The Overall and Differential Effect of the Sarbanes-Oxley Act on U.S. Publicly Traded Companies

Honors Thesis

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ABSTRACT

The Sarbanes-Oxley Act was enacted in July 2002 in response to major accounting scandals. This thesis investigates the announcement effects surrounding the passage of SOX to examine the differential impact of SOX on U.S. publicly traded companies. As the Act requires greater transparency of financial reporting and imposes burden on managers through mandatory CEO/CFO certification of financial statements, the associated compliance costs create a significant loss in total market value that amounts to $1.4 trillion (Zhang 2005). It is predicted that SOX has a disproportionate negative impact on small firms due to the fixed cost component of the compliance costs and the characteristics of small firms (i.e. they compete on flexibility but SOX limits it). Previous studies show that the imposed compliance costs lead to a significant number of firms going dark or private in the post-SOX period, which suggests that the imposed compliance costs outweigh the induced benefits of SOX to shareholders (Engel 2004). While past studies have been done to examine the effect of SOX on public firms in general, this thesis is specifically interested in how different firm sizes react differentially to the events leading the passage of SOX. Through the event study methodology, the event day effect on stock returns and abnormal returns will be examined to see if the market also perceives the Act to have a negative impact on firms.

I. BACKGROUND

With the high-profile corporate corruptions in the U.S. in 2001-2002, the Congress swiftly enacted the Sarbanes-Oxley Act (the Act or SOX hereafter) to improve the accuracy and reliability of financial reporting. SOX creates a regulatory body to oversee the accounting industry and imposes numerous significant and potentially far-reaching reforms in public company governance and disclosure requirements. The confluence of surrounding events, including the plummeting stock markets, approaching elections, and the summer recess, created a charged political environment that put tremendous pressure on Congress and the President to pass the legislation (Zhang 2005). The complexity of the Act and the lightning speed of its passage raise questions on its economic consequences on U.S. publicly traded firms and its purpose in restoring investors' confidence. SOX is one of the most sweeping revisions of the federal securities laws in the last 60 years. When President Bush signed the Act into law, he described it as "the most far-reaching reforms of American business practices since the time of Franklin Delano Roosevelt." (White House Corporate Accountability Reform)

Unlike previous federal regulations that are mainly concerned with disclosure requirements, SOX has a number of major provisions that are actual mandates. They introduce significant changes in both management's reporting responsibilities and the scope of the responsibilities of the auditor. The Public Company Accounting Oversight Board (PCAOB) that SOX creates requires external auditors to submit opinions on manager's assessments as well as their own evaluation of control effectiveness (Li 2006). Other responsibilities of PCAOB include registering public accounting firms, establishing standards related to preparation of audit reports to issuers, and overseeing public accounting firms. SOX includes other major provisions that prohibit auditors from performing non-audit services for their audit clients, call for audit

committee independence, require executive certification concerning the quality of internal controls, and prohibit corporations from extending credit to executives. Among these provisions, Section 404 of the Act is considered the most costly provision to corporations. Section 404 imposes an extensive obligation on managers to assess the quality and effectiveness of internal controls (Butler et al. 2006). While these provisions improve corporate governance and enhance the quality of financial reporting, they also promote audit effectiveness by regulating the potential conflict of interest between auditors, legal counsel, and analysts, and increasing the criminal and civil liability for violations of securities laws. (For further details of SOX provisions, please refer to Appendix II.)

Given the extensive provisions of SOX, the Act affects social costs in a two-fold manner. SOX is socially beneficial to investors by protecting investors and increasing investors' confidence. By minimizing accounting frauds, SOX shields investors from potential investment risks due to corporate frauds. As the Act increases transparency of financial reporting, it also prevents investors from making ill-informed investment decisions due to the accounting manipulations of firms. However, SOX increases social costs by restricting companies from making changes. As explained further in the next few paragraphs, SOX provisions may increase social costs by discouraging acquisitions of smaller firms by larger firms. Firms often want to avoid the lengthy work of reevaluating their internal controls as required by the executive certification provision, so they may give up the opportunities for new acquisitions or other significant changes that would affect their internal controls. As a result, companies would rather stay safe and avoid implementing new ideas.

Although SOX is claimed to restore investors' confidence, the associated direct compliance costs may also outweigh the stated benefits. As SOX requires deeper oversight of

financial reporting, it changes managements' reporting responsibilities and imposes more stringent responsibilities on the auditor. According to the SEC's initial estimate, implementing Section 404 "would impose an additional 5 burden hours (equivalent to $375) per issuer in connection with each quarterly and annual report." (Butler et al. 2006) This estimate was later revised to around $91,000 per company, not including "additional cost burdens that a company will incur as a result of having to obtain an auditor's attestation." (Butler et al. 2006) Nonetheless, SEC's revised cost estimate was far lower than the estimated compliance costs computed by Financial Executives International (FEI) and AMR Research. While FEI surveyed 224 public companies and estimated that the first year compliance cost would increase 53% to $3 million, AMR Research estimated that companies will spend $6 billion to comply with SOX in 2006 (Butler et al. 2006). The likelihood that the compliance costs of SOX outweigh its benefits is again asserted by an August 2003 survey of executives by *CFO Magazine*. This survey indicates that 70% of the respondents did not believe that the benefits of complying with SOX justify with its costs (Zhang 2005).

The SOX provisions concerning internal control place a disproportionately negative burden on small firms. Small firms have higher overhead costs per unit of capitalization compare with large firms. These firms often compete through flexibility – the ability to change business plans rapidly to meet customer needs. SOX may have a disproportionately negative impact on small firms by imposing stringent and inflexible rules and increasing overhead costs. For instance, one study found that the provision regarding audit committee independence imposes an increased cost from $5.91 to $9.76 to independent directors per $1,000 in sales after SOX for small firms, while it only imposes an increased cost from $0.13 to $0.15 per $1,000 in sales for large firms (Butler et al. 2006). Small firms may also be disproportionately affected,

because they tend to have a larger portion of non-independent board members. As a result, they need to make more changes to internal control in order to comply with the new rules (Butler et al. 2006).

SOX also imposes costs by causing firms, especially small firms, to either go private or stay privately held. The Act imposes a disproportionately negative impact on small firms as they tend to find internal control problems. The internal control reporting provision is inherently less beneficial for small firms as they pose a lower risk of business failure to the economy. Furthermore, small firms benefit less from internal control structures, because they rely on managers who can often override internal controls (Butler et al. 2006). The disproportional negative impact that SOX places on small firms causes these firms to reduce their public ownership by either becoming privately held or going dark (Engel 2006). As public ownership enables diversification of risk that makes it cheaper for diversified stockholders to bear risks, SOX reduces the flow of resources to riskier firms like small firms and startup ventures. This may potentially limit innovation and invention.

By shifting risk-bearing responsibilities to firms, SOX distorts executives' incentives and investment decisions. Because SOX demands the attention of all board members and senior officers of all publicly traded firms, it may potentially divert managers' attention from maximizing shareholder value. Since the Act exposes managers to greater risk of SOX liability and rigid penalties, executives are likely to take less risky activities. In some cases, executives choose to leave publicly traded firms for private equity firms (Zhang 2005). This increases the agency costs of companies when firms spend too much time and resources on complying with SOX, or when managers are too risk averse to take on positive net present value projects to

maximize firm value (Butler et al. 2006). The reallocation of risks consequently changes executives' business strategies, potentially reducing firm value.

In addition to the direct and indirect compliance costs that SOX imposes on publicly traded firms, it is also costly for firms to eliminate all corporate fraud. In order to minimize frauds, stringent controls often remove most discretion and flexibility in business (Zhang 2005). The costs of inflexibility may outweigh the benefits of reducing the number of scandals (i.e. increasing investors' confidence and enhancing firm's reputation). The shift to more rigid federal regulation reduces the flexibility of the current governance systems and environment, which in turns causes extensive changes in the economy (Zhang 2005). According to the *New York Times*, a PricewaterhouseCoopers survey of CEOs at the World Economic Forum in 2004 finds that 59% of the respondents view the risk of overregulation as one of the biggest threats hindering growth opportunities of their firms (Zhang 2005).

Despite the fact that SOX is socially beneficial by increasing shareholders' confidence, the costs of the Act, especially its disproportionate impact on small firms, may outweigh its benefits. In order to determine the differential effect of SOX by firm size, this paper examines the market reaction to the events surrounding the passage of SOX. A maintained hypothesis is that SOX has a disproportionately negative impact on small firms due to the higher direct and indirect costs that these firms incur. SOX affects all publicly traded firms, it imposes a systematic risk to the market, so I control for market returns. I examine the daily stock returns of 587 randomly selected firms from three stock markets (NYSE, AMEX, and NASDAQ), and these markets consist a total of 723 industries. I find that the stock returns and abnormal returns around the events leading to the passage of SOX are significantly negative, and the negative effect grows as firm size decreases. The significant negative effect on stock returns and

abnormal returns demonstrates that SOX reduces the value of firms to shareholders. Since it is difficult to determine the size of the societal benefits of SOX, my findings do not directly conclude that the costs of SOX outweigh its societal benefits. However, the reduced stock value suggests that current shareholders perceive the passage of SOX to have a negative effect on firms. This may indicate that the market also thinks costs of SOX are likely to outweigh the benefits. Lastly, my finding shows that a firm's industry has no effect on its stock returns or abnormal returns.

This study conducts a cross-sectional test on stock price returns and abnormal returns around the events leading to the passage of SOX during the period February 2002 to August 2002. I examine fifteen events that may change investors' expectations. The selection of these events is based on prior event studies related to SOX. These studies include Zhang 2005, Rezaee and Jain 2005, Chhaochharia and Grinstein 2005, and Li et al. 2006. To assess the differential impact of SOX on returns of small firms, it can be assumed that if benefits of compliance outweigh costs, the value of the firm will increase; similarly, if compliance costs outweigh benefits, the stock price of the firm will drop. The empirical results largely support the hypothesis that SOX has a negative effect on publicly traded firms and the effect increases inversely with firm size.

While existing event studies mostly investigate the effect of SOX on public firms in general, this paper extends that literature by examining the differential effect of SOX on small firms. It is important to understand how the Act affects publicly traded firms, in particular small firms, and how the market interprets the information conveyed by the passage of the Act. This study provides evidence documenting the disproportionately negative return and abnormal return

on small firms around events leading to the passage of SOX. The findings have important implications for both researchers and policymakers.

Stock prices convey noisy information that reflects the value of a firm. Stock price does not only reflect firm, however. It also changes according to the market trends and the economy. Stock price is comprised of the expected return and the unexpected return. Abnormal return of a stock refers to the part of a stock's return that is unanticipated due to an event. Abnormal returns are associated with unanticipated changes in value due to some events, they are useful in determining the correlation between pre-SOX events and stock prices (Chhaochharia et al. 2005). They help us better understand how the events surrounding the passage of SOX affect market behaviors, and more importantly, what implications those changes in market behaviors have for the costs and benefits of SOX (i.e. an increase in stock prices implies SOX enhances public confidence, but a decrease in stock prices entails the possibility that the public views SOX as a financial burden for firms). However, the impact of other contemporaneous news announcements is incorporated in stock prices as well. Although no other news on the selected event days is likely to be the key driver of the documented returns, it is impossible to completely eliminate other confounding factors that stock prices might have incorporated into (Zhang 2005).

The remainder of the paper is organized as follows. Section II discusses prior research related to SOX and event studies. Section III presents the hypothesis. Section IV summarizes SOX event history and describes empirical methods. Section V analyzes the empirical results. Section VI concludes and proposes possible extensions of this study.

II. EXISTING RESEARCH

Prior Studies on the Effect of SOX

Effects of SOX have been a controversial topic among researchers since it was first considered. Romano (2004) evaluates the substantive corporate governance mandates of SOX and identifies whether specific provisions can be most accurately characterized as efficacious or not. Her findings suggest that SOX's corporate governance provisions are ill-conceived, which she suggests were due to the charged political environment surrounding the passage of SOX. Several studies, as discussed below, have been conducted to examine the impact of the Act on abnormal returns. However, there is no consensus on how SOX changes the value of publicly traded firms. This section discusses what is known so far regarding the effects of SOX.

Several studies have been conducted to study SOX's effect on the overall market. They focus on the effect of the passage of SOX on firm value. Zhang (2005) presents the most extensive study of the economic consequences of SOX. She finds that the cumulative abnormal returns surrounding legislative events leading to the passage of SOX are significantly negative, and the loss in total market value of firms surrounding those events is $1.4 trillion. If SOX is effective in protecting investors, the market prices of firms with weak governance should increase with the passage of SOX (Butler et al. 2006). Zhang shows, however, that the market values of firms with weak corporate governance decrease as the likelihood of the passage of SOX increases. This indicates that shareholders believed that the compliance costs to poorly governed firms would exceed the benefits.

While Zhang (2005) finds that enactment of SOX is associated with negative cumulative abnormal return, other studies show that positive stock returns surround events leading to the passage of SOX. Li et al. (2006) examines stock price reactions to events surrounding SOX and focuses on the effect of earnings management on these reactions. Although the study finds positive abnormal stock returns associated with SOX events, it finds no significant difference

between SOX events and stock returns on firms that have been managing earnings or that have fully independent audit committees. This indicates that the market does not expect SOX reforms in these areas to be meaningful.

Chhaochharia and Grinstein (2005) examine the announcement effect of governance rules (not SOX per se but SEC regulations as well) on firm value and finds that governance rules have a positive impact on the value of large firms but no significant effect on small firms. Those findings suggest that, on average, large firms that require more changes to comply with the rules outperform firms that need to make fewer changes, but small firms that need to make more changes underperform those that need to make fewer changes. This indicates that the market believed that the costs of governance rules outweigh their benefits in small firms.

Jain and Rezaee (2005) examine the relation between events that are favorable to SOX's enactment and market reaction. They show that favorable events are associated with positive stock returns, and firms that are better governed before SOX perform better after SOX. This is consistent with the distinction between well and poorly governed firms as illustrated in Zhang (2005). Since more compliant firms have both lower compliance costs and lower benefits from SOX reforms, it is unclear why they would enjoy more positive stock returns during SOX-related events (Butler et al. 2006). It is likely that firms that were previously spending more on compliance perform better after SOX, and those that were previously less compliant are now forced to incur higher costs in order to remain public.

Other studies create serious doubts about whether SOX is worth the cost. Bhattacharya et al. (2003) examine the effectiveness of the executive certification provision in SOX. They examine whether shareholders consider certification (or absence of certification) to be good news, bad news, or no news. This study finds that firms' share prices do not react to the presence or

absence of certification, which suggests that the effectiveness of executive certification is low as the market could also separate good from bad firms without certification. Another study presents evidence that the market does not react much to the high-cost information that is revealed due to SOX provisions. For example, Ogneva et al. (2006) examine the relation between the implied cost of equity and the internal control effectiveness of firms. Their findings suggest that firms disclosing weaknesses in internal controls have a marginally higher cost of equity, but such differences are mainly associated with general economic characteristics of disclosing firms. These studies cast doubt on the effectiveness of the provisions of SOX.

Some findings suggest that SOX's enactment imposes a negative economic burden on U.S. publicly traded firms, while other studies show that many of these firms decide to go private or get listed on foreign exchanges after the passage of SOX. Engel et al. (2004) examine firms' going-private decisions in response to SOX and argue that firms go private in response to SOX only if the compliance costs of SOX exceed the induced benefits. Results show that SOX causes more firms to go private, and there is a trend of fewer getting listed on the NYSE and more on foreign stock exchanges. This suggests that the compliance costs of SOX outweigh its benefits to firms, so firms need to avoid strict regulations and high compliance costs by going private or going public abroad.

Studies of SOX frequently display contradictory findings. They are sensitive to the events selected for measuring stock price effects. One explanation maybe that the studies that finding positive stock price effects include a period of rising stock prices that occurred after the passage of SOX had been assured. Therefore, the market had already anticipated the Act's effect and the news is most likely incorporated into stock prices. On the other hand, the studies that find negative stock returns focus on an earlier period of sharp market declines prior to the

passage of SOX. This period is around the time when events, such as President Bush's July 9 speech, calling for strong legislation, make it evident that strong legislation would pass (Butler et al. 2006). Despite the fact that these studies examine slightly different events leading to various research findings, the results are still inconclusive because it is difficult to infer causation when the stock price includes other confounding factors as well.

Prior Studies on Industry Opacity

Industry opacity refers to the quality of the firms' financial reporting in a particular industry being clear and transparent. We care about the relationship between SOX and industry opacity, because the main purpose of the Act is to increase investors' confidence through making firms' financial reporting more transparent. As SOX increases the transparency of firms, it minimizes the chance for investors from making ill-informed decisions.

In addition to the available research on market reactions to SOX-related events, there are other studies that examine the effect of industry opacity on stock returns. Morgan (2000) investigates the dispersion of bond ratings on banks and insurance companies and concludes that they are intrinsically more opaque than are other firms. The nature of those businesses (i.e. high leverage, frequent trading, lending to opaque borrowers, doing businesses with risky clients) lead to uncertainty for outsiders, which causes higher discrepancy between bond raters. While Morgan (2002) suggests that banks and insurance companies are inherently more opaque, Ang et al. (2001) finds that a firm's stock return is positively correlated with firm's transparency. While they find that transparent firms (firms with lower dispersion and error of annual earnings forecasts) significantly outperform less-transparent companies (firms with higher dispersion and error of annual earnings forecasts), their results do not suggest that those firm's industry is a driving factor. In other words, transparency of individual firms has an effect on the firm's stock

returns, but transparency of the industry that the sample companies belong to does not have significant effect on those firms' stock returns.

III. HYPOTHESIS DEVELOPMENT

Although some claims have been made that there is no need for policy interventions because market correction mechanisms provide incentives for firms to adopt the most efficient and effective corporate governance mechanisms, history shows that market-based governance alone fails to protect investors and thus regulations are needed. Some argue that if firms do not adopt effective corporate governance, they are presumed to be less efficient in the long run, and will consequently be replaced (Rezaee et al. 2003). Nonetheless, the spectacular crashes of Enron, WorldCom, and other corporations due to accounting scandals illustrate that market correction mechanisms per se could not solve corporate governance issues. When the public information provided by companies is questionable, investors face a heightened risk of trading against a privately informed insider and incurring losses in their trades (Rezaee et al. 2003). This is likely to explain why the stock market plummeted in 2001 to 2002, and why SOX is enacted.

The ostensible purpose of SOX is to restore investors' confidence by requiring higher quality earnings through regulations on audit quality and audit committee effectiveness. The Act consists of mandatory disclosure and corporate governance regulations that are claimed to benefit all publicly traded companies. If SOX improves corporate governance without imposing higher costs, it would lead to an increase in investor confidence, a decrease in the cost of capital, and an increase in firm value (Li et al. 2006). It is claimed that these provisions would improve the accuracy and reliability of accounting information reported to investors. As a result, investors would have more confidence in publicly traded firms, which would in turn increase the value of these firms.

Despite the fact that SOX is claimed to enhance firm value by increasing the level of corporate governance, it is argued that such level of corporate governance is much higher than the presumably optimized level. If this is the case, the associated compliance costs would outweigh the induced benefits of the Act. Unlike previous federal regulations, SOX is not only concerned with disclosure requirements. It has actual mandates to introduce significant changes in both management's reporting responsibilities and the scope of the responsibilities of the auditor. The creation of the PCAOB, additional requirements for executive certifications and audit committee independence, prohibition of non-audit services, more transparent and timely financial disclosures, and stiffer penalties impose significant compliance costs that are illustrated by numerous research findings. These stringent provisions may outweigh SOX's benefits to shareholders.

Although research shows that the compliance costs vary depending on the firm's compliance level prior to the passage of SOX, all firms experience a significant amount of compliance costs due to the stringent provisions of SOX. A survey conducted by the Business Roundtable shows that firms encounter a compliance cost with the Act ranging from $1 million to more than $10 million, with 22 percent of the sampled firms estimating costs at more than $10 million (Li et al. 2006). SOX's compliance costs include:

1) Costs of executive certifications;

2) Costs associated with reporting and assessing internal controls quality;

3) Management and staffing requirements (i.e. costs of hiring independent board members, financial experts for the audit committee, legal counsel for monitoring compliance, setting up a whistleblower program, and training employees);

4) Opportunity costs associated with the decreased flexibility and the misallocation of

managerial talents and risks (Li et al. 2006).

According to Zhang (2005), these costs amount to a loss of $1.4 trillion in the market value of

publicly traded firms. This amount is the change in the total market value of NYSE, AMEX, and

NASDAQ between July 8, 2002 and July 26, 2002 (event 11, 12, and 13). These high

compliance costs cause numerous publicly traded firms to go private or go public on foreign

exchanges (Engel 2004).

Based on the discussed analyses and prior research, the first alternative hypothesis is

formulated as follows:

"The Sarbanes-Oxley Act has a negative impact on the abnormal returns of U.S.

publicly traded firms."

The second argument is that SOX's provisions concerning internal control place a

disproportionately heavy burden on small firms. Research shows that the provisions of SOX are

less beneficial to small firms, as they increase overhead costs and lower flexibility that small

firms rely on when competing with large firms. Small firms are also disadvantaged, because

they tend to have larger portion of non-independent board members. As a result, they need to

make more changes to internal control in order to comply with the new rules (Butler et al. 2006).

In addition to the direct compliance costs that SOX imposes on small firms, the enactment of

SOX also makes it more probable for small firms to find internal control problems. These

difficulties make it more costly for firms to go or stay public. As a result, the second hypothesis

is:

"The Sarbanes-Oxley Act will have a negative effect on the abnormal returns of U.S.

publicly traded firms. This effect increases as firm size decreases."

One claimed benefit of SOX is to improve the transparency of accounting information reported to investors in order to strengthen investors' confidence, so the Act should have a positive impact on firms in the opaque industries. This premise is based on the study of Ang et al. (2001), which suggests a positive correlation between stock returns and firm transparency. According to Morgan (2002), banks and insurance companies are inherently more opaque. Based on these findings, I propose my third hypothesis:

"The Sarbanes-Oxley Act will have a positive impact on the abnormal returns of U.S. publicly traded companies in more opaque industries."

This hypothesis does not contradict my first and second hypotheses. Although my first and second hypotheses claim that SOX has a negative impact on firms as the associated compliance costs may outweigh the induced benefits, the third hypothesis is based on a separate argument. SOX increases the compliance costs of all publicly traded firms, small firms in particular, due to the nature of these companies. Therefore, SOX should negatively affect small firms. On the other hand, SOX should have a positive impact on firms in opaque industries, because it would make those industries more transparent. Firms in the opaque industries, however, may or may not bear a disproportionately greater economic burden due to the compliance costs associated with the Act.

Methodology of Testing Hypotheses

Similar to other regulations, market reacts to the passage of SOX as a function of both the expected benefits and the associated costs that the Act imposes on publicly traded companies. To assess the impact of SOX on the stock markets, it can be assumed that if the induced benefits of compliance outweigh the costs, the value of the firm would increase; similarly, if the compliance costs outweigh the Act's induced benefits to shareholders, the stock price of the firm

would react negatively. The net benefits of SOX's provisions can be measured in terms of the changes in market reactions to legislative events leading up to the passage of SOX (Li et al. 2006).

In order to observe how the market reacts to the passage of SOX, these hypotheses are tested using a number of variables. Dependent variables are the return and abnormal return on stock price for individual firms. Return on stock price is defined as the daily change in the value of each individual firm. Abnormal return on stock price is defined as the difference between the actual return and the expected return calculated using the Capital Asset Pricing Model. The independent variables are the market return, the occurrence of event that is related to the passage of SOX, and the firm size that is determined based on the market capitalization of firms. The market return is the required return on the market portfolio. The list of events is illustrated in Appendix 1 Table 2. There are a total of five different types of events related to the passing of bills in the House, the passing of bills in the Senate, the signing of the bill into law, the introduction of bills in the House, Senate, and the committee, and the introduction of bills in the committee. Each event signals different level of likelihood for the enactment of SOX. This research investigates the differences in stocks return and abnormal return for all fifteen events combined as well as the separate impact of different types of events (subset of the fifteen events) leading to the passage of SOX.

The industry group of firms is controlled for in this study. "Industry group" is included as a control variable because the difference between industry groups might affect the stock return and abnormal return depending on the opacity of the industry. As explained in the above section, depository institutions (banks) and insurance carriers (insurance companies) are intrinsically

more opaque than other industries. These industries are included as variables in the regression model as I am particularly interested in examining the effect of SOX events on these industries.

IV. RESEARCH DESIGN

Timeline of Events

The reported financial scandals in 2001-2002 occurred in many industries, which led to Congressional and regulatory responses that are applicable to all U.S. publicly traded companies. I identify the legislative events leading to the passage of SOX by leveraging existing research that studies the impact of SOX on market reactions. Existing research includes Zhang 2005, Rezaee and Jain 2005, Chhaochharia and Grinstein 2005, Li et al. 2006. These events were crosschecked with the Wall Street Journal (*WSJ*) and the New York Times (*NYT*) via Factiva to verify the event dates. Verifying the event dates from these two sources allows me to extract the legislative activities that are most relevant to the business community. The description of the events is summarized in Appendix I Table 2.

There was no significant development in rulemaking in 2001 (Hilzenrath, December 12, 2001, *Washington Post*). The regulatory overhaul was first signaled on January 16, 2002 when SEC Chairman Pitt announced a reform plan to propose an independent regulatory organization (Zhang 2005), but SOX was not expected until the bill H.R. 3763 (Corporate and Auditing Accountability, Responsibility, and Transparency Act of 2002) was introduced in the House Financial Services Committee on February 13 (Schroeder, February 12, 2002, *WSJ*). The intent of H.R. 3763 was to strengthen auditor independence and establish a public accounting regulatory board. After Representative Oxley's accounting reform bill in February, House Democrats continued to draft bills that strengthened the provisions in H.R. 3763 (Schroeder, March 7, 2002 and April 23, 2002, *WSJ*).

SOX was a combination of the accounting reform bills of Senator Paul Sarbanes and Representative Michael Oxley. H.R. 3763 was passed in the House Financial Services Committee on April 16 and in the House on April 24 on a 334 to 90 vote. According to Li et al. (2006), H.R. 3763 was considered to be a business-friendly and moderate overhaul of accounting oversight and corporate financial reporting. After a series of activities in the House, the Senate Judiciary Committee approved legislation imposing felony charges for securities fraud and shredding or mishandling documents on April 25. Senator Sarbanes circulated a tough reform bill in the Senate Banking Committee on May 8 proposing a major overhaul of accounting practices. The bill was well supported and backed by Democrats in the Committee on June 11. The S.E.C proposed rules on June 12 to require executives to certify financial reports. Senator Sarbanes' reform bill was passed in the Committee on June 18, and his bill S.2673 (Public Company Accounting Reform and Investor Protection Act of 2002) was introduced in the Senate on June 25.

In addition to the multiple actions taken in Congress, President Bush and former Federal Reserve Chairman, Alan Greenspan, also addressed the issue. President Bush first responded to the accounting scandals by unveiling a plan on March 7, 2002 to improve corporate disclosure and CEO and auditor responsibility for financial reporting. Although Alan Greenspan warned against too much regulation and expressed his concern on the effect of regulations on market performance on March 26, he suggested in his speech that a stringent regulation on corporate governance is expected.

After the announcement of WorldCom fraud on June 25, the rulemaking process accelerated. Subsequent to S.E.C. filing the suit against WorldCom and requiring CEO/CFO certifications on June 26, President Bush gave a speech on Wall Street on July 9 suggesting that

the passage of S.2673 was virtually assured (Cummings, July 9, 2002, *WSJ* and Murray, July 9, 2002, *WSJ*). S.2673 was passed 97 to 0 in the Senate on July 15. On the same day, the House introduced H.R.5118 (Corporate Fraud Accountability Act of 2002) to require certification of financial statements by top executives and impose additional criminal penalties for financial report misrepresentation. The House passed H.R. 5118 on July 16 on a 391 to 28 vote, followed by the issuance and passage of the Conference Report on July 24 and July 25, which was since known as the Sarbanes-Oxley Act of 2002 (Oppel, July 25, 2002, *NYT*). S.E.C. posted names of CEOs and CFOs who failed to certify their companies' financial reports on its website on July 29, and it mandated that the deadline for filing the initial CEO/CFO financial report certifications was 5:00p.m. on August 14. According to Li et al. (2006), market participants paid close attention to updates about certifications throughout the day on August 14. President Bush signed the bill into law on July 30 (Bumiller, August 1, 2002, *NYT*). As Li et al. (2006) described, SOX is the most important legislation dealing with financial reporting in the U.S. since the passage of the Securities Act of 1933.

This study examines into the impact of fifteen legislative events leading to the passage of SOX. As described in Appendix 1, events are further divided into five classifications. The first and second type of event refers to the event days when bills are passed in the House or the Senate. The third type of event is related to the signing of bills by the President. The fourth type of event corresponds to the introduction of bills in the House, the Senate, or the committee, and the fifth type of event focuses on the introduction of bills in the committee.

The event window for each is determined by existing research. Existing research mostly uses narrow event windows in order to minimize the effect of other contemporaneous events. It generally ranges from one day prior the event to one day after the event. The length of event

windows varies depending on the level of uncertainty of the event. For instance, events that have higher level of uncertainty on the passage of SOX have a longer event window in order to include possible postponement of the effect.

Sample Selection

The sample consists of 587 public companies that are listed on the NYSE, AMEX, and NASDAQ. It is randomly chosen from the Center for Research in Security Prices (CRSP) historical data that covers roughly 26,500 stocks. A list of all companies is first obtained from CRSP, then I apply the random number generator method in Excel to randomly pick the firms.

I extract security return, market return of the S&P 500, market capitalization (market value), and Standard Industrial Classification (SIC) code for these companies for all of the test dates as shown in Table 2. The historical data for the risk free rate were obtained from the Board of Governors of the Federal Reserve System. I use the 30-year bond yield as the proxy for the risk free rate. The beta of each stock is the adjusted beta value obtained from Bloomberg. It is measured over a one year range (February 10, 2001 to February 10, 2002) prior to the first event. Bloomberg performs a regression of the historical trading prices of the stock against the S&P 500 using weekly data.

Firm size is determined according to the market capitalization of the company. The sample firms are divided into quintiles based on their market values. The first quintile (type of firm=1) consists of firms with a market value of less than 0.026 billion, second quintile (type of firm=2) is firms with a market value under 0.73 billion, third quintile (type of firm=3) is firms with a market value below 4.03 billion, fourth quintile (type of firm=4) represents firms with less than a market value of 13.85 billion, and fifth quintile (type of firm=5) is the remaining firms that have a market value over 13.85 billion.

An alternative way of grouping by firm size is according to the market value of the firm and the median market capitalization of the NYSE. If the market capitalization of the company is above the median market capitalization on the NYSE (2.1 billion), it is classified as a large firm. If the value of the company is below 2.1 billion, the company is classified as a small firm.

The initial sample has 26,415 observations of stock returns that are aggregated by firms. This sample is filtered using the standard methods in the microstructure literature (Huang and Stoll 1996). The following data filters are applied:

i. Delete company if the market value is negative;

ii. Delete company if it is out of time sequence (i.e. data available only during a part of the sample period), or involves an error;

iii. Delete unlisted firms and other firms that are missing in Bloomberg or Finance Yahoo! on any event date. This is done so in order to obtain reliable value of the adjusted beta.

The trimming process decreases the observations by 7.11%, resulting in a final sample of 24,660 observations for 548 firms in 58 industries. In order to check for robustness, I also conduct the analysis without applying the filters (with the exception of filter ii) and find no significant difference in results.

Empirical Methods

This study focuses on the differential effect of the pre-SOX announcements on firm sizes through conducting an event study as discussed in Brown and Warner (1984), Romano and Bhagat (2001), and Chhaochharia and Grinstein (2005).

One approach to assess the effect of a policy is to observe how the market reacts to the announcements that signal the passage of an act. Through observing market responses to events

that signal the passage of SOX, the abnormal return of small versus large firms is calculated to

determine the impact of the Act. Assuming the stock market is efficient, stock price reflects any

publicly available information. Therefore, it should change immediately to an extent that

investors cannot earn abnormal profits by trading on information after its release. As a result, the

announcement effect on stock prices can be a simple but noisy indicator that illustrates how

people perceive the effects of a new policy. The event study methodology that this study

employs has four components: 1) defining the event and announcement days; 2) measuring the

stock returns during the announcement period; 3) estimating the expected return of the stock

during this announcement period in the absence of the announcement; 4) computing the

abnormal return and measuring its statistical and economic significance (Romano 2001).

SOX is applicable to all publicly traded companies. It is, therefore, expected that the

stock market would react positively or negatively to the legislative events leading to the passage

of SOX. The test initially focuses on the market as a whole, which is represented by the

randomly selected firms in the NYSE, AMEX, and NASDAQ. After determining the overall

SOX-related announcement effect on firms, the test shifts its focus to detect any differential firm

size effect due to the events leading to SOX's enactment. The test period for the fifteen events is

from February to August 2002. For each randomly selected firm, the abnormal returns (AR)

around the event days are computed using the Capital Asset Pricing Model. AR is defined as the

difference between the actual return and the expected return. Consistent with Rezaee and Jain

(2005), I examine the average impact of the fifteen legislative events on stock returns and

abnormal returns. In calculating the expected returns for all relevant events, the CAPM model as

shown below is used:

$R_{it} = R_f + \beta_i * (R_{mt} - R_f)$

R_{it} is the computed expected return;

R_f is the risk-free rate that uses the 30-year bond yield as the proxy;

R_m is defined as the market return of the S&P 500;

β_i is the adjusted beta of firm i estimated from Bloomberg, using one year of data.

Other return models are also used in conducting event studies, but this study uses the CAPM because it is a classic approach that is widely discussed in other event study papers (i.e. Jain and Rezaee 2005, and Gelband 2005) and the information required for this model is readily available. (For a detailed list of other return models, please refer to Appendix III.) Among other models, the Fama-French three factor model is often considered to be superior to the CAPM in event studies as it incorporates additional variables to give a better r-squared. In simple terms, the Fama-French model is a regression analysis that separates out the systematic risk of a stock from the unsystematic risk by compensating for three factors. The first factor is a financial ratio called book to market, the second factor is the firm size based on its market capitalization, and the third factor is the return on the market portfolio. However, critics claim that this model is problematic as it does not explain why the size of a company or the firm's book-to-market ratio is a proper indicator of risk. Lam (2005) compares the performance of the Fama-French model with the CAPM and finds no significant evidence suggesting that the Fama-French model is better than the CAPM.

After computing the abnormal return of each event based on the CAPM, I perform multiple empirical tests using seven fundamental regression models to test my first and second hypotheses. These regressions are estimated over the 1 to 45 trading days of stock return data between February and August 2002 using the actual returns of firms. The number of trading

days that the regressions are estimated over depends on the type of event. Below is the list of the regression models:

Regressions with stock return as the dependent variable

$R_i = \alpha + \text{Market return} + b_1*\text{Event day} + b_2*\text{Type of firm} + b_3*\text{Type of firm}*\text{Event day} + e_i$ (1)

$R_i = \alpha + \text{Market return} + b_1*\text{Event day} + b_2*\text{Type of firm2} + b_3*\text{Type of firm2}*\text{Event day} + e_i$ (2)

$R_i = \alpha + \text{Market return} + b_1*\text{Event day} + b_2*\text{Market value} + b_3*\text{Market value}*\text{Event day} + e_i$ (3)

$R_i = \alpha + \text{Market return} + b_1*\text{Event day} + b_2*\text{Market value} + b_3*\text{Market value}*\text{Event day} +$

    $b_2*\text{Market value2} + b_3*\text{Market value2}*\text{Event day} + e_i$ (4)

Regressions with stock abnormal return as the dependent variable

$AR_i = \alpha + \text{Market return} + b_1*\text{Event day} + b_2*\text{Type of firm} + b_3*\text{Type of firm}*\text{Event day} + e_i$ (5)

$AR_i = \alpha + \text{Market return} + b_1*\text{Event day} + b_2*\text{Type of firm2} + b_3*\text{Type of firm2}*\text{Event day} + e_i$ (6)

$AR_i = \alpha + \text{Market return} + b_1*\text{Event day} + b_2*\text{Market value} + b_3*\text{Market value}*\text{Event day} + e_i$ (7)

$AR_i = \alpha + \text{Market return} + b_1*\text{Event day} + b_2*\text{Market value} + b_3*\text{Market value}*\text{Event day} +$

    $b_2*\text{Market value2} + b_3*\text{Market value2}*\text{Event day} + e_i$ (8)

Market return is defined in the "Sample Selection" section. Event day is a dummy variable equal to 1 when there is an event leading to the passage of SOX, and equal to 0 when there is no SOX-related event. As noted earlier, there are two methods to group firms according to their firm size based on market values. In the "Type of firm" regressions – regressions (1) and (5) – sample firms are divided into five groups with type of firm equal to 1 being the quintile with smallest firms and type of firm equal to 5 being the quintile with largest firms. Similarly, in the "Type of firm2" regressions – regressions (2) and (6) – sample firms are divided into two groups with type of firm equal to 0 being the small firms and type of firm equal to 1 being the large firms. Market value2 is the squared term of a firm's market value. It is included in the regression to capture possible non-linear effects. There are also multiple interaction terms in the regression models (i.e. Market value*Event day) that capture the effect of firm size on stock returns or abnormal

returns during event days. For descriptive statistics of each variable, please refer to Table 1 in the Appendix.

The above regressions are also estimated for the five event classifications: 1) the passing of bills in the House; 2) the passing of bills in the Senate; 3) when the President signs the bill into law; 4) when the bills are first introduced in the House, the Senate, or the committee; and 5) when the bills are first introduced in the committee. The same regression models listed above are used with the exception of the difference in the Event day variable. For any events pertaining to the passing of bills in the House, Event day1 is used (instead of Event day). For the events related to the passing of bills in the Senate, Event day2 is used. Similarly, Event day3 is used when the President signs the bill into law, Event day4 represents when the bills are first introduced in the House, the Senate, or the committee, and Event day5 corresponds to when the bills are first introduced into the committee.

To test my third hypothesis, I examine the industry opacity effect on stock returns and abnormal returns during event period. Four additional variables and interaction terms are added to Regressions (1) through (8) to examine SOX's effect on the returns of firms in more opaque industries, such as depository institutions and insurance carriers. For each regression listed above, the variables Industry1 and Industry2, and the interaction terms Industry1*Event day and Industry2*Event day are added in addition to the original regression. Industry1 represents firms that belong to the depository institutions industry. Industry2 represents firms that belong to the insurance carrier industry. The industry effect also tests each of the five event classifications as described above.

To account for possible heteroscedasticity in the error structure, I run the regressions using both Ordinary Least Square (OLS) and Generalized Least Square (GLS) methods.

Heteroscedasticity exists when the variance of the residual term varies with the independent variable. This problem is usually found in cross-sectional data (i.e. when dealing with multiple members of a population at a given point in time, and these members may be of different sizes). With heteroscedasticity, estimators are unbiased and linear, but they are not best (i.e. they do not have the smallest variance). Since OLS requires its estimators to be BLUE (best, linear, and unbiased), in the presence of heteroscedasticity, OLS estimators are not efficient. On the other hand, GLS corrects for heteroscedasticity by taking into account the expected variance and covariance of the error terms. Consistent with Burgio-Ficca (2004), GLS is recommended when heteroscedasticity exists and when the residuals are contemporaneously uncorrelated.

V. RESULTS

This section discusses empirical tests of the overall and differential effects of the events leading to the passage of SOX on market reactions. Stock returns and the abnormal returns around SOX events are examined to test the hypotheses. I also examine different market reactions toward events that are related to the signing of bills by the President, the passing of bills in the House or Senate, or the introduction of bills in the House, Senate, or the committee. Lastly, I discuss the relation between the opacity of an industry and stock returns and abnormal returns of those firms. The robustness of the tests and alternative explanation are discussed at the end of this section.

Overall and Differential Effect of SOX Events

Tables 3 and 4 present results of stock return analyses of the overall firms' and the different sizes of firms' reactions to the legislative events leading to the passage of SOX. The regressions performed in ordinary least squares or generalized least squares are largely consistent, with the exception of the significance of the *Event day* variable and the interaction term of

Market Value * Event day in Specifications (3) and (7), the *Event day1* variable in Specification

(4), and the interaction term *Type of firm * Event day4* in Table 4 (Stock Abnormal Returns).

There are also slight discrepancies in some variables between OLS and GLS in Table 6 (Stocks

Abnormal Return with Industry). These variables are not significant at the 10 percent level when

tested under OLS but they are significant at the 10 percent level when tested under GLS. This is

likely due to heteroscedasticity that causes a biased result in OLS; hence, the significance level is

lower. Figure 1 is a visual examination of residuals that suggests heteroscedasticity is very likely

in Specifications (3) and (7) in the Event day table of Table 4. The consistency across other

results, nonetheless, suggests that heteroscedasticity is not likely to occur in other specifications.

According to empirical results presented in Tables 3 and 4, there is a negative effect on

stock returns and abnormal returns when it is an event day. This negative effect decreases as

firm size increases. The negative coefficients for the *Event day* dummy variable are consistent

and significant at a 5 or 10 percent level for all specifications. This strongly suggests that being

an event day (d=1) has a significantly negative impact on returns and abnormal returns. These

results support my hypothesis that as SOX has a negative impact on publicly traded firms;

therefore, the market reacts negatively to events leading to SOX's enactment. This effect

decreases as firm size increases, which suggests that the market perceives small firms to be more

negatively impacted by SOX. The inverse relation between the negative effect due to the event

and firm size supports my hypothesis that SOX has a disproportionately negative impact on

small firms.

The testing of Market value and Market value squared in each of the tables suggests that

non-linearity exists for some specifications. For instance, some variables are not significant or

less significant in Specifications (3) and (7), but they are significant or more significant in Specifications (4) and (8). This is shown in the Event day table in Table 3.

When I look specifically into how the market reacts to events related to the passing of bills in the House, I find that the market reacts negatively to those events. There is no significant differential effect due to firm size. Looking at Specifications (3), (4), (7), and (8) on Event day1 in Tables 3 and 4, the *Event day1* dummy variable is negative at the 5 percent level across these specifications. As these events signal the likelihood of SOX's enactment, the negative coefficients suggest that the market perceives SOX to have a negative value on firms. This is consistent with the finding above, which suggests that when all fifteen legislative events are examined together, there is a negative effect of a SOX-related event on returns and abnormal returns.

The market behaves similarly to the events related to the passing of bills in the Senate as to events related to the passing of bills in the House. Event day2 identifies event days when there are bills passing in the Senate that increase the likelihood of SOX's enactment. As Tables 3 and 4 illustrate, the negative coefficients of the *Event day2* dummy variable are significant at the 5 percent level. While the interaction term of *Market Value * Event day2* is positive for Specifications (3), (4), (7), and (8), it is not significant. This suggests that events related to the passing of bills in the Senate have a negative overall effect on stock returns and abnormal returns, but that effect is unrelated to firm size.

Although the passing of bills in the House or the Senate has a negative impact on market reaction, the market reacts positively when President Bush signs the bill into law. Event day3 represents the event day when he signed the bill into law. I find that the market reacts positively to this event, and that effect increases as firm size increases. In other words, while there is an

overall positive effect due to this event, larger firms react more positively. This may be explained by the fact that when President Bush signed the bills into law, the market is relieved as there would be no further changes in the near future that would strengthen the Act. The result that large firms react more positively to the event supports my hypothesis that small firms have a more negative (or less positive) response to the events leading to the passage of SOX.

For Event day4, results suggest that the event has a negative effect on the overall market and that effect decreases as the market value of the firm (firm size) increases. Event day4 represents the events when the bills are introduced in the House, Senate, or committee. There results are consistent in Specifications (3), (4), (7), and (8) in Tables 3 and 4. The negative coefficients of the dummy variable *Event day4* are significant at the 5 percent level for all those specifications. This suggests that these events have a negative impact on returns and abnormal returns, which supports my hypothesis that SOX has a negative impact on publicly traded companies. If the market perceives that SOX has a negative impact on publicly traded companies, then the market is likely to react negatively to events that signal the enactment of the Act. The positive coefficients of the interaction term *Market Value * Event day4* are significant at the 5 percent level, which suggests that the negative effect decreases as firm size increases. This is as predicted, because prior research shows that SOX has a disproportionately negative impact on small firms.

Event day5 is very similar to Event day3. The positive coefficients of Event day5 are significant across all specifications, which suggests that the market in general has a positive perception of the introduction of bills in the committee. Furthermore, the positive interaction term suggests that this positive effect is greater as firm size increases. One possible explanation for this behavior is that market may prefer some (but not too stringent) government regulation on

corporate governance. As shown in Table 2 (Event Descriptions), there are often subsequent changes to the bill that impose more restrictions after its introduction in the committee. Therefore, it is likely that when bills are first introduced in committee, the market reacts positively as the initial bills would improve the reliability of information without imposing too much cost. However, as the bills are made more stringent, the costs outweigh the benefits, which explains why the market reacts negatively when bills are later introduced and passed in the House or Senate. This finding supports my hypothesis, because although there is an overall positive effect due to the event, the differential effect of firm size is also positive for larger firms. In other words, small firms have a less positive effect due to the event. They are, thus, disproportionately harmed by the events leading to the passage of SOX.

Relation Between Opaque Industries and Stock Returns and Abnormal Returns on Event Days

I also investigated the relation between industry opacity and market reaction to event days. As illustrated in Table 5, no significant finding can be drawn from the empirical test of the relation between industry transparency and stock returns. The only significant result in Table 5 is the interaction term of *Industry2 * Event day2*. Recall that *Industry 2* is a dummy variable representing the insurance carriers industry, while *Event day2* is a dummy variable corresponding to the events related to the passing of bills in the Senate. The negative coefficient of the interaction term that is significant at a 5 or 10 percent level suggests that the event has a more negative (or less positive effect) on firms in the insurance carriers industry on event days. This finding does not support my hypothesis that SOX has a positive impact on opaque industries and so events leading to the passage of SOX should have a more positive or less negative effect on stock returns.

Table 6 suggests that firms belonging to those opaque industries have a positive effect on stock abnormal returns. However, that effect is lessened on event days. In other words, events leading to the passage of SOX do not positively impact firms in the opaque industries. These events instead impose a negative effect on these firms. Results, however, are not consistent across the specifications. As illustrated in Tables 5 and 6, these results do not support my hypothesis. Ang et al.'s (2001) findings suggest that transparency of individual firms has an effect on the firm's stocks returns, but transparency of the industry that the sample companies belong to does not have significant effect on those firms' stocks returns. This may explain why some results are marginally significant, and results are generally inconsistent.

Robustness and Alternative Explanation

Although the Fama-French model, a refined model that is used in event studies which may lead to more solid findings, is not used in this study, the consistency of the results across different specifications and returns suggests that results are robust.

I also estimate regression using alternative definitions of firm size. In addition to performing the regressions on market values to capture the firm size effect, I also performed the regressions on the different types of firm. *Type of firm* is a discrete variable ranging from 1 to 5, with 1 being the quintile of the smallest market values of the sample firms (that is, the smallest 110 firms) and 5 being the quintile of the largest market values (the largest 110 firms). *Type of firm2* is a dummy variable, where 0=small firm and 1=large firm. The results are largely consistent, except that regressions using *Type of firm* or *Type of firm2* have different signs for the coefficients of some variables than regressions using *Market Value*. Nonetheless, discrepancies only exist for coefficients that are not significant at the 5 or 10 percent level. In other words, the

results generated from the regressions using *Type of firm*, *Type of firm2*, or *Market Value* are consistent across all significant coefficients.

VI. CONCLUSION AND FUTURE RESEARCH

This research investigates the overall and differential effect of the Sarbanes-Oxley Act on firms with different sizes through a study of market reactions around the legislative events leading to the passage of SOX. Although SOX claims to prevent deceptive accounting and management misbehavior, it simultaneously imposes high compliance costs onto U.S. publicly traded companies, and the small firms in particular. I find that the stock returns and abnormal returns around the legislative events are significantly negative, and the negative effect decreases as firm size increases. I also find that when I examine the effect of SOX under the five event classification, the market in general reacts negatively to the events, with the exception of the events pertaining to the signing of the bill into law and the introduction of bills in the committee. In these two types of events, the market reacts positively, but small firms experience a smaller positive effect as consistent with my hypothesis. The evidence reveals that investors may prefer government regulation in the midst of accounting scandals, but they consider a stringent act, such as SOX, to be costly. Therefore, they perceive that the information that signals the likelihood of the passage of SOX to be bad news for companies.

I further investigate the relation between SOX-related events and industry opacity. I find no consistent result that suggests events leading to SOX's enactment have a positive impact on firms that belong to a more opaque industry. On the contrary, the small amount of results that are significant suggest that the events leading to the passage of SOX have a more negative or less positive effect on the companies that belong to the depository institutions or the insurance

carriers industries. In another words, firms in no particular industry would be harmed by the events leading to the passage of SOX.

Even though the selection of events in this study is leveraged on previous research, one possible extension of this study is to further examine other important, but not associated with significant market reactions, business news around SOX-related events that could affect industries or specific sectors of the economy. This could help explain insignificant results or results that do not support the hypotheses.

The study could also be extended further by examining the political issues surrounding the passage of the Act. Despite the fact that SOX is claimed to combat the corrupted corporate governance, the real purpose of the Act is often questioned. Some scholars even believe that the swift passage of SOX is a political product due to the tensions from the congressional election of November 2002 (Zhang 2005). If the passage of SOX is due to political reason rather than its claimed benefits, the costs of SOX would unsurprisingly outweigh the benefits and create a substantial compliance burden to U.S. publicly traded firms. This explains why investigating the political issues around SOX would help examining the economic consequences on all publicly traded firms, and the disproportionate negative effect that SOX imposes on small firms.

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Appendix I

Table 1 – Statistical Descriptive of Variables and Interaction Terms

	Minimum	Maximum	Mean	Std. Deviation	No. Observations
RETURN: actual daily return of sample securities	-0.51	2.19	0.00	0.05	24660
ABNORMAL RETURN: difference between the expected and actual return	-0.66	1.97	-0.11	0.05	24660
MARKET RETURN: market return of the S&P 500	0.11	0.12	0.11	0.00	24660
EVENT DAY: dummy variable of the fifteen events with 1=event and 0=no event	0.00	1.00	0.58	0.49	24660
EVENT DAY1: dummy variable of events related to passing bills in the House	0.00	1.00	0.04	0.21	24660
EVENT DAY2: dummy variable of events related to passing bills in the Senate	0.00	1.00	0.04	0.21	24660
EVENT DAY3: dummy variable of events related to signing of bill into law	0.00	1.00	0.04	0.21	24660
EVENT DAY4: dummy variable of events related to introducing bills in the House, the Senate, and the committee	0.00	1.00	0.13	0.34	24660
EVENT DAY5: dummy variable of events related to introducing bills in the committee	0.00	1.00	0.04	0.21	24660
TYPE OF FIRM: five firm size groups with 1=quintile of smallest firms to 5=quintile of largest firms	1.00	5.00	3.00	1.41	24660
TYPE OF FIRM * EVENT DAY: interaction term that suggests possible differential effect	0.00	5.00	1.73	1.83	24660
TYPE OF FIRM * EVENT DAY1: interaction term	0.00	5.00	0.13	0.69	24660
TYPE OF FIRM * EVENT DAY2: interaction term	0.00	5.00	0.13	0.69	24660
TYPE OF FIRM * EVENT DAY3: interaction term	0.00	5.00	0.13	0.69	24660
TYPE OF FIRM * EVENT DAY4: interaction term	0.00	5.00	0.40	1.14	24660
TYPE OF FIRM * EVENT DAY5: interaction term	0.00	5.00	0.13	0.69	24660
TYPE OF FIRM2: two firm size group with 0=small firms and 1=large firms	0.00	1.00	0.54	0.50	24660
TYPE OF FIRM2 * EVENT DAY: interaction term that suggests possible differential effect	0.00	1.00	0.31	0.46	24660
TYPE OF FIRM2 * EVENT DAY1: interaction term	0.00	1.00	0.02	0.15	24660
TYPE OF FIRM2 * EVENT DAY2: interaction term	0.00	1.00	0.02	0.15	24660
TYPE OF FIRM2 * EVENT DAY3: interaction term	0.00	1.00	0.02	0.15	24660
TYPE OF FIRM2 * EVENT DAY4: interaction term	0.00	1.00	0.07	0.26	24660
TYPE OF FIRM2 * EVENT DAY5: interaction term	0.00	1.00	0.02	0.15	24660
MARKET VALUE: market capitalization of firm; used to determine firm size	0.00	442.92	12.20	35.32	24660
MARKET VALUE * EVENT DAY: interaction term that suggests possible differential effect	0.00	442.92	7.05	27.52	24660

MARKET VALUE * EVENT DAY1: interaction term	0.00	442.92	0.54	7.86	24660
MARKET VALUE * EVENT DAY2: interaction term	0.00	442.92	0.54	7.86	24660
MARKET VALUE * EVENT DAY3: interaction term	0.00	442.92	0.54	7.86	24660
MARKET VALUE * EVENT DAY4: interaction term	0.00	442.92	1.63	13.55	24660
MARKET VALUE * EVENT DAY5: interaction term	0.00	442.92	0.54	7.86	24660
MARKET VALUE2: the squared term of market value	0.00	196180.90	1396.59	11541.90	24660
MARKET VALUE2 * EVENT DAY: interaction term that suggests possible differential effect	0.00	196180.90	806.92	8800.27	24660
MARKET VALUE2 * EVENT DAY1: interaction term	0.00	196180.90	62.07	2450.21	24660
MARKET VALUE2 * EVENT DAY2: interaction term	0.00	196180.90	62.07	2450.21	24660
MARKET VALUE2 * EVENT DAY3: interaction term	0.00	196180.90	62.07	2450.21	24660
MARKET VALUE2 * EVENT DAY4: interaction term	0.00	196180.90	186.21	4241.16	24660
MARKET VALUE2 * EVENT DAY5: interaction term	0.00	196180.90	62.07	2450.21	24660
INDUSTRY1: insurance carriers	0.00	1.00	0.04	0.20	24660
INDUSTRY1 * EVENT DAY: interaction term that suggests possible differential effect	0.00	1.00	0.03	0.16	24660
INDUSTRY1 * EVENT DAY1: interaction term	0.00	1.00	0.00	0.04	24660
INDUSTRY1 * EVENT DAY2: interaction term	0.00	1.00	0.00	0.04	24660
INDUSTRY1 * EVENT DAY3: interaction term	0.00	1.00	0.00	0.04	24660
INDUSTRY1 * EVENT DAY4: interaction term	0.00	1.00	0.01	0.08	24660
INDUSTRY1 * EVENT DAY5: interaction term	0.00	1.00	0.00	0.04	24660
INDUSTRY2: depository institutions	0.00	1.00	0.09	0.29	24660
INDUSTRY2 * EVENT DAY: interaction term that suggests possible differential effect	0.00	1.00	0.05	0.22	24660
INDUSTRY2 * EVENT DAY1: interaction term	0.00	1.00	0.00	0.06	24660
INDUSTRY2 * EVENT DAY2: interaction term	0.00	1.00	0.00	0.06	24660
INDUSTRY2 * EVENT DAY3: interaction term	0.00	1.00	0.00	0.06	24660
INDUSTRY2 * EVENT DAY4: interaction term	0.00	1.00	0.01	0.11	24660
INDUSTRY2 * EVENT DAY5: interaction term	0.00	1.00	0.00	0.06	24660

Table 2 – Description of Events

Event Window (**bolded** = event days)		Descriptions of Events
E1: 2/11-2/14	20020211	Oxley introduced an accounting reform bill in the House Financial Services Committee
	20020212	
	20020213	
	20020214	
E2: 2/27-3/1	20020227	House Democrats introduced legislation that would impose more restrictions than Oxley's proposal
	20020228	
	20020301	
E3: 3/6-3/8	20020306	Bush's first response to accounting scandals unveiled
	20020307	
	20020308	
E4: 3/25-3/27	20020325	Greenspan warned against too much regulation
	20020326	
	20020327	
E5: 4/11-4/12	**20020411**	House Financial Services Committee scheduled to vote Oxley's bill, but the vote was postponed
	20020412	
E6: 4/16-4/17	**20020416**	Oxley's bill passed in the Committee
	20020417	
E7: 4/24-4/26	**20020424**	Oxley's bill passed in the House
	20020425	Senate Judiciary Committee approved legislation bolstering corporate fraud laws
	20020426	
E8: 5/7-5/9	20020507	Sarbanes circulated his reform bill in the Senate Banking Committee
	20020508	
	20020509	
E9: 6/10-6/13	20020610	Democrats in Senate Banking Committee united behind Sarbanes' bill
	20020611	Mark-up of Sarbanes bill to occur: SEC proposed rules to require executives to certify financial reports
	20020612	
	20020613	
E10: 6/25-6/27	**20020625**	Introduction of S. 2673 in Senate.
	20020626	WorldCom fraud announcement.
		S.E.C. files suit against WorldCom and require CEO/CFO certifications.
	20020627	

Event Window (**bolded** = event days)	Descriptions of Events
E11: 7/8-7/12	
20020708	Senate considers S. 2673
20020709	Bush makes speech on Wall Street.
20020710	Senate passes amendment to strengthen criminal penalties.
20020711	
20020712	
E12: 7/15-7/17	
20020715	Senate passes S. 2673.
20020716	Introduction of H.R. 5118
20020717	Passage of H.R. 5118.
	Bush wants bill before August break.
E13: 7/24-7/26	
20020724	Issuance of Conference Report
20020725	House and Senate pass Conference Report.
20020726	Bush reportedly will sign bill.
E14: 7/29-7/30	
20020729	S.E.C. to post names of CEOs/CFOs who fail to certify their companies' financial reports.
20020730	President signs bill into law.
E15: 8/14-8/15	
20020814	CEO/CFO certifications due at the S.E.C.
20020815	

Table 3 – Empirical Results of Stocks Returns

Return - Event day	OLS				GLS			
Exogenous variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
	(6.32)	(6.31)	(6.30)	(6.30)	(6.32)	(6.31)	(6.30)	(6.30)
Market return	-1.17	-1.17	-1.17	-1.17	-1.17	-1.17	-1.17	-1.17
	(-6.21)**	(-6.21)**	(-6.21)**	(-6.21)**	(-6.21)**	(-6.21)**	(-6.21)**	(-6.21)**
Event day	-0.0044	-0.0023	-0.0012	-0.0015	-0.0044	-0.0023	-0.0012	-0.0015
	(-3.15)**	(-2.56)**	(-1.88)*	(-2.20)**	(-3.15)**	(-2.56)**	(-1.88)*	(-2.20)**
Type of firm	-0.00011	-	-	-	-0.00011	-	-	-
	(-0.34)	-	-	-	(-0.34)	-	-	-
Type of firm * Event day	0.0012	-	-	-	0.0012	-	-	-
	(2.83)**	-	-	-	(2.83)**	-	-	-
Type of firm2	-	-2.45E-05	-	-	-	-2.45E-05	-	-
	-	(-0.03)	-	-	-	(-0.03)	-	-
Type of firm2 * Event day	-	0.0026	-	-	-	0.0026	-	-
	-	(2.23)**	-	-	-	(2.23)**	-	-
Market value	-	-	4.17E-06	5.24E-06	-	-	4.17E-06	5.24E-06
	-	-	(0.33)	(0.19)	-	-	(0.33)	(0.19)
Market value * Event day	-	-	0.000030	0.000071	-	-	0.000030	0.000071
	-	-	(1.81)*	(1.98)**	-	-	(1.81)*	(1.98)**
Market value sq.	-	-	-	-3.68E-09	-	-	-	-3.68E-09
	-	-	-	(-0.04)	-	-	-	(-0.04)
Market value sq. * Event day	-	-	-	-1.40E-07	-	-	-	-1.40E-07
	-	-	-	(-1.29)	-	-	-	(-1.29)
Goodness-of-fit:	-	-	-	-				
F value	13.70	12.64	12.28	8.88	-	-	-	-
Root MSE	0.045	0.045	0.045	0.045	-	-	-	-
Adjusted R-sq.	0.0021	0.0019	0.0018	0.0019	0.0019	0.0018	0.0017	0.0018
Observations	24660	24660	24660	24660	24660	24660	24660	24660

Return - Event day1	OLS				GLS			
Exogenous variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
	(5.29)	(5.34)	(5.37)	(5.36)	(5.29)	(5.34)	(5.37)	(5.36)
Market return	-0.96	-0.96	-0.96	-0.96	-0.96	-0.96	-0.96	-0.96
	(-5.26)**	(-5.26)**	(-5.26)**	(-5.26)**	(-5.26)**	(-5.26)**	(-5.26)**	(-5.26)**
Event day1	-0.00019	-0.0032	-0.0039	-0.0032	-0.00019	-0.0032	-0.0039	-0.0032
	(-0.06)	(-1.52)	(-2.57)**	(-2.00)**	(-0.06)	(-1.52)	(-2.57)**	(-2.00)**
Type of firm	0.00064	-	-	-	0.00064	-	-	-
	(3.03)**	-	-	-	(3.03)**	-	-	-
Type of firm * Event day1	-0.0014	-	-	-	-0.0014	-	-	-
	(-1.42)	-	-	-	(-1.42)	-	-	-
Type of firm2	-	0.0016	-	-	-	0.0016	-	-
	-	(2.68)**	-	-	-	(2.68)**	-	-
Type of firm2 * Event day	-	-0.0023	-	-	-	-0.0023	-	-
	-	(-0.82)	-	-	-	(-0.82)	-	-
Market value	-	-	0.000023	0.000052	-	-	0.000023	0.000052
	-	-	(2.79)**	(2.88)**	-	-	(2.79)**	(2.88)**
Market value * Event day1	-	-	0.000042	-0.00013	-	-	0.000042	-0.00013
	-	-	(-1.07)	(-1.56)	-	-	(-1.07)	(-1.56)
Market value sq.	-	-	-	-9.88E-08	-	-	-	-9.88E-08
	-	-	-	(-1.79)*	-	-	-	(-1.79)*
Market value sq. * Event day1	-	-	-	3.13E-07	-	-	-	3.13E-07
	-	-	-	(1.20)	-	-	-	(1.20)
Goodness-of-fit:								
F value	14.08	13.44	13.63	9.74	-	-	-	-
Root MSE	0.045	0.045	0.045	0.045	-	-	-	-
Adjusted R-sq.	0.0021	0.0020	0.0020	0.0021	0.0020	0.0019	0.0020	0.0020
Observations	24660	24660	24660	24660	24660	24660	24660	24660

Return - Event day2	OLS				GLS			
Exogenous variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
	(6.85)	(6.90)	(6.93)	(6.92)	(6.85)	(6.90)	(6.93)	(6.92)
Market return	-1.23	-1.23	-1.23	-1.23	-1.23	-1.23	-1.23	-1.23
	(-6.82)**	(-6.82)**	(-6.82)**	(-6.82)**	(-6.82)**	(-6.82)**	(-6.82)**	(-6.82)**
Event day2	-0.0053	-0.0052	-0.0075	-0.0082	-0.0053	-0.0052	-0.0075	-0.0082
	(-1.60)	(-2.51)**	(-4.99)**	(-5.11)**	(-1.60)	(-2.51)**	(-4.99)**	(-5.11)**
Type of firm	0.00060	-	-	-	0.00060	-	-	-
	(2.85)**	-	-	-	(2.85)**	-	-	-
Type of firm * Event day2	-0.00057	-	-	-	-0.00057	-	-	-
	(-0.58)	-	-	-	(-0.58)	-	-	-
Type of firm2	-	0.0016	-	-	-	0.0016	-	-
	-	(2.76)**	-	-	-	(2.76)**	-	-
Type of firm2 * Event day	-	-0.0033	-	-	-	-0.0033	-	-
	-	(-1.17)	-	-	-	(-1.17)	-	-
Market value	-	-	0.000020	0.000040	-	-	0.000020	0.000040
	-	-	(2.35)**	(2.22)**	-	-	(2.35)**	(2.22)**
Market value * Event day2	-	-	0.000040	0.00014	-	-	0.000040	0.00014
	-	-	(1.02)	(1.58)	-	-	(1.02)	(1.58)
Market value sq.	-	-	-	-7.03E-08	-	-	-	-7.03E-08
	-	-	-	(-1.27)	-	-	-	(-1.27)
Market value sq. * Event day2	-	-	-	-3.28E-07	-	-	-	-3.28E-07
	-	-	-	(-1.25)	-	-	-	(-1.25)
Goodness-of-fit:								
F value	17.38	17.34	17.32	12.22	-	-	-	-
Root MSE	0.045	0.045	0.045	0.045	-	-	-	-
Adjusted R-sq.	0.0026	0.0026	0.0026	0.0027	0.0025	0.0026	0.0026	0.0026
Observations	24660	24660	24660	24660	24660	24660	24660	24660

Return - Event day3	OLS				GLS			
Exogenous variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	0.062	0.062	0.062	0.062	0.062	0.062	0.062	0.062
	(3.03)	(3.05)	(3.06)	(3.05)	(3.03)	(3.05)	(3.06)	(3.05)
Market return	-0.54	-0.54	-0.54	-0.54	-0.54	-0.54	-0.54	-0.54
	(-3.02)**	(-3.02)**	(-3.01)**	(-3.02)**	(-3.02)**	(-3.02)**	(-3.01)**	(-3.02)**
Event day3	0.0041	0.018	0.025	0.023	0.0041	0.018	0.025	0.023
	(1.24)	(8.63)**	(16.69)**	(14.46)**	(1.24)	(8.63)**	(16.69)**	(14.46)**
Type of firm	0.00025	-	-	-	0.00025	-	-	-
	(1.18)	-	-	-	(1.18)	-	-	-
Type of firm * Event day3	0.0074	-	-	-	0.0074	-	-	-
	(7.44)**	-	-	-	(7.44)**	-	-	-
Type of firm2	-	0.00081	-	-	-	0.00081	-	-
	-	(1.38)	-	-	-	(1.38)	-	-
Type of firm2 * Event day	-	0.015	-	-	-	0.015	-	-
	-	(5.46)**	-	-	-	(5.46)**	-	-
Market value	-	-	0.000017	0.000030	-	-	0.000017	0.000030
	-	-	(2.06)**	(1.69)*	-	-	(2.06)**	(1.69)*
Market value * Event day3	-	-	0.000097	0.00036	-	-	0.000097	0.00036
	-	-	(2.45)**	(4.19)**	-	-	(2.45)**	(4.19)**
Market value sq.	-	-	-	-4.51E-08	-	-	-	-4.51E-08
	-	-	-	(-0.82)	-	-	-	(-0.82)
Market value sq. * Event day3	-	-	-	-8.95E-07	-	-	-	-8.95E-07
	-	-	-	(-3.44)**	-	-	-	(-3.44)**
Goodness-of-fit:								
F value	110.70	103.9	97.92	67.71	-	-	-	-
Root MSE	0.045	0.045	0.045	0.045	-	-	-	-
Adjusted R-sq.	0.018	0.016	0.016	0.016	0.018	0.017	0.016	0.016
Observations	24660	24660	24660	24660	24660	24660	24660	24660

Return - Event day4	OLS				GLS			
Exogenous variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	0.13	.13	.13	.13	0.13	.13	.13	.13
	(6.30)	(6.34)	(6.36)	(6.36)	(6.30)	(6.34)	(6.36)	(6.36)
Market return	-1.12	-1.11	-1.12	-1.12	-1.12	-1.11	-1.12	-1.12
	(-6.25)**	(-6.24)**	(-6.25)**	(-6.25)**	(-6.25)**	(-6.24)**	(-6.25)**	(-6.25)**
Event day4	-0.0056	-.0033	-.0030	-.0035	-0.0056	-.0033	-.0030	-.0035
	(-2.78)**	(-2.62)**	(-3.32)**	(-3.62)**	(-2.78)**	(-2.62)**	(-3.32)**	(-3.62)**
Type of firm	0.00041	-	-	-	0.00041	-	-	-
	(1.88)*	-	-	-	(1.88)*	-	-	-
Type of firm * Event day4	0.0012	-	-	-	0.0012	-	-	-
	(1.97)**	-	-	-	(1.97)**	-	-	-
Type of firm2	-	.0012	-	-	-	.0012	-	-
	-	(1.88)*	-	-	-	(1.88)*	-	-
Type of firm2 * Event day	-	.0024	-	-	-	.0024	-	-
	-	(1.39)	-	-	-	(1.39)	-	-
Market value	-	-	.000011	.000026	-	-	.000011	.000026
	-	-	(1.21)	(1.39)	-	-	(1.21)	(1.39)
Market value * Event day4	-	-	.000082	.00015	-	-	.000082	.00015
	-	-	(3.38)**	(2.84)**	-	-	(3.38)**	(2.84)**
Market value sq.	-	-	-	-5.45e-08	-	-	-	-5.45e-08
	-	-	-	(-0.94)	-	-	-	(-0.94)
Market value sq. * Event day4	-	-	-	-2.28e-07	-	-	-	-2.28e-07
	-	-	-	(-1.44)	-	-	-	(-1.44)
Goodness-of-fit:								
F value	13.57	12.78	15.23	10.91	-	-	-	-
Root MSE	0.045	0.045	0.045	0.045	-	-	-	-
Adjusted R-sq.	0.0020	0.0021	0.0023	0.0024	0.0019	0.0018	0.0022	0.0023
Observations	24660	24660	24660	24660	24660	24660	24660	24660

Return - Event day5	OLS				GLS			
Exogenous variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	0.13	.13	0.13	0.13	0.13	.13	0.13	0.13
	(6.30)	(6.32)	(6.35)	(6.34)	(6.30)	(6.32)	(6.35)	(6.34)
Market return	-1.12	-1.12	-1.12	-1.12	-1.12	-1.12	-1.12	-1.12
	(-6.27)**	(-6.27)**	(-6.27)**	(-6.27)**	(-6.27)**	(-6.27)**	(-6.27)**	(-6.27)**
Event day5	-0.0043	0.0092	0.012	0.0093	-0.0043	0.0092	0.012	0.0093
	(-1.31)	(4.43)**	(7.84)**	(5.84)**	(-1.31)	(4.43)**	(7.84)**	(5.84)**
Type of firm	0.00029	-	-	-	0.00029	-	-	-
	(1.37)	-	-	-	(1.37)	-	-	-
Type of firm * Event day5	0.0064	-	-	-	0.0064	-	-	-
	(6.49)**	-	-	-	(6.49)**	-	-	-
Type of firm2	-	0.001	-	-	-	0.001	-	-
	-	(1.71)*	-	-	-	(1.71)*	-	-
Type of firm2 * Event day	-	0.011	-	-	-	0.011	-	-
	-	(3.85)**	-	-	-	(3.85)**	-	-
Market value	-	-	9.18E-06	0.000019	-	-	9.18E-06	0.000019
	-	-	(1.10)	(1.08)	-	-	(1.10)	(1.08)
Market value * Event day5	-	-	0.00028	0.00060	-	-	0.00028	0.00060
	-	-	(6.99)**	(7.03)**	-	-	(6.99)**	(7.03)**
Market value sq.	-	-	-	-3.54E-08	-	-	-	-3.54E-08
	-	-	-	(-0.64)	-	-	-	(-0.64)
Market value sq. * Event day5	-	-	-	-1.11E-06	-	-	-	-1.11E-06
	-	-	-	(-4.27)**	-	-	-	(-4.27)**
Goodness-of-fit:								
F value	50.50	43.31	51.94	38.10	-	-	-	-
Root MSE	0.045	0.045	0.045	0.045	-	-	-	-
Adjusted R-sq.	0.0080	0.0068	0.0082	0.0092	0.0079	0.0068	0.0082	0.0089
Observations	24660	24660	24660	24660	24660	24660	24660	24660

Table 4 – Empirical Results of Stocks Abnormal Return

AR – Event day	OLS				GLS			
Exogenous variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	0.16	0.14	0.14	0.14	0.16	0.14	0.14	0.14
	(7.30)	(5.64)	(5.55)	(5.62)	(7.30)	(5.64)	(6.58)	(6.64)
Market return	-2.17	-2.17	-2.17	-2.17	-2.17	-2.17	-2.17	-2.17
	(-11.46)**	(-9.65)**	(-9.66)**	(-9.68)**	(-11.46)**	(-9.65)**	(-11.46)**	(-11.46)**
Event day	-0.0044	-0.0023	-0.0012	-0.0015	-0.0044	-0.0023	-0.0012	-0.0015
	(-3.14)**	(-2.151)**	(-1.57)	(-1.85)*	(-3.14)**	(-2.151)**	(-1.87)*	(-2.19)**
Type of firm	-0.0063	-	-	-	-0.0063	-	-	-
	(-6.83)**	-	-	-	(-6.83)**	-	-	-
Type of firm * Event day	0.0012	-	-	-	0.0012	-	-	-
	(2.82)**	-	-	-	(2.82)**	-	-	-
Type of firm2	-	-0.0080	-	-	-	-0.0080	-	-
	-	(-7.46)**	-	-	-	(-7.46)**	-	-
Type of firm2 * Event day	-	0.0026	-	-	-	0.0026	-	-
	-	(1.87)*	-	-	-	(1.87)*	-	-
Market value	-	-	-0.00014	-3.55E-04	-	-	-0.00014	-3.55E-04
	-	-	(-9.28)**	(-11.00)**	-	-	(-3.72)**	(-4.42)**
Market value * Event day	-	-	0.000030	0.000071	-	-	0.000030	0.000071
	-	-	(1.52)	(1.66)*	-	-	(1.80)*	(1.97)**
Market value sq.	-	-	-	7.44E-07	-	-	-	7.44E-07
	-	-	-	(7.54)**	-	-	-	(3.03)**
Market value sq. * Event day	-	-	-	-1.40E-07	-	-	-	-1.40E-07
	-	-	-	(-1.08)	-	-	-	(-1.28)
Goodness-of-fit:								
F value	158.60	46.81	64.09	60.91	-	-	-	-
Root MSE	0.054	0.054	0.054	0.054	-	-	-	-
Adjusted R-sq.	0.025	0.0074	0.010	0.014	0.0060	0.0059	0.0058	0.0059
Observations	24660	24660	24660	24660	24660	24660	24660	24660

AR – Event day1	OLS				GLS			
Exogenous variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	0.13	0.12	0.12	0.12	0.13	0.12	0.12	0.12
	(5.42)	(4.84)	(4.77)	(4.84)	(6.32)	(5.73)	(5.65)	(5.71)
Market return	-1.96	-1.96	-1.96	-1.96	-1.96	-1.96	-1.96	-1.96
	(-9.06)**	(-8.98)**	(-8.99)**	(-9.01)**	(-10.67)**	(-10.67)**	(-10.67)**	(-10.67)**
Event day1	-0.00019	-0.0032	-0.0039	-0.0032	-0.00019	-0.0032	-0.0039	-0.0032
	(-0.05)	(-1.27)	(-2.16)**	(-1.68)*	(-0.06)	(-1.51)	(-2.56)**	(-1.99)**
Type of firm	-0.0055	-	-	-	-0.0055	-	-	-
	(-22.25)**	-	-	-	(-6.23)**	-	-	-
Type of firm * Event day1	-0.0014	-	-	-	-0.0014	-	-	-
	(-1.20)	-	-	-	(-1.41)	-	-	-
Type of firm2	-	-0.0064	-	-	-	-0.0064	-	-
	-	(-8.95)**	-	-	-	(2.46)**	-	-
Type of firm2 * Event day	-	-0.0023	-	-	-	-0.0023	-	-
	-	(-0.68)	-	-	-	(-0.81)	-	-
Market value	-	-	-0.00012	-0.00031	-	-	-0.00012	-0.00031
	-	-	(-12.04)**	(-14.37)**	-	-	(-3.31)**	(-3.97)**
Market value * Event day1	-	-	0.000042	-0.00013	-	-	0.000042	-0.00013
	-	-	(-0.89)	(-1.31)	-	-	(-1.06)	(-1.55)
Market value sq.	-	-	-	6.49E-07	-	-	-	6.49E-07
	-	-	-	(9.89)**	-	-	-	(2.73)**
Market value sq. * Event day1	-	-	-	3.13E-07	-	-	-	3.13E-07
	-	-	-	(1.01)	-	-	-	(1.19)
Goodness-of-fit:								
F value	158.88	47.38	65.04	61.53	-	-	-	-
Root MSE	0.054	0.054	0.054	0.054	-	-	-	-
Adjusted R-sq.	0.025	0.0075	0.010	0.015	0.0060	0.006	0.006	0.006
Observations	24660	24660	24660	24660	24660	24660	24660	24660

AR – Event day2	OLS				GLS			
Exogenous variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	0.16	0.15	0.15	0.15	0.16	0.15	0.15	0.15
	(6.75)	(6.15)	(6.08)	(6.15)	(7.87)	(7.28)	(7.20)	(7.27)
Market return	-2.23	-2.23	-2.23	-2.23	-2.23	-2.23	-2.23	-2.23
	(-10.43)**	(-10.34)**	(-10.35)**	(-10.38)**	(-12.28)**	(-12.29)**	(-12.28)**	(-12.29)**
Event day2	-0.0053	-0.0052	-0.0075	-0.0082	-0.0053	-0.0052	-0.0075	-0.0082
	(-1.35)	(-2.10)**	(-4.19)**	(-4.30)**	(-1.59)	(-2.50)**	(-4.97)**	(-5.09)**
Type of firm	-0.0056	-	-	-	-0.0056	-	-	-
	(-22.40)**	-	-	-	(-6.27)**	-	-	-
Type of firm * Event day2	-0.00057	-	-	-	-0.00057	-	-	-
	(-0.49)	-	-	-	(-0.57)	-	-	-
Type of firm2	-	-0.0063	-	-	-	-0.0063	-	-
	-	(-8.89)**	-	-	-	(-2.44)**	-	-
Type of firm2 * Event day	-	-0.0033	-	-	-	-0.0033	-	-
	-	(-0.98)	-	-	-	(-1.17)	-	-
Market value	-	-	-0.00012	-0.00032	-	-	-0.00012	-0.00032
	-	-	(-12.41)**	(-14.93)**	-	-	(-3.42)**	(-4.13)**
Market value * Event day2	-	-	0.000040	0.00014	-	-	0.000040	0.00014
	-	-	(0.85)	(1.33)	-	-	(1.01)	(1.57)
Market value sq.	-	-	-	6.78E-07	-	-	-	6.78E-07
	-	-	-	(10.33)**	-	-	-	(2.85)**
Market value sq. * Event day2	-	-	-	-3.28E-07	-	-	-	-3.28E-07
	-	-	-	(-1.05)	-	-	-	(-1.25)
Goodness-of-fit:								
F value	161.28	50.12	67.66	63.30	-	-	-	-
Root MSE	0.054	0.054	0.054	0.054	-	-	-	-
Adjusted R-sq.	0.025	0.0079	0.011	0.015	0.0066	0.0066	0.0066	0.0067
Observations	24660	24660	24660	24660	24660	24660	24660	24660

AR – Event day3	OLS				GLS			
Exogenous variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	0.085	0.071	0.069	0.070	0.085	0.071	0.069	0.070
	(3.53)	(2.92)	(2.83)	(2.90)	(4.12)	(3.47)	(3.36)	(3.43)
Market return	-1.54	-1.54	-1.54	-1.54	-1.54	-1.54	-1.54	-1.54
	(-7.24)**	(-7.17)**	(-7.18)**	(-7.20)**	(-8.55)**	(-8.54)**	(-8.54)**	(-8.54)**
Event day3	0.0041	0.018	0.025	0.023	0.0041	0.018	0.025	0.023
	(1.05)	(7.22)**	(13.97)**	(12.13)**	(1.24)	(8.59)**	(16.61)**	(14.39)**
Type of firm	-0.0059	-	-	-	-0.0059	-	-	-
	(-23.95)**	-	-	-	(-6.67)**	-	-	-
Type of firm * Event day3	0.0074	-	-	-	0.0074	-	-	-
	(6.27)**	-	-	-	(7.41)**	-	-	-
Type of firm2		-0.0071	-	-		-0.0071	-	-
		(-10.10)**	-	-		(-2.76)**	-	-
Type of firm2 * Event day		0.015	-	-		0.015	-	-
		(4.57)**	-	-		(5.44)**	-	-
Market value	-	-	-0.00013	-0.00033	-	-	-0.00013	-0.00033
	-	-	(-12.72)**	(-15.46)**	-	-	(-3.49)**	(-4.25)**
Market value * Event day3	-	-	0.000097	0.00036	-	-	0.000097	0.00036
	-	-	(2.05)**	(3.51)**	-	-	(2.44)**	(4.17)**
Market value sq.	-	-	-	7.03E-07	-	-	-	7.03E-07
	-	-	-	(10.76)**	-	-	-	(2.96)**
Market value sq. * Event day3	-	-	-	-8.95E-07	-	-	-	-8.95E-07
	-	-	-	(-2.89)**	-	-	-	(-3.43)**
Goodness-of-fit:								
F value	229.19	110.93	124.62	102.84	-	-	-	-
Root MSE	0.054	0.054	0.054	0.054	-	-	-	-
Adjusted R-sq.	0.036	0.018	0.020	0.024	0.022	0.021	0.020	0.020
Observations	24660	24660	24660	24660	24660	24660	24660	24660

AR – Event day4	OLS				GLS			
Exogenous variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	0.15	.14	.14	.14	0.15	.14	.14	.14
	(6.30)	(5.68)	(5.61)	(5.68)	(7.35)	(6.73)	(6.64)	(6.71)
Market return	-2.12	-2.12	-2.12	-2.12	-2.12	-2.12	-2.12	-2.12
	(-10.00)**	(-9.91)**	(-9.93)**	(-9.95)**	(-11.77)**	(-11.77)**	(-11.78)**	(-11.78)**
Event day4	-0.0056	-.0033	-.0030	-.0035	-0.0056	-.0033	-.0030	-.0035
	(-2.35)**	(-2.19)**	(-2.79)**	(-3.04)**	(-2.77)**	(-2.60)**	(-3.31)**	(-3.60)**
Type of firm	-0.0057	-	-	-	-0.0057	-	-	-
	(-22.03)**	-	-	-	(-6.46)**	-	-	-
Type of firm * Event day4	0.0012	-	-	-	0.0012	-	-	-
	(1.66)*	-	-	-	(1.96)	-	-	-
Type of firm2		-.0068	-	-		-.0068	-	-
		(-9.08)**	-	-		(-2.61)**	-	-
Type of firm2 * Event day		.0024	-	-		.0024	-	-
		(1.16)	-	-		(1.38)	-	-
Market value	-	-	-.00013	-.00033	-	-	-.00013	-.00033
	-	-	(-12.68)**	(-14.82)**	-	-	(-3.66)**	(-4.29)**
Market value * Event day4	-	-	.000082	.00015	-	-	.000082	.00015
	-	-	(2.83)**	(2.39)**	-	-	(3.36)**	(2.83)**
Market value sq.	-	-	-	6.94E-07	-	-	-	6.94E-07
	-	-	-	(10.06)**	-	-	-	(2.91)**
Market value sq. * Event day4	-	-	-	-2.28E-07	-	-	-	-2.28E-07
	-	-	-	(-1.21)	-	-	-	(-1.43)
Goodness-of-fit:								
F value	158.50	62.36	66.18	46.91	-	-	-	-
Root MSE	0.054	0.054	0.054	0.054	-	-	-	-
Adjusted R-sq.	0.025	0.015	0.011	0.0074	0.0060	0.0059	0.0063	0.0064
Observations	24660	24660	24660	24660	24660	24660	24660	24660

AR – Event day5	OLS				GLS			
Exogenous variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	0.15	0.14	0.13	0.14	0.15	0.14	0.13	0.14
	(6.30)	(5.67)	(5.59)	(5.67)	(7.35)	(6.71)	(6.63)	(6.70)
Market return	-2.12	-2.12	-2.12	-2.12	-2.12	-2.12	-2.12	-2.12
	(-10.04)**	(-9.95)**	(-9.96)**	(-9.99)**	(-11.83)**	(-11.82)**	(-11.83)**	(-11.84)**
Event day5	-0.0043	0.0092	0.012	0.0093	-0.0043	0.0092	0.012	0.0093
	(-1.11)	(3.71)**	(6.57)**	(4.91)**	(-1.31)	(4.41)**	(7.80)**	(5.82)**
Type of firm	-0.0059	-	-	-	-0.0059	-	-	-
	(-23.70)**	-	-	-	(-6.62)**	-	-	-
Type of firm * Event day5	0.0064	-	-	-	0.0064	-	-	-
	(5.48)**	-	-	-	(6.46)**	-	-	-
Type of firm2		-0.0069	-	-		-0.0069	-	-
		(-9.79)**	-	-		(-2.68)**	-	-
Type of firm2 * Event day		0.011	-	-		0.011	-	-
		(3.22)**	-	-		(3.83)**	-	-
Market value	-	-	-0.00013	-0.00034	-	-	-0.00013	-0.00034
	-	-	(-13.49)**	(-15.93)**	-	-	(-3.71)**	(-4.39)**
Market value * Event day5	-	-	0.00028	0.0006	-	-	0.00028	0.00060
	-	-	(5.85)**	(5.90)**	-	-	(6.95)**	(7.00)**
Market value sq.	-	-	-	7.13E-07	-	-	-	7.13E-07
	-	-	-	(10.88)**	-	-	-	(3.00)**
Market value sq. * Event day5	-	-	-	-1.11E-06	-	-	-	-1.11E-06
	-	-	-	(-3.58)**	-	-	-	(-4.25)**
Goodness-of-fit:								
F value	185.45	68.42	92.18	81.78	-	-	-	-
Root MSE	0.045	0.045	0.045	0.045	-	-	-	-
Adjusted R-sq.	0.029	0.011	0.015	0.020	0.011	0.011	0.012	0.013
Observations	24660	24660	24660	24660	24660	24660	24660	24660

Table 5 – Empirical Results of Stock Returns In Relation to the Opaque Industries

Return (Industry) – Event day	OLS				GLS			
Exogenous variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	0.14	.14	.14	.14	0.14	.14	.14	.14
	(6.32)	(6.31)	(6.30)	(6.30)	(6.32)	(6.31)	(6.30)	(6.30)
Market return	-1.17	-1.17	-1.17	-1.17	-1.17	-1.17	-1.17	-1.17
	(-6.21)**	(-6.21)**	(-6.21)**	(-6.21)**	(-6.21)**	(-6.21)**	(-6.21)**	(-6.21)**
Event day	-0.0046	-0.0023	-.0012	-.0015	-0.0046	-0.0023	-.0012	-.0015
	(-3.14)**	(-2.49)**	(-1.75)*	(-2.09)**	(-3.14)**	(-2.49)**	(-1.75)*	(-2.09)**
Type of firm	-0.00011	-	-	-	-0.00011	-	-	-
	(-0.33)	-	-	-	(-0.33)	-	-	-
Type of firm * Event day	0.0012	-	-	-	0.0012	-	-	-
	(2.89)**	-	-	-	(2.89)**	-	-	-
Type of firm2	-	-0.0000208	-	-	-	-0.0000208	-	-
	-	(-0.02)	-	-	-	(-0.02)	-	-
Type of firm2 * Event day	-	0.0027	-	-	-	0.0027	-	-
	-	(2.27)**	-	-	-	(2.27)**	-	-
Market value	-	-	4.25e-06	5.45e-06	-	-	4.25e-06	5.45e-06
	-	-	(0.34)	(0.20)	-	-	(0.34)	(0.20)
Market value * Event day	-	-	.00003	.000071	-	-	.00003	.000071
	-	-	(1.80)*	(1.98)**	-	-	(1.80)*	(1.98)**
Market value sq.	-	-	-	-4.12e-09	-	-	-	-4.12e-09
	-	-	-	(-0.05)	-	-	-	(-0.05)
Market value sq. * Event day	-	-	-	-1.41e-07	-	-	-	-1.41e-07
	-	-	-	(-1.29)	-	-	-	(-1.29)
Industry1: Depository Institutions	0.000083	0.0000632	.000091	.000094	0.000083	0.0000632	.000091	.000094
	(0.04)	(0.03)	(0.04)	(0.04)	(0.04)	(0.03)	(0.04)	(0.04)
Industry1 * Event day	-0.00086	-0.001134	-.00037	-.00027	-0.00086	-0.001134	-.00037	-.00027
	(-0.30)	(-0.39)	(-0.13)	(-0.09)	(-0.30)	(-0.39)	(-0.13)	(-0.09)
Industry2: Insurance Carriers	-9.81E-06	0.0000814	.00012	.00012	-9.81E-06	0.0000814	.00012	.00012
	(-0.010)	(0.05)	(0.08)	(0.08)	(-0.010)	(0.05)	(0.08)	(0.08)
Industry2 * Event day	0.0010	0.0005191	.00018	.00033	0.0010	0.0005191	.00018	.00033
	(0.50)	(0.25)	(0.09)	(0.16)	(0.50)	(0.25)	(0.09)	(0.16)
Goodness-of-fit:								
F value	6.95	6.39	6.15	5.34	-	-	-	-
Root MSE	0.054	0.045	0.045	0.045	-	-	-	-
Adjusted R-sq.	0.0019	0.0017	0.0020	0.0022	0.0019	0.0018	0.0017	0.0018
Observations	24660	24660	24660	24660	24660	24660	24660	24660

Return (Industry) – Event day1	OLS				GLS			
Exogenous variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	0.11	.11	.11	.11	0.11	.11	.11	.11
	(5.29)	(5.34)	(5.37)	(5.36)	(5.29)	(5.34)	(5.37)	(5.36)
Market return	-0.96	-.96	-.96	-.96	-0.96	-.96	-.96	-.96
	(-5.26)**	(-5.26)**	(-5.26)**	(-5.26)**	(-5.26)**	(-5.26)**	(-5.26)**	(-5.26)**
Event day1	-0.0015	-.0042	-.0049	-.0043	-0.0015	-.0042	-.0049	-.0043
	(-0.43)	(-1.90)*	(-3.01)**	(-2.45)**	(-0.43)	(-1.90)*	(-3.01)**	(-2.45)**
Type of firm	0.00065	-	-	-	0.00065	-	-	-
	(3.06)**	-	-	-	(3.06)**	-	-	-
Type of firm * Event day1	-0.0013	-	-	-	-0.0013	-	-	-
	(1.26)	-	-	-	(1.26)	-	-	-
Type of firm2	-	.0016	-	-	-	.0016	-	-
	-	(2.73)**	-	-	-	(2.73)**	-	-
Type of firm2 * Event day	-	-.0022	-	-	-	-.0022	-	-
	-	(-0.78)	-	-	-	(-0.78)	-	-
Market value	-	-	.000023	.000052	-	-	.000023	.000052
	-	-	(2.76)**	(2.86)**	-	-	(2.76)**	(2.86)**
Market value * Event day1	-	-	-.000037	-.00012	-	-	-.000037	-.00012
	-	-	(-0.94)	(-1.41)	-	-	(-0.94)	(-1.41)
Market value sq.	-	-	-	-9.86e-08	-	-	-	-9.86e-08
	-	-	-	(-1.78)*	-	-	-	(-1.78)*
Market value sq. * Event day1	-	-	-	2.89e-07	-	-	-	2.89e-07
	-	-	-	(1.10)	-	-	-	(1.10)
Industry1: Depository Institutions	-0.0084	-.0010	-.00052	-.00045	-0.0084	-.0010	-.00052	-.00045
	(-0.58)	(-0.70)	(-0.35)	(-0.31)	(-0.58)	(-0.70)	(-0.35)	(-0.31)
Industry1 * Event day1	0.0094	.0096	.0089	.0087	0.0094	.0096	.0089	.0087
	(1.37)	(1.39)	(1.29)	(1.26)	(1.37)	(1.39)	(1.29)	(1.26)
Industry2: Insurance Carriers	0.0036	.00012	-.000046	.000058	0.0036	.00012	-.000046	.000058
	(0.34)	(0.12)	(-0.04)	(0.06)	(0.34)	(0.12)	(-0.04)	(0.06)
Industry2 * Event day1	0.0052	.0059	.0061	.0057	0.0052	.0059	.0061	.0057
	(1.05)	(1.19)	(1.24)	(1.17)	(1.05)	(1.19)	(1.24)	(1.17)
Goodness-of-fit:								
F value	7.45	7.16	7.19	6.13	-	-	-	-
Root MSE	0.054	0.045	0.045	0.045	-	-	-	-
Adjusted R-sq.	0.0021	0.0020	0.0020	0.0021	0.0021	0.0021	0.0021	0.0018
Observations	24660	24660	24660	24660	24660	24660	24660	24660

Return (Industry) – Event day2	OLS				GLS			
Exogenous variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	0.14	.14	.14	.14	0.14	.14	.14	.14
	(6.84)	(6.89)	(6.93)	(6.92)	(6.84)	(6.89)	(6.93)	(6.92)
Market return	-1.23	-1.23	-1.23	-1.23	-1.23	-1.23	-1.23	-1.23
	(-6.82)**	(-6.82)**	(-6.82)**	(-6.82)**	(-6.82)**	(-6.82)**	(-6.82)**	(-6.82)**
Event day2	-0.0031	-.0038	-.0063	-.0070	-0.0031	-.0038	-.0063	-.0070
	(-0.90)	(-1.72)*	(-3.89)**	(-4.04)**	(-0.90)	(-1.72)*	(-3.89)**	(-4.04)**
Type of firm	0.00064	-	-	-	0.00064	-	-	-
	(2.98)**	-	-	-	(2.98)**	-	-	-
Type of firm * Event day2	-0.00089	-	-	-	-0.00089	-	-	-
	(-0.88)	-	-	-	(-0.88)	-	-	-
Type of firm2	-	.0017	-	-	-	.0017	-	-
	-	(2.84)**	-	-	-	(2.84)**	-	-
Type of firm2 * Event day	-	-.0037	-	-	-	-.0037	-	-
	-	(-1.31)	-	-	-	(-1.31)	-	-
Market value	-	-	.000020	.000041	-	-	.000020	.000041
	-	-	(2.38)**	(2.27)**	-	-	(2.38)**	(2.27)**
Market value * Event day2	-	-	.000034	.00012	-	-	.000034	.00012
	-	-	(0.86)	(1.40)	-	-	(0.86)	(1.40)
Market value sq.	-	-	-	-7.25e-08	-	-	-	-7.25e-08
	-	-	-	(-1.31)	-	-	-	(-1.31)
Market value sq. * Event day2	-	-	-	-2.96e-07	-	-	-	-2.96e-07
	-	-	-	(-1.13)	-	-	-	(-1.13)
Industry1: Depository Institutions	-0.000057	-.00026	.00024	.00029	-0.000057	-.00026	.00024	.00029
	(-0.04)	(-0.18)	(0.16)	(0.20)	(-0.04)	(-0.18)	(0.16)	(0.20)
Industry1 * Event day2	-0.0081	-.0075	-.0080	-.0078	-0.0081	-.0075	-.0080	-.0078
	(-1.17)	(-1.09)	(-1.16)	(-1.13)	(-1.17)	(-1.09)	(-1.16)	(-1.13)
Industry2: Insurance Carriers	0.0010	.00081	.00061	.00069	0.0010	.00081	.00061	.00069
	(0.98)	(0.78)	(0.59)	(0.66)	(0.98)	(0.78)	(0.59)	(0.66)
Industry2 * Event day2	-0.0097	-.0097	-.0087	-.0084	-0.0097	-.0097	-.0087	-.0084
	(-1.96)**	(-1.98)**	(-1.77)*	(-1.71)*	(-1.96)**	(-1.98)**	(-1.77)*	(-1.71)*
Goodness-of-fit:								
F value	9.36	9.32	9.20	7.74	-	-	-	-
Root MSE	0.054	0.045	0.045	0.045	-	-	-	-
Adjuted R-sq.	0.0027	0.0027	0.0027	0.0027	0.0027	0.0028	0.0027	0.0028
Observations	24660	24660	24660	24660	24660	24660	24660	24660

Return (Industry) – Event day3	OLS				GLS			
Exogenous variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	0.62	.062	.062	.062	0.62	.062	.062	.062
	(3.03)	(3.04)	(3.06)	(3.05)	(3.03)	(3.04)	(3.06)	(3.05)
Market return	-0.54	-.54	-.54	-.54	-0.54	-.54	-.54	-.54
	(-3.02)**	(-3.02)**	(-3.01)**	(-3.02)**	(-3.02)**	(-3.02)**	(-3.01)**	(-3.02)**
Event day3	0.0044	.019	.026	.024	0.0044	.019	.026	.024
	(1.29)	(8.55)**	(16.00)**	(13.85)**	(1.29)	(8.55)**	(16.00)**	(13.85)**
Type of firm	0.0027	-	-	-	0.0027	-	-	-
	(1.28)	-	-	-	(1.28)	-	-	-
Type of firm * Event day3	0.0073	-	-	-	0.0073	-	-	-
	(7.28)**	-	-	-	(7.28)**	-	-	-
Type of firm2	-	.00087	-	-	-	.00087	-	-
	-	(1.46)	-	-	-	(1.46)	-	-
Type of firm2 * Event day	-	.015	-	-	-	.015	-	-
	-	(5.34)**	-	-	-	(5.34)**	-	-
Market value	-	-	.000017	.000031	-	-	.000017	.000031
	-	-	(2.09)**	(1.72)*	-	-	(2.09)**	(1.72)*
Market value * Event day3	-	-	.000093	.00035	-	-	.000093	.00035
	-	-	(2.35)**	(4.07)**	-	-	(2.35)**	(4.07)**
Market value sq.	-	-	-	-4.68e-08	-	-	-	-4.68e-08
	-	-	-	(-0.85)	-	-	-	(-0.85)
Market value sq. * Event day3	-	-	-	-8.77e-07	-	-	-	-8.77e-07
	-	-	-	(-3.37)**	-	-	-	(-3.37)**
Industry1: Depository Institutions	-0.00026	-.00037	-.000069	-.000037	-0.00026	-.00037	-.000069	-.000037
	(-0.18)	(-0.26)	(-0.05)	(-0.030)	(-0.18)	(-0.26)	(-0.05)	(-0.030)
Industry1 * Event day3	-0.0035	-.0049	-.0012	-.00057	-0.0035	-.0049	-.0012	-.00057
	(-0.51)	(-0.71)	(-0.17)	(-0.080)	(-0.51)	(-0.71)	(-0.17)	(-0.080)
Industry2: Insurance Carriers	0.00065	.00059	.00052	.00059	0.00065	.00059	.00052	.00059
	(0.62)	(0.57)	(0.53)	(0.57)	(0.62)	(0.57)	(0.53)	(0.57)
Industry2 * Event day3	-0.0013	-.0047	-.0071	-.0062	-0.0013	-.0047	-.0071	-.0062
	(-0.27)	(-0.95)	(-1.46)	(-1.27)	(-0.27)	(-0.95)	(-1.46)	(-1.27)
Goodness-of-fit:								
F value	55.44	52.16	49.23	40.79	-	-	-	-
Root MSE	0.054	0.045	0.045	0.045	-	-	-	-
Adjusted R-sq.	0.017	0.0163	0.015	0.016	0.018	0.0028	0.0027	0.0028
Observations	24660	24660	24660	24660	24660	24660	24660	24660

Return (Industry) – Event day4	OLS				GLS			
Exogenous variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	0.13	.13	.13	.13	0.13	.13	.13	.13
	(6.30)	(6.33)	(6.36)	(6.35)	(6.30)	(6.33)	(6.36)	(6.35)
Market return	-1.12	-1.12	-1.12	-1.12	-1.12	-1.12	-1.12	-1.12
	(-6.24)**	(-6.24)**	(-6.25)**	(-6.25)**	(-6.24)**	(-6.24)**	(-6.25)**	(-6.25)**
Event day4	-0.0053	-.0030	-.0029	-.0034	-0.0053	-.0030	-.0029	-.0034
	(-2.51)**	(-2.29)**	(-2.95)**	(-3.26)**	(-2.51)**	(-2.29)**	(-2.95)**	(-3.26)**
Type of firm	0.00045	-	-	-	0.00045	-	-	-
	(1.99)**	-	-	-	(1.99)**	-	-	-
Type of firm * Event day4	0.0011	-	-	-	0.0011	-	-	-
	(1.84)*	-	-	-	(1.84)*	-	-	-
Type of firm2	-	.0012	-	-	-	.0012**	-	-
	-	(1.97)**	-	-	-	(1.97)**	-	-
Type of firm2 * Event day	-	.0022	-	-	-	.0022	-	-
	-	(1.29)	-	-	-	(1.29)	-	-
Market value	-	-	.000011	.000027	-	-	.000011	.000027
	-	-	(1.22)	(1.42)	-	-	(1.22)	(1.42)
Market value * Event day4	-	-	.000081	.00015	-	-	.000081	.00015
	-	-	(3.34)**	(2.80)**	-	-	(3.34)**	(2.80)**
Market value sq.	-	-	-	-5.58e-08	-	-	-	-5.58e-08
	-	-	-	(-0.96)	-	-	-	(-0.96)
Market value sq. * Event day4	-	-	-	-2.24e-07	-	-	-	-2.24e-07
	-	-	-	(-1.41)	-	-	-	(-1.41)
Industry1: Depository Institutions	-0.00043	-.00058	-.00025	-.00021	-0.00043	-.00058	-.00025	-.00021
	(-0.28)	(-0.38)	(-0.17)	(-0.14)	(-0.28)	(-0.38)	(-0.17)	(-0.14)
Industry1 * Event day4	0.00013	-.000065	.00099	.0011	0.00013	-.000065	.00099	.0011
	(0.03)	(-0.02)	(0.24)	(0.27)	(0.03)	(-0.02)	(0.24)	(0.27)
Industry2: Insurance Carriers	0.00079	.00065	.00047	.00053	0.00079	.00065	.00047	.00053
	(0.71)	(0.60)	(0.43)	(0.49)	(0.71)	(0.60)	(0.43)	(0.49)
Industry2 * Event day4	-0.0015	-.0020	-.0019	-.0016	-0.0015	-.0020	-.0019	-.0016
	(-0.49)	(-0.68)	(-0.63)	(-0.55)	(-0.49)	(-0.68)	(-0.63)	(-0.55)
Goodness-of-fit:								
F value	6.87	6.49	7.68	6.59	-	-	-	-
Root MSE	0.054	0.045	0.045	0.045	-	-	-	-
Adjusted R-sq.	0.0019	0.0018	0.0022	0.0023	0.0019	0.017	0.016	0.016
Observations	24660	24660	24660	24660	24660	24660	24660	24660

Return (Industry) – Event day5	OLS				GLS			
Exogenous variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
	(6.30)	(6.31)	(6.34)	(6.34)	(6.30)	(6.31)	(6.34)	(6.34)
Market return	-1.12	-1.12	-1.12	-1.12	-1.12	-1.12	-1.12	-1.12
	(-6.27)**	(-6.27)**	(-6.27)**	(-6.27)**	(-6.27)**	(-6.27)**	(-6.27)**	(-6.27)**
Event day5	-0.0033	0.010	0.012	0.010	-0.0033	0.010	0.012	0.010
	(-0.95)	(4.76)**	(7.81)**	(5.87)**	(-0.95)	(4.76)**	(7.81)**	(5.87)**
Type of firm	0.00032	-	-	-	0.00032	-	-	-
	(1.49)	-	-	-	(1.49)	-	-	-
Type of firm * Event day5	0.0063	-	-	-	0.0063	-	-	-
	(6.23)**	-	-	-	(6.23)**	-	-	-
Type of firm2	-	0.0011	-	-	-	0.0011	-	-
	-	(1.80)*	-	-	-	(1.80)*	-	-
Type of firm2 * Event day	-	0.010	-	-	-	0.010	-	-
	-	(3.66)**	-	-	-	(3.66)**	-	-
Market value	-	-	9.45E-06	0.000020	-	-	9.45E-06	0.000020
	-	-	(1.13)	(1.12)	-	-	(1.13)	(1.12)
Market value * Event day5	-	-	0.00027	0.00059	-	-	0.00027	0.00059
	-	-	(6.86)**	(6.89)**	-	-	(6.86)**	(6.89)**
Market value sq.	-	-	-	-3.72E-08	-	-	-	-3.72E-08
	-	-	-	(-0.67)	-	-	-	(-0.67)
Market value sq. * Event day5	-	-	-	-1.09E-06	-	-	-	-1.09E-06
	-	-	-	(-4.18)**	-	-	-	(-4.18)**
Industry1: Depository Institutions	-0.00021	-0.00036	-0.000073	-0.000047	-0.00021	-0.00036	-0.000073	-0.000047
	(-0.15)	(-0.25)	(-0.05)	(-0.03)	(-0.15)	(-0.25)	(-0.05)	(-0.03)
Industry1 * Event day4	-0.0045	-0.0052	-0.0011	-0.00033	-0.0045	-0.0052	-0.0011	-0.00033
	(-0.66)	(-0.76)	(-0.16)	(-0.05)	(-0.66)	(-0.76)	(-0.16)	(-0.05)
Industry2: Insurance Carriers	0.00080	0.00074	0.00058	0.00062	0.00080	0.00074	0.00058	0.00062
	(0.76)	(0.71)	(0.57)	(0.60)	(0.76)	(0.71)	(0.57)	(0.60)
Industry2 * Event day4	-0.0046	-0.0081	-0.0081	-0.0070	-0.0046	-0.0081	-0.0081	-0.0070
	(-0.93)	(-1.64)*	(-1.67)*	(-1.43)	(-0.93)	(-1.64)*	(-1.67)*	(-1.43)
Goodness-of-fit:								
F value	25.46	22.09	26.32	23.08	-	-	-	-
Root MSE	0.054	0.045	0.045	0.045	-	-	-	-
Adjusted R-sq.	0.0079	0.0068	0.0081	0.0089	0.0080	0.0069	0.0083	0.0090
Observations	24660	24660	24660	24660	24660	24660	24660	24660

Table 6 – Empirical Results of Stock Abnormal Returns In Relation to the Opaque Industries

AR (Industry) – Event day	OLS				GLS			
Exogenous variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	0.16	0.14	0.14	.14	0.16	.14	.14	.14
	(6.17)	(5.57)	(5.50)	(5.57)	(7.18)	(6.57)	(6.48)	(6.55)
Market return	-2.17	-2.17	-2.17	-2.17	-2.17	-2.17	-2.17	-2.17
	(-9.76)**	(-9.69)**	(-9.70)**	(-9.72)**	(-11.46)**	(-11.46)**	(-11.46)**	(-11.46)**
Event day	-0.0046	-.0023	-0.0012	-.0015	-0.0046	-.0023	-.0012	-.0015
	(-2.66)**	(-2.09)**	(-1.48)	(-1.76)*	(-3.12)**	(-2.48)**	(-1.75)*	(-2.08)**
Type of firm	-0.0058	-	-	-	-0.0058	-	-	-
	(-15.38)**	-	-	-	(-6.28)**	-	-	-
Type of firm * Event day	0.0012	-		-	0.0012	-	-	
	(2.44)**	-	-	-	(2.87)**	-	-	-
Type of firm2	-	-.0070	-	-	-	-.0070	-	-
	-	(-6.50)**	-	-	-	(-2.61)**	-	-
Type of firm2 * Event day	-	.0027	-	-	-	.0027	-	-
	-	(1.91)*	-	-	-	(2.26)**	-	-
Market value	-	-	-0.00013	-.00033	-	-	-.00013	-.00033
	-	-	(-8.70)**	(-10.30)**	-	-	(-3.51)**	(-4.17)**
Market value * Event day	-	-	0.000030	.000071	-	-	.000030	.000071
	-	-	(1.52)	(1.67)*	-	-	(1.79)*	(1.97)**
Market value sq.	-	-	-	6.96e-07	-	-	-	6.96e-07
	-	-	-	(7.06)**	-	-	-	(2.85)**
Market value sq. * Event day	-	-	-	-1.41e-07	-	-	-	-1.41e-07
	-	-	-	(-1.09)	-	-	-	(-1.28)
Industry1: Depository Institutions	0.0055	0.0056	0.0032	.0028	0.0055	.0056	.0032	.0028
	(2.13)**	(2.15)**	(1.24)	(1.06)	(0.87)	(0.87)	(0.50)	(0.43)
Industry1 * Event day	-0.00086	-0.001134	-0.000367	-.00027	-0.00086	-.0011	-.00037	-.00027
	(-0.25)	(-0.33)	(-0.11)	(-0.08)	(-0.30)	(-0.39)	(-0.13)	(-0.09)
Industry2: Insurance Carriers	0.012	0.016	0.017	.016	0.012	.016	.017	.016
	(6.67)**	(8.69)**	(9.00)**	(8.60)**	(2.72)**	(3.49)**	(3.63)**	(3.48)**
Industry2 * Event day	0.0010	0.0005191	0.0001803	.00033	0.0010	.00052	.00018	.00033
	(0.42)	(0.21)	(0.07)	(0.14)	(0.50)	(0.25)	(0.09)	(0.16)
Goodness-of-fit:								
F value	94.86	47.36	56.66	54.8	-	-	-	-
Root MSE	0.054	0.054	0.054	0.054	-	-	-	-
Adjusted R-sq.	0.030	0.015	0.018	0.021	0.0060	0.0059	0.0058	0.0059
Observations	24660	24660	24660	24660	24660	24660	24660	24660

AR (Industry) – Event day1	OLS				GLS			
Exogenous variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	0.13	.12	.12	.12	0.13	.12	.12	.12
	(5.32)	(4.77)	(4.72)	(4.78)	(6.19)	(5.62)	(5.56)	(5.63)
Market return	-1.96	-1.96	-1.96	-1.96	-1.96	-1.96	-1.96	-1.96
	(-9.08)**	(-9.02)**	(-9.03)**	(-9.05)**	(-10.67)**	(-10.67)**	(-10.67)**	(-10.67)**
Event day1	-0.0015	-.0042	-.0049	-.0043	-0.0015	-.0042	-.0049	-.0043
	(-0.36)	(-1.60)	(-2.53)**	(-2.07)**	(-0.42)	(-1.89)*	(-2.99)**	(-2.44)**
Type of firm	-0.0051	-	-	-	-0.0051	-	-	-
	(-20.12)**	-	-	-	(-5.66)**	-	-	-
Type of firm * Event day1	-0.0013	-	-	-	-0.0012	-	-	-
	(-1.07)	-	-	-	(-1.25)	-	-	-
Type of firm2	-	-.0053	-	-	-	-.0053	-	-
	-	(-7.45)**	-	-	-	(-2.06)**	-	-
Type of firm2 * Event day	-	-.0022	-	-	-	-.0022	-	-
	-	(-0.66)	-	-	-	(-0.78)	-	-
Market value	-	-	-.00011	-.00029	-	-	-.00011	-.00029
	-	-	(-11.19)**	(-13.33)**	-	-	(-3.10)**	(-3.71)**
Market value * Event day1	-	-	-.000037	-.00012	-	-	-.000037	-.00012
	-	-	(-0.79)	(-1.19)	-	-	(-0.93)	(-1.41)
Market value sq.	-	-	-	6.01e-07	-	-	-	6.01e-07
	-	-	-	(9.17)**	-	-	-	(2.55)**
Market value sq. * Event day1	-	-	-	2.89e-07	-	-	-	2.89e-07
	-	-	-	(0.93)	-	-	-	(1.10)
Industry1: Depository Institutions	0.0046	.0045	.0026	.0022	0.0046	.0045	.0026	.0022
	(2.68)**	(2.62)**	(1.52)	(1.28)	(0.75)	(0.72)	(0.42)	(0.36)
Industry1 * Event day1	0.0094	.0096	.0089	.0087	0.0094	.0096	.0089	.0087
	(1.16)	(1.17)	(1.09)	(1.06)	(1.36)	(1.38)	(1.28)	(1.25)
Industry2: Insurance Carriers	0.013	.016	.016	.016	0.013	.016	.016	.016
	(10.33)**	(13.10)**	(13.41)**	(12.89)**	(2.90)	(3.62)**	(3.72)**	(3.59)**
Industry2 * Event day1	0.0052	.0059	.0061	.0057	0.0052	.0059	.0061	.0057
	(0.89)	(1.00)	(1.04)	(0.99)	(1.04)	(1.19)	(1.23)	(1.17)
Goodness-of-fit:								
F value	95.22	47.91	57.41	55.37	-	-	-	-
Root MSE	0.054	0.054	0.054	0.054	-	-	-	-
Adjusted R-sq.	0.030	0.015	0.018	0.022	0.0062	0.0061	0.0061	0.0062
Observations	24660	24660	24660	24660	24660	24660	24660	24660

AR (Industry) – Event day2	OLS				GLS			
Exogenous variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	0.16	.15	.15	.15	0.16	0.15	.15	.15
	(6.65)	(6.08)	(6.03)	(6.10)	(7.73)	(7.16)	(7.11)	(7.18)
Market return	-2.23	-2.23	-2.23	-2.23	-2.23	-2.23	-2.23	-2.23
	(-10.46)**	(-10.38)**	(-10.40)**	(-10.41)**	(-12.29)**	(-12.29)**	(-12.29)**	(-12.29)**
Event day2	-0.0031	-.0038	-.0063	-.0070	-0.0031	-0.0038	-.0063	-.0070
	(-0.76)	(-1.45)	(-3.28)**	(-3.41)**	(-0.89)	(-1.71)*	(-3.87)**	(-4.02)**
Type of firm	-0.0051	-	-	-	-0.0051	-	-	-
	(-20.19)**	-	-	-	(-5.68)**	-	-	-
Type of firm * Event day2	-0.00089	-	-	-	-0.00089	-	-	-
	(-0.74)	-	-	-	(-0.87)	-	-	-
Type of firm2	-	-.0053	-	-	-	-0.0053	-	-
	-	(-7.36)**	-	-	-	(-2.03)**	-	-
Type of firm2 * Event day	-	-.0037	-	-	-	-0.0038	-	-
	-	(-1.10)	-	-	-	(-1.31)	-	-
Market value	-	-	-.00012	-.00030	-	-	-.00012	-.00030
	-	-	(-11.52)**	(-13.84)**	-	-	(-3.19)**	(-3.85)**
Market value * Event day2	-	-	.000034	.00012	-	-	.000034	.00012
	-	-	(0.72)	(1.18)	-	-	(0.86)	(1.39)
Market value sq.	-	-	-	6.27e-07	-	-	-	6.27e-07
	-	-	-	(9.57)**	-	-	-	(2.66)**
Market value sq. * Event day2	-	-	-	-2.96e-07	-	-	-	-2.96e-07
	-	-	-	(-0.95)	-	-	-	(-1.13)
Industry1: Depository Institutions	0.0054	.0053	.00337	.0029	0.0054	0.0053	.00337	.0029
	(3.13)**	(3.06)**	(1.96)**	(1.71)*	(0.88)	(0.84)	(0.54)	(0.48)
Industry1 * Event day2	-0.0081	-.0075	-.0080	-.0078	-0.0081	-0.0075	-.0080	-.0078
	(-1.00)	(-0.92)	(-0.98)	(-0.96)	(-1.17)	(-1.09)	(-1.16)	(-1.13)
Industry2: Insurance Carriers	0.013	.017	.017	.016	0.013	0.017	.017	.016
	(10.87)**	(13.67)**	(13.94)**	(13.41)**	(3.06)**	(3.77)**	(3.86)**	(3.73)**
Industry2 * Event day2	-0.0097	-.0097	-.0087	-.0084	-0.0097	-0.0097	-.0087	-.0084
	(-1.66)*	(-1.66)*	(-1.49)	(-1.44)	(-1.95)**	(-1.97)**	(-1.76)*	(-1.70)*
Goodness-of-fit:								
F value	96.64	49.46	58.85	56.54	-	-	-	-
Root MSE	0.054	0.054	0.054	0.054	-	-	-	-
Adjusted R-sq.	0.030	0.016	0.018	0.022	0.0068	0.0068	0.0068	0.0068
Observations	24660	24660	24660	24660	24660	24660	24660	24660

AR (Industry) – Event day3	OLS				GLS			
Exogenous variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	0.082	.069	.067	.068	0.082	.069	.067	.068
	(3.42)	(2.84)	(2.77)	(2.83)	(3.98)	(3.35)	(3.27)	(3.34)
Market return	-1.54	-1.54	-1.54	-1.54	-1.54	-1.54	-1.54	-1.54
	(-7.26)**	(-7.20)**	(-7.21)**	(-7.22)**	(-8.54)**	(-8.54)**	(-8.54)**	(-8.54)**
Event day3	0.0044	.019	.026	.024	0.0044	.019	.026	.024
	(1.09)	(7.17)**	(13.44)**	(11.67)**	(1.28)	(8.51)**	(15.92)**	(13.79)**
Type of firm	-0.0055	-	-	-	-0.0055	-	-	-
	(-21.76)**	-	-	-	(-6.08)**	-	-	-
Type of firm * Event day3	0.0073	-	-	-	0.0073	-	-	-
	(6.16)**	-	-	-	(7.25)**	-	-	-
Type of firm2	-	-.0061	-	-	-	-.0061	-	-
	-	(-8.57)**	-	-	-	(-2.36)**	-	-
Type of firm2 * Event day	-	.015	-	-	-	.015	-	-
	-	(4.48)**	-	-	-	(5.32)**	-	-
Market value	-	-	-.00012	-.00031	-	-	-.00012	-.00031
	-	-	(-11.83)**	(-14.38)**	-	-	(-3.26)**	(-3.98)**
Market value * Event day3	-	-	.000093	.00035	-	-	.000093	.00035
	-	-	(1.97)**	(3.43)**	-	-	(2.34)**	(4.05)**
Market value sq.	-	-	-	6.53e-07	-	-	-	6.53e-07
	-	-	-	(10.01)**	-	-	-	(2.77)**
Market value sq. * Event day3	-	-	-	-8.77e-07	-	-	-	-8.77e-07
	-	-	-	(-2.83)**	-	-	-	(-3.35)**
Industry1: Depository Institutions	0.0052	.0052	.0031	.0026	0.0052	.0052	.0031	.0026
	(3.03)**	(3.00)**	(1.79)*	(1.53)	(0.85)	(0.83)	(0.49)	(0.42)
Industry1 * Event day3	-0.0035	-.0049	-.0012	-.00057	-0.0035	-.0049	-.0012	-.00057
	(-0.43)	(-0.60)	(-0.14)	(-0.07)	(-0.51)	(-0.71)	(-0.17)	(-0.08)
Industry2: Insurance Carriers	0.0073	.017	.017	.016	0.013	.017	.017	.016
	(6.16)**	(13.55)**	(13.95)**	(13.39)**	(2.97)**	(3.72)**	(3.85)**	(3.71)**
Industry2 * Event day3	-0.0013	-.0047	-.0071	-.0062	-0.0013	-.0047	-.0071	-.0062
	(-0.22)	(-0.80)	(-1.23)	(-1.07)	(-0.26)	(-0.95)	(-1.46)	(-1.26)
Goodness-of-fit:								
F value	130.49	80.01	87.59	80.44	-	-	-	-
Root MSE	0.054	0.054	0.054	0.054	-	-	-	-
Adjusted R-sq.	0.040	0.025	0.027	0.032	0.022	0.021	0.020	0.020
Observations	24660	24660	24660	24660	24660	24660	24660	24660

AR (Industry) – Event day4	OLS				GLS			
Exogenous variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	0.15	.14	.13	.14	0.015	.14	.13	.14
	(6.20)	(5.61)	(5.56)	(5.63)	(7.20)	(6.61)	(6.55)	(6.62)
Market return	-2.12	-2.12	-2.12	-2.12	-2.12	-2.12	-2.12	-2.12
	(-10.02)**	(-9.95)**	(-9.96)**	(-9.98)**	(-11.77)**	(-11.77)**	(-11.78)**	(-11.78)**
Event day4	-0.0053	-.0030	-.0029	-.0034	-0.0053	-.0030	-.0029	-.0034
	(-2.13)**	(-1.92)**	(-2.48)**	(-2.75)**	(-2.50)**	(-2.28)**	(-2.93)**	(-3.24)**
Type of firm	-0.003	-	-	-	-0.0053	-	-	-
	(-19.94)**	-	-	-	(-5.87)**	-	-	-
Type of firm * Event day4	0.0011	-	-	-	0.0011	-	-	-
	(1.56)	-	-	-	(1.83)*	-	-	-
Type of firm2	-	-.0057	-	-	-	-.0057	-	-
	-	(-7.62)**	-	-	-	(-2.21)**	-	-
Type of firm2 * Event day	-	.0022	-	-	-	.0022	-	-
	-	(1.08)	-	-	-	(1.28)	-	-
Market value	-	-	-.00012	-.00031	-	-	-.00012	-.00031
	-	-	(-11.85)**	(-13.80)**	-	-	(-3.44)**	(-4.02)**
Market value * Event day4	-	-	.000081**	.00015**	-	-	.000081**	.00015**
	-	-	(2.81)**	(2.36)**	-	-	(3.32)**	(2.79)**
Market value sq.	-	-	-	6.44e-07	-	-	-	6.44e-07
	-	-	-	(9.36)**	-	-	-	(2.73)**
Market value sq. * Event day4	-	-	-	-2.24e-07	-	-	-	-2.24e-07
	-	-	-	(-1.19)	-	-	-	(-1.40)
Industry1: Depository Institutions	0.0050	.0050**	.0029	.0024	0.0050	.0050	.0029	.0024
	(2.77)**	(2.73)**	(1.59)	(1.35)	(0.82)	(0.79)	(0.46)	(0.39)
Industry1 * Event day4	0.00013	-.000065	.00099	.0011	0.00013	-.000065	.00099	.0011
	(0.03)	(-0.01)	(0.20)	(0.23)	(0.03)	(-0.02)	(0.24)	(0.27)
Industry2: Insurance Carriers	0.013	.017**	.017**	.016**	0.013	.017**	.017**	.016**
	(10.17)**	(12.88)**	(13.17)**	(12.64)**	(2.99)**	(3.73)**	(3.82)**	(3.68)**
Industry2 * Event day4	-0.0015	-.0020	-.0019	-.0016	-0.0015	-.0020	-.0019	-.0016
	(-0.42)	(-0.57)	(-0.53)	(-0.46)	(-0.49)	(-0.67)	(-0.63)	(-0.55)
Goodness-of-fit:								
F value	94.80	47.43	57.76	55.71	-	-	-	-
Root MSE	0.054	0.054	0.054	0.054	-	-	-	-
Adjusted R-sq.	0.030	0.015	0.018	0.022	0.0060	0.0059	0.0063	0.0064
Observations	24660	24660	24660	24660	24660	24660	24660	24660

AR (Industry) – Event day5	OLS				GLS			
Exogenous variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	0.15	0.13	0.13	0.13	0.015	0.13	0.13	0.013
	(6.20)	(5.59)	(5.54)	(5.61)	(7.21)	(6.59)	(6.54)	(6.61)
Market return	-2.12	-2.12	-2.12	-2.12	-2.12	-2.12	-2.12	-2.12
	(-10.06)**	(-9.98)**	(-10.00)**	(-10.02)**	(-11.83)**	(-11.82)**	(-11.83)**	(-11.84)**
Event day5	-0.0033	0.010	0.012	0.010	-0.0033	0.10	0.012	0.010
	(-0.80)	(4.00)**	(6.57)**	(4.95)**	(-0.94)	(4.73)**	(7.78)**	(5.84)**
Type of firm	-0.0054	-	-	-	-0.0054	-	-	-
	(-21.50)**	-	-	-	(-6.03)**	-	-	-
Type of firm * Event day5	0.0063	-	-	-	0.0063	-	-	-
	(5.28)**	-	-	-	(6.20)**	-	-	-
Type of firm2	-	-0.0059	-	-	-	-0.0059	-	-
	-	(-8.25)**	-	-	-	(-2.28)**	-	-
Type of firm2 * Event day	-	0.010	-	-	-	0.010	-	-
	-	(3.08)**	-	-	-	(3.64)**	-	-
Market value	-	-	-0.00013	-0.00032	-	-	-0.00013	-0.00032
	-	-	(-12.60)**	(-14.84)**	-	-	(-3.49)**	(-4.12)**
Market value * Event day5	-	-	0.00027	0.00059	-	-	0.00027	0.00059
	-	-	(5.77)**	(5.81)**	-	-	(6.83)**	(6.86)**
Market value sq.	-	-	-	6.63E-07	-	-	-	6.63E-07
	-	-	-	(10.14)**	-	-	-	(2.81)**
Market value sq. * Event day5	-	-	-	-1.09E-06	-	-	-	-1.09E-06
	-	-	-	(-3.52)**	-	-	-	(-4.16)**
Industry1: Depository Institutions	0.0052	0.0052	0.0031	0.0026	0.0052	0.0052	0.0031	0.0026
	(3.04)**	(3.00)**	(1.78)*	(1.52)	(0.85)	(0.83)	(0.49)	(0.42)
Industry1 * Event day4	-0.0045	-0.0052	-0.0011	-0.00033	-0.0045	-0.0052	-0.0012	-0.00033
	(-0.56)	(-0.64)	(-0.13)	(-0.04)	(-0.66)	(-0.76)	(-0.16)	(-0.05)
Industry2: Insurance Carriers	0.013	0.017	0.017	0.016	0.013	0.017	0.017	0.016
	(10.70)**	(13.62)**	(13.95)**	(13.39)**	(3.00)**	(3.76)**	(3.86)**	(3.72)**
Industry2 * Event day4	-0.0046	-0.0081	-0.0081	-0.0070	-0.0046	-0.0081	-0.0081	-0.0070
	(-0.79)	(-1.38)	(-1.40)	(-1.20)	(-0.93)	(-1.63)*	(-1.66)*	(-1.42)
Goodness-of-fit:								
F value	108.49	58.59	71.17	67.65	-	-	-	-
Root MSE	0.054	0.054	0.054	0.054	-	-	-	-
Adjusted R-sq.	0.034	0.018	0.022	0.026	0.012	0.011	0.012	0.013
Observations	24660	24660	24660	24660	24660	24660	24660	24660

Figure 1 – Visual Examination of Heteroscedasticity

Scatterplot

Dependent Variable: AR

As shown in the diagram above, the residuals are not evenly scattered around the line y=0. This suggests heteroscedasticity.

Appendix II

Provisions of the Sarbanes-Oxley Act 2002

SOX has eleven sections that include provisions regulating corporate entities, such as accounting firms, financial analysts, corporate officers, and corporate directors. Title I of the Act establishes the Public Company Accounting Oversight Board that registers public accounting firms, establishes standards related to preparation of audit reports to issuers, and oversee public accounting firms. Title II addresses issues related to auditor independence. It imposes restrictions on public accounting firms by mandating public accounting firms not to provide any non auditing services simultaneously with the auditing services, and requiring those firms to rotate the coordinating auditing partner and the reviewing auditing partner every 5 years. Title III illustrates responsibilities of the corporations, which include requirement for independent audit committee, executive certification of financial reports, and forfeiture of certain bonuses and profits upon financial restatements. Title IV mandates financial disclosure and internal controls of companies. It prohibits personal loans to executives, and requires disclosure of managerial assessment of internal controls and disclosure of audit committee financial expert. Title V, VI, and VII illustrate treatment of analyst conflicts of interest, S.E.C. resources and authority, and studies and reports regarding consolidation of public accounting firms, credit rating agencies, violators and violations, enforcement actions, and investment banks. Title VIII, IX, and XI impose increased penalties for corporate fraud, while title X addresses corporate tax returns matters.

Appendix III

Other return models that are also used in event studies include:

1. The constant expected returns model: $R_{it} = \mu_i + e_{it}$
   where, R_{it} is the return for stock i over time period t, μ_i is the expected return for stock i, and e_{it} is the usual statistical error term.

2. The market model:
   $R_{it} = a_i + b_i * R_{mt} + e_{it}$
   where, a_i and b_i are firm-specific parameters, and R_{mt} is the market return for the period t.

3. The arbitrage pricing model:
   $R_{it} = \delta_0 + \delta_{i1} F_{1t} + \delta_{i2} F_{2t} + ... + \delta_{in} F_{nt} + e_{it}$
   where, F_1, F_2,..., F_n are the returns on the n factors that generate returns, and δ are the factor loadings.

4. The Fama-French three factor model:
   $r - R_f = beta_3 * (K_m - R_f) + b_s * SMB + b_v * HML + alpha$
   where, r is the portfolio's return, R_f is the risk-free return, and K_m is the market return; $beta_3$ is analogous to the classical beta; SMB is the small [cap] minus big [cap], HML is the high [book/price] minus low.