX period, while adopters have similar levels of accruals in the two periods. Column 2 indicates that non-adopters have lower accruals in the SOX 404a period compared with the PRESOX period, but adopters have significant higher accruals in the SOX 404a period compared with the PRESOX period. Neither non-adopters nor adopters show any incremental benefits from SOX 404a or SOX 404b. Column 6 shows that there is no change in accruals for firms that dropped 404b audits.

Quintile 5 comprises firms with the highest accruals in the PRESOX period. All firms in Quintile 5 have lower accruals in the SOX 302 and SOX 404a periods compared with the

Table V.
Clean firms –
partition by average
PRESOX quality

		Dependent Variable				
		1st Quintile	5th Quintile	3rd Quintile	5th Quintile	DA
		(1)	(3)	(4)	(5)	(6)
<i>Panel A: Regression Results</i>						
	Variables	ABSDA				
	Constant	0.087*** (0.028)	2.009*** (0.405)	0.108*** (0.026)	0.133*** (0.035)	1.362*** (0.426)
	nonadopt302	-0.113*** (0.040)	-1.552*** (0.275)	-0.167*** (0.050)	-0.059 (0.061)	-0.594** (0.296)
	nonadopt404a	0.062*** (0.014)	-1.607*** (0.285)	-0.006 (0.017)	-0.019 (0.022)	-0.681** (0.308)
	adoptpresox	0.012 (0.014)	-0.438** (0.208)	-0.007 (0.022)	-0.012 (0.030)	-0.393 (0.282)
	adopt302	-0.119*** (0.041)	-1.468*** (0.250)	-0.146** (0.056)	-0.127* (0.075)	-0.470* (0.273)
	adopt404a	0.084 (0.067)	-1.538*** (0.310)	-0.013 (0.106)	-0.043 (0.067)	-0.523 (0.332)
	adopt404b	0.047 (0.036)	-1.683*** (0.286)	-0.015 (0.043)	-0.055 (0.050)	-0.919** (0.298)
	AFTERdrop	0.103*** (0.051)	-1.723*** (0.354)	-0.039 (0.056)	-0.053* (0.029)	-0.785** (0.342)
	Control variables	Included	Included	Included	Included	Included
	Year FE	Included	Included	Included	Included	Included
	N	1,402	1,467	1,402	1,380	1,467
	Adj R-squared	0.138	0.134	0.136	0.139	0.046
<i>Panel B: Test of RQ1: Incremental benefit over PRESOX, and compared with previous regime</i>						
		Benefit (compared with PRESOX)		Incremental Benefit (compared with previous regime)		
	1st Quintile	302	404a	404a	404b	AFTERDROP
	Non-adopters	(1)	(2)	(4)	(5)	(6)
	Adopters	-0.113**	0.062**	0.175***	-0.037	0.056
	Difference	β_1	β_2	$\beta_2 - \beta_1$	$\beta_6 - \beta_5$	$\beta_7 - \beta_6$
	(Adopters minus Non-adopters)	-0.131***	0.072	0.203**		
	3rd Quintile	$\beta_4 - \beta_3$	$\beta_5 - \beta_3$	$\beta_5 - \beta_4$		
	Non-adopters	-0.018	0.01	0.028		
	Difference	$\beta_4 - \beta_3 - \beta_1$	$\beta_5 - \beta_3 - \beta_2$	$\beta_5 - \beta_4 - \beta_2 - \beta_1$		
	Adopters	-0.051	-0.015	0.036		
	Difference	$\beta_4 - \beta_3$	β_2	$\beta_2 - \beta_1$		
	(Adopters minus Non-adopters)	-0.007	0.059***	0.066	-0.136	0.069
	5th Quintile	$\beta_4 - \beta_3$	$\beta_5 - \beta_3$	$\beta_5 - \beta_4$	$\beta_6 - \beta_5$	$\beta_7 - \beta_6$
	Non-adopters	0.044***	0.074***	0.03		
	Difference	$\beta_4 - \beta_3 - \beta_1$	$\beta_5 - \beta_3 - \beta_2$	$\beta_5 - \beta_4 - \beta_2 - \beta_1$		
	(Adopters minus Non-adopters)				$\beta_6 - \beta_5$	$\beta_7 - \beta_6$

(continued)

		Benefit (compared with PRESOX)		Incremental benefit (compared with previous regime)	
		404a (2)	404b (3)	404a (4)	404b (5)
<i>Panel C: Test of RQ1: Incremental benefit over PRESOX, and compared with previous regime</i>					
<i>Dependent Variable – DA</i>					
<i>1st Quintile</i>					
Non-adopters					
Adopters					
Difference (Adopters minus Non-adopters)					
<i>3rd Quintile</i>					
Non-adopters					
Adopters					
Difference (Adopters minus Non-adopters)					
<i>5th Quintile</i>					
Non-adopters					
Adopters					
Difference (Adopters minus Non-adopters)					

Notes: Variable definitions are in Appendix. Standard errors are in parentheses. *** (***) [*] Significantly different from zero at or below the 0.01 (0.05) [0.1] level (two-tailed)

Table V.

PRESOX period. Non-adopters benefited more than adopters during both the SOX 302 and SOX 404a periods. Column 3 shows that adopters have lower accruals in the SOX 404b period relative to the PRESOX period. Columns 4-6 indicate different results from the previous quintiles. Adopters show lower accruals in the SOX 404b period compared with the SOX 404a period. Quintile 5 is the only group where firms show incremental benefits from SOX 404b over SOX 404a. Finally, firms that dropped SOX 404b audit do not show any changes in accruals, suggesting that the audits may have put sufficient mechanisms in place to retain the benefits of improved internal control quality in future years[14].

Table V, Panel C presents test results of the DA analysis. It shares several common messages with the ABSDA analysis results. First, most firms benefited incrementally from SOX 302 as shown by the negative and significant coefficients in Column 1. Second, quality unexpectedly deteriorated from SOX 302 to SOX 404a period for non-adopters starting with the highest quality in the 1st quintile. Lastly, firms in Quintile 5 are the only group that show incremental benefits moving from SOX 404a to SOX 404b, and the benefits remain even after SOX 404b audits are dropped.

5. Conclusions

A controversial provision of the Sarbanes–Oxley Act is the requirement relating to the audits of internal control under Section 404b. In 2010, the Dodd–Frank Act permanently exempted non-accelerated filers from complying with Section 404b. The exemption is largely driven by concerns about the substantial compliance costs for small companies. Among those that opposed the permanent exemption include the Center for Audit Quality and the Council of Institutional Investors, maintaining that the exemption “would substantially impact the quality and timing of financial disclosures by sizable public companies to the detriment of investors and our capital markets more generally” [Center for Audit Quality and Council of Institutional Investors (CAQ-CII), 2014]. The Dodd–Frank Act also required the U.S. Government Accountability Office (GAO) to examine the “impact of the permanent exemption on the quality of financial reporting by small public companies and on investors.” The GAO subsequently issued a report recommending that the “SEC consider requiring public companies, where applicable, to explicitly disclose whether they obtained an auditor attestation of their internal controls” (GAO, 2013).

In this study we investigate the impact of a series of internal control regulations introduced by SOX (SOX 302, SOX 404a and SOX 404b) on the financial reporting quality of small firms. The issue is important because the incidence of fraud is high among small companies (Beasley *et al.*, 1999) and small companies are likely to have weak internal controls (Doyle *et al.*, 2007a)[15].

We document the following findings. In general, the non-accelerated filers benefited from SOX 302 and SOX 404a regulations over the PRESOX period. This is consistent with evidence provided in Kinney and Shepardson (2011) and other studies. However, we also find that firms that voluntarily adopted SOX 404b, particularly those with material weaknesses, and those without material weaknesses that had low reporting quality, benefited from the internal control audits. Our findings can inform the current policy debate on 404b exemption .

Notes

1. More recently, the SEC (SEC, 2019) has issued a proposal for comments to exempt additional firms from SOX 404b audits. Two recent articles also highlight adverse effects of exempting small companies from internal control audits (Levitt, 2019; Michaels, 2019).
2. Using ICW disclosure rates as a measure of quality can be problematic. Rice and Weber (2012) document that “a large proportion of firms with material weaknesses fail to report those

weaknesses in a timely manner” with many revealing material weaknesses only after a restatement has been announced. [McVay \(2011\)](#) notes in her discussion of [Kinney and Shepardson’s \(2011\)](#) paper, “it is likely that the material weakness disclosure rates under 404(a) are overstated”[...] possibly because “many managers of small firms were lobbying to have Section 404(b) permanently rescinded, they likely exercised additional care and effort when making their assessments in order to convince regulators that Section 404(b) was superfluous.”

3. In 2012, the House of Representatives introduced a Bill proposing that companies with market capitalization of up to \$250m be exempted from the internal control audits requirement [[American Institute of Certified Public Accountants \(AICPA\), 2012](#)]. This bill was passed by the House Financial Services Committee ([Harkins, 2014](#)). More recently, the Financial Choice Act of 2017 includes a proposal to exempt companies with market capitalization less than \$500m from internal control audits and to grant temporary exemption to companies that are not large accelerated filers and whose average annual gross revenues is less than \$50m. The Center for Audit Quality, the Council of Institutional Investors, and the CFA Institute oppose this bill urging “Congress to recognize that capital formation is impacted by many factors and to preserve Section 404(b) on behalf of all investors. Shareholders in public companies of all sizes should benefit from the same protections, including the beneficial, third-party inspection of a company’s ICFR that is mandated under SOX Section 404(b)” [[Center for Audit Quality, Council of Institutional Investors, and CFA Institute \(CAQ-CII-CFA\), 2017](#)].
4. A company’s “public float” is the aggregate market value of voting and non-voting common equity held by non-affiliates. Accelerated filers are companies with public float of at least \$75m that have been subject to Exchange Act reporting requirements for at least 12 calendar months, have filed at least one annual report, and are not eligible to use Forms 10-KSB and 10-QSB for their annual and quarterly reports.
5. Some studies find that small accelerated filers pay disproportionately more to comply with Section 404b than large firms ([Krishnan et al., 2008](#); [SEC, 2009](#)).
6. See [Schneider et al. \(2009\)](#) for a comprehensive review of studies relating to internal control.
7. The SEC’s final rule states “[...] we are not requiring any particular procedures for conducting the required review and evaluation. Instead, we expect each issuer to develop a process that is consistent with its business and internal management and supervisory practices.”
8. Critics of SOX’s provisions argue that “the law forces all companies to undergo a financial root canal because a handful had rotten teeth” while others have described “it as ‘chemotherapy’ to prevent the cancer from recurring after cutting out corporate tumors at Enron, WorldCom and elsewhere. Chemotherapy has unpleasant side effects, but it beats the alternative [...]” ([Jones, 2003](#)).
9. As a robustness check, we re-run our tests using performance-matched discretionary accruals ([Kothari et al., 2005](#)). We first estimate the residual from [equation \(2\)](#). Next, we match each firm-year observation with another from the same two-digit SIC and year with the closest ROA. ABSDA is then calculated as the absolute value of the difference between the residual and the matched firm’s residual. Our results and inferences remain similar using this alternative specification.
10. We winsorize continuous independent variables at the 1 and 99 per cent levels.
11. The highest variance inflation factor (except for some year indicator variables) is 1.45, which is well below the acceptable threshold of 10.
12. We conducted additional analysis to examine whether the benefit remains post 2010 (the Dodd–Frank Act permanently exempted non-accelerated filers from 404b audits in 2010). We extended the sample period to 2012, the year the JOBS Act provided a five-year 404b exemption to more emerging growth companies. We included an indicator variable AFTER10, which equals one for

adopter observations after 2010. The coefficient on AFTER10 is negative and significant. It is marginally less negative than AFTERDROP, suggesting decreased financial reporting quality for the adopters after 2010.

13. We also performed an additional check by including only one indicator variable for the SOX 302 period (coded 1 for NONADOPT302 or ADOPT302) and one for the SOX 404a period (coded 1 for NONADOPT404a or ADOPT404a). Estimated coefficients on all the test variables are negative and significant at the 1 per cent level, consistent with our main analyses.
14. As a robustness test, we also partition the firms based on their ABSDA when they first entered the sample. The results remain qualitatively similar to those tabulated. In a separate robustness test, we divide the sample into quartiles and re-run the analysis. The results are similar to the main analysis using quintiles. Adopters with the lowest reporting quality is the only group with incremental benefits moving to SOX 404b.
15. For example, a recent \$31m fraud that occurred in Koss Corporation is directly attributable to weak internal controls even though the management had certified to its effectiveness. Koss was not subject to 404b audit at that time (<http://ww2.cfo.com/accounting-tax/2010/01/fraud-case-feeds-sarbox-exemption-critics/>).

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DA	Discretionary accruals adjusted for portfolio performance
ABSDA	Absolute value of discretionary accruals adjusted for portfolio performance
NONADOPT302	Coded 1 for non-adopter observations during years 2002 to 2006, 0 otherwise
NONADOPT404a	Coded 1 for non-adopter observations for 2007 and later years, 0 otherwise
ADOPTPRESOX	Coded 1 for adopter observations during years 2000 and 2001, 0 otherwise
ADOPT302	Coded 1 for adopter observations from 2002 to the earlier of 2006 and the year before first ICFR audit, 0 otherwise
ADOPT404a	Coded 1 for adopter observations during year 2007 to the year before first ICFR audit, 0 otherwise
ADOPT404b	Coded 1 for adopter observations during or after the year of first ICFR audit and during or before the last ICFR audit, 0 otherwise
AFTERDROP	Coded 1 for adopter observations after ICFR audit is discontinued, 0 otherwise
BIGN	Coded 1 if the sample firm is a client of Big N auditor, 0 otherwise
MERGER	Coded 1 if the sample firm has engaged in a merger or acquisition (Compustat footnote AFTNT1), 0 otherwise
LITIGATION	Coded 1 if the sample firm operates in a high-litigation industry (SIC codes 2833-2836, 3570-3577, 3600-3674, 5200-5961, and 7370), 0 otherwise
LOSS	Coded 1 if the sample firm reports a loss, 0 otherwise
L1ACCRUAL	Last year's total accruals equal to net income before extraordinary items (Compustat data item 123) minus cash flow from operations (Compustat data item 308) scaled by lagged total assets
LEVERAGE	Total asset (Compustat data item 6) less book value (Compustat data item 60) divided by total asset
MB	Market-to-book ratio
LNMV	Natural logarithm of a firm's market value of equity, calculated as price per share at fiscal year-end (Compustat data item 199) multiplied by the number of shares outstanding (Compustat data item 25) (millions of dollars)
CFO	Cash flow from operations (Compustat data item 308) scaled by lagged total assets
SDCFO	Standard deviation of the ratio of CFO to total assets over the past five years (including current year)
SDREV	Standard deviation of the ratio of sales (Compustat data item 12) to total assets over the past five years (including current year)
ΔSALES	Change in sales (Compustat data item 12) scaled by lagged total assets
ASSETS	Total assets (Compustat data item 6)
ΔAR	Change in accounts receivable (Compustat data item 2) scaled by lagged total assets
PPE	Net property, plant and equipment (Compustat data item 8) scaled by lagged total assets

Table AI.
Variable definitions

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