

# An Empirical Investigation Of The Impact Of The Sarbanes-Oxley Act Of 2002 On Agency Costs

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## ABSTRACT

*Drawing upon the long established stream of agency theory literature, this research investigates the effect the impact of the Sarbanes-Oxley Act of 2002 (SOX) on the moderating effect of corporate governance mechanisms on the agency problem. Significant attention has been given to the costs associated with SOX, yet there is no notable research which examines the benefits derived therefrom. The purpose of this research is to fill the void in the current literature and complement its focus on costs with a serious investigation into whether benefits are being realized from this legislation. Investigating domestic, manufacturing firms listed on the New York Stock Exchange, this research illustrates that SOX caused these governance mechanisms to effectively moderate agency conflict in a post-SOX environment for this sample when they did not do so in a pre-SOX environment. Additionally, it concludes that in a model that includes audit fees, SOX improved the effectiveness of these governance mechanisms in the reduction of agency costs more predominantly with more robust results. Therefore, this research is the first to provide evidence that there are measureable benefits that flow from the passage of SOX.*

**Keywords:** agency costs; Sarbanes-Oxley; corporate governance

## INTRODUCTION

The purpose of this research was to assess the impact of the Sarbanes-Oxley Act of 2002 (SOX) on agency costs in United States (U.S.). Specifically, this research focused on domestic firms listed on the New York Stock Exchange (NYSE) in the manufacturing industry.

Much has been written about the impact of SOX from a cost perspective (both perceived and real). Many researchers and authors have espoused the increases in compliance costs caused by the passage of SOX. Not only has audit fee costs been criticized (Cielieski & Weirich, 2006; U.S. Audit Fees Double, 2005), but also other costs associated with complying with SOX's internal control requirements (Boodoo & Boodoo, 2007). Other issues related to the time and money spent on complying with this broad-based legislation have also been denounced. Baldwin (2006) noted that compliance with SOX can cost investors millions of dollars through firms' compliance efforts, causing U.S. firms to choose to list on foreign markets, most notably the London Stock Exchange, instead of U.S. markets (see also Marshall, 2006). Piotroski and Srinivasan (2007) and Doidge, Karolyi and Stulz (2007) presented conflicting results as to the impact of SOX on cross-listing behavior of foreign firms. Block (2004) and Engel, Hayes, and Wang (2008) argued that firms were increasingly going private as a result of the burdensome requirements imposed by SOX.

To date, the literature surrounding SOX research has focused on its costs (audit fees, compliance, and loss of listings in the capital markets) and ignored a meaningful investigation into the benefits of this landmark legislation. Bealing and Baker (2006) noted that "public corporations, through compliance with [SOX] hope to secure future access to capital markets by demonstrating more transparency in corporate governance procedures and availability of more reliable financial information" (p. 7). It was clear that, at least in the eyes of the U.S. Congress, benefits from this legislation would outweigh the costs imposed by its implementation. In fact, the preamble to SOX

itself stated its purpose was “[t]o protect investors by improving the accuracy and reliability of corporate disclosures made pursuant to the securities laws and for other purposes” (SOX, 2002). To achieve this, SOX imposed requirements on auditor independence (including limiting outside services and requiring audit partner rotation), corporate responsibility (through audit committee requirements and officer certification of financial statements), enhanced financial disclosures (related to both financial statements and internal controls), conflict of interest requirements for analysts, and corporate and criminal fraud accountability, to name just some of the requirements imposed.

Many if not most of the requirements of SOX fall into elements of what is commonly known as corporate governance. Corporate governance can be defined as a process which delineates “the relationship between a company’s shareholders, directors, and management as defined by the corporate charter, bylaws, formal policy, and rule of law” (Gallegos, 2004, p. 37). As noted by Radin and Stevenson (2006), “[c]orporate governance for publicly traded companies is based on the principle that boards are empowered and guided by the law including the Securities Act of 1933, the Securities Exchange Act of 1934, and the Sarbanes-Oxley Act of 2002” (p. 367). It is clear that the requirements of SOX (in addition to other securities laws) attempt to improve the monitoring and bonding activities suggested by Jensen and Meckling (1976) as elements to reducing agency costs.

Drawing on the long standing stream of literature established by Jensen and Meckling (1976) and Fama and Jensen (1983), and extending the research by Miller (2009) in an attempt to fill the void left in the current literature surrounding SOX, the purpose of this research was to assess the intended benefits of SOX to determine if some of the intended benefits have been realized. It can be stated that the broad based goal of SOX was to improve corporate governance (and corporate accountability). One measure of improved corporate governance is the extent to which the firm reduces agency costs. Specifically, it can be deduced from the discussion above that if a firm experiences improved governance, it should experience a corresponding (even proportionate) decrease in these costs.

This research provided the first evidence that there are measurable benefits from the passage of SOX. Specifically, it concludes that SOX improved the moderating effect of governance mechanisms on agency conflict and thereby reduced agency costs as measured by efficiency of asset utilization and discretionary expenditures.

## **METHODOLOGY**

Using a series of multivariate regression analyses, this research assessed the change in agency costs from before the passage of SOX through a period after its passage drawing on two common and proven measures of agency cost as outlined by Ang, Cole, and Lin (1999) and further developed by Singh and Davidson (2003). Consistent with the methodology used by Davidson, Bouresli, and Singh (2006), a baseline of agency costs incurred by the firms in the sample was determined using the fiscal year before the passage of SOX was regressed against variables commonly regarded to cause or mitigate agency conflicts. Next, the same multivariate analyses were performed for each of the three fiscal years following the passage of the SOX legislation. The purpose of performing such an analysis was to allow for a learning curve which companies may have experienced after SOX was enacted into law. It was posited that, as time progressed, SOX became more effective in improving corporate governance as firms were more aware of its requirements and comfortable with its application (both through the firms’ familiarity with the legislation and competence in implementing its requirements), thereby reducing agency costs. Alternatively, it could be argued that as time passed management became more complacent with regard to the SOX requirements, causing agency costs to rise. A more cynical view would be that, as time passed, management became savvier in ways to circumvent the new governance requirements and were, consequently, able to consume more perquisites from the firm.

## **LIMITATIONS**

This study, consistent with Botosan (1997), was limited by the fact that the sample used in this study included manufacturing firms in the following SIC codes: 3310-3600. Therefore, the results of this study may only have been representative of issues unique to the manufacturing industry and further study beyond this industry may be necessary to impute broader application of this research. Additionally, due to characteristics related to foreign filings, this study was limited to domestic companies in the data set for the SIC codes selected. In addition, due to

the different governance requirements imposed by different stock exchanges, only firms listed on the NYSE were used. Only firms who were registered as public companies for the entire window of this study (namely, from the fiscal year prior to the passage of SOX to the third fiscal year after such filing) were studied. As a result, firms newly registered or that withdrew registration during the time window of this study were not included in the data set. Lastly, not all firms were required to be in full compliance with certain elements of SOX until late 2007. Therefore, its benefits may not, as of the dates covered by this research, have been fully realized.

In addition, Leuz (2007) noted there were significant economic events that occurred around the same time period as the passage of SOX. For example, the events of September 11, 2001 as well as an economic downturn in the U.S. occurred during the time period studied in this research. It was acknowledged that these events may also have impacted the ratios used as proxies for agency costs. Additionally, the ratios used in this study may have been limited by differences in the accounting methods chosen and the timing of revenues and expenses recognized by the firms in the sample (Ang, Cole, & Lin, 2000).

As with any statistical study, this study included the risk of a type I (or  $\alpha$ ) and type II (or  $\beta$ ) errors (Stock & Watson, 2007; Gujarati, 2003).

Despite these limitations, this research contributes to the streams of literature on agency costs and on the impact of SOX. Importantly, this research affords an opportunity to further study the benefits of SOX rather than a unilateral focus on cost.

## **LITERATURE REVIEW**

While previous research has focused primarily on the costs of the Sarbanes-Oxley Act of 2002 (SOX), the purpose of this research was to investigate the intended benefits of this momentous legislation and whether said benefits are being realized in the market. Specifically, since SOX was intended to improve corporate governance, it can be argued that one benefit of this intended result is the reduction in agency costs. To follow is a review of SOX, its intent and purpose, and research conducted on the impact of this law on firms in the United States (U.S.). Next, agency cost literature is explored to determine which variables, based on prior research, are appropriate to measure whether SOX has had an impact (i.e. a SOX effect) on firms in the U.S.

### **SARBANES-OXLEY ACT OF 2002**

SOX, originally introduced as Corporate and Auditing Accountability, Responsibility, and Transparency Act of 2002, was passed in its final form by Congress on July 25, 2002 and signed into law by President George W. Bush on July 30, 2002 in response to the corporate scandals of the late 1990's and early 2000's. Final rules were adopted by the United States Securities Exchange Commission (SEC) under this legislation on January 23, 2003 (Anson, 2003). The purpose of SOX was to restore public confidence in the markets after this confidence was weakened by these scandals (Green & Gregory, 2005). Accordingly, Green and Gregory noted the major provisions of SOX to include:

1. The principal executive officer and principal financial officer must certify the financial statements of the company;
2. The company must document its internal control systems;
3. The audit committees of the boards of directors must be composed of independent directors and establish "whistleblower" policies to allow questionable accounting practices to be anonymously reported; and
4. Public companies are to adopt and disclose a code of ethics for its key executives.

SOX was a broad-based, complex piece of legislation which was generally considered to be Congress' knee-jerk reaction to public opinion of corporate practices after the dramatic, well publicized falls of major U.S. corporations such as Enron, WorldCom, and others (Burrowes, Kastantina & Novicevich, 2004; Madrid, 2004) and the overzealous actions of corporate executives who lined their pockets with lucrative stock options (Besner, 2004; see also Burrowes et al., 2004). It was passed "to restore integrity and public confidence in corporate governance, financial statements and stock valuation" (Goodman, 2003 p. 604). Although some argued that Congress missed the

opportunity for meaningful reform (Cullinan, 2004), by passing SOX, Congress intended to renew investor confidence in the financial markets and ensure fair and accurate reporting of financial information to stakeholders by public companies<sup>1</sup> (Stevens, 2004).

Many of the provisions of SOX drew upon concepts the government had wanted to enforce since passage of the Foreign Corrupt Practices Act (FCPA) (Rockness & Rockness, 2005, see also Kinney, Maher, & Wright, 1990) and investigations of the Treadway Commission (Ge & McVay, 2005). SOX drew upon existing listing standards of the New York Stock Exchange (NYSE) and National Association of Securities Dealers (NASD) to establish additional governance and reporting requirements for the firms (Green & Gregory, 2005). These additional governance and reporting requirements included: (a) creating more accountability for auditor independence; (b) requiring audits of internal controls in addition to those already required of financial statements; (c) limiting the use of pro forma financial information in various ways; and (d) setting minimum standards for professional conduct for attorneys representing issuers in any way before the SEC (Cohen, Bronson, Edwards & Stegemoeller, 2004; Madrid, 2004).

Senator Sarbanes, one of the principal sponsors of the SOX legislation, was clear in the Senate floor debates of his intentions when lobbying for passage of his proposed legislation. The SEC emphasized “simple principles” which were espoused by Senator Sarbanes in their final regulations illustrated by Ainsworth (2004) as follows:

*...the principles of independence with respect to services provided by auditors are largely predicated on three basic principles violations of which would impair the auditor’s independence:*

- An auditor cannot function in the role of management;
- An auditor cannot audit his or her own work; and
- An auditor cannot serve in an advocacy role for his or her own client.

While auditor independence was covered significantly in SOX, Gavius (2007) noted that there was still an agency problem between the auditor and the companies they audit given that the relationship between the parties (whereby the company pays the auditor for its services) created an inherent conflict of interest for the auditor. This may be one rationale for Cullinan’s (2004) criticism that legislators missed an opportunity to make more effective reforms to U.S. securities laws.

SOX was the most comprehensive reform of securities laws since the Securities Act of 1933 and Securities Exchange Act of 1934 (Koehn & Del Vecchio, 2004). Until passage of SOX, the accounting profession was largely self-regulated.<sup>2</sup> Many attempts to federalize any regulation of accounting standards were defeated by effective lobbying on behalf of the various professional societies. However, the corporate scandals that ensued during the previous decade gave the government the ammunition and motivation it needed to combat these lobbying efforts with the passage of SOX. Green and Gregory (2005) noted “when seismic events shake investor confidence in large international corporations, the worldwide landscape of public company governance changes” (p. 48). Some argued these scandals were the result of “corporate governance structures that permit[ed] an individual or a small group of individuals to consolidate power, to shroud their activities and to manipulate and intimidate those around them” (Grace, 2003 p. 8).

Additionally, Field (2004) noted the provision requiring companies disclose to auditors all “off balance sheet transactions, arrangements, obligations and other relationships” essential to the business imposed a heavy burden on supply-chain managers (p. 55 quoting a supply chain management consultant). This provision required

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<sup>1</sup> Interestingly, Stevens (2004) argued that investors did not have much confidence in the markets before Enron and WorldCom and questioned whether one can restore something that did not exist in the first place.

<sup>2</sup> It should be noted that the hallmark of any profession is self-regulation (Moriarty, 2000; see also Canning & O’Dwyer, 2001) and the accounting profession is no different. Through the Financial Accounting Standards Board (FASB), American Institute of Certified Public Accountants (AICPA), and Institute of Management Accountants (IMA), the accounting profession had regulated itself for decades.

that these managers be aware of and disclose all relationships or service contracts, including the responsibilities under such agreements and potential penalties should the company fail to fulfill its obligation (Field). In essence, “[t]he legislators have taken ‘ignorance’ as a defense away in the future” (Birchfield, 2004 p.74). This particular component of SOX implementation was somewhat overlooked in the early stages as companies were so preoccupied with the implementation of the basic provisions of SOX, resulting in a situation where they had not even begun applying SOX to their global supply chains two years after the passage of the legislation (Field). Additionally, it was difficult for senior managers to know all of the company’s international trade efforts as to properly understand how SOX applies in this area. Not only was the implementation of all of these controls costly, the mandate that the internal controls then be audited and certified by the independent auditor added to the financial burden of doing business globally. Field noted, however, the effect of this was to essentially mandate good management as the document flow and process that must be used to make the company SOX-compliant was very similar to ISO 9000 standards. Therefore, in many ways it was just a good, common sense way of doing business.

One problem the SOX requirements created was a possible detriment to the company as a whole in terms of return on investment for shareholders. Internal controls are a form of risk management; and risk management, taken to an extreme, can become risk avoidance and, therefore, a risk in and of itself (Birchfield, 2004). One might argue, however, that this created a division between public and nonpublic (also known as private) companies rather than large and small companies (Cheney, 2004). Standards applied by many national and international jurisdictions tend to focus on the lowest common denominator and, thus, apply to international public companies that sell equities in other countries. Therefore, one could argue that private companies had a financial, and therefore possibly a competitive, advantage over public companies entering foreign markets as private companies are not burdened with the extensive reporting and audit requirements of public companies imposed by SOX when doing so.<sup>3</sup> Cheney noted that “[a]bout half of America’s economic output is generated by millions of nonpublic companies, yet FASB [the Financial Accounting Standards Board] writes standards primarily for the complex finances of about 15,000 public companies, establishing the generally accepted accounting principles (GAAP) that the SEC requires for listing on U.S. stock exchanges” (p. 20). The same analysis was made about applying SOX and the burdens it created. It is interesting to note that most countries required private companies to file reports under a national GAAP (i.e. the accounting principles generally accepted in that country) while the U.S. does not. Yet national GAAP in these other countries as it applied to small companies was not as rigorous as that of international or U.S. standards imposed on public companies (Cheney p. 22).

#### *Research on the Sarbanes-Oxley Act of 2002*

Since the passage of SOX, numerous researchers have analyzed the costs and impact of SOX on the market. Zhang (2007) performed an event study on the passage of SOX. Using three event windows surrounding key SOX events, Zhang concluded that the cumulative raw and abnormal returns were significantly negative for firms in the U.S. after the passage of SOX. However, Rezaee and Jain (2006) and Li, Pincus, and Rego (2008) found significantly positive returns using different event windows. Leuz (2007) noted a problem implicit in Zhang’s study as the lack of a natural control group since SOX applied to all firms listed in the U.S. and there were, therefore, no firms which were unaffected.

In response to the use of the event study methodology in the Zhang (2007) study, Leuz (2007) noted “[e]vent returns could also be affected by broad stock market trends and major macroeconomic or political news” (p. 151). Most notably, Leuz noted the downturn in the U.S. economy and the events of September 11, 2001 as plausible explanations for Zhang’s results. Leuz also expressed concern over the method with which Zhang chose the event windows. In addition, Leuz noted the NYSE and the National Association of Securities Dealers Automated Quotations system (NASDAQ) changed their listing requirements during the periods of time covered in Zhang’s event windows which were not controlled for or studied.

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<sup>3</sup> As pointed out by a reviewer at the 2006 American Accounting Association Mid-Atlantic Regional Meeting, the hardships outlined here on public companies are to specifically provide a protection to stakeholders of the public company and, therefore, should be viewed in this light. Presumably, a private company is managed by its owners and, therefore, the owners do not need the level of protections herein contemplated as these owners have direct access to inside information by virtue of their position in management.

Not only has research focused on firms listing on foreign exchanges, but also on firms de-listing in the U.S. due to the cost of complying with SOX (Block, 2004). Block performed a survey of firms that went private between January, 2001 and July, 2003 (a period directly related to the passage of SOX) and concluded costs of compliance as the primary reason for firms going private. In addition, Engel, Hayes, and Wang (2008) evaluated the decision by firms to go private in response to SOX. Specifically, Engel, et al. investigated whether SOX was associated with an increase in the number of firms going private, changes in characteristics of firm's going private, and a change in going private announcement returns. Their research indicated the cost of SOX was higher for smaller, less liquid firms. In response to this study, Leuz (2007) expressed similar concerns to those expressed with the Zhang (2007) study described above.

## **AGENCY COSTS**

While Berle and Means (1932) first introduced the concept of separation of ownership and control stating “[a]s the ownership of corporate wealth has become more widely dispersed, ownership of that wealth and control over it have come to lie less and less in the same hands” (p. 69); it was Jensen and Meckling (1976) who modeled the theory illustrating that as a manager's ownership in the firm declined, the manager had the propensity to take non-pecuniary benefits which are not beneficial to the firm but generate utility to the manager. Fama (1980) noted “[e]conomists have long been concerned with the incentive problems that arise when decision making in a firm is the province of managers who are not the firm's security holders” (p. 288). Jensen and Meckling defined the agency relationship as “a contract under which one or more persons – the principal(s) – engage another person – the agent – to perform some service on their behalf which involves delegating some decision-making authority to the agent” (p. 3). These are, as Fama noted, contracts among factors of production. The purpose of bringing these elements of production together on a contractual basis is to achieve cooperation among specialists to achieve productivity for the resource owners (Alchian & Demsetz, 1972). Fama described the relationships in the firm as a series of contracts citing Alchian and Demsetz who stated:

*The essence of the classical firm is identified here as contractual structure with: 1) joint input production; 2) several input owners; 3) one party who is common to all the contracts of the joint inputs; 4) who has the right to renegotiate any input's contract independently of contracts with other input owners; 5) who holds the residual claim; and 6) who has the right to sell his central contractual residual status. The central agent is called the firm's owner and the employer. (Alchian & Demsetz, p. 794).*

The costs associated with the agency relationship can be classified into three categories, according to Jensen and Meckling (1976): monitoring costs, bonding costs, and residual loss. Monitoring costs include costs of observing the actions of the agent as well as costs to control the agent's behavior through auditing, internal controls, policies and procedures, and restrictions (such as budgets).<sup>4</sup> Due to their large influence and risk in the firm, Ang, Cole and Lin (2000) noted that large blockholders often fulfill a monitoring role for publicly held corporations since they have the greatest to gain from such monitoring (Holderness & Sheehan, 1985; Barclay & Holderness, 1991). Additionally, creditors may incur monitoring costs to protect their investment in the firm, particularly when the creditors have significant amounts lent to the firm (Ang et al.). In doing so, the creditor is ensuring the firm is operating efficiently and utilizing assets effectively (thus controlling the consumption of perquisites by management). This is particularly important, Ang et al. noted, in a highly leveraged firm where the risk of default is higher, increasing the incentive to monitor.

Bonding costs include costs associated with providing assurance to outside owners that the manager's activity related to taking benefits from the company are limited and take the form of audits by public accounting firms, fiduciary bonds (i.e. insurance), and limitations placed on the manager's authority though the contract between the firm and the manager (Jensen & Meckling, 1976).

The residual loss is defined as the difference between the value to the firm if the manager acted in the best interest of the firm and the decisions the manager ultimately makes (Jensen & Meckling, 1976) and include “social and private costs of an agent's actions due to incomplete alignment of the agent's and owner's interests” (Ang et al.,

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<sup>4</sup> Competition also makes it necessary to monitor the performance of the management team and individuals (Fama, 1980).

2000).<sup>5</sup> These decisions have been shown to include capital structure, maturity structure, dividend policy, and executive compensation (Ang et al.). According to Jensen and Meckling, the residual loss occurs because management has incentive to consume perquisites<sup>6</sup> from the firm. When a manager consumes these perquisites the manager benefits from 100% of their value. While the manager may have some ownership interest in the firm, the manager's loss of profit from this consumption is equal to his or her ownership percentage in the firm times the value of the perquisite consumed. The cost to the remaining shareholders, however, is  $1 - \alpha$  (where  $\alpha$  is the percentage of the firm the manager owns). Therefore, the less ownership interest held by the manager, the greater the benefit of the consumption of the perquisite to the manager and the greater the loss to the remaining shareholders.

## METHODOLOGY

### Hypothesis Development

The research question asked in this study is whether agency costs declined for manufacturing firms on the New York Stock Exchange (NYSE) as a result of the passage of SOX. More broadly, the crux of the question is whether the provisions of SOX are creating benefits for firms in the U.S. capital markets.

#### *Sample Selection and Event Window*

“An important methodological approach to market based empirical research in finance and accounting is the event study” (Bowman, 1983 p. 561). Merino, Koch, and MacRitchie (1987) recommended a sufficient historical framework must be developed to determine the sample selection and event windows when performing an event study. The literature review above provides a sufficient historical framework based on the studies of SOX and agency theory for the sample selection, and classification of events for this event study as recommended by Merino et al. While the typical event study evaluates the effect of some event on securities prices (Bowman, 1983) and “the extent to which security returns around the time of the event are ‘abnormal, in that they differ from those predicted by some process that determines equilibrium expected returns’” (Coutts, Mills & Roberts, 1995 p. 108), this study evaluated the effect of an event (the passage of SOX) on the agency costs on manufacturing firms listed on the NYSE.

In evaluating the impact of disclosure levels on the cost of equity capital, Botosan (1997) noted it was important to choose one industry as disclosure patterns varied among industries. Specifically, she noted that firms in the pharmaceuticals industry would be more likely to make more transparent disclosures about research and development activities than firms in other industries (p. 327). Additionally, Ang, Cole and Lin (2000) noted that there were significant differences in agency costs among industries. Therefore, to ensure the any changes from the pre-SOX sample to the post-SOX sample was not influenced by industry factors, a single industry was used in this study. Consistent with Botosan's argument, it was argued that different industries may allow for different levels of agency costs. This was acknowledged by Ang, Cole, and Lin (2000), Singh and Davidson (2003), and Davidson, Boursesli, and Singh (2006) when each controlled for industry effects in their studies. Given that this study was interested in the impact of SOX on agency costs, and that this was a question of first impression, it was logical to choose one industry. Therefore, given Botosan's argument that an intra-industry sample would be appropriate, this

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<sup>5</sup> The manager may be motivated to make decisions which do not maximize firm value. This case occurs when the manager makes a decision which benefits the manager (financially or non-financially) which is not the optimal decision to maximize firm value. Fama (1980) noted that this divergence of ownership and management creates a situation where the manager, whose motivations may not be parallel with the owners, has little resemblance to Adam Smith's “economic man.” Not only do these decisions involve those which result in consumption of perquisites, but also those that result in the shirking of responsibility (Ang, Cole, & Lin, 2000). However, if the manager is consuming perquisites to maximize the manager's overall utility that may be interpreted as exemplifying Adam Smith's “economic man.”

<sup>6</sup> Ellig (2005) noted that perquisites (often referred to as “perks”) are a form of compensation that separates top level executives from those below them in the firm. They are often not performance based and create a two class system between the executives and other employees which is contrary to dominant corporate philosophies which stress teamwork in the workplace. Perquisites are a form of compensation which is an extension of and beyond that of the normal benefit package.

research used the same broadly defined manufacturing industry with SIC codes 3310-3600.<sup>7</sup> The use of these manufacturing industry codes allowed for the one measure of agency cost (selling, general, and administrative expense) to be more likely to focus on the perquisites desired in the analysis below as this measure was more likely to include discretionary expenditures.

Consistent with Leuz's (2007) observation that U.S. exchanges have differing governance standards and have experienced changes in each exchange's respective governance standards over the period of interest, the use of one exchange allowed for controlling for this change. Therefore, the firms selected were firms listed on the NYSE for the entirety of the event window. This constraint allowed the results to be read with an understanding of the governance requirements of this exchange on these firms relative to the governance variables examined.

In evaluating the effect of initial public offerings (IPOs) on agency costs, Davidson, Bouresli, and Singh (2006) calculated the agency cost regressions in the IPO year-1 (the year before the IPO) and the IPO year+1 (the year after the IPO). The researchers argued that to use the year of the IPO (year zero) would have included information in the analysis for a year where the firm was privately owned for a period of time and publicly owned for a period of time. Consistent with and extending this approach, this research calculated the agency cost regressions for the fiscal year before the passage of SOX and the three years after its passage. In addition to calculating the agency cost regressions for the fiscal year after the passage of SOX (SOX+1), and in recognition of a possible learning curve on the part of company management in implementing the provisions of the legislation, this research calculated the regressions for each of the years SOX+2 and SOX+3. The year SOX was passed was not calculated as this year may include significant noise since it will include part of a year without SOX and part of a year with SOX.<sup>8</sup>

## MODEL

This study used univariate and multivariate regression with two dependent variables as proxies for agency costs in two separate regressions using the same independent variables. Consistent with Singh and Davidson (2003) and Davidson et al.'s (2006) revision of the proxies developed and proven by Ang et al. (2000), the dependent variables used to proxy for agency costs was sales divided by total assets (asset turnover) and selling, general, and administrative expense as a percentage of sales. Following closely the work of Davidson, Bouresli, and Singh (2006), this study investigated firms in the manufacturing industry using the following model to measure the change in agency costs pre-SOX and post-SOX. Consistent with Miller (2009), audit fees were added to the models of the aforementioned researchers was amended to include audit fees since this is a discretely measurable cost related to the agency problem. The model can be expressed as follows:

$$\begin{aligned} \text{ATO} &= \beta_0 + \beta_1\text{CEO} + \beta_2\text{BH} + \beta_3\text{BOARD} + \beta_4\text{DIR} + \beta_5\text{LEV} + \beta_6\text{ASSETS} + \beta_7\text{AUDIT} + \beta \\ \text{SGA} &= \beta_0 + \beta_1\text{CEO} + \beta_2\text{BH} + \beta_3\text{BOARD} + \beta_4\text{DIR} + \beta_5\text{LEV} + \beta_6\text{ASSETS} + \beta_7\text{AUDIT} + \beta \end{aligned}$$

The variables in this model are presented in Table 1.

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<sup>7</sup> Botosan (1997) did not use the entire range, arguing "[e]lectronic components manufactures (SIC codes 3571-3579) are excluded because their disclosure practices may be influenced by the high technology nature of these firms which is quite different from the other firms included in the analysis" (p. 327). Given that this research does not use disclosure level as a component of the research, leaving this range out of the sample would not have been appropriate.

<sup>8</sup> Not all firms have the same fiscal years, therefore, to calculate a regression for firms with varying amounts of time before and after SOX would not yield meaningful results. Not all firms were required to implement all the provisions of SOX immediately. The law and related regulations did allow for various phase-in periods based on company size yet it can be assumed that after the passage of SOX, firms were more cognizant of its requirements and, therefore, would be improving their corporate governance systems in preparation of its implementation.



Table 1: Variables to be used in Data Analysis

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<u>Dependent Variables</u>		
ATO	=	asset turnover (net sales ÷ total assets)
SGA	=	selling, general, and administrative expense ÷ net sales
<u>Independent Variables</u>		
CEO	=	CEO ownership as a percentage of all voting shares outstanding
BH	=	blockholder ownership as a percentage of all voting shares outstanding
BOARD	=	size of the board of directors (number of directors)
DIR	=	outside directors as a percentage of all directors
LEV	=	leverage (total debt ÷ total assets)
AUDIT	=	audit fees as a percentage of net sales
<u>Control Variables</u>		
ASSETS	=	$\log_{10}$ of total asset

Consistent with Ang et al. (2000), Singh and Davidson (2003), and Davidson et al. (2006), each dependent variable was regressed with each independent variable in a univariate regression to determine the impact of each individual independent variable with a final multivariate analysis including all the independent variables. Analysis was performed to test the assumption normality of the residuals of the regression through the preparation and review of the related histograms. This procedure was repeated for each year (SOX-1, SOX+1, SOX+2, and SOX+3).

#### *Dependent variables*

As explained in the model presented above, each of the dependent variables were used as a single dependent variable in univariate and multivariate regression analyses using identical independent variables known to impact agency costs.

Asset turnover (identified as ATO in the model) was equal to net sales divided by total assets as reported by financial information provided by Compustat. Davidson, Bouresli, and Singh (2006); Ang, Cole and Lin (2000), and Singh and Davidson (2003) used this ratio to measure the effectiveness of management's use of the assets of the firm and, therefore, a measure of agency costs. A lower asset turnover implied management had invested in nonproductive assets which did not generate cash flows and there was, therefore, agency conflict.

Given that a higher asset turnover indicated efficient use of firm assets, a positive coefficient on any of the independent variables when regressed against asset turnover (ATO) indicated a positive impact on the dependent variable and, thus, a decrease in agency costs (since the positive impact would increase the efficiency with which the firm utilized its assets). Conversely, a negative coefficient on any of the independent variables indicated a negative impact on the dependent variable and an increase in agency costs (since the negative impact decreases the efficiency with which the firm utilized its assets).

Selling, general, and administrative expense as a percentage of net sales (identified as SGA in the model) was a ratio which uses total selling, general, and administrative expenses and net sales as reported by financial information provided by Compustat. This variable was expressed as a percentage. The use of a percentage allowed this variable to be a relative measure which was, therefore, standardized among various sized firms. Davidson et al. (2006), Singh and Davidson (2003) used this ratio as a measure of the discretionary spending by managers and, thus, a measure of agency costs. Ang et al. (2000) used total expenses less cost of goods sold, interest expense and management compensation in the context of privately owned companies, arguing that the excess expenses include perks and other rents obtained by the manager in their role as a manager. Singh and Davidson (2003) refined this ratio in the context of publicly held companies to be selling, general, and administrative expenses. Since selling, general, and administrative expenses, by definition include neither cost of goods sold nor interest expense (nor other non-operating items for that matter), this expense was a better proxy, Singh and Davidson argued, for the ability of managers to obtain perquisites from the firm. Additionally, Singh and Davidson argued that management

compensation included in the selling, general, and administrative expenses were necessarily agency costs as the manager may warrant higher salaries to receive benefits from the firm. Therefore, Singh and Davidson's definition of this expense ratio as a measure of agency cost was used in this study (consistent with that used by Davidson et al., 2006).

A positive coefficient on any of the independent variables when regressed against selling, general, and administrative expense as a percentage of net sales (SGA) would indicate an increase in the expense ratio, indicating an increase in discretionary expenditures, thus demonstrating an increase in agency costs. A negative coefficient on any of the independent variables would indicate a decrease in the expense ratio which, by virtue of the decrease in discretionary expenditures illustrated thereby, illustrate a reduction in agency costs.

### **TESTS OF THE IMPACT OF SOX ON AGENCY COSTS**

A series of tests was performed focusing on the impact of SOX on the agency costs. These tests involved evaluating the statistical significance as well as the magnitude of the coefficients of each independent variable in the regression models to determine if each behaved differently in the model developed above in the years after the passage of SOX versus the years before the passage of SOX.

If the coefficients on the variables were significant both before and after SOX, a Chow test was to be employed to determine whether the regressions in the years SOX-1, SOX+1, SOX+2, and SOX+3 were different. The Chow test is an econometric tool used to "test whether the assumption that there are two different regression models is correct [by starting] with the null hypothesis that the regressions are *identical* and see whether we can reject this hypothesis" (Pindyck & Rubinfeld, 1998, p. 133, emphasis in original). The *F* statistic is calculated using the error sums of squares of the individual equations and the unrestricted sums of squares (the total of the error sums of squares of the individual equations). If the *F* statistic is greater than the critical value of *F* then the null hypothesis can be rejected and the regressions are not identical. Stock and Watson (2007) noted that this test is helpful when a hypothesized break in the coefficients is known. For purposes of this research, the hypothesized break is the passage of SOX. Therefore, it was hypothesized that the regression for SOX-1 would be different from the regression for SOX+1, SOX+2, and SOX+3. In addition, this research investigated whether the latter three regressions were different, indicating a learning curve (whether positive in the form of reduced agency costs or negative in the form of management finding ways to avoid or overcome the hurdles established by SOX to reduce agency costs).

#### *Independent Variables*

CEO ownership (CEO) was used as a measure of total votes possessed by the CEO expressed as a percentage of the total voting rights in the firm. Given the goal of SOX to improve corporate governance, it was hypothesized that, in the context of the more highly regulated environment and the arguments regarding the increase in monitoring costs post-SOX, the impact of CEO ownership on agency costs would be more pronounced as CEOs would be more cognizant of agency problems. Specifically, as CEO ownership declined, the increase in monitoring imposed by SOX would cause the CEO ownership (CEO) variable to have a greater impact on agency costs than might otherwise be apparent. This led to the following hypothesis:

H<sub>1</sub> = CEO ownership will have a greater impact on agency costs in a post-SOX environment.

Ownership by blockholders (BH) was defined as total votes of outside shareholders with common stock ownership of five percent (5%) or more (blockholders) expressed as a percentage of the total voting rights in the firm. The theory indicated when there were more blockholders, there would be greater control of the firm by these influential shareholders, and hence increased monitoring power. It was posited that, given the increase in regulation imposed by SOX and the increased awareness this legislation has placed on corporate governance (and hence, agency cost) issues, the influence of blockholders would be more apparent in a post-SOX environment. Therefore, it was hypothesized these blockholders would exert vigorous control and extend monitoring capability in a post-SOX environment in an attempt to reduce agency costs. This hypothesis can be expressed as follows:

H<sub>2</sub> = Blockholders will have a greater influence on agency costs in a post-SOX environment.

Board size (BOARD) was defined as the number of board members as disclosed in the SEC Form 10K for each year of interest. Brunarski et al. (2004) and Borokhovich et al. (2005) used board size as a proxy for the monitoring strength of the board of directors and its impact on agency costs. While the results were mixed, the argument that larger boards provide greater oversight was intuitive. In addition, the increased emphasis on board responsibility in a post-SOX environment created an environment whereby boards were more inclined to monitor firm managers. Hence, it was expected that the influence of the board as well as its sense of responsibility would cause the post-SOX board to be more cognizant of agency issues and more observant of management opportunism. This led to the ninth hypothesis:

H<sub>3</sub> = Agency costs will decline more predominantly in firms with larger boards than in firms with smaller boards in a post-SOX environment.

Specifically, it was hypothesized the coefficient on board size (BOARD) would increase as to asset turnover (ATO) and become more negative as to the selling, general, and administrative expense percentage (SGA) after the passage of SOX due to the decrease in agency costs which result from the improved corporate governance imposed by SOX.

Outside directors (DIR) were all directors who were not affiliated with the firm, either as members of management or other employees, former employees, or family members of employees. Based on prior research, firms with more outside directors had lower agency costs and, therefore, reap greater benefit from SOX. Dallas (1996) noted that a corporation will desire a higher proportion of outside directors in times of uncertainty and use these outside directors as a means to send information to stakeholders to deal with the concerns brought on by the uncertainty and enlist the expertise of directors (Pearce & Zahra, 1992). As illustrated by the literature review, to say that the time period after the passage of SOX was a period of uncertainty for corporate governance would be an understatement as firms waited on impending legislation from Congress (in response to public outcries over the corporate scandals of the previous decade). Subsequently, the uncertainty continued as these firms awaited the application of SOX through SEC regulation and auditor demands for information. Therefore, since there was an increased emphasis in oversight by SOX and a perceived need for improved corporate governance, it was hypothesized that the need for outside directors was more apparent in a post-SOX environment.<sup>9</sup> This observation, coupled with the increased awareness of board members of the importance of their monitoring role<sup>10</sup> led to the logical conclusion that outside directors would become even more cognizant of business dealings within the firm as to avoid liability for failure to exercise their fiduciary responsibility. Therefore, the next hypothesis was stated:

H<sub>4</sub> = Agency costs will decline more predominantly in firms with more outside directors in a post-SOX environment.

This hypothesis was grounded in the expectation that the positive coefficient on the outside directors (DIR) variable would become more positive as to asset turnover (ATO) and the negative sign on the coefficient on more negative as to selling, general, and administrative expense as a percentage of net sales (SGA) after the passage of SOX.

The degree of leverage (LEV) incurred by the firm was calculated as total debt divided by total assets from information reported by Compustat. Since managers of firms with greater debt may be more constrained to use a firm's cash on perquisites, there was typically a negative relationship between leverage and agency costs. As noted above, given the findings that higher leverage decreases the prevalence of agency costs, boards will use capital structure to control agency costs by maintaining certain levels of leverage to deter management from obtaining perquisites from the firm (see Dallas, 1996). Drawing on the arguments above that the increase in the effectiveness

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<sup>9</sup> During the period following the passage of SOX, the NYSE altered its listing standards to require a majority of the board of any listed firm to be independent to improve corporate governance. Therefore, this research may be influenced by increases in independent directors brought on by this requirement during the event window.

<sup>10</sup> The falls of Enron, Worldcom, and Tyco, to name a few, illustrate that boards of directors were often "asleep at the switch" (i.e. not performing their proper oversight duty with due diligence) while firm management was engaging in questionable behavior. These events could only have led to an increased sense of responsibility by boards across the world in their monitoring role.

of corporate governance mechanisms indicated by SOX, it was expected that the impact of leverage will have a greater effect on agency costs in a post-SOX environment than might have been present in the status quo ante. This led to the eleventh hypothesis tested in this research:

H<sub>5</sub> = Agency costs will decline more predominantly in firms with greater leverage in a post-SOX environment.

This hypothesis theorized that the negative coefficient as to asset turnover (ATO) on the financial leverage variable would become less negative after the passage of SOX as there would be a reduction in agency costs. In addition, the positive coefficient as to selling, general, and administrative expense as a percentage of net sales (SGA) would increase due to the expected decrease in agency costs.

Neither Ang, Cole and Lin (2000) and its progeny nor other literature studying the agency problem (e.g. Borokhovich, Brunarski, Harman & Kehr, 2005; DeFond, 1992; Francis & Wilson, 1988) included audit fees in their models addressing and analyzing the agency problem. In response to the agency problem that can actually be caused by the hiring of the audit firm (Gavious, 2007) it was determined that outflows related to the agency conflict (whether monitoring or bonding) should be included in the model to control for known agency costs which can be measured (i.e. the bonding cost associated with an independent audit). Therefore, audit fees were added to the models as a control variable to determine if a model including audit fees would more appropriately specify the effect of the governance mechanisms on agency costs. Audit fees had been obtained from Compustat and were divided by net sales to obtain a variable which would be a proxy for the complexity or sophistication of the audit. It could also be argued, drawing from the work of DeAngelo (1981a,1981b) and its offspring, that this measure of audit fees was a proxy for audit quality.

H<sub>6</sub> = Agency costs will decline as audit fees increase.

It was anticipated that coefficient ( $\beta_7$ ) of audit fees as a percentage of net sales (AUDIT) would be positive as to asset turnover (ATO) as the monitoring of the auditor would increase the efficiency with which the firm utilized its assets. It was also anticipated that the coefficient of AUDIT would be positive as to selling, general, and administrative expenses as a percentage of net sales (SGA) as the higher audit fees would, by definition, increase selling, general, and administrative expenses since audit fees would be classified in this line item on the financial statements.

*Control Variable*

The log<sub>10</sub> of assets was used to control for the size of the firm (ASSETS). One would expect that larger firms, which may have greater resources available for management opportunism coupled with greater resources to apply to SOX compliance, would be more likely to reap the benefit of reduced agency costs than smaller firms.

**DATA**

The initial data collected for this research was collected from Compustat. A compilation of all companies listed on the New York Stock Exchange (NYSE) with SIC Codes of 3310 to 3600 was requested. From this request, data on 133 companies were obtained as the initial sample. For each company, the information listed in Table 2 was requested from Compustat for the years ended between May 31, 2001 and May 31, 2007 to ensure that the event window, which included years ended July 31, 2001 through July 31, 2006 were included. In total, 5,054 unique pieces of data were obtained from

<b>Table 2: Data obtained from Compustat</b>	
	Fiscal Year End
	Total Assets
	Total Debt
	Net Sales
	Selling, General, and Administrative Expenses
	Audit Fees
	SIC Code

Compustat. The information was compiled in a Microsoft Excel 2007 spreadsheet. From this data, the following variables were calculated for each year resulting in 3,192 additional data points:

- Asset turnover (ATO) was calculated by dividing net sales by total assets.
- Log<sub>10</sub> of assets (ASSETS) was calculated using the logarithm function in Microsoft Excel 2007.
- Leverage (LEV) was calculated by dividing total debt by total assets.
- Selling, general, and administrative expense as a percentage of net sales (SGA) was calculated by dividing selling, general, and administrative expense by net sales.
- Audit Fees (AUDIT) was calculated as a percentage of net sales.

Once the list of companies in the preliminary data set was determined, additional data was collected manually. The Securities Exchange Commission (SEC) annual report pursuant to section 13 and 15(d) (Form 10-K) or Annual and transition report of foreign private issuers pursuant to sections 13 or 15(d) (Form 20-F), as appropriate, was pulled from the SEC website (www.sec.gov) for each year within the event window for each company listed in the sample provided by Compustat. When appropriate, information was obtained from the annual proxy statement (DEF 14A) when incorporated by reference in the Form 10-K. From these filings, 5,586 data points were collected for this research. The data collected from the annual SEC filings for each company is presented in Table 3.

<b>Table 3: Data obtained from Annual SEC Filings</b>
Number of directors
Number of outside directors
Number of voting shares outstanding
Number of voting shares owned by outside blockholders
Number of voting shares owned by CEO
Country of Incorporation

From this information, the following variables were calculated for each year:

- The percentage of outside directors as a percentage of the total board of directors (DIR) was calculated by dividing the total outside directors by the total board members.
- The percentage of blockholder ownership (BH) was calculated by dividing the total voting shares owned by outside blockholders by the total voting shares outstanding.
- The percentage of CEO ownership (CEO) was calculated by dividing the total voting shares owned by the chief executive officer, president, or chairman of the board with the highest level of compensation by the total voting shares outstanding.

These calculations resulted in 2,394 data points being calculated. In total, 17,822 unique data points were obtained or calculated for purposes of performing the initial phase of this research. The data points analyzed for the initial analysis, as described above are summarized in Table 1.

*Data Selection*

After compiling the data above, it was necessary to filter the data to have construct validity. Specifically, it was necessary to ensure that the companies included in all the regressions (the fiscal year before the passage of SOX, SOX-1; the fiscal year after the passage of SOX, SOX+1; the second fiscal year after the passage of SOX, SOX+2; and the third fiscal year after the passage of SOX, SOX+3)<sup>11</sup> were the same. To draw conclusions from this

<sup>11</sup>The year SOX-1 was any fiscal year end from July 31, 2001 through July 30, 2002. The year SOX+1 was any fiscal year end from July 31, 2003 through July 30, 2004. The year SOX+2 was any fiscal year end from July 31, 2004 through July 30, 2005. The year SOX+3 was any fiscal year end from July 31, 2005 through July 30, 2006. Consistent with Davidson, Bouresli, and Singh (2006), any fiscal year that ended from July 31, 2002 through July 30, 2003 was not used in this analysis as this fiscal year would include a partial year before SOX was passed and a partial year after SOX was passed resulting in significant noise during that year.

research, the regression calculations for each year needed to include the same companies to evaluate if SOX had an impact on those particular firms. Therefore, this study only focused on companies registered with the SEC for the entire period SOX-1 through SOX+3 (and thus providing the necessary annual information in addition to being subject to the provisions of SOX). Nineteen firms fell into the category of firms which had registered or withdrawn registration during the event window. Of these nineteen firms, eight filed a registration statement (Form S-1), two filed a registration of securities issued in business combinations (Form S-4), four filed a registration statement of certain foreign private issuers (Form F-1), two filed a registration of securities by foreign private issuers in certain business combinations (form F-4), two filed a prospectus under Rule 424(b)(2) (Form 424B2), and one filed a registration withdrawal request (Form RW). The nineteen firms involved included nine domestic firms and ten foreign firms. This analysis left 114 remaining in the sample from the 133 firms which had been provided by Compustat.

While collecting the governance and ownership data on each firm, it became apparent that many of the foreign firms (specifically the foreign private issuers) did not present the ownership interest of the CEO. In addition, the distinction between inside and outside directors was not apparent for many of the foreign firms. Given that there were 24 foreign firms in the data set and many of the firms did not present CEO ownership and/or the independence of the board was not readily determinable, and considering that ten of the firms had filed the initial registration during the event window (discussed above), it was determined that the best results would be obtained by focusing on only domestic firms to prevent any outliers that might occur due to differing regulatory requirements for foreign firms (not only SOX requirements, but more specifically, NYSE listing requirements). Given that ten firms had filed an initial registration after the start of the event period, the net reduction in the sample resulting from focusing the study to domestic firms was 14 firms. Therefore, only the 100 domestic firms were left in the sample.

In addition, there were two firms for which the full complement of Compustat data was not available due to changes in the presentation of the financial information by these companies during the event window. This change in financial statement presentation made determining comparable data points manually from the annual filing impractical. It was deemed imprudent, therefore, to include these firms in the data set as determining the data points from the filings would amount to conjecture. Additionally, data would need to be gathered from later SEC filings than the years at issue which would be inconsistent with the data collection methods used for the remainder of the sample. One of these two firms filed its last 10-K in 2005 for the year ended December 31, 2004 and withdrew its registration in 2006 and had already been pulled from the sample based on its lack of registration for the entire event window. Therefore, the net reduction in the sample size was one domestic firm from this analysis. This resulted in a total of 99 firms in the remaining sample. Given that four firms did not report audit fees for the year before SOX was passed, these firms could not be included in the model. Therefore, these four firms were not included in the initial research results for continuity and comparison of results. This resulted in a total of 95 firms ( $n = 95$ ) in the final sample used for the remainder of the study.

## **REGRESSION ANALYSIS**

The data collected was analyzed in eight multivariate regression equations (one regression for each of the two dependent variables using the same regressors for each year of this study: SOX-1, SOX+1, SOX+2 and SOX+3). Before regression analysis took place, the data was analyzed for high degrees of bivariate correlation between the dependent and independent variables. Correlation analysis allows the researcher to test for the potential for perfect or imperfect multicollinearity between the variables. No correlations exceeded a critical value of 0.600 in the analysis.

*Regression Results of ATO Multivariate Model.* The results of the multivariate model with asset turnover (ATO) as the dependent variable are presented in Table 4.

The coefficient ( $\beta_1$ ) of the CEO ownership (CEO) variable continued to lack any statistical significance. The impact of this variable was, therefore, not enhanced by the inclusion of the audit fees as a percentage of net sales (AUDIT) variable.

During the year SOX-1, the coefficient ( $\beta_2$ ) of the blockholder ownership (BH) independent variable was statistically significant at the 10% level of confidence ( $t = -1.814$ ;  $p = 7.3\%$ ). BH had a negative coefficient which

was contrary to the expected result. Specifically, the coefficient indicated that for every one percentage point increase in blockholder ownership, there was a 0.00478 point decrease in asset turnover (ATO). The inclusion of AUDIT, therefore, controlled this variable with more precision. However, the coefficient of the BH variable was still not statistically significant in the remaining years. This result indicated that BH impacted the efficiency which with the firm utilizes its assets positively in the post-SOX years.

Table 4: Regression Results – ATO

	<u>SOX-1</u>	<u>SOX+1</u>	<u>SOX+2</u>	<u>SOX+3</u>
<b>Intercept</b>	1.863	1.755	2.213	2.585
<i>t-statistic</i>	5.023 ‡	5.312 ‡	6.603 ‡	7.463 ‡
<i>p-value</i>	0.000	0.000	0.000	0.000
<b>CEO</b>	-0.083	0.700	-0.201	-0.104
<i>t-statistic</i>	-0.153	1.187	-0.507	-0.262
<i>p-value</i>	0.879	0.239	0.613	0.794
<b>BH</b>	-0.478	0.256	-0.023	0.076
<i>t-statistic</i>	-1.814 *	1.023	-0.086	0.341
<i>p-value</i>	0.073	0.309	0.932	0.734
<b>BOARD</b>	0.021	0.047	0.032	0.027
<i>t-statistic</i>	1.255	2.494 †	1.695 *	1.479
<i>p-value</i>	0.213	0.015	0.094	0.143
<b>DIR</b>	0.619	-0.209	-0.080	-0.495
<i>t-statistic</i>	2.018 †	-0.665	-0.228	-1.505
<i>p-value</i>	0.047	0.508	0.820	0.136
<b>LEV</b>	-0.024	-0.197	-0.044	-0.403
<i>t-statistic</i>	-0.107	-0.973	-0.182	-1.647
<i>p-value</i>	0.915	0.333	0.856	0.103
<b>ASSETS</b>	-0.377	-0.272	-0.352	-0.309
<i>t-statistic</i>	-4.175 ‡	-3.309 ‡	-4.184 ‡	-3.960 ‡
<i>p-value</i>	0.000	0.001	0.000	0.000
<b>AUDIT</b>	-205.157	-110.729	-71.369	-91.708
<i>t-statistic</i>	-2.456 †	-2.646 ‡	-4.304 ‡	-5.065 ‡
<i>p-value</i>	0.016	0.010	0.000	0.000
<b>Adjusted R<sup>2</sup></b>	0.172	0.160	0.205	0.258

‡significant at 0.01 †significant at 0.05 \*significant at 0.10

The board size (BOARD) variable was not statistically significant in the year before the passage of SOX (SOX-1). During the year SOX+1, the coefficient ( $\beta_3$ ) of the BOARD variable was statistically significant at the 5% level of confidence ( $t = 2.494$ ;  $p = 1.5\%$ ) with the anticipated positive sign indicating that the greater the board size, the greater the asset turnover, consistent with the agency and resource dependency theories. The coefficient indicated that as the board of directors increased by one member, the asset turnover (ATO) increased by 0.047 thus reflecting an increase in the efficient deployment of firm assets. During the year SOX+2, the coefficient of the BOARD variable was statistically significant at the 10% confidence level ( $t = -1.695$ ;  $p = 9.4\%$ ). The coefficient in SOX+2 was 0.032 indicating that for each incremental addition of a board member, the asset turnover (ATO) increased by 0.032. Conversely, the BOARD variable was not statistically significant in this model. Clearly, boards

of directors were influenced in their role as monitors of the activities of managers in the initial years after the passage of SOX, however, the lack of statistical significance in SOX+3 indicates the boards began to become more complacent in later years.

In addition, the coefficient ( $\beta_4$ ) of the director independence (DIR) variable was statistically significant at the 5% level of confidence ( $t = 2.018$ ;  $p = 4.7\%$ ) in the year SOX-1 and had the anticipated positive impact on asset turnover (ATO). In a post-SOX environment, the coefficient of the outside directors (DIR) variable was not statistically significant. The coefficient indicated an increase of 0.00619 as a result of the inclusion of the audit fees as a percentage of net sales (AUDIT) variable. Again, it appeared that the implementation of SOX caused outside directors to be less effective in moderating agency conflict as it related to the efficient exploitation of firm assets likely due to the complex implementation requirements as well as the learning curve that outside directors had to endure not only with regard to SOX, but with regard to learning the firms' core businesses.

The coefficient ( $\beta_5$ ) of the leverage variable (LEV) continued to lack any statistical significance. The impact of this variable was, therefore, not enhanced by the inclusion of the audit fees as a percentage of net sales (AUDIT) variable.

The coefficient ( $\beta_6$ ) of the  $\log_{10}$  of assets (ASSETS) variable was significant at the 1% level of confidence in all years of the event window. The coefficient of the control variable ASSETS variable was also negative in each year. Specifically, the coefficients of the ASSETS variable in each year were higher than that in a model without audit fees, indicating the ASSETS variable, as a control variable, was enhanced by the inclusion of the audit fees as a percentage of net sales (AUDIT) variable.

Lastly, the coefficient of the control variable audit fees as a percentage of net sales (AUDIT) was statistically significant at the 5% level of confidence ( $t = -2.456$ ;  $p = 1.6\%$ ) with a negative sign in SOX-1, contrary to the anticipated result. In the year SOX-1, every one percentage point increase in audit fees as a percentage of net sales caused the asset turnover (ATO) to decline by 2.05 points. However, there was a noteworthy improvement in each successive year after the passage of SOX in the magnitude of the coefficient of the AUDIT variable (by the coefficient becoming less negative) throughout the event window indicating audit fees, on a relative basis, have reduced agency costs as defined by asset turnover, *ceteris paribus*. By the year SOX-1, a one percentage point increase in audit fees as a percentage of net sales decreased ATO by 0.92. This result is contrary to the complaints about the increase audit fees in the literature and the implied consequence thereof (e.g. Cielieski & Weirich, 2006; U.S. Audit Fees Double, 2005). Additionally, the decline in the coefficient of the AUDIT variable was interesting that given the increase in the average audit fees as a percentage of net sales as illustrated by the descriptive statistics.

The adjusted  $R^2$  for each year in the model was greater when including audit fees than in a model which did not include audit fees.<sup>12</sup> The difference was particularly pronounced in the later years after the passage of SOX. This result was noteworthy given that, while the coefficient of determination ( $R^2$ ) will increase as variables are added to a model, the adjusted  $R^2$  can increase or decrease based on the sample size and number of regressors (Pindyk & Rubinfeld, 1998). This suggested that when the audit fees as a percentage of net sales (AUDIT) variable was included, AUDIT controlled for the other variables and yields a more meaningful result than a model without audit fees, providing a more robust result. Therefore, the asset turnover (ATO) model was more appropriately specified with the inclusion of the AUDIT variable

*Regression Results of SGA Multivariate Model.* The results of the multivariate regressions for each of the four years studied are presented in Table 5.

The coefficient ( $\beta_1$ ) of the CEO ownership (CEO) variable was not statistically significant in any year until the year SOX+3. Every one percentage point increase in CEO ownership decreased discretionary expenditures (SGA) by 0.216 percentage points. Again, the increased responsibilities placed on management by SOX appeared to have increased the monitoring effect of CEO ownership as would be expected under Jensen and Meckling's (1976) theory.

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<sup>12</sup> It should be noted that all models were run without AUDIT as a variable, consistent with Ang, Cole and Lynn (2000) and its progeny to assess the relevance of including audit fees in the model.



The coefficient ( $\beta_2$ ) of the blockholder ownership (BH) variable was statistically significant at the 5% level of confidence ( $t = -2.068$ ;  $p = 4.2\%$ ) in the year SOX+3. A one percentage point increase in blockholder ownership decreased discretionary expenditures by 0.129 percentage points in SOX+3. This would be attributable to the call to action by SOX for more accountability among the various stakeholders in the corporate governance structure.

The coefficient ( $\beta_3$ ) of the independent director variable (DIR) was not statistically significant in any year of the study in the selling, general, and administrative expenses as a percentage of net sales (SGA) model. In addition, the coefficient ( $\beta_4$ ) of the board size (BOARD) variable was not statistically significant in any of the years in the event window.

In the year before the passage of SOX (SOX-1), the coefficient ( $\beta_5$ ) of the leverage (LEV) variable was statistically significant at the 10% level of confidence ( $t = -1.787$ ;  $p = 7.7\%$ ) and had the expected negative sign. The coefficient indicated that a one percentage point increase in financial leverage would cause selling, general, and administrative expenses as a percentage of net sales (SGA) to decline by 0.095 percentage points. In the years after the passage of SOX, the LEV variable was not statistically significant but declined.

The coefficient ( $\beta_6$ ) of the control variable  $\log_{10}$  of assets (ASSETS) was statistically significant at the 10% level of confidence in the year SOX-1. However, the coefficient was positive which was contrary to the expected result. In the year SOX-1, the coefficient of the ASSETS variable indicated that an increase in  $\log_{10}$  of assets of one would increase discretionary expenditures by 0.039 percentage points. After the passage of SOX, however, the coefficient was not statistically significant. In a model that included AUDIT, the size of the firm did not increase agency costs after the passage of SOX. This was likely due to the increased emphasis on internal controls and the fact that managers in larger firms were able to obtain pecuniary benefits before SOX but not after.

The coefficient ( $\beta_7$ ) of the control variable audit fees as a percentage of net sales (AUDIT) was statistically significant at the 1% level of confidence ( $t = 6.466$ ;  $p = 0.0\%$ ) in the year SOX-1 and had the expected positive impact on selling, general, and administrative expenses as a percentage of net sales (SGA). Specifically, the coefficient indicated that for every one percentage point increase in audit fees as a percentage of net sales, selling, general, and administrative expenses increased by 1.262 percentage points. In the year SOX+1, the AUDIT variable was statistically significant (at the 5% level with  $t = 2.573$ ;  $p = 1.2\%$ ). The coefficient in the year after the passage of SOX declined to 27.925 percentage points, indicating a one percentage point increase in audit fees caused SGA to increase by 0.279 percentage points. In the year SOX+2, again, only the coefficient of the AUDIT variable was the only statistically significant coefficient in the model (at the 1% level of confidence;  $t = 2.913$ ;  $p = 0.5\%$ ). The coefficient in the second year after the passage of SOX indicated that SGA increased by 0.127 percentage points for every one percentage point increase in AUDIT. The coefficient of the control variable AUDIT in SOX+3 was statistically significant at the 1% level of confidence ( $t = 6.123$ ;  $p = 0.0\%$ ). This coefficient indicated that every one percentage increase in audit fees caused SGA to increase by 0.311 percentage points. The coefficients of the AUDIT variable declined by 75% from the base year to the third year after SOX and, therefore, had a positive impact, *ceteris paribus*, on agency costs as defined by discretionary expenditures.

The inclusion of the audit fees as a percentage of net sales (AUDIT) variable clearly yielded a more robust result than without and the inclusion, therefore, more appropriately specified the effect of the governance variables on selling, general, and administrative expenses as a percentage of net sales (SGA).

	SOX-1	SOX+1	SOX+2	SOX+3
<b>Intercept</b>	<b>0.019</b>	<b>0.172</b>	<b>0.174</b>	<b>0.055</b>
<i>t-statistic</i>	<i>0.215</i>	<i>2.011</i> †	<i>1.979</i> *	<i>0.565</i>
<i>p-value</i>	<i>0.830</i>	<i>0.047</i>	<i>0.051</i>	<i>0.573</i>
<b>CEO</b>	<b>-0.069</b>	<b>-0.216</b>	<b>-0.143</b>	<b>-0.216</b>
<i>t-statistic</i>	<i>-0.540</i>	<i>-1.413</i>	<i>-1.369</i>	<i>-1.922</i> *
<i>p-value</i>	<i>0.591</i>	<i>0.161</i>	<i>0.175</i>	<i>0.058</i>
<b>BH</b>	<b>0.010</b>	<b>0.020</b>	<b>-0.024</b>	<b>-0.129</b>
<i>t-statistic</i>	<i>0.167</i>	<i>0.313</i>	<i>-0.341</i>	<i>-2.068</i> †
<i>p-value</i>	<i>0.868</i>	<i>0.755</i>	<i>0.734</i>	<i>0.042</i>
<b>BOARD</b>	<b>0.000</b>	<b>0.004</b>	<b>0.001</b>	<b>0.004</b>
<i>t-statistic</i>	<i>0.019</i>	<i>0.853</i>	<i>0.274</i>	<i>0.856</i>
<i>p-value</i>	<i>0.985</i>	<i>0.396</i>	<i>0.785</i>	<i>0.394</i>
<b>DIR</b>	<b>-0.022</b>	<b>0.006</b>	<b>0.064</b>	<b>0.129</b>
<i>t-statistic</i>	<i>-0.306</i>	<i>0.072</i>	<i>0.699</i>	<i>1.394</i>
<i>p-value</i>	<i>0.760</i>	<i>0.943</i>	<i>0.486</i>	<i>0.167</i>
<b>LEV</b>	<b>-0.095</b>	<b>-0.063</b>	<b>-0.055</b>	<b>-0.018</b>
<i>t-statistic</i>	<i>-1.787</i> *	<i>-1.206</i>	<i>-0.870</i>	<i>-0.260</i>
<i>p-value</i>	<i>0.077</i>	<i>0.231</i>	<i>0.387</i>	<i>0.796</i>
<b>ASSETS</b>	<b>0.039</b>	<b>-0.013</b>	<b>-0.020</b>	<b>-0.014</b>
<i>t-statistic</i>	<i>1.857</i> *	<i>-0.628</i>	<i>-0.882</i>	<i>-0.643</i>
<i>p-value</i>	<i>0.067</i>	<i>0.532</i>	<i>0.380</i>	<i>0.522</i>
<b>AUDIT</b>	<b>126.159</b>	<b>27.925</b>	<b>12.706</b>	<b>31.143</b>
<i>t-statistic</i>	<i>6.466</i> †	<i>2.573</i> †	<i>2.913</i> †	<i>6.123</i> †
<i>p-value</i>	<i>0.000</i>	<i>0.012</i>	<i>0.005</i>	<i>0.000</i>
<b>Adjusted R<sup>2</sup></b>	<b>0.322</b>	<b>0.048</b>	<b>0.107</b>	<b>0.322</b>
	†significant at 0.01	†significant at 0.05	*significant at 0.10	

## SUMMARY

This analysis indicates CEO ownership, blockholder ownership, board size, director independence, and leverage did not generally impact agency costs as outlined by the literature to date. However, it provides evidence that the passage of SOX had a significant impact of these mechanisms on agency costs. Specifically, SOX improved the relative importance and impact of these governance mechanisms as moderators of agency costs. Lastly, audit fees were found to have a significant influence on asset turnover (ATO) and selling, general, and administrative expenses as a percentage of net sales (SGA) and to influence the results of the other variables included in the model. Therefore it concluded that there was a measurable benefit from the passage of SOX relative to agency costs.

Based on the data analysis, it was concluded that CEO ownership reduced agency costs in a post-SOX environment but not before its passage. This result was more profound relative to discretionary expenditures when audit fees are included in the model. The impact of the elements of SOX intended to increase management responsibility has had the desired impact in this regard.

Next, it concluded that blockholders' monitoring role with regard to efficiency of the use of the firm's assets was more profound after the passage of SOX than before its enactment. This result was more prominent in a model which includes audit fees as a control variable. Blockholders' role as moderators of discretionary expenditures was only shown to be affected by SOX in a model which included audit fees. Hence, the intended improvement in governance structures espoused by SOX has improved the monitoring roll of these blockholders.

The size of the board of directors was found to increase the effectiveness of the use of firm assets to a greater extent after the passage of SOX than in the year before its passage. In addition, this result was more pronounced when audit fees were included in the model. The size of the board of directors as a monitor of discretionary expenditures was determined to not be impacted by the passage of SOX.

The degree to which the board of directors was independent was concluded to not affect agency costs differently after the passage of SOX than before. The opposite result occurred whereby agency costs increased relative to the degree of board independence in a post-SOX environment compared to the base year. Therefore, SOX appeared to incur a result contrary to the expected benefit of having independent members on the board of directors. This result may have been a result of the need not only to educate independent board members on the core businesses of the firms, but also to educate outside directors on the compliance requirements and procedures implemented by SOX.

The impact of financial leverage on agency costs was found to not be impacted by SOX. However, when audit fees were included in the model, the degree of financial leverage did reduce the level of discretionary expenditures incurred by the firm and, therefore reduce agency costs, in a post-SOX setting. Therefore, the effectiveness governance mechanism of the relationship between creditors and debtors were enhanced by SOX, resulting in increased monitoring strength as to discretionary expenditures by creditors.

The size of the firm as defined by the  $\log_{10}$  of total assets was found to be more effective at tempering agency costs after the passage of SOX than before. This result was more pronounced in a model which included audit fees. This was consistent with the economies of scale that are often discussed in relation to the high cost of implementing the compliance instruments required by SOX.

Finally, audit fees as a percentage of net sales (AUDIT) were determined to have a significant influence on the measures of agency conflict used in this research, specifically asset turnover (ATO) which measured the efficiency with which the firm utilized its assets and selling, general, and administrative expenses as a percentage of net sales (SGA) which measured the level of discretionary expenditures. Additionally, AUDIT influenced the impact other variables had on agency costs. This was an important result given the heavy attention to the increase in audit fee costs after the passage of SOX and indicated that the higher audit costs did yield a desired benefit.

## **RELEVANCE AND CONTRIBUTION**

This paper expanded the literature on agency costs and that of SOX by testing the impact SOX had on these same variables related to agency conflict. Each variable was tested for the year before the enactment of SOX and for three years after its enactment to investigate not only if SOX had an immediate impact on agency costs, but whether there was a learning curve in the implementation of SOX surrounding agency costs. The research developed a new, more appropriately specified model than used in the current research literature on agency costs by including audit fees as a percentage of net sales (AUDIT) to test for measurable benefits from SOX.

The relevance and contribution of this research was three-fold. First, provides the first evidence of measurable benefit flowing from the passage of SOX. The various governance requirements imposed by SOX served to enhance the effectiveness of various governance mechanisms in reducing agency costs. It adds to the growing body of research related to the impact of SOX on the U.S. securities markets. At the outset of the research, it was argued that, given the growing body of literature criticizing the costs associated with SOX, one benefit that could be derived from it might be a reduction in agency costs resulting from the stated purpose of SOX (i.e. improved corporate governance). This research was the first to illustrate that SOX yielded such improvements and calls on researchers, therefore, to further develop the stream of literature to determine the level of benefit of SOX to determine if said benefits justify the costs which have been so widely reported.

Second, it added to the already established stream of literature related to agency theory. Specifically, it illustrated that, in the shadow of the corporate scandals of the late 20<sup>th</sup> century and the passage of SOX, governance variables which have traditionally been viewed as moderators of agency costs appeared to no longer be produce the desired result. However, SOX appeared to have resurrected the influence these governance mechanisms had on agency costs. In addition, it illustrated the importance of including audit fees in the model to measure agency costs. Therefore, further development of these models and studies similar to those performed before the passage of SOX should be performed to determine what additional variables and mechanisms temper agency costs in these uncertain times.

Lastly, it has the practical contribution of informing policy-makers of the effect of their actions, specifically whether this historic legislation has achieved its desired result. This last contribution was very important to the direction of U.S. securities policy in that there have been many calls for pulling back on the allegedly onerous costs of complying with SOX. In light of these results, it would appear that the time, due diligence, and considerations made by policy makers in the U.S. when passing future legislation which may be intended to protect investors, should not be underestimated and the costs should be weighed against the benefits in an effort to maximize shareholder value.

### **RECOMMENDATIONS FOR FURTHER RESEARCH**

In the post-SOX environment, research should continue the stream started by this paper to determine which variables, including governance and control instruments, affect agency costs. This research can assist firms and their boards in improving performance and transparency as well as protecting shareholder value.

On the SOX front, it is important for researchers to continue not only to assess its costs, but to research the benefits that result therefrom. In accounting, cost-benefit analysis is a very important and relevant tool in decision making. Never has cost-benefit analysis been so important in the securities markets as one where the bulk of the research literature is focusing on the costs of historic legislation which purports as its major impetus and purpose enhanced corporate governance and improved confidence in securities markets. Should the research continue in a glass-half-empty view toward this legislation, researchers, legislators, and investors, will not be given the proper opportunity to objectively assess the effectiveness of this legislation and, more importantly, will not have a significant opportunity to make meaningful improvements thereto. Researchers can begin by expanding the research herein to broader data sets and including other relevant variables based on sound theory to improve the explanatory results. To that end, researchers should begin to merge the stream of literature related to the costs of SOX with the stream started by this dissertation to weigh the costs of SOX against the benefits derived therefrom.

### **SUMMARY**

This research illustrated that, for the data set used in this study, agency costs were reduced more effectively in a post-SOX environment by the governance mechanisms the literature has long held to moderate for agency conflicts. In addition, in the first research known to the researcher to investigate the benefits of SOX, it found that SOX had an impact on the effectiveness of these variables on agency costs. It concluded there was a measurable benefit derived from the passage of SOX. In doing so, the research design extended currently accepted models for measuring agency costs and the tools used by firms to reduce agency conflict by illustrating the importance of including audit fees (in a manner which controls for the complexity and sophistication of the audit) in the model to control for the monitoring cost related thereto. Finally, it recommended a future direction for research related to both agency theory and SOX to benefit the academic and practitioner communities.

### **ACKNOWLEDGEMENTS**

This paper is a summary of some of the results in my doctoral dissertation at Anderson University. I give special thanks to Dr. Terry C. Truitt, Dean of the Falls School of Business, chair of my dissertation committee, for his tireless efforts in working with me on this project as well as the input of Dr. Barry C. Ritchey and Dr. John M. Waters. The encouragement and continued support Dr. Doyle Lucas, director of the doctoral program is also greatly appreciated.

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NOTES