

The Effect of SOX Section 404: Costs, Earnings Quality, and Stock Prices

PETER ILIEV*

ABSTRACT

This paper exploits a natural quasi-experiment to isolate the effects that were uniquely due to the Sarbanes–Oxley Act (SOX): U.S. firms with a public float under \$75 million could delay Section 404 compliance, and foreign firms under \$700 million could delay the auditor’s attestation requirement. As designed, Section 404 led to conservative reported earnings, but also imposed real costs. On net, SOX compliance reduced the market value of small firms.

THE SARBANES–OXLEY ACT (SOX) was passed in 2002 after a string of high profile corporate scandals. The law’s main goal was to improve the quality of financial reporting and to increase investor confidence. The Securities and Exchange Commission (SEC) was put in charge of enforcing the law. In 2003, the SEC implemented Section 404 of SOX, which requires companies to put in place and periodically test procedures that monitor the internal systems ensuring accurate financial reports.¹ Section 404 requires that managers report their findings in a special management’s report, and that an outside auditor attest to management’s assessment of the company controls. According to the SEC, Section 404 procedures are intended to help companies detect fraudulent reporting early and thus to deter financial fraud, directly improving the reliability of financial statements (SEC release 33-8238).

Recently, Section 404 and its practical application have come under intense attack from business groups and lawmakers alike. In 2005, the Duke University/CFO Magazine Business Outlook Survey listed increased regulation as one of the top concerns of U.S. corporations, third after competition and health care costs. The SEC’s own Advisory Committee on Smaller Public Companies recommended renewed Section 404 exemptions for small firms because of the

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¹Section 302 of SOX has similar provisions that became effective earlier than Section 404. Section 404, however, mandates that outside auditors “attest” to the findings of management. Furthermore, Section 404 was implemented in a way that requires that firms include their management’s report on internal controls over financial reporting in their 10K filing.

high costs of compliance.² Testifying before the Small Business Committee of the U.S. House of Representatives, Michael J. Ryan Jr., executive director and senior vice president of the Center for Capital Markets Competitiveness at the U.S. Chamber of Commerce, concluded (based on evidence from the Center survey) that Section 404 costs and regulatory burden are “far beyond what Congress intended and well in excess of the benefits to shareholders and management”.³

Despite the above calls for small company exemption, the SEC only gave a 5-month extension to small companies’ compliance, and Chairman Christopher Cox renewed the SEC commitment to enforcing SOX compliance for all U.S. firms.⁴ In response to the SEC’s actions, the House Small Business Committee Chairwoman Nydia M. Velazquez (D-N.Y.) said that “while this delay will help ease undue burdens on small firms it is by no means the final stage of this fight”.⁵ On April 25, 2007, the Senate unanimously passed an amendment to the America Competes Bill, expressing “the sense of the Senate that small businesses play a critical role in the economy, and that the SEC and the Public Company Accounting Oversight Board (PCAOB) should implement Section 404 of the Sarbanes–Oxley law in a manner that limits the burdens placed on small and mid-size public companies.”⁶ As a result, the SEC is conducting its own study of the costs of Section 404 compliance to small firms.

The policy debate about the implementation of the Sarbanes–Oxley Act reflects the following questions that each regulator faces: What is the optimal level of regulation for public firms?⁷ Are the costs of new regulations excessive? Can regulation improve the quality of financial reporting? And, ultimately, how does regulation affect the market valuation of firms? The critics of SOX point to the high costs of enhanced disclosure, especially for small firms. These costs include additional internal controls required to achieve compliance with the new regulation as well as the extra audit fees paid to the outside auditors that attest to the management’s assessment. The proponents of SOX, on the other hand, argue that paying the price for the new procedures leads to improved financial reporting. According to this argument post-SOX earnings better reflect the actual economic profits of the firm because management has less discretion when it comes to reporting firm performance. Weighing the

²See “Final Report of the Advisory Committee on Smaller Public Companies”, April 23, 2006.

³See Malini Manickavasagam, “SEC Plans to Propose Further Delay for Small Company Section 404 Compliance,” *Corporate Accountability & Fraud Daily*, December 13, 2007.

⁴See Kara Scannell and Deborah Solomon, “Business Wins Its Battle to Ease a Costly Sarbanes–Oxley Rule,” *The Wall Street Journal*, November 10, 2006.

⁵See Erin Donar, “SEC Chairman Announces Delay of SOX 404 Implementation,” Committee on Small Business, December 12, 2007.

⁶See “Dodd-Shelby Amendment Passes—Supports Investor Protections and SEC Efforts to Ease Burden on Small Business,” <http://dodd.senate.gov/index.php?q=node/3852>, April 5, 2007.

⁷See Admati and Pfleiderer (2000), Glaeser, Johnson, and Shleifer (2001), and Zingales (2004) for the theoretical discussion behind this question. In a recent cross-country experiment, La Porta, Lopez-De-Silanes, and Shleifer (2006) find that extensive disclosure regulations are associated with large stock markets.

benefits against the costs of SOX, especially for smaller firms, is thus of great importance. Unfortunately, tests of the effect of SOX are confounded by other contemporaneous events such as the demise of Arthur Anderson in 2002 and the general post-Enron scrutiny of corporate practices. It is therefore difficult to answer the counterfactual question: How would firms have behaved in the absence of SOX?

Studying the effect of SOX has proven to be difficult. In a review of the SOX literature, Coates (2007) writes explicitly about the serious problems related to estimating the effects of the law. He stresses that assessing the effect of the Section 404 rule is complicated by the fact that the law was enforced in the midst of significant financial, economic, and political changes. Leuz (2007) and Hochberg, Sapienza, and Vissing-Jorgensen (2009) also emphasize the lack of a control group of publicly traded firms that were not affected by the new regulation.

Ideally, to study SOX's effect, one would like to have an exogenous experiment in which firms were randomly assigned to comply with the new rules. This would allow us to compare the treated and nontreated firms' outcomes and to attribute any differences to the effect of the regulation.

Remarkably, something very close to such an experiment exists. The majority of U.S. companies had to file their first management report (MR) in their 10K and provide the first independent outside auditor report with their annual reports for the fiscal year ending on or after November 15, 2004. However, small companies defined by a rule based on public float received a "stay of execution." Companies with a public float that did not exceed \$75 million in 2002, 2003, or 2004 were not required to comply with Section 404. In fact, given the choice, the overwhelming majority of firms opted out of compliance. (The public float is the part of equity not held by management or large shareholders, as reported on the first page of the company 10K.) Small companies finally had to submit an MR for fiscal year 2007, and were exempt from an auditor's attestation of the MR with extensions stretching to June 2010.

The SEC had a similar approach to foreign incorporated firms. Foreign firms with a public float under \$700 million were not required to file an auditor's attestation to the MR in 2006, the first year when foreign firms had to file an MR. This provides a second set of firms with which the effect of SOX compliance can be assessed.

In this paper, I use a regression discontinuity design that compares the companies that were just above the rule cutoff and had to file the report to companies that were just below the cutoff and did not have to file the report. This is a good quasi-natural experiment because the *exact* cutoff is not related to firm fundamentals. In addition, one must consider whether firms actively manipulated their public float to escape compliance. This paper uses the public float rule in 2002 to predict (instrument) the actual compliance in 2004. Firms with a public float over \$75 million in 2002 had to comply with Section 404 in 2004. However, in 2002 firms had no information about the way Section 404 would be implemented. Therefore, companies did not know that this threshold would be used to define 2004 compliance and were less likely to actively avoid having a public float above \$75 million.

The primary advantage of the regression discontinuity design is that it can isolate the effects of SOX Section 404 compliance from the effects of the changing business climate (and any contemporaneous event) that would have affected all firms. The disadvantage of this approach is that by looking at small firms only, to the extent that the effect of Section 404 compliance is different for larger firms, the results may not generalize to, for example, Fortune 500 type firms. However, small firms are interesting in and of themselves. First, there are, of course, more small firms than large firms. Second, the big complaint about Section 404 (and SOX compliance in general) has been that small firms pay disproportionately high costs because of the fixed cost nature of compliance. Third, small firms are likely to suffer more from asymmetric information and low reporting quality, and thus arguably they could benefit most from the new regulation.

The goal of my paper is to measure the costs, benefits, and overall value impact of SOX, focusing on small firms. The costs are likely to be found in additional costs of compliance, partly measurable as audit fees. The benefits are likely to be found in changes in how firms report earnings. And the net effect is most likely found in firms' stock returns. Accordingly, I investigate audit fees as a direct measure of the costs of Section 404, changes in reporting behavior proxied by firm accruals as a measure of the benefits of compliance, and stock returns around Section 404-related announcements as a measure of the net effect of compliance.

I find that the attestation of the MR by outside auditors imposes significant SOX-specific costs for small firms. Filing an MR in 2004 increased audit fees by 98%, or \$697,890. With a median firm size of \$110.9 million in 2004 and negative average earnings, this is not a small amount. Section 404 also leads to more conservative reporting. MR filers had significantly lower accruals and discretionary accruals in 2004.⁸ The effect is economically significant, with MR filers booking an estimated \$15.1 million less in discretionary accruals than nonfilers. For small firms, this change is substantial. The mean and median earnings of the sample firms are negative \$4.8 million and negative \$1.4 million with a standard deviation of \$23.3 million. Finally, MR filers have higher returns around SOX-related announcements of delays in Section 404 implementation. The buy-and-hold returns of MR filers were 17% lower than those of nonfilers over the 2-year period starting with the announcement of the rule and ending after the filing of the 2004 annual reports. These returns suggest that the costs of Section 404 compliance outweigh the benefits. The above results are confirmed using a sample of foreign firms that were near the 2006 implementation cutoff of \$700 million. Specifically, foreign firms that did not provide audit reports had 30% lower audit fees and 2.3% lower discretionary accruals, and event study evidence of foreign firm returns further indicates that the costs of compliance outweigh the benefits.

⁸Accruals are earnings minus cash flows. Discretionary accruals are the difference between the actual accruals and the normal accruals predicted by an accruals model.

Notice that some firms might have manipulated their public float in 2004 to avoid filing an MR. To determine if the results are driven by firm selection, I repeat my tests using an instrumental variables (IV) approach. The IV estimates confirm that Section 404 compliance leads to higher audit costs and lower discretionary accruals.

The paper proceeds as follows. Section I reviews related literature. Section II discusses the identification strategy. Section III describes the data and provides summary statistics. Section IV presents the effect of MRs on audit fees, earnings management, and stock returns. Section V concludes.

I. The Setting

SOX is widely considered to be the most far-reaching securities legislation since the Securities Acts of 1933 and 1934. It not only imposes additional disclosure requirements, but, more importantly, has substantive corporate governance mandates, a feature that is unprecedented in the history of federal securities legislation (Romano (2005)). Not surprisingly, SOX has generated much interest not only in the popular press, but also in the academic disciplines of financial economics, law and economics, and accounting, as SOX sits at the center of debates about the intersection of regulation, auditing and control, and corporate governance.⁹

As early as 2003, Holmstrom and Kaplan (2003) observed that the overall U.S. regulatory system had reacted adequately to governance problems prior to SOX. They suggested that new regulations were likely to further improve the current system, but they also recommended caution about overreacting to extreme events. Holmstrom and Kaplan worried that SOX could burden smaller companies because of the fixed costs of complying. These are exactly the firms upon which this study focuses. A different perspective emerges in Hochberg et al. (2009). They document that the firms that lobbied against strict implementation of SOX experienced *positive* abnormal returns upon passage. They interpret this as a sign of investors' positive expectations with regard to SOX implementation.

Coates (2007 p. 106) reviews SOX-related regulations and the academic literature on the law's impact. He provides perhaps the best motivation for this paper, stating repeatedly that existing studies of SOX are confounded by the presence of contemporaneous economic, legal, and political events. For example,

Serious problems confront any effort to estimate empirically the effects of Sarbanes–Oxley. The legislation was enacted amidst sharp financial, economic, and political changes. It makes a large number of simultaneous, disparate legal changes, which continue to be implemented and phased in over time. . . . Given the corporate scandals of the early 2000s, and the awareness of this behavior by investors and other market participants,

⁹The results of this paper are related to the broader discussion about the benefits of regulation through enhanced disclosure (Bushee and Leuz (2005), Greenstone, Oyer, and Vissing-Jorgensen (2006)).

the chances are good that public and private enforcement and manager behavior would have changed even had Sarbanes–Oxley not been enacted.

The main contribution of this paper is the isolation of SOX's regulatory effects from other contemporaneous events.

The principal source of concern with respect to SOX relates to the increased cost of compliance, of which auditing fees are an easily measurable component. For instance, based on a 2005 survey of 217 large companies, Financial Executives International (FEI (2005)) reports that the average 1-year increase in audit fees due to SOX Section 404 was approximately \$1.3 million. The survey also suggests that the cost of internal and external labor hours (excluding fees paid for auditor attestation) was \$3.1 million, thus exceeding the direct audit fees.

Ultimately, the important question about SOX is whether its net value effect was positive or negative. Chhaochharia and Grinstein (2007) classify firms as having had inefficient internal control compliance if they replaced their external auditors in the past. They find that such firms' value reacted relatively more positively to the announcement of SOX. However, their identification strategy is probably not powerful enough to find a statistically significant effect for the small firms on which this study focuses.¹⁰

Zhang (2007) reports large and statistically significant negative cumulative abnormal returns for the set of all public firms around key SOX events. My study differs by quantifying the direct costs of SOX and the benefits as captured by focusing on the set of small firms determined by the public float rule, and by using clean treatment and control groups. Further, I use hand-collected public float information and actual filing status rather than 2002 market capitalization data.

Marosi and Massoud (2008) find that the passage of SOX has reduced the overall benefits of U.S. listing. In contrast, Doidge, Karolyi, and Stulz (2009) find that the premium of U.S. listing has not fallen significantly since the passage of SOX. A natural related question is whether some firms escaped SOX by "going dark." Engel, Hayes, and Wang (2007) claim that more firms went dark after 2002, and attribute this to SOX. I find that this is not an economically large phenomenon in my sample of smaller firms. Only 14 of 188 firms subject to compliance in my sample disappeared, which is not statistically different from the number of disappearing firms not subject to compliance.

In sum, my paper uses a regression discontinuity technique that is considerably more powerful in measuring the quantitative impact among smaller firms, and in sorting out whether or not any measured effects are due to SOX.

¹⁰They do try to control for contemporaneous events that affect both the firms that benefit and the firms that do not benefit from Section 404. However, the weakness of their approach is that they have to assume which firms benefit from the law. Their study cannot account for the nonrandom nature of firm governance practices prior to SOX. Some firms intentionally chose to institute good practices before SOX was passed.

II. Identification

The estimations in this study rely on regression discontinuity analysis—a technique commonly used in labor economics (Angrist and Levy (1999), van der Klaauw (2002), Black (1999)), with recent applications in finance (Rauh (2006), Roberts and Chava (2008)). Such a design can be used to assess SOX Section 404 because the SEC used a well-defined rule to enforce Section 404. The regression discontinuity design compares the outcomes of firms that are just above and just below the Section 404 compliance cutoff.

Table I shows the SEC effective rule implementation dates. The SEC introduced accelerated filer status for annual reports filed after December 15, 2002. Accelerated filers were defined as companies with a public float (the part of equity that is not held by management or large shareholders) of more than \$75 million in the second fiscal quarter of a fiscal year. Once a company was classified as an accelerated filer, it was classified as an accelerated filer thereafter.¹¹ All accelerated filers had to complete their 10K filing within 75 days of their fiscal year-end, rather than within the old deadline of 90 days. This new accelerated filing became effective for accelerated filers with a fiscal year ending on or after December 15, 2003.

All accelerated filers with a fiscal year ending on or after November 15, 2004 had to file a MR and an auditor's attestation of the MR under Section 404. I denote these firms as MR firms. Companies that were not accelerated filers as of their fiscal year ending on or after November 15, 2004 did not have to file an MR in that year (non-MR firms). Those were companies that had a public float under \$75 million in their reports for fiscal years 2002 (November 2002 to October 2003), 2003 (November 2003 to October 2004), and 2004 (November 2004 to October 2005). Compliance for small firms was further delayed, with Section 404 compliance becoming effective for all firms for the fiscal year ending in December 2007. However, small firms were given an additional extension stretching to June 2010 the deadline for filing an auditor's attestation to the MR.

This study focuses on the firms that reported a public float between \$50 and \$100 million in 2004 (2004 was the first time companies were required to comply with Section 404). Focusing on firms that were near the \$75 million cutoff reduces the bias from unobservable factors (such as firm investment opportunities) that might be correlated with the public float and with the outcomes of interest (such as audit fees, earnings, and returns). I further include a flexible functional form of the public float in my estimations, to eliminate any remaining continuous effect of the public float on the outcomes. If the differences in the public float are properly controlled for and we abstract from possible firm manipulation of the public float, then the estimated difference between MR and non-MR firms should be directly attributable to filing an MR. A typical

¹¹A company can become a nonaccelerated filer after having been an accelerated filer in the previous year, but it should have revenues and a public float of less than \$25 million in 2 consecutive years (SEC release 33-8182). In my sample no company switched from an accelerated filer in 2003 to a nonaccelerated filer in 2004.

Table I
SEC Section 404 Rules' Effective Dates

The SOX was signed into law on July 30, 2002. The SEC was put in charge of implementing Section 404. All U.S. incorporated companies had to finally submit a management report (MR) for fiscal year 2007, but non-accelerated firms were exempt from the auditor's attestation of the MR until June 2010. See the Internet Appendix for the SEC releases.

| Rules Effective for Fiscal Years Ending On or After | Accelerated Filer Status | Management's Report Under Section 404 | Annual Report Filing Deadline |
|---|--|--|---|
| Prior to December 2002 | No filer status mandated by SEC. | Not required. | The annual report deadline is 90 days after the fiscal-year end. |
| December 15, 2002 | Companies with a public float of more than \$75 million become accelerated filers. (SEC Rel. 33-8128, September 5, 2002) | Not required. | The reporting deadline stays at 90 days. |
| December 15, 2003 | \$75 million become accelerated filers. Companies that were accelerated filers in the previous year keep their accelerated filer status. | Not required. | The annual report deadline for accelerated filers is changed to 75 days after the fiscal-year end. Non-accelerated filers' deadline remains at 90 days. (SEC Rel. 33-8128, September 5, 2002 and SEC Rel. 33-8507, Nov. 17, 2004) |
| November 15, 2004 | Companies with a public float of more than \$75 million become accelerated filers. Companies that were accelerated filers in the previous year keep their accelerated filer status. | All companies that are accelerated filers have to file a management's report. (SEC Rel. 33-8238, Jun. 5, 2003 and Rel. 33-8392, February 24, 2004) | Non-accelerated filers: 90 days/Accelerated filers: 75 days. |
| December 15, 2005 | Companies with a public float of more than \$75 million become accelerated filers. Companies that were accelerated filers in the previous year remain accelerated filers if their public float exceeds \$50 million, or change status to non-accelerated filers if their public float is less than \$50 million. (SEC Rel. 33-8644, December 21, 2005) | All companies that are accelerated filers have to file a management's report. Non-accelerated filers do not have to file a management's report. | Non-accelerated filers: 90 days/Accelerated filers: 75 days. |

estimation uses the model

$$\text{Dep. Var.} = \beta_0 + \beta_1 \cdot MR + \beta_2 \cdot PFL + \beta_3 \cdot PFL^2 + \beta_4 \cdot PFL^3 + \gamma \cdot X + \varepsilon, \quad (1)$$

where MR is a dummy variable for firms that filed an MR; PFL is the public float reported on the company's annual report; and X is a vector of controls defined in Section IV. The results do not change if I use a quadratic functional form. The results are also similar if I use the following difference-in-difference approach instead

$$\begin{aligned} \text{Dep. Var.} = & \beta_0 + \beta_1 \cdot MR \cdot d_{2004} + \beta_2 \cdot MR \\ & + \beta_3 \cdot (d_{2004}, d_{2003}, d_{2002}, d_{2001}) + \gamma \cdot X + \varepsilon, \end{aligned} \quad (2)$$

where MR is a dummy variable for firms that filed MR; d_{2004} is a dummy variable for the first year of compliance; and $(d_{2004}, d_{2003}, d_{2002}, d_{2001})$ is a full set of year dummies. Note that I use the difference-in-difference approach as a primary tool in the analysis of foreign firms, because they do not report their public float.

While regression discontinuity is an appealing research design, it relies on several assumptions. The rest of the section discusses assumptions and diagnostics in the context of the MR filing rule.

A. Rule Implementation

The sharp regression discontinuity design assumes that the rule fully explains which firms are treated. The first figure in the Internet Appendix shows the public float distributions of firms that were not accelerated filers in their previous fiscal years, categorized by their accelerated filer status. If a company was a nonaccelerated filer in the previous year and its public float exceeds \$75 million in the current year, then it automatically changes status to an accelerated filer. Accelerated filers that crossed the \$75 million public float threshold in 2002, 2003, or 2004 had to submit an MR in 2004.¹²

A small number of firms did not follow the rule in the first year of implementation. In 2002, 12 firms with a public float exceeding \$75 million (7.8% of firms) were nonaccelerated filers. This number drops to zero in 2003, and increases to two firms (1.6%) in 2004.¹³ Similarly, 30 firms (5.5%) reported being accelerated filers even though they had a public float under \$75 million in

¹²The Internet Appendix is available at <https://www.afajof.org/supplements.asp>. There is legal uncertainty regarding the definition of an "affiliate" and hence the definition of a firm's public float. In the 1997 SEC Release No. 33-7391, the SEC gave the definition: "A person shall be deemed not to be an affiliate for purposes of this section if the person: (i) is not the beneficial owner, directly or indirectly, of more than 10% of any class of equity securities of the issuer; (ii) is not an officer of the issuer; and (iii) is not a director of the issuer," but leaves the option that "Members of one or more of these classes may contend, nevertheless, that they are not affiliates because they are not in a 'control' position. For such persons, the determination of affiliate status would be a 'facts and circumstances' test." I did not find evidence that firms changed their definition to avoid compliance.

¹³Some of these cases may be due to reporting errors. For example, of the two firms that had a public float in excess of \$75 million and that were reported to be nonaccelerated filers in 2004, only one did not file an MR.

2002. By 2004, only four firms (1%) filed an MR and reported a public float of under \$75 million. Thus, the early misreporting can be attributed to confusion over the new rules set by the SEC.

B. Rule Anticipation

The regression discontinuity approach assumes that either the firms did not anticipate the rule or did not have control over their public float. If firms have imperfect control over their stock price, or if they find that changing their public float is costly because they move away from the optimal level of public financing, then the OLS estimates will provide a measure of the true effect of compliance. However, if some firms changed their public float in order to avoid compliance, then the OLS estimates will be biased. The empirical evidence suggests that some firms reacted to the rule and evaded compliance. Figure 1 plots distributions of the public float by filing year for firms that were not affected by the rule up to that year. If firms anticipated and actively tried to evade filing an MR, then there should be an excess of firms with public floats of just under \$75 million. We do not observe a break in the public float distribution in 2002 and 2003. However, a disproportionate number of firms had a public float of just under \$75 million in 2004. This suggests that a number of firms could have evaded filing an MR by manipulating their public float. Firms can decrease their public float by increasing the holdings of management and large shareholders, or by repurchasing shares to decrease the total value of their outstanding equity. Gao, Wu, and Zimmerman (2009) provide evidence that firms tried to stay small to avoid crossing the compliance threshold. Nondorf, Singer, and You (2007) similarly find evidence that firms near the threshold significantly reduced their market value of equity during the threshold measurement quarters.

Inspection of the firms that reported a public float just under the cutoff in 2004 reveals the following examples of potential rule evasion.¹⁴ TechTeam Global Inc. (TEAM) reported a public float of \$57.6 million in 2003 and \$73.2 million in 2004. However, over the same time period the firm's stock price increased from \$6.39 to \$9.07. This stock price change implies a public float of \$81.8 million in 2004. If the TechTeam Global Inc. public float in 2004 was above \$75 million, it should have filed an MR. The company's definitive proxy statements reveal an increase in the percentage of total insider holdings from 46.5% before the date the 2004 public float was computed to 53.5% after the date the 2004 public float was computed. The increase was due to adding three large shareholders. Moreover, in 2003 TechTeam Global Inc. repurchased and retired 2,000,000 shares of common stock worth \$12,545,000, further reducing the total market value of equity and thus the public float of the company. As a second example, Video Display Corp. (VIDE) reported a public float of \$20.3 million in 2003 and \$73.8 million in 2004. However, the firm's stock price

¹⁴The author cannot prove that these firms evaded filing an MR on purpose.

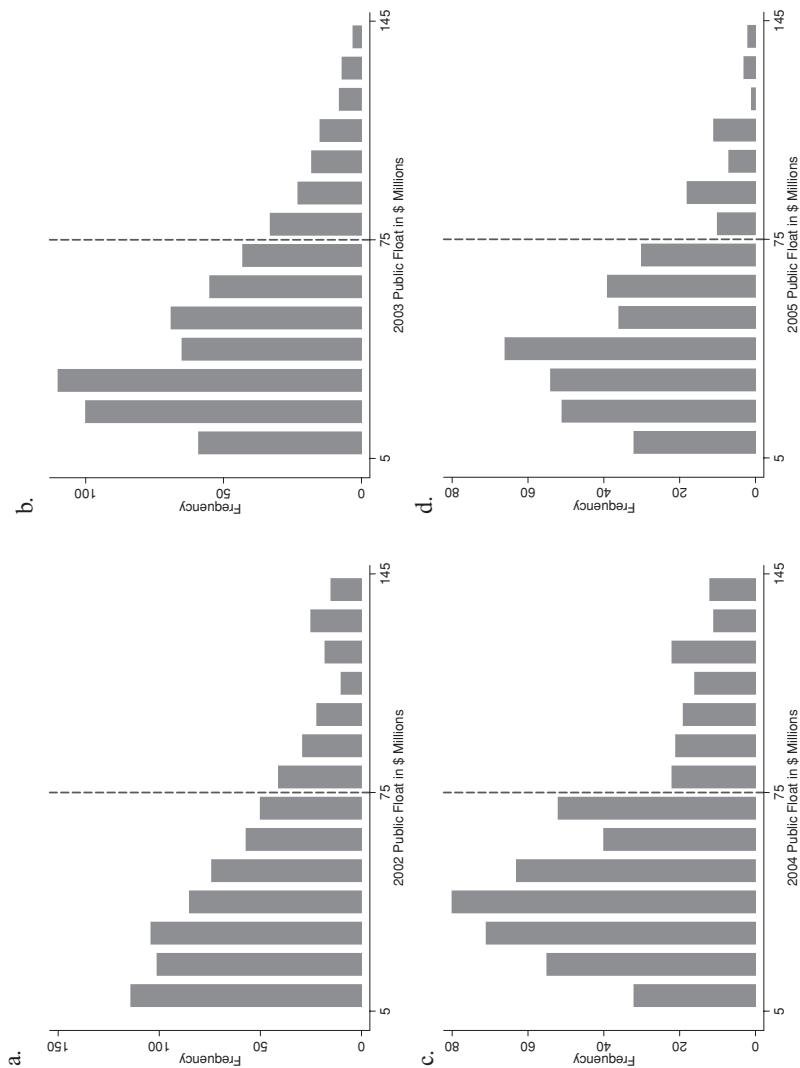


Figure 1. Did companies manipulate their public float to evade compliance? This figure depicts the public float distribution of firms that were not affected by the rule up to the reported year. These firms had a public float of less than \$75 million up to the year plotted in each graph. For these firms being above the \$75 million cutoff means that they switch status to accelerated filer. Accelerated filers in years 2004 and 2005 had to file a management report (MR). The four graphs report fiscal years ending 2002 (November 2002 to October 2003), 2003 (November 2003 to October 2004), 2004 (November 2004 to October 2005), and 2005 (November 2005 to October 2006).

(adjusted for a stock split) increased from \$9.13 to \$36.14 over the same period, implying a public float of \$80.3 million in 2004.

C. Instrumental Variables Approach

I use an instrumental variables approach to account for potential public float manipulation. On June 5, 2003, the SEC announced that firms with public floats above \$75 million in 2002 or thereafter should comply with Section 404 (SEC release 33-8238). Companies had to comply for the first time in 2004, so they had an opportunity to manipulate their 2003 and 2004 public float. However, companies could not manipulate their public float in 2002 because they did not know about the rule at that point. I use a dummy variable equal to one if the company had a public float above \$75 million in year 2002 to instrument for filing an MR in 2004. I then predict the probability of a firm filing an MR in 2004 with the cutoff in 2002. Given the path dependence of the treatment rule, a company with a public float just above \$75 million in 2002 had to comply with Section 404 in 2004.¹⁵

Instruments should fulfill two requirements: First, instruments should predict the actual treatment. The position of the company's public float with respect to the 2002 cutoff is a strong instrument for filing an MR because all firms that were above the \$75 million cutoff in 2002 became accelerated filers and had to file an MR in 2004. Second, instruments should not have a direct effect on the outcome of interest. The exact position of the public float with respect to the \$75 million threshold in 2002 does not affect audit fees or earnings in 2004.

In the instrumental variables approach I estimate the following two-stage model:

$$\begin{aligned} MR &= \alpha_0 + \alpha \cdot PF75_{2002} + \theta \cdot X + \eta \\ \text{Dep. Var.} &= \beta_0 + \beta \cdot \widehat{MR} + \gamma \cdot X + \varepsilon, \end{aligned} \quad (3)$$

where MR is a dummy variable for firms that file an MR; $PF75_{2002}$ is a dummy variable indicating whether the firm had public float above \$75 million in 2002; \widehat{MR} is the predicted probability of filing an MR; and X is a vector of controls defined in Section IV.

D. Confounding Events

The regression discontinuity design assumes that the jump in outcomes between accelerated and nonaccelerated filers in 2004 can be attributed to MR filing. In other words, there should be no confounding events that augment the effect of MR filing for firms just above and just below the \$75 million cutoff. However, the original purpose of the accelerated filer status was to speed up the annual report (10K) due date. Starting from 2003, an accelerated filer had to produce an annual report 15 days earlier than a nonaccelerated filer. In 2004,

¹⁵The IV approach is not feasible for foreign firms because they do not report a public float.

a firm that just became an accelerated filer had to both accelerate its filing and submit an MR. Thus, my study of 2004 outcomes cannot separate the effect of filing an MR from the effect of accelerated filing. Fortunately, the effect of accelerated filing can be separately tested by repeating the 2004 cross-sectional estimations in 2003. In 2003, accelerated filers had to submit their annual reports earlier, but they did not have to comply with Section 404. I perform the regression discontinuity estimations in 2003 to confirm that accelerated filing had no separate and significant effect on the outcomes of interest.

III. Sample and Descriptive Statistics

I collected data on public float, accelerated filer status, and MRs under Section 404 from the companies' annual 10K filings. The data for audit fees came from Audit Analytics, accounting data came from Compustat, and monthly stock return data came from CRSP.

The sample creation procedure (see the first table in the Internet Appendix) starts with all companies that have Compustat equity market capitalization between \$30 and \$330 million at the end of their fiscal years ending between November 2003 and October 2004.¹⁶ I exclude foreign firms because they were not affected by the regulation in 2004, and financial firms ($SIC \geq 6000$ & $SIC < 7000$) because segments of the financial industry had regulations similar to SOX 404 already in place. This leaves 1,499 firms. For these firms, I hand-collected public float data from their annual reports. I next exclude 358 firms that either did not report a public float in 2004 or reported a public float for a date different from their second fiscal quarter-end. Finally, I limit attention to those companies whose public float was between \$50 and \$100 million in 2004. (The results do not change when I use alternative regions around the rule—\$60 to \$90 million and \$40 to \$110 million.) This procedure yields a final sample of 301 companies in 2004.¹⁷

The empirical analysis focuses on those firms that were close to the rule cutoff in fiscal year 2004—the year the MR was first required. I check how many of the firms that expected to be affected by the new regulation left the sample before the compliance date in 2004. Out of the 188 accelerated filers in 2003 that were close to the \$75 million cutoff, 14 firms (7.4%) were not in the 2004 sample (11 mergers, one bankruptcy, and two “delinquent in filing” delisting codes in CRSP), whereas out of the 149 nonaccelerated filers, eight firms (5.4%) dropped out of the sample (seven merger codes in CRSP). A linear probability model of firms disappearing from the sample in 2004 as a result of

¹⁶I refer to all companies with fiscal year ending between November 2003 and October 2004 as 2003 companies, and all companies with fiscal year ending between November 2004 and October 2005 as 2004 companies. The majority of the sample firms have a fiscal year-end in December 2004, which was the first year when companies had to file MRs under Section 404.

¹⁷Some of the firms in my sample are household names. For example, the Princeton Review, Inc., 1-800 CONTACTS Inc., and Friendly Ice Cream Corp. are three firms in my sample that filed an MR in 2004, and Samsonite Corp, Books-A-Million Inc., and Meade Instruments Corp. are three firms in my sample that did not file an MR in 2004.

their 2003 accelerated filer status shows a higher probability of dropping out for accelerated filers (by 2.1%), but the relation is not statistically significant. This suggests that small firms did not evade Section 404 compliance by delisting.

The regression discontinuity design assumes that firms just above and just below the treatment cutoff are similar before the rule was implemented but differ in their outcomes after the rule takes effect. The second table in the Internet Appendix compares companies with a public float between \$50 and \$100 million that filed an MR in 2004 with companies with a public float between \$50 and \$100 million that did not file an MR in 2004.¹⁸ Both the MR filers and nonfilers were small firms with an average equity market capitalization of about \$132 million. About 70% of the firms are listed on Nasdaq. The MR filers and nonfilers have comparable assets, sales, book-to-market value of equity, use of big auditors, number of geographic segments, and fraction of firms listed on Nasdaq. However, they are statistically significantly different in their earnings and accruals. On average, firms that filed an MR had 3.3% lower accruals scaled by assets. The difference is hard to explain as earnings manipulation to avoid SOX compliance, because under manipulation we would observe lower reported earnings for firms that try to lower their market size of equity and public float. The differences suggest that filing an MR made firms more conservative in their earnings reports. MR filers had significantly higher audit fees, with a mean difference of \$433,000.

Next, I verify that the two groups of firms have similar characteristics in the year before compliance. In 2003, there were no statistically significant differences in mean accruals (see the third table of the Internet Appendix). The eventual MR filers had significantly lower earnings due to lower cash flow from operations but did not have statistically significant higher audit fees. Further, accelerated filers and nonaccelerated filers did not differ significantly in their audit fees and accruals in 2003, the year before they had to comply with Section 404. (Accelerated filers were the firms that crossed the \$75 million cutoff in 2002 or 2003. These firms filed an MR in 2004.) However, accelerated filers had a higher public float and had significantly higher market size of equity. These significant differences are in contrast to the 2004 sample, where the MR filers had similar average size as nonfilers and the difference in their assets was not statistically significant compared to the assets of firms that did not file a report. The difference between the two years suggests that a number of firms could have evaded filing the report in 2004 by manipulating their public float. Section IV disentangles treatment and selection by instrumenting the filing of an MR with the public float cutoff rule in 2002.¹⁹

¹⁸See Appendix A for a list of variables.

¹⁹For this identification strategy to work, firms should not sort in terms of their characteristics just above or just below the 2002 cutoff. To test the validity of my instrument, I collect the inside ownership of the 127 firms closest to the 2002 cutoff—these are all firms in my sample with a public float within \$10 million of the \$75 million cutoff. The firms above the cutoff have 23% mean executive ownership versus 20% for the firms under the cutoff. Similarly, on average 53% of the

IV. Empirical Results

A. Audit Fees

Figure 2 plots the mean audit fees from 2002 to 2007 for accelerated and nonaccelerated filers. Filing an MR more than doubled the audit fees. The audit fees of accelerated filers in 2002 (2003) were \$64,977 (\$121,836) higher than those of nonaccelerated filers. In contrast, the audit fees of accelerated filers in 2004 were \$535,557 higher and remained significantly higher in the first 4 years of compliance. We observe a similar jump for a sample of firms that filed MRs for all four compliance years compared to firms that did not file an MR over the whole period.²⁰

Table II estimates a set of regression discontinuity models for firms near the \$75 million cutoff. The estimation focuses on the 2004 cross-section—the first year when MRs were filed. The first regression uses an MR filer dummy and linear, quadratic, and cubic public float terms. This flexible functional form for the public float is included to control for possible nonlinear effects of the public float on audit fees. Section 404 compliance (the coefficient on the MR dummy variable) increased audit fees by 86.6%. All regressions control for industry fixed effects.

Regression 2 controls for more determinants of audit fees. If the MR dummy variable captures the differences between the filers and nonfilers, the addition of the controls should not significantly change the MR coefficient. I include *firm size*, *assets*, and *sales* to control for the size of the company. Larger companies pose more of an auditing challenge and thus pay higher audit fees. *Firm leverage* and *receivables* proxy for the risk involved in auditing. Large auditing companies might have different expertise and might follow different accounting practices than smaller auditors. The number of *business and geographic segment* variables controls for business complexity. Regression 2 shows that after controlling for *firm size*, *assets*, *sales*, *big auditor*, and *number of business and geographic segments*, the MR effect on audit fees is similar at 74.4%. This implies an increase of \$528,000 for the mean firm.

A.1. Manipulation of the Public Float

The OLS regressions have to be interpreted carefully because firms could have manipulated their public float. It is reasonable to suspect that the firms that decreased their public float to avoid filing an MR are the firms that would have paid higher audit fees under Section 404. In this case, the OLS regressions will underestimate the true effect of the regulation because they compare the

equity of the firms in the group above the cutoff is held by insiders versus 45% for the under-cutoff firms. The differences between the two groups are not statistically significant, with the standard deviation of executive ownership of 17% and overall insider ownership of 23%.

²⁰Raghunandan and Rama (2006) use the jump in the time series of audit fees to estimate the effect of SOX compliance on audit costs. Their results are similar in magnitude to the estimations provided in this section. However, my paper goes a step further by showing that the increase in audit fees was due to Section 404 compliance and not to other contemporaneous events.

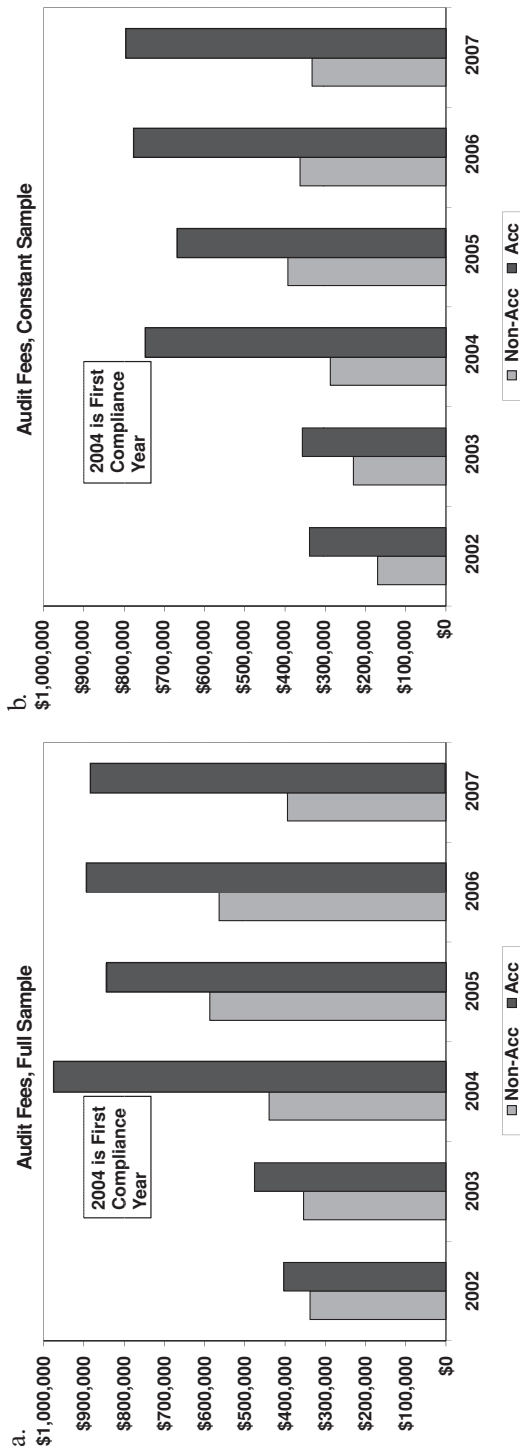


Figure 2. Audit fees annual means. The *Full Sample* graph uses all companies with a public float between \$50 million and \$100 million in 2004 over the 2002 to 2007 period, with separate mean audit fees for accelerated (Acc) filers ($N = 174$ in 2004) and non-accelerated (Non-Acc) filers ($N = 127$ in 2004). The *Constant Sample* graph further restricts attention to companies that have data for all 6 years and that filed a management report (MR) for all 4 years of compliance ($N = 69$) or did not file an MR for all 4 years of compliance ($N = 21$). Starting in 2004, accelerated filers had to comply with Section 404. *Audit Fees* are mean audit and audit-related fees paid by the company to all its auditors for the relevant fiscal year.

Table II
Audit Fees Regressions for Fiscal Year 2004

This table presents the audit fees results. All OLS regressions are estimated with the model defined in Section II, equation (1); the IV regressions are estimated with the IV model defined in Section II, equation (3). The sample in estimations (1)–(4) covers all companies that had a public float between \$50 and \$100 million in 2004. The dependent variable is the logarithm of *Audit Fees*. In estimations (1) and (2) *MR* is a dummy variable equal to one if the company filed a management report (MR) in 2004, and in estimations (3) and (4) *MR* is the predicted treatment based on the first-stage regression; the IV estimation uses the instrument *PFL75*₂₀₀₂, a dummy equal to one if the company public float was above \$75 million in 2002. See the Appendix at the end of the main article for variables' definitions; *Market Size of Equity* is measured in billions. The regressions include (but are not reported here) a constant term; the OLS estimations include linear, quadratic, and cubic terms of *Public Float*, the public float reported in the annual reports. Regressions (2) and (4) control for industry fixed effects based on the Fama-French 12 sector definitions. The first-stage regressions have the same controls and fixed effects as the second stage. *First Stage Partial F-test* reports the *F*-test of the instrument in the first-stage regression. *Implied Audit Fee Increase* refers to the implied audit fee increase as a result of filing an MR for the mean company in \$ thousands. Robust *t*-statistics are reported in brackets. *, **, and *** denote two-sided statistical significance at the 10%, 5%, and 1% levels, respectively.

| Dependent Variable Estimation Type | Log Total Audit Fees 2004 | | | |
|--|---------------------------|--------------------|---------------------|--------------------|
| | (1) OLS | (2) OLS | (3) IV | (4) IV |
| MR in fiscal year 2004 | 0.866*** [7.57] | 0.744*** [7.39] | 1.171*** [4.95] | 0.983*** [3.65] |
| Log sales 2004 | | 0.031 [1.09] | | 0.034 [1.09] |
| Log assets 2004 | | 0.235*** [3.35] | | 0.218*** [2.79] |
| Log market size of equity 2003 | | 0.050 [0.51] | | −0.052 [−0.38] |
| Leverage 2004 | | 0.612*** [2.62] | | 0.647*** [2.75] |
| Receivables scaled by total assets 2004 | | 0.086 [0.35] | | 0.129 [0.55] |
| Big auditor 2004 | | 0.370*** [3.94] | | 0.373*** [3.86] |
| Number of business segments 2004 | | 0.040 [1.45] | | 0.047* [1.71] |
| Number of geographic segments 2004 | | 0.070*** [2.91] | | 0.069*** [2.77] |
| Public float terms | Yes | Yes | No | No |
| Industry fixed effects | Yes | Yes | Yes | Yes |
| Observations | 281 | 281 | 281 | 281 |
| <i>R</i> ² | 0.32 | 0.55 | 0.28 | 0.54 |
| Implied audit fee increase | 614.24 | 528.11 | 830.78 | 697.89 |
| First-Stage Regression, <i>MR</i> instrumented by <i>PFL</i> ₂₀₀₂ > \$75 million, including first-stage controls, public float terms, and fixed effects | | | | |
| <i>PFL</i> ₂₀₀₂ > \$75 Million | | | 0.466*** [10.15] | 0.376*** [7.74] |
| First-stage <i>R</i> ² | | | 0.21 | 0.33 |
| First-stage partial <i>F</i> -test | | | 103.10 | 59.91 |

firms that did not actively avoid the regulation to firms that potentially avoided compliance. I instrument for the filing of an MR with a dummy variable measuring whether the public float is above the \$75 million cutoff in 2002. The company public float in 2002 predicts the 2004 treatment, and firms did not manipulate their 2002 float to avoid compliance. Table II columns (3) and (4) repeat the OLS estimations with the instrumented MR status. The first-stage estimations use a linear probability model. The partial F -tests of the instrument are highly significant with values in excess of 59. The IV estimations suggest that the effect of Section 404 on audit fees is even larger (up to one million annually). The difference between the OLS and IV estimators suggests that firms affected by Section 404 paid higher audit fees, and some firms that expected large increases in their audit fees evaded the regulation.

A.2. Specification Tests

The results are robust to excluding all firms that were very close to the cutoff of \$75 million in the year before compliance and thus faced lower costs to manipulate their float (see the Internet Appendix). The alternative difference-in-differences approach, using a pooled estimation to compare the audit fees of filers and nonfilers before and after the regulation effective date, produces results consistent with the cross-sectional estimation (see the Internet Appendix). We do not observe the same audit fee differences in 2002 and 2003, the 2 years before Section 404 compliance was implemented (see the Internet Appendix). To test for a mechanical bias due to functional form misspecification, I construct placebo cutoff rules and estimate my results using these artificial rules. I do not find significant differences with cutoff rules of \$125 and \$150 million (see the Internet Appendix).

A.3. Magnitude of the Costs

I find that on average the MR filers had to pay \$698 thousand more in audit fees. FEI (2005) suggests that the additional Section 404 cost of internal labor hours and external people hours exceeds the audit fees paid by the firms, and they put the compliance costs at \$2.3 million per year. (Here I use the same proportion of audit costs to total Section 404 monetary costs as the ones reported in the FEI (2005) survey.) If we assume that these costs remain constant and that firms that avoided filing an MR will be able to avoid filing in the future, the total value reduction due to increased costs is in the range of \$15.3 million to \$46 million (with a 15% and 5% discount rate, respectively). If we instead assume that the effect will be only temporary (3 years), then the implied total value reduction is in the range of \$6 million to \$6.6 million (with a 15% and 5% discount rate, respectively). Adjusting for the sample firms' average size in terms of market equity, a 3-year compliance delay will lead to a stock price increase in the 4.6% to 5% range, and a permanent break from compliance can have a positive effect in the 12% to 35% range. These back-of-the-envelope computations show that, under reasonable parameter values, Section 404

direct compliance costs alone can have a significant valuation effect (a point further explored in Section IV.C.2, below). Of course, Section 404 can have other costs, including increased likelihood of litigation, bankruptcy, and additional strain on management. Some of these costs will be balanced with potential benefits such as better corporate governance practices and improved financial reporting.

B. Earnings Management

The intent of Section 404 was to improve the quality of financial reporting. This section investigates whether filing an MR has a measurable effect on reported earnings of small firms.²¹

B.1. Earnings Targets

The first test explores whether the distribution of earnings per share (EPS) excluding extraordinary items differs for MR filers and nonfilers.²² Firms typically try to show positive EPS and meet or exceed their prior-year EPS. Figure 3 graphs the distribution of EPS and 1-year changes in EPS for MR filers and nonfilers with a public float between \$50 and \$100 million in 2004. As we can see, the fraction of MR filers that report negative EPS is larger than the fraction of nonfilers that report negative EPS. A linear probability model estimates a 19% higher probability of reporting negative EPS for MR filers, statistically significant at the 1% level. These results support the notion that filing an MR reduces the ability of firms to report positive earnings. Similarly, firms that do not file an MR meet their prior-year EPS more often than filers do. A linear probability model estimates an 8% higher probability of not meeting last year's EPS for MR filers. This difference is not statistically significant at normal levels (p -value of 16%). In summary, the MR filers appear to have lost some of their discretion in reporting earnings.

B.2. Measuring Accruals

This paper focuses on the part of earnings that is not cash flow, that is, it focuses on accruals, because accruals are the part of earnings that is hard to verify and easier to manage. Because firms might have different accruals based on their industry and business practices, accruals are usually decomposed into normal accruals and discretionary accruals. Following Teoh, Welch, and

²¹Cohen, Dey, and Lys (2008) find that earnings management (discretionary accruals) increased between 1987 and 2001, and declined after the passage of SOX in 2002. It is not clear whether the observed changes are due to SOX or to a changed business climate.

²²Burgstahler and Dichev (1997) and Degeorge, Patel, and Zeckhauser (1999) show that firms try to meet benchmarks in their earnings. Graham, Harvey, and Rajgopal (2005) show that managers view EPS as a key performance metric.

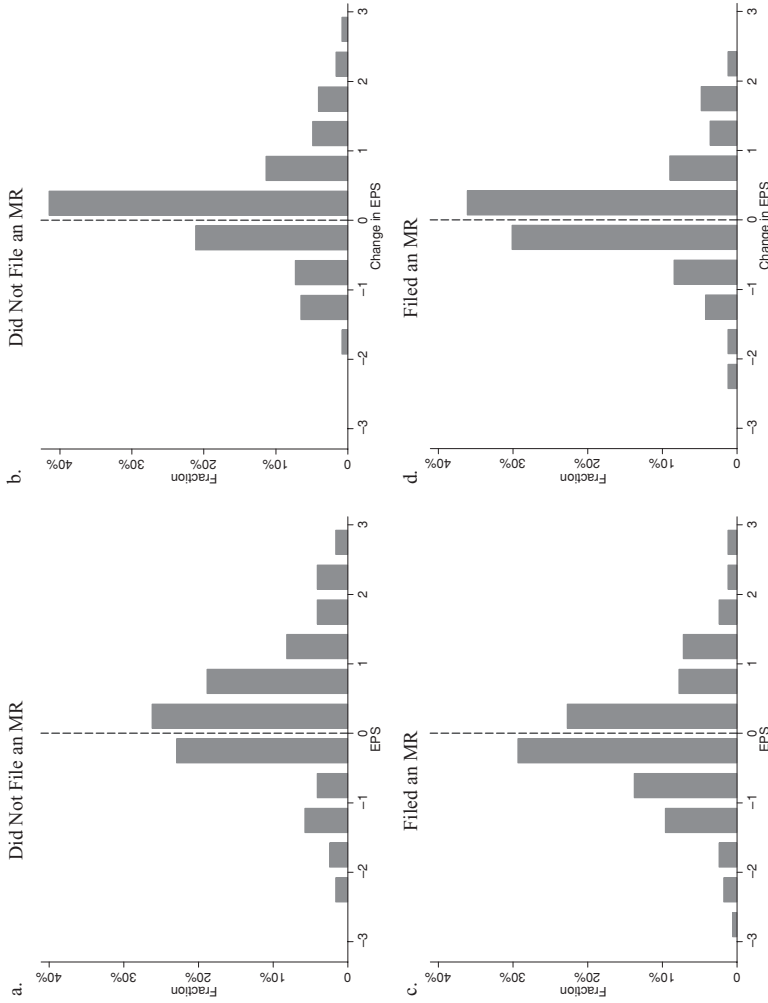


Figure 3. EPS and Change in EPS Distributions in 2004. The left graphs show earnings per share (EPS excluding extraordinary items) in 2004 and the right graphs show the difference between the EPS in 2004 and the EPS in 2003 in dollars. The top graphs show the distribution of companies that did not file a management report (MR) and the bottom graphs show the distribution of companies that filed MR. All graphs use companies that had a public float between \$50 million and \$100 million. The graphs are based on 166 MR filers and 123 non-filers.

Wong (1998), I use a cross-sectional version of the Jones (1991) model.²³ The procedure for constructing discretionary accruals is explained in detail in the Internet Appendix. In short, accruals are regressed on the change in sales and property, plant, and equipment within each two-digit SIC code in the full Compustat universe during a year, excluding the firm itself. All variables are scaled by past assets. Discretionary accruals are the difference between actual accruals and the fitted accruals from the above procedure, with the additional adjustment of subtracting the change in trade receivables from the change in sales. This measure aims to isolate the part of accruals that is hard to explain based on the normal business of the firm. The results reported in this section do not change if I do not adjust for trade receivables.

Table III reports OLS and IV estimates for accruals and discretionary accruals in 2004. The regressions control for *operational cash flow*, *change in net income*, *negative cash flow in previous year*, *book-to-market*, *big auditor*, and *market size of equity* in the previous year. The variables *operational cash flow*, *change in net income*, and *negative cash flow* in the previous year are included to control for the firm's level of real economic activity; *book-to-market* controls for firm growth opportunities; and *big auditor* accounts for the different accounting practices of big and small accounting firms. I also control for *market size of equity*. The *market size of equity* is lagged because contemporaneous earnings can influence the size of the company.

These controls are not exhaustive. The advantage of the regression discontinuity design is that it compares similar firms, which renders it fairly robust to omitted variables. Therefore, the regression discontinuity design produces consistent estimates without controlling for all of the firm's observable and unobservable characteristics.

B.3. Findings

Filing an MR is associated with a 3.5% decrease in accruals when including all the controls and industry fixed effects. This translates into \$5 million lower earnings for the mean firm. The effects of filing an MR are similar with discretionary accruals. The OLS estimations yield a 3.9% decrease in discretionary accruals (significant at the 5% level), equivalent to \$5.5 million lower earnings for the mean firm. The difference in reported earnings cannot be explained by higher audit fees alone because Section IV.A shows that the audit fee increase was about \$0.5 million.

Firms that anticipated that filing an MR would lead to a large reduction in earnings had an incentive to evade the new rule. Table III shows that MR firms have an estimated 9.2% decrease in total accruals, which is equivalent to \$12.9 million lower earnings for the mean firm. The instrumented MR filers

²³Unfortunately, my sample of firms becomes too small when I perform a time-series version of the Jones model. My results are quantitatively similar and statistically significant when I use a difference-in-differences approach that compares the 2004 effect with the differences in previous years.

Table III
Accruals and Discretionary Accruals Regressions in Fiscal Year 2004

This table presents the discretionary accruals results. All OLS regressions are estimated with the model defined in Section II, equation (1); the IV regressions are estimated with the IV model defined in Section II, equation (3). The sample consists of all companies that had a public float between \$50 and \$100 million in 2004. The dependent variables are *Accruals* and *Discretionary Accruals*, defined in the Internet Appendix. In estimations (1), (2), (5), and (6) *MR* is a dummy variable equal to one if the company filed a management report in 2004; in the IV estimations (3), (4), (7), and (8) *MR* is the predicted treatment based on the first-stage regression; see the Appendix at the end of the main article for variables definition; *Market Size of Equity* is in billions. The regressions include (but are not reported here) a constant term and linear, quadratic, and cubic terms of *Public Float*. Industry fixed effects are based on the Fama–French 12 sector definitions. The IV estimation uses the instrument *PFL75*₂₀₀₂, a dummy equal to one if the company public float was above \$75 million in 2002. The first stage regressions have the same controls and fixed effects as the second stage. *First Stage Partial F-test* reports the *F-test* of the instrument in the first-stage regression. Robust *t*-statistics are reported in brackets. *, **, and *** denote two-sided statistical significance at the 10%, 5%, and 1% levels, respectively.

| Dependent Variable Estimation Type | Accruals | | | Discretionary Accruals | | | | |
|---------------------------------------|---------------------|--------------------|--------------------|------------------------|------------------------|---------------------|---------------------|----------------------|
| | (1) OLS | (2) OLS | (3) IV | (4) IV | (5) OLS | (6) OLS | (7) IV | (8) IV |
| MR in fiscal year 2004 | -0.042** [-2.50] | -0.035* [-1.90] | -0.060* [-1.68] | -0.092** [-2.23] | -0.0475*** [-3.092] | -0.039** [-2.23] | -0.074** [-2.25] | -0.108*** [-2.70] |
| Cash flow from operations 2004 | | -0.052 [-0.81] | | -0.046 [-0.69] | | -0.069 [-1.06] | | -0.068 [-0.98] |
| Change in net income 2004 | | 0.213*** [3.00] | | 0.207*** [2.82] | | 0.219*** [3.22] | | 0.211*** [2.99] |
| Negative cash flow 2004 | | 0.009 [0.41] | | 0.020 [0.89] | | -0.016 [-0.66] | | -0.005 [-0.20] |
| Book to market 2004 | | 0.043** [2.02] | | 0.040** [2.07] | | 0.044** [2.25] | | 0.043*** [2.34] |
| Big auditor 2004 | | -0.006 [-0.35] | | -0.004 [-0.20] | | 0.015 [0.77] | | 0.020 [0.95] |
| Market size of equity 2003 | | -0.189 [-1.59] | | 0.065 [0.41] | | -0.202 [-1.60] | | 0.086 [0.53] |

(continued)

Table III—Continued

| Dependent Variable Estimation Type | Accruals | | | | Discretionary Accruals | | | |
|--|----------|---------|--------------------|--------------------|------------------------|---------|---------------------|--------------------|
| | (1) OLS | (2) OLS | (3) IV | (4) IV | (5) OLS | (6) OLS | (7) IV | (8) IV |
| Public float terms | Yes | Yes | No | No | Yes | Yes | No | No |
| Industry fixed effects | Yes | Yes | Yes | Yes | No | No | No | No |
| Observations | 251 | 251 | 251 | 251 | 251 | 251 | 251 | 251 |
| R ² | 0.12 | 0.34 | 0.11 | 0.27 | 0.021 | 0.27 | 0.00 | 0.17 |
| MR magnitude | −5.85 | −4.98 | −8.44 | −12.93 | −6.693 | −5.46 | −10.44 | −15.14 |
| First-Stage Regression, <i>MR</i> instrumented by <i>PFL</i> ₂₀₀₂ > \$75 million, including first-stage controls, public float terms, and fixed effects | | | | | | | | |
| <i>PFL</i> ₂₀₀₂ > \$75 Million | | | 0.442*** [9.17] | 0.386*** [7.65] | | | 0.456*** [10.06] | 0.394*** [8.08] |
| First-stage R ² | | | 0.19 | 0.29 | | | 0.17 | 0.28 |
| First-stage partial <i>F</i> -test | | | 84.17 | 58.59 | | | 101.28 | 65.23 |

Table IV
Event Study Estimations

This table presents the event study results. The Hypothesis columns report the expected market responses based on the hypothesis that delays in Section 404 compliance increase market value whereas news of SEC determination to enforce the rule decrease market valuation (+ denotes expected positive reaction, - expected negative reaction, none denotes no expected effect, and ± denotes unclear expected effect). Management report (MR) filers refers to the equal-weighted portfolio that buys all companies that filed an MR and were in a \$50 to \$100 million band in 2004. Non-filers refers to the equal-weighted portfolio that buys all companies that did not file an MR and were in the same band. MR minus no-MR refers to the long-short portfolio. The estimations use a 120-day estimation window immediately before the event window. I estimate the market model: $R_{it} = \alpha_i + \beta_{i1} \cdot MKTRF_t + \beta_{i2} \cdot SMB_t + \beta_{i3} \cdot HML_t + \beta_{i4} \cdot UMD_t + \epsilon_{it}$, $E(\epsilon_{it}) = 0$, $var(\epsilon_{it}) = \sigma_{\epsilon}^2$ for the 120-day estimation window immediately before the 3-day event window, where R_{it} is the portfolio return and $MKTRF_t$, SMB_t , HML_t , and UMD_t are the return on the market, the Fama-French size, book-to-market, and momentum factors. I use the predicted normal portfolio returns for the event window to calculate cumulative abnormal returns. For large estimation windows, the cumulative abnormal returns are distributed normally with expected value of zero and variance of $3 \cdot \sigma_{\epsilon}^2$ (MacKinlay (1997)). Two-sided z-statistics are reported in brackets. *, **, and *** denote two-sided statistical significance at the 10%, 5%, and 1% levels, respectively.

| # | Event Date | Event Description [Expected Effect] | MR filers | | Non-filers | | MR minus no-MR | |
|-----|-------------------|--|------------|---------------------|------------|--------------------|----------------|-------------------|
| | | | Hypothesis | Actual | Hypothesis | Actual | Hypothesis | Actual |
| (1) | August 27, 2002 | SEC Press Release No. 2002-128: Accelerated filer status definition and acceleration schedule. [no effect expected because MR filing is not yet tied to acceleration rule] | none | -0.42% [-0.57] | none | -0.67% [-0.62] | none | 0.25% [0.23] |
| (2) | May 28, 2003 | SEC Press Release No. 2003-66 & Wall Street Journal article: "SEC Sets a New Rule Aimed at Companies' Internal Controls." [setting the deadlines, market expected earlier deadline] | + | 2.96% [3.57]*** | + | 1.90% [2.23]** | ± | 1.05% [1.21] |
| (3) | May 6, 2003 | SEC Final Rule No. 33-8238: Rule giving 1-year delay of Section 404 compliance for accelerated filers and 2 years for non-accelerated filers. [setting the deadlines, market expected earlier deadline] | + | 3.36% [3.86]*** | + | 2.44% [2.83]*** | ± | 0.92% [1.07] |
| (4) | February 24, 2004 | SEC Press Release No. 2004-21: 3-month extension of the compliance dates, requirement for companies to include an MR and an auditor's attestation in the annual report. [some relief, but re-states the December 2004 deadline for most MR firms] | - | -1.57% [-2.17]** | + | -0.87% [-1.03] | - | -0.70% [-0.88] |

(continued)

Table IV—Continued

| # | Event Date | Event Description [Expected Effect] | MR filers | | Non-filers | | MR minus no-MR | |
|------|-------------------|--|------------|-------------------|------------|------------------|----------------|---------------------|
| | | | Hypothesis | Actual | Hypothesis | Actual | Hypothesis | Actual |
| (5) | August 26, 2004 | SEC Press Release No. 2004-121: SEC proposes accelerated filer status deadline change giving extra time for MR filers to comply. [softer SEC stance, immediate relief for MR filers] | + | 1.44% [1.74]* | + | 0.02% [−0.02] | + | 1.46% [1.98]* |
| (6) | November 17, 2004 | SEC Press Release No. 2004-158: SEC announces relaxed accelerated filer deadline (remaining at 75 days instead of changing to 60). [softer SEC stance, immediate relief for MR filers] | + | 1.97% [2.58]** | + | 0.81% [1.26] | + | 1.16% [1.60] |
| (7) | December 1, 2004 | SEC Press Release No. 2004-162 & <i>Wall Street Journal</i> article: Accelerated filers (with public float of under \$700 million) get a 45-day postponement of filing an MR. [softer SEC stance, immediate relief for MR filers] | + | 1.99% [2.57]** | + | 0.85% [1.33] | + | 1.14% [1.60] |
| (8) | December 16, 2004 | SEC Press Release No. 2004-174: SEC establishes advisory committee to examine impact of Sarbanes–Oxley Act on smaller public companies. [SEC can reduce costs, direct benefit for MR filers] | + | 2.04% [2.53]** | + | 0.72% [1.10] | + | 1.32% [1.80]* |
| (9) | March 2, 2005 | SEC Press Release No. 2005-25: Compliance dates for non-accelerated filers are extended to first fiscal year ending on or after July 15, 2006. [non-filers get a filing extension] | ± | −0.15% [−0.22] | + | 1.01% [1.61] | − | −1.17% [−1.72]* |
| (10) | May 17, 2005 | SEC Press Release No. 2005-74 and <i>New York Times</i> article: Regulators seek to trim cost of rules on auditing. [expected reduction in the cost of MR filing] | + | −0.93% [−1.2] | + | 0.82% [1.06] | − | −1.76% [−2.51]** |

have a 10.8% decrease in discretionary accruals, translating into \$15.1 million lower earnings, significant at the 1% level. The OLS estimates are significantly smaller than the IV estimates. This supports the view that firms expecting high discretionary accruals evaded filing MRs.

B.4. Robustness

Kothari, Leone, and Wasley (2005) show that the Jones model leads to a significant type I error in nonrandom samples. The research design in this paper has a control group (nonfilers) and treatment group (MR filers), and hence does not suffer from the common problem that the Jones model tends to produce, namely, non-zero discretionary accruals for selected subsamples. In effect, the regression discontinuity design matches the outcomes of similar treated and nontreated firms. As a general specification test, I check whether the 2004 results appear to be spurious. The results show that imposing an artificial rule at \$125 or \$150 million does not produce statistically significant differences in accruals between the treatment and nontreatment groups. Next, if the specification suffers from a type I error, then we should observe a similar error in previous years. Using a difference-in-difference approach comparing the 2004 difference in accruals to the difference in previous years leads to the same results as the cross-sectional estimations. The differences in 2004 are also not present in the cross-sectional estimations for the years before implementation—2002 and 2003. Finally, excluding the firms immediately under the \$75 million cutoff does not change the results. These results are all available in the Internet Appendix.

C. Stock Return Evidence

SOX was enacted to benefit investors and in turn firms. The previous sections show that filing an MR leads to significant costs in terms of audit fees but leads firms to be more conservative in their earnings reports. However, there are other costs and benefits associated with filing an MR. For example, firms have to pay for extensive internal auditing personnel and outside consultants (FEI (2005)). Consistent with this paper's finding of less earnings management and more transparency, filing an MR might have reduced the firm cost of capital (Ashbaugh-Skaife et al. (2009)).

C.1. Event Studies

The SEC press releases detailing the SOX implementation process provide a testing ground for the net valuation effect of compliance. The estimated reaction to regulation news reflects the market's updated beliefs and not the full effect of the regulation. Furthermore, firms were given temporary extensions rather than permanent breaks from compliance, so the valuation effects of Section 404 compliance will likely be larger than those estimated in this paper.

Table IV shows the 3-day abnormal returns for three cumulative equal-weighted portfolios:²⁴ (1) a portfolio that buys all companies that filed an MR and were in the \$50 to \$100 million public float band in 2004; (2) a portfolio that sells all companies that did not file an MR and were in the same band; and (3) a net portfolio. This section assumes that the market anticipates which firms will be subject to Section 404 compliance. If Section 404 imposes a net burden on firms, then the market reaction should be consistent with the following hypothesis:

Hypothesis 1: News about delays in Section 404 compliance will have a positive impact on firm valuation, whereas news about SEC determination to enforce Section 404 will have a negative impact on firm valuation.

Based on this hypothesis, I predict the expected increase or decrease in valuation of the MR and non-MR portfolios around the 10 events of interest (see the signs in Table IV). To the extent that the MR and non-MR portfolios are expected to move in opposite directions, or that one of the portfolios is expected to react more strongly, I also predict the sign of the portfolio that buys MR filers and sells nonfilers.

The first event reported in Table IV is the SEC press release announcing the rule defining the accelerated filer status and acceleration schedule over the next 3 years. The press release had no impact on the equity value of MR filers or nonfilers. Thus, in August 2002, either the market did not expect a significant effect from acceleration or the event was already anticipated. The lack of reaction is consistent with firms not actively avoiding accelerated status in 2002 and 2003.

The next two events are the announcement of deadlines for filing an MR. The deadlines appeared in a *Wall Street Journal* article on May 28, 2003 and were officially enforced by the SEC with a ruling on June 5, 2003.²⁵ The reaction to these events must be considered in the context of the expectations before the news came (via *The Wall Street Journal* article):

The SEC originally sought to have companies comply with the new rules by September 2003, but given the expensive and time-consuming realities of meeting the new requirements, the deadlines have been pushed back.

Given the market expectation of earlier compliance dates, the effect of these two announcements is expected to be positive. The market reaction is indeed positive, with both dates having significant abnormal returns of 2.96% and 3.36% for the portfolio of MR filers and slightly lower returns (1.90% and 2.44%) for the nonfilers. The two events are good news for both groups, so it is hard to predict the difference between the groups. The two-event difference

²⁴Results are similar using a 5-day event window.

²⁵See Deborah Solomon, "SEC Sets a New Rule Aimed at Companies' Internal Controls," *The Wall Street Journal*, May 28, 2003.

between the MR filers and nonfilers is 1.97%, which is insignificantly different from zero at the 11% level of significance.

The above returns are benchmarked against the cumulative value-weighted market return. However, the announcements affected all companies and thus should affect the whole market. The news of regulatory delay coincides with a positive 3-day return of 3.4% for a portfolio of large companies (S&P 500) over the two announcements (see the Internet Appendix.). However, the return is much larger for small firms that receive a 1-year MR extension (11.7%), implying that SOX is considered costlier for smaller firms. Small firms that were not scheduled to comply immediately and received a 2-year extension still outperformed the large firms in S&P 500 by 4.1%.

The fourth event corresponds to the relatively minor 3-month extension of the compliance day announced on February 24, 2004, which left the effective deadline for the majority of firms scheduled to comply unchanged because it left the deadline before the December 2004 fiscal year-end. This event led to a statistically significant negative reaction of 1.57% for firms scheduled to comply.

Events 5, 6, and 7 announce extensions given to firms before their first MR filing deadline. The SEC proposed (event 5) and decided (event 6) to keep the accelerated filer deadline for filing annual reports at 75 days (after the fiscal year end-date) instead of the planned change to 60 days. The decision should be positive news for MR filers because it delays the filing of the first MR and signals the softer stance of the SEC. The MR filer portfolio observed a positive abnormal return of 1.44% and 1.97% on the two dates. On December 1, 2004 (event 7) the SEC gave another 45-day postponement for filing the MR. The temporary extension was given to small companies, now with a market capitalization threshold of less than \$700 million.²⁶ The extension should be good news for both MR filers and nonfilers because it signals the softer SEC approach. The extension also suggests that future rule exceptions might be based on this new threshold. However, it is reasonable to hypothesize that the effect will be stronger for MR filers because they received the actual relief. The estimated abnormal returns are 1.99% for MR filers and 0.85% for nonfilers, statistically significant for the MR filers only.

Event 8 corresponds to the press release on December 16, 2004 announcing that the SEC would establish an advisory committee to examine the impact of SOX on smaller public companies. This announcement drew a strong positive reaction (+2.04%) for the MR filers that were in the process of preparing their first reports.

On March 2, 2005 the SEC extended the deadline for MR filing for nonaccelerated filers to July 2006 (event 9). Consistent with the hypothesis, the press release had a positive impact for nonfilers (1%), no effect for MR filers, and a negative return for the net portfolio. The actual abnormal returns have the predicted signs but are not large in magnitude. It is likely that by March 2005 the market was aware of the SEC intention to renew the small firm extension.

²⁶See "Moving the Market: Small Companies Get a Reprieve," *The Wall Street Journal*, December 1, 2004.

Finally, event 10 consists of a May 17, 2005 *New York Times* article (based on a day-earlier SEC press release) reporting the SEC intention of trimming auditing costs.²⁷ The chief accountant of the SEC, Donald T. Nicolaisen, presented a staff report encouraging auditors to use their judgment to reduce the number of checks they perform and thus reduce the overall cost of auditing. The resulting reduction in costs should be good news for both MR filers and nonfilers, though more so for the nonfilers who are yet to incur the initial cost of compliance. The 3-day nonfilers' abnormal return outperformed filers by 1.76%.

C.2. Two-Year Returns

As an alternative check of the valuation effect of Section 404, I construct an equal-weighted long-short portfolio. The equal-weighted portfolio longs the industry-adjusted returns of all companies that should have complied with Section 404 given their starting public float in 2002 and the returns of their industry, and shorts the industry-adjusted returns of all companies not required to comply with the rule by virtue of their 2002 public float and industry returns. This indirect approach of assigning firms to portfolios eliminates selection due to the ability of firms to manipulate their float after the rule was announced. Firms in the long portfolio were treated because of their initial public float and the change in their industry conditions.²⁸ To control for the risk of this portfolio I use the common risk factors identified in Fama and French (1993) and a momentum factor motivated by the findings in Jegadeesh and Titman (1993).

Table V reports the 24-month Fama-French estimations for the period from May 2003 to June 2005. The period starts before the Sarbanes-Oxley Act implementation rule was announced and ends after the first MRs were filed. The constant term measures the return of the portfolio that cannot be explained by the four risk factors. The portfolio has a very significant monthly negative risk-adjusted return of -0.81% per month. This implies an abnormal buy-and-hold negative return of 17.7% for the firms that had to comply with Section 404 as compared to the firms that did not have to comply. The negative 17.7% 2-year difference between predicted filers and nonfilers is substantial. As already discussed in Section IV.A.3, if the market perceives Section 404 to be a permanent tax on firms, costs can easily exceed the \$15 million mark and trigger a significant decrease in value for small firms.

In summary, the event responses and long-term returns are consistent with a market perception that for small firms the costs of MR filing outweigh the benefits.

²⁷See Floyd Norris, "Regulators Seek to Trim Cost of Rules on Auditing," *The New York Times*, May 17, 2005.

²⁸The results are similar if I instead use the market return as a tool to predict the future compliance of the firms.

Table V
Two-Year Returns

This table presents monthly Fama–French estimations for the period from May 2003 to June 2005. $R_{p,t}$ is the monthly return of a long-short equal-weighted portfolio. The portfolio longs the industry-adjusted returns of companies that were predicted to comply with Section 404 based on their 2002 public float and their industry returns. The portfolio shorts the industry-adjusted returns of companies predicted not to comply with Section 404 based on their 2002 public float and their industry returns. All firms had to have 36 months of return data in CRSP to predict their public float in 2003 and 2004. Industry-adjusted firm returns in excess of $\pm 50\%$ are not included in the portfolio. $R_{f,t}$ is the risk-free return. $(R_{m,t} - R_{f,t})$ is the excess return on the market, calculated as the equal-weighted return on all NYSE, Amex, and NASDAQ stocks (from CRSP) minus the 1-month Treasury bill rate. *HML* (High Minus Low) is the average return on the two value portfolios minus the average return on the two growth portfolios. *Small Minus Big* (SMB) is the average return on the three small portfolios minus the average return on the three big portfolios. *MOM* is the momentum factor, the average return on the two high prior return portfolios minus the average return on the two low prior return portfolios. *HML*, *SMB*, and *MOM* come from Kenneth French's web site at Dartmouth via WRDS. t -statistics are reported in brackets. *, **, and *** denote two-sided statistical significance at the 10%, 5%, and 1% levels, respectively.

| | | | | | | |
|-----------------------|---|--------------------------------|---|---|---|---------------------------------|
| $R_{p,t} - R_{f,t} =$ | – | 0.0081 [–2.21]** | + | $0.110 \cdot (R_{m,t} - R_{f,t})$ [0.98] | – | $0.0346 \cdot SMB_t$ [–0.25] |
| | + | $0.331 \cdot HML_t$ [1.88]* | + | $0.030 \cdot MOM_t$ [0.32] | | $(R^2 = 21.8\%)$ |

D. Foreign Firms

The SEC also gave a temporary compliance break to “foreign private issuers” (foreign firms).²⁹ Foreign firms with a public float above \$700 million had to comply with Section 404 and file both an MR and an auditor attestation starting on July 15, 2006, and firms with a public float of under \$700 million did not have to provide an auditor's attestation until July 15, 2007.³⁰ As expected, foreign firms that had to comply with the auditor's attestation requirement in 2006 were larger in terms of *market size*, *assets*, and *sales* than firms that did not have to provide an auditor's attestation (see the Internet Appendix). They also are more likely to be audited by a *big auditor* and less likely to be *Nasdaq listed*. The comparison also reveals increases in audit fees and accruals for the auditor's attestation filers as compared to the previous year.

Foreign firms that had to include an auditor's attestation in their annual reports paid 28% more in audit fees, and reported 1.7% less accruals and 2% lower discretionary accruals relative to firms that did not have to comply (see

²⁹For purposes of the Exchange Act, a “foreign private issuer” is any foreign issuer (other than a foreign government) except an issuer meeting the following conditions: (1) more than 50% of the issuer's outstanding voting securities are directly or indirectly held of record by residents of the U.S.; and (2) the majority of the executive officers or directors are U.S. citizens or residents; or more than 50% of the assets of the issuer are located in the U.S.; or the business of the issuer is administered principally in the U.S. See Exchange Act Rule 3b-4(c) [17 CFR 240.3b-4(c)].

³⁰The foreign sample uses all foreign incorporated nonfinancial firms with market equity between \$350 million and \$2,750 million in 2005 (the year prior to the rule implementation for foreign firms) with data in Compustat. I choose the sample to be between 50% and 400% of the \$700 million public float cutoff. I expect that this band has most of the firms near the cutoff, but still keeps firm size comparable. The total sample consists of 160 firms, 86 of which filed both an MR and an auditor attestation in 2006, while 74 filed only an MR.

the Internet Appendix). The increased costs are smaller than those for U.S. firms near the \$75 million cutoff. The smaller increase may be due to the fact that the estimations compare firms that file an MR to firms that file an MR and an auditor's attestation, whereas the larger audit fee jump for U.S. firms may be due to the estimations comparing firms filing an MR and auditor's attestation to firms that do not file any of the two reports. As previously discussed, firms had an opportunity to evade compliance. That is why the 28% increase in audit fees should be a lower bound of the true increase. These results are consistent with the effect on U.S. firms, but also underline the separate effect of auditor attestation on internal controls.

The Internet Appendix reports four events used to measure the impact of Section 404 compliance on foreign firms. First, the announcements of Section 404 delay led to a positive reaction for foreign firms, with a higher abnormal returns for the larger firms that had to comply with the auditor's attestation requirement. The May 16, 2006 announcement that the SEC was committed to going through with Section 404 enforcement came just a month before the actual implementation date. The signal of commitment to Section 404 was bad news for both firms that were scheduled to provide an auditor's attestation and firms that were given a temporary break. However, the negative impact was larger for firms that were scheduled to comply immediately with the auditor's attestation provision (the AA portfolio): AA filers had a negative 3-day abnormal return of 2.44%, while nonfilers had a negative 1% abnormal return, with the difference being statistically significant at the 10% level. The fourth event of interest near the 2006 compliance date was *The Wall Street Journal* report that the SEC was planning to ease the implementation rules in order to reign in the costs of compliance.³¹ Future filers had a positive 3-day announcement return, outperforming the firms that already incurred the Section 404 costs by 1.62%.

V. Conclusion

This paper uses the exogenous variation generated by the SEC implementation of Section 404 of SOX. Specifically, I perform a regression discontinuity analysis, comparing the outcomes of firms around the Section 404 compliance cutoff. The paper's most significant contribution to the regulation literature is its ability to disentangle the effect of SOX Section 404 from the effects of other contemporaneous events. The empirical results are strong and difficult to explain except in the context of SOX. Section 404 compliance led to a significant increase in costs and lower discretionary earnings for both domestic and foreign firms. Further, the market reacted positively to news of delays in SOX implementation and negatively to news of the regulator's determination to carry on the implementation process. Finally, firms that filed an MR experienced significantly lower stock returns over the SOX implementation period. Taken together, these results are consistent with the view that, on net, SOX Section 404 proved to be too costly for small firms.

³¹Kara Scannell and Deborah Solomon, "Business Wins Its Battle to Ease a Costly Sarbanes-Oxley Rule," *The Wall Street Journal*, November 10, 2006.

Appendix

Variable Definitions

| Variable | Units | Description (Compustat data items are in parentheses) |
|-------------------------------|-------------|---|
| Public float | \$ millions | Public float reported on the company's annual report. |
| Market size of equity | \$ millions | Fiscal year-end stock price multiplied by the number of shares outstanding ($PRCC.F \times CSHO$). |
| Assets | \$ millions | Total Assets (AT). |
| Sales | \$ millions | Net Sales ($SALE$). |
| BE/ME | Ratio | Total Common Equity (CEQ) plus Deferred Taxes & Invest Tax Credit ($TXDITC$) (if available) minus Preferred Stock – Redemption ($PSTKRV$), Liquidating ($PSTKL$) or Carrying Value ($UPSTK$), used in that order, divided by the market value of equity at the end of the fiscal year ($PRCC.F \times CSHO$). |
| Audit fees | \$ millions | Total audit and audit-related fees from Audit Analytics. |
| Earnings | Ratio | IBC scaled by previous-year assets (AT). Values in excess of $\pm 100\%$ were censored. |
| Leverage | Ratio | Long-term debt ($DLTT$) + Debt in Current Liabilities (DLC) divided by Long-term debt ($DLTT$) + Debt in Current liabilities (DLC) + Market Size of Equity. |
| IPO year | Year | Company Initial Public Offering Date ($IPODATE$). |
| Receivables | Ratio | Inventories ($INVT$) plus Receivables ($RECT$) scaled by Total Assets (AT). |
| Cash flow from operations | Ratio | Operating Cash Flow from continuing operations ($XIDOC - OANCF$) scaled by previous-year assets (TA). Values in excess of $\pm 100\%$ were censored. |
| Change in net income | Ratio | Change in Net Income (NI) scaled by previous-year assets (TA). |
| Negative cash flow in 2003 | Y/N | Dummy variable equal to one if previous-year Cash Flow from Operations is negative. |
| Accruals | Ratio | Total Accruals are IBC minus cash flow from continuing operations ($IBC - OANCF + XIDOC$) scaled by previous-year assets (AT). Values in excess of $\pm 100\%$ were censored. |
| Big auditor | Y/N | Dummy variable equal to one if the company used one of the big auditing firms (Deloitte and Touche, Ernst and Young, KPMG, PricewaterhouseCooper). |
| Number of business segments | Integer | Number of business segments from Compustat Segments. |
| Number of geographic segments | Integer | Number of geographic segments from Compustat Segments. |
| NASDAQ listed | Y/N | Dummy variable equal to one if the company is traded on NASDAQ. |

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