Market Reaction to Events Surrounding the Sarbanes-Oxley Act of 2002[*]

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ABSTRACT

The Sarbanes-Oxley Act seeks to improve the accuracy and reliability of financial reports. However, questions have been raised as to the extent of substantive reform in the Act. We investigate the extent of substantive reform by conducting an event study of the Act to infer its expected impact. In univariate analysis, we find significantly positive stock returns associated with events that resolved uncertainty about the Act's final provisions or were informative about its enforcement. Results from cross-sectional analysis suggest a positive relation between stock returns and the extent of earnings management and a negative relation between stock returns and the proportion of non-independent audit committee members and the extent of non-audit services performed by external auditors. Overall, the results are consistent with investors expecting the Act to have a net beneficial effect of improving the accuracy and reliability of financial reports by constraining earnings management and enhancing corporate governance.

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I. INTRODUCTION

Declaring that "The era of low standards and false profits is over,"[1] President Bush

signed the Sarbanes-Oxley Act into law July 30, 2002, describing it as incorporating the "most

far-reaching reforms of American business practices" since the Great Depression.[2] Congress

passed the Act with unexpected swiftness, spurred by the public's seeming outrage over the ever-

growing list of corporate and accounting scandals, including Enron, Adelphia, Tyco, WorldCom,

and Arthur Andersen.[3] The preamble of the Act states its purpose: "To protect investors by

improving the accuracy and reliability of corporate disclosures made pursuant to the securities

laws, and for other purposes."[4]

Major accounting, auditing, and corporate governance provisions in the Act require

members of boards of directors serving on audit committees to be independent of management,

mandate CEO and CFO certification of financial statements, impose criminal penalties for

knowingly certifying financial reports that fail to comport with the requirements of the Act, and

prohibit accounting firms from performing certain non-audit services for an audit client. The Act

also establishes the Public Company Accounting Oversight Board, requires rotation of audit

partners on a client every five years, and orders Securities and Exchange Commission (S.E.C.)

reviews of a registrant's financial statement filings at least once every three years.

In this paper we estimate changes in shareholder wealth associated with the Sarbanes-

Oxley Act of 2002 (commonly referred to as "SOX") to infer the capital market's assessment of

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[1] E. Bumiller, Corporate Conduct: The President; Bush Signs Bill Aimed at Fraud in Corporations, N. York Times, July 31, 2002.

[2] G. Hitt, Bush Signs Sweeping Legislation Aimed at Curbing Corporate Fraud, Wall St. J., July 31, 2002.

[3] "The stock market awakened in 2002 to discover that it no longer had numbers it could trust." (W. Bratton, Enron, Sarbanes-Oxley, and Accounting: Rules versus Standards versus Rents, 48 Vill. L. Rev. 1 (2003)).

[4] J. Hamilton and T. Trautmann, Sarbanes-Oxley Act of 2002: Law and Explanation 87 (2002).

the Act's expected costs and benefits.[5] We examine stock price reactions to events surrounding

SOX and investigate whether market reactions associated with the Act are related to the extent of

(1) non-audit services provided by a firm's auditor, (2) audit committee member independence,

and (3) earnings management. We focus on these factors because SOX seeks to enhance the

independence of external auditors, strengthen the role of audit committees, and reduce earnings

management. SOX is the most important legislation dealing with financial reporting practices in

the United States since the passage of the S.E.C. Acts in the 1930s, and our research should be

useful to legislators, regulators, and researchers in assessing its expected impact.[6]

A number of legal commentaries have analyzed the main provisions of SOX and argue

the new criminal liability provisions criminalize very little conduct that was not already criminal

under existing statutes.[7] Perino asserts that "as the political firestorm increased and the Dow

Jones Average plunged, there was clearly a sense in Washington that Congress had to do

something (anything) and do it fast," and that the legislation contains more rhetoric than

corporate reform.[8] These legal analyses suggest that SOX may simply be a political response to

the high profile cases of fraudulent financial reporting with no significant impact on publicly

traded companies in general.

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[5] Bhagat and Romano review the application of event studies to corporate law and governance issues (S. Bhagat and R. Romano, Event Studies and the Law: Part II: Empirical Studies of Corporate Law, 4 Am. Law and Econ. Rev. (2002)).

[6] We note that our tests assume semi-strong capital market efficiency. Recent capital markets research raises questions about market efficiency and the ability of the market to fully appreciate the implications of publicly available accounting information. To minimize the possibility that our sample reflects less efficient sectors of the market, we restrict our analysis to firms in the S&P 1500 so that our sample includes more widely followed and traded public companies.

[7] L. Cunningham, The Sarbanes-Oxley Yawn: Heavy Rhetoric, Light Reform (and it Might Just Work), 36 U. Conn. L. Rev. (2003); M. Perino, Enron's Legislative Aftermath: Some Reflections on the Deterrence Aspects of the Sarbanes-Oxley Act of 2002, (Working paper, Columbia U. L. Sch., 2002); L. Ribstein, Market vs. Regulatory Responses to Corporate Fraud: A Critique of the Sarbanes-Oxley Act of 2002, 28 J. Corp. Law (2002).

[8] See note 7 *supra*. Also see S. Bainbridge and C. Johnson, Managerialism, Legal Ethics, and Sarbanes-Oxley, (Working paper, UCLA Sch. Of L., 2003) and J. Gordon, Governance Failures of the Enron Board and the New Information Order of Sarbanes-Oxley, (Working paper, Columbia U. L. Sch., 2003).

In contrast, Brickey argues that SOX expands statutory prohibitions against fraud and obstruction of justice, increases criminal penalties, and strengthens sentencing guidelines.[9] In addition, news reports indicate there was considerable opposition to the Act's reforms by the American Institute of Certified Public Accountants (AICPA) and four of the Big 5 public accounting firms.[10] Since lobbying is costly, we assume that affected parties will lobby only when they perceive the expected benefits of altering proposed legislation exceed the expected costs. The lobbying efforts of the largest public accounting firms suggest they anticipated the Act would significantly affect their own practices, although it is an open question whether such lobbying also suggests an expectation of a significant impact on their publicly traded clients.

If SOX contains substantive accounting, auditing, or corporate governance reforms that improve the accuracy and reliability of financial reporting, then we would expect the Act to have a significant impact on shareholder value. In particular, it should impact the shareholder value of firms that (1) extensively manage earnings, and (2) were otherwise less compliant with SOX before its enactment (i.e., had dependent audit committee members or acquired substantial non-audit services from their external auditors) differently than the shareholder value of other firms.

On one hand, if SOX contains substantive reforms, then we would expect the financial reports of firms that extensively managed earnings or were less compliant with SOX before its enactment to show a greater improvement in accuracy and reliability vis-à-vis the financial reports of other firms.[11] This greater improvement in accuracy and reliability should lead to a greater reduction of information uncertainty and thus greater positive stock price effects for these

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[9] K. Brickey, From Enron to WorldCom and Beyond: Life and Crime After Sarbanes-Oxley, Washington U. Law Quarterly 81 (2003).

[10] Review and Outlook, Volcker's Andersen Triumph, Wall St. J., April 23, 2002.

[11] SOX seeks to improve the accuracy and reliability of financial reporting by enhancing the independence of audit committees and external auditors, which should restrict the extent of earnings management.

firms. To be precise, we assume investors set share prices to reflect estimates of unmanaged earnings and discount prices to reflect the greater uncertainty associated with valuing firms that likely have managed their earnings.[12] This discount reflects information uncertainty, a risk factor that can be removed if private information, in this case unmanaged earnings, is publicly reported.[13] Hence, if investors expect SOX to reduce information uncertainty by improving the accuracy and reliability of financial reporting, then we would expect greater *positive* share price reactions to legislative events surrounding the Act, the more firms managed earnings or were not in compliance with SOX prior to its enactment.[14]

On the other hand, SOX was expected to impose costs on firms; for example, Section 404 of the Act mandates that firms annually obtain external certification of their internal controls.[15] Moreover, firms that extensively managed earnings and firms that were less compliant with SOX before its enactment would likely bear greater costs of implementing the reforms. That is, firms with dependent audit committees would have to incur costs to appoint independent members. Earnings managers would have to change their accounting and reporting strategies; they would incur out-of-pocket costs to do so, as well as opportunity costs from changing their operating, investing, or financing decisions from what they would have been under their former reporting policies. Such changed decisions could have contracting or political cost implications. For example, given agency problems between managers and shareholders, constraining managers' abilities to manage earnings could affect existing compensation contracts (namely, managers'

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[12] There is a large literature on detecting earnings management; for examples see Patricia Dechow & Catherine Schrand, Earnings Quality, ch.5 (2004).

[13] D. Easley and M. O'Hara, Is Information Risk a Determinant of Asset Returns? 5 J. Finance (2002); Francis et al., The Market Pricing of Accruals Quality, forthcoming J. Acct. & Econ. (2005).

[14] In addition, if it is relatively costly for individual investors to demand less earnings management to reduce information uncertainty, then it can be the case that collective action, e.g., a new law, can make everyone better off.

[15] D. Henry and A. Borrus, Honesty is a Pricey Policy, Bus. Week Online, October 22 for October 27, 2002, http://www.businessweek.com.

abilities to increase their compensation). Further, managers acting in shareholders' best interests would be constrained in their ability to manage earnings to increase slack in debt covenant provisions or to lower income to avoid income tax costs. In addition, reporting constraints imposed by the Act could restrict managers' ability to communicate private information to investors through earnings. If the total of all such costs is greater for firms that extensively managed earnings or were less compliant with SOX vis-à-vis other firms, then we would expect these firms to experience more *negative* stock returns as a result of SOX.

To the extent the reforms in SOX result in meaningful differences in expected net benefits or costs, such disparities should be reflected in differing share price reactions to critical events surrounding the Act. While we expect the shareholder wealth effects to differ for more extensive earnings managers compared to other firms, and similarly for firms with less independent audit committees relative to firms with more independent audit committees, and for firms acquiring relatively more non-audit services from their external auditors vis-à-vis other firms, it is nonetheless difficult to know a priori the relative magnitude of the benefits and costs of SOX, and thus what the net shareholder wealth effects will be.[16] Furthermore, it is unclear a priori whether the disparities in net costs and benefits are of a sufficient magnitude to allow us to detect cross-sectional differences in stock returns.

Results from our univariate analysis of stock prices indicate positive and significant stock returns associated with events that resolved uncertainty about specific provisions included in the Act or were informative about its enforcement, consistent with investors expecting the provisions and enforcement of SOX to have a net beneficial effect. The results of our cross-sectional

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[16] An additional factor complicating any prediction of the net effects is that legislative outcomes are endogenous. As previously noted, parties facing expected costs (or benefits) from the passage of pending legislation or regulations have incentives to lobby to affect the legislative or regulatory outcomes (Raymond Ball, Changes in Accounting Techniques and Stock Prices, 10 J. Acct. Res. (1972); Raymond Ball, Discussion of Accounting for Research and Development Costs: The Impact on Research and Development Expenditures, 18 J. Acct. Res. (1980)).

analysis suggest that the expected benefits were greater for shareholders of firms that had more extensively managed earnings in prior years, consistent with the market anticipating SOX to constrain earnings management and induce more transparent financial reporting. In addition, we find evidence consistent with investors expecting the Act to impose greater costs on firms with less independent audit committee members and on firms with relatively high levels of non-audit services acquired from their external auditors.[17]

We organize the remainder of the paper as follows. In the next section we develop an event history of SOX. Section III describes our empirical methods, Section IV presents the results, and we conclude in Section V.

II. EVENT HISTORY OF THE SARBANES-OXLEY ACT OF 2002

In this section we identify the events surrounding the Sarbanes-Oxley Act of 2002, which we summarize in Table 1. These events potentially affected the probability that SOX would become law and/or the extent of reform in the legislation were it to become law.[18] We develop the event history based on a legislative history of SOX,[19] the Library of Congress's *Bill Summary & Status for the 107th Congress*,[20] and an extensive search and review of articles in *The Wall*

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[17] After completing the previous draft of this paper, we became aware of a working paper by Rezaee and Jain (Z. Rezaee and P. Jain, The Sarbanes-Oxley Act of 2002 and Security Market Behavior: Early Evidence, (Working paper, U. Memphis, 2003)) that addresses the same research question. Our paper differs from Rezaee and Jain in several dimensions: we allow for the possibility that the Act may induce net costs, we have a more precise dating of events, we examine several events regarding the enforcement of the Act's provisions, and we control for event- and calendar-time clustering in our empirical analyses. There is another working paper (Ellen Engle, Rachel Hayes, and Xue Wong, The Sarbanes-Oxley Act and Firms' Going Private Decisions, (Working paper, U. Chic., 2004)) that considers market reactions to SOX events, but their sample only includes firms that opted to go private.

[18] Assume a prior probability (*pr*) that legislation reforming financial reporting will become law, and a prior assessment of the expected impact (i.e., the magnitude effect, *M*) of the legislation should it become law. Market reaction to a SOX event will equal the sum of the following three components: (1) the change in the prior probability reform legislation will become law (Δpr) times the prior assessment of the magnitude effect of the law; (2) the change in the prior assessment of the magnitude effect of the law (ΔM) times the prior probability the legislation will become law; and (3) the change in the prior probability the legislation will become law times the change in the prior assessment of the magnitude effect of the law; i.e., $(\Delta pr)M + pr(\Delta M) + (\Delta pr)(\Delta M)$.

[19] See note 4 *supra*.

[20] Library of Congress, Bill Summary & Status for the 107th Congress (2002).

Street Journal, *The New York Times*, and various other sources (using the *Factiva* and *Lexis-Nexis* databases). We classify the events into three groups: early events that resolved little uncertainty about SOX; events that resolved virtually all uncertainty that reform legislation would be enacted but did not resolve uncertainty about the final provisions of the Act; and events that resolved uncertainty about the Act's provisions or were informative about its enforcement.[21]

PLACE TABLE 1 HERE

A. Event D_1: Early Period

Following the Enron debacle, several things occurred in the early months of 2002 that set the stage for the subsequent SOX legislative process, but which resolved little if any uncertainty about whether reform legislation would be enacted or what provisions such legislation might include. First, S.E.C. Chairman Harvey Pitt called for the creation of a public accounting regulatory body that would not be dominated by the accounting industry.[22] A few weeks later Rep. Michael Oxley, chair of the House Financial Services Committee, introduced House of Representatives bill H.R. 3763, the "Corporate and Auditing Accountability, Responsibility, and Transparency Act of 2002." H.R. 3673 was seen as strengthening auditor independence and included a call for a public accounting regulatory board.[23] In March, President Bush unveiled a plan to improve corporate disclosure and CEO and auditor responsibility for financial reporting[24], and Sen. Christopher Dodd introduced Senate bill S. 2004,[25] which sought to

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[21] Our classification of events is similar to Pownall (Grace Pownall, An Empirical Investigation of the Regulation of the Defense Contracting Industry: The Cost Accounting Standards Board, 24 J. Acct. Res. (1986)).

[22] Harvey Pitt, Regulation of the Accounting Profession, (Public statement by S.E.C. chairman, January 17, 2002).

[23] M. Schroeder, Lawmakers Plan More Financial Oversight – Accounting Industry Faces Stepped-up Regulation and Limits on Services, Wall St. J., February 12, 2002; R. Oppel Jr., Enron's Many Strands: The Overview, N. York Times, February 12, 2002; M. Schroeder, Deals & Deal Makers: Everyone Wants Accounting Fix; But How?, Wall St. J, February 14, 2002.

[24] Business and Finance, Bush Will Unveil a Plan Aimed at Improving Corporate Disclosure, Wall St. J., March 7, 2002.

[25] See note 20 *supra*.

improve financial reporting by having an independent oversight board for auditors and an enhanced accounting standard setting process, and by providing more resources for the S.E.C.[26]

The Financial Services Committee report on H.R. 3763 suggested it would improve the accuracy and reliability of financial disclosures made pursuant to the securities laws,[27] and the House passed the bill April 24th on a 334 to 90 vote. *The Wall Street Journal* described the bill as a "moderate" overhaul of accounting oversight and corporate financial reporting,[28] while *The New York Times* quoted Democratic leaders who attacked the bill as "toothless".[29] At about the same time, the Senate Judiciary Committee approved proposed legislation creating felony charges for securities fraud and for shredding or mishandling documents.[30] The Senate took no action on reform proposals that had been introduced, or on the bill the House had passed.[31]

B. Event D₂: Resolving Uncertainty about Passage of Accounting Reform Legislation

In mid-June 2002, *The Wall Street Journal* reported that Sen. Paul Sarbanes, chair of the Senate Banking Committee, said progress was being made toward developing a consensus

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[26] In the wake of the Enron collapse, a number of bills had been proposed in the Senate, mostly by Democrats, that reflected a backing away from deregulation of financial services (M. Schroeder and C. Bryan-Low, Enron Collapse Has Congress Backing Off Deregulation – Better Financial Reporting, Tighter Accounting Rules Top Bipartisan Call for Changes, Wall St. J., January 29, 2002). Our review indicates Sen. Dodd's bill was the first Senate bill that reflected potentially significant changes in financial reporting (see note 20 *supra*).

[27] See note 4 *supra*, and Business and Finance, Congress is Moving to Impose Tough Penalties on Securities and Accounting-law Violations, Wall St. J., April 23, 2002.

[28] M. Schroeder, The Economy: House, in Bipartisan Vote, Backs Moderate Accounting Overhaul, Wall St. J., April 25, 2002.

[29] R. Oppel Jr., GOP Bill on Auditing Clears House, N. York Times, April 25, 2002.

[30] M.H. Anderson, Senate Panel Votes to Bolster Fraud, Record-Keeping Laws, Wall St. J., April 26, 2002.

[31] The Wall Street Journal (Business and Finance, Paul A. Volcker is Likely to Abandon His Efforts to Help Rescue Arthur Andersen, Wall St. J., April 22, 2002) reported that former Federal Reserve Chairman Paul Volcker, who headed an oversight board at Arthur Andersen with authority to mandate changes in its business practices, was abandoning efforts to institute significant reforms at Andersen, which included turning Andersen into a strictly auditing firm. These reforms were opposed by the other Big 5 accounting firms and the AICPA (Review and Outlook, Volcker's Andersen Triumph, Wall St. J., April 23, 2002). Dropping the proposed changes deepened the crisis at Andersen and perhaps signaled a loss of whatever momentum had existed for substantive change within the profession, and possibly for reform legislation as well.

proposal for major overhaul of accounting practices,[32] and a Banking Committee press release June 12, 2002 announced the Committee would meet June 18th to mark-up the "Public Company Accounting Reform and Investor Protection Act of 2002" (S. 2673).[33]

On June 15th, a jury convicted Arthur Andersen of obstructing the S.E.C.'s Enron investigation.[34] The Senate Banking Committee met June 18th, and in what was described as "a bipartisan rebuke to the scandal-plagued accounting industry," the Committee voted 17 to 4 to approve legislation creating an accounting oversight board, mandating audit committee members independent of management, limiting audit firms' consulting work, and disciplining wayward auditors.[35] The news report stated the Committee's action on the so-called Sarbanes bill made "it virtually certain" public accounting would face new regulatory scrutiny by year-end.

Sen. Sarbanes introduced S. 2673 in the Senate June 25th. The next day revelations of massive fraud at WorldCom were disclosed;[36] expenses totaling $3.8 billion allegedly had been accounted for as capital expenditures (that is, as assets). President Bush called the disclosures

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[32] G. Hitt, Democrats in Senate Unite on Accounting –Overhaul Bill, Wall St. J., June 11, 2002.

[33] U.S. Senate Committee on Banking, Housing, and Urban Affairs, Sarbanes Announces Mark-Up of Accounting Reform and Investor Protection Legislation, June 12, 2002, http://banking.senate.gov/pre102/0612mark.htm.

[34] J. Weil, A. Barrionuevo, and C. Bryan-Low, Auditor's Ruling: Andersen Win Lifts U.S. Enron Case – Shredding Wasn't Factor in Verdict, Jurors Say; A Single E-Mail Was – Prelude to the Main Event, Wall St. J., June 17, 2002.

[35] M. Schroeder & T. Hamburger, Accounting Reform Gets Big Lift as Senate Panel Backs New Board, Wall St. J., June 19, 2002.

[36] R. Oppel Jr. and S. Labaton, Turmoil at WorldCom: Legislation; Latest Scandal Lifts Prospects for Measures to Tighten up Audit Industry, N. York Times, June 27, 2002; T. Hamburger, G. Hitt, & M. Schroeder, Sorry, Wrong Number: WorldCom Case Boosts Congress in Reform Efforts, Wall St. J., June 27, 2002.

"outrageous" and vowed to hold people accountable for accounting scandals,[37] and the S.E.C.

filed a civil lawsuit against WorldCom alleging a fraudulent scheme to overstate earnings.[38]

The Senate Banking Committee issued its report on the Sarbanes bill July 3rd, and at

almost the same time the S.E.C. instituted a requirement that CEOs and CFOs certify that their

companies' financial reports were correct.[39] The Senate began deliberation of S. 2673 on July 8th

that would continue until July 15th, with news reports saying that passage was virtually assured.[40]

On July 9th, President Bush spoke on Wall Street in support of securities law reform.[41]

The Senate unanimously passed S. 2673 on a vote of 97 to zero July 15th.[42] On the same

day, the "Corporate Fraud Accountability Act of 2002" (H.R. 5118) was introduced in the

House. It required certification of financial statements by top executives and imposed additional

criminal penalties for misrepresentation of financial reports.[43] The Republican-controlled House

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[37] Y. Dreazen, Sorry, Wrong Number: Bush Promises Tough Response; Probe Advances, Wall St. J., June 27, 2002; S. Romero, Turmoil at WorldCom: The Overview; WorldCom Facing Charges of Fraud; Inquiries Expand, N. York Times, June 27, 2002.

[38] Business and Finance, The SEC Filed Suit Alleging WorldCom Engaged in a Fraudulent Scheme to Pad Earnings, Wall St. J., June 27, 2002; Y. Dreazen, Sorry, Wrong Number: Bush Promises Tough Response; Probe Advances, Wall St. J., June 27, 2002.

[39] Business and Finance, A New SEC Order Requires CEOs and Finance Chiefs to Swear Under Oath, Wall St. J., July 5, 2002.

[40] J. Freeman, Who Will Audit the Regulators?, Wall St. J., July 8, 2002; S. Murray and J. McKinnon, Senate Passes Tough Fraud Bill in Unanimous Vote – Going Beyond Bush Plan, Lawmakers Push Ahead on White-Collar Crime, Wall St. J., July 11, 2002.

[41] Some viewed the President's proposals as simply tinkering with things the S.E.C. had already done or proposed (N. Kulish, Questioning the Books: The President Speaks: Senate Penalties for executives Are Tougher than Bush's Plan, Wall St. J., July 10, 2002; Editorial, The Corporate Scandals; Cleaning Up, N. York Times, July 10, 2002), while others argued the speech suggested a change in policy with the President saying that financial reporting, corporate governance, and Wall Street practices had been corrupted and needed repair and that he supported a long list of reforms (Editorial, It's Time for a New Era of Reform, Bus. Week, July 22, 2002).

[42] Some expressed disappointment believing that S. 2673 failed to mitigate the considerable incentive external auditors have to please their clients (S. Lee, The Dismal Science: A Market Remedy for Our Nasty Accounting Virus, Wall St. J., July 10, 2002), and because it did not require that stock options be expensed (S. Murray, Leading the News: Bill Overhauling Audit Regulation Passes in Senate, Wall St. J., July 16, 2002).

[43] S. Murray, House Clears Accounting Bill that Boosts Criminal Penalties, Wall St. J., July 17, 2002.

passed H.R. 5118 on a 391 to 28 vote July 16th. On the same day, President Bush demanded that

a final bill be passed before Congress left for its August recess.[44]

C. Event D₃: Events Resolving Uncertainty about Specific Provisions and Enforcement of Accounting Reform Legislation

A House-Senate Conference Committee, formed to reconcile the House and Senate bills,

met in executive session beginning July 19th. Several news reports noted various aspects of the

House and Senate bills the Conference Committee was considering,[45] but none appear to reflect

leaks from the Conference Committee regarding specific provisions to be included in a final bill.

Moreover, a July 23rd news broadcast indicated that significant unresolved issues remained

among the Conference Committee members, and that it was unclear when a bill would emerge.[46]

The Conference Committee issued its report during trading hours on July 24th.[47] The

Conference Committee's bill, now referred to as the "Sarbanes-Oxley Act of 2002," largely

reflected the more extensive reforms included in the Sarbanes bill;[48] however, changes had been

made. These changes increased S.E.C. control of the new Public Company Accounting

Oversight Board and generally incorporated the House's tougher punishments of executives.[49]

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[44] See note 43 *supra*; S. Murray, Leading the News: House GOP Moves on Oversight Bill, with Few Changes, Wall St. J., July 18, 2002.

[45] M. Gordon, House, Senate Negotiators Promise Swift Actions on Compromise Anti-fraud Legislation, Associated Press Newswires, July 19, 2002; Editorial, It's Time for a New Era of Reform, Bus. Week, July 22, 2002; L. Walczak, R. Dunham, & P. Dwyer, Scandals in Corporate America, Bus. Week, July 22, 2002; M. Coyle, Substance or Show, Miami Daily Bus. Rev., July 24, 2002; G. Farrell, Reform Bill Tough on Accounting, USA Today, July 25, 2002.

[46] National Public Radio, Analysis: Congressional Recess Looms without Agreement on a Corporate Reform Bill, July 23, 2002.

[47] R. Wells and M. Anderson, Details of House-Senate Pact on Corporate Accounting Bill, Dow Jones Int'l News, July 24, 2002.

[48] See note 4 *supra*; R. Oppel Jr., Corporate Conduct: The Overview; Negotiators Agree on Broad Changes in Business Laws, N. York Times, July 25, 2002.

[49] Economist.com, Congress's Crackdown; America's Corporate Scandals, July 25, 2002, http://www.economist.com; R. Oppel Jr., Corporate Conduct: The Overview; Negotiators Agree on Broad Changes in Business Laws, N. York Times, July 25, 2002.

News accounts attributed a July 24th stock market rally to the issuance of the Conference Committee report.[50]

Congress overwhelmingly passed the Conference Committee's bill July 25th, 423-3 in the House and 99-0 in the Senate,[51] and *The Wall Street Journal* reported the president would sign the bill,[52] which he did on July 30th.

On July 29th, the S.E.C. announced it would post on its Web site the names of CEOs and CFOs who fail to comply with the rule requiring certification of their companies' financial reports.[53] Finally, 5:00p.m. on August 14th was the deadline for nearly 1,000 large companies to file CEO and CFO certifications of their companies' financial statements with the S.E.C. News reports suggest market participants paid attention to updates on the S.E.C.'s Web site about certifications (or lack thereof) on August 14th, as well as to the news coverage the next day.[54]

D. Summary of Event History

We discussed critical events in the SOX legislative process with former S.E.C. Chief Accountant Lynn Turner. He indicated that much of the content that was included in the Sarbanes bill had been discussed for a long while, but had lacked support in Congress. However, Turner believes news of massive fraud at WorldCom changed the political environment for

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[50] For example, Brit Hume et al., Political Headlines, Fox News: Special Report with Brit Hume, July 24, 2002.

[51] S. Milligan, Congress Passes Strict Corporate Responsibility Bill in Bid to Calm Markets, Bos. Globe, July 26, 2002, http://www.economist.com.

[52] Business and Finance, Congress Approved Legislation, Wall St. J., July 26, 2002.

[53] Reuters News, S.E.C. to List on Web Executives Meeting New Rules – WSJ, July 29, 2002.

[54] For example, see J. Pletz and C. Anna, SEC Rakes in Vows of Corporate Honesty, Austin Am.-Statesman, August 15, 2002. Two papers examine the S.E.C.'s rule requiring CEOs and CFOs to certify their companies' financial statements. One paper finds no difference in stock returns for certifying and non-certifying firms, while the other finds significant absolute excess returns associated with the SEC certification requirements (U. Bhattacharya, P. Groznik, & B. Haslem, Is CEO Certification of Earnings Numbers Value-relevant?, (Working paper, Indiana U., 2002); Paul Griffin and David Lont, Taking the Oath: Investor Response to SEC Certification, forthcoming Asia-Pac. J. of Acct. and Econ. (2005)).

accounting reform. This is consistent with our review of the event history, and is also the view

of the Economist.com and Oppel.[55] Hence, we do not believe the probability of reform

legislation becoming law changed to any significant degree during the early event period (D_1 in

Table 1); rather, our review suggests that it was during the period between June 10th and July 17th

(i.e., event D_2) that uncertainty as to whether accounting reform legislation would become law

was virtually eliminated. In particular, the probability of reform legislation becoming law began

to increase following the Andersen conviction, the Senate Banking Committee's actions, and

especially after reports of massive fraud at WorldCom, and it turned into a virtual certainty by

the time the Senate passed the Sarbanes bill and the House passed its new reform bill. It then

became a question of how extensive the reform provisions of the final legislation would be. That

is, what remained uncertain after July 17th was which specific provisions would be included in

the final law. The issuance of the House-Senate Conference Committee's report on July 24th

represented the first clear indication that the more demanding reforms of S. 2673 and H.R. 5118

would form the core of the Act. The Conference Committee report was the first date in event D_3,

and it was followed in quick succession by Congress passing the bill, the president saying he

would sign it, and by two events that were informative about the Act's enforcement: the S.E.C.'s

announcement that it would list CEOs and CFOs unable to certify their companies' financial

reports on its Web site, and the initial CEO and CFO certification filings. Hence, we believe

events D_2 and D_3 represent the critical events in the SOX process and expect them to be

associated with significant share price effects.

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[55] See note 49 *supra*.

Researchers cannot know with certainty when the market learns about an event. Thus, we use event windows that include the trading day the event occurs and the following trading day if that is when the event was reported in the news.[56]

III. EMPIRICAL METHODS

The empirical analysis involves two main parts. First, we examine stock price changes associated with SOX events for our sample of firms. This is a univariate analysis that gauges market response to the events surrounding the Act. Second, we employ a multivariate approach to investigate whether market reactions associated with the Act are related to cross-sectional differences in the extent of earnings management, the independence of audit committees, or the relative extent of non-audit services performed by a firm's external auditor.

A. Univariate Stock Price Analysis

To estimate the average stock price reaction of our sample to the events surrounding SOX, we estimate portfolio average daily stock returns over each of the three event periods using the following time-series model:[57]

$$R_t = \alpha_0 + \sum_{i=1}^{3} \beta_i D_i + e_t, \qquad\qquad (1)$$

where: R_t = average daily stock return of sample firms on date t;

D_i = dummy variable for the ith event, which takes a value of 1 for the event window surrounding event i, and 0 otherwise. We examine the three events summarized in Table 1; hence, $i = 1, 2, 3$.

That is, we estimate the average stock price effects over each of the three events: event D_1, the

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[56] If an event was not reported in the news, we include only the day the event occurs. In event D_2, we assume the Andersen trial outcome was unknown prior to Saturday, June 15, the day the jury rendered its verdict. In event D_3, the deadline for CEO/CFO certifications was 5:00pm, August 14th, and we include August 14th as well August 15th since information about many certifications (or lack thereof) was available during trading hours on August 14th.

[57] A. Ali and S. Kallapur, Security Price Consequences of the Private Securities Litigation Reform Act of 1995 and Related Events, 76 Acct. Rev. (2001).

early period (12 trading days); event D_2, when uncertainty about passage of reform legislation was resolved (19 trading days); and event D_3, when uncertainty about specific provisions and enforcement of the Act was resolved (7 trading days). We estimate equation (1) over the 252 trading days of stock return data for 2002 using OLS. We use raw returns because our sample (described below) of 850 firms in the S&P 1500 approximates the market as a whole, and because SOX affects all publicly traded firms. Adjusting for market returns would effectively subtract out the returns we seek to examine.[58] The intercept, a_0, in equation (1) represents the average daily stock return across the 214 non-event trading days in 2002 for an equal-weighted portfolio consisting of our sample of firms. This implies that the coefficient, β_i, on each event dummy variable represents an estimate of the *incremental* average daily stock return related to each event i for the portfolio; that is, the portfolio return for event i minus the portfolio mean return over the non-event days.[59]

B. Multivariate Analysis

The univariate analysis focuses on average stock price effects across all sample firms, and thus does not consider the possibility of differential market reactions with regard to the extent of earnings management, audit committee dependence, or non-audit services acquired

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[58] Contemporaneous market-level events unrelated to SOX could potentially confound the analysis. However, it is reasonable to assume that market-level events are just as likely to occur on event days as on non-event days, and thus it is unlikely that our statistical analysis will be affected by market-level events. Nevertheless, each of the authors independently reviewed all news items in the Wall Street Journal's "What's News" section (namely, "Business and Finance" and "World-Wide" news), focusing on macroeconomic and other news that potentially could induce market-wide effects. We found relatively few such news items on the event days, and none that reflected major news stories. Furthermore, in our multivariate analysis (discussed below), in which we investigate whether SOX events impact firms depending on the extent of earnings management, dependence of audit committees, or non-audit services, any contemporaneous events would have to differentially affect a specific set of firms relative to others (for example, earnings managers vis-à-vis non-earnings managers) to confound the analysis. Finally, we control for industry and other factors known to affect stock returns.

[59] The standard deviation used in this analysis is based on the time-series regression estimated over 252 trading days with one observation (the portfolio return) for each date. Hence, the analysis does not suffer from cross-sectional correlation problems associated with event- and calendar-time clustering since we estimate the standard deviation of portfolio returns on a given event date. We also find that the autocorrelation of portfolio returns is insignificant.

from a firm's external auditor. In our multivariate analysis, we estimate the cross-sectional

relation between event date stock returns and these factors, as well as other characteristics that

can affect returns. More specifically, we estimate the following model for each event i:

$$R_{ij} = \alpha_i + \beta_{1i}AbPMMJ3_j + \beta_{2i}RESTATE_j + \beta_{3i}AUDDEP_j + \beta_{4i}NONAUDF_j$$
$$+ \beta_{5i}SIZE_j + \beta_{6i}BM_j + \beta_{7i}BETA_j + \Sigma\beta_{ki}INDUSTRY_j + e_j. \quad\quad (2)$$

R_{ij} is raw stock return for firm j on event i, $AbPMMJ3_j$ is the average of the absolute values of

performance-matched modified Jones model abnormal accruals over the years 1999, 2000, and

2001 for firm j, and $RESTATE_j = 1$ if firm j restated its earnings during the period 1997 through

June 2002 based on a 2002 General Accounting Office (G.A.O.) study, and 0 otherwise.[60] We

define $AUDDEP_j$ as the ratio of non-independent audit committee members to total audit

committee members as of the end of 2001, where a dependent audit committee member is one

who was employed by or affiliated with the firm. Section 301 of SOX requires that all audit

committee members be independent of management. $NONAUDF_j$ is the ratio of non-audit fees

to total fees paid by firm j to its external auditor.

AbPMMJ3_j$ and $RESTATE_j$ capture two different aspects of earnings management. The

former reflects the magnitude of (performance-adjusted) abnormal accruals averaged over the

three previous years, and proxies for the extent to which firms have consistently reported large

abnormal (or discretionary) accruals. *RESTATE* denotes whether a firm restated earnings in the

previous 5½-year period, implying a public disclosure of an accounting error or irregularity.[61]

Panel A of Table 2 reports that 9.9 percent of our sample had earnings restatements, and Panel C

indicates that $AbPMMJ3_j$ and $RESTATE_j$ are uncorrelated.

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[60] General Accounting Office, Financial Statement Restatements: Trends, Market Impacts, Regulatory Responses, and Remaining Challenges, GAO-03-138 (2002).

[61] Most of the restatements in the G.A.O. study are for earnings overstatements.

We include several control variables in equation (2) for factors that can affect returns, specifically firm size ($SIZE_j$), defined as the natural logarithm of market value of equity, the book-to-market ratio (BM_j), and market-model beta ($BETA_j$).[62] We compute $SIZE_j$ and BM_j as of the end of 2001, and estimate $BETA_j$ using a minimum of 60 daily stock returns from 2001. We also control for industry using two-digit SIC codes.[63, 64]

OLS estimation of equation (2) can yield biased standard errors of the coefficient estimates if there is cross-sectional correlation and/or heteroscedasticity in the residuals across firms. Cross-sectional correlation is particularly likely in our setting because each event surrounding SOX affects all firms at the same time. To address these problems we adopt the estimation procedure proposed by Sefcik and Thompson.[65] Their methodology accounts for cross-sectional correlation and heteroscedasticity, and produces unbiased estimates of both the coefficients and their standard errors.[66] The Appendix describes this methodology.

Performance-Adjusted Abnormal Accruals. We base one of our two earnings management variables on performance-matched modified Jones (*PMMJ*) model abnormal accruals.[67] Performance matching, based on industry membership and return on assets, is

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[62] We note, however, that the impact of these factors may be muted in short event windows.

[63] Our review of news articles revealed several cases of industry-specific news, especially for telecom firms that occurred on some of the event dates.

[64] In untabulated tests, we also include audit committee size, frequency of audit committee meetings, and stock ownership by the top five executives as additional control variables and the results remain the same.

[65] S. Sefcik and R. Thompson, An Approach to Statistical Inference in Cross-Sectional Models with Security Abnormal Returns as Dependent Variable, 2 J. Acct. Res. (1986).

[66] One advantage of the Sefcik-Thompson methodology over the Feasible Generalized Least Squares estimation is that it does not require direct computation of the sample covariance matrix of residuals.

[67] S.P. Kothari, A. Leone, & C. Wasley, Performance Matched Discretionary Accrual Measures, forthcoming J. Acct. & Econ. (2004).

designed to control for the effect of performance on measured abnormal accruals. To estimate a

firm's *PMMJ*, we first compute total accruals using data from the statement of cash flows:[68]

$$TAcc_{jt} = EBEI_{jt} - (CFO_{jt} - EIDO_{jt}),\qquad(3)$$

where: $TAcc_{jt}$ = firm *j*'s total accruals in year *t*

$EBEI_{jt}$ = firm *j*'s income before extraordinary items (*Compustat* #123) in year *t*

CFO_{jt} = firm *j*'s cash flows from operations (*Compustat* #308) in year *t*

$EIDO_{jt}$ = firm *j*'s extraordinary items and discontinued operations included in CFO_{jt} (*Compustat* #124) in year *t*.

We then estimate the following equation to compute modified Jones model abnormal accruals:

$$TAcc_{jt} = \beta_0\,(1/\,Assets_{j,t-1}) + \beta_1\,(\Delta Sales_{jt} - \Delta AR_{jt}) + \beta_2\,PPE_{jt} + v_{jt},\qquad(4)$$

where: $Assets_{j,t-1}$ = firm *j*'s total assets (*Compustat* #6) in year *t-1*

$\Delta Sales_{jt}$ = change in firm *j*'s sales (*Compustat* #12) from year *t-1* to *t*

ΔAR_{jt} = change in firm *j*'s accounts receivable from operating activities (*Compustat* #302) from year *t-1* to *t*

PPE_{jt} = firm *j*'s gross property, plant, and equipment (*Compustat* #7) in year *t*.

We scale all variables by beginning-of-year total assets.[69]

We define the normal accrual (NA^{MJ}_{jt}) and abnormal accrual (AA^{MJ}_{jt}) metrics as:

$$NA^{MJ}_{jt} = \beta_0\,(1/Assets_{jt-1}) + \beta_1\,(\Delta Sales_{jt} - \Delta AR_{jt}) + \beta_2\,PPE_{jt}\qquad(5)$$

$$AA^{MJ}_{jt} = TAcc_{jt} - NA^{MJ}_{jt}.\qquad(6)$$

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[68] Paul Hribar & Daniel Collins, Errors in Estimating Accruals: Implications for Empirical Research, J. Acct. Res. (2002).

[69] We analyze a broad sample of firms in a general setting in which there are no obvious incentives that identify a subset of firms as likely earnings managers in a specific case (for example, seeking to meet or beat analysts' consensus earnings forecasts). Hence, we compute performance-matched abnormal accruals following Francis et al., The Market Pricing of Accruals Quality, forthcoming J. Acct. & Econ. (2005), and include ΔAR_{it} in the estimation of equation (4) for all firms.

Next, we partition the sample into deciles by ranking firms within two-digit SIC industries by the current year's return on assets (ROA_{jt}), defined as net income before extraordinary items (*Compustat* #18) divided by beginning-of-year total assets. $PMMJ_{jt}$ is the difference between firm j's year t modified Jones model abnormal accrual metric (AA^{MJ}_{jt}) and the median metric for its joint industry and ROA_{jt} decile, where the median calculation excludes firm j. Lastly, we compute $PMMJ_{jt}$ for 1999, 2000, and 2001, take the absolute value each year, and average the three absolute values to calculate $AbPMMJ3_j$.

C. Sample Selection and Descriptive Statistics

We include a firm in the empirical analysis if all of the following requirements are met. First, firms must have daily stock returns available for all trading days in 2002 from the *CRSP* database. Second, data from Standard & Poor's 2002 *Compustat* Industrial and Research files must be available to compute performance-matched modified Jones model abnormal accruals for 1999, 2000, and 2001,[70] and must also have *Compustat* data to compute the (natural log of) market value of equity (*SIZE)*, the book-to-market ratio (*BM)*, market-model beta (*BETA)*, and to identify earnings announcement dates.[71] Third, there must be audit committee member independence data for each firm for 2001 from the *Investor Responsibility Research Center* (*IRRC*) database, which includes corporate governance data for the S&P 1500 companies. Fourth, firms must have non-audit fee data from the *Board Analyst* database. 3,253 firms have the necessary *Compustat* data to compute performance-matched abnormal accruals for 1999-2001 and *SIZE*, *BM*, and *BETA* for 2001, and 1,166 firms have the necessary *IRRC* and *Board*

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[70] When computing *AbPMMJ3_j*, we require a minimum of 20 observations in each two-digit SIC industry. In addition, we eliminate observations with abnormal accruals (scaled by total assets) greater than 1 or less than -1.

[71] If a firm announces earnings on an event day, then the firm's return is not included for that day.

Analyst data, respectively, to compute *AUDDEP* and *NONAUDF*, as well as the necessary *CRSP* data. The final sample consists of 850 firms that have all of the required data.

Table 2, Panel A presents summary statistics for the sample. The mean performance-matched modified Jones model abnormal accruals (*AbPMMJ3*) is 0.058, or 5.8 percent of total assets (median = 0.046). As noted, the sample frequency of earnings restatements is 9.9 percent (*RESTATE*). The mean proportion of non-independent audit committee members (*AUDDEP*) is 10.2 percent, and the ratio of non-audit fees to total fees paid to external auditors (*NONAUDF*) ranges from zero to 98.5 percent, with a mean (median) of 56.6 percent (58.3 percent).

PLACE TABLE 2 HERE

Firms in the sample have a mean book-to-market (*BM*) ratio of 0.493 (median = 0.432), a mean market *BETA* of 1.186 (median = 0.955), and a mean market value of equity (*MVE*) of $6.67 billion (median = $1.49 billion). As noted in Panel B of Table 2, the sample has the following size composition: 35.1 percent from the S&P 500 (sample mean *MVE* = $17 billion), 24.8 percent from the S&P MidCap 400 (mean *MVE* = $1.9 billion), and 40.1 percent from the S&P SmallCap 600 (mean *MVE* = $0.55 billion). Untabulated results indicate the sample includes firms from 42 two-digit SIC industries, with the largest representation (approximately 11 percent) coming from electrical manufacturing and business services.

We report a correlation matrix in Table 2, Panel C. With regard to both Pearson and Spearman correlations, *AbPMMJ3* is positively associated with *BETA* and negatively associated with *SIZE* and *BM*; *RESTATE* is positively correlated with *SIZE*; and *NONAUDF* is positively correlated with *SIZE* and *BETA* and negatively correlated with *BM*.

IV. RESULTS

A. Univariate Stock Price Analysis

Table 3, Panel A presents results of our *portfolio* stock price analysis for the three SOX events, while for descriptive purposes, Panel B summarizes the results of 850 separate *firm-specific* time-series regressions of model (1). Panel A reveals significant incremental stock price effects associated with event D_3, that is, the resolution of uncertainty about the final provisions and enforcement of SOX. Specifically, there are significant positive average incremental daily returns of 2.2 percent ($t = 3.42$) across all sample firms. Panel B provides additional evidence on the positive price reaction to event D_3. In particular, 94 percent of firms have positive incremental returns, and 59 percent of the returns are significantly positive.

PLACE TABLE 3 HERE

We conduct additional tests on individual components of event D_3 (untabulated), which reveal the following details. First, across all sample firms, there is an incremental average daily stock return of 4.8 percent ($t = 2.89$) associated with the July 24th release of the House-Senate Conference report, with 89 percent of sample firms having positive incremental daily returns (42 percent significant). As the event history in Section II suggests, the Conference Committee report resolved uncertainty about specific provisions in the Act, which in general contained the most demanding reforms Congress had been considering. The second significant effect in D_3 is an incremental average daily stock return of 3.0 percent ($t = 2.55$) associated with the July 29th news report that the S.E.C. would publicly identify the CEOs and CFOs not certifying their companies' financial reports. Ninety-one percent of the firm-specific coefficients are positive for this component of D_3 (40 percent significant). Third, there is a significant 2.2 percent incremental average daily return ($t = 1.87$) associated with the initial filings of CEO/CFO financial report certifications on August 14th, with 87 percent of firms having positive

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incremental returns (26 percent significant). Overall, the positive shareholder wealth effects associated with event D_3 suggest that investors anticipated SOX to have a net beneficial effect and that the S.E.C would rigorously enforce at least some key provisions of the Act.

We find no significant stock price effect associated with event D_1, consistent with our expectation that the early events resolved little uncertainty about SOX. Stock price effects were also not significant for event D_2. However, it is instructive to comment on the results for event D_2, which spans the period June 10th to July 17th. During this period, virtually all uncertainty was resolved regarding the *enactment* of legislation reforming U.S. corporate financial reporting, while at the same time the *extent* of corporate reforms remained unresolved. Panel A shows that the incremental average daily stock return for event D_2 is -0.4 percent ($t = -1.07$), which over the 19 trading days included in event D_2 accumulates to approximately -7.6 percent. Panel B indicates that 80 percent of firms have negative incremental daily returns for this period, but only 7 percent are significant. Untabulated results on individual event-day returns reveal that 14 of the 19 incremental daily stock returns in event D_2 are negative, although none of the 14 is significant. If positive (including zero) and negative returns are equally likely to occur, then 14 negative returns out of 19, or 74 percent, is significantly different than 50 percent (p-value = 0.05 using a binomial test of proportions), suggesting a modest negative effect for event D_2.

Overall, the results of our univariate stock return analysis suggest the following. By July 17th, the market expected reform legislation would be enacted, but did not expect such legislation to have a net positive impact on firms. Event D_3 changed investors' expectations about the extent and effectiveness of the reforms in SOX. Specifically, the significantly positive stock returns associated with the release of the Conference Committee report, the S.E.C.'s enhanced enforcement actions, and initial compliance with the CEO/CFO certifications suggest these events changed investors' expectations such that they began to anticipate that the law's

provisions, and the enforcement thereof, would have a net beneficial effect, consistent with

substantive reforms in financial reporting, auditing, and/or corporate governance practices.

B. Multivariate Analysis

Table 4 presents results for our cross-sectional analysis using the Sefcik-Thompson

estimation method. Consistent with the univariate results in Table 3, we find significant effects

associated with event D_3 that resolved uncertainty about the provisions of SOX and was

informative about its enforcement. More specifically, the coefficient on *AbPMMJ3* is positive

and significant (0.040, $t = 2.87$) for event D_3, suggesting that the market viewed the provisions

and the enforcement of SOX as benefiting shareholders more, the more their firms had managed

earnings in prior years.[72] Hence, these results are consistent with investors expecting SOX to

constrain earnings management and enhance the accuracy and reliability of financial reporting of

such firms. In contrast, the coefficient on *RESTATE* is not significant for event D_3.[73] In

addition, the coefficient on *AUDDEP* for event D_3 is significantly negative (-0.005, $t = -1.98$),

which is consistent with the expectation that SOX would be more costly the greater the

proportion of dependent audit committee members on a firm's audit committee. Finally,

NONAUDF has a significant and negative coefficient for event D_3 (-0.005, $t = -2.47$), consistent

with the expectation that SOX would be more costly the greater the proportion of non-audit

services (compared to total services) that firms acquire from their external auditors. Thus, SOX

was expected to impose greater costs on firms that were less compliant with the audit committee

and non-audit services provisions prior to SOX's enactment. We also note that *SIZE* has a

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[72] Untabulated results for individual components of event D_3 reveal a significantly positive coefficient on *AbPMMJ3* (0.160, $t = 4.53$) for the issuance of the House-Senate Conference Committee report on July 24th. This is the most significant result among the components of event D_3 and is consistent with the univariate results reported above.

[73] Perhaps the act of restating earnings in prior years had forced these firms to improve the accuracy and reliability of their financial reports prior to the SOX legislation.

significantly positive coefficient for event D_3 (0.002, $t = 2.06$), suggesting that investors expected SOX to have a greater net beneficial effect for larger firms.

PLACE TABLE 4 HERE

Table 4 indicates no significant results associated with event D_1, which is consistent with the univariate results in Table 3 and with our expectation that the early events did not change expectations about SOX. Additionally, we find no significant results for event D_2, when virtually all uncertainty was resolved about the passage of reform legislation, while the extent of reforms remained unresolved. However, untabulated results for individual components of event D_2 indicate significant *offsetting* effects for *AbPMMJ3*. First, there is a negative coefficient on *AbPMMJ3* (-0.048, $t = -1.90$) for the introduction of the Sarbanes bill in the Senate and the disclosure of fraudulent reporting at WorldCom, which the event history suggests changed the political environment. The negative coefficient on *AbPMMJ3* is consistent with the WorldCom announcement causing investors to re-examine the earnings quality of other firms and react by bidding down stock prices more, the more firms had managed earnings in prior years. Second, there are two significantly positive effects for *AbPMMJ3*: the Senate Finance Committee's report on the Sarbanes bill and the S.E.C.'s announcement requiring CEO and CFO certifications of financial reports (coefficient = 0.051, $t = 2.05$); and the Senate's consideration and passage of the Sarbanes bill, the introduction and passage in the House of H.R. 5118, and the President's calling for passage of a bill before Congress's August break (coefficient = 0.029, $t = 2.33$). These last two results reverse the negative effect associated with the WorldCom fraud announcement and are consistent with an increase in the probability that reform legislation would pass and be more beneficial for shareholders the more their firms had managed earnings in prior years. Hence, while the House and Senate had passed competing bills and uncertainty remained about which provisions would be included in a Conference Committee bill, the results

suggest the market was expecting that reform legislation would be enacted and that its provisions likely would constrain earnings management.

Overall, the results of the multivariate tests are consistent with the inference that investors viewed SOX as representing substantive reforms that would enhance the accuracy and reliability of financial reports, and that the beneficial effects were expected to be greater for shareholders of firms that had more extensively managed earnings in prior years. In addition, the market expected SOX to be more costly for firms that needed to adjust their corporate governance practices to eliminate dependent audit committee members and reduce non-audit services acquired from external auditors.

V. CONCLUDING REMARKS

We identify critical events surrounding the enactment of the Sarbanes-Oxley Act of 2002 and conduct an event study to infer the capital market's assessment of the Act's expected impact and investigate the impact cross-sectionally in terms of the extent of earnings management, dependent audit committee members, and non-audit services provided by external auditors.

In our univariate analysis, we find significantly positive stock returns associated with events that resolved uncertainty about which provisions would be included in the law and that were informative about enforcement of the law – specifically, the issuance of the House-Senate Conference Committee report on the final bill, the S.E.C.'s announcement of plans to publicly identify CEOs and CFOs who fail to certify their firms' financial reports, and initial compliance with the required CEO/CFO certifications. The results are consistent with investors expecting the provisions and enforcement of SOX to have a net beneficial effect. In our cross-sectional analysis, we find considerable evidence of a positive association between stock returns and the extent of earnings management, suggesting that investors expected SOX to constrain earnings management and to have a greater positive impact on firms that had managed earnings more

extensively in prior years. We also find evidence consistent with SOX imposing more costs on

firms having higher proportions of non-independent audit committee members and on firms

whose external auditors provided relatively higher levels of non-audit services. Overall, the

results are consistent with market participants anticipating that the provisions and enforcement of

SOX would have a net beneficial effect by improving the accuracy and reliability of financial

reporting.

The first step in implementing the Sefcik-Thompson[74] approach for our analysis is to form P portfolios, where P is the number of intercepts and explanatory variables in equation (2). Returns for each portfolio on day t are computed as:

$$R_t^p = W_p' R_t, \tag{A1}$$

where R_t^p is return for portfolio p on day t, R_t is an N x 1 vector of individual firms' returns on day t (N is total number of firms), and W_p' is a 1 x N vector of weights for portfolio p.[75] The weight vectors are from the following matrix:

$$W = \begin{bmatrix} W_1' \\ W_2' \\ \vdots \\ W_p' \end{bmatrix} = (X'X)^{-1} X' \tag{A2}$$

where X is an N x P matrix and can be written as $X =$ (*1 AbPMMJ3 RESTATE AUDDEP NONAUDF SIZE BM BETA INDUSTRY*). In X, *1* represents a column of ones, *INDUSTRY* represents a column of zeros or ones for each industry, and *AbPMMJ3*, *RESTATE*, *AUDDEP*, *NONAUDF*, *SIZE*, *BM*, and *BETA* represent columns of firm-specific characteristics as specified in equation (2). Each of the rows in matrix W represents a set of weights that are used in equation (A1) to compute portfolio returns. Hence, we create portfolios corresponding to each row, the first being the intercept, and the others having returns influenced by only one firm characteristic (namely, *AbPMMJ3*, *RESTATE*, *AUDDEP*, *NONAUDF*, *SIZE*, *BM*, *BETA*, and

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[74] See note 55 *supra*.

[75] We compute equation (A1) for each portfolio on each trading day, so all portfolios have a time-series of daily returns in 2002.

INDUSTRY, respectively). We then run the following regression, which regresses portfolio

returns (from equation (A1) using weights from equation (A2)), for each portfolio using OLS:

$$R_t^p = \alpha_0^p + \sum_{i=1}^{3} \beta_i^p D_i + e_t^p,$$
(A3)

where all variables have previously been defined. The coefficient estimates from equation (A3)

(eight regressions for eight portfolios, ignoring *INDUSTRY*, each producing three coefficient

estimates) would be the same as those estimated from equation (2) using OLS (three regressions

for three events, each producing eight coefficient estimates, ignoring *INDUSTRY*), but the

Sefcik-Thompson approach accounts for cross-sectional correlation and heteroscedasticity, and

produces unbiased estimates of the coefficients and their standard errors.

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TABLE 1
Description of Critical Events in the Legislative Process

Events	Event Window

Event D$_1$: Early Period:

1/17/02	– S.E.C. Chairman Harvey Pitt proposes oversight board	Thu 1/17
2/11-12/02	– Legislation to be introduced in the House	Mon 2/11, 12, 13, 14
2/13-14/02	– Introduction of H.R. 3763 in the House	
3/7/02	– Bush to unveil reform plan	Thu 3/7, 8
3/8/02	– Introduction of S. 2004 in the Senate	
4/22/02	– Committee report issued on H.R. 3763	Mon 4/22, 23, 24, 25, 26
4/24/02	– House considers and passes H.R. 3763	
4/25/02	– Senate Judiciary approves legislation	

Event D$_2$: Resolving Uncertainty about Passage of Accounting Reform Legislation:

6/11/02	– Progress reported on Senate legislation	Mon 6/10, 11, 12, 13
6/12/02	– Mark-up of Sarbanes bill to occur	
6/15/02	– Andersen convicted	Mon 6/17, 18, 19
6/18/02	– Senate Banking Committee meets and supports major reform legislation	[no trading 6/15]
6/25/02	– Introduction of S. 2673 in Senate	Tue 6/25, 26
6/26/02	– WorldCom fraud announcement	
7/3/02	– Committee Report on S. 2673	Wed 7/3, 5
7/5/02	– S.E.C. requires CEO/CFO certification	[no trading 7/4]
7/8-12/02	– Senate considers S. 2673	Mon 7/8, 9, 10, 11, 12,
7/9/02	– Bush's Wall Street speech	Mon 7/15, 16, 17
7/15/02	– Senate passes S. 2673	
7/15/02	– Introduction of H.R. 5118	
7/16/02	– Passage of H.R. 5118	
7/16/02	– Bush wants bill before August break	

Event D$_3$: Resolving Uncertainty about Specific Provisions and Enforcement of Accounting Reform Legislation:

7/24/02	– Issuance of Conference Report	Wed 7/24
7/25/02	– House and Senate pass Conference Report; Bush reportedly will sign bill	Thu 7/25, 26
7/29/02	– S.E.C. to post names of CEOs and CFOs who fail to certify their firms' financial reports	Mon 7/29, 30
7/30/02	– President signs bill into law	
8/14-15/02	– CFO/CFO certifications filed with the S.E.C.	Wed 8/14, 15

In general, each event window includes the trading day the event occurs and the next trading day if the event was reported in the news that day. Not all events were reported in the news, and when that is the case we include only the date the event occurs. For event D_2, we assume the Andersen trial outcome was unknown prior to Saturday, June 15, the day the jury rendered its verdict. For event D_3, while the deadline for CEO/CFO certifications was 5:00pm, August 14th, we include August 14th as well August 15th since information about many certifications or failures to certify was available during trading hours on August 14th.

TABLE 2
Descriptive Statistics

Panel A: Sample Characteristics (N = 850)

Variable	Mean	Std. Dev.	Minimum	25th	Median	75th	Maximum
AbPMMJ3	0.058	0.042	0.007	0.028	0.046	0.073	0.212
RESTATE	0.099	0.299	0	0	0	0	1
AUDDEP	0.102	0.176	0	0	0	0.250	1
NONAUDF	0.566	0.203	0	0.434	0.583	0.725	0.985
MVE	6,665.16	23,778.37	42.03	577.72	1,491.97	4,515.33	392,959.00
SIZE	7.424	1.481	4.374	6.359	7.308	8.415	11.500
BM	0.493	0.321	0.063	0.260	0.432	0.636	1.788
BETA	1.186	0.871	-0.044	0.573	0.955	1.623	3.840

Variable Definitions:

AbPMMJ3 = Mean of the absolute value of *PMMJ* over 1999 – 2001, where *PMMJ* is Performance-matched Modified Jones Model Abnormal Accruals.

RESTATE = 1 if the company restated financial restatement in the G.A.O. sample and 0 otherwise.

AUDDEP = Ratio of non-independent audit committee members to total audit committee members.

NONAUDF = Proportion of non-audit fee to total fee paid to the external auditor.

MVE = Market value of equity (millions of $).

SIZE = Natural log of *MVE*.

BM = Book-to-market ratio, computed as total book value of equity divided by *MVE*.

BETA = Market-model beta computed based on 2001 daily stock returns.

Panel B. Sample Composition from the S&P 1500 Index

	# of firms	%	Firm Size (millions of $)
S&P 500	298	35.06	17,008
S&P MidCap 400	211	24.82	1,938
S&P SmallCap 600	<u>341</u>	<u>40.12</u>	552
Total	850	100.00	

Panel C. Pearson (Spearman) Correlation Coefficients, Reported above (below) the Diagonal

	AbPMMJ3	RESTATE	AUDDEP	NONAUDF	SIZE	BM	BETA
AbPMMJ3		0.029	0.036	0.054	-0.074**	-0.106***	0.442***
RESTATE	0.039		-0.014	-0.031	0.077**	-0.017	-0.011
AUDDEP	0.059*	-0.006		0.036	-0.007	-0.058*	0.021
NONAUDF	0.046	-0.034	0.053		0.312***	-0.137***	0.121***
SIZE	-0.117***	0.082**	0.005	0.314***		-0.503***	-0.056
BM	-0.176***	-0.005	-0.044	-0.132***	-0.493***		-0.114***
BETA	0.394***	-0.013	0.009	0.100***	-0.101***	-0.081**	

*, **, *** refer to significance at the 0.10, 0.05, and 0.01 level (two-tailed), respectively.

TABLE 3
Univariate Stock Price Analysis

Panel A: Average Daily Incremental Stock Returns – Portfolio

$$R_t = \alpha_0 + \beta_1 D_1 + \beta_2 D_2 + \beta_3 D_3 + e_t \qquad (1)$$

	a_0	D_1	D_2	D_3
Coefficient	-0.001	0.001	-0.004	0.022***
t-statistic	-0.66	0.29	-1.04	3.42

Panel B: Average Daily Incremental Stock Returns – Individual Firms $(N = 850)$[a]

$$R_{jt} = \alpha_{j0} + \beta_{j1} D_1 + \beta_{j2} D_2 + \beta_{j3} D_3 + e_{jt}$$

	D_1	D_2	D_3
Mean	0.001	-0.004	0.021
Median	0.001	-0.004	0.022
Standard Deviation	0.007	0.007	0.016
Proportion of Positive Coefficients	0.61	0.20	0.94
Proportion of Significant Positive Coefficients	0.02	0.00	0.59
Proportion of Negative Coefficients	0.39	0.80	0.06
Proportion of Significant Negative Coefficients	0.01	0.07	0.01

*, **, *** refer to significance at the 0.10, 0.05, and 0.01 level (two-tailed), respectively.

D_1: Event D_1: Early Period.
D_2: Event D_2: Resolving Uncertainty about Passage of Accounting Reform Legislation.
D_3: Event D_3: Resolving Uncertainty about Specific Provisions and Enforcement of Accounting Reform Legislation.

Variable Definitions:
R_t = average stock return across sample firms on date *t*;
R_{jt} = stock return for firm *j* on date *t*;
D_i = dummy variable for the ith event, which takes a value of 1 for the event window surrounding event *i*, and 0 otherwise; *i* = 1, 2, 3.

[a] For descriptive purposes, Panel B summarizes the results of 850 separate firm-specific time-series regressions of equation (1).

TABLE 4
Multivariate Results Using Sefcik-Thompson Estimation

$$R_{ij} = \alpha_i + \beta_{1i}AbPMMJ3_j + \beta_{2i}RESTATE_j + \beta_{3i}AUDDEP_j + \beta_{4i}NONAUDF_j$$
$$+ \beta_{5i}SIZE_j + \beta_{6i}BM_j + \beta_{7i}BETA_j + \Sigma\beta_{ki}INDUSTRY_j + e_j \qquad (2)$$

	D_1	D_2	D_3
AbPMMJ3	-0.015	0.011	0.040***
t-statistic	*-1.41*	*1.25*	*2.87*
RESTATE	0.000	-0.001	0.001
t-statistic	*-0.21*	*-1.13*	*0.79*
AUDDEP	0.001	0.001	-0.005**
t-statistic	*0.64*	*0.85*	*-1.98*
NONAUDF	-0.000	-0.002	-0.005**
t-statistic	*-0.05*	*-1.55*	*-2.47*
SIZE	0.000	0.001	0.002**
t-statistic	*-0.38*	*1.29*	*2.06*
BM	-0.001	0.000	-0.002
t-statistic	*-0.60*	*-0.06*	*-0.68*
BETA	-0.001	0.000	0.001
t-statistic	*-0.19*	*-0.16*	*0.32*

*, **, *** refer to significance at the 0.10, 0.05, and 0.01 level (two-tailed), respectively.

D_1: *Event D_1: Early Period.*
D_2: *Event D_2: Resolving Uncertainty about Passage of Accounting Reform Legislation.*
D_3: *Event D_3: Resolving Uncertainty about Specific Provisions and Enforcement of Accounting Reform Legislation.*

Variable Definitions:
AbPMMJ3 = Mean of the absolute value of *PMMJ* over 1999 – 2001, where *PMMJ* is Performance-matched Modified Jones Model Abnormal Accruals.
RESTATE = 1 if the company restated financial restatement in the G.A.O. sample and 0 otherwise.
AUDDEP = Ratio of non-independent audit committee members to total audit committee members.
NONAUDF = Proportion of non-audit fee to total fee paid to the external auditor.
SIZE = Natural log of market value of equity.
BM = Book-to-market ratio, computed as total book value of equity divided by *MVE*.
BETA = Market-model beta computed based on 2001 daily stock returns.
INDUSTRY = 41 industry dummy variables (results not tabled).