

HOW MUCH STOCK CAN WE PUT IN SOX?

EVALUATING THE EFFECTIVENESS OF THE SARBANES-OXLEY ACT OF 2002*

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Abstract

This article examines the effects of the Sarbanes-Oxley Act of 2002 from a public administration/policy perspective. Although “SOX” has attracted voluminous research and commentary from the business and legal communities and the popular press, the literature of public administration has not given the Act and its consequences the serious attention it deserves. Accordingly, the present research evaluates the effects of SOX based on the goals stated by Congress, to create stricter financial disclosure rules and to increase investors’ confidence in the capital markets. Our analysis begins with a discussion of the Securities and Exchange Commission (SEC) as a “cohesive regulatory system” that broke down with the corporate scandals of late 2001 and early 2002. We briefly describe the history of the SEC, its structure, and the market ideology and events that led to the corporate scandals. Using longitudinal research designs and appropriate data from the Securities and Exchange Commission and specific market indices to reflect the reaction of the market to an event, we evaluate the effects of SOX empirically. The findings show that the Sarbanes-Oxley Act of 2002 appeared to increase internal enforcement efforts of the SEC. However, the Act did not appear to have an effect on the capital markets or investors’ confidence levels.

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In December 2001 a corporation that was once a small natural gas provider in Texas, turned international energy trading giant, collapsed. Without notice and seemingly without reason, Enron, the energy giant, went from a lucrative, solvent and powerful company to declaring bankruptcy and needing to close overnight. The collapse of Enron involved many complicated derivatives¹ and off-balance sheet transactions. The ramifications of the collapse were colossal: “stockholders lost \$60 billion in market value, long-serving employees lost more than \$2 billion in pension money, and 5,600 people lost their jobs” (Thomas-Booth, 2006). Early 2002 revealed more corporate scandals, the most notable at Tyco, Adelphia and WorldCom. Tyco padded earnings growth associated with acquisitions. Adelphia’s founding family intertwined personal and corporate debt that resulted in personal loans totaling \$2 billion from off-balance sheet transactions. WorldCom performed blatant accounting fraud, hiding huge amounts of expenses and reporting the ability to pay debt when that ability had eroded. In direct response to the corporate scandals, Congress enacted the Sarbanes-Oxley Act of 2002 (SOX) (Opening Statement, Senate Hearings, February 12). The legislation was the largest change to securities law since the New Deal.

Despite the breadth and depth of the problems exposed by the fall of Enron and the other notable corporate scandals of late 2001 and early 2002, public administration scholars have devoted scant attention to the solutions proposed with the passage of SOX. This article is meant to address that lacuna. To understand what went wrong, why the existing Securities and Exchange Commission (SEC) regulations failed and how SOX is intended to correct these problems, we focus on the Commission’s regulatory process. The SEC’s regulatory process and

the implementation of SOX offer a view of the cooperation between the public and private sectors. David P. McCaffrey, Amy E. Smith and Ignacio J. Martinez-Moyano (2006) describe the cooperation as a “Cohesive Regulatory System” in which the responsibilities of regulation are shared between the public and private sectors (McCaffrey, et al, 2006). We begin with a brief history of the Securities and Exchange Commission, its structure, and the market ideology and events that led to the corporate scandals. The present study reviews and describes the intent of SOX to create stricter guidelines for financial disclosure and to increase investor confidence. To measure the effects of SOX we conduct an empirical analysis to evaluate changes in enforcement procedures at the SEC and the response of the capital markets to the passage of the Act. Following the empirical analysis, we discuss the effects of SOX in light of its intended public policy purposes.

The Securities and Exchange Commission

The structure and design of the SEC provide a view of a cohesive regulatory system. The Securities and Exchange Commission operates by relying on the cooperation of the public and the private sectors to promote the strength and prosperity of the capital markets (Khademian, 1992, 2002; McCaffrey, et al, 2006). Despite perturbations since the crash of 1929, the financial markets have been able to recover with little government intervention (or “interference” in the parlance of the private sector). The Sarbanes-Oxley Act of 2002 was only the sixth law enacted to regulate the securities industry and the first since 1940. A review of the history of the Securities and Exchange Commission, its structure and the ideology driving the regulatory process demonstrates why Congress sought changes at the SEC as exemplified by the SOX legislation.

A Brief History

Prior to the creation of the SEC in 1934, early efforts to regulate the capital markets failed to protect investors. A small number of states attempted the regulation of the securities industry with “blue sky laws” which focused on the disclosure of information for newly issued securities (Khademian, 2002). The enforcement of these laws varied from state to state and did little to protect individual investors (Khademian, 2002). In addition to the blue sky laws, the exchanges on which stock is bought and sold provided some internal controls of securities (Khademian, 2002). According to Anne M. Khademian, the goal of the exchanges’ internal controls was the protection of the exchange members and not individual investors (Khademian, 1992, 2002).

The stock market crash of 1929 exposed the shortcomings of the blue sky laws, revealed the failures of the internal controls by the exchanges, and provoked dramatic action by Congress. In a very similar story to the corporate scandals of 2001 and 2002, “the combination of scandal, steep market declines, and dramatic losses for individual American investors have been necessary factors . . . for Congress to address the capacity and resource needs to regulate continuously growing and changing capital markets” (Khademian, 2002, p. 516). In response to the Great Depression, Congress passed two Acts intended to regulate the securities industry, the Securities Act of 1933 and the Securities Exchange Act of 1934. The Securities Act of 1933 required the disclosure of financial information to help keep individual investors informed and protected from fraud (Khademian, 1992). The Securities Exchange Act of 1934 created the Securities and Exchange Commission, an independent regulatory commission to enforce the new disclosure laws through regulatory action and rule making. Together the two Acts provide the foundation of the SEC’s authority that protects individual investors and promotes capital market

integrity through financial disclosure requirements. From the inception of the Commission, its primary purpose was to enforce the disclosure of financial information for companies traded publicly on the stock exchanges and to set rules for the capital markets (Khademian, 2002).

In its regulatory efforts, the SEC attempts to strike a balance between the needs of private industry (generating profit) and the needs of government (maintaining investor confidence). From the beginning of the Commission, the recognition of a need to involve both public and private actors is evident in the appointment of the Wall Street savvy Joseph Kennedy (President John F. Kennedy's father) as the first SEC chair. In the eyes of the business community, the appointment of Kennedy legitimized the Commission and opened communication channels with Wall Street.

Kennedy had made his fortune as a Wall Street insider, guilty of many of the market manipulations the SEC was created to prevent. His appointment outraged many New Deal reformers. Yet his presence on the commission sent a message to Wall Street that the SEC and Wall Street needed to work together to restore investor confidence and speed economic recovery (Khademian, 2002, p. 517).

Despite the fact that many reformers opposed Kennedy's appointment, as a result of his heading the Commission, it was able to quickly develop and enforce reforms through an open communication process with the very groups it was established to regulate (Khademian, 2002).

The Securities and Exchange Commission is intended to protect the individual investor from securities fraud without unduly influencing the capital markets. Because of the need for accommodation between legitimate regulatory action and open economic exchange, the SEC must rely on experts. Securities law is rather complicated and technical, and these complexities create a tension between Congress and the Commission staff (Khademian, 2002). As Kenneth J.

Meier (2000) explains, the structure of most independent regulatory commissions removes high levels of political influence. The commissions fall outside the executive branch and the realm of organized interest group politics, which tend to be the regulated.

Two features of the Securities and Exchange Commission heighten the opportunity for influence from outside the public sector and frame the characteristics of its cohesive regulatory system. First, the complexities of securities law place a premium on financial knowledge that requires significant expertise. Because most experts in securities law remain in the private sector, the experts who choose to work in the public sector (the approximately 3,400 individuals employed by the SEC) need to maintain open communication with their counterparts in the private sector. According to McCaffrey et. al. (2006), the SEC is designed as a cohesive regulatory system to create an environment that allows for open communication between the SEC staff and the regulated members of the capital markets. Open communication is necessary for the Commission staff to remain current on intricacies of and developments in the markets and technology. The reliance on the private sector introduces organized interests into the regulatory processes of the Commission despite its creation as an independent commission.

Second, the SEC relies on the private interests in its cohesive regulatory system to develop and implement rules for the oversight of the capital markets. The effects of securities legislation are often unknown for both the short- and long-term (Khademian, 2002). A change in regulation promoted by a member of Congress can be politically devastating if it results in losses for constituents (Khademian, 1992). Because the reactions of the markets are difficult to predict, members of Congress usually defer to regulation and rule changes promoted by the Commission (Khademian, 1992). In its turn, to remain current in and act responsively to new trends in financial markets (McCaffrey et al., 2006); the Securities and Exchange Commission must rely

on the private sector for recommendations on needed changes. Additionally, the Commission is responsible for overseeing a large number of transactions, which are impossible to monitor without assistance from the private sector members of the cohesive regulatory system (McCaffrey, et al., 2006). Thus, the Commission's close and open relationship with the private sector creates a system permeable to the viewpoints of organized interests or the regulated.

The SEC's Cohesive Regulatory System as a Tool of the "New Governance"

In his introduction to The Tools of Government: A Guide to the New Governance (2002), Lester M. Salamon explains that frustration over the cost and effectiveness of government and a belief in liberal economic theory has led to the expansion of the "tools of new governance". New governance refers to the use of nontraditional methods that involve private processes in public action. These tools move the process of government away from the traditional concept of bureaucratic hierarchy and agency autonomy to a paradigm of "complex, interdependent relationships of third-party partners" (Salamon, 2002, p. 3).

The new governance paradigm involves five concepts. First, a *tool* uses a method that employs collective action to address a public problem (Salamon, 2002). Second, a *network* is a structure of interdependencies between public actors and a third party. The third concept in the new governance shifts action from public vs. private to *collaboration* between the sectors. The members of the network engage in *negotiation* and have some power of *persuasion*. Finally, new governance "*enablement skills*" (Salamon, 2002, p. 16) allow multiple stakeholders to work in conjunction toward a common goal. Although Salamon does not explicitly describe a cohesive regulatory system as a tool of new governance, our analysis suggests the process of the Securities and Exchange Commission's cohesive regulatory system meets his definition.

The Securities and Exchange Commission utilizes a process of open communication and cooperation between the regulator and the regulated as the foundation for its public action. The reliance on communication and cooperation between the Commission and the private sector creates a network of actors within the cohesive regulatory system. The system allows for fluidity in the process of sharing information between the public and the private. “Understanding how relationships between regulatory organizations and firms affect compliance thus is essential to understanding regulatory implementation” (McCaffrey, p. 308). The cohesive regulatory system of the SEC removes the boundary between the public and private sectors and establishes a collaboration of authority and resources as needed in new governance. The members of the interdependent network act in partnership and use negotiation and persuasion to develop and enforce rules to ensure the underlying assumption of the cohesive regulatory system of transparent and accurate financial disclosures. The performance of the cohesive regulatory system depends on all the actors within it collaborating toward the common goal of investor confidence and the integrity of the capital markets.

The cohesive regulatory system of the SEC provides an example of a tool of the new governance (Salamon, 2002). This article examines the dynamics of this tool in practice. The cohesive regulatory system operates effectively as long as the implicit assumption of trustworthy financial disclosures remains. As we explore in the next section the corporate scandals of 2001-02 exposed a shortcoming in the cohesive regulatory system that failed to prevent fraudulent practices. The shortcoming rendered the tool ineffective so that Congress felt the needed to reinforce and clarify the cohesive regulatory system’s foundation of open communication and cooperation among the actors inside and outside of the system.

The Breakdown of the Cohesive Regulatory System

The mission of the SEC is to protect investors, promote the integrity of the financial markets and facilitate capital accumulation (www.sec.gov). The Commission attempts to achieve its mission through the requirement of the disclosure of accurate financial information from stock issuing companies. The requirement of financial disclosure defines the cohesive regulatory system, which relies on truthful and open communication and cooperation between the regulated and the regulators. The SEC operates a two-tiered system that emphasizes interdependence among three groups of actors within the system: the SEC, self-regulating organizations (SROs) and investment firms.

First, the SEC establishes rules and regulations for the SROs and investment firms but relies on open communication among the groups for development and enforcement of its rules (see above). The private sector members of the cohesive regulatory system, SROs and investment firms, inform Commission members about market changes to assist the SEC in the development of new rules. To aid with the enforcement of the SEC's rules, the SROs and investment firms oversee market transactions and review financial disclosures to alert the Commission of discrepancies or fraud.

Second, the SEC relies on private self-regulating organizations (SROs) such as the New York Stock Exchange (NYSE) and the National Association of Securities Dealers Automated Quotations (NASDAQ) to establish and enforce rules for membership on the major financial exchanges (McCaffrey, et. al, 2006). The rules of membership reinforce Federal securities laws. The third group of actors, investment firms, such as Merrill Lynch and Goldman Sachs, need to be members of and have access to the exchanges to buy and sell stock. The formal relationship of membership and the SROs authority over the firms is the reason the firms are actors within the cohesive regulatory system. The SEC requires all publically traded companies or issuers to file

accurate annual financial disclosures. The firms monitor and review the financial disclosures of issuers, which are outside of the system.

Contained in the interdependent network are safeguards to ensure that the goal of the cohesive regulatory system of investor confidence and market integrity is attainable. The SEC requires all stock issuers to disclose annual financial statements. Issuers are not actors within the cohesive regulatory system. However, an investor's access to accurate financial information provides the basis of the system. The effectiveness of the cohesive regulatory system hinges on the accuracy of the disclosures. Within the cohesive regulatory system, investment firms represent the individual investor. A failure to disclose accurate information makes it difficult for an investment firm (or individual investor) to determine if the company is a lucrative investment. Four safeguards, three within the cohesive regulatory system and one outside of the system, ensure the accuracy of the disclosed information.

First, securities law requires independent auditors to certify the accuracy of annual financial disclosures. The requirement falls outside of the cohesive regulatory system and creates an external control for the accuracy of financial statements. Second, the SEC periodically reviews a publicly traded company's financial disclosures. (In 2001, the year prior to the passage of SOX, the SEC reviewed 2,280 annual financial disclosure reports [SEC 2001 Annual Report], approximately 7.5% of all the annual reports filed that year). Third, investment firms alert the Commission if the financial information of an issuer is not available, incorrect, or fraudulent. Investment firms routinely review the financial information as a matter of daily business. Because the large number of publicly traded companies makes it difficult for the SEC to review financial disclosures every year, the investment firms provide an internal check of the accuracy

of those disclosures. Last, the SROs not only establish rules for exchange membership but also provide a “check” of internal controls within investment firms.

Underlying the process of the cohesive regulatory system is the SEC’s recognition of and confidence in the responsibility of the individual investor to be informed and choose worthwhile investments (Khademian, 2002). The SEC requires that companies disclose financial statements. The SEC does not determine the financial strength of companies or endorse any company, investment firm or market. The Commission’s main role is to protect investors by ensuring that annual financial disclosures are available and accurate.

The corporate scandals of late 2001 and early 2002 arose from the failure of some public companies to disclose accurate financial statements. The failures became even more shocking when the scandals revealed that the independent auditors were involved in failing to report accurate financial statements. Even though auditing standards existed, these standards were inadequate in preventing the fall of Enron and other contemporary scandals. Executives of Enron, with the help of their independent auditors, Arthur Andersen LLP, reported false financial data, relied on derivatives and withheld many off-balance sheet transactions. At the time of the scandals, the established SEC rules required all companies trading on the open American stock markets to file an Annual Report and a Proxy Statement annually. These reports disclose the financial strength of the company and require the review or audit of independent auditors. The problem was not that companies failed to report financial information or violated existing regulation.

The problem uncovered by the scandals was that some companies, with the help of their respective independent auditors, failed to report accurate information. Companies could report fraudulent financial information showing a prosperous future, have the information certified by a

public accountant, file the information with the SEC and still fail within a year. There was a flaw in the existing regulations.

Free Market Ideology

The SEC's open communication system seemed to provide investors with access to accurate financial disclosures until the corporate scandals of 2001-02. The years between the Commission's inception and the scandals saw a change in economic ideology that exacerbated potential shortcomings in a system founded in responsibilities and trust. In the 1960s, Milton Friedman developed an economic theory based on a "free-enterprise, private-property system" (Friedman, p. 1, 1970). "In an ideal free market resting on private property . . . there are no values, no 'social' responsibilities in any sense other than the shared values and responsibilities of individuals (Friedman, p. 6, 1970). According to Friedman's ideology, a corporation cannot be aware of or act in response to social values, the corporation's only responsibility is to maintain its own survival through profit maximization (Friedman, 1970; Conrad, 2003; Govekar, 2008). "The use of the cloak of social responsibility . . . does clearly harm the foundations of a free society" (Friedman, p. 5, 1970). A corporation is "to use resources and engage in activities designed to increase its profits" (Friedman, p. 133, 1962; p. 6, 1970).

Friedman's ideas moved economic and political thinking from a Keynesian based system of economics, which supports government intervention in the macro-economy, to "free market fundamentalism" (Govekar, 2008, p. 285). Friedman believes governments and regulations hinder the development of the macro-economic system (Conrad, 2003). Government intervention obstructs capitalism. "There is nothing that could do more in a brief period to destroy a market system and replace it by a centrally controlled system than effective governmental control" (Friedman, p. 5, 1970). Friedman denounced deception and fraud, nevertheless, in the years after

his book Capitalism and Freedom (1962) and article “The Social Responsibility of Business is to Increase its Profits” (1970) his ideas became misconstrued to mean that profit was the only priority of a corporation.

After the corporate scandals of 2001 and 2002, the debate surrounding the social responsible of business or corporate social responsibility gained momentum (Stohl, et. al 2007, Christensen, 2007). A collection of essays in The Debate over Corporate Responsibility explores the historical development and rhetorical responses to corporate social responsibility throughout the late 19th and 20th centuries. In his chapter “How to Read Milton Friedman”, James Arnt Aune examines the rhetoric of Friedman and concludes that the economist’s ideas developed into an ideology that supports corporate profit and forgoes responsibility (Aune, 2007). In a similar argument, Charles Conrad (2003) claims the consequence of free-market fundamentalism is a culture of profit above responsibility and a political discourse of deregulation and limited government intervention. Friedman’s ideology became the foundation of political discourse in the United States during the latter part of the 20th century. (Aune, 2007, Conrad, 2007)

One of the consequences of free-market fundamentalism is of particular interest to our research, the concept of profit above responsibility. The Securities and Exchange Commission relies on the safeguards of the cohesive regulatory system for the review of financial information by independent auditors and the scrutiny of investment firms to detect fraudulent information. In free-market fundamentalism, investment firms and independent auditors have everything to gain and nothing to lose by accepting inaccurate financial statements rather than scrutinize the actual value of a company. If the investment firm’s goals are selling stock and auditor’s goals are keeping clients, in a culture of profit before social responsibility, exposing fraud then becomes a secondary responsibility (Conrad, 2003).

The concept of free-market fundamentalism weakened the cohesive regulatory system at the SEC. The idea of profit before responsibility became the accepted practice. As SEC Chairman Arthur Levitt explained in his statement before the Senate Committee on Banking, Housing and Urban Affairs in early 2002, “When the motivation to prop up stock prices overtakes the obligation to keep honest books, capital flows to the wrong companies and the very market system from which these executives profit is fundamentally weakened” (Levitt, 2002, p. 14). The corporate scandals of 2001 and 2002 exposed flaws in free-market fundamentalist thinking. Without trust in the safeguards of accurate reporting and open communication, the SEC became ineffective at preventing fraudulent financial disclosure. In the view of Congress, the SEC needed to increase guidelines for financial disclosures, develop stricter auditing standards and review the disclosure process more frequently.

The Passage of the Sarbanes-Oxley Act

It was not until the corporate scandals at Enron, Adelphia, Tyco and WorldCom that Congress took action to examine the failures of existing processes at the SEC. At the Senate Committee on Banking, Housing and Urban Affairs hearings on “Accounting Reform and Investor Protection”, Senator Richard C. Shelby (R-AL) explained in his opening statement, “I think that everyone recognizes that the Enron story is what has focused our (Congress) attention and led to today’s hearings. I am hopeful that the present investigations will uncover the facts and lead to the appropriate sanctions and perhaps prosecutions” (Shelby, 2002, p. 3). Members of Congress understood that action was necessary (Opening Statement, Senate Hearings, February 12) and quickly held Committee Hearings in the Senate Banking, Housing and Urban Affairs Committee and the House Committee on Finance. Ultimately, the result of the hearings was the passage of the Sarbanes-Oxley Act of 2002.

On February 12, 2002, the Senate Committee on Banking, Housing and Urban Affairs led by Senator Paul Sarbanes (D-MD) began hearings on the causes and consequences of the fall of Enron and the other contemporary scandals. Representative Michael Oxley (R-Ohio) introduced HR 3763, the “Corporate and Auditing Accountability, Responsibility and Transparency Act”, to the House Committee on Financial Services the same week. By July 2002, Congress presented the Accounting Industry Reform Act that was short-titled the Sarbanes-Oxley Act to President George W. Bush for his signature.

The Congress’s quick response to Enron and the other contemporary corporate scandals illustrates how quickly policy problems and solutions can arrive on the national agenda. As John W. Kingdon (2003) explains in Agendas, Alternatives and Public Policies, policy ideas survive in “streams”. Participants inside and outside of government have normative ideas about answers to policy problems. Often the ideas move through the policy streams in increments, through the routine process of government, eventually making it to the national agenda. However, a push or in Kingdon’s words a “focusing event” (Kingdon, 2003, p. 94) reinforces the problem until it becomes noticed. Focusing events that are of crisis proportion, such as the corporate scandals of 2001-2002, lend a sense of urgency to decision making (Kingdon, 2003). The passage of SOX illustrates how a policy problem catapults onto the national conscience and opens a policy window.

The idea of auditor reform was not new. During the 1990s SEC Chairman Arthur Levitt and SEC Chief Accountant Lynn Turner advocated changes to corporate governance and independent auditor standards (Cunningham, 2003; Canada, et. al, 2008; Khademian, 2002) but accounting and other business lobbies thwarted these efforts (Canada, et. al, 2008, Khademian, 2002). The collapse of Enron was the focusing event that opened a policy window for reform of

the public accounting industry: the passage of Sarbanes-Oxley followed a mere five months after the first Congressional hearings, a notably swift response to the policy problem that occasioned it.

The intent of the Sarbanes-Oxley Act is to develop stricter guidelines for financial disclosure and increase investor confidence. Its purpose is “to protect investors by improving the accuracy and reliability of corporate disclosures made pursuant to the securities laws” (Public Law 107-204, 116 Stat. 745, “The Sarbanes-Oxley Act of 2002”). As then Chairman William H. Donaldson of the Securities and Exchange Commission explained in a Congressional hearing on the implementation of the Sarbanes-Oxley Act one year after its passage, “The Act effects dramatic change across the corporate landscape to re-establish investor confidence in the integrity of corporate disclosures and financial reporting” (Donaldson, 2003, p. 1). The Sarbanes-Oxley Act clarifies the function of disclosure as fundamental in the ability of investors to make informed decisions.

Although the Act contains eleven sub-titles that address specific aspects of the shortcomings in existing regulation exposed by the corporate scandals of 2001-2002, we focus our analysis on the goal of increasing investor confidence by rebuilding the foundation of the cohesive regulatory system. The foundation of the system at the Securities and Exchange Commission is a trust in accurate financial disclosure. The creation of stricter and clarified guidelines for financial disclosures and auditor independence is meant to reinforce the foundation of the system and construct an environment that increases investor confidence. The development of specific guidelines for analysts in investment firms is projected to bolster the process for the detection of fraud. In essence, stricter and clarified guidelines of financial

reporting and practices for securities analysts were intended by Congress to address failures within the existing cohesive regulatory system.

Existing literature evaluating the Sarbanes-Oxley Act of 2002

Most of the scholarly attention devoted to the passage of the Sarbanes-Oxley Act has been by the business and legal disciplines rather than public administration and policy. The focus of these studies is not the effectiveness of the Act in achieving its goal of investor confidence, but the consequences and cost of the Act on conducting (for-profit) business. Below are brief descriptions of some of the existing literature on the Act.

The article “Transparency: panacea or Pandora’s box” by Theodora C. Welch and Eugene H. Rotberg address the issues for the business and legal disciplines and the implication of SOX on transparency. The adverse effects of regulation namely the requirement of full financial disclosure are explored. The article calls for the research of the unintended consequences of transparency. Is a company’s ability to take risk strategy and make the largest possible profit inhibited by transparency? Does having disclosures occur during a certain period create a market that is susceptible to swooping highs and bottoming lows without reason? Is money forced to move to private rather than public equity funds?

“Ideological reactions to Sarbanes-Oxley” by C. Richard Baker explores numerous articles that attempt to discredit SOX. Exploring four groups that have evaluated SOX, financial executives, free-market political forces (namely the Free Enterprise Fund), academic accounting researchers and non-US based companies, Baker determines the groups are highly critical of SOX. One group, the free market political forces, has filed for the elimination of the Act on the grounds it is too costly, prevents the free flow of capital and encourages companies to list on

foreign exchanges. Baker argues that the design of the Act demonstrates a commitment to the ideological foundation of capitalism. The Act does not attempt to control the flow of capital but emphasizes the restoration of credibility to the capital markets. (Baker, 2007).

In “The Sarbanes-Oxley Yawn: Heavy Rhetoric, Light Reform (And it Just Might Work)”, Lawrence A. Cunningham argues that SOX was not reform as much as a spotlight on best practices and a reinforcement of existing regulation. Cunningham’s article does not focus on the adverse effects of SOX. Its focus is on the provisions of the Act and that those provisions are not the actions of sweeping reform. Cunningham points out that Sarbanes-Oxley fails to address one crucial element of the corporate meltdowns of 2001-2002, executive compensation and stock option issuance and valuation practices (Cunningham, 2003). Even though SOX is not sweeping reform, the Act may just restore the confidence in the existing system through the explicit description of the financial disclosure process and additional steps to assure the independence of auditing firms.

M. Babajide Wintoki argues that the argument prior to SOX that corporate boards were ineffective is flawed. This flaw then makes the regulation “detrimental to certain firms.” Through empirical research using proxies for costs and benefits, Wintoki concludes that the cost to business of outside director monitoring outweighs the benefits of SOX.

Ivy Xiyang Zhang explores the private cost of SOX in “Economic consequences of the Sarbanes-Oxley Act of 2002”. Based on an empirical analysis, Zhang compares the market returns in the US during significant events around the passage of SOX and compares the market returns with foreign market returns. Zhang concludes that investors responded negatively to SOX, and that this negativity is reflected in lower returns in the US market versus foreign markets.

In 2007, the Journal of Corporate Finance dedicated an entire issue to the questions raised by the regulation of the capital markets. Janet Kiholm Smith summarizes the issue in the article “Evaluating the boundaries of SEC regulation”. The issue presents both sides of the argument in regulation. One side argues that regulation hinders the growth of individual firms and therefore limits the wealth potential of investors. The other side argues that a market that has grown to rely more heavily on hedge funds and private equity and has seen numerous accounting scandals and fraud requires stricter regulation to protect investors.

In a National Bureau of Economic Research Working Paper, Benjamin E. Hermalin and Michael S. Weisbach explore the development of the rules of SOX through the Ronald H Coase’s economics theorem. Coase’s microeconomic theorem focuses on the internal structure of firms and the costs related to production. Hermalin and Weisbach argue that SOX is no more than a contract restriction that inevitably imposes unnecessary costs on firms. Using an evaluation of CEO remuneration, Hermalin and Weisbach argue the failings discovered in the corporate scandals were not completely the fault of the individuals involved. The “market” did not thoroughly question the activities of the individuals and allowed for the occurrence of fraud. The authors argue that eventually the market would have come to its own equilibrium around what acceptable corporate practices are and thus mitigate the need for Sarbanes-Oxley.

In “Enron as a symptom of audit process breakdown: can the Sarbanes-Oxley Act cure the disease”, Charlie Cullinan examines the actions of an audit professional in the process of conducting an independent audit. Through applying the process of an audit to each of the corporate scandals of 2001-2002, Cullinan concludes that SOX does not address all the possible shortcomings of an audit. Each scandal had specific failings and Sarbanes-Oxley only addresses the shortcomings in the most notable scandal, the collapse of Enron. The Act needs to include

additional provisions for “intellectual ability and diligence (as opposed to objectivity) of auditors to recognize problems” (Cullinan, p. 862, 2004) As Cullinan explains, SOX addresses the symptoms of the breakdown and not the underlying disease of a lack of a sense of “public duty” (Cullinan, p. 862, 2004).

J. Harold Mulherin explores the conceptual issues that surround securities market regulation markets and measurement issues to determine the effects of any regulation to the market. The article includes critiques of several attempts to analyze the effects of Sarbanes-Oxley on the markets. Mulherin claims, “as is typical of legislation the Act evolved through Congress over a lengthy period” (p. 429) and is difficult to pinpoint a time when the Act should have effected the markets.

Research question and hypotheses

As the previous discussion shows, most studies conducted on the effects of the Sarbanes-Oxley Act are written by scholars in the business and law disciplines and examine the burdens of SOX on the private sector. These studies are enlightening, however they do not address the central questions of whether SOX achieved its public goals, and whether Congress’s response was effective in this regard. To our knowledge, these questions have not been investigated empirically. Accordingly, we focus on the two goals of the legislation: 1) providing more stringent financial disclosure enforcement by the SEC and 2) increasing investor confidence.

The root of the corporate scandals of 2001-02 was the failure of some companies to disclose accurate financial statements. To address this flaw in previous SEC regulations the Sarbanes-Oxley Act requires the Commission to review every publicly traded company at least once every three years. We hypothesize that the SOX stipulation of the review of a company’s financial disclosures every three years will increase the number of possible violations of the

Securities Acts investigated by the SEC. We also anticipate that the same stipulation will lead to an increase in the identification of financial disclosure cases requiring enforcement actions by the SEC.

The overall goal of the Sarbanes Oxley-Act is to increase investor confidence in the capital markets. To determine if the passage of the Act increases investor confidence two proxy measures are used: stock option volatility² and trading volume. With these measures, a decrease in volatility is indicative of increased confidence while and an increase in trading volume is assumed to reflect an increase in confidence. We expect that increased investor confidence will yield increased stock prices, i.e., the higher the stock price, the higher the investor confidence. Therefore, we expect the passage of the Sarbanes-Oxley Act to increase stock price. We analyze the effect of the passage of the Act on two stock market indices, the Standard and Poor's 500 (SNP500) and the Dow Jones Industrial Average (Dow), which reflect the response to the Act on the overall market. In sum, we test the following hypotheses:

- H1: Because the Sarbanes-Oxley Act requires that the SEC review financial disclosures every three years, passage of the Act will increase the identification and investigation of possible violations of the Securities Acts.
- H2: The passage of the Sarbanes-Oxley Act will lead to an increase in the number of financial disclosure enforcement cases opened by the SEC.
- H3: The passage of the Sarbanes-Oxley Act will increase investor confidence in the stock market.
- H4: The passage of the Sarbanes-Oxley Act will increase investor confidence, thus yielding increased stock value.

Data

To test these hypotheses the study uses five time series created from data made available by the Securities and Exchange Commission, Yahoo Finance and the New York Stock Exchange. The first dataset, used to test hypotheses H1 and H2, is gathered from the Securities and Exchange Commission Annual Reports from 1978 to 2008 on enforcement, investigation and market size available at www.sec.gov. Downloaded from Yahoo Finance to test hypotheses H3 and H4 were daily data from two stock market indices: the Chicago Board of Options Exchange Volatility Index (VIX) and the Standard and Poor's 500 (SNP 500). The Chicago Board of Options Exchange Volatility Index (VIX) "is a measure of market expectations of near-term volatility conveyed by SNP 500 stock index option prices" (Chicago Board Options Exchange, 2009). The index is considered a proxy for investor sentiment or confidence (Baker and Wurgler, 2007). The SNP 500 is a broad-based market index that includes firms of varying size and reflects the overall reaction of the market (Jain, 2006). The index consists of 500 securities traded on the US markets. It is weighted based on a company's market capitalization and reflects approximately 75 percent of the US equities market (Standard and Poor's, 2009).

Both the VIX and the SNP 500 are proxies for investor confidence and market trends respectively. To confirm or counter the results of the hypotheses tests two additional proxies were created for investor confidence and market trends. An additional proxy for investor confidence is the ratio of volume of shares traded on a given day to the total number of shares listed or outstanding (Baker and Wurgler, 2007). Downloaded from Yahoo Finance was daily volume from the New York Stock Exchange (NYSE); the ratio was calculated using the average number of shares listed on the exchange for the years 2001 and 2002 (New York Stock Exchange, 2009). As a second proxy for the reaction of the market to the Sarbanes-Oxley Act, the Dow Jones Industrial Average was downloaded from Yahoo Finance. The Dow is comprised

of 30 leading companies that account for 25 to 30 percent of the total market. The Dow average is tallied by adding the prices of all the components and dividing by a factor that takes into account possible changes to individual stocks such as stock splits (Dow Jones Indexes).

We use six dependent variables to test the hypothesis. The investigation and enforcement dataset for testing H1 and H2 was compiled from data included in the Securities and Exchange Commission's annual reports for the period 1978 through 2008 (n=31). For the first hypothesis the dependent variable is the number of investigations of possible violations of the Securities Acts opened by the Commission during the fiscal year. We calculate a rate of investigations relative to the size of the market (Variable name: *OpenInvestigations*)³. The dependent variable in the second hypothesis is the percentage of actual enforcement cases brought to legal action by the Securities and Exchange Commission relative to all opened legal actions that concern violations of financial disclosure requirements (*PerFinancial*).

The remaining four dependent variables tap the anticipated effects of the Sarbanes-Oxley Act on established market proxies. The accepted approach to evaluate the response of the market to an event is the examination of the rate of return (Schwert, 1981). The outcome variable is the abnormal return at any given time t . The abnormal return to measure investor confidence is the difference in volatility from the expected volatility for the VIX index (AMV_t) and the difference in trading volume from expected volume (ATV_t). For stock price, the abnormal return is the difference of rate from an expected rate of return on the stock price for both the SNP 500 ($ASNPR_t$) and Dow ($ADowR_t$) indices. Returns are calculated as a rate of change from one period to the next (R_t). Abnormal returns are excess/deficient returns relative to the expected return (AR_t). The expected return is an average of the rate of return for a normal period (R_{mt}). For this study, the expected return is the mean of the rate of return for all dates prior to the event window,

i.e. from Friday August 3, 2001 through Monday, July 22, 2002. The formula used to calculate the abnormal market volatility, trading volume and stock return for all index datasets is:

$$AR_t = R_t - R_{mt}$$

where

AR_t = abnormal market volatility or stock return

R_t = the raw market volatility or stock return of the index on date t

R_{mt} = average volatility or stock return on the market portfolio

To test H1 and H2 a dichotomous variable identifies the passage of the Sarbanes-Oxley Act in 2002 (*SOX*). The variable is coded for unity from 2002 through 2008 (post-*SOX*) and zero for all years prior. An additional dummy variable identifies a change in the annual financial disclosure availability at the Securities and Exchange Commission. In 1986 the Commission implemented a program that created access to financial disclosures on the World Wide Web: EDGAR (Electronic Data Gathering Analysis and Retrieval) allowed investors greater access to financial disclosures and enabled the SEC to review disclosures more efficiently (SEC Annual Report 1986). Because the introduction of EDGAR may have influenced the number of investigations and enforcement cases opened, we include a dummy variable (*EDGAR*). The variable is equal to one for all years from 1986 forward and zero prior to 1986.

To test hypotheses H3 and H4, we use the accepted econometric method of evaluating the effect of an event of the financial markets or an event study. The event study methodology uses time-series for analysis of the influence of a particular event on an outcome (Campbell, 2007; Wooldridge, 2006; Rose, 1985). The analysis includes 250 periods from Friday, August 3, 2001 through Tuesday, August 6, 2002 that includes the passage of *SOX* on Tuesday, July 30, 2002. We use daily data to reduce the possible “noise” that monthly and weekly data create (Rose, 1985). Friday August 3, 2001 through Tuesday, August 6, 2002 is the 250-day date range of the

dataset (n=250) for all market datasets. To isolate the event, the passage of SOX, a dummy variable was created with unity assigned for the “event window” of five periods (days) prior to the passage and five periods (days) after the passage, and zero at all other points (*SOX*). The event study literature explains that the event window is considered 5 days prior and 5 days after the date of the event (Brown, 1985; Jain, 2006; Rose,1985) for a total of 11 time points (or days).

A second dichotomous variable included in our tests of investor confidence and stock price controls for the effects of a speech (*Speech*) by President George W. Bush on July 9, 2002 that called for increased penalties on corporate fraud and greater corporate responsibility by CEOs (Online NewsHour, 2002). The event window for the speech is one period prior to the speech and the five periods after the speech. The explanation for including the time prior to the event is to account for the anticipation of the speech (Rose, 1985). The President’s speech was not announced until one day prior to the speech, so that the one period (day) anticipation period is adequate and appropriate. Table 1 presents the descriptive statistics for all six dependent variables.

[Table 1 about here]

Models

To test hypotheses H1 and H2, an interrupted time-series was used to evaluate the effects of the Sarbanes-Oxley Act on investigations and enforcement cases by the SEC. For hypotheses H3 and H4, an event study was designed to evaluate whether SOX exerted a statistically significant influence on investor confidence and on the stock price. We test the following models:

For hypothesis H1 the model is:

$$OpenInvestigations = \beta_0 + \beta_1Time + \beta_2SOX + \beta_3SOXCounter + \beta_4EDGAR + u_t$$

where

OpenInvestigations = the rate of investigations into possible violations of the Securities Acts opened by the Securities and Exchange Commission
Time = an annual counter variable with year 1 = 1978
SOX = a dummy variable equal to 1 after the passage of Sarbanes-Oxley (2002-2008) and 0 otherwise
SOXCounter = an annual counter variable with year 1 = 2002 evaluates the time trend following the passage of SOX
EDGAR = a dummy variable equal to 1 after the implementation of EDGAR (1986-2008) and 0 otherwise
 u_t = random disturbance

The model used to evaluate hypothesis H2 is:

$$PerFinancial = \beta_0 + \beta_1 Time + \beta_2 SOX + \beta_3 SOXCounter + \beta_4 EDGAR + u_t$$

where

PerFinancial = the percentage of annual enforcement cases related to financial disclosure opened by the SEC
Time = an annual counter variable with year 1 = 1983
SOX = a dummy variable equal to 1 after the passage of Sarbanes-Oxley (2002-2008) and 0 otherwise
SOXCounter = an annual counter variable with year 1 = 2002 evaluates the time trend following the passage of SOX
EDGAR = a dummy variable equal to 1 after the implementation of EDGAR (1986-2008) and 0 otherwise
 u_t = random disturbance

Using the following model we perform two (2) tests of the effects of SOX on investor confidence with the dependent variables abnormal market volatility and abnormal trading volume (H3):

$$AV_t = \beta_0 + \beta_1 Time + \beta_2 SOX + \beta_3 Speech + u_t$$

where

AV_t = the abnormal volatility or trading volume at time t
Time = the counter variable for the stochastic effect of time t with day 1 = August 3, 2001
SOX = a dummy variable equal to 1 for the event window of the passage of Sarbanes-Oxley (July 23, 2002 to August 6, 2002) and 0 otherwise
Speech = a dummy variable equal to 1 for the event window of President George W. Bush's speech on corporate fraud (July 8, 2002 to July 16, 2002) and 0 otherwise

u_t = random disturbance

Using a model with the same independent variables, we conduct two (2) tests of the effect of SOX on stock price with the dependent variables abnormal return on the SNP 500 and abnormal return on the Dow (H4):

$$AR_t = \beta_0 + \beta_1 Time + \beta_2 SOX + \beta_3 Speech + u_t$$

where

AR_t = the abnormal return on the SNP 500 or the Dow at time t

$Time$ = the counter variable for the stochastic effect of time t with day 1 = August 3, 2001

SOX = a dummy variable equal to 1 for the event window of the passage of Sarbanes-Oxley (July 23, 2002 to August 6, 2002) and 0 otherwise

$Speech$ = a dummy variable equal to 1 for the event window of President George W. Bush's speech on corporate fraud (July 8, 2002 to July 16, 2002) and 0 otherwise

u_t = random disturbance

We use Ordinary Least Squares with an interrupted time series to estimate the regression coefficients for H1 and H2. The data are annual based on Annual Reports from the SEC. We use Ordinary Least Squares with an event study design to estimate the regression coefficients of H3 and H4. Consistent with that methodology the data includes 250 data time points. Because of the possible existence of arbitrary serial correlation and heteroskedasticity, the Newey West method is used to calculate serial correlation robust standard errors to ensure the regression models meet all the assumptions of time-series analysis (Wooldridge, 2006).

Findings

Table 2 presents the results of the model estimation for H1 and H2. The results of hypothesis test 1 (H1) show that SOX had no immediate statistically significant effect on the number of investigations of possible violations of the Securities Act. However, in the long-term

the passage of the Sarbanes-Oxley Act is associated with an annual increase in investigations of possible violations of the Securities Act by 4 percent and is statistically significant at $p < .01$.

[Table 2 about here]

The results of hypothesis test 2 (H2) imply that the passage of SOX is associated with an immediate increase in the number of enforcement cases related to financial disclosure by almost 9 percent (0.087). This effect is also statistically significant at $p < .01$. Additionally, the test of H2 shows that the passage of the Act is associated with a long-term decrease in financial disclosure enforcement cases by about 1 percent (-0.009) and is statistically significant at $p < .01$.

Table 3 presents the results of the model estimation of the effect of the Sarbanes-Oxley Act on investor confidence. As shown in Table 3, the two tests of hypothesis 3 (H3) confirm that the passage of SOX had no statistically significant effect on investor confidence. However, the tests return conflicting results with respect to President Bush's speech given on July 9, 2002, three weeks before final passage of SOX. An increase in volatility is believed to reflect a decrease in investor confidence. The Volatility Index (VIX) is often referred to as a "fear index", and as it increases investor fear is thought to rise. The hypothesis test with VIX shows that the passage of SOX had no statistically significant effect on investor confidence. By contrast, the speech given by President Bush is associated with a 0.062 increase in volatility (or decrease in investor confidence) and is statistically significant at $p < .01$.

[Table 3 about here]

The second test of H3 uses trading volume (from the New York Stock Exchange) as a proxy for investor confidence. Trading volume assumes that irrational investors (the inexperienced or individual rather than a broker or analyst) will trade when confidence is high (Baker and Wurgler, 2007). The test confirms the results of the first test of H3 that the passage of

the Sarbanes-Oxley Act had no statistically significant effect on investor confidence. Additionally, the second test of H3 confirms that the speech given by President Bush had a statistically significant effect on investor confidence. However, the results of the second test indicate that the speech is associated with a one percent (.009) increase in trading volume (or increase in investor confidence) and is statistically significant at $p < .05$.

Table 4 presents the results of the two tests of H4 concerning the effect of the passage of the Sarbanes-Oxley Act on stock price. Both tests show no statistically significant effect of the passage of SOX on stock price. Nevertheless, the tests suggest that the speech given by President Bush had a statistically significant effect ($p < .01$) on stock price: the speech is associated with a decrease in return on the Standard and Poor's 500 by one percent (-.010) as well as a decrease in return on the Dow Jones Industrial Average by about the same amount (-.012).

[Table 4 about here]

Conclusion

To our knowledge, no empirical analysis of the effects of the Sarbanes-Oxley Act of 2002 has been conducted within the framework of public administration and policy. As Anne Khademian explains, "The field of public administration has a vital role to play in the current debate, taking a place beside MBAs, economists, and journalists to provide the research and insights needed for designing, implementing, and managing the financial regulatory strategy of the future" (Khademian, 2009). Our purpose in this article has been to assess the effectiveness of the Act with respect to reducing fraudulent financial disclosure and increasing investor confidence, Congress's stated goals for the legislation. To achieve these goals, the Act creates stricter guidelines for information disclosure.

The results of our test of the first hypothesis reveal that the passage of the Sarbanes-Oxley Act may not have had an immediate statistically significant effect on investigations of possible violations of the Securities Act. One explanation is that the SEC may not have had sufficient staff to increase investigations; at the time of the passage of the Act the SEC may have been understaffed (Khademian, 2002). Included in the Act is a provision for authorization to increase in staffing levels. Our analysis shows in the long-term the Sarbanes-Oxley Act did have an effect on the number of investigations conducted by the Securities and Exchange Commission. We may speculate that an increase in staffing levels may be responsible, at least in part, for this result.

With regard to Hypothesis 2, the statistical test shows that the percentage of enforcement cases related to financial disclosure violations increased immediately after the passage of the Sarbanes-Oxley Act. The Securities and Exchange Commission was under scrutiny for failing to uncover the fraudulent practices of some public corporations and, therefore, may have had an increased incentive to root out financial disclosure violations. SOX created the Public Company Accounting Oversight Board, which is designed to monitor more closely the process of independent auditors (Donaldson, 2003). As a result, we might expect the long-term decrease in fraudulent cases as substantiated by our statistical analysis.

We used two proxies to measure investor confidence for tests of Hypothesis 3. The statistical analysis reveals that the passage of the Sarbanes-Oxley Act had no impact on investor confidence, but that a speech made by President Bush regarding corporate responsibility and executive compensation on July 9, 2002 had conflicting results. Several factors may be responsible. These findings may stem from the fact investor confidence is notoriously difficult to measure. It is also possible that the Act has yet to achieve its goals. Another implication may be

the Act left investors uncertain about the profitability of publically traded companies post-SOX due to a belief the Act would place undue financial burdens upon them.

The interpretation of the results of the two tests of H4 indicates no statistically significant change in stock price return attributable to passage of the Sarbanes-Oxley Act, thus suggesting that there was no significant short-term effect of the Act on stock value. The significant effect of President Bush's speech close to the passage of the Sarbanes-Oxley Act bears further scrutiny, however, the speech is associated with a decrease in stock price, which implies that the market was uncertain about the potential effects of the impending legislation.

In sum, our statistical analysis of the effects of the Sarbanes-Oxley Act reveal mixed results. In general, enforcement procedures by the Securities and Exchange Commission appeared to increase, particularly investigations of possible violations of the Securities Acts in the long-term. Additionally, there was an immediate apparent effect of SOX on enforcement cases concerning financial disclosure. The percentage of enforcement cases concerning financial disclosure decreased in the long-term, a finding which may imply that the increased standards mandated by SOX are effective. Thus, SOX may have had an effect on internal procedures at the SEC. However, the Act appears to have had no statistically significant effect on market indices, assessing investor confidence and stock price. Future study might investigate various provisions and implementation of the Act. At present, though, the findings presented here emanate from the first empirical evaluation of the effects of the Sarbanes-Oxley Act from a public administration/policy perspective. Future study on the specific provisions and implementation of the Act is warranted. At present, the findings of this research represent an initial evaluation of the empirical effects of the Sarbanes-Oxley Act from a public administration/policy perspective.

Table 1: Descriptive Statistics for Dependent Variables

	H1	H2	H3		H4	
	Open Investigations (<i>OpenInvestigations</i>)	Percent of Enforcements that are Financial Disclosures (<i>PerFinancial</i>)	Abnormal Market Volatility (<i>AMV_t</i>)	Abnormal Trading Volume (<i>ATV_t</i>)	Abnormal Return in the SNP 500 (<i>ASNPR_t</i>)	Abnormal Return in the Dow (<i>ADowR_t</i>)
Minimum	0.2149	0.1081	-0.2519	-0.00697	-0.0476	-0.07011
Maximum	1.7042	0.3300	0.4938	.00403	0.0589	0.06466
Median	0.4823	0.1754	-0.0065	-0.00004	0.0001	-0.00007
Mean	0.6425	0.1921	0.0044	0.00007	0.0003	0.00032
St. Deviation	0.4339	0.0626	0.0821	0.00097	0.0144	0.01470
N	29	26	250	250	250	250

Table 2: Interrupted time-series Analysis of the Effects of the Passage of the Sarbanes-Oxley Act of 2002 on SEC Investigations and Enforcement cases

Independent Variables	Dependent Variables					
	Investigations (H1) (<i>OpenInvestigations</i>)			Enforcement Cases (H2) (<i>PerFinancial</i>)		
	Estimate	t value		Estimate	t value	
(Intercept)	1.45406	28.4147	***	0.09415	10.1521	***
Time	-0.04328	-7.3225	***	0.00529	8.2708	***
SOX	0.23975	1.8481		0.08668	9.7253	***
SOXCounter	0.03997	2.6651	***	-0.00908	6.1556	***
EDGAR	-0.30979	3.1812	***	-0.01518	2.5147	***

*** statistically significant at p<.01

Table 3: Event Study Analysis of the Effects of the Passage of the Sarbanes-Oxley Act of 2002 on Investor Confidence (H3)

Independent Variables	Dependent Variables			
	Abnormal Market Volatility (AMV_t)		Abnormal Trading Volume (ATV_t)	
	Estimate	t value	Estimate	t value
(Intercept)	-0.000191	0.0161	-0.000321	-1.1556
Time	0.000024	0.3074	0.000002	1.1768
SOX	-0.004962	0.1391	0.001343	1.4801
Speech	0.062463	5.3694 ***	0.009416	2.1054 **

*** statistically significant at $p < .01$

** statistically significant at $p < .05$

Table 4: Event Study Analysis of the Effects of the Passage of the Sarbanes-Oxley Act of 2002 on Stock Price (H4)

Independent Variables	Dependent Variables			
	Abnormal Return on SNP 500 ($ASNPR_t$)		Abnormal Return on Dow ($ADowR_t$)	
	Estimate	t value	Estimate	t value
(Intercept)	0.001721	0.7426	0.001299	0.5105
Time	-0.000012	0.6842	-0.000008	0.4270
SOX	0.007518	1.1062	0.007776	0.9792
Speech	-0.010575	3.061 ***	-0.012697	4.8403 ***

*** statistically significant at $p < .01$

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¹ Derivatives are contracts whose value is derived from other financial assets such as stocks or commodities, but in theory, control for the risk involved in the transaction. Risks include a change in interest rates or foreign currency values. Derivatives trade in the form of forward contracts, futures contracts, options and swaps.

² Volatility is a beta coefficient that “approximates a security's returns against the returns of a relevant benchmark” (investopedia.com)

³ The size of the market was determined using an average security value calculated using the total dollar value on the exchanges divided by the number of securities traded.