Economic Consequences of the Sarbanes-Oxley Act of 2002

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Abstract

This paper investigates the economic consequences of the Sarbanes-Oxley Act through a study of market reactions to legislative events related to the Act. I find that the cumulative abnormal return around all legislative events leading to the passage of the Act is significantly negative. The loss in total market value around the most significant rulemaking events amounts to $1.4 trillion. I then examine the private benefits and costs of major provisions of the Act by investigating the cross-sectional variation in market reactions to the rulemaking events. Regression results are consistent with the hypothesis that shareholders consider both the restriction of nonaudit services and the provisions to enhance corporate governance costly to business. The results also show that Section 404 of SOX, which mandates an internal control test, imposes significant costs on firms.

1. Introduction

In response to the collapse of a number of high-profile firms since late 2001, Congress passed the Sarbanes-Oxley Act (the Act or SOX hereafter) in July 2002 to enhance corporate governance and thereby restore public confidence. The Act has introduced significant changes in both management's reporting responsibilities and the scope and nature of the responsibilities of the auditor. When President Bush signed the Act into law, he characterized it as "the most far-reaching reform of American business practices since the time of Franklin Delano Roosevelt."[1]

The major provisions of the Act established the Public Company Accounting Oversight Board (PCAOB), prohibit auditors from performing certain nonaudit services for their audit clients, impose greater criminal penalties for corporate fraud, and call for more detailed and timely disclosure of financial information. Further, Section 404 of the Act requires that management assess internal controls and that auditors report on the internal controls of their clients. By requiring deeper oversight, imposing greater penalties for misconduct, and dealing with potential conflicts of interest, the Act aims to prevent deceptive accounting and management misbehavior.

However, despite the claimed benefits of SOX, it has been frequently noted that the Act and its swift passage was a political product (e.g., Hilzenrath et al., July 28, 2002, *The Washington Post*). As the Democrats planned to charge the Bush Administration as being soft on corporate scandals in the congressional election of November 2002, the Republicans were eager to ease the pressure by showing their determination to punish corporate malfeasance. Ever since the passage of the Act, the business community has expressed substantial concerns for its costs of compliance. An August 2003 survey of executives by *CFO Magazine* indicated that 70% of the respondents did not believe the benefits of compliance justify its costs. Moreover, Financial Executives International (FEI) surveyed 224 public firms in July 2004 about the direct costs of complying with Section 404 of SOX. The survey finds that the average first-year cost estimate is almost $3 million for roughly 26,000 hours of internal work and 5,000 hours of external work, plus additional audit fees of $823,200, or an increase of 53%.[2]

While the out-of-pocket compliance costs are generally considered significant (Solomon et al., 2004, *WSJ*), they are likely swamped by the opportunity costs of resources and the potentially profound impact of SOX on business practices. The *Wall Street Journal* cited the chief accounting officer of General Motors to illustrate the opportunity costs that have not been quantified: "The real

[1] See President Bush's speech at the signing ceremony of SOX (http://www.whitehouse.gov/news/releases/2002/07).
[2] Fifty-four percent of the FEI respondents are from companies with more than $1 billion in sales revenue and sixteen percent with sales revenue lower than $100 million.

cost isn't the incremental dollars, it is having people that should be focused on the business focused instead on complying with the details of the rules" (Solomon et al., January 2004, *WSJ*). In addition, the Act exposes executives to greater litigation risks and stiffer penalties. As a result, CEOs are likely to take less risky actions, consequently changing their business strategies and potentially reducing the value of their firms (Wallison, September 2003, *WSJ*).

The overall direct and indirect private costs of SOX on businesses could well outweigh its private benefits, as it is likely too costly to eliminate all corporate fraud. Zero fraud can only be achieved by very stringent controls that remove most discretion and flexibility in business. The lack of flexibility could be far more detrimental to the vast majority of firms than a few scandals. Further, the passage of SOX gives rise to a broader concern that SOX could signal a shift to more rigid federal regulation and legislation of corporate America. Such a shift would likely reduce the flexibility of the current governance systems and business environment, causing extensive changes in the economy (Holmstrom and Kaplan, 2003). A PricewaterhouseCoopers survey of CEOs at the World Economic Forum in 2004 finds that 59% of the respondents currently view the risk of overregulation as one of the biggest threats to the growth of their firms (Norris et al., January 2004, *New York Times*).

Motivated by the ongoing debate on the economic impact of SOX, this paper investigates the private benefits and costs of the Act by examining market reactions to the rulemaking events related to the Act. A maintained hypothesis is that stock prices correctly incorporate all the private costs and benefits of SOX. As the provisions of SOX affect every listed firm, I examine changes of the market index around the legislative events. I find that the cumulative abnormal return around the events leading to the passage of SOX is significantly negative. The loss in total market value around the most significant legislative events amounts to $1.4 trillion. Moreover, most of the subsequent implementation activities do not significantly change investors' expectations. The cumulative abnormal return around all the significant rulemaking events related to SOX is significantly negative. The losses likely reflect the costs of SOX and/or the expected costs of future government legislation.

Further, I explore the sources of private costs/benefits of the Act by investigating its major provisions and their cross-sectional implications. Specifically, I examine the impact of the restriction of nonaudit services, the requirements on corporate responsibilities, and the provisions on the forfeiture of incentive pay and insider trading. If the private benefits (costs) of these provisions outweigh their private costs (benefits), I expect firms' cumulative abnormal returns to be an increasing (decreasing) function of their purchase of nonaudit services and their usage of incentive pay prior to SOX, and a decreasing (increasing) function of the strength of their corporate governance.

I also examine the economic significance of the costs of complying with Section 404, which requires firms to test their internal controls and is considered the key direct cost driver of SOX.

I conduct a cross-sectional test for the cumulative abnormal return around the events leading to SOX and for each event that significantly changed investors' expectations. The empirical results largely support the hypothesis that the private costs of major provisions of SOX exceed their potential benefits. Firms' cumulative abnormal returns around the significant events are decreasing with their purchase of nonaudit services. I also find that the costs of the internal control tests are economically significant. Most startlingly, firms with so-called "weak" corporate governance experienced lower abnormal returns as the likelihood of passing tough rules increased, which is inconsistent with the conventional wisdom that strengthened governance benefits shareholders. The result is significant based on bootstrapped statistics that address the potential mechanical association between governance and stock performance.[3] The cross-sectional test further suggests that SOX is likely to impose net private costs on firms, as it is unclear that the expected costs of future regulations vary with firms' purchases of nonaudit services or with governance.

The economic significance of the Sarbanes-Oxley Act has been widely acknowledged and is considered comparable only to that of the Securities Acts of 1933 and 1934 (see, e.g., KPMG, 2004). Thus, it is important to understand how this Act affects businesses and how the market interprets the information conveyed by the passage of the Act. This paper provides evidence for shareholders' collective evaluation of SOX by documenting the significant negative cumulative abnormal return around the rulemaking events. As both SOX and the message conveyed by SOX about future legislation likely changed stock prices and their impact cannot be separated, one cannot decisively conclude that SOX is costly. However, the evidence, together with the results of the cross-sectional tests of this paper, does suggest that SOX is likely to impose net private costs on firms. The findings have important implications for both researchers and lawmakers. This paper also extends the event-study literature by examining changes in stock prices in response to market-wide news. Existing event studies mostly investigate market reactions to news announcements that affect a subset of the listed firms. Investigating stock price reactions to market-wide news is more challenging. This paper adjusts expected returns in computing cumulative abnormal returns and corrects for time-varying market volatility in the statistical tests. The impact of possible contemporaneous news announcements around the most significant rulemaking events is examined. I show that it is unlikely

[3] Gompers et al. (2003) find that firms with stronger governance experience higher returns than firms with weaker governance during the 1990s.

that other contemporary events are the key driver of the documented abnormal performance around the most significant rulemaking activities.

This study focuses on the evaluation of the private benefits and costs of SOX on businesses. I make no attempt to explore the social welfare implication of SOX. An investigation of changes in security prices can only provide evidence for the private benefits and costs of regulations, which is insufficient to determine the social desirability of rules (Gonedes and Dopuch, 1974; Watts and Zimmerman, 1986). In addition, I acknowledge that this paper is not free of the fundamental limitations of event studies (Leftwich, 1981). First, the impact of other contemporaneous news announcements is incorporated in stock prices, though I show that other news around the most significant SOX-related events is unlikely the key driver of the documented abnormal returns. Second, as investors' expectations are unobservable, I cannot completely rule out an alternative hypothesis for the observed negative cumulative abnormal return, namely, that investors had expected really tough regulations but were disappointed by SOX. However, additional analyses in the paper do not provide support for this hypothesis.

The remainder of the paper is organized as follows. Section 2 discusses the event history of SOX and related research. Section 3 examines the private costs and benefits of the Act and develops hypotheses regarding the cross-sectional variation in market response to the Act. Empirical tests of these hypotheses and results are then presented in Section 4. Section 5 concludes and proposes future research avenues.

2. Event history and related research

2.1. Event history

The Sarbanes-Oxley Act, which combined the accounting reform bills of Sen. Sarbanes and Rep. Oxley, was passed in Congress on July 25, 2002. The two bills, together with a flurry of other legislative proposals towards corporate reforms, were triggered directly by the collapse of Enron in late 2001, which exposed an unprecedented accounting scandal and a seriously corrupted governance system. I identify the legislative events leading to the passage of SOX by a keyword search of "accounting" through the *Wall Street Journal* (*WSJ* hereafter) and the *Washington Post* (*WP* hereafter) via *Factiva*, from November 2001 to July 2002. To identify related rulemaking events post-SOX, I search the *WSJ* and *WP* for "Sarbanes-Oxley" from August 2002 to December 2003 and also check press releases of the SEC and the PCAOB during this period. The *WSJ* is widely considered the most influential and timely business journal and its news filtering system is likely to extract the legislative activities that are most relevant to the business community. The *WP* closely follows significant

movements in Congress and provides information supplementary to the *WSJ* articles. The description of the events is summarized in Appendix 1.

There was no significant development in rulemaking in 2001 (Hilzenrath, December 12, 2001, *WP*). The first signal of a regulatory overhaul was reported on January 16, 2002 (Day et al., January 16, 2002, *WP*): SEC Chairman Pitt would announce a reform plan to create an independent regulatory organization. Legislative activities progressed slowly from February to May 2002. The Bush Administration unveiled their response to the Enron scandal in February and March, while Congress moved ahead with several proposals towards accounting reforms. Republican Rep. Oxley's reform bill, which was introduced in the House on February 13, was considered a business-friendly reform proposal (Schroeder, February 12, 2002, *WSJ*). Meanwhile, Democratic Senators reportedly drafted bills that went beyond Oxley's bill (Schroeder, March 7, 2002 and April 23, 2002, *WSJ*).

Although Sen. Sarbanes' tough reform bill passed in the Senate Banking Committee on June 18, it was not expected to have much chance of becoming law at that time (Hilzenrath et al., July 28, 2002, *WP*). However, the exposure of the WorldCom scandal in late June boosted rulemaking activities (Hamburger et al., June 27, 2002, *WSJ*). The rulemaking process accelerated after President Bush delivered a speech regarding accounting reforms on Wall Street on July 9 (Cummings, July 9, 2002, *WSJ*). The Senate started debate on Sarbanes' bill on July 8. On July 9, news reports already suggested that Senate passage of the bill was very likely (Murray, July 9, 2002, *WSJ*). Sarbanes' bill was passed 97 to 0 in the Senate on July 15 (Hilzenrath et al., July 16, 2002, *WP*).

House GOP leaders allegedly sought to dilute Sarbanes' bill after its passage (VandeHei, July 17, 2002, *WSJ*). However, on July 18, the *WSJ* highlighted that House Republican leaders retreated from such efforts and offered minor changes to complete the legislation (Murray, July 18, 2002, *WSJ*). The House and Senate formed a conference committee and started final negotiations to merge the bills on Friday, July 19 (Hilzenrath, July 20, 2002, *WP*). The negotiation continued over the weekend of July 20 and in a radio address on Saturday, July 20, President Bush urged Congress to pass a final bill before the fall recess (Melloan, July 23, 2002, *WSJ*). The final rule was agreed upon on July 24 (VandeHei et al., July 25, 2002, *WP*), passed in Congress on July 25, and signed into law on July 30 (Hitt, July 31, 2002, *WSJ*). The presidential approval on July 30 is not included in the event list and is discussed in Section 4 in detail.

The implementation of SOX started soon after its passage. August 14, 2002 was the first deadline for CEOs and CFOs of the 947 largest firms to certify the truthfulness of their financial reports (Day et al., August 15, 2002, *WP*). As directed by SOX, the SEC started rulemaking activities

as of late August 2002.[4] The budget problem of the SEC in October and the resignation of the SEC Chairman and the Chairman of the PCAOB potentially affect the implementation of SOX and are included as two events.

The rulemaking activities directed by SOX continued in 2003. The SEC proposed listing standards on January 8 (Schroeder, January 9, 2003, *WSJ*) and adopted a series of rules in mid-January. The SEC adopted rules concerning management reports on internal controls on May 27, adjusting the compliance date from September 2003 in the original proposal to July 2004 for accelerated filers and April 2005 for nonaccelerated filers (Solomon, May 28, 2003, *WSJ*).[5] On October 7, 2003, the PCAOB proposed a standard on the audit of internal controls, as required by Section 404 of SOX (Bryan-Low, October 8, 2003, *WSJ*). The standard was adopted in March 2004 and approved by the SEC in June, which completed the major rulemaking activities directed by SOX.

2.2. Related research

Several working papers examine the impact of the Sarbanes-Oxley Act; however, there is no consensus regarding how SOX changes business practices, nor whether the changes are value increasing for firms. Appendix 2 provides a list of accounting papers that are related to SOX and that have been posted on SSRN. The number of working papers on SOX further demonstrates the significance of the Act. In this section, I focus on two working papers that are most closely related to my study.

Rezaee and Jain (2003) investigate S&P 500 index returns around the events leading to SOX, but the events they examine are largely a subset of the events listed in Appendix 1. For example, President Bush's speech on July 9, 2002, which is considered a signal of a change of attitude in Washington (Cummings et al., July 10, 2002, *WSJ*), is not included in their study. They find that the abnormal returns are positive around the final legislative events before the passage of the Act and negative around prior events.[6] They argue that the market reacts positively as uncertainty is resolved and thus conclude SOX is value increasing. However, the market response captures only the

[4] The SEC adopted rules to require CEOs and CFOs of all public firms to certify their financial reports and to accelerate the filing of financial reports in August, and proposed rules regarding the disclosure of financial expert, management reports on internal controls, and new disclosure requirements of pro forma information and off-balance sheet transactions in October 2002.

[5] Firms satisfying the following criteria are considered "accelerated filers": common equity public float was $75 million or more as of the last business day of its most recently completed second fiscal quarter; the company has been subject to the reporting requirements of Section 13(a) or 15(d) of the Exchange Act for a period of at least 12 calendar months; the company has previously filed at least one annual report pursuant to the Exchange Act; and, the company is not eligible to use Forms 10-KSB and 10-QSB (see the SEC, File No. S7-08-02).

[6] They compute the abnormal return of the market as the difference between the daily index return and the historical mean of index returns.

unexpected portion of news. If the final rule reveals lower costs on firms than expected, positive abnormal returns can be observed around its announcement, even though investors consider the rule to be costly. Indeed, news reports indicated that lobbyists successfully pushed some of their proposals through at the last minute (Hilzenrath et al., July 28, 2002, *WP*; Murray and Schroeder, July 26, 2002, *WSJ*).[7] Moreover, reports prior to the final ruling revealed concerns that the rules would impose greater costs than Sarbanes' bill (Melloan, July 23, 2002, *WSJ*). Hilzenrath et al. (July 28, 2002, *WP*) cite the comments of Sen. Gramm after the passage of SOX, "this bill could have been a lot worse," as "virtually anything could have passed the Congress." An examination of all the rulemaking events and the cumulative abnormal return around these events provides more unequivocal evidence than Razaee and Jain (2003)'s focus on the final legislative events.

Rezaee and Jain (2003) also examine the relation between the abnormal returns of the S&P 500 firms around the final rulemaking events (with positive returns) and firm characteristics, including a firm's S&P Transparency & Disclosure (T&D) rating, whether a restatement was issued during 1995 to 2002, and a firm's purchase of nonaudit services in 2002. They find that firms' abnormal returns increased with their S&P T&D rating and decreased with their purchase of nonaudit services in 2002. The findings are inconsistent with their claim that SOX provides net private benefits for firms. The reliability of their results and conclusion is further confounded by methodology issues (e.g., overlapping event windows, omitted events, and omitted correlated variables).

Li et al. (2004) examine the market reaction to the rulemaking events around the passage of SOX. In addition to the events leading to SOX, they also identify several events related to the implementation of SOX. However, they also do not provide a complete list of the events. For example, they do not consider the negotiation of the House-Senate conference committee starting July 19 to be an event. They argue that there was no news leakage prior to the issuance of the conference report on July 24. However, the opening statements of major lawmakers at the first conference meeting on July 19 set the tone of the final bill and were made available to the public. Democrat Rep. LaFalce, the ranking minority leader of the House Financial Services Committee and a member of the conference committee, made a public statement about the progress of the conference on July 22. Moreover, Hilzenrath (July 20, 2002, *WP*), VandeHei (July 21, 2002, *WP*), Oppel (July 22, 2002, *NYT*), Weisman (July 23, 2002, *WP*), Hilzenrath et al. (July 24, 2002, *WP*) and Murray (July 24, 2002, *WSJ*) all discussed specific progress details of the negotiation and lobbying activities.

[7] Hilzenrath et al. (2002) point out that the three key targets of lobbyists are: requiring the chairman of the board to certify their firms' financial statements, prosecuting CEOs for unintentional misstatement, and extending the statute of limitations for securities lawsuits. Hilzenrath et al. (2002) suggest that lobbyists won the first two battles.

The last two articles also revealed major disputes between the two parties by July 23, citing talks given by the lawmakers. These articles, as well as Hilzenrath et al. (July 28, 2002, *WP*) who detailed the discussions of the conference committee, do not support the argument of Li et al. (2004).

Li et al. (2004)'s results are further confounded by their expected return model. They examine market reactions to the events by estimating the deviation of the market raw returns around the event days from the average raw return of nonevent days in 2002. They find positive "abnormal" returns around the final rulemaking events and conclude that investors viewed SOX as beneficial. However, it is unclear that the average raw return of nonevent days is an appropriate benchmark to evaluate expected returns around the event days. The omission of events makes the model even more problematic. Their cross-sectional test does not provide much support for their hypothesis that SOX is beneficial.[8]

Both Razaee and Jain (2003) and Li et al. (2004) conclude that SOX is beneficial. However, this study finds significantly conflicting evidence after taking into account the above-mentioned problems. First, I find no evidence supporting the conjecture that SOX is beneficial. Second, I systematically examine specific provisions of SOX that are likely to introduce changes and I find no evidence that the investigated provisions are beneficial. The evidence suggests that SOX and/or the message conveyed by the passage of SOX are bad news to the market. Several other studies, such as Cohen et al. (2004a), look into the impact of SOX by examining changes in the behavior of firms around the passage of the Act. Their time-series tests usually investigate one aspect of the impact of SOX and require a longer time series of data to obtain powerful results. Moreover, these tests are potentially confounded by contemporaneous changes in economic conditions. The event-study setting of this paper provides a complimentary and more complete test of the impact of SOX.

3. Hypothesis development

3.1. Overall market reaction to SOX

The Sarbanes-Oxley Act established the Public Company Accounting Oversight Board (PCAOB), prohibits auditors from performing certain nonaudit services for their audit clients, and imposes greater criminal penalties for corporate fraud. Further, Section 404 of the Act requires that management assess internal controls and that auditors report on their clients' internal controls. The specifics of SOX are discussed in greater detail in the next subsection.

[8] Engel et al. (2004) examine firms' going private decisions. They also conduct an event study of SOX in the first part of the paper. They do not test the value implication of SOX, but focus instead on its cross-sectional implications. For a sample of firms that went private after SOX and their matching firms, Engel et al. (2004) find that the cumulative abnormal returns are an increasing function of firm size and stock liquidity.

The impact of SOX has been hotly contested. Lawmakers expect SOX to enhance corporate controls of public firms and prevent accounting misrepresentations. If the exposed accounting scandals that led to the rulemaking activities suggest a pervasive market failure, the regulations could increase firm value and improve efficiency. As Watts and Zimmerman (1986) point out, regulations could improve social welfare in a Pareto sense, if the government's contracting costs are lower than the private contracting costs. For example, legislation that reduces the transaction costs of takeovers could improve the efficiency of the market for corporate controls and increase firm value.

However, it is unclear that the government's remedies are always less costly than the private contracting process, especially in the case of SOX. The Act rushed through Congress in a very short period of time. Contemporary news reports unveiled substantial politics between Republicans and Democrats in the rulemaking process (e.g., Melloan, July 23, 2002, *WSJ*; Hilzenrath et al., July 28, 2002, *WP*). Democrats reportedly planned to charge pro-business Republicans with being soft on corporate scandals in the congressional election of November 2002. Facing such pressure, Republicans responded by showing their determination to punish corporate wrongdoings. The politicians' eagerness to win the election, rather than an intention to increase firm value, was alleged to motivate them to draft tough legislation and pass it swiftly.

The business community and certain academics criticize SOX more specifically. Executives complain about the substantial out-of-pocket compliance costs and indirect opportunity costs imposed by SOX. They argue that complying with the rules diverts their attention from doing business and brings little benefit (Solomon et al., 2004). Moreover, commentators blame SOX for discouraging CEOs from value-increasing risky investment, as SOX significantly increases the litigation risks of management (Wallison, 2003). The change in management's risk-taking behavior will likely slow down the growth of their firms and even deter economic growth. Further, there are concerns that SOX could signal a change in attitude in Washington. The change in the behavior of lawmakers, especially the pro-business Republicans, towards tighter government controls is likely to give rise to more and tighter federal and state regulations in the future. Thus, the change is expected to have long-lasting and far-reaching influence on business practices (Holmstrom and Kaplan, 2003).

If investors consider the Act beneficial (costly) and/or the information conveyed by the passage of the Act good news (bad news) for business, the cumulative market reaction to the rulemaking events will be positive (negative).

H1a: The cumulative abnormal return around the rulemaking events related to SOX is positive.
H1b: The cumulative abnormal return around the rulemaking events related to SOX is negative.

The market response to individual events was determined by the value implication of the Act and how the news changed investors' expectations of the probability of passing tough rules.[9] If the proposed regulation imposed net private costs on firms, events that increased (reduced) the probability of passing tough rules would be associated with significant negative (positive) abnormal returns.

3.2. Specific provisions of SOX and their cross-sectional implications

SOX consists of 11 parts. Title I, Public Company Accounting Oversight Board, Title V, Analyst conflicts of interest, Title VI, Commission resources and authority, Title VII, Studies and reports, and Title X, Corporate tax returns, are unlikely to have significant cross-sectional implications on individual firms. The remaining provisions mainly cover five areas, namely, auditor independence, insider trading, disclosure, internal controls, and corporate responsibilities.

3.2.1. Provisions on nonaudit services

SOX prohibits accounting firms from providing eight categories of nonaudit services contemporaneously with audit services, thereby leaving tax services as the primary nonaudit service available to audit clients (Section 201).[10]

The restriction of nonaudit services evidently reflects lawmakers' concern that the provision of nonaudit services compromises auditor independence by increasing the economic bond between the auditor and the client. This concern also motivated the SEC to require the disclosure of all audit and nonaudit fees paid to the auditor since February 2001. However, auditors adamantly opposes this position of lawmakers and argues that performing nonaudit services helps auditors gain competencies and capabilities that are essential to the audit process (Schroeder et al., June 19, 2002, *WSJ*).

Empirical evidence on the relation between nonaudit services and audit quality is mixed. Frankel et al. (2002) document that nonaudit fees are positively associated with their measures of earnings management. They also find a negative association between nonaudit fees and the market reaction on the date the fees are disclosed. In contrast, Ashbaugh et al. (2003) find no evidence to support the claim that nonaudit services impair auditor independence. They point out that the results of Frankel et al. (2002) are sensitive to research design choices.

[9] See Leftwich (1981) for a model of market response to rulemaking events.

[10] The prohibited nonaudit services include: bookkeeping or other services related to the accounting records of financial statements of the audit client; financial information system design and implementation; appraisal or valuation services, fairness opinions, or contribution-in-kind reports; actuarial services; internal audit outsourcing services; management functions or human resources; broker or dealer, investment advisor, or investment banking services; legal services and expert services unrelated to the audit.

The above countervailing arguments generate opposite predictions for the impact of the restriction of nonaudit services. Regulators expect the restriction to reduce the economic bond between the auditor and the client, thereby improving auditor independence and the credibility of financial statements. It predicts that the provision is beneficial for firms. I call this argument the benefit hypothesis. In particular, firms that purchased more nonaudit services from their auditor are expected to benefit more from the rule change. These firms were likely to have less credible accounting prior to SOX if their auditor compromised audit quality by providing consulting services.

On the other hand, the logic of the accounting profession implies that the restriction destroys value by eliminating the cost-efficiency of hiring the auditor as a consultant. Auditors will incur greater costs in the audit process to gain the institutional knowledge that they could have obtained while performing consulting services for their client. New business consultants will also make greater initial investments than the auditor used to. The incremental costs will be borne by the client. I call this argument the cost hypothesis. It predicts firms that purchased more nonaudit services will lose more as a result of the rule change.

H2a: Benefit – Ceteris paribus, firms' cumulative abnormal returns (abnormal returns around the events that increase the likelihood of passing tough rules) are increasing with their purchase of nonaudit services from the auditor.
H2b: Cost – Ceteris paribus, firms' cumulative abnormal returns (abnormal returns around the events that increase the likelihood of passing tough rules) are decreasing with their purchase of nonaudit services from the auditor.

It should be noted that the purchase of nonaudit services is likely correlated with other firm characteristics such as financial and business risks (Frankel et al., 2002). I discuss alternative explanations for the relation between market reactions to SOX and firms' purchase of nonaudit services in Section 4.

3.2.2. Provisions on incentive pay and insider trading

If there is an accounting restatement as a result of misconduct, SOX requires CEOs and CFOs to reimburse any incentive-based compensation or profits from the sale of stock received in the 12 months after the misreporting (Section 304). Additionally, executives are prohibited from selling

company stock during the pension blackout periods and are required to report sales or purchases of company stock within two days rather than the previous ten days of the transaction (Section 306).[11]

There has been a general concern that compensation contracts for executives are suboptimal. The business press criticizes stock option grants and other incentive-based compensation for providing managers with excessive incentives to manipulate accounting numbers and eventually stock prices in order to maximize their personal wealth (e.g., Kristof et al., July 12, 2002, *LA Times*). The new rule on the forfeiture of incentive pay and the restrictions on insider trading aim to reduce such incentives and deter misreporting.[12] Particularly, this argument suggests that firms in which CEOs are compensated more with incentive-based pay benefit more from the provision.

However, the potential benefits of reducing contract-motivated earnings management could be lower than the costs of the changes. Holmstrom and Kaplan (2003) argue that these provisions increase the risk to CEOs or CFOs of selling a large amount of stock or options while they are still in office, as "misconduct" is not clearly defined. They also predict that the provisions will reduce the liquidity of executive shares. Both changes are likely to motivate firms to alter their compensation structure, substituting incentive-based compensation with an increase in cash salary. Ribstein (2002) argues that such a change can cause CEOs to act more conservatively than shareholders would prefer. Consistent with this view, Cohen et al. (2004b) document a significant decline in both the ratio of incentive compensation to salary and the outlays in R&D and capital expenditures after SOX. These predictions indicate that the potential private costs imposed by the provisions are likely considerable. Following this line, the more firms compensate their CEOs with incentive pay, the greater costs they will incur as a result of the change.

H3a: Benefit – Ceteris paribus, firms' cumulative abnormal returns (abnormal returns around the events that increase the likelihood of passing tough rules) are increasing with their use of incentive-based compensation.

H3b: Cost – Ceteris paribus, firms' cumulative abnormal returns (abnormal returns around the events that increase the likelihood of passing tough rules) are decreasing with their use of incentive-based compensation.

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[11] Pension blackout period is defined in Section 306 (a) (4) of the Act. It refers to any period during which the majority of plan beneficiaries are prohibited from trading on any equity of the firm held in the plans.

[12] The provision on the forfeiture of incentive pay is generally considered by the legal literature an innovation of SOX (e.g., Romano, 2004; Cunningham, 2002; Ribstein, 2002). There are basically two arguments regarding how this provision increases executive liabilities. First, managers could be held liable for poor judgment and negligence (Cunningham, 2002; Ribstein, 2002). This suggests that executives cannot use poor judgment as an excuse to defend themselves in lawsuits. Second, CEOs could be held liable for the misconduct of others in the firm (Ribstein, 2002). However, it is still unclear how "misconduct" in this provision will be interpreted by the court.

3.2.3. Provisions on corporate responsibilities and criminal penalties

SOX requires CEOs and CFOs to certify annual and quarterly reports to the SEC (Section 302) and raises the criminal penalties for corporate fraud and white-collar crimes. The statute of limitations for security lawsuits is extended from three years to five years after the misconduct (Section 804). Moreover, SOX directs the U.S. Sentencing Commission to promulgate amendments to tighten sentencing guidelines for fraud and white-collar crimes (Sections 805, 905, and 1104). Section 305 lowers the standard to bar directors and executives.[13] Although the latter changes are not as specific as the increases of penalties, they indicate a change in attitude towards corporate crimes, and can be expected to influence subsequent legislation and enforcement.

The certification requirement and increased criminal penalties intend to improve the accountability of executives and directors to shareholders. These changes are expected to reduce executives' incentive to commit fraud, to enhance the monitoring role of directors, and to better protect shareholder rights. In particular, this benefit hypothesis suggests that firms with weak governance and shareholder protection will benefit more from the regulation, as executives in these firms are more likely to be entrenched and engage in opportunistic behavior, according to the argument underlying the benefit hypothesis.

Nonetheless, the mandatory change of governance and shareholder rights could impose substantial private costs on businesses. Firms have been complaining about the difficulty of finding qualified directors, the rising compensation of directors, and the rising costs of directors' and officers' insurance policies (Francis, July 31, 2003, *WSJ*). Yet, the indirect costs of tight governance are likely to be much greater. A flexible governance system could be optimal for certain firms. For example, for firms that face dynamic market conditions, the intervention of outside directors and shareholders could delay the decision-making process, resulting in a loss of investment opportunities. Thus, it is likely efficient to give the management of these firms greater discretion and flexibility in decision making. The mandatory strengthening of monitoring forces these firms to change their flexible governance systems, which will likely give rise to additional costs in the form of monitoring expenses and forgone investment opportunities. Further, SOX is predicted to encourage aggressive

[13] The Security Acts of 1933 and 1934 provide that the court can issue an order prohibiting a person from acting as an officer or director of a public company if the person has committed a securities violation and his or her conduct demonstrates "substantial unfitness" to serve as an officer or director. However, judicial interpretations of the phrase "substantial unfitness" have created a very high standard for obtaining a bar. The change is intended to reduce the burden of establishing unfitness to serve as an officer and director (see Summary of Corporate Responsibility Act of 2002, The House Financial Committee).

shareholder litigation. Holmstrom and Kaplan (2003) argue that the pressure from the litigation risk will motivate executives and directors to allocate more resources to protect themselves against potential lawsuits. This hypothesis suggests that the mandatory improvement will result in greater losses in firms with so-called weak governance systems prior to SOX.

H4a: Benefit – Ceteris paribus, firms' cumulative abnormal returns (abnormal returns around the events that increase the likelihood of passing tough rules) are decreasing with the strength of their corporate governance.

H4b: Cost – Ceteris paribus, firms' cumulative abnormal returns (abnormal returns around the events that increase the likelihood of passing tough rules) are decreasing with the strength of their corporate governance.

3.2.4. Provisions on internal controls

SOX directs the SEC to set rules that require management to document and assess the effectiveness of internal controls. It also directs the PCAOB to prescribe rules requiring the auditor to attest to and report on management's assessment (Section 404).

Section 404 is considered bringing one of the most significant changes in financial reporting and the key direct cost driver of SOX. Again, the provision could benefit firms by tightening internal controls and reducing opportunistic behavior, but it is also associated with substantial implementation costs. If the provision brings net benefits (costs), firms with weak internal controls are expected to benefit (lose) more than firms with tight controls in place.

The strength of internal controls is unobservable. As a result, whether Section 404 is beneficial or costly on the net cannot be tested as with the other provisions. However, the economic significance of the requirement can be investigated. The PCAOB proposed auditing rules regarding the implementation of Section 404 in October 2003 and adopted it in 2004. The standard requires the auditor to perform a walk-through of major classes of transactions while evaluating management's assessment of controls. This suggests that firms with more business lines will incur greater compliance costs. If the costs of complying with Section 404 are significant and if investors could reasonably expect the costs of the control test to increase with the complexity of a firm's business, firms with more business lines would experience lower returns around the events that increased the likelihood of passage of SOX.

H5: Ceteris paribus, firms' cumulative abnormal returns (abnormal returns around the events that increase the likelihood of passing tough rules) are decreasing with the complexity of firms' business.

The SEC adopted rules regarding management's report on internal controls on May 27, 2003. In the original proposal, firms were required to comply with Section 404 from the fiscal year ending on or after September 15, 2003; in the final rule, accelerated filers are required to comply from the fiscal year ending on or after June 15, 2004 and nonaccelerated filers are required to comply from the fiscal year ending on or after April 15, 2005. Further, as the compliance date was not extended by one full year or two full years, firms with different fiscal year ends obtain different extension periods. Early adopters of Section 404 will develop techniques and procedures in their control tests that will be useful for late adopters. Moreover, late adopters avoid competing with early adopters for auditing resources to comply with Section 404. Thus, late adopters would incur lower compliance costs and experience higher abnormal returns around this announcement, if the cost savings from postponing Section 404 are significant. On the other hand, if firms' internal control systems are so weak on average that it is a top priority for them to comply with Section 404, the postponement of the compliance date constitues bad news to investors. If this is the case, late adopters would experience lower abnormal returns than early adopters.

H6a: Ceteris paribus, firms that obtained a longer extension period experienced lower abnormal returns than firms that were required to comply with Section 404 earlier around the announcement of postponing the compliance dates.

H6b: Ceteris paribus, firms that obtained a longer extension period experienced higher abnormal returns than firms that were required to comply with Section 404 earlier around the announcement of postponing the compliance dates.

3.2.5. Provisions on disclosure and other regulatory changes

SOX directs the SEC to issue final rules requiring full disclosure of material off-balance-sheet transactions (Section 401). It also directs the SEC to issue rules requiring that pro forma financial information not contain misleading statements and be reconciled with GAAP numbers (Section 401). Section 409 further requires firms to provide real-time disclosure of material changes in operations or financial conditions.

The benefits and costs of mandatory disclosure are not obvious. Disclosure could increase firm value by mitigating the information asymmetry problem, but it could also reduce value by releasing proprietary information of the firm (Lo, 2003). As firms ultimately bear the cost of withholding information, they have incentives to provide information voluntarily (Bushee and Leuz, 2004). The value implication of mandatory additional disclosure is thus determined by whether the pre-SOX disclosure practices maximize firm value.

The impact of the disclosure requirements is not tested in this paper. Some of the requirements are unlikely to have new content (e.g., reconciliation of pro forma and GAAP accounting numbers, see Bhattacharya et al., 2004; timely disclosure); others are not testable in the event-study setting (e.g., disclosure of off-balance-sheet transactions).[14] In sensitivity analyses, I examine whether the market response to SOX varies with firms' disclosure ratings.

In addition to the above-mentioned major provisions, SOX also changes audit practices by requiring a rotation of audit partners every five years (Section 203). The rotation of audit partners is likely a compromise between advocates and opponents of accounting firm rotation. The rule applies to all firms and it is unclear whether the requirement has significant benefits or costs. Title III of SOX also specifies certain requirements about the composition of audit committees. Prior to SOX, NYSE and NASDAQ had already required listed firms to establish independent audit committees with certain exceptions (Klein, 2003). While SOX strengthens the independence requirement, the requirement is not innovative.[15]

In summary, the economic impact of SOX on firms is determined by the potential private benefits and private costs associated with its specific provisions. If government regulations are less costly than the private contracting process, the major provisions of SOX are likely to correct the market failures and increase firm value. However, if government regulations are more costly than the private contracting process, the requirements of SOX are likely to impose significant costs on firms and reduce firm value. The value implication of SOX will be reflected in the market reaction to major news related to the likelihood of passing tough rules.

4. Empirical tests and results

This section discusses the empirical tests of the private costs and benefits of SOX. First, the cumulative abnormal returns around the legislative events are examined to test H1. Methodological issues related to expected returns, market volatility, and confounding events are discussed in detail. Second, cross-sectional regressions are estimated to test H2 to H6. Lastly, I discuss alternative explanations and sensitivity analyses.

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[14] Prior to SOX, FAS 140 required disclosure of information about securitized financial assets, a subset of off-balance-sheet arrangements, in footnotes. If this is the only type of off-balance-sheet transactions of a firm, the new disclosure requirement does not have a material impact. For other types of off-balance-sheet transactions, the information is unavailable before it is disclosed. As a result, it is unlikely that the market can distinguish the impact of the requirement on different firms around the passage of SOX.

[15] SOX requires members of the audit committee to accept no consulting, advisory, or other compensatory fees from the firm other than in the capacity as a member of the audit committee, the board of directors, or any other board committees. In contrast, NYSE prohibits members of the audit committee to have a business relationship that compromises independence; NASDAQ further specifies monetary cutoffs for such relationships (Klein, 2003).

4.1. Overall market reaction to the legislative events leading to SOX

4.1.1. Market expected return and volatility

As the most influential regulation in decades, SOX has significant economic impact on every listed firm. Consequently, I examine the changes of the market index around the related legislative events. To investigate the impact of the rulemaking news on the market index, I need to specify an expected return model for the market index and examine the abnormal returns of the market.

It has been documented in finance that expected market returns can be predicted by financial variables. Fama (1990) and Schwert (1990) model monthly, quarterly, and annual expected returns as a function of dividend yields on stocks, default spreads on corporate bonds, and term spreads on bonds. Flannery et al. (2002) extend the expectation model to daily returns and further control for past stock returns and the logarithm of the value of the market portfolio. Following this literature, I employ the following model for expected returns,

$$E_{t-1}(VWRET_t) = a_0 + a_1 TB3M_{t-1} + a_2 DEF_{t-1} + a_3 TPRE_{t-1} + a_4 DIVPRI_{t-5} + a_5 LMV_{t-5} + a_6 JAN + a_7 DEC + \sum_{i=1}^{4} a_{8i} D_i \quad (1)$$

VWRET refers to the value-weighted CRSP daily returns. $TB3M_{t-1}$ is the three-month Treasury bill rate. DEF_{t-1} is the default premium, which is computed as the difference in the yields to maturity between Moody's Baa and Aaa seasoned corporate bond indices. $TPRE_{t-1}$ is the Treasury term structure premium, which is computed as the difference in the yields to maturity of the ten-year Treasury bond and the three-month Treasury bill. The above three variables are lagged one trading day and the data is obtained from the Federal Reserve's H.15 release of interest rate data (daily). The variable $DIVPRI_{t-5}$ is the dividend price ratio of the value-weighted market portfolio and LMV_{t-5} is the logarithm of the value of the market portfolio. These two variables are lagged five trading days to avoid spurious correlation with returns and the data is obtained from CRSP daily files (Flannery et al., 2002). *JAN* equals one if day *t* is in January and *DEC* equals one if day *t* is between December 28 and 31. These two variables are included to capture the "January effect". The D_is are dummy variables for four of the five weekdays (Wednesday is the excluded day). These dummy variables are used to control for weekly patterns in stock returns.[16] As the daily data of the yield of Moody's Baa corporate

[16] This model does not directly control for the announcement of macroeconomic factors such as CPI, PPI, industrial production, and M1. However, CPI, PPI, and industrial production data are announced on a fixed day of each month (the second Friday for CPI, the second Thursday for PPI, and the middle of each month for industrial production) and M1 is announced every Thursday. The weekday dummies could control for part of their impact on market returns. Moreover, as the events do not concentrate on a particular weekday, these factors are unlikely to systematically affect the results. The impact of economic news is further discussed later in this section.

bond indices became available on Federal Reserve's website after 1986, model (1) is estimated using daily data from 1986 to 2001.

The estimation results are reported in Table 1 Panel A. The coefficient estimates are roughly consistent with the estimation results of Flannery et al. (2002).[17] It should be noted that the explanatory power of the regression is quite low, indicating that much of the variation in daily market returns is not captured by the model. However, it is important to control for the expected return in the test of cumulative market reactions. The expected market return over a month or an even longer period is certainly non-zero. The daily expected returns of the test period are computed using the estimated parameters. The daily abnormal returns (*AR*) are then calculated as the difference between the value-weighted returns (*VWRET*) and the estimated expected returns.

Traditional event studies use the standard deviation of prediction errors in the estimation period to test the statistical significance of abnormal returns in the event period (Brown and Warner, 1985). The maintained hypothesis is that volatility does not change over time. However, news announcements are likely to affect stock returns as well as market volatility. The implied volatility index for the S&P 500 portfolio (VIX) estimated by the Chicago Board Options Exchange (CBOE) indicates that the average VIX increased from 22% per year in January 2002 to 34% per year in July 2002. Failure to account for time-varying market volatility is likely to affect the reliability of the statistical tests of market returns. As a result, I use three proxies for volatility: (1) the standard deviation of prediction errors in the estimation period, (2) the standard deviation of prediction errors in the 30 days prior to day *t*, and (3) the closing VIX of day *t-1*.[18] The historical realized volatility of the raw and abnormal value-weighted index returns are very close and are close to that of S&P 500 index returns. In the 24 years from 1980 to 2003, the realized volatility of the raw and abnormal value-weighted returns estimated using daily data in each year are on average 92% of the realized volatility of S&P 500 index returns and are lower than the latter in 22 years. This suggests that statistics based the VIX are slightly underestimated.

4.1.2. Cumulative abnormal returns over the event period

Table 1 Panel B reports the cumulative raw market returns and abnormal returns around the legislative events leading to the passage of SOX. The statistical test of the raw returns is based on the

[17] I also estimate the parameters of model (1) using daily data in 2001. The results of the subsequent tests are qualitatively the same. The inferences also remain intact if I include $VWRET_{t-1}$ in the expectation model. The inclusion of $VWRET_{t-1}$ is likely to bias the estimation of cumulative abnormal returns around the events. However, the model that excludes $VWRET_{t-1}$ fails to capture the autocorrelation of stock returns, which is likely important in estimating equal-weighted expected returns.

[18] VIX is annualized. I scale it back to daily volatility in the statistical test by dividing it by $\sqrt{365}$ (Schwert, 2002).

standard deviation of daily raw market returns from 1986 to 2001, the standard deviation of daily raw returns in the 30 days prior to day *t*, and the closing VIX of day *t-1*.

The cumulative abnormal return around all the legislative events leading to the passage of SOX would be negative if SOX is costly for firms and/or signals bad news to the market. Table 1 shows that the cumulative abnormal return (-19.89%) is significantly negative, which is consistent with the hypothesis that investors considered the new rule and/or the information it conveyed to be bad news, assuming, for now, that the negative return is not driven by other contemporaneous news. The economic significance of the losses is discussed later in this section. Few events prior to July 2002 are associated with significant revisions of expectations. This is consistent with what news reports revealed (e.g., Cummings et al, July 10, 2002, *WSJ*): the probability of passing laws was generally considered remote before July. I also test the cumulative return around all the events that are associated with significant market reactions. The results are consistent with the test of cumulative abnormal returns around all the events.

The market reactions to individual events are consistent with the hypothesis that events increasing (reducing) the probability of passing tough rules are associated with negative (positive) returns. For example, Oxley's bill was considered proposing mild changes in a business-friendly manner (Schroeder et al., April 17, 2002, *WSJ*). It would empower the SEC to supervise the new oversight authority and to set the limits to nonaudit services (Congress, Summary of H.R.3763 as of April 24, 2002). In contrast, Sarbanes' bill endows the new oversight body greater power in standard setting, requires all CEOs and CFOs to certify financial reports, explicitly bans certain types of consulting services by the auditor, requires internal control assessment, extends the statute of limitation of security lawsuits, and promotes penalties for reckless violation of security laws (Congress, Summary of S.2673 as of July 15, 2002). The House Financial Services Committee scheduled to vote on Oxley's bill on April 11, but the vote was later postponed because of Democrats' attempts to toughen the bill. As the expected costs of the bill increased, the abnormal market return on that day was -2.16%. The negative return reversed when the bill finally passed on April 16 (2.15%) without significant changes.

The most momentous rulemaking activities occurred in July 2002 and were associated with the most significant market reactions. President Bush's speech on July 9 (event 14) was considered signaling a change of attitude in Washington and a change in the balance of power between the federal government and American corporations (Cummings et al., July 10, 2002, *WSJ*). The November congressional election, in which Democrats hoped to gain ground by charging that the Bush team had been soft on corporate misbehavior, is cited as the motivation for the change (Murray

et al., July 11, 2002, *WSJ*). The evolvement of laws that were considered inconceivable a few weeks before the speech became imminent after President Bush expressed his agreement with Senate Democrats on the goals of reforms (Cummings et al., July 10, 2002, *WSJ*). The market realized a significant negative abnormal return (-2.28%) on the day of the speech. The Senate started debate on Sarbanes' bill on July 8. Several amendments to add more teeth to the bill were passed on July 10. For example, the Senate Judiciary Committee Chairman's amendment to impose tougher penalties for corporate wrongdoings was passed 97 to 0 (Murray et al., July 11, 2002, *WSJ*). Consistent with the hypothesis that these tough amendments were considered costly and/or signaling bad news to the market, the abnormal return of July 10 was -3.11%.

Negative market returns were also observed when the House Republican leaders reportedly gave up efforts to water down the Senate's tough bill around July 18 (event 16). News reports explained the change as Republicans' efforts to prevent Democrats from using the issue in the fall elections (Murray, July 18, 2002, *WSJ*). The passage of a tough reform bill became increasingly likely, especially after Bush's radio address urging Congress to speed up the legislation and finish it within one week. There were concerns that the final bill would impose even greater costs than Sarbanes' proposal. Melloan (July 23, 2002, *WSJ*) commented that the unanimous passage of several proposals in the Senate were scary, as they signaled that most of the members did not care much about the contents of the bill; rather, they only wanted to show in the November election that they voted the "right" way. He argues that the "win-at-any-cost" attitudes of politicians could be at least partly responsible for the volatility in the stock market. The cumulative abnormal returns from July 18 to July 23 amounted to -12.27%.

Given these concerns prior to the final ruling, the positive return on July 24 (event 17) is not surprising. The abnormal return of July 24 was 5.07%, consistent with the explanation that the final announcement eliminated prior concerns for tougher rules. By July 23, the House and Senate negotiators still could not agree on several issues including the authority of the PCAOB, whether to prosecute executives that misstate financial reports without a criminal intent, and the extension of the statute of limitations for securities lawsuits (Murray, July 24, 2002, *WSJ*). The final rule increased the SEC's control over the PCAOB and dropped the proposal to punish unintentional misstatement, but kept the extension of the statute of litigation limitations proposed by the Senate (Murray et al., July 26, 2002, *WSJ*). Thus, business lobbyists won part of the game (Hilzenrath et al., July 28, 2002, *WP*).

The total market value of NYSE, AMEX and NADAQ as of July 31, 2002 was $11.3 trillion and the total market value loss around the three significant events (events 14, 16 and 17) in July 2002 amounted to $1.4 trillion. The survey of Financial Executive International (FEI) as of July 2004

indicates that the average first-year costs of complying with Section 404 of SOX are over $3 million. If the annual compliance costs are capitalized in perpetuity at a rate of 10%, the total compliance costs are about $30 million for an average firm in FEI's sample. As there are over 7,000 listed firms included in the market index, this suggests that the total compliance costs of Section 404 could be over $100 billion, after taking into account the fact that FEI's sample is biased towards large firms. This is only a small part of the costs of SOX; the indirect opportunity costs are conceivably much higher. Yet, part of the losses may be attributed to expected costs beyond the scope of SOX. As Cummings et al. (July 10, 2002, *WSJ*) and Holmstrom and Kaplan (2003) suggest, SOX could signal a shift to a less business-favorable environment. The expected costs of future anti-business legislation are likely reflected in the losses estimated above.

I also conduct the above tests using equal-weighted index returns. The raw cumulative equal-weighted return around the events leading to SOX is -11.38%, higher than that of the value-weighted return (-16.00%). However, after adjusting for expected returns based on model (1), which is re-estimated using equal-weighted returns, the cumulative abnormal return is -22.85%, 2.96% lower than the value-weighted cumulative abnormal return (-19.89%). Small firms are expected to incur disproportionately greater compliance costs than large firms (e.g., Holmstrom and Kaplan, 2003; Friedman, 2003, *LA Times*). Yet, large firms could face greater indirect costs. Shu (2000) finds that, *ceteris paribus*, large firms are more likely to get sued than small firms. As a result, the increased litigation risks could impose greater costs on large firms. Moreover, if part of the negative return reflects expected costs related to future legislation, large firms are likely to be subject to greater political costs than small firms.

To summarize, the evidence presented in Table 1 Panel B consistently supports the hypothesis that shareholders consider SOX costly and/or the information conveyed by the passage of SOX bad news. Events 2, 14, 16, and 17 were associated with significant changes in investors' expectations of the likelihood of passing tough rules. The market responded negatively to events that signaled increases in the likelihood of passing tough rules and positively to events revealing that no further costs would be imposed.

4.1.3. Confounding events and intraday returns

One of the fundamental limitations of event studies is that the measured abnormal performance could also capture other information released at the same calendar date (Leftwich, 1981). This problem particularly stands out in this paper's setting. The market abnormal returns likely incorporate investors' reactions to news releases about other legislative activities, accounting scandals, and economic statistics.

To evaluate how much the abnormal returns documented in Table 1 are affected by confounding events, I search for the above-mentioned three categories of market-wide news via *ProQuest* from July 8 to July 31, 2002. First, I search the *WSJ* and *WP* for news reports with their subjects including "federal legislation" or "federal regulation." The search reveals rulemaking activities related to four major issues other than the accounting legislation in July 2002: the Trade Act of 2002, the Homeland Security bill, a proposal targeting tax shelters (H.R. 5095), and proposals related to prescription drugs and Medicare. The activities related to prescription drugs likely have a direct impact on an industry rather than the whole economy. Further, it is unclear whether the bill to allow the re-importation of prescription drugs, which was passed in the Senate on July 17, could be implemented, given the required certification of the safety of re-importation (Lueck, July 18, 2002, *WSJ*). Thus, I focus on congressional activities related to the other three issues. Reported legislative activities are presented in Table 2 Panel A column (1). The Trade Act of 2002 grants the President more authority in free trade negotiations. This act is expected to have broad benefits for the economy as a whole, though it can be harmful for certain industries or workers (Philips, July 19, 2002, *WSJ*). News reports describe its passage in the House on July 27 as a triumph for businesses and free markets at a time when corporations and deregulation are under heavy attack in Congress (Philips, July 29, 2002, *WSJ*). It is not obvious whether the Homeland Security bill is beneficial or costly for business. This bill established a new Homeland Security Department that presumably enhances the security of the country but increases government expenditure at the same time. [19]

In addition, to capture news about accounting scandals or economic statistics, I search the *WSJ* for news reports with their subjects including "scandals", "securities fraud", "economy", "economic conditions", or "economic statistics." News about accounting scandals and economic statistics is summarized in Table 2 Panel A columns (2) and (3) respectively. The reports on economic news in the period largely show a mixed tone, with no significant good or bad indication. As a result, economic news is unlikely the driver of the huge losses of the period.

Around event 14 (7/8-7/12/2002), major contemporaneous events include the WorldCom hearing (7/8), the debate on the Homeland Security bill in the House committees (7/10, 7/11), and the rulemaking related to tax shelters (7/9, 7/11). The House Financial Services Committee held a hearing of the WorldCom scandal starting at 1 p.m. July 8. The witnesses were former WorldCom

[19] According to the Department of Homeland Security (DHS) Appropriations Act of 2005, the spending on security of 2005 will be higher than that of 2001 by over $20 billion. If the incremental spending is capitalized in perpetuity at a 10% discount rate, the total additional expense is about $200 billion. Even if all the costs are borne by public firms, if there is no benefit associated with additional security activities, and if all the expected costs are reflected in the abnormal return of July 2002, the costs are still insufficient to explain the losses in July 2002.

executives and the Salomon Smith Barney analyst Jack Grubman. Both the ex-CEO and the ex-CFO of WorldCom invoked the Fifth Amendment and refused to answer questions. As a result, it is unclear that the hearing revealed any new information about accounting scandals to the market. On the same day, the Senate met at 2 p.m. and started debate on Sarbanes' bill soon afterwards (Congressional Record, S.6327). I examine the intraday value-weighted market return from 1 to 2 p.m. and from 2:05 to 3:05 p.m. The market return in the one hour after WorldCom's hearing started was 0.16%, while the market return in the one hour after the Senate debate started was about -0.42%. As the exact starting and ending time of the hearing and the debate was unavailable and the two events overlapped in time, no strong conclusion can be drawn from the evidence. However, it suggests that the WorldCom hearing itself likely does not explain the negative return of July 8.

The rulemaking activities related to the Homeland Security bill were very preliminary around event 14. The House committees voted against some of the President's proposals, such as merging the Secret Service (7/10) and the Federal Emergency Management Agency (7/11) into the new department. However, news reports indicated that it was unclear how important these votes were, given that a special Select Committee could override the votes and write the bill that would go to the House floor (Pincus et al., July 11, 2002, *WP*). Indeed, the bills later proposed by the Select Committee overrode some of the earlier votes (Calmes, July 18, 2002, *WSJ*). Thus, the votes around event 14 are likely to have a limited impact on stock prices. Moreover, their effect on the cumulative return of the period likely cancels out the impact of subsequent rulemaking progress.

The House Appropriations Committee voted on July 9 to deny future federal contracts to American multinationals that relocate offshore to avoid U.S. taxes (Rogers, July 10, 2002, *WSJ*). However, the provision was later removed from the appropriations bill on July 18 in the House debate (Johnston, July 19, 2002, *NYT*). Again, the overall impact of these activities on the cumulative return of the period is likely to be minimal. Rep. Thomas proposed a bill related to firms seeking foreign tax havens, but it is unclear whether the bill really attacks tax shelters, according to the news report (McKinnon, July 12, 2002, *WSJ*). Further, the bill was at a very early stage of the rulemaking process and unlikely to generate a significant impact on stock prices.

I obtain the timing of the President's speech on July 9 from the White House website and compute stock returns around the speech. The method to compute the intraday returns and to construct the statistical test is summarized in Appendix 3. The results are reported in Table 2 Panel B. Stock prices began to decline in the middle of the President's speech. The stock return in the last 10 minutes of the President's speech accounts for 18% of the negative return of the whole day. As the

event window is significantly narrowed, the documented intraday return is less likely to reflect the effect of other contemporaneous events.

Around event 16 (7/18-7/23/2002), the trade bill was first mentioned in news reports. I expect positive market reactions to the reported progress of the bill and thus this event is unlikely to explain the negative return of July 18, 2002. The negative return of July 22 could be related to the announcement of the bankruptcy of WorldCom on July 21. However, as the bankruptcy was announced during the weekend, I expect a significant negative return at the opening of the market, if the negative return of July 22 was driven by this event. The previous-close-to-open return of July 22 was -0.32%, but it was not statistically significant. Moreover, the negative return reversed within fifteen minutes after the opening of the market (unreported). The evidence shows that the bankruptcy of WorldCom is unlikely the key driver of the large negative return of the day. The pattern of intraday returns of July 22 is also plotted in Table 2 Panel C.

The major contemporaneous event around event 17 (7/24-7/26/2002) is the arrest of five Adelphia executives. Adelphia executives were arrested around 6 a.m. in the morning of July 24 (Markon et al., July 25, 2002, *WSJ*). The conference committee of the accounting bill met and reached an agreement in the morning and the content of the conference report was revealed during the day, though the exact timing is not available.[20] If stock returns on July 24 mainly reflect the effect of the arrest of Adelphia executives, I expect significant positive returns right after the opening of the market. However, the opening return of July 24 was negative, inconsistent with this hypothesis. The pattern of intraday returns of July 24 in Panel C also shows that positive returns were realized during the day, not at the opening of the stock market.

In summary, although there were rulemaking activities, accounting scandals and economic news reported from July 8 to July 26, 2002, the news releases are unlikely to be the key drivers of the abnormal stock performance of the period. They are also unlikely to have an overwhelming impact on the magnitude of the cumulative return over the period.

In contrast to Razaee and Jain (2003) and Li et al. (2004), I do not include the presidential approval of the Act (July 30) as a major event related to SOX. After the Act was passed in the House on July 25, the President urged the Senate to pass the bill so that he could sign it into law. He also indicated when he commended the Senate after the Act was passed that he looked forward to signing

[20] I could search Dow Jones Newswire and find the stamped time of the first news report to test the intraday market reactions (Barclay et al., 1988). However, I find that the stamped time of the reports is inaccurate. For example, the President gave a speech on July 29 at 11:00 a.m. However, I find a news report stamped at 10:07 a.m., talking about the speech as if it had been given. It is hard to use the inaccurate time to distinguish the impact of confounding events that occur on the same date.

the bill into law.[21] The President's comments revealed a strong indication that he would sign the bill and thus his approval was well expected.

However, both Razaee and Jain (2003) and Li et al. (2004) find significant positive cumulative returns around the three-day window from July 29 to July 31. The value-weighted returns for the three days are: July 29, 5.31%; July 30, 0.47%; and, July 31, 0.58%. Only the return of July 29 (Monday) is significantly different from zero. I argue that the positive return of July 29 is likely explained by the passage of the Trade Act of 2002 or the Homeland Security bill in the House after the close of the stock market on July 26 (Friday). If so, I expect to see a significant positive return at the opening of the market on July 29. Table 2 Panel B shows that the previous-close-to-open return accounted for almost 40% of the daily return of July 29. Unreported results reveal that the realized market return within one hour after the opening of the market accounted for 66% of the daily return. The findings strongly suggest that the significant positive return of July 29 was driven by news released prior to the opening of stock market on that day. I also search the Dow Jones Newswire from July 26 to July 29 for any news about President Bush. A news report on July 29 indicates that the President gave a speech regarding the welfare reform that day, in which he explicitly announced that he would sign the bill on July 30. There was no significant market movement during his speech. While the market return in the ten minutes after his speech is significantly positive, the magnitude of the return is only about one-tenth of the opening return. The positive return could also reflect the impact of other information in his speech, as the speech is not mainly about accounting reforms. Thus, most, if not all, of the significant positive return around the presidential approval was unrelated to SOX. The positive return on July 29 should not be included in the test of market reactions to the Act.

I also search for significant news announcements around event 2. On the same day as the Treasury Secretary's talk (February 2, 2002, Saturday), the Powers report was released indicating that the Chicago office of Andersen was well aware of accounting problems at Enron. The report suggested that Andersen did not function as an effective check on the disclosure reported by Enron (Chaney and Philipich, 2002). There would have been a negative market reaction to the report if it changed investors' expectation of the reliability of financial reporting and audit quality. I cannot distinguish which event gave rise to the negative return on February 4, 2002.

4.2. Subsequent events

Li et al. (2004) examine both the events leading to the passage of SOX and several events related to the implementation of SOX that occurred between August and December 2002. However,

[21] These comments can be found at http://www.whitehouse.gov/news/releases/2002/07/.

they only examine a subsample of legislative events subsequent to SOX. To investigate whether the post-SOX implementation events changed the expected costs of SOX, I examine a more comprehensive set of events related to the rulemaking activities directed by SOX.

The events subsequent to SOX largely involve rulemaking activities of the SEC and the PCAOB, and are discussed in Appendix 1 Panel B. Table 3 reports the raw and abnormal market returns around these legislative events. Most of the subsequent rulemaking events are not associated with significant market reactions. It shows that the implementation of SOX did not significantly change its implications. As a result of the inclusion of many insignificant events in the test, the cumulative abnormal return around all SOX-related events is significantly negative only when historical volatility is used in the test. However, the cumulative abnormal return over all significant events is still significantly negative.

4.3. Cross-sectional variation in abnormal returns around the rule-making events

4.3.1. Research design, sample selection, and descriptive statistics

The regression to test the cross-sectional implication of major provisions of SOX (H2 – H5) is specified as follows,

$$CAR_i = \sum_j a_{0j} Ind_{ij} + a_1 Nonaudit_i + a_2 Incentive_i + a_3 Gindex_i + a_4 Complexity_i + a_5 Size_i + a_6 MTB_i + a_7 ROA_i + a_8 Pre\_Ret_i + e_i \quad (2)$$

CAR_i is the cumulative abnormal return of firm *i*. In the subsequent tests, I investigate how abnormal returns cumulated over different horizons and abnormal returns around the events associated with significant changes in investors' expectations vary with firm characteristics. I estimate the market model for each firm using their 2001 daily return data.[22] Abnormal returns are then computed as the prediction errors. Cumulative abnormal returns are the sum of the prediction errors based on the estimated parameters. [23]

H2 examines the impact of the provision on nonaudit services. I collect the nonaudit fee data from firms' fiscal 2001 proxy statements via *Lexis/Nexis*. The variable *Nonaudit* is then constructed to capture firms' purchases of nonaudit services from their auditors. It equals a firm's nonaudit fees minus fees paid to the auditor for tax-related services, deflated by the market value of equity of the

[22] Both equal-weighted and value-weighted index returns are used to estimate the market model parameters and yield very similar results in the cross-sectional tests. Only results based on the equal-weighted index are reported.

[23] The market model abnormal returns are likely to underestimate the impact of regulatory events on individual firms, as the market as a whole is affected by these events (Lo, 2003). This problem is crucial in a test of the value implication of a regulation. However, it is less important in the cross-sectional test, as the relative, rather than the absolute magnitude, of returns matters. Lo (2003) also examines regulatory events and uses market model abnormal returns in his cross-sectional test.

firm at the end of 2001. Fees paid to the auditor for tax-related services are excluded because they are not subject to the restriction of nonaudit services and they constitute a substantial portion of nonaudit fees paid to the auditor.[24] If the purchase of nonaudit services is a result of cost efficiency reasons rather than an intention to buy a favorable audit opinion, a_1 should be negative.

H3 examines whether firms that compensate CEOs with more incentive-based pay benefit (lose) more from SOX. The variable of interest is thus the ratio of incentive pay, including option grants, restricted stocks, bonus, and long-term incentive payouts, to the total compensation of the CEO (*Incentive*), measured at the end of 2001. Compensation data is obtained from ExecuComp. The variable *Incentive* is likely influenced by firm performance. CEOs in poorly performing firms probably lost their bonus and thus the percentage of incentive pay in their total pay would be low. I control for firm performance by adding return on assets (*ROA*) and the market-adjusted returns of 2001 (*Pre_Ret*). If the provision on incentive pay has a negative impact on firms, a_2 is expected to be negative.

Corporate governance is measured by the governance index (*Gindex*) of IRRC database as of 2002. The governance data on IRRC is only available for every other year. As the governance structure is likely sticky, I assume that the governance index of 2002 does not differ significantly from that of 2001. I also conduct the tests using governance data of 2000. The tenor of the results does not change. The higher the value of the index, presumably the weaker is the governance system. H4 predicts that a_3 is negative if the provisions to enhance corporate governance are costly.

The complexity of business (*Complexity*) is measured by the number of four-digit SIC industries of each firm. The data is obtained from Compustat segment files. If a firm does not have segment data, I assume it has one segment and one industry. H5 predicts a_4 to be negative.

Size and *MTB* are also included in the regression. *Size* is measured as the logarithm of the market value of equity of each firm at the end of 2001. Market-to-book ratio (*MTB*) is defined as the market value of equity over the book value of equity at the end of 2001. Firms' purchases of nonaudit services, compensation structures, and corporate governance are likely affected by firm size and investment opportunities. Firms with more growth options could lose more investment opportunities as a result of tight controls and higher litigation risks, which predicts a negative relation between *CAR* and growth options. There is no clear prediction for the sign of the relation between *CAR* and *Size*. Although small firms may incur disproportionately greater direct compliance costs, large firms

[24] Neither Sarbanes' bill nor the final act banned tax-related services. About 45% of the firms in my sample separately disclosed the amount of fees for tax-related services. For firms that did not disclose the detailed fee items, I use the total nonaudit fees in the tests. Investors could not determine whether the services would be affected by SOX if detailed fee items were not disclosed. As a result, it is reasonable to use the total fees for these firms.

could be subject to proportionately greater litigation and political costs as an indirect result of SOX or future legislation. The Ind_js are industry dummies and are defined as in Frankel et al. (2002) and Ashbaugh et al. (2003). The exclusion of industry dummies does not affect the results.

To be included in the sample for the cross-sectional test, I require that firms have return data from CRSP, financial data from Compustat, compensation data from Execucomp, governance data from IRRC, and nonaudit fee data from proxy statements. Execucomp and the IRRC database largely cover S&P 1,500 firms. The final sample includes 1,417 observations. The extreme 1% of each continuous variable is winsorized. Descriptive statistics are reported in Table 4.

Table 4 Panel A shows the sample selection procedures. Although the number of firms only accounts for about 20% of the CRSP population, the market value of these firms constitutes over 90% of the total market capitalization of NYSE, AMEX, and NASDAQ. Panel B reports the average raw returns of the sample around the events leading to SOX. The pattern of raw returns around the events mimics that of the whole market presented in Table 1. The raw returns around events 2, 14, 16, and 17 are significant. The magnitude of the average raw returns of this sample is also comparable to that of the value-weighted raw returns of the market. Panel C presents firm characteristic variables. The average firm size in the sample is significantly larger than an average firm in the CRSP universe. Panel D reports the Pearson correlation between variables. As expected, *Incentive* is positively correlated with *ROA* and *MTB*. *Size* is significantly correlated with all the variables, while *MTB* is negatively correlated with *Nonaudit.*

Table 5 reports the results of the univariate analysis of cumulative abnormal returns. I classify firms into two groups by *Nonaudit*, *Incentive*, *Gindex*, or *Complexity*, and examine differences in cumulative abnormal returns between the two groups. The examined cumulative abnormal returns are abnormal returns cumulated over the three significant events in July (events 14, 16, and 17, *CAR_3E*), cumulated over the four significant events (events 2, 14, 16, and 17, *CAR_4E*), cumulated over all the events (events 1 to 17, *CAR_ALL*), and cumulated from June 25 to July 26 (*CAR_JJ*). Bootstrapped statistics show that firms with weaker governance and more complex business experienced lower cumulative abnormal returns, consistent with the hypothesis that the provisions on governance and internal controls are costly. The univariate results on *Nonaudit* and *Incentive* provide little support for either the cost or the benefit hypothesis.

4.3.2. Regression results

The estimation results of regression (2) are reported in Table 6. Because the event dates are clustered, cross-sectional correlation of returns may result in biased standard errors and potentially

incorrect inferences (Sefcik and Thompson, 1986; Bernard, 1987). Moreover, the association between abnormal returns and firm characteristics could be explained by other documented regularities. For example, a negative correlation between abnormal returns and the governance index could be driven by the regularities found by Gompers et al. (2003). As a consequence, I compute both bootstrapped p-values and the asymptotic p-values of the OLS regression.[25]

Table 6 Panel A shows the estimation results of regression (2) with *CAR* as the dependent variable. Both the OLS two-tailed p-values and bootstrapped one-tailed p-values are reported and show similar inferences. The coefficient on *Nonaudit* is significantly negative, suggesting that the restriction of nonaudit services is value decreasing for firms. This is consistent with the hypothesis that employing the auditor as a consultant more likely reflects cost-efficiency than an intention to buy favorable audit opinions.

The coefficient on *Incentive* is insignificant. Although Cohen et al. (2004b) document a significant decline both in the ratio of incentive pay to salary and in the level of investments after SOX, the return test in this paper does not find a significant association between incentive pay and firms' abnormal returns.

Probably the most startling finding is that firms' abnormal returns decrease with the governance index, which contradicts the conventional wisdom that stronger governance increases firm value. It suggests that the requirement to tighten corporate governance is generally value decreasing for firms. Given that SOX is primarily characterized as an act to enhance corporate governance, the result casts substantial doubt on the value of the rules, assuming *Gindex* at least partly captures the strength of corporate governance.

The coefficient on *Complexity* is significantly negative, consistent with the hypothesis that the costs of complying with Section 404 are significant. The more business lines a firm has, the greater decline there is in firm value. The coefficient on *MTB* is largely insignificant; *MTB* is likely correlated with other firm characteristics and measures investment opportunities with noise. The coefficient on *Size* is positive but insignificant. The coefficient on *ROA* is significantly negative. It could be that investors expect firms with higher accounting earnings to have manipulated accounting

[25] Based on Lo (2003)'s method, the bootstrapped p-values are calculated as follows: One-tailed p-values are the percentage of 1,000 repetitions that generate coefficients greater than the OLS coefficients in the table (less than the OLS coefficient if it is negative). For the cumulative return regression (e.g., *CAR* over event 14, 16 and 17), each repetition uses sample firms' abnormal returns from 12 random nonevent days selected from 2002 or 2003. If the event days are consecutive, I select consecutive nonevent days similarly. I then cumulate each firm's abnormal returns to obtain *CAR*. For regressions with abnormal returns around individual events as the dependent variable, the procedure is similar. Consecutive nonevent days are selected and the number of days selected equals the number of days in the event window of each event.

numbers or that investors expect them to face greater litigation risks. Consistent with this explanation, after firms' accruals and other proxies for litigation risks are added to the regression in the sensitivity analysis (see Table 7), the coefficient on *ROA* largely ceases to be significant.

Table 6 Panel B reports the estimation results of regression (2) with *CAR*S* as the dependent variable, where *CAR* is firms' abnormal returns around the key events that revised investors' expectations, and *S* is an indicator variable that equals one for events 2, 14, and 16 (the events with negative market abnormal returns) and minus one for event 17 (the event with a positive return). Hypotheses 2-5 predict that the sign of the coefficients in regression (2) depends on the cross-sectional implication of SOX and the direction in which each event revised investors' expectations. The results in Table 1 suggest that event 17 was associated with a reduction in expected costs of SOX. Consequently, in the cross-sectional tests, the sign of *CAR* for this event is reversed so that the estimated coefficients have the same signs as predicted by H2-H5 (Leftwich, 1981). Regression (2) is estimated separately for the four significant events.

Little cross-sectional variation is found for event 2. This is not surprising. The Treasury Secretary's talk sent a signal to the market that new regulations were on the way, but there was no clear indication how the laws would be written. The coefficient on *Gindex* is significant with the sign predicted by the cost hypothesis in the regressions for events 14, 16, and 17. When the likelihood of passing tough rules increased, firms with weak governance were struck harder and experienced greater losses. In contrast, when it was revealed that tougher requirements would not be imposed, firms with weak governance experienced higher abnormal returns. The coefficient on *Complexity* is also significant with the expected sign in the three regressions. The results of *Nonaudit* are weaker; the coefficient on *Nonaudit* is insignificant in the regression for event 14.[26] The sign of the coefficient on *Nonaudit* is inconsistent with the cost hypothesis in the regression for event 17. The sign of the coefficient on *Incentive* is significantly positive in two regressions, though in Panel A, the coefficient is always insignificant. One potential explanation is that the direction of changes in investors' expectations concerning one specific provision could differ from the direction of changes in investors' overall expectations of the Act. As the Act primarily targets corporate governance, changes in investors' expectations regarding governance are consistent with changes in investors' overall

[26] There could be several explanations for the weaker results on *Nonaudit.* First, the variable contains measurement errors. Although the calculation of *Nonaudit* excludes fees for tax-related services that are not affected by SOX, fees paid for other unrestricted services such as statutory audit are not excluded. Firms usually report such fees in the audit-related nonaudit services category. However, audit-related nonaudit fees likely include other items such as fees for assistance in internal audit. As a result, it is hard to separate these fee items. Second, the restriction of nonaudit services likely affects all firms, since it eliminates the choice of employing the auditor as a consultant.

expectation of the Act. Accordingly, the results on *Gindex* are more consistent in the regressions. Overall, most of the results support the hypothesis that major provisions of SOX are costly.

It is possible that there is a fixed component of private benefits or costs that does not vary with firm characteristics. The fixed private benefits can be interpreted as one type of positive externality, such as restoring investor confidence in the stock market. However, as the overall cumulative market reaction to the rulemaking is negative, there is no evidence that this kind of positive externality is sufficient to offset the private costs of SOX on firms. Note, however, social benefits or externalities of SOX could manifest themselves in other forms and the evaluation of all the social costs and benefits goes beyond the scope of this paper.

In summary, the results of the cross-sectional return test differ substantially from those documented in related working papers. Three out of the four major provisions tested are demonstrated to have significant negative economic consequences. The cross-sectional test provides further support for the hypothesis that SOX is likely costly.

4.3.3. Market reactions to the announcement of postponing the compliance dates of Section 404

Table 7 Panel A summarizes the predictions of H6. H6a predicts that investors consider the postponement to be bad news and thus early adopters would experience higher abnormal returns. In contrast, H6b predicts that the postponement is good news and therefore late adopters would experience higher abnormal returns.

If a firm has a market capitalization less than $75 million by the end of 2002, I classify it as a nonaccelerated filer. Note that some of the nonaccelerated filers could be misclassified as accelerated filers, if their total market value of equity is greater than $75 million but the market value of equity excluding shares held by insiders is less than $75 million or they do not satisfy other criteria for an accelerated filer (see footnote 5 on page 6 for the definition of an accelerated filer). Foreign firms and banks are excluded, as the expected compliance costs of foreign firms and banks prior to the announcement of the final rule were likely different from those of the other firms. For example, since large banks had been required to file an internal control report to the FDIC before SOX, banks were lobbying for a waiver of compliance with Section 404. The final rule of the SEC allows large banks to file one report both to the FDIC and to comply with Section 404. The inclusion of these firms does not affect the tenor of the results.

I employ the following regression to examine the cross-sectional variation in market reactions to the announcement,

$$CAR_i = a_0 + a_1\, Non\_Acc_i + a_2\, Late\_Non_i + a_3\, Late\_Acc_i + a_4\, MTB_i + a_5\, Size_i + e_i \qquad (3)$$

where *Late_Non* equals one for nonaccelerated filers that obtain two years of extension and zero otherwise, and *Late_Acc* equals one for accelerated filers that obtain one year of extension and zero otherwise. The variable *Non_Acc* equals one for nonaccelerated filers and zero for accelerated filers. H6a (H6b) predicts a_2 and a_3 to be negative (positive). As nonaccelerated filers are significantly smaller than accelerated filers and small firms are likely to incur greater compliance costs as a percentage of their market value, the sign of a_1 is indeterminate.

The estimation results are reported in Table 7 Panel B. The dependent variable is abnormal returns cumulated over (-1, 1), (-3, 1), and (-5, 1) around the announcement day respectively. The regression with *CAR* (-1, 1) as the dependent variable does not provide support for either H6a or H6b. However, the regressions with *CAR* (-3, 1) and *CAR* (-5, 1) as the dependent variable show that nonaccelerated filers that obtained two years of extension realized significantly higher abnormal returns than nonaccelerated filers that obtained one year of extension, consistent with H6b. Unreported results based on *CAR* (-4, 1) and *CAR* (-6, 1) show similar inferences. The findings suggest that there could be news leakage prior to the release of the final rule. It is not surprising that the difference between the early and late adopters in the accelerated filers group is insignificant. The cost savings as a percentage of the market value of large firms likely are less evident than those of small firms.

Table 7 Panel B shows that the cost savings of delaying compliance for one more year are about 1.4% of the market value of an average firm in the nonaccelerated filers group. The average market capitalization of a nonaccelerated filer is $28 million, which suggests that the estimated cost savings are about $0.4 million. The average annual revenue of the nonaccelerated filers is $91 million. The FEI January 2004 survey indicates that the direct initial compliance costs for a firm with an annual revenue between $25 and $99 million are about $0.74 million and the opportunity costs are likely to be even greater. Compared with FEI's cost estimates, the magnitude of the cost savings of delaying compliance for one year appears reasonable.

In summary, the results in Table 7 provide support for H6b. The compliance costs of Section 404 are particularly significant for small firms and delaying compliance is beneficial for them.

4.4. Alternative explanations and sensitivity analyses

4.4.1. Alternative explanations

It is not completely clear that all the abnormal market returns around the event days can be attributed to the effect of SOX. First, both SOX and the message conveyed by SOX about future legislation affected stock prices and their impact cannot be tested separately. Although the

cumulative abnormal return in the legislative period is negative, I cannot decisively conclude that SOX itself is costly. Yet, it is likely that the signal conveyed by the passage of SOX goes in the same direction as the impact of SOX. If SOX were beneficial, it is more plausible that investors would expect the government to write similar beneficial legislation in the future. Moreover, the cross-sectional test of the paper provides additional support for the conjecture that SOX is costly. It is not very clear why the expected costs of future anti-business legislation should vary systematically with firms' purchases of nonaudit services, corporate governance, and the complexity of firms' business. One possible explanation is that since SOX imposes costs on firms with more flexible corporate governance, investors expect future legislation to continue scrutinizing these firms and impose greater costs. The explanation itself supports the hypothesis that the examined provisions impose net private costs on firms.

Further, the documented cumulative abnormal returns likely incorporate market reactions to contemporaneous news announcements. However, the cross-sectional test provides supporting evidence for the connection between SOX-related legislative activities and abnormal returns. If most of the market reactions reflected economic news unrelated to the rulemaking movements, firms' abnormal returns would not vary as predicted. The examination of contemporary news around the legislative events in July 2002 also shows that SOX is likely the driver of the negative cumulative abnormal return in that period. I will further investigate the impact of confounding events around other SOX-related events in future research.

In addition, as the market expectation of the government reaction to accounting scandals is unobservable, I cannot completely rule out the hypothesis that SOX was beneficial but investors had expected really tough rules to correct the market failures and were dissatisfied with SOX. For example, investors could have expected strict legislation when the WorldCom scandal was exposed but were disappointed that President Bush was not tough enough in his speech on July 9. As a result, there would have been a negative market reaction around his speech. However, in order for SOX to be beneficial under this hypothesis, one must assume that if there were no government intervention, the expected losses after the revelation of the accounting scandals would have amounted to at least 15% (the cumulative abnormal return around events 14, 16, and 17) of the total market value. It is highly arguable whether this is plausible.

Moreover, although it is difficult to evaluate changes in investors' expectation of the toughness of the overall bill, their expectations regarding specific amendments are likely easier to track. For example, in the Senate debate on July 10, 2002, Sen. Leahy proposed an amendment to extend the statute of limitations for securities fraud, to require a review of sentencing guidelines, and to create

criminal penalties for altering documents. The amendment became a significant part of SOX and apparently added teeth to Sarbanes' proposal. It is unclear why investors should have expected this amendment or a more significant amendment to be proposed. The amendment was voted at 3:15 p.m. on July 10. The market return in the interval 3:05 – 3:14 p.m. was -0.32% and in the interval 3:15 – 3:24 p.m. was -0.30%, both of which are statistically significant.[27] In the House debate of Oxley's bill on April 24, House Democrats also made an attempt to strengthen the bill but failed.[28] Before the vote of Oxley's bill, Rep. LaFalce offered a motion to recommit with instructions, in which he proposed stiff disgorgement requirements, required executive certification of financial statements, and required annual internal control assessments (Congressional Record, H1589-H1590).[29] There was a significant negative return (-0.18%) in the ten minutes before the motion to recommit was voted and a positive though insignificant return (0.08%) in the ten minutes after the motion was voted down. If investors had expected tougher amendments, there would have been a significant negative return when the amendments were voted down. The evidence is more consistent with the cost hypothesis of this paper than the alternative hypothesis.

The key variables in the cross-sectional regression, such as *Nonaudit*, *Incentive*, and *Gindex*, are not exogenous. Although regression (2) controls for firm size, investment opportunities, and firm performance, these variables could be correlated with other firm characteristics. For example, distressed firms are likely to purchase more consulting services to improve business operations. They are also more likely to become the targets of lawsuits. SOX increases the litigation costs of firms and executives and thus firms' abnormal returns around the legislative events are likely decreasing with their litigation risks. To mitigate the omitted correlated variables problem, I include additional controls for litigation risks in regression (2).

Lys and Watts (1994) find that the probability of lawsuit is a function of the likelihood of bankruptcy, the likelihood of acquisition, firms' accruals, and whether a qualified audit opinion is issued. Since only one firm in my sample received a qualified audit opinion in 2001, I use proxies for the other three factors to control for litigation risks. I estimate the likelihood of bankruptcy (*Bankrupt*) following Shumway (2001)'s model. The variable *Acquisition* equals one if a firm is subsequently

[27] There were three amendments voted in the Senate during trading hours (see Congress bill summary and status, S.2673). The other two are about attorney conduct rule or the certification of financial statements by labor organizations and I do not expect them to have a significant impact on firms.

[28] There were three amendments voted down in the House debate during trading hours. The other two amendments are a proposal to create the Federal Bureau of Audits to conduct an annual audit of the financial statements of public firms and a proposal to explicitly ban nonaudit services and require executive certification of financial statements etc. The first one was voted down overwhelmingly and thus was not examined. The motion to recommit was proposed immediately after the vote of the second one, so the impact of the vote cannot be investigated.

[29] A motion to recommit is the final chance of the Minority to make a germane change in a bill before it is passed.

acquired and delisted in 2003. The variable *Accrual* is defined as firms' total accruals deflated by total assets. Table 7 reports the estimation results. The addition of these proxies for litigation risks does not change the main results of Table 6. I also estimate an aggregate measure for litigation risks, which is calculated based on Shu (2000, Table 3)'s model to predict the likelihood of lawsuits (not reported). Again, the inclusion of the aggregate measure does not affect the main results of Table 6.

4.4.2. Sensitivity tests

To test the impact of the disclosure requirement of SOX, I examine whether *CAR* varies with firms' disclosure practices. I use the S&P financial disclosure rating to proxy for disclosure quality and add it to regression (2). Because the rating is only available for S&P 500 firms, the introduction of this variable reduces the sample to 421 firms. The financial disclosure rating is not significantly associated with *CAR*. The coefficient *Gindex* is still significantly negative. The coefficient on *Nonaudit* is insignificant, but the change is likely due to the reduction of sample firms rather than the inclusion of new variables.

I also estimate regression (2) using alternative definitions of variables. I use the three-year average of *Incentive* instead the value of this variable in 2001 and all inferences remain intact. I also redefine *Nonaudit* as the logarithm of total nonaudit fees minus fees for tax related services, or the ratio of nonaudit fees over audit fees. Ferguson et al. (2004) and Ashbaugh et al. (2003) use the logarithm of nonaudit fees without deflation to examine the impact of nonaudit services on audit independence. The use of this variable does not change the inferences. However, the coefficient on *Nonaudit* becomes insignificant when the fee ratio is used. Although prior research (e.g., Frankel et al., 2002) employs this variable to test the implication of nonaudit services, the measure is criticized for not capturing the economic significance of the services to the firm or to the auditor (Ferguson et al., 2004; Frankel et al., 2002), which is important in the return test. As a result, I do not rely on the results based on this measure.

In the cross-sectional tests, I estimate the market model for individual firms using data prior to the first event to obtain the parameters and I calculate *AR* as the prediction error. Alternatively, following Schipper and Thompson (1983), I estimate the market model using data prior to and during the event period, allowing the intercept to shift around the event days. The coefficients on event-day dummies are then aggregated to compute *CAR*. I re-estimate regression (2) with *CAR* computed in this way as the dependent variable. All inferences remain intact.

5. Conclusion and future research

This paper investigates the economic consequences of the Sarbanes-Oxley Act through a study of market reactions around the legislative events prior and subsequent to the passage of SOX. I find that the cumulative abnormal return around the legislative events leading to SOX is significantly negative. The abnormal returns are largely insignificant around the events related to the implementation of SOX. The evidence reveals that investors consider the Act to be costly and/or the information conveyed by the passage of the Act to be bad news for business. The loss in market value around the most significant rulemaking events amounts to $1.4 trillion, which likely reflects direct compliance costs, indirect costs and expected costs of future anti-business legislation. The impact of other contemporaneous news announcements is also incorporated into the abnormal return, but a further examination of intraday returns shows that such announcements are unlikely the key driver of the negative returns in July 2002.

Further, I investigate the sources of costs by looking into the cross-sectional implication of major provisions of SOX. I find that firms' cumulative abnormal returns are decreasing with their purchases of nonaudit services and the complexity of their business. These findings suggest that the restriction of nonaudit services and the new requirement of the internal control tests are costly. The test of market reactions to the announcement of postponing compliance with Section 404 shows that the postponement is particularly beneficial for small firms. Most significantly, I find that firms with perceived weak governance experience lower abnormal returns around the events that increase the likelihood of passing tough governance rules. The results show that these firms do not benefit from enhanced governance as commonly expected, but actually lose more as a result of SOX. This finding significantly challenges the value of SOX, as it is primarily characterized as legislation "improving" corporate governance and increasing shareholder value.

This study could be extended in several ways. First, I will further examine news releases around SOX-related events that are not associated with significant market reactions, as it is still unclear in this draft whether the insignificant results are driven by confounding events that have different influences on stock prices.

In addition, the statistical tests of abnormal returns could be further improved. The current tests all assume normality of abnormal returns. If the abnormal returns are skewed, the test statistics are likely biased. I could use bootstrapping methods to obtain the empirical distribution of abnormal returns and conduct a nonparametric test. The bootstrapping test of intraday returns could also be improved by taking into account the weekly pattern in returns and the variation in market volatility.

Appendix 1: Description of the legislative events related to the Sarbanes-Oxley Act

The following tables summarize legislative events related to the Sarbanes-Oxley Act. The Date column shows the date when each event took place. The Event column lists descriptions of the events. The *WSJ* column presents the date when the *Wall Street Journal* first revealed information about the event, the major content of a speech, a legislative proposal or a new rule, or the result of a vote. The *WP* column shows the reporting date for each event of the *Washington Post*. The events are numbered and overlapping events are grouped together into one event.

Panel A: Events prior to the passage of Sarbanes-Oxley Act

Event Number	Date	Event	*WSJ*	*WP*
1	1/17/2002	SEC Chairman proposed an accounting overhaul plan	1/17/2002 1/18/2002	1/16/2002 1/18/2002
2	2/2/2002	Treasury Secretary called for changes in rules governing corporations	2/4/2002	
3	2/13/2002	Oxley introduced his accounting reform bill in the House Financial Services Committee	2/12/2002 2/14/2002	2/12/2002 2/14/2002
4	2/28/2002	House Democrats introduced legislation that would impose more restrictions than Oxley's proposal		3/1/2002
5	3/7/2002	Bush's first response to accounting scandals unveiled; Senate reportedly drafted tough reform bills	3/7/2002	3/7/2002
6	3/26/2002	Greenspan warned against too much regulation	3/27/2002	
7	4/11/2002	House Financial Services Committee scheduled to vote on Oxley's bill, but the vote was postponed because of Democrats' proposed amendments	4/11/2002 4/12/2002	4/11/2002 4/12/2002
8	4/16/2002	Oxley's bill passed in the Committee	4/17/2002	4/17/2002
9	4/24/2002	Oxley's bill passed in the House	4/25/2002	4/25/2002
	4/25/2002	Senate Judiciary Committee approved legislation bolstering corporate frauds laws	4/26/2002	4/26/2002
10	5/8/2002	Sarbanes circulated his reform bill in the Senate Banking Committee	5/9/2002	5/8/2002 5/9/2002
11	6/11/2002	The *WSJ* reported that Democrats in the Senate Banking Committee united behind Sarbanes' bill	6/11/2002	
	6/12/2002	SEC proposed rules to require CEOs and CFOs of the largest 1000 firms to certify financial reports	6/12/2002	6/13/2002
12	6/18/2002	Senate Banking Committee passed Sarbanes' bill	6/19/2002	6/19/2002
13	6/25/2002	WorldCom admitted that they understated expenses by $3.8 billion	6/26/2002 6/27/2002	6/26/2002

Continued

Event Number	Date	Event	*WSJ*	*WP*
14	7/8-7/12	Senate debated on Sarbanes' bill	7/8/2002 7/9/2002	7/8/2002 7/9/2002
	7/9/2002	Bush delivered a speech on corporate reforms; news reports indicated the passage of Sarbanes' bill likely	7/9/2002	7/10/2002
	7/10/2002	Senate passed the Judiciary Committee's proposal to strengthen criminal penalties 97 to 0	7/11/2002	7/11/2002
15	7/15/2002	Senate passed Sarbanes' bill 97 to 0	7/16/2002	7/16/2002
	7/16/2002	House passed a bill to strengthen criminal penalties	7/17/2002	7/17/2002
16	7/18/2002	House republican leaders reportedly retreated efforts to dilute the Senate's tough bill	7/18/2002	7/18/2002
	7/19/2002	Conference committee started negotiations to merge bills and Sarbanes' bill became the framework; negotiation continued over the weekend		7/20/2002 7/21/2002
	7/20/2002	Bush pushed to speed up rulemaking in a radio address	7/22/2002	7/21/2002
	7/23/2002	Lobbyists reportedly lost their influence		7/23/2002
17	7/24/2002	Senate and House agreed on the final rule	7/24/2002	7/24/2002
	7/25/2002	Senate and House passed the Sarbanes-Oxley Act	7/26/2002	7/26/2002

Panel B: Events subsequent to the passage of Sarbanes-Oxley's Act

Event Number	Date	Event	*WSJ*	*WP*
18	8/14/2002	Deadline for CEOs and CFOs of the 947 largest firms to certify their financial reports	8/15/2002	8/15/2002
19	8/27/2002	SEC adopted rules to require CEOs and CFOs of all public firms to certify their financial reports and to accelerate filings of statements	8/28/2002	8/28/2002
20	10/16/2002	SEC proposed rules concerning internal control assessment and disclosure of financial experts	10/17/2002	10/17/2002
	10/18/2002	SEC budget shortage	10/21/2002	10/22/2002
21	10/22/2002	Bush promised to increase the funding of the SEC	10/23/2002	
22	10/25/2002	Webster named Chairman of the PCAOB	10/25/2002	10/26/2002
23	10/30/2002	SEC proposed new disclosure requirement of off-balance sheet transactions and pro forma information	10/30/2002	

Continued

Event Number	Date	Event	*WSJ*	*WP*
24	11/5/2002	SEC Chairman Pitt resigned	11/6/2002	11/6/2002
	11/6/2002	SEC proposed new attorney conduct rule	11/7/2002	
25	11/12/2002	PCAOB Chairman Webster resigned	11/12/2002	11/13/2002
26	11/19/2002	SEC proposed auditor independence rule	11/19/2002	11/19/2002
27	1/8/2003	SEC proposed listing standards rules	1/9/2003	1/9/2003
28	1/15/2003	SEC adopted rules regarding the pro forma earnings report, trading during blackout periods, and audit committee financial expert requirement	1/16/2003	1/16/2003
29	1/22/2003	SEC adopted rules on auditor independence and disclosure of off-balance-sheet transactions	1/23/2003	1/23/2002
	1/23/2003	SEC adopted attorney conduct rule	1/24/2003	1/24/2003
30	5/21/2003	McDonough named Chairman of the PCAOB	5/22/2003	5/22/2003
31	5/27/2003	SEC adopted rules concerning management's report on internal controls and postponed the compliance date	5/28/2003	5/28/2003
32	7/28/2003	PCAOB roundtable meeting; works of PCAOB revealed	7/29/2003	7/29/2003
33	10/7/2003	PCAOB proposed rules related to Section 404	10/8/2003	

Appendix 2: A list of working/published papers on the Sarbanes-Oxley Act (from SSRN)

Aguilera, R.V., 2005. Corporate Governance and Director Accountability: An Institutional Comparative Perspective. Forthcoming, British Journal of Management, March 2005.

Ascioglu, N. A., S. Hegde, and J. B. McDermott, 2004. Does Auditor Compensation Lower Market Liquidity? Working paper, Bryant College and University of Connecticut.

Asthana, S., S. Balsam, and S. Kim, 2004. The effect of Enron, Andersen and Sarbanes-Oxley on the Market for Audit Services. Working paper, Temple University and the State University of New Jersey.

Bhattacharya, U., P. Groznik, and B. Haslem, 2003. Is CEO Certification Credible? Regulation, Vol. 26, No. 3, 8-10.

Block, S. B., 2004. The Latest Movement to Going Private: An Empirical Study**.** Journal of Applied Finance, Vol. 14, No. 1, Spring/Summer 2004.

Bryan, D. M., C. Liu, and S.L. Tiras, 2004. The Influence of Independent and Effective Audit Committees on Earnings Quality. Working paper, SUNY at Buffalo.

Cardwell, P. M., L. L. Poulson, and J. T. Sennetti, 2004. The Characteristics of Independence after the Sarbanes-Oxley Act of 2002 for Audit Committees in a Financially Stressed Industry: A Small Sample Study. Working paper, Elon University and Nova Southeastern University.

Cohen, D. A., A. Dey, and T. Lys, 2004a. Trends in Earnings Management and Informativeness of Earnings Announcements in the Pre- and Post-Sarbanes Oxley Periods. Working paper, Northwestern University and University of Southern California.

Cohen, D. A., A. Dey, and T. Lys, 2004b. The Sarbanes Oxley Act of 2002: Implications for Compensation Structure and Risk-Taking Incentives of CEOs. Working paper, Northwestern University and University of Southern California.

Datar, S. and M. Alles, 2004. How Do you Stop the Books from Being Cooked? A Management Control Perspective on Financial Accounting Standard Setting and the Section 404 Requirement of the Sarbanes-Oxley Act. International Journal of Disclosure & Governance, Vol. 1, No. 2, 119-137.

DeFond, M., R. N. Hann, and X. Hu, 2004. Does the Market Value Financial Expertise on Audit Committees of Boards of Directors? Working paper, University of Southern California.

Engel, E., R. M. Hayes, and X. Wang, 2004. The Sarbanes-Oxley Act and Firms' Going-Private Decisions. Working paper, University of Chicago.

Ge, W. and S. McVay, 2004. On the Disclosure of Material Weaknesses in Internal Control after the Sarbanes-Oxley Act. Working paper, University of Michigan and New York University.

Glover, J.C., Y. Ijiri, C. B. Levine, and Liang, P. J., 2002. CEO/CFO Certification and Emerging Needs to Separate Facts and Forecasts: Exploring 'Intertemporal Financial Statements' with Two Time-Phases. Working paper, Carnegie Mellon University.

Gordon, E. A., E. Henry, and D. Palia, 2004. Related Party Transactions: Associations with Corporate Governance and Firm Value. Working paper, the State University of New Jersey.

Heflin, F. and C. Hsu, 2004. The Impact of the Sarbanes-Oxley Act of 2002 on the Use of Non-GAAP Earnings Measures. Working paper, Purdue University.

Heier, J. R., M. T. Dugan, and D. L. Sayers, 2004. Sarbanes-Oxley and the Culmination of Internal Control Development: A Study of Reactive Evolution. Working paper, Auburn University.

Holmstrom, B. R. and S. N. Kaplan, 2003. The State of U.S. Corporate Governance: What's Right and What's Wrong? Journal of Applied Corporate Finance 15, 8-20.

Jain, P., J. Kim, and Z. Rezaee, 2004. The Effect of the Sarbanes-Oxley Act of 2002 on Market Liquidity. Working paper, University of Memphis and North Dakota State University.

Jain, P. and Z. Rezaee, 2004. The Sarbanes-Oxley Act of 2002 and Accounting Conservatism. Working paper, University of Memphis.

Kane, E. J., 2003. Continuing Dangers of Disinformation in Corporate Accounting Reports. NBER Working Paper, Boston College – Department of Finance.

Kohlbeck, M. J. and B.W. Mayhew, 2004. Related Party Transactions. Working paper, University of Wisconsin – Madison.

Lai, K.W. 2003. The Sarbanes-Oxley Act and Auditor Independence: Preliminary Evidence from Audit Opinion and Discretionary Accruals. Working paper, City University of Hong Kong.

Leuz, C., A.J. Triantis, and T. Wang, 2004. Why do Firms go Dark? Causes and Economic Consequences of Voluntary SEC Deregistrations. Working paper, University of Pennsylvania.

Li, H., M. P. Pincus, and S.O. Rego, 2004. Market Reaction to Events Surrounding the Sarbanes-Oxley Act of 2002. Working paper, University of Iowa.

Marks. E., 2004. The Sarbanes-Oxley Act: Costs and Trade offs Relating to International Application and Convergence. Research in Accounting Regulation, Vol. 17, 2004.

Marosi, A. and N. Massoud, 2004. Why Do Firms Go Dark? Working paper, University of Alberta.

Peek, L. E., H. Blanco, and M. Roxas, 2004. Sarbanes-Oxley Act of 2002: Corporate Governance and Public Accounting Firms Oversight in NAFTA Countries. Working paper, Western Illinois University, Laurentian University and Central Connecticut State University.

Griffin, P. A. and D. H. Lont, 2005. Taking the Oath: Investor Response to SEC Certification Under Sarbanes-Oxley. Asia-Pacific Journal of Accounting & Economics, June 2005.

Rezaee, Z. and P. Jain, 2003. The Sarbanes-Oxley Act of 2002 and Security Market Behavior: Early Evidence. Working paper, University of Memphis.

Rezaee, Z., 2004. Corporate Governance Role in Financial Reporting**.** Research in Accounting Regulation, Vol. 17, 2004.

Smith, R. C., 2003. Making Corporate Governance Work. Working paper, New York University.

Turnbull, S., 2003. A New Way to Govern: Because 'World Best Practices' are the Problem Not the Solution. Working paper, Macquarie University.

Turnbull, S., 2003. Corporate Accountability – An Impact on Community Expectations. Corporate Ownership & Control, Vol. 1, No. 1, 26-34.

Vinod, H. D., 2002. Divest Investment Banking from Financial Institutions. Working paper, Fordham University.

Wojcik, D., G.L. Clarkand, and R. Bauer, 2004. Corporate Governance and Cross-Listing: Evidence from European Companies. Working paper, University of Oxford.

Appendix 3: The computation and statistical test of intraday returns

a. Computation of intraday returns

Intraday security price data is obtained from NYSE TAQ database. If a security trades in consecutive intervals, *t-1* and *t*, the return during interval *t* is estimated by $R_{it} = (P_{it} - P_{it-1})/P_{it-1}$, where P_{it} is the last transaction price in interval *t* (Barclay and Litzenberger, 1988). The previous-close-to-open return is calculated using the previous close price, the last transaction price within 10 minutes before the close of the market, and the open price, the first transaction price within 10 minutes after the opening of the market. I compute the value-weighted market return for the interval to facilitate a comparison with the results in Table 1. The value-weighted market return is,

$$R_t = \sum_{i=1}^{N} P_{it-1} * Shrout_i * R_{it} / \sum_{i=1}^{N} p_{it-1} * Shrout_i \ ,$$

where *Shrout* denotes the number of shares outstanding. If a security does not trade in consecutive intervals, the observation is excluded.

b. Statistical tests

Since intraday returns are not normally distributed (Busse and Green, 2002), I use nonparametric bootstrapping tests to determine the statistical significance of intraday returns. Specifically, to test whether R_t differs significantly from zero, I employ the following algorithm:

(1) The intraday returns for the same time interval on nonevent days in 2001 and 2002 are computed (Sample A);

(2) A sample (B) of 1000 intraday returns is drawn with replacement from sample A;

(3) The bootstrapped one-tailed p-value is computed as:

p = Number of observations in sample B with values greater than R_t / 1000, if $R_t > 0$;
Number of observations in sample B with values lower than R_t / 1000, if $R_t < 0$.

Appendix 4: Definition of variables

Variable	Description
CAR	In the test of overall value implication of SOX, *CAR* is the cumulative abnormal market returns. Daily abnormal returns (*AR*) are computed as the difference between the raw value-weighted returns and the expected market returns calculated based on the following model, $E_{t-1}(VWRET_t) = a_0 + a_1 TB3M_{t-1} + a_2 DEF_{t-1} + a_3 TPRE_{t-1} + a_4 DIVPRI_{t-5} + a_5 LMV_{t-5} + a_6 JAN + a_7 DEC + \sum_{i=1}^{4} a_{8i} D_i$ *TB3M* is the three-month Treasury bill rate. *DEF* is the default premium, which is computed as the difference in the yields to maturity between Moody's Baa and Aaa seasoned corporate bond indices. *TPRE* is the Treasury term structure premium, which is computed as the difference in the yields to maturity of the ten-year Treasury bond and the three-month Treasury bill. *DIVPRI* is the dividend price ratio. *LMV* is the logarithm of the value of the market portfolio. *JAN* equals one if day t is in January and *DEC* equals one if day t is between December 28 and 31. D_is are dummy variables for four of the five weekdays (Wednesday is the excluded day). The parameters of the model are estimated using daily data from 1986 to 2001.
	In the cross-sectional test, I estimate the market model for each firm using their return data of 2001 and the daily abnormal return is computed as the prediction error. Cumulative abnormal returns are the sum of the prediction errors. *CAR_3E* is cumulative abnormal returns around events 14, 16, and 17. *CAR_4E* is cumulative abnormal returns around events 2, 14, 16, and 17. *CAR_ALL* is cumulative abnormal returns around events 1 to 17. *CAR_JJ* is cumulative abnormal returns from June 25 to July 26, 2002. Abnormal returns around individual events are denoted *CAR*. *S* is an indicator variable which equals one for events 2, 14, and 16, and minus one for event 17.
Nonaudit	(Nonaudit fees – Fees for tax-related services) / Market value of equity at the end of 2001
Complexity	Number of four-digit SIC industries of each firm in 2001
Incentive	(Bonus + Option Grants (Black-Scholes value) + Restricted Stocks Grants + Long-term Incentive Payouts) / Total Compensation, evaluated as of 2001
Gindex	Governance index of Gompers et al. (2003)
MTB	Market value of equity / book value of equity, evaluated at the end of 2001
Size	Logarithm of the market value of equity, evaluated at the end of 2001
ROA	Earnings before extraordinary items / Average total assets, evaluated at the end of 2001
Late_Acc	Equals one if a firm is an accelerated filer and obtained one year of extension, zero otherwise
Late_Non	Equals one if a firm is a nonaccelerated filer and obtained two years of extension, zero otherwise
Non_Acc	Equals one if a firm is a nonaccelerated filer, zero otherwise
Litigation	Probability of lawsuit, which equals 1 – 1/(1 + exp (–10.049 + 0.276*log(Total Assets) + 1.153*(Inventory/Total Assets) + 2.075*(Receivables/Total Assets) + 1.251*ROA – 0.088*(Current Ratio) + 1.501*Leverage + 0.301*Sales Growth – 0.371*Return – 2.309 *Stock Volatility + 0.235*Beta + 1.464*Stock Turnover + 1.060*Delist Dummy + 0.928*Technology Dummy + 0.463*Qualified Opinion Dummy)). All variables are defined following Shu (2000).
Bankrupt	Probability of bankruptcy, calculated as 1 – 1/(1 + exp(-7.811 – 6.307 *(Net Income /Total Assets) + 4.068*(Total Liabilities/Total Assets)- 0.158*(Current Ratio) + 0.307*log(Age)) (see Shumway, 2001).
Acquisition	Equals one if a firm is acquired and delisted in 2003, zero otherwise
Accrual	(Net Income – Cash Flow from Operations) / Total Assets, evaluated at the end of 2001

References

Ashbaugh, H., R. Lafond, and B.W. Mayhew, 2003. Do nonaudit services compromise auditor independence? Further evidence. Accounting Review, Vol. 78, 611-639.

Barclay, M. and R.H. Litzenberger, 1988. Announcement effects of new equity issues and the use of intraday price data. Journal of Financial Economics 21, 71-99.

Bernard, V.L., 1987. Cross-sectional dependence and problems in inference in market-based accounting research. Journal of Accounting Research, Vol. 25, 1-48.

Bhattacharya, N., E.L. Black, T.E. Christensen, and R.D. Mergenthaler, 2004. Empirical evidence on recent trends in pro forma reporting. Accounting Horizons, Vol. 18, 27-43.

Brown, S.J. and J.B. Warner, 1985. Using daily stock returns: the case of event studies. Journal of Financial Economics 14, 3-31.

Bushee, B.J. and C. Leuz, 2004. Economic consequences of SEC disclosure regulation: Evidence from the OTC bulletin board. Forthcoming, Journal of Accounting and Economics.

Busse, J.A. and T.C. Green, 2002. Market efficiency in real time. Journal of Financial Economics 65, 415-437.

Chaney, P.K. and K.L. Philipich, 2002. Shredded reputation: The cost of audit failure. Journal of Accounting Research 40, 1221-1245.

Cohen, D.A., A. Dey, and T.Z. Lys, 2004a. Trends in earnings management and informativeness of earnings announcements in the pre- and post-Sarbanes Oxley periods. Working paper, Northwestern University and University of Southern California.

Cohen, D. A., A. Dey, and T. Lys, 2004b. The Sarbanes Oxley Act of 2002: Implications for Compensation Structure and Risk-Taking Incentives of CEOs. Working paper, Northwestern University and University of Southern California.

Collins, P., 2003. Senior Executives Divided on Cost of Complying with Sarbanes-Oxley Act. PricewaterhouseCoopers Management Barometer, July 2, 2003.

Congress, 2002. The Sarbanes-Oxley Act of 2002.

Congress, 2002. Summary of H.R.3763 as of April 24, 2002.

Congress, 2002. Summary of S.2673 as of July 15, 2002.

Cunningham, L.A., 2002. The Sarbanes-Oxley yawn: Heavy rhetoric, light reform (and it might just work). University of Connecticut Law Review, Vol. 36.

Engel, E., R.M. Hayes, and X. Wang, 2004. The Sarbanes-Oxley Act and firms' going-private decisions. Working paper, University of Chicago.

Fama, E.F., 1990. Stock returns, expected returns and real activity. Journal of Finance, Vol. 45, 1089-1108.

Fama, E.F., 1991. Efficient capital markets: II. Journal of Finance 46, 1575-1617.

Ferguson, M.J., G. Seow, and D. Young, 2004. Nonaudit services and earnings management: U.K. evidence. Contemporary Accounting Research 21 (4).

Financial Executive International (FEI), 2004. Section 404 costs survey.

Flannery, M.J. and A.A. Protopapadakis, 2002. Macroeconomic factors do influence aggregate stock returns. Review of Financial Studies, Vol. 15, No. 3, 751-781.

Frankel, R.M., M.F. Johnson, and K.K. Nelson, 2002. The relation between auditors' fees for nonaudit services and earnings management. Accounting Review, Vol. 77, 71-105.

Heflin, F. and C. Hsu, 2004. The impact of the Sarbanes-Oxley Act of 2002 on the use of non-GAAP earnings measures. Working paper, Purdue University.

Holmstrom, B. and S. Kaplan, 2003. The state of U.S. Corporate governance: What's right and what's wrong? Journal of Applied Corporate Finance 15, 8-20.

Gompers, P.A., J.L. Ishii, and A. Metrick, 2003. Corporate governance and equity prices. Quarterly Journal of Economics 118 (1), 107-155.

Gonedes, N. and N. Dopuch, 1974. Capital market equilibrium, information production and selecting accounting techniques: theoretical framework and review of empirical work. Journal of Accounting Research 14, 89-137.

Klein, A., 2002. Economic determinants of audit committee independence. Accounting Review, Vol. 77, No. 2, 435-452.

Klein, A., 2003. Likely effects of stock exchange governance proposals and Sarbanes-Oxley on corporate boards and financial reporting. Accounting Horizons, Vol. 17 No. 4, 343-255.

KPMG LLP, 2004. Sarbanes-Oxley Section 404: An overview of the PCAOB's requirements.

Leftwich, R., 1981. Evidence of the impact of mandatory changes in accounting principles on corporate loan agreements. Journal of Accounting and Economics 3, 3-36.

Li, H., M. Pincus, and S. Rego, 2004. Market reaction to events surrounding the Sarbanes-Oxley Act of 2002. Working paper, University of Iowa.

Lo, K., 2003. Economic consequences of regulated changes in disclosure: the case of executive compensation. Journal of Accounting and Economics 35, 285-314.

Lys, T. and R.L. Watts, 1994. Lawsuits against auditors. Journal of Accounting Research 32, 65-93.

Rezaee, Z. and P. Jain, 2003. The Sarbanes-Oxley act of 2002 and security market behavior: early evidence. Working paper, University of Memphis.

Ribstein, L.E., 2002. Market vs. regulatory responses to corporate fraud: a critique of the Sarbanes-Oxley Act of 2002. Journal of Corporation Law, Vol. 28, No. 1.

Romano, R., 2004. The Sarbanes-Oxley Act and the making of quack corporate governance. Working paper, Yale University, NBER and ECGI.

Schipper, K. and R. Thompson, 1983. The impact of merger-related regulations on the shareholders of acquiring firms. Journal of Accounting Research 21, 184-221.

Sefcik, S.E. and R. Thompson, 1986. An approach to statistical inference in cross-sectional models with security abnormal returns as dependent variable. Journal of Accounting Research 24, 316-334.

Schwert, G.W., 1990. Stock returns and real activity: A century of evidence. Journal of Finance, Vol. 45, No. 4, 1237-1257.

Schwert, G.W., 2002. Stock volatility in the new millennium: how wacky is Nasdaq? Journal of Monetary Economics 49, 3-26.

Shu, S.Z., 2000. Auditor resignations: clientele effects and legal liability. Journal of Accounting and Economics 29, 173-205.

Shumway, T. G., 2001. Forecasting Bankruptcy More Accurately: A Simple Hazard Model. Journal of Business, Vol. 74, No. 1, 101-124.

Skinner, D., 1994. Why firms voluntarily disclose bad news. Journal of Accounting Research 32, 38-60.

Smith, C.W. and R.L. Watts, 1992. The investment opportunity set and corporate financing, dividend and compensation policies. Journal of Financial Economics 32, 263-292.

Watts, R.L. and J.L. Zimmerman, 1986. Positive Accounting Theory. Prentice Hall, Upper Saddle River, New Jersey.

Articles from The Wall Street Journal or The Washington Post to identify the legislative events

Anderson, M.H., 2002. Senate Panel Votes to Bolster Fraud, Record-keeping Laws. Wall Street Journal, April 26, 2002.

Brown, K., 2002. Questioning the Books – Heard on the Street: Accounting Industry Fights Calls for 'Audit Only' Rules – Certain Proposals Harken to 1970s, But Is That Good? Wall Street Journal, March 7, 2002.

Burns, J., 2003. Accounting Panel Provides Insights Into Its Workings. Wall Street Journal, July 29, 2003.

Burns, J. and M. Schroeder, 2002. SEC Proposes Rules to Tighten Companies' Financial Controls. Wall Street Journal, October 17, 2002.

Calmes, J., 2002. Two Bills Put Coast Guard, FEMA in Security Agency. Wall Street Journal, July 18, 2002.

Cummings, J., 2002. Bush to Seek Tougher Penalties in Assault on Corporate Fraud. Wall Street Journal, July 9, 2002.

Cummings, J., J. M. Schlesinger, and M. Schroeder, 2002. Securities Threat: Bush Crackdown on Business Fraud Signals New Era. Wall Street Journal, July 10, 2002.

Davis, B., 2002. O'Neill Wants Stiffer Penalties for CEOs – Under Proposal, Executive Who Mislead Holders Couldn't Use Insurance. Wall Street Journal, February 4, 2002.

Day, K. and A.B. Crenshaw, 2002. SEC, Accounting Firms Redrafting Audit Rules; Agency Chairman Draws Fire for Role in Effort. The Washington Post, January 16, 2002.

Day, K. and K. Williams, 2002. CEO Deadline Brings Some Restatements; Accounting Certifications Overload SEC Staff. The Washington Post, August 15, 2002.

Freeman, J., 2002. Who Will Audit the Regulators? Wall Street Journal, July 8, 2002.

Hamburger, T., 2002. House Committee Postpones Vote on Oversight of Auditors. Wall Street Journal, April 12, 2002.

Hilzenrath, D.S., 2001. Pitt Seeks Closer Watch on Auditors: SEC Chief Wants Improvements in Accounting's Self-regulation. The Washington Post, December 12, 2001.

Hilzenrath, D.S., 2002. SEC Seeks Reform of Auditor Controls; Battered Enron Fires Accounting Firm. The Washington Post, January 18, 2002.

Hilzenrath, D.S., 2002. Bill Would Tighten Curbs on Auditors; Oxley's Measure is Similar to Proposals Backed by Accounting Industry. The Washington Post, February 14, 2002.

Hilzenrath, D.S., 2002. Accounting Bill Advances; Senate Panel Backs Broad Measure With GOP Help. The Washington Post, June 19, 2002.

Hilzenrath, D.S., 2002. Accounting Bill Draws Scrutiny; Reform Advocates Fear Loopholes Will Undermine Efforts. The Washington Post, July 10, 2002.

Hilzenrath, D.S., 2002. Hill Begins Search for Compromise on Accounting Rules. The Washington Post, July 20, 2002.

Hilzenrath, D.S., 2002. Webster to Lead Auditing Oversight; SEC Votes 3-2 Over Democratic Objections. The Washington Post, October 26, 2002.

Hilzenrath, D.S. and H. Dewar, 2002. Key Senators See Audit Bill Passing as Debate Starts. The Washington Post, July 9, 2002.

Hilzenrath, D.S. and H. Dewar, 2002. United Senate Passes Anti-fraud Measures. The Washington Post, July 11, 2002.

Hilzenrath, D.S. and K. Day, 2002. Webster Leaving Audit Job; Resignation May Hinder Cleanup. The Washington Post, November 13, 2002.

Hilzenrath, D.S. and H. Dewar, 2002. Senate Votes 97-0 TO Rein In Firms; Bill Targets Auditors and Executives. The Washington Post, July 16, 2002.

Hilzenrath, D.S., J. Weisman, and J. Vandehei, 2002. How Congress Rode a 'Storm' to Corporate Reform. The Washington Post, July 28, 2002.

Hilzenrath, D.S. and J. Vandehei, 2002. Negotiators Nearing Deal on Accounting Bill. The Washington Post, July 24, 2002.

Hitt, Gregg, 2002. Democrats in Senate Unite on Accounting-Overhaul Bill. Wall Street Journal, June 11, 2002.

Hsu, S.S. and K. Day, 2002. Senate Vote Spotlights Audit Reform and Sarbanes. The Washington Post, July 15, 2002.

Ip, G., 2002. Greenspan Warns Against Too Much Regulation. Wall Street Journal, March 27, 2002.

Johnston, D.C., 2002. House Takes Up, but Drops, Bermuda Corporation Issue. The New York Times, July 19, 2002.

Kessler, G., 2002. Bush Plan Puts CEOs on Notice; New Accountability for Accounting. The Washington Post, March 7, 2002.

Kristof, K.M. and J. Flanigan, 2002. Crisis in Corporate America; Stock Options Lavished on Executives Come Under Fire. Los Angeles Times, July 12, 2002.

McKinnon, J. D., 2002. GOP Plan Takes Shot at Tax Shelters – Thomas Bill Gives Weapons To IRS, Sets Moratorium On Paper Moves to Bermuda. Wall Street Journal, July 12, 2002.

Melloan, G., 2002. Can Capitalism Survive Election Year Politics? Wall Street Journal, July 23, 2002.

Murray, S., 2002. GOP Senators Are Likely to Back Democrats in Accounting Overhaul. Wall Street Journal, July 9, 2002.

Murray, S., 2002. House Clears Accounting Bill that Boosts Criminal Penalties. Wall Street Journal, July 17, 2002.

Murray, S., 2002. Leading the News: House GOP Moves on Oversight Bill, With Few Changes. Wall Street Journal, July 18, 2002.

Murray, S. and J.D. Mckinnon, 2002. Senate Passes Tough Fraud Bill in Unanimous Vote. Wall Street Journal, July 11, 2002.

Murray, S. and M. Schroeder, 2002. Goverance Bill Has Major Consequences for Many. Wall Street Journal, July 26, 2002.

Norris, F., 2004. Too Much Regulation? Corporate Bosses Sing the Sarbanes-Oxley Blues. New York Times, January 23, 2004.

Oppel, R. A., 2002. Little Progress on Corporate Governance Bill. New York Times, July 22, 2002.

Orwall, B., 2002. Disney Investors Reject Proposal to Split Auditing and Consulting. Wall Street Journal, February 20, 2002.

Philips, M.M., 2002. Bush Steps In to Break Logjam Stalling 'Fast Track" Trade Bill. Wall Street Journal, July 19, 2002.

Philips, M.M., 2002. Wall Street Journal, July 29, 2002.

Pincus, W., J. Eilperin, and B. Miller, 2002. Details of Homeland Plan Assailed; House Panels Vote to Block Transfers of Some Agencies. The Washington Post, July 11, 2002.

Porter, E., 2002. Taking the Pledge: Certification Deadline Reveals Common Errors. Wall Street Journal, August 15, 2002.

Pulliam, S., D. Solomon, and R. Smith, 2002. WorldCom is Denounced at Hearing – Congressmen Say Executives Mismanaged Company; Grubman Draws Criticism. Wall Street Journal, July 9, 2002.

Rogers, D., 2002. Bill Gains to Ban U.S. Contracts To Firms Moving to Tax Havens. Wall Street Journal, July 10, 2002.

Scannell, K., 2003. Corporate Reforms: The First Year: Where is That Flood of Lawsuits? Wall Street Journal, July 24, 2003.

Schlesinger, J.M. and M. Schroeder, 2002. Bush to unveil Post-Enron Plan for Disclosures. Wall Street Journal, March 7, 2002.

Schroeder, M., 2002. SEC Proposes Accounting Disciplinary Body. Wall Street Journal, January 17, 2002.

Schroeder, M., 2002. Lawmakers Plan More Financial Oversight – Accounting Industry Faces Stepped-up Regulation and Limits on Services. Wall Street Journal, February 12, 2002.

Schroeder, M., 2002. Senate Panel Seeks Sweeping Change for Auditors. Wall Street Journal, March 7, 2002.

Schroeder, M., 2002. The Economy: Congress Seeks Harsher Penalties For Violations of Accounting Laws. Wall Street Journal, April 23, 2002.

Schroeder, M., 2002. The Economy: House, in Bipartisan Vote, Backs Moderate Accounting Overhaul. Wall Street Journal, April 25, 2002.

Schroeder, M., 2002. SEC Gives Broad Interpretation of Rules for Accounting Statute. Wall Street Journal, August 28, 2002.

Schroeder, M., 2002. Under Pressure from Democrats, Bush Offers to Increase SEC Budget. Wall Street Journal, October 23, 2002.

Schroeder, M., 2002. New SEC Oversight Panel Awaits Budget Resolution. Wall Street Journal, October 21, 2002.

Schroeder, M., 2002. SEC to Propose New Financial-Disclosure Rules. Wall Street Journal, October 30, 2002.

Schroeder, M., 2002. Regulator Under Fire: As Pitt Launches SEC Probe of Himself, Criticism Mounts. Wall Street Journal, November 1, 2002.

Schroeder, M., 2002. Webster Makes It Official and Quits Accounting Board. Wall Street Journal, November 13, 2002.

Schroeder, M., 2002. SEC to Mull New Audit-firm Rules. Wall Street Journal, November 19, 2002.

Schroeder, M., 2003. SEC proposes Rules to Strengthen Boards. Wall Street Journal, January 9, 2002.

Schroeder, M., 2003. SEC proposes Orders New Disclosures on Company Earnings. Wall Street Journal, January 16, 2002.

Schroeder, M., 2003. SEC Clears Rules Limiting Auditors From Offering Consulting Services. Wall Street Journal, January 23, 2002.

Schroeder, M. and T. Hamburger, 2002. Accounting Reform Is Left in SEC's Lap – Oxley Proposal Would Place Pitt in an Awkward Position. Wall Street Journal, April 17, 2002.

Schroeder, M. and T. Hamburger, 2002. Accounting Reform Gets Big Lift As Senate Panel Backs New Board. Wall Street Journal, June 19, 2002.

Smith, R. and M. Schroeder, 2002. Accounting for Enron: Pitt's SEC Plan for Self-Regulation of Accountants May Have Pitfalls. Wall Street Journal, January 18, 2002.

Solomon, D., 2003. Fraud Detector: SEC Sets a New Rule Aimed at Companies' Internal Controls. Wall Street Journal, May 28, 2003.

Solomon, D. and C. Bryan-Low, 2004. Companies complain about cost of corporate-governance rules. Wall Street Journal, Feb. 10, 2004.

Spinner, J., 2002. New Audit Rules Taking Form; Proposals Also Would Require Faster Financial Reporting. The Washington Post, April 11, 2002.

Spinner, J., 2002. Committee Passes Auditor Bill. The Washington Post, April 17, 2002.

VandeHei, J., 2002. House GOP's Leaders Fight Audit Plan; Lawmakers Seek to Dilute Some Senate-Passed Reforms. The Washington Post, July 17, 2002.

VandeHei, J., 2002. Conferees to Haggle With Eye on Nov.; Political Stakes High in Corporate Reform. The Washington Post, July 21, 2002.

VandeHei, J. and D.S., Hilzenrath, 2002. Hill Leaders Agree on Corporate Curbs; Attack on Fraud Includes Auditing Control and Jail Terms. The Washington Post, July 25, 2002.

Wallison, P., 2003. Blame Sarbanes-Oxley. Wall Street Journal, September 3, 2003.

Weisman, J., 2002. Lobbyists Lose Clout; Business Groups Find Their Influence on Audit Reform Legislation Shrinking. The Washington Post, July 23, 2002.

Table 1: Raw and abnormal market returns around the events leading to the passage of the Sarbanes-Oxley Act

This table reports the value-weighted raw returns and abnormal returns around legislative events leading to the passage of SOX. For each event, the event window is determined using the following procedure: (1) For events related to speeches, if a news report that covered major contents of the speech appeared in the *WSJ* or *WP* on or before the date the speech was delivered, the event window covers one day before the news report to one day after the speech; if a news report appeared in the *WSJ* or *WP* after a speech, the event window covers one day before the speech to one day after the speech. (2) For events related to legislative votes prior to the passage of SOX, as there is some uncertainty about the vote result, the event window covers the voting day and one day after the date. For the subsequent events related to the vote of the SEC, since there is little uncertainty as to the vote result, the event window is set to be one day before the event to one day after it.

Panel A: Estimation of the expected return model

The following model is employed to predict expected returns,

$$E_{t-1}(VWRET_t) = a_0 + a_1 TB3M_{t-1} + a_2 DEF_{t-1} + a_3 TPRE_{t-1} + a_4 DIVPRI_{t-5} + a_5 LMV_{t-5} + a_6 JAN + a_7 DEC + \sum_{i=1}^{4} a_{8i} D_i \quad (1)$$

Variable definitions are presented in Appendix 2. The parameters of the model are estimated using daily data from 1986 to 2001.

	Intercept	$TB3M_{t-1}$	DEF_{t-1}	$TPRE_{t-1}$	$DIVPRI_{t-5}$	LMV_{t-5}	JAN	DEC	D_1	D_2	D_3	D_4
Estimate	0.0261**	-0.0005**	0.0005	-0.0007**	0.7173	-0.0010*	0.0008	0.0009	-0.0008*	-0.0002	-0.0005	-0.0003
t-stat	2.00	-2.28	0.60	-2.15	0.53	-1.92	1.37	0.62	-1.65	-0.40	-0.93	-0.68
Number of observations		3993										
Durbin-Watson Stat		1.99										
R^2		0.30%										

***, **, * indicate significance at 1%, 5% and 10% level respectively, two-tailed test.

Panel B: Raw and abnormal returns around the legislative events leading to SOX

Abnormal returns (AR) are computed as the difference between the raw value-weighted returns and the expected market returns calculated based on model (1) and parameter estimates in Panel A. The t-statistics reported in this panel are based on the standard deviation of raw returns or the prediction errors in the estimation period (*Historical*), the VIX as of day *t-1*(*VIX*), or the standard deviation of raw returns or predication errors in the 30 days prior to day *t* (*Rolling*). CVWRET and CAR reported together with event descriptions are cumulative raw returns or abnormal returns around each event. Statistical tests of cumulative raw or abnormal returns for the whole period are reported at the bottom of the table.

Event Number	Date	Description	Event Window	CVWRET	Historical	VIX	Rolling	CAR	Historical	VIX	Rolling
1	1/17/2002	SEC Chairman proposed an accounting overhaul plan	1/15-1/18	-0.0105	-0.53	-0.44	-0.60	-0.0163	-0.82	-0.68	-0.93
2	2/2/2002	Treasury Secretary called for changes in rules governing corporations	2/1-2/4	-0.0303	-2.15**	-1.63	-2.28**	-0.0309	-2.19**	-1.66*	-2.32**
3	2/13/2002	Oxley introduced an accounting reform bill in the House Financial Services Committee	2/11-2/14	0.0169	0.85	0.75	0.81	0.0144	0.73	0.64	0.70
4	2/28/2002	House Democrats introduced legislation that would impose more restrictions than Oxley's proposal	2/27-3/1	0.0200	1.16	1.07	0.98	0.0178	1.03	0.95	0.87
5	3/7/2002	Bush's first response to accounting scandals unveiled	3/6-3/8	0.0170	0.99	0.95	0.79	0.0151	0.88	0.85	0.70
6	3/26/2002	Greenspan warned against too much regulation	3/25-3/27	-0.0030	-0.18	-0.19	-0.17	-0.0037	-0.21	-0.23	-0.20
7	4/11/2002	House Financial Services Committee scheduled to vote Oxley's bill, but the vote was postponed	4/11-4/12	-0.0131	-0.93	-0.90	-0.95	-0.0137	-0.97	-0.94	-1.00
8	4/16/2002	Oxley's bill passed in the Committee	4/16-4/17	0.0201	1.42	1.44	1.56	0.0188	1.33	1.35	1.47
9	4/24/2002	Oxley's bill passed in the House	4/24-4/26	-0.0213	-1.23	-1.05	-1.37	-0.0226	-1.31	-1.11	-1.46
	4/25/2002	Senate Judiciary Committee approved legislation bolstering corporate fraud laws									
10	5/8/2002	Sarbanes circulated his reform bill in the Senate Banking Committee	5/7-5/9	0.0169	0.98	0.87	0.90	0.0150	0.87	0.77	0.81
11	6/11/2002	Democrats in Senate Banking Committee united behind Sarbanes' bill	6/10-6/13	-0.0198	-0.99	-0.76	-0.78	-0.0220	-1.10	-0.84	-0.87
	6/12/2002	SEC proposed rules to require executives to certify financial reports									

12	6/18/2002	Senate Banking Committee passed Sarbanes' bill	6/18-6/19	-0.0151	-1.07	-0.76	-0.79	-0.0170	-1.21	-0.86	-0.90
13	6/25/2002	WorldCom admitted that they understated expenses by $3.8 billion	6/25-6/27	-0.0025	-0.15	-0.10	-0.13	-0.0050	-0.29	-0.21	-0.26
14	7/8-7/12	Senate debated Sarbanes' bill	7/8-7/12	-0.0639	-2.86***	-1.64	-2.00**	-0.0680	-3.05***	-1.75*	-2.12**
	7/9/2002	Bush delivered a speech on corporate reforms; passage of Sarbanes' bill likely									
	7/10/2002	Senate passed a tough amendment to strengthen criminal penalties 97 to 0									
15	7/15/2002	Senate passed Sarbanes' bill	7/15-7/17	-0.0131	-0.76	-0.40	-0.52	-0.0159	-0.92	-0.49	-0.63
	7/16/2002	House passed bill to strengthen criminal penalties									
16	7/18/2002	House Republican leaders reportedly retreated from efforts to dilute the Senate's tough bill	7/18-7/23	-0.1193	-5.98***	-2.77***	-3.80***	-0.1227	-6.15***	-2.84***	-3.89***
	7/19/2002	Conference committee started negotiations to merge bills and Senate's bill became the framework; negotiation continued over the weekend									
	7/20/2002	Bush pushed to speed up rulemaking in a radio address									
	7/23/2002	Lobbyists reportedly lost their impact									
17	7/24/2002	Senate and House agreed on the final rule	7/24-7/26	0.0611	3.54***	1.91*	1.78*	0.0576	3.34***	1.80*	1.68*
	7/25/2002	Senate and House passed SOX									

Tests of cumulative stock returns around the above events	CVWRET	Historical	VIX	Rolling	CAR	Historical	VIX	Rolling
Cumulated over all the dates listed above	-0.1600	-2.20**	-1.60	-1.81*	-0.1989	-2.74***	-1.99**	-2.25**
Cumulated over events associated with significant returns	-0.1524	-4.08***	-2.14**	-2.68***	-0.1639	-4.40***	-2.31**	-2.88***
Cumulated over July 8 to July 26, 2002	-0.1352	-3.50	-2.54**	-2.21**	-0.1489	-3.86***	-2.80***	-2.43**

***, **, * indicate significance at 1%, 5% and 10% level respectively, two-tailed test.

Table 2: Contemporaneous events between July 8 – July 31, 2002 and intraday returns

This table reports contemporaneous news announcements between July 8 and July 31, 2002. Three categories of news announcements are examined: announcements related to legislative activities, accountings scandals, and economic statistics. Panel A describes the contemporary events in the period. Panel B presents intraday returns around some of the events. Panel C shows the intraday return patterns of the days examined in Panel B.

Panel A: Contemporaneous events in July 2002

Date	Legislative activities	Accounting scandals	Economics news
7/8/2002		House Financial Services Committee held a hearing of WorldCom – 1 p.m.	
7/9/2002	House Appropriations Committee voted to deny future federal contracts to firms seeking foreign tax shelters		
7/10/2002	House panel voted against some of the President's proposals regarding the Homeland Security bill, but the votes could be overridden		
7/11/2002	Rep. Thomas proposed a bill targeting tax shelters, but whether the bill attacks U.S. multinationals is arguable		Retail sales went up; whole sale price increased by 0.1%; labor market stabilized (Gold, 7/12/02, *WSJ*)
	House panel voted against some of the President's proposals regarding the Homeland Security bill, but the votes could be overridden		
7/15/2002	Senate Appropriations Committee Chairman Robert Byrd sought to cut spending of the Homeland Security bill		US dollar fell, but there was no forecast of large fall; US business inventory increases by 0.2% (7/16/02, *WSJ*)
7/16/2002		Duke Energy admitted that they inflated revenue by $126 million, but the accounting problem did not affect earnings	Greenspan issued optimistic forecast of the economy (Ip, 7/17/2002, *WSJ*)
7/17/2002	Two bills were drafted by the Select Committee. The bills were closer to the President's proposals, overriding some of the previous votes of the House Committees		Housing starts fell 3.6% in June. However, building permits, a measure of future construction activity, increased 1.4%. This increase, combined with 30-year fixed-mortgage rates that have stayed below 7% for the past several weeks, suggests that the housing market will remain healthy for the foreseeable future (7/18/02, *WSJ*)

7/18/2002	Bush lobbied the House for the trade bill The provision to deny future federal contracts to firms seeking foreign tax shelters was removed from the appropriations bill		The index of leading economic indicators was unchanged; first-time applications for unemployment benefits declined to a 17-month low in the past week, suggested the labor market is continuing to improve (7/19/02, *WSJ*)
7/19/2002	The Select Committee considered and approved the Homeland Security bill		
7/21/2002		WorldCom CEO said the company would file for Chapter 11	
7/22/2002			Manufacturers benefited from weak dollars; raw-steel production by the nation's mills increased 0.5% in the week ended July 20 (7/21/02, *WSJ*)
7/23/2002	Bush lobbied the House for the Homeland Security bill		The number of entrepreneurs seeking funding for new businesses fell 10% in the second quarter (Whitman, 7/24/02, *WSJ*)
7/24/2002		Adelphia executives were arrested around 6 a.m.	
7/25/2002			Durable-goods orders fell in June by 3.8%; Labor Department reported a surprisingly steep decline in the number of people filing first-time jobless claims. While existing-home sales plummeted in June, the Commerce Department reported that new-home sales rose 0.5% that month (Gavin, 7/26/02, *WSJ*)
7/26/2002	The Homeland Security bill passed in the House		
7/27/2002	The Trade Act of 2002 passed in the House		

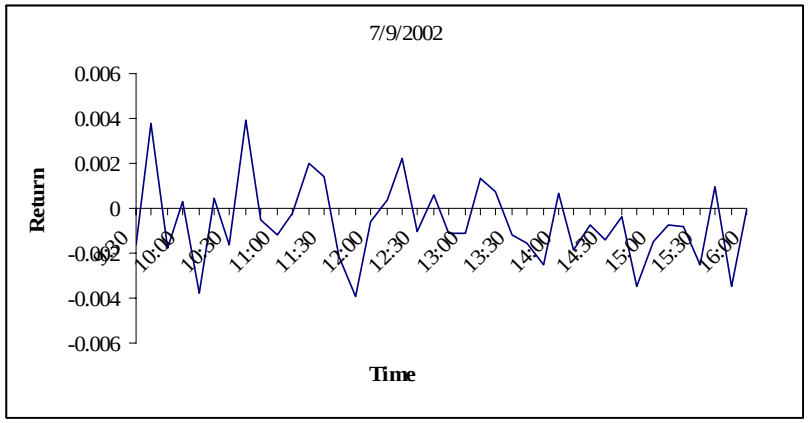
Panel B: Intraday returns

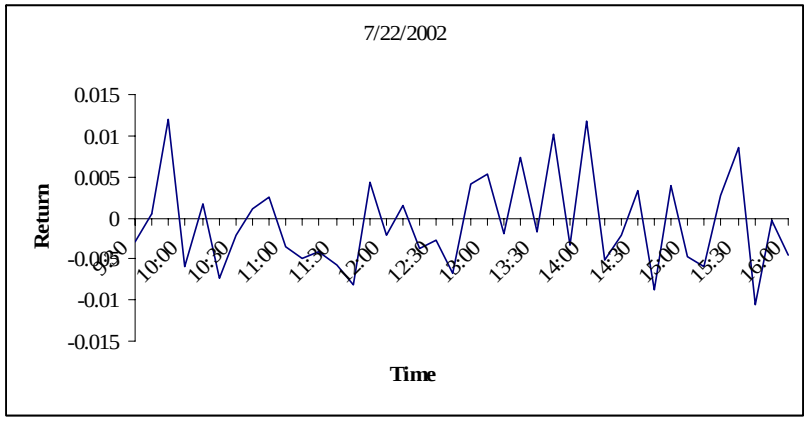
The method to compute and test the intraday returns is discussed in Appendix 3. The last column of the table, Percentage, reports the market return in the interval as a percentage of the pervious-close-to-close return of the day.

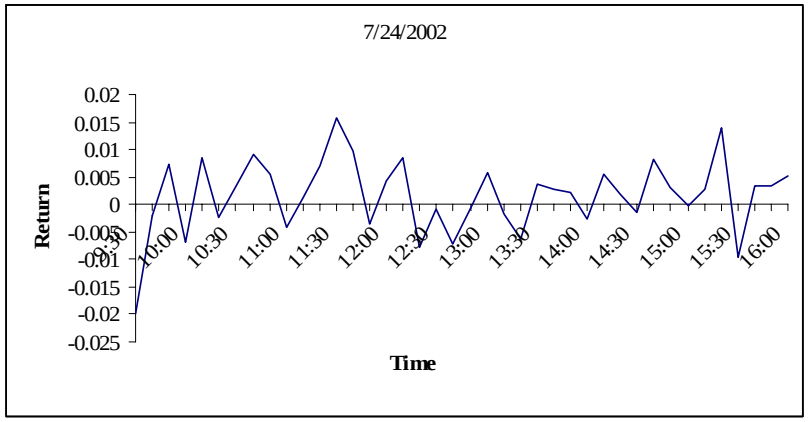
Date	Time of event	Event	Return interval	Return	P-value	Percentage
7/9/2002	11:20 a.m. – 11:47 a.m.	Bush delivered a speech regarding accounting reforms	11:20-11:29	0.0015	0.0970	-7.22%
			11:30-11:39	-0.0020	0.0370	9.81%
			11:40-11:49	-0.0038	0.0140	18.28%
			11:50-11:59	-0.0007	0.2480	3.16%
			Previous close – close	-0.0207		
7/22/2002	July 21	WorldCom announced intention to file for Chapter 11 on July 21	Previous close – open	-0.0032	0.2490	10.53%
			Previous close – 9:39	-0.0027	0.2950	8.88%
			Previous close – close	-0.0304		
7/24/2002	July 24, 6 a.m.	Adelphia executives were arrested around 6 a.m.	Previous close – open	-0.0190	0.0080	-32.82%
			Previous close – 9:39	-0.0268	0.0060	-46.29%
			Previous close – close	0.0579		
7/29/2002	July 26/27	Trade bill passed in the House on July 27	Previous close – open	0.0207	0.0010	39.01%
		The Homeland Security bill passed in the House on July 26	Previous close – 9:39	0.0234	0.0010	44.10%
	11:00 a.m. – 11:31 a.m.	Bush delivered a speech regarding the welfare reform, in which he explicitly indicated that he would sign the accounting reform bill into law	11:00-11:09	-0.0005	0.3580	-1.01%
			11:10-11:19	-0.0009	0.2340	-1.64%
			11:20-11:29	-0.0010	0.1780	-1.91%
			11:30-11:39	0.0026	0.0380	4.94%
			Previous close – close	0.0531		

Panel C: Patterns of intraday returns

Intraday stock returns are plotted for the four days examined in Panel B. Stock returns are calculated for each ten-minute interval as explained in Appendix 3. The horizontal axis represents time and the vertical axis represents the value-weighted market return. The return corresponding to time *t* is the value-weighted market return of the interval [*t-1*, *t*). The return corresponding to 9:30 is the previous-close-to-open return.







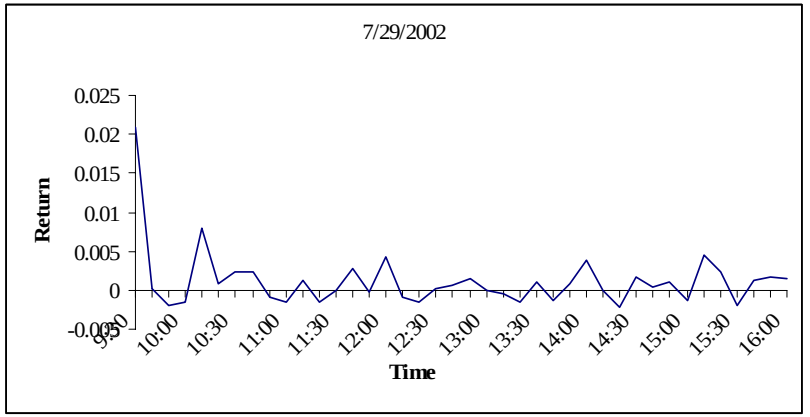


Table 3: Raw and abnormal returns around the legislative events subsequent to SOX

Abnormal returns (AR) are computed as the difference between the raw value-weighted returns and the expected market returns calculated based on model (1) and parameter estimates in Table 1 Panel A. The t-statistics reported in this table are based on the standard deviation of raw returns or the prediction errors in the estimation period (*Historical*), the VIX as of day *t-1*(*VIX*), or the standard deviation of predication errors in the 30 days prior to day *t* (*Rolling*). CVWRET and CAR reported together with event descriptions are cumulative raw returns or abnormal returns around each event. Statistical tests of cumulative raw or abnormal returns for the whole period are reported at the bottom of the table.

Event Number	Date	Description	Event window	CVWRET	Historical	VIX	Rolling	CAR	Historical	VIX	Rolling
Implementation of SOX in 2002											
18	8/14/2002	Deadline for CEOs and CFOs of 947 largest firms to certify their financial reports	8/13-8/15	0.0268	1.55	0.98	0.62	0.0226	1.31	0.82	0.52
19	8/27/2002	SEC adopted rules to require CEOs and CFOs of all public firms to certify their financial reports and to accelerate filings of statements	8/26-8/27	-0.0236	-1.36	-0.80	-0.56	-0.0268	-1.56	-0.91	-0.64
20	10/16/2002	SEC proposed rules concerning sections 404, 406 and 407 of SOX	10/15-10/18	0.0503	2.52**	1.41	1.17	0.0444	2.22**	1.24	1.11
	10/18/2002	SEC budget shortage									
21	10/22/2002	Bush promised to increase the funding of the SEC	10/21-10/23	0.0126	0.73	0.41	0.34	0.0086	0.50	0.28	0.25
22	10/25/2002	Webster named Chairman of the PCAOB	10/24-10/28	-0.0046	-0.26	-0.16	-0.12	-0.0079	-0.46	-0.28	-0.23
23	10/30/2002	SEC proposed new disclosure requirement of off-balance sheet transactions and pro forma information	10/29-10/31	-0.0026	-0.15	-0.10	-0.07	-0.0071	-0.41	-0.26	-0.21
24	11/5/2002	SEC Chairman Pitt resigned	11/4-11/7	0.0029	0.15	0.09	0.07	-0.0025	-0.13	-0.08	-0.06
25	11/12/2002	PCAOB Chairman Webster resigned	11/11-11/13	-0.0124	-0.72	-0.45	-0.37	-0.0161	-0.93	-0.59	-0.51
26	11/19/2002	SEC proposed auditor independence rule	11/18-11/20	0.0049	0.28	0.21	0.16	0.0009	0.05	0.04	0.03
Implementation of SOX in 2003											
27	1/8/2003	SEC proposed listing standards rules	1/7-1/9	-0.0015	-0.09	-0.07	-0.06	-0.0080	-0.46	-0.36	-0.35
28	1/15/2003	SEC adopted rules regarding the pro forma earnings report, trading during blackout periods, and audit committee financial expert requirement	1/14-1/16	-0.0099	-0.57	-0.44	-0.47	-0.0162	-0.94	-0.71	-0.77
29	1/22/2003	SEC adopted rules on auditor independence and disclosure of off-balance-sheet transactions	1/21-1/24	-0.0400	-2.01**	-1.25	-1.61	-0.0484	-2.43**	-1.51	-1.94**

30	5/21/2003	McDonough named Chairman of the PCAOB	5/20-5/22	0.0127	0.73	0.70	0.72	0.0074	0.43	0.41	0.42
31	5/27/2003	SEC adopted rules concerning management's report on internal controls and postponed the compliance date	5/23-5/28	0.0232	1.34	1.27	1.34	0.0180	1.04	0.99	1.03
32	7/28/2003	PCAOB roundtable meeting; works of PCAOB revealed	7/25-7/29	0.0090	0.52	0.53	0.53	0.0068	0.39	0.40	0.40
33	10/7/2003	PCAOB proposed rules related to section 404	10/6-10/8	0.0059	0.34	0.34	0.38	0.0030	0.17	0.17	0.19

Tests of cumulative stock returns around all the legislative events related to SOX in 2002 and 2003

	CVWRET	Historical	VIX	Rolling	CAR	Historical	VIX	Rolling
Cumulated over all the dates listed above	-0.1062	-1.04	-0.74	-0.72	-0.2203	-2.17	-1.54	-1.52
Cumulated over events associated with significant returns	-0.1925	-4.55***	-2.48**	-2.98***	-0.2123	-5.03***	-2.73***	-3.28***

***, **, * indicate significance at 1%, 5% and 10% level respectively, two-tailed test.

Table 4: Descriptive statistics of the sample used in the cross-sectional tests

Panel A: Sample selection procedures

This table summarizes the sample selection procedure for the cross-sectional tests. Firms are required to have daily return data from CRSP, financial data from Compustat, compensation data from Execucomp, governance index from IRRC and nonaudit fee data manually collected from proxy statements.

Sample Selection Procedures	
Number of firms with return data from CRSP in 2002	7033
with financial data from Compustat	6191
with compensation data from Execucomp in 2001	1591
with governance index from IRRC in 2002	1435
with nonaudit fee data for 2001	1417

Panel B: Average raw returns of the sample around the events leading to SOX

This table reports the average raw returns of the sample used in the cross-sectional tests around the 17 events leading to the passage of SOX. CRAW denotes the average cumulative raw returns around each event. The t-statistics are calculated based on the standard deviation of daily average raw returns estimated 180 days prior to December 27, 2001 (*Historical*) or in the 30 days prior to day *t* (*Rolling*). Detailed description of each event is presented in Appendix 1 and Table 1.

Event Number	Date	Event Window	CRAW	Historical	Rolling
1	1/17/2002	1/15 – 1/18/2002	-0.0117	-0.44	-0.56
2	2/2/2002	2/1 – 2/42002	-0.0273	-1.45	-1.92*
3	2/13/2002	2/11 – 2/14/2002	0.0180	0.67	0.81
4	2/28/2002	2/27-3/1/2002	0.0188	0.82	0.91
5	3/7/2002	3/6 – 3/8/2002	0.0289	1.25	1.34
6	3/26/2002	3/25 – 3/27/2002	0.0061	0.27	0.33
7	4/11/2002	4/11 – 4/12/2002	0.0011	0.06	0.08
8	4/16/2002	4/16 – 4/17/2002	0.0189	1.00	1.45
9	4/23/2002	4/22 – 4/26/2002	-0.0187	-1.12	-1.17
10	5/8/2002	5/7-5/9/2002	0.0082	0.35	0.46
11	6/11/2002	6/10 – 6/13/2002	-0.0313	-1.18	-1.20
12	6/18/2002	6/18 – 6/19/2002	-0.0181	-0.96	-0.92
13	6/25/2002	6/25-6/27/2002	-0.0036	-0.15	-0.18
14	7/8 2002	7/8 – 7/12/2002	-0.0641	-2.15**	-1.88*
15	7/15/2002	7/15 – 7/17/2002	-0.0159	-0.69	-0.60
16	7/18/2002	7/18 – 7/23/2002	-0.1175	-4.42***	-3.79***
17	7/24/2002	7/24 – 7/26/2002	0.0488	2.12**	1.52

Tests of cumulative stock returns around the events	CRAW	Historical	Rolling
Cumulated over all the dates listed above	-0.1594	-1.65*	-1.76*
Cumulated over events associated with significant returns	-0.1600	-3.21***	-3.43***

***, **, * indicate significance at 1%, 5% and 10% level respectively, two-tailed test.

Panel C: Descriptive statistics

This table reports the descriptive statistics of explanatory variables in the cross-sectional tests. *Nonaudit* is calculated as nonaudit fees minus fees paid for tax-related services, deflated by the market value of equity of each firm at the end of 2001. *Incentive* equals the ratio of incentive pay to total compensation of the CEO. *Gindex* is the governance index of IRRC as of 2002. *Complexity* equals the number of four-digit SIC industries of each firm. *MTB* denotes the market-to-book ratio, evaluated at the end of 2001. *Size* equals the logarithm of market value of equity at the end of 2001. *ROA* is return on assets of 2001. *Pre_Ret* is market-adjusted returns in 2001. The detailed variable definitions are presented in Appendix 4.

Variable	Number of Observations	Mean	Median	Std	p25	p75
Nonaudit (%)	1417	0.0891	0.0347	0.1684	0.0111	0.0899
Incentive	1417	0.6418	0.7326	0.2828	0.4971	0.8597
Gindex	1417	9.3564	9	2.5802	8	11
Complexity	1417	3.0233	2	1.9071	2	4
MTB	1417	3.0491	2.1634	2.8685	1.4364	3.6299
Size	1417	7.4103	7.2847	1.5945	6.3516	8.4617
ROA (%)	1417	0.9172	2.9293	15.0614	-0.1665	6.9498
Pre_Ret	1417	0.2414	0.1505	0.6549	-0.0616	0.4214

Panel D: Pearson correlation

This table reports the Pearson correlation between variables used in the cross-sectional tests. Correlation coefficients that are significantly different from zero at less than 5% level are presented in bold.

	Nonaudit	Incentive	Gindex	Complexity	MTB	Size	ROA
Nonaudit							
Incentive	**-0.1609**						
Gindex	0.0181	**0.1081**					
Complexity	**0.0592**	0.0143	**0.1632**				
MTB	**-0.2033**	**0.2006**	-0.0413	**-0.0836**			
Size	**-0.3445**	**0.4322**	**0.0799**	**0.2077**	**0.3684**		
ROA	**-0.1962**	**0.0793**	**0.0842**	**0.0792**	**0.1733**	**0.2375**	
Pre_Ret	-0.0471	-0.0307	0.0135	-0.0405	0.0296	**-0.0934**	**0.1931**

Table 5: Univariate analysis of CAR

This table presents the univariate analysis of *CAR_3E* (cumulative abnormal return around events 14, 16, and 17), *CAR_4E* (cumulative abnormal return around events 2, 14, 16, and 17), *CAR_ALL* (cumulative abnormal return around events 1 to 17), and *CAR_JJ* (cumulative abnormal return from June 25 to July 26, 2002). In Panel A, B, C and D, firms are partitioned into two groups by *Nonaudit*, *Incentive*, *Gindex*, and *Complexity* respectively. The mean and median CAR in each group are reported. Bootstrapping is used to test the significance of differences between groups (the method is similar to the one described in footnote 25 on page 29).

Panel A: Nonaudit

	Mean				Median			
	Low	High	Difference		Low	High	Difference	
	(1)	(2)	Prediction	(1)-(2)	(3)	(4)	Prediction	(3)-(4)
			Benefit/cost				Benefit/cost	
CAR_3E	0.0007	-0.0096	-/+	0.0102	-0.0053	-0.0101	-/+	0.0048
CAR_4E	-0.0030	-0.0127	-/+	0.0098	-0.0087	-0.0102	-/+	0.0016
CAR_ALL	0.0241	0.0094	-/+	0.0147*	0.0079	0.0138	-/+	-0.0059
CAR_JJ	0.0089	-0.0178	-/+	0.0266*	-0.0100	-0.0216	-/+	0.0115*

Panel B: Incentive

	Mean				Median			
	Low	High	Difference		Low	High	Difference	
	(1)	(2)	Prediction	(1)-(2)	(3)	(4)	Prediction	(3)-(4)
			Benefit/cost				Benefit/cost	
CAR_3E	-0.0111	0.0022	-/+	-0.0133	-0.0107	-0.0026	-/+	-0.0081
CAR_4E	-0.0137	-0.0020	-/+	-0.0117	-0.0124	-0.0052	-/+	-0.0071
CAR_ALL	-0.0020	0.0356	-/+	-0.0376*	-0.0021	0.0216	-/+	-0.0237
CAR_JJ	-0.0209	0.0120	-/+	-0.0329	-0.0204	-0.0105	-/+	-0.0099

Panel C: Gindex

	Mean				Median			
	Low	High	Difference		Low	High	Difference	
	(1)	(2)	Prediction	(1)-(2)	(3)	(4)	Prediction	(3)-(4)
			Benefit/cost				Benefit/cost	
CAR_3E	0.0094	-0.0198	-/+	0.0292**	0.0001	-0.0159	-/+	0.0159*
CAR_4E	0.0057	-0.0228	-/+	0.0285**	0.0006	-0.0151	-/+	0.0157*
CAR_ALL	0.0377	-0.0063	-/+	0.0441**	0.0264	0.0009	-/+	0.0255*
CAR_JJ	0.0199	-0.0314	-/+	0.0513**	0.0008	-0.0312	-/+	0.0319**

Panel D: Complexity

	Mean				Median			
	Low	High	Difference		Low	High	Difference	
	(1)	(2)	Prediction	(1)-(2)	(3)	(4)	Prediction	(3)-(4)
			Benefit/cost				Benefit/cost	
CAR_3E	0.0143	-0.0262	-/+	0.0405*	0.0044	-0.0249	-/+	0.0293*
CAR_4E	0.0105	-0.0292	-/+	0.0397*	0.0039	-0.0261	-/+	0.0300
CAR_ALL	0.0391	-0.0092	-/+	0.0483*	0.0258	-0.0045	-/+	0.0303
CAR_JJ	0.0220	-0.0353	-/+	0.0573***	0.0049	-0.0372	-/+	0.0422**

***, **, * indicate significance at 1%, 5% and 10% level respectively, one-tailed test.

Table 6: Cross-sectional test of the market reaction to SOX

This table presents the estimation results of regression (2) to examine the cross-sectional variation in market reaction to the events leading to SOX.

$$CAR_i = \sum_j a_{0j} Ind_{ij} + a_1 Nonaudit_i + a_2 Incentive_i + a_3 Gindex_i + a_4 Complexity_i + a_5 Size_i + a_6 MTB_i + a_7 ROA_i + a_8 Pre\_Ret_i + e_i \quad (2)$$

Variables are defined as in Appendix 4.

Panel A: Cross-sectional test of the market reaction to SOX – cumulative returns

Regression (2) is estimated with *CAR_3E* (cumulative abnormal return around events 14, 16, and 17), *CAR_4E* (cumulative abnormal return around events 2, 14, 16, and 17), *CAR_ALL* (cumulative abnormal return around events 1 to 17), and *CAR_JJ* (cumulative abnormal return from June 25 to July 26, 2002) as the dependent variable respectively. The coefficients on industry dummies (Ind_j) are not presented. For each model the asymptotic two-tailed OLS p-values and bootstrapped one-tailed p-values are reported. The detailed description of the bootstrapping method can be found in footnote 25 on page 29.

			Dependent Variable											
			CAR_3E			*CAR_4E*			*CAR_ALL*			*CAR_JJ*		
	Prediction		Estimate	P-value		Estimate	P-value		Estimate	P-value		Estimate	P-value	
	Benefit	Cost		OLS	Bootstrap		OLS	Bootstrap		OLS	Bootstrap		OLS	Bootstrap
Nonaudit	+	-	-0.0889	<.0001	0.0330	-0.0837	0.0002	0.0360	-0.0867	0.0153	0.0370	-0.1326	<.0001	0.0100
Incentive	+	-	0.0002	0.9895	0.4490	-0.0002	0.9869	0.5190	0.0219	0.3215	0.1830	0.0027	0.8847	0.3610
Gindex	+	-	-0.0026	0.0525	0.0710	-0.0026	0.0703	0.0820	-0.0054	0.0149	0.0270	-0.0037	0.0482	0.0500
Complexity		-	-0.0037	0.0599	0.0550	-0.0031	0.1311	0.0730	-0.0079	0.0153	0.0100	-0.0054	0.0493	0.0000
MTB		-	0.0033	0.0147	0.1020	0.0035	0.0139	0.1090	0.0000	0.9852	0.4440	0.0044	0.0194	0.0630
Size			-0.0027	0.3316	0.3080	-0.0041	0.1623	0.2340	0.0033	0.4761	0.4330	0.0030	0.4524	0.3160
ROA			-0.0014	<.0001	0.0110	-0.0014	<.0001	0.0210	-0.0009	0.0283	0.1710	-0.0026	<.0001	0.0000
Pre_Ret			-0.0255	<.0001	0.4050	-0.0276	<.0001	0.5340	-0.1175	<.0001	0.2200	-0.0653	<.0001	0.0000
Adj. R^2	With industry dummies			15.94%			15.16%			18.96%			25.07%	
	Without industry dummies			8.97%			8.37%			14.08%			17.04%	

Panel B: Cross-sectional test of the market reaction to SOX – individual events

This table presents the estimation results of regression (2) with *CAR*S* as the dependent variable, where *CAR* denotes abnormal returns around the individual events that are associated with revisions in expectations (events 2, 14, 16, and 17), and *S* is an indicator variable which equals one for events 2, 14, and 16, and minus one for event 17. The coefficients on industry dummies (Ind_j) are not reported. For each regression, both the asymptotic two-tailed OLS p-values and the bootstrapped one-tailed p-values are reported.

	Prediction		Event 2			Event 14			Event 16			Event 17		
			Estimate	P-value		Estimate	P-value		Estimate	P-value		Estimate	P-value	
	Benefit	Cost		OLS	Bootstrap		OLS	Bootstrap		OLS	Bootstrap		OLS	Bootstrap
Nonaudit	+	-	0.0052	0.3499	0.4260	0.0005	0.9672	0.5140	-0.0585	<.0001	0.0130	0.0309	0.0189	0.0130
Incentive	+	-	-0.0004	0.9062	0.4520	0.0078	0.2602	0.1150	0.0146	0.1053	0.0520	0.0222	0.0062	0.0010
Gindex	+	-	0.0001	0.8696	0.3950	-0.0020	0.0048	0.0260	-0.0035	0.0001	0.0000	-0.0029	0.0005	0.0000
Complexity		-	0.0006	0.2439	0.2360	-0.0033	0.0010	0.0040	-0.0021	0.1060	0.0140	-0.0018	0.1323	0.0270
MTB		-	0.0002	0.5945	0.4000	0.0004	0.5588	0.2580	0.0017	0.0635	0.0260	-0.0012	0.1436	0.1200
Size			-0.0014	0.0551	0.2270	0.0010	0.4743	0.3510	-0.0036	0.0565	0.0690	0.0001	0.9307	0.4540
ROA			0.0000	0.6743	0.3940	-0.0013	<.0001	0.0000	-0.0010	<.0001	0.0000	-0.0008	<.0001	0.0010
Pre_Ret			-0.0021	0.1311	0.8790	-0.0125	<.0001	0.2240	-0.0189	<.0001	0.0000	-0.0058	0.0729	0.0020
Adj. R^2	With industry dummies			1.76%			23.99%			30.24%			23.63%	
	Without industry dummies			0.33%			16.77%			13.44%			11.21%	

Table 7: Market reactions to the announcement of postponing compliance with Section 404

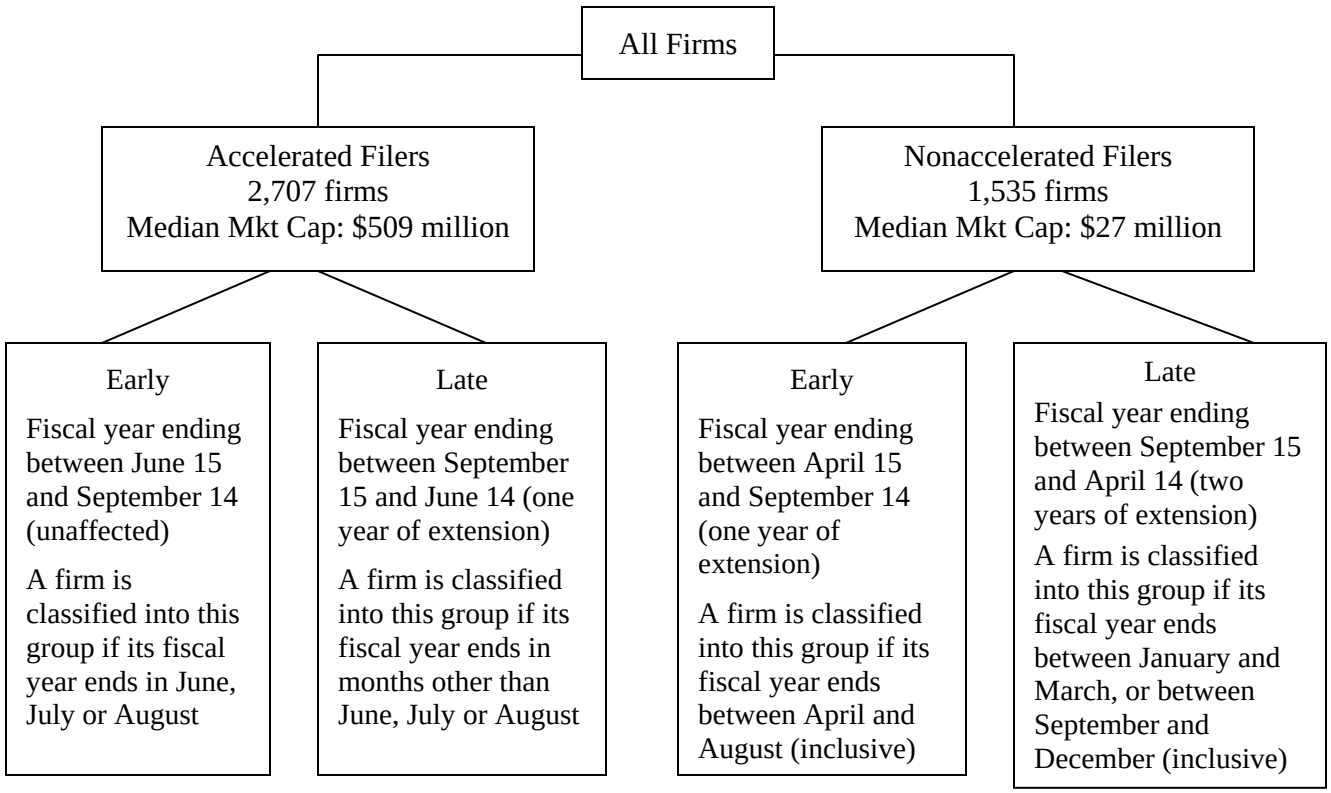
This table reports the test of market reactions to the announcement of postponing the compliance dates of Section 404. Panel A summarizes the predictions of H6a and H6b. Panel B presents the test results.

Panel A: Summary of predictions

This panel summarizes the predictions of H6a, which hypothesizes that the postponement is costly as it is necessary for firms to tighten their internal controls immediately, and of H6b, which hypothesizes that the postponement is beneficial as it reduces the compliance costs, especially for firms that obtained a longer extension period.

Proposed compliance date: fiscal year ending on or after September 15, 2003
Final compliance dates: Accelerated filers: fiscal year ending on or after June 15, 2004
Nonaccelerated filers: fiscal year ending on or after April 15, 2005

In the empirical tests, firms with a market capitalization lower than $75 million by the end of 2002 are classified as nonaccelerated filers (see footnote 5 on page 6 for the definition of an accelerated filer). Foreign firms and banks are excluded.



Predictions:

H6a: Early > Late	**H6a: Early > Late**
H6b: Early < Late	**H6b: Early < Late**

Panel B: Regression results

This panel reports the estimation results of the regression that examines the cross-sectional variation in market reactions to the announcement of postponing compliance with Section 404. Foreign firms and banks are excluded. The method used to obtain the bootstrapped p-values is similar to the one described in footnote 25 on page 29. Variable definitions can be found in Appendix 4.

$$CAR_i = a_0 + a_1\, Non\_Acc_i + a_2\, Late\_Non_i + a_3\, Late\_Acc_i + a_4\, MTB_i + a_5\, Size_i + e_i \quad (3)$$

	Prediction	CAR (-1, 1)			CAR (-3, 1)			CAR (-5, 1)		
		Estimate	P-value		Estimate	P-value		Estimate	P-value	
			OLS	Bootstrap		OLS	Bootstrap		OLS	Bootstrap
Intercept		-0.0002	0.9647	0.4950	-0.0092	0.0505	0.3080	-0.0156	0.0059	0.1180
Non_Acc	?	-0.0065	0.0844	0.2160	-0.0069	0.1853	0.2320	-0.0105	0.0924	0.1690
Late_Non	-/+	0.0036	0.2774	0.2160	0.0100	0.0257	0.0620	0.0142	0.0088	0.0370
Late_Acc	-/+	-0.0020	0.5705	0.2240	0.0059	0.2238	0.1950	0.0039	0.5119	0.3760
Size	?	-0.0009	0.1377	0.3510	0.0005	0.5430	0.4170	0.0012	0.2534	0.2630
MTB	?	0.0003	0.2623	0.1270	0.0004	0.3386	0.0250	-0.0001	0.8532	0.6830

Table 8: Additional test to control for litigation risks

This table presents the results of the cross-sectional regression (2) after controlling for litigation risks. The following regression is estimated,

$$CAR_i = \sum_j a_{0j} Ind_{ij} + b_k Litigation\_Proxies + a_1 Nonaudit_i + a_2 Incentive_i + a_3 Gindex_i + a_4 Complexity_i + a_5 Size_i + a_6 MTB_i + a_7 ROA_i + a_8 Pre\_Ret_i + e_i$$

Variables are defined in Appendix 4. Descriptive statistics of the litigation variables are reported in Panel A. The regression results are reported in Panel B. The coefficients on industry dummies (Ind_j) are not reported. For each model the asymptotic two-tailed OLS p-values are reported.

Panel A: Descriptive statistics of litigation variables

Variable	# of Observations	Mean	Median	Std
Bankrupt	1239	0.0301	0.0057	0.1287
Acquisition	1417	0.0233	0.0000	0.1509
Accrual	1340	-0.0939	-0.0674	0.1343

Panel B: Regression results

			Dependent Variable							
	Prediction		*CAR_3E*		*CAR_4E*		*CAR_ALL*		*CAR_JJ*	
	Benefit	Cost	Estimate	P-value	Estimate	P-value	Estimate	P-value	Estimate	P-value
Nonaudit	+	-	-0.0923	<.0001	-0.0870	0.0003	-0.0851	0.0248	-0.1318	<.0001
Incentive	+	-	-0.0028	0.8490	-0.0028	0.8573	0.0212	0.3811	0.0033	0.8726
Gindex	+	-	-0.0033	0.0328	-0.0034	0.0385	-0.0065	0.0104	-0.0047	0.0306
Complexity		-	-0.0040	0.0866	-0.0036	0.1470	-0.0074	0.0538	-0.0055	0.0974
Bankrupt		-	-0.0069	0.8848	-0.0363	0.4670	-0.0391	0.6167	-0.0644	0.3344
Acquisition		-	0.0286	0.2590	0.0450	0.0885	0.0591	0.1533	0.0285	0.4195
Accrual		-	-0.1337	0.0044	-0.1665	0.0007	-0.1742	0.0232	-0.1872	0.0043
MTB		-	0.0024	0.1146	0.0023	0.1436	-0.0022	0.3767	0.0030	0.1601
Size			-0.0028	0.3738	-0.0034	0.3143	0.0048	0.3541	0.0033	0.4628
ROA			-0.0005	0.3076	-0.0005	0.3636	0.0000	0.9826	-0.0017	0.0117
Pre_Ret			-0.0271	<.0001	-0.0292	<.0001	-0.1173	<.0001	-0.0682	<.0001
Adj. R^2	With industry dummies			17.19%		16.96%		20.20%		26.47%
	Without industry dummies			10.29%		10.24%		15.04%		18.49%