

THE IMPACT OF THE SARBANES-OXLEY ACT OF 2002 ON THE PREMIA  
PAID FOR TARGET COMPANIES IN MERGERS AND ACQUISITIONS

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THE IMPACT OF THE SARBANES-OXLEY ACT OF 2002 ON THE PREMIA  
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THESIS ABSTRACT

THE IMPACT OF THE SARBANES-OXLEY ACT OF 2002 ON THE PREMIA  
PAID FOR TARGET COMPANIES IN MERGERS AND ACQUISITIONS

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This thesis investigates the impact of the Sarbanes-Oxley Act of 2002 on the premia paid for target companies in mergers and acquisitions. I am analyzing a sample of 104 deals, where both the target and the acquiring company are either U.S. based public companies, or foreign public companies listed on one of the major U.S. exchanges. My study did not allow me to detect any significant difference in merger premia pre- and post- Sarbanes-Oxley. Of all the variables included in my model that are predicted to affect the size of premium paid for a target company, only target's market-to-book ratio was found to have significant negative effect on the premium, although this effect is not

economically significant. I have also found that the target's ROA has a marginal negative effect on merger premia. Finally, my results show that method of payment plays a role in explaining of the size of a premium, with cash paid acquisitions resulting in a higher premium offered. None of the other variables were found to have a significant effect on the size of the premium offered for a target company.

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## **CHAPTER I: INTRODUCTION**

It is commonly acknowledged in academic research that federal regulation influences the mergers and acquisitions market. Weston et al. (2004) outline eight main securities laws that have significantly impacted financial markets and operations in the United States in the last century: the Securities Act of 1933, the Securities Exchange Act of 1934, the Public Utility Holding Company Act of 1935, the Trust Indenture Act of 1939, the Investment Company Act of 1940, the Investment Advisers Act of 1940, the Securities Investor Protection Act of 1970 and the Sarbanes-Oxley Act of 2002. This work will focus on the latest legislation – the Sarbanes-Oxley Act of 2002. In particular, the purpose of this study is to see how the adoption of Sarbanes-Oxley has influenced the merger and acquisition (M&A) scene in the U.S., and specifically, how the Act has impacted the premia paid for target companies.

Regulatory and technological changes have become important drivers of M&A deals in recent years. According to Bruner (2004a), the mergers and acquisitions market is significantly affected by government regulations, which include antitrust actions, court rulings and other general securities legislation, like the Williams Act of 1968, which establishes procedures to protect target companies from secret and hostile takeovers. Bruner (2004b) analyzes several studies that find increased regulation associates with

lower returns and reduced wealth for merging firms. In his research, Zhang (2005) emphasizes legislation that reduces the transaction costs of mergers and acquisitions, possibly improving the efficiency of the market and increasing the value of the companies. Andrade et al. (2001) show that deregulation in different industries has been a primary factor influencing the merger activity since the late 1980s and explains almost half of the mergers since then.

The Sarbanes-Oxley Act was enacted in 2002 and has become one of the major securities laws adopted in recent decades in the U.S. Many researchers today are trying to estimate the economic effect of this legislation on the U.S. securities market in general and public companies in particular. It is likely that the Act has had a profound effect on M&A market as well.

Despite research that has been done on the potential impact of Sarbanes-Oxley on mergers and acquisitions market and determinants of merger premia, no analysis has been done so far attempting to empirically estimate how the Act has impacted the premia paid for target companies in mergers and acquisitions. The purpose of my research is to try to measure this impact.

My study proceeds as follows. The second chapter contains a literature overview of the role of acquiring and target companies in M&A transactions and determinants of premia paid for target companies, as well as discussion of the Sarbanes-Oxley Act of 2002 and its potential impact on M&A market. In the third chapter I formulate my conceptual and estimated models, define the variables and establish hypothesis to be

tested. Chapter four contains data description and summary statistics. Chapter five presents my results and discussion. Finally, in chapter six I present my conclusions and suggestions for future research.

## **CHAPTER II: LITERATURE OVERVIEW**

### **1. M&A Transactions: Acquirers vs. Targets**

An acquisition of another company is an investment made by the acquiring company. It is common to measure the returns on such an investment by focusing on the stock price appreciation of the acquirer as well as the target around the merger/acquisition announcement dates. It is generally believed that the dollar return for the stock of the acquiring firm is associated with the net present value of such an investment, and the value it adds to the acquiring firm as perceived by the market. The characteristics of the firm and the details of the merger are important factors used in analyzing the annual returns for the acquirer.

Why do companies merge? Andrade et al. (2001) mention three major factors affecting merger/acquisition decisions: improved efficiency (economies of scale, synergies), diversification, and increased market power. Simonyan (2006) finds that several external factors largely affect M&A activity, including general economic cycle, interest rates and industry specific events. Blackburn et al. (1997) suggest that personal intentions of the acquiring company's managers largely affect merger decisions and the size of the premium offered for the target. Moeller et al. (2003) further suggest that larger acquiring firms will make poorer acquisitions due to agency problem and also because

these companies need more growth opportunities. This finding is confirmed by Gondhalekar et al. (2004), whose study shows that agency effects is one of the best factors explaining prices paid by acquiring firms for the target companies.

Many researchers have tried to empirically estimate how mergers affect both acquiring companies and targets by analyzing their post-acquisition returns (see, for example, Moeller et al. (2005), Moeller et al. (2003), Sirower and Sahni (2006), Andrade et al. (2001), Hazelkorn et al. (2004), Betton and Moran (2003), Moran and Betton (2004) and others). These studies report mixed results for the acquiring companies: for example, Moeller et al. (2003) analyze mergers that took place from 1980 to 2001 and discover an average small negative return from the acquisition to the acquiring company, mentioning that the factor that seems to matter the most for the deal outcome is the size of the acquiring company. For relatively small acquiring companies the average return from the acquisition was positive, while for large companies who made large acquisitions, the returns were more likely to be negative, especially for deals financed with stock. Andrade et al. (2001) find small negative returns for acquiring companies, however, these returns are not statistically significant. In fact, the negative returns appeared to be true for the stock financed deals, while cash transactions appeared to produce return insignificantly different from zero, or in other words, earning a normal or fair rate of return. Betton and Moran (2003) also find that acquiring companies earn on average zero or negative abnormal return on acquisition announcement.

Sirower and Sahni (2006) have analyzed mergers that took place from 1995 to 2001 and concluded that acquiring firms have underperformed their industry peers, on average, although they mention the wide variance in the merger outcomes. The study of the M&A transactions from 1990 to 2002 by Hazelkorn et al. (2004) again shows an average slightly negative return for the acquirer's stock with a wide variation in returns distribution in the short term. In the longer term periods, the study showed that buying companies tended to slightly outperform other companies in the same industry.

Even though the results for acquiring companies are mixed, research studies generally agree that the target companies are the ones who clearly gain the most from merger transactions (see, for example, Andrade et al. (2001), Moran and Betton (2004)). Bruner (2004a) reports that the findings of 25 studies prove that the target company shareholders receive a premium return for the M&A transaction. Sirower and Sahni (2006) report 20% adjusted return for the target companies for the week after the deal announcement to the week before. This evidence proves the empirical models of Betton and Moran (2003) and Morellec and Zhdanov (2004). These models predict higher returns to target company's shareholders versus acquiring company's shareholders, and argue that by nature the acquiring company's returns should be lower than those of the target.

Many researchers analyzed the results of acquisitions depending on the type of the target. Moeller et al. (2003) find that public targets are more likely to produce negative returns to the acquiring company, while acquisitions of private targets and subsidiaries



tend to be more profitable. Hazelkorn et al. (2004), Antoniou et al. (2007) and Da Silva Rosa et al. (2001) also find that acquisitions of private companies and business units of public companies tend to be more profitable than acquisitions of whole public companies. Moeller et al. (2003) find that acquisitions of private targets are associated with significant positive abnormal returns regardless of the method of payment.

There are several possible explanations of these results. First, an acquisition of a public company will require a premium to an established public price, whereas, a private company or a business unit of a public company can be acquired for a smaller premium as they do not have such an established public price (Sirower and Sahni (2006)). Second, the acquiring company won't have to pay the large "control" premia for private or subsidiary targets that are generally needed in case of a public company target to get its managers to consent to the deal. Da Silva Rosa et al. (2001) report evidence of the highly competitive market for corporate control of public companies that stipulates higher premia offered for public targets and resulting lower returns to acquiring companies. Fuller (2002) offers two explanations: first, private targets and subsidiaries are less liquid assets comparing to public targets, thus the latter will require a "liquidity premium", second, current regulation favors public companies versus private. Betton and Moran (2003) explain that enhanced required disclosure causes delays in public deals and more open bidding process, which leads to a more competitive bidding process and higher final price paid for the public target. Moeller et al. (2005) add that in case of public targets, price pressure from arbitrageurs also affects the price paid and the merger outcome.

## **2. Method of Payment**

When a company acquires another company or business unit generally three major methods of payment are used: cash, stock or a combination of both. For example, Blackburn et al. (1997) and Andrade et al. (2001) suggest that the method of payment is a function of company's intentions. These authors predict that the method of payment and acquiring company ownership structure have a major impact on merger outcome, since cash financed deals usually signal more confidence of the acquiring company in merger outcome and thus are better perceived by the market, resulting in higher abnormal returns for the buyer.

Many researches find that merger premia are higher when cash versus stock is offered (see Moeller et al. (2003), Blackburn et al. (1997), Chang and Suk (1998) etc.). Several research studies (Dong et al., (2006), Blackburn et al. (1997), Da Silva Rosa et al. (2001), Moeller et al. (2003) etc.) find that cash deals on average generate higher returns than stock deals. Moeller et al. (2003), for example, find that cash acquisitions are associated with abnormal returns insignificantly different from zero (in other words, these transactions earn a normal rate of return), whereas, stock paid acquisitions earn significantly negative returns. Hazelkorn et al.'s (2004) study confirms that cash-financed acquisitions are perceived better by the market than the ones paid with the stock. Andrade et al. (2001) find that larger acquisition deals tend to have smaller premia and a greater tendency to be stock-financed and also prove to be less profitable.

Hun et al. (1998) suggest that cash is used when managers of the acquiring company believe their stock is undervalued, thus using cash in acquisition signals to the market the “good news” about the company stock. Blackburn et al. (1997) agree that using cash or debt generally signals “high quality projects” and can be used if the buying company believes its stock is undervalued. Sirower and Sahni (2006) explain that in cash transactions the risk of successful merger is fully absorbed by the acquiring company, since these deals usually assume debt financing, which requires regular interest payments that act as a disciplinary tool that motivates a better execution of the merger and more close control over the integration process. Thus cash transactions are better perceived by the market and send a positive signal of the confidence in the deal outcome.

On the other hand, most studies (see, for example, Sirower and Sahni (2006), Moeller et al. (2003), Blackburn et al. (1997), Dong et al. (2006)) agree that stock transactions are perceived by the market as signaling that the acquirer believes its stock to be overpriced. Dong et al. (2006) show that firms whose stock is overvalued get low abnormal returns on the acquisition deals, and that this misvaluation often stimulates takeover activity. Sirower and Sahni (2006) suggest that often the buying company will pay with stock for the acquisition when it is less confident about the deal outcome, since with stock transactions the merger risk is proportionally shared with the target.

### **3. Premia Determinants**

#### *A. General Overview*

So what determines a premium paid for a target? Moran and Betton (2004) suggest that the premium paid for the target by the acquiring company should reflect the three main types of costs: the current market value of the target's assets, the present value of all expected integration costs and a premium to convince shareholders to sell control. Sirower and Sahni (2006) define a dollar premium offered for a target as a product of the percentage premium and the market value of the target. The premium paid for a target consists of two parts: the current market cost of the target's assets and the present value of expected synergies the target will bring to the acquiring company. Sirower and Sahni (2006) and Hazelkorn et al. (2004) define two major areas of expected merger synergies: cost savings and increased revenues. These expected synergies are usually carefully assessed to justify the paid premium depending on whether these synergies are plausible and likely to achieve. Hazelkorn et al. discuss, however, that cost reductions are a lot easier to achieve than improvements in revenues.

#### *B. Profitability*

There are several characteristics of targets and acquirers discussed in economic literature that were found to be important factors determining the size of premium offered in merger transaction. Crawford and Lechner (1996) discover positive relationship between the acquisition premium and attributes that make the target attractive. For

example, higher profitability of the target as measured by ROA or ROE ratios will positively affect the premium size since more profitable target will have higher revenues, higher level of free cash flow and thus will demand a higher price. Gart (1999) agrees that more profitable targets will have higher market value and thus a premium offered to these companies is expected to be higher.

### *B. Market-to-Book Ratio*

Market-to-book ratio is an important tool used by investors in valuing companies. Analysts often consider firms with low market-to-book ratios to be a less risky investment since book value is presumably a level below which market price will not fall. Many researchers find market-to-book ratio to be one of the significant determinants of acquisition premium. The literature discusses several different ways the market-to-book ratio can be interpreted when valuing companies: some researchers view it as a proxy for market valuation, some view it as a proxy for growth opportunities and some view it as a proxy for risk.

For example, Dong et al. (2006) use misvaluation theory as one of the most important factors influencing acquisition decisions. These authors use book-to-price ratio as one of the major determinants of acquisition premia. Their study shows that lower book-to-price ratio for acquirer results in higher bid premia, and more undervalued targets as measured by book-to-price ratio receive higher premia as well. Han et al. (1998) show that high market-to-book ratio signals overvalued firms and will result in

lower premium offered. Kaufman (1988) finds that lower market-to-book ratio of the target results in higher premium.

On the other hand, Crawford and Lechner (1996) mention high market-to-book ratio of a target as signaling more growth opportunities and thus making a target more attractive. This effect results in higher premium offered for these targets. The study by Gondhalekar et al. (2004) confirms this finding, showing that acquiring firms with low market-to-book ratios have fewer internal investment opportunities and will be likely to pay more for the target. High market-to-book ratios are typical for high growth firms with many good internal investment opportunities, thus these firms will be likely to pay lower premia since they have less need for external acquisitions. Gondhalekar et al. found that firms with lower market-to-book ratios are over invested and pay higher premia for targets. Moran and Betton (2004) find the target offer premium is significantly affected by the target's volatility and market-to-book ratio. Moran and Betton show that high growth potential and high volatility of the target would imply higher acquisition premium, and as a result, lower return to the acquiring company.

### *C. Agency Theory*

Agency problems or conflicts of interest arise in public companies due to the separation of ownership and control, when managers start pursuing goals not in the best interest of shareholders. Slusky and Caves (1991) find that premia paid for the target is largely influenced by agency factors. Their findings suggest that weaker control of managers of the acquiring company result in higher premia paid for the targets, while

managers who own more shares of their companies tend to offer smaller premia. Espen Eckbo and Betton (2000) and Bugeja and Walter (1995) show that when more shares of the target is owned by the acquiring company prior to acquisition, the premium is lower and the return is higher for the acquiring company since it has to obtain fewer outstanding shares at a premium.

#### *D. Size*

Gart (1999) discusses various other factors influencing the size of the premium offered. According to Gart, bigger size of the target company would require a larger premium. Moeller et al. (2005), Antoniou et al. (2007), and Crawford and Lechner (1996) agree that relative size of target to bidder matters in determining the size of the premium offered. Target size will have a negative effect on the premium offered since the cost of acquiring larger target is higher. This effect is larger for larger public targets due to higher activity of arbitrageurs. Gondhalekar et al. (2004) found that relative size (the ratio of acquirer's market value of equity to that of the target) is significant and negatively related to the size of the premium. These authors further suggest that smaller size companies are easier to integrate, thus acquirers will be more likely to pay higher premia for smaller targets.

#### *E. Leverage*

Debt-to-equity ratio is often used by analysts as an important measure of company's risk. A high level of debt increases possibility of default since there is a

chance the firm will be unable to earn enough to cover interest payments. Gart (1999) determines debt-to-equity ratio (financial leverage) of the target to be important factor affecting the size of the premium. A higher ratio implies higher debt and thus higher risk of the target, thus lowering a potential premium. Gondhalekar et al. (2004) and Kaufman (1988) also find that acquirer's debt-to-equity ratio is inversely related to acquisition premium. This ratio serves as a proxy for the acquirer's ability to pay for the target, and thus higher debt-to-equity ratio will limit the size of the premium the acquirer can offer.

Sirower and Sahni (2006) have found successful mergers (acquiring company showed an improved performance following the acquisition) are generally associated with lower premia paid. The authors report almost a 15% difference in the premium paid for successful mergers versus unsuccessful ones. Furthermore, Bruner's (2004) analysis shows premia in mergers of companies of equal size are typically much smaller than those on other transactions.

Sirower and Sahni (2006) and Mamdani and Noah (2004) report that public company acquisition premium typically average 30% to 40%. Andrade et al. (2001) report that since 1973 target premia were 20 or 30 percent. Weston (2001) finds that the mean arithmetic premium offered since 1990 has been 40%. However, the author believes that the median premium of 31% is a better indicator of an average premium. Table 1 shows average and median percent premia offered for target companies in 1990-1999, and Table 2 gives a distribution of premia in the same time period.



**Table 1: Average Premia Paid for Target Companies, 1990-1999**

<b>Percent Premium Offered, 1990–1999</b>		
<b>Year</b>	<b>Average</b>	<b>Median</b>
1990	42.0	32.0
1991	35.1	29.4
1992	41.0	34.7
1993	38.7	33.0
1994	41.9	35.0
1995	44.7	29.2
1996	36.6	27.3
1997	35.7	27.5
1998	40.7	30.1
1999	43.3	34.6
Mean	40.0	31.3
Median	40.9	31.1

Source: Mergerstat Review (from Weston (2001)).

**Table 2: Distributions of Premium Offered for Target Companies, 1990-1999**

<b>Distributions of Premium Offered, 1990–1999 (Percent)</b>						
<b>Year</b>	<b>20% and Less</b>	<b>Over 20% through 40%</b>	<b>Over 40% through 60%</b>	<b>Over 60% through 80%</b>	<b>Over 80% through 99.9%</b>	<b>100.0% and over</b>
1990	34.9	25.1	19.4	8.0	4.0	8.6
1991	36.5	30.7	20.4	5.1	2.9	4.4
1992	29.6	29.6	14.8	13.4	9.9	2.8
1993	27.2	36.4	19.7	8.1	5.2	3.5
1994	25.4	34.2	20.0	10.8	2.7	6.9
1995	32.7	33.3	17.0	6.8	1.9	8.3
1996	35.7	30.7	18.4	8.9	2.6	3.7
1997	35.1	34.7	17.2	7.2	3.1	2.7
1998	34.2	30.5	16.2	9.0	3.3	6.8
1999	24.8	34.7	20.3	10.2	3.6	6.4
Mean	31.6	32.0	18.3	8.7	3.9	5.4
Median	33.4	32.0	18.9	8.5	3.2	5.4

Source: *Mergerstat Review*. (from Weston (2001))

#### **4. The Sarbanes-Oxley Act of 2002 and Its Impact on M&A Market**

The Sarbanes-Oxley Act was signed into law by President George W. Bush on July 31, 2002. The Act was one of the most comprehensive reforms of securities laws since the Acts of 1933 and 1934. The Sarbanes-Oxley Act has also become one of the most controversial pieces of legislation. Currently, many researchers and practitioners are analyzing economic impact of the Act on the United States equity market. The results appear mixed: some studies report significant negative economic consequences of the Act (Zhang (2005)), while others show net positive effects (Jain and Rezaee (2006), Jain et al. (2006)).

According to Zhang (2005) and Jain and Rezaee (2006), the Sarbanes-Oxley Act was signed into law with a purpose to increase corporate control, prevent accounting frauds, improve corporate governance and increase disclosure transparency. The goal was to increase firm value, improve efficiency, and ultimately, lead to greater investor confidence. The way to achieve these goals as established by the Act is increased scrutiny of corporate financial reporting, greater penalty for management fraudulent activities, enforced independence of auditing firms, restriction of non-audit services, and enhanced and timely corporate disclosure.

The benefits of Sarbanes-Oxley come at a price – there are imposed costs of compliance with the Act that can potentially outweigh the benefits. Many researchers and economists are concerned this legislation is hurting business activity rather than improving it. Some research shows (see, for example, Zhang (2005), Solomon et al.

(2004)) that the costs of complying with certain provisions of Sarbanes-Oxley, especially Section 404 which addresses internal control measures, far outweigh the economic benefits.

The empirical study of Jain and Rezaee (2006) investigates the effect of Sarbanes-Oxley on the U.S. capital market. The authors find that on average, the market reaction to the Act was positive, suggesting that the Act has actually served its purpose of improving investor confidence. Jain et al. (2006) find that Sarbanes-Oxley was successful in improving market liquidity and increasing investor confidence in financial information and argue that Sarbanes-Oxley is positively viewed by investors. Jain and Rezaee (2006) also find that the market reaction is more positive for companies that are more in compliance with the Act prior to its enactment. The authors explain that the companies with poorer governance and lower disclosure standards had to incur more costs when bringing their firms to compliance with Sarbanes-Oxley, thus the Act was more likely to negatively affect these companies imposing net costs. Overall, the study of Jain and Rezaee suggests that induced benefits of the Act significantly outweigh its imposed compliance costs.

Brantley (2004) and Falis and Eaton (2004) predict that the Act will have a major impact on companies evaluating potential mergers and acquisitions. As an acquiring company, the buyer carries the responsibility of making sure the combined company is meeting the requirements of Sarbanes-Oxley after the deal is signed.

Betton and Moran (2004) discuss that acquiring companies face imperfect information about the true synergy gains from a potential acquisition. Potential failed acquisitions might occur as a consequence of imperfect information about the true gains derived from corporate takeovers. The provisions of Sarbanes-Oxley aimed at improving transparency and the quality of information about companies thus have a profound effect on M&A market, allowing acquiring companies to better assess the potential target and pay a more fair acquisition premium. Jain and Rezaee (2006) explain that the Sarbanes-Oxley Act and its provisions were intended to increase investor confidence and reduce information asymmetries about the financial condition of the companies. This means reduction in the risk premium and thus reduced discount rate used by investors to evaluate companies. For companies acquiring public targets this means more fair valuation of the target, less chance to overpay and therefore, lower premium offered.

## **5. Important M&A Considerations After The Sarbanes-Oxley**

Walton and Greenberg (2003) in their working paper on the impact of Sarbanes-Oxley on merger & acquisition practices, discuss that the Act will have a substantial impact on three areas: the due diligence process for an M&A transaction, the negotiation and documentation of these transactions, and most importantly, the nature and structure of these deals. The authors also analyze how Sarbanes-Oxley may potentially influence different kinds of deals: the acquisition of a private company by a public company, public company by a public company, and private company by a private company.

Following Walton and Greenberg, Falis and Eaton (2004) argue that not all transactions are influenced in the same way. For example, a publicly traded target company is assumed to be already in compliance with Sarbanes-Oxley. Moreover, if a target is of non-significant size relative to its acquirer, regardless of whether it is private or public company, the costs of complying with Sarbanes-Oxley are not going to be significant. According to Falis and Eaton, most concerns arise when a publicly traded company is trying to acquire a target of significant size that is held privately and therefore is not required to comply with Sarbanes-Oxley. The major compliance issues that are likely to arise include a review of internal control, evaluation of the company's financial disclosure procedures and accounting practices, and general audit of the target. Therefore, as the authors suggest, it is critical for acquiring companies to perform a costly and thorough inspection of a potential target to identify and address Sarbanes-Oxley compliance concerns.

Even if the target is already a public company and therefore, expected to comply with Sarbanes-Oxley provisions, a careful review of the target's prior filings is needed to ensure its accuracy. Walton and Greenberg (2003) also agree that after the merger, the surviving company's compliance with Sarbanes-Oxley provisions becomes a major issue that should be properly planned and addressed well before the transaction is closed.

The first aspect of the due diligence process described by Walton and Greenberg (2003) deals with the financial condition of the target. In accordance with Section 401 of Sarbanes-Oxley, the financial reports of the company should not only comply with

GAAP, these reports should also include off-balance sheet transactions that affect financial condition of the company. The accounting policies and procedures of the target should be critically examined, and in case these practices are different for the buyer and the target, the rationale for unifying these practices should be devised prior to the deal closing. All the potential effects of the merger on the buyer's financial statements should be taken into consideration. Moreover, it is important to closely review the reports of the target auditors to identify potential problems that could affect the successful integration of the two companies.

Brantley (2004) and Walton and Greenberg (2003) provide further insights for the due diligence process that the acquiring company is expected to undertake while evaluating a potential target. One of the important provisions established by Sarbanes-Oxley can be found in sections 302 and 906 of the Act. These sections require the CEO and CFO of the company (and in case of an M&A deal, the CEO and CFO of the acquiring company) to personally certify each financial report of the company and to be responsible for establishing and maintaining efficient internal controls. Moreover, section 906 establishes a serious legal responsibility for the signing officers for the accuracy of information presented in all financial reports. Possible penalties for a failure to comply with these provisions could be very severe and include significant fines and prison terms. Such a serious responsibility imposed on the acquiring company's principal officers emphasizes the importance of a thorough due diligence process performed on a potential target prior to the deal closing.

Another important issue to consider when evaluating a potential acquisition target (Brantley, 2004, Walton et al., 2003) is personal loans and credit extended to the company's principal officers, which could especially be the case for a private company. The Sarbanes-Oxley Act contains provisions (Section 402) that prohibit the principal officers to receive any personal loans from the company.

Brantley (2004) underlines that given the responsibility of the buying company and, specifically, its principal officers, for the target's financial statements, internal controls for financial reporting and disclosure immediately after the deal closing, it is essential for the acquiring company to start an early planning for the target's integration with the buying company and its compliance with Sarbanes-Oxley provisions. Furthermore, Brantley emphasizes that the enactment of Sarbanes-Oxley has significantly affected the negotiation and integration processes in M&A transactions, requiring both sides of the transaction to spend considerably more time and effort on pre and post transaction evaluation and integration procedures than ever before.

According to Walton and Greenberg (2003), the acquiring company should pay close attention to the reporting requirements for the united company following the deal close. Since the principal officers (the CEO and the CFO) of the buyer will take the responsibility for certifying the target's financial statements in the period following the acquisition, Walton and Greenberg (2003) suggest that the buying company may wish to close the deal immediately after the due date of a periodic report that has to be filed with

the SEC to allow the CEO and the CFO of the united company more time for a proper assessment and incorporation of the target's financial condition.

Section 302 of Sarbanes-Oxley, on top of other things, outlines that the signing officers are not only responsible for establishing and maintaining internal controls for the company, but have designed and evaluated the effectiveness of such controls to ensure that they are familiar with all the relevant material information. This implies, according to Walton and Greenberg (2003), that the signing officers of the acquiring company understand the internal accounting, control and disclosure procedures used by the target and have planned on a proper and quick integration of these practices to be able to certify the required documentation for the acquired company. This also implies that the company, either private or public, that wants to become an attractive target, should ensure that the proper processes and procedures are in place so that the future integration process would be as seamless as possible.

Another important area of consideration for the acquiring company according to Walton and Greenberg (2003) and Brantley (2004) is director independence. In case any individuals that are in some way affiliated with the target company are expected to become directors in the united company following the acquisition, it is critical for the acquiring company to carefully analyze their independence under the Sarbanes-Oxley Act. Section 302 specifically emphasizes that the audit committee is to consist of independent directors only, however, it should be mentioned that Sarbanes-Oxley doesn't apply these restrictions on other committees and members of the board of directors.



Walton and Greenberg (2003) discuss the importance of analyzing this director independence including the analysis of the possible influence of the acquisition on director independence. For example, significant stock ownership of the acquiring company may affect possible independence of a potential director.

Having discussed all the important considerations for merger and acquisition deals after the enactment of the Sarbanes-Oxley Act, I proceed to my conceptual and estimated models. Despite the research that has been done on the determinants of merger premia and potential impact of Sarbanes-Oxley on mergers and acquisitions market, no analysis has been done so far attempting to estimate how Sarbanes-Oxley has impacted the premia paid in mergers and acquisitions. The purpose of my research is to try to measure this impact.

### CHAPTER III: CONCEPTUAL AND ESTIMATED MODELS

From the literature review, it can be concluded that a premium paid for a target company depends on many different factors, including financial characteristics of the target and acquiring companies (profitability, relative size, assets, solvency, etc.), method of payment and general economic environment. Other difficult to observe factors include strategic considerations of the acquiring company's managers. For example, a firm may desire to increase the size of the company or to improve production capacity, get control over a competitor, or simply to spend extra cash.

Based on these factors, a conceptual model is formulated as follows:

*PREMIUM = f (STRATEGIC CONSIDERATIONS OF ACQUIRING FIRM MANAGERS, FINANCIAL CHARACTERISTICS OF THE TARGET AND THE ACQUIRER, METHOD OF PAYMENT, ECONOMIC ENVIRONMENT)*

While we cannot easily observe and measure strategic considerations of acquiring company managers, we can measure other premia determinants. My estimated model is formulated as follows:

$$\text{Premium} = \beta_0 + \beta_1 \text{tgt\_mtb} + \beta_2 \text{tgt\_de} + \beta_3 \text{tgt\_roa} + \beta_4 \text{aq\_mtb} + \beta_5 \text{aq\_de} + \beta_6 \text{aq\_roa} + \beta_7 \text{aq\_tgt\_mkt\_cap} + \beta_8 \text{cash\_stock} + \beta_9 \text{95\_02\_dummy} + u_i$$

Where my variables are defined as follows (all financial variables are calculated using data for the fiscal year-end prior to the deal announcement date, source: Industrial Annual database of COMPUSTAT North America):

Dependent Variable:

**Premium** – premium paid for a target company (percent). Derived by comparing the per share offer price at announcement with the average price of a target company share over the 20 trading days prior to the announcement. Source: Bloomberg terminal.

Independent Variables:

**Tgt\_mtb** – target's market-to-book ratio. Calculated as follows: target's market capitalization – fiscal year closing stock price (data 199) times common shares outstanding (data 25) – over target's book value of common equity (data 60). The literature interprets the ratio in different ways: higher ratio may imply higher risk of the target, company's overvaluation or higher growth opportunities (-/+).

**Tgt\_de** – target's debt-to-equity ratio: measures target's leverage. Calculated as follows: target's total debt (data 181) over target's market capitalization. A higher ratio implies higher level of debt and therefore more risk of default (-).

***Tgt\_roa*** – target’s return on assets ratio: measures target’s profitability.

Calculated as follows: target’s net income (data 172) over total assets (data 6). A higher ratio implies higher more profitable targets (+).

***Aq\_mtb*** – acquirer’s market-to-book ratio. For acquirers, a low ratio may imply that the acquirer has little internal growth opportunities and thus is willing to pay higher premia for a target to stimulate external growth, it is also possible that acquirers with low market-to-book ratios are overinvested and this may result in lower premium offered (-/+).

***Aq\_de*** – acquirer’s debt-to-equity ratio. A lower ratio may indicate more debt capacity, better access to low cost borrowing, thus more ability to pay for acquisition (-).

***Aq\_roa*** – acquirer’s return on assets ratio: measures acquirer’s profitability. More profitable acquirers may have more money to spend on acquisition and thus could offer a higher premium. On the other hand, it is possible that more profitable acquirers are more efficient and less willing to overpay (-/+).

***Aq\_tgt\_mkt\_cap*** – ratio of acquirer’s to target’s market capitalization: measures the relative size of the two companies. A higher ratio implies a larger size of the acquirer compared to the target. Smaller targets are expected to be less expensive and receive higher premia (+).

*Cash\_stock* – dummy variable, set as 1 for cash deals and 0 for stock or stock and cash deals. I expect cash deals to result in higher premia offered (+).

*95\_02\_dummy* – dummy variable, set as 1 for the deals announced in the years 1995-2002 (prior to Sarbanes-Oxley), and 0 otherwise. It is possible for the deals announced after the year 2002 to have lower premia due to first, increased costs imposed by Sarbanes-Oxley that are expected to negatively affect the premia, and second, increased transparency that allows acquirers to better evaluate potential targets and thus to be less likely to overpay. On the other hand, the deals announced after 2002 may result in higher premia offered, since acquirers may be willing to pay more for the targets that are already in compliance with Sarbanes-Oxley (since we are looking only at public acquirers and targets) (-/+).

All the expected signs are defined based on the literature review. The main hypothesis I want to test is whether or not the Sarbanes-Oxley Act (SOX) has affected merger premia. Therefore, I have:

*Ho: no change has occurred in the size of premia after SOX*

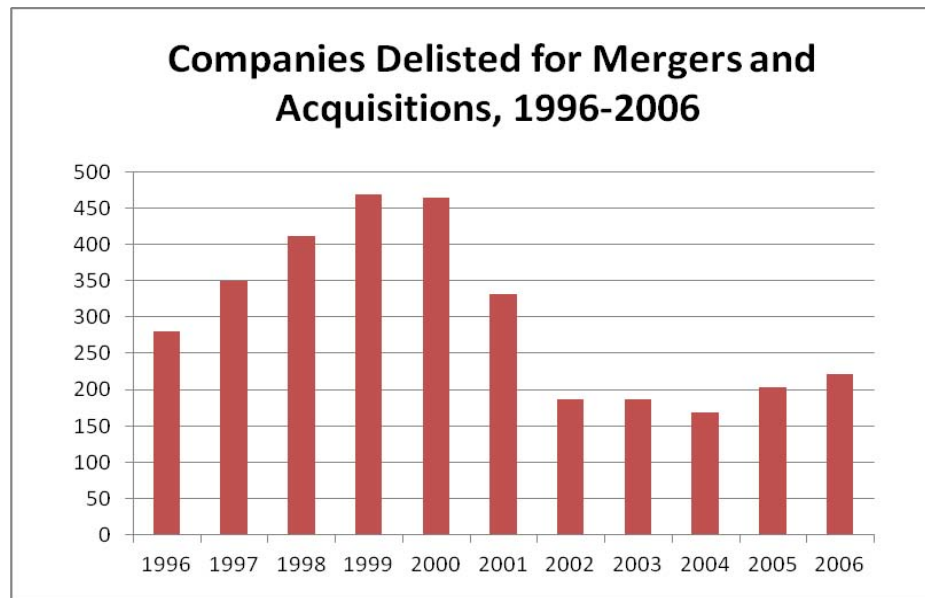
*Ha: there was a change in the size of premia after SOX*

## **CHAPTER IV: DATA DESCRIPTION AND SUMMARY STATISTICS**

My purpose is to try to find out how the enactment of the Sarbanes-Oxley Act of 2002 has impacted the premia paid for target companies in M&A transactions. Data for my study come from several different sources, including COMPUSTAT North America database, the Center for Research in Security Prices (CRSP) at the University of Chicago and the Bloomberg terminal. Since it is complicated to obtain data on private companies, I focus on mergers where both the target and acquirer are publicly traded U.S.-based firms.

In order to come up with a sample of companies, I use the “Names and Events” tool of the CRSP database. I compile the companies delisted from the U.S. exchanges (NYSE, AMEX and NASDAQ) for mergers (delisting codes 200-299) in the period 1996-2006. After obtaining the list of all companies delisted for mergers in this period, I exclude financial and utility companies (SIC codes 4900-4999 and 6000-6999) due to the difference in their regulation. This results in a total of 3269 companies. Figure 1 presents the distribution of companies delisted by year in the period 1996-2006 for the total sample excluding financial and utilities companies.

**Figure 1. Distribution of Companies Delisted for Mergers and Acquisitions,  
3269 observations**



The data on premia, announcement dates and acquiring companies was obtained from the Bloomberg terminal. Since I had to find this data on each deal manually, it was not possible to analyze all 3269 transactions. Moreover, the list of companies delisted for M&A was obtained from CRSP, and all the financial data had to be obtained from COMPUSTAT North America. The two databases have different coding systems for companies; moreover, often times the ticker symbols for companies are different in these two databases. Therefore, I had to manually search for proper ticker symbols for certain companies in COMPUSTAT database to obtain financial data. These limitations on data collection did not allow me to analyze the entire initial 3269 deals.

To come up with a smaller random sample of companies to be analyzed, I have sorted the sample by the year delisted and selected every 30<sup>th</sup> firm in my major sample. This resulted in a sample of 108 delisted targets. I then used the Bloomberg terminal to obtain the merger/acquisition announcement dates, information about acquiring companies and percentage premia paid for the target companies. I have excluded deals that were missing deal information. Furthermore, since I need data for both a target and its acquiring company, I excluded targets acquired by either privately held or foreign companies not listed on U.S. exchanges. I further restricted my sample by requiring the acquiring company to purchase at least 80% of the target company, since greater prior ownership of the target would result in lower premium offered and would bias my analysis. These restrictions result in a sample of 69 companies.

Because data restrictions limited the sample more than was expected, I obtained another random sample of companies. I took the initial sample of 3269 companies and used a random number generator function in Excel to come up with an additional sample of 55 companies. After excluding deals with missing information on the target company or the acquirer and those that did not meet the prior ownership restriction, I obtained an additional sample of 35 firms. Finally, I combined both random samples together to obtain a sample of 104 companies with complete data which I used to conduct my statistical analysis. Figure 2 shows the distribution of companies delisted each year in the final 104 firm sample. Figures 1 and 2 show that the distribution of delisted companies in my sample does not substantially differ from the overall CRSP sample. Appendix A lists



all the deals in my final sample, including target and acquiring company, announcement date, percentage premium paid and method of payment.

**Figure 2. Distribution of Companies Delisted for Mergers and Acquisitions,  
final 104 observations**

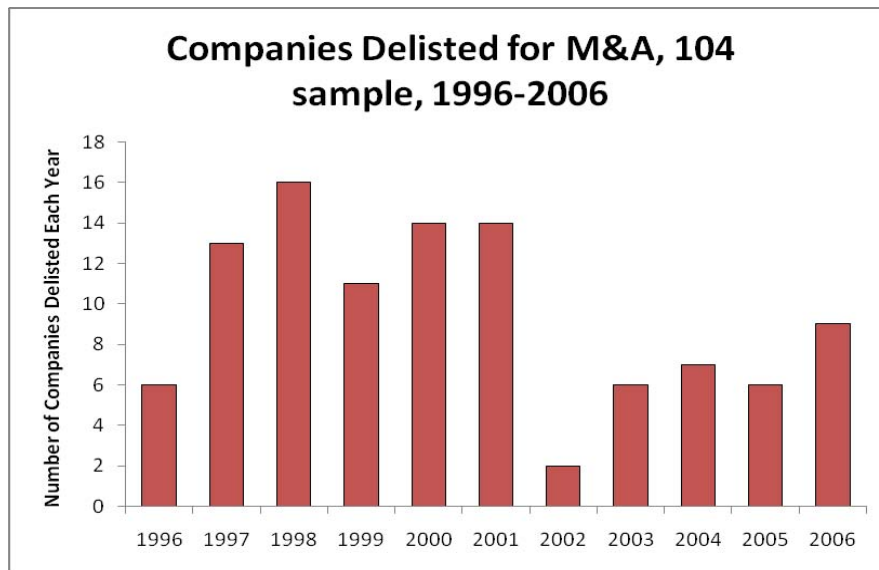


Table 3 presents descriptive statistics for my final sample. As already mentioned, the data on premia come from Bloomberg terminal. According to Bloomberg, acquisition premia are derived by comparing the per share offer price at the announcement with the average price of a target company share the 20 trading days prior to the announcement. Other financial data comes from the COMPUSTAT North America Database for the fiscal year end prior to the deal announcement date.

Descriptive statistics are calculated for the overall sample, and separately for the deals announced in pre- and post- Sarbanes-Oxley time periods: 1995-2002 and

2004-2006 (for several target companies delisted in 1996, the deals were announced in 1995). I have defined the 2004-2006 time period as post- Sarbanes-Oxley, allowing some time for the Act to be implemented and for the companies to comply with the Act. I have tested for the difference between the means for the two time periods (1995-2002 and 2004-2006). None of the differences between the means appear to be significant at any of the commonly used levels of significance (one, five and ten percent level). This result suggests that the financial characteristics of the acquirer and the target have not changed significantly in post- Sarbanes-Oxley period. The mean premium is not significantly different between the two time periods. The only variable that is significant at the five percent level is the dummy variable for cash versus stock deals. This result suggests that cash is more likely to be used as a method of payment for the target company in post- Sarbanes-Oxley time period.

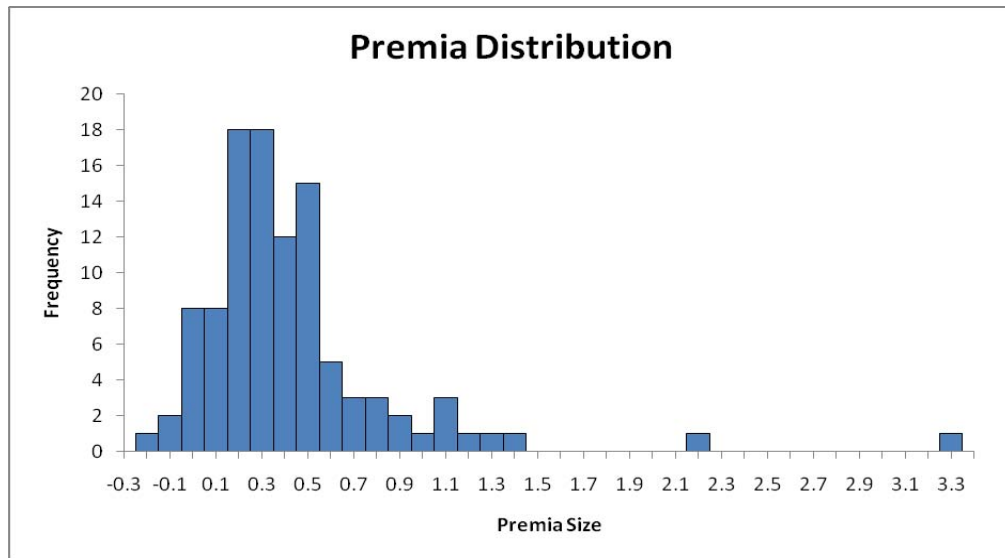
Each deal was classified as paid by cash, stock or both based on the delisting codes specified in CRSP. In my sample of 104 deals, 52 deals were cash financed, 38 were stock deals, and 14 deals were financed with both cash and stock. Figure 3 shows a distribution of premia paid for target companies in my final sample of 104 deals. The minimum and the maximum premia in my sample are – 28.9% and 322.9% respectively.

**Table 3: Descriptive Statistics**

The data on premia come from the Bloomberg terminal. Other financial data come from the COMPUSTAT North America Database, fiscal year-end prior to the deal announcement. Medians are presented below means in parentheses. For the deals announced in the 2004-2006 period, \*\*\*, \*\*, and \* represent significance at the one percent, five percent, and ten percent levels, respectively, for mean and median differences with the deals announced in the 1995-2002 period.

	Overall Sample	Deals Announced in 1995-2002	Deals Announced in 2004-2006
Premium ( <i>Premium</i> )	0.3793 (0.2852)	0.3953 (0.2625)	0.3154 (0.3152)
Acquirer's market-to-book ratio ( <i>Aq_mtb</i> )	3.7364 (2.6742)	3.7145 (2.6690)	3.3830 (2.7988)
Acquirer's debt-to-equity ratio ( <i>Aq_de</i> )	0.6675 (0.3653)	0.6159 (0.3614)	0.9498 (0.4159)
Acquirer's ROA ratio ( <i>Aq_roa</i> )	-0.0075 (0.0468)	-0.0132 (0.0480)	0.0395 (0.0468)
Target's market-to-book ratio ( <i>Tgt_mtb</i> )	8.9858 (1.9769)	10.5164 (2.0212)	5.6430 (1.9610)
Target's debt-to-equity ratio ( <i>Tgt_de</i> )	0.8857 (0.3644)	0.9481 (0.4014)	0.6226 (0.3352)
Target's ROA ratio ( <i>Tgt_roa</i> )	-0.0313 (0.0235)	-0.0204 (0.0255)	0.0154 (0.0414)
Acquirer to target market capitalization ratio ( <i>Aq_tgt_mkt_cap</i> )	54.4930 (8.0680)	58.2038 (8.0071)	47.5922 (8.4421)
Dummy variable, 1 for cash deals, 0 for stock or stock and cash deals ( <i>Cash_stock</i> )	0.5 (0.5)	0.4286 (0.0)	0.7** (1.0)**
Number of Observations	104	77	20

**Figure 3. Distribution of Premia Paid for Target Companies, 104 observations**  
(premia expressed in decimal format)



From the figure we can see that there are two obvious outliers in the premia distribution. While my primary analysis includes these observations, one of my alternative specifications for the main model uses a reduced sample of 102 deals with the two outliers omitted. I now turn to analyzing the premia determinants in multivariate framework.

## CHAPTER V: RESULTS AND DISCUSSION

The initial results of OLS regressions are presented in Table 4. Table 4 reports the results of estimating several specifications for the main estimated model using the full sample of 104 deals. All the specifications were tested for heteroskedasticity and multicollinearity. I use both the Breusch-Pagan/Cook-Weisberg test and White's general test to test each specification for heteroskedasticity. All the specifications except for Model 1 showed the presence of heteroskedasticity at the one percent level of significance. Robust test statistics were calculated to correct for heteroskedasticity for these specifications and are reported in Table 4. Each of the specifications was further tested for the presence of multicollinearity using variance inflation factors (VIF). The mean VIFs confirm that multicollinearity is not a problem for any of the regressions. (see Appendix B).

**Table 4: OLS Estimation: Analysis of Premia Determinants.**

T-statistics are in parentheses below the estimated coefficients. \* significant at ten percent level, \*\* significant at five percent level, \*\*\* significant at one percent level. All models were tested for heteroskedasticity. If heteroskedasticity was detected, robust statistics were calculated and are reported.

	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 4</b>	<b>Model 5</b>	<b>Model 6</b>
Intercept	0.3339*** (3.85)	0.3005*** (5.96)	0.2938*** (5.88)	0.1744* (1.80)	0.1759* (1.76)	0.1580 (1.54)
<i>95_02_dummy</i>	0.0612 (0.61)	0.0979 (1.16)	0.0959 (1.12)	0.1499 (1.45)	0.1498 (1.45)	0.1501 (1.41)
<i>Tgt_mtb</i>		-0.0002 (-1.22)	-0.0002 (-1.36)	-0.0004** (-2.24)	-0.0004** (-2.21)	-0.0004** (-1.97)
<i>Tgt_de</i>		-0.0165 (-0.97)	-0.0161 (-0.93)	-0.0165 (-0.98)	-0.0166 (-0.99)	-0.0207 (-1.01)
<i>Tgt_roa</i>		-0.7430 (-1.62)	-0.7436 (-1.61)	-0.8205* (-1.71)	-0.8208* (-1.71)	-0.7517 (-1.48)
<i>Aq_tgt_mkt_cap</i>			0.0001 (1.32)	0.0000 (0.02)	0.0000 (0.03)	0.0000 (0.08)
<i>Cash_stock</i>				0.1733 (1.50)	0.1730 (1.48)	0.1847* (1.67)
<i>Aq_mtb</i>					-0.0003 (-0.05)	0.0019 (0.22)
<i>Aq_de</i>						0.0107 (0.32)
<i>Aq_roa</i>						-0.1351 (-0.36)
Number of observations	104	104	104	104	104	104

The first specification examines the effect of the dummy variable for the 1995-2002 time period on premia. The second specification includes financial characteristics of the target (market-to-book ratio, debt-to-equity ratio and return on assets ratio). The third specification includes the relative size ratio of the acquiring company to the target. The fourth specification adds a cash versus stock dummy variable. The fifth specification adds the acquirer's market-to-book ratio. Finally, the sixth specification includes the rest

of the financial characteristics of the acquiring company (debt-to-equity ratio and return on assets).

Our primary focus is the coefficient for the 1995-2002 dummy variable<sup>1</sup>. Although it is positive, implying higher premia paid for target companies prior to Sarbanes-Oxley, the coefficient is statistically insignificant across all specifications, meaning that we cannot reject the null hypothesis that this coefficient is not different from 0. That shows that there is not enough evidence to conclude that there was a change in the size of premium paid for a target company after the enactment of the Sarbanes-Oxley Act of 2002.

The market-to-book ratio coefficient for the target is negative and significant at the 5 percent level in the last three specifications, although it is very small and is not very economically significant. The negative sign of this coefficient may appear as a surprise, since a higher market-to-book ratio would imply more growth opportunities for the target and thus would require a higher premium. However, from the literature review it can be seen that many researchers use this ratio as a proxy for a target's relative valuation. Several research studies (for example, Han et al. (1998), Kaufman (1988), Dong et al. (2006) and Moeller (2005)) use the target's market-to-book ratio as a proxy for the

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<sup>1</sup> Test statistics for the six models are as follows: Model 1:  $R^2 = 0.0036$ , F test p-value = 0.5445; Model 2:  $R^2 = 0.1148$ , F test p-value = 0.1897; Model 3:  $R^2 = 0.1174$ , F test p-value = 0.0227; Model 4:  $R^2 = 0.1486$ , F test p-value = 0.0448; Model 5:  $R^2 = 0.1486$ ; F test p-value = 0.0550; Model 6:  $R^2 = 0.1523$ , F test p-value = 0.1174. Even though test statistics for almost all the models are not significant, my purpose is not to get a good model that would predict premia, but to test the effect of the pre- and post- Sarbanes-Oxley variable.

target's relative valuation and find that a higher ratio signals overvalued targets and results in a lower premium offered. Therefore, our result is generally consistent with these studies.

The coefficient on the target's debt-to-equity ratio has the expected sign but is insignificant in all specifications. The target's ROA ratio is significant at the ten percent level in the fourth and fifth specifications. The negative sign of this coefficient is a surprise, since we expect more profitable targets to be more attractive and require higher premia. The study of Bugeja and Walter (1995) helps to form a possible explanation for the sign of target's ROA coefficient. Bugeja and Walter suggest that one of the possible motivations for acquisitions is a desire to remove inefficient management from the target. Therefore, the worse the performance of the target company prior to acquisition, the greater the chance that an acquisition will lead to improvement in the target firm's performance since the poorly performing managers of the target will be removed. The authors test the hypothesis that an acquisition premium is inversely related to a target's prior performance and will be higher the worse the target was performing prior to the announcement. Although Bugeja and Walter do not get significant results to prove their hypothesis, this hypothesis could be used to explain the negative coefficient on the target's ROA in my regression results.

The coefficient for the ratio of relative size of acquirer to target is insignificant in all specifications. None of the acquirer's financial characteristics appear to be significant as well. The dummy variable for cash deals is marginally significant at the ten percent



level in the full model. The coefficient on this dummy variable is positive and consistent with previous research which shows that cash deals result in higher premia offered than stock deals.

I further test my model by forming and testing for three alternative specifications. Table 5 reports the results of OLS regressions for these three models<sup>2</sup>. The purpose of the first two models is to test whether the pre- and post- Sarbanes-Oxley period dummy variable was correctly specified. Model 1 uses an alternative dummy variable that equals 1 for deals announced in the years 1995-2001 and 0 otherwise. The purpose of this specification is to see if perhaps companies were anticipating the enactment of Sarbanes-Oxley prior to the year 2002 when the law was signed. Model 2 uses an alternative dummy variable that equals 1 for deals announced in the years 2004-2006 and 0 otherwise. This model attempts to estimate whether the effects of Sarbanes-Oxley were somewhat delayed in time, assuming the Act's implementation was delayed and the companies took some time to comply with the Act. Finally, Model 3 excludes two extreme premia outliers and uses 102 deals for regressions with a dummy variable that equals 1 for deals announced in the years 1995-2002 and 0 otherwise, similar to the models in Table 4.

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<sup>2</sup> Besides the discussed alternative specifications, I run a model using all the variables and the 95-02 dummy, plus interaction terms of the dummy with each of the variables. After correcting for heteroskedasticity, the model has improved and significant test statistics ( $R^2 = 0.2490$ , F test p-value = 0.0000), but the results are still the same and none of the coefficients is significant at either the one, five or ten percent level.

All specifications are again tested for heteroskedasticity using both the Breusch-Pagan/Cook-Weisberg test and White's general test. Wherever heteroskedasticity is detected, robust statistics are calculated and are reported.

**Table 5: Alternative Specifications.**

T-statistics are in parentheses. \* significant at the ten percent level, \*\* significant at the five percent level, \*\*\* significant at the one percent level. All models are tested for heteroskedasticity. If heteroskedasticity is detected, robust statistics were calculated and are reported.

	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>
Intercept	0.2240** (2.15)	0.2996*** (4.66)	0.2842*** (3.10)
<i>95_01_dummy</i>	0.0802 (0.73)		
<i>04_06_dummy</i>		-0.0803 (-1.23)	
<i>95_02_dummy</i>			0.0235 (0.32)
<i>Tgt_mtb</i>	-0.0003* (-1.88)	-0.0003 (-1.62)	-0.0004 (-0.73)
<i>Tgt_de</i>	-0.0197 (-0.96)	-0.0194 (-0.95)	0.0144 (0.86)
<i>Tgt_roa</i>	-0.7276 (-1.40)	-0.6873 (-1.37)	-0.2242 (-1.19)
<i>Aq_tgt_mkt_cap</i>	0.0000 (0.17)	0.0000 (0.29)	0.0001 (0.92)
<i>Cash_stock</i>	0.1671 (1.54)	0.1594 (1.58)	0.0490 (0.70)
<i>Aq_mtb</i>	0.0014 (0.16)	0.0013 (0.14)	-0.0058 (-0.74)
<i>Aq_de</i>	0.0058 (0.17)	0.0082 (0.24)	0.0057 (0.15)
<i>Aq_roa</i>	-0.1326 (-0.34)	-0.1441 (-0.37)	0.2357 (1.22)
Number of observations	104	104	102

From Table 5 we can see that the results of OLS regressions for alternative models are consistent with our prior findings. The dummies for different time periods (1995-2002, 1995-2001 and 2004-2006) are still all insignificant, although we can see the change of sign for the 2004-2006 time period. None of the other coefficients are significant in any of the alternative specifications, except for the target's market-to-book ratio, which is marginally significant at the ten percent level in the first model, consistent with the previous specifications. Therefore, the results are robust and consistent with the null hypothesis that there was no significant change in the size of premia paid for target companies post- Sarbanes-Oxley.

## **CHAPTER VI: CONCLUSION AND SUGGESTIONS FOR FUTURE RESEARCH**

This study investigates the determinants of the premia paid for target companies in mergers and acquisitions, focusing on the impact of the Sarbanes-Oxley Act of 2002 on the premia. I am analyzing a sample of 104 deals, where both the target and the acquiring company are either U.S. based public companies, or foreign public companies listed on one of the major U.S. exchanges. My study did not allow me to detect any significant difference in merger premia pre- and post- Sarbanes-Oxley. Of all the variables included in my model that are predicted to affect the size of premium paid for a target company, only target's market-to-book ratio was found to have significant negative effect on the premium, although this effect is not economically significant. I have also found that the target's ROA has a marginal negative effect on merger premia. Finally, my results show that method of payment plays a role in explaining of the size of a premium, with cash paid acquisitions resulting in a higher premium offered. None of the other variables were found to have a significant effect on the size of the premium offered for a target company.

My results can have several potential explanations. First of all, due to data collection difficulties mentioned previously, I was using a small sample of firms. More data and a larger sample could be used for a more thorough analysis. Second, since it is

difficult to get data on private targets, I have only analyzed transactions involving public targets and public acquirers. Further research could be done investigating the impact of Sarbanes-Oxley on acquisition deals involving private targets and private acquirers.

Finally, previous research has emphasized that agency factors play one of the major roles in determining the size of the premium offered. Further research can attempt to measure these factors and investigate a magnitude of their impact on premia, and specifically investigate whether the Sarbanes-Oxley Act has affected these factors.

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## APPENDIX A

### Complete List of Deals Analyzed, 104 deals

Acquiring Company	Target Company	Announcement Date	Premium Paid	Method of Payment
COLLINS & AIKMAN CORP	LARIZZA INDUSTRIES INC	9/26/1995	34.63%	cash
AMRE INC	FACELIFTERS HOME SYSTEMS INC	11/1/1995	-28.88%	stock
COMPUWARE CORP	TECHNALYSIS CORP	1/9/1996	16.00%	cash
NORTEL NETWORKS CORP	MICOM COMMUNICATIONS CORP	5/13/1996	22.75%	cash
GP STRATEGIES CORP	GENERAL PHYSICS CORP	9/25/1996	0.00%	stock
DELHAIZE AMERICA INC	KASH N KARRY FOOD STORES INC	10/31/1996	14.69%	cash
FURON CO	MEDEX INC	11/13/1996	0.00%	cash
CENTRAL PARKING CORP	SQUARE INDUSTRIES INC	12/9/1996	0.00%	cash
GOLDCORP INC	WHARF RESOURCES LTD	1/14/1997	0.00%	cash
MARSHALL INDUSTRIES	STERLING ELECTRONICS	1/19/1997	57.59%	cash
NEWS CORP	HERITAGE MEDIA CORP	3/17/1997	72.80%	stock
ASCEND COMMUNICATIONS INC	CASCADE COMMUNICATIONS CORP	3/30/1997	37.86%	stock
NATIONAL OILWELL VARCO INC	DRECO ENERGY SERVICES LTD	5/14/1997	0.00%	stock
EXCEL COMMUNICATIONS INC	TELCO COMMUNICATIONS GRP INC	6/6/1997	26.25%	both
SUMMA INDUSTRIES	CALNETICS CORP	7/2/1997	30.31%	cash
INTEGRATED HEALTH SVCS INC	ROTECH MEDICAL CORP	7/7/1997	18.44%	stock
INTEL CORP	CHIPS & TECHNOLOGIES INC	7/28/1997	44.88%	cash
METROCALL HOLDINGS INC	PRONET INC	8/11/1997	0.00%	stock
STERIS CORP	ISOMEDIX INC	8/12/1997	13.89%	cash
HBO & CO	HPR INC	9/29/1997	30.11%	stock
U S FILTER CORP	PURO WATER GROUP INC	10/10/1997	0.00%	stock
OAKWOOD HOMES CORP	SCHULT HOMES CORP	1/5/1998	16.94%	cash
AT&T CORP	TELEPORT COMM GRP	1/8/1998	0.50%	stock

CHECKMATE ELECTRS INC	INTL VERIFACT INC	1/15/1998	20.32%	stock
NATIONAL FUEL GAS CO	HARCOR ENERGY CO	1/23/1998	13.51%	cash
FLEETWOOD ENTERPRISES	HOMEUSA INC	2/17/1998	25.62%	both
BOWATER INC	AVENOR INC	3/9/1998	32.68%	cash
SKILLSOFT PLC	FOREFRONT GROUP INC	3/17/1998	34.00%	stock
STERLING COMMERCE INC	XCELLENET INC	4/17/1998	12.88%	both
RANGE RESOURCES CORP	DOMAIN ENERGY CORP	5/12/1998	8.84%	stock
POGO PRODUCING CO	ARCH PETROLEUM INC	5/29/1998	16.60%	stock
ALCATEL-LUCENT	DSC COMMUNICATIONS CORP	6/4/1998	93.76%	stock
CARLTON COMMUN PLC	NIMBUS CD INTERNATIONAL INC	6/10/1998	10.11%	cash
SUPERIOR SERVICES INC	GEOWASTE INC	7/6/1998	12.77%	stock
AT&T CORP	VANGUARD CELLULAR SYS	10/5/1998	18.15%	cash
CLOROX CO/DE	FIRST BRANDS CORP	10/19/1998	1.82%	stock
ECLIPSYS CORP	TRANSITION SYSTEMS INC/MA	10/29/1998	41.44%	stock
INTEGRATED DEVICE TECH INC	QUALITY SEMICONDUCTOR INC	11/2/1998	82.18%	stock
QUINTILES TRANSNATIONAL CORP	ENVOY CORP	12/16/1998	52.73%	stock
KERAVISION INC	TRANSCEND THERAPEUTICS INC	12/23/1998	215.98%	stock
COLUMBIA ENERGY GROUP	NATIONAL PROPANE PTNRS - LP	4/6/1999	106.90%	cash
TEXAS INSTRUMENTS INC	INTEGRATED SENSOR SOLUTIONS	5/3/1999	71.85%	cash
CORIXA CORP	RIBI IMMUNOCHEM RESEARCH INC	6/10/1999	24.14%	stock
INTL BUSINESS MACHINES CORP	SEQUENT COMPUTER SYSTEMS INC	7/12/1999	22.29%	cash
OAK TECHNOLOGY INC	XIONICS DOCUMENT TECHNOLGIES	7/29/1999	25.71%	both
HARRAHS ENTERTAINMENT INC	PLAYERS INTERNATIONAL INC	8/16/1999	24.83%	cash
AMDOCS LTD	INTL TELECOMM DATA SYSTM INC	9/6/1999	24.92%	stock
LA-Z-BOY INC	LADD FURNITURE INC	9/28/1999	28.10%	stock
TEFRON LTD	ALBA-WALDENSIAN INC	11/8/1999	68.86%	cash
PHARMACIA CORP	PHARMACIA & UPJOHN INC	12/19/1999	-10.95%	stock
INTERPUBLIC GROUP OF COS	NFO WORLDWIDE INC	12/20/1999	102.82%	stock
INTL PAPER CO	SHOREWOOD PACKAGING CORP	2/17/2000	24.19%	cash

MDS INC	PHOENIX INTL LIFE SCIENCES	2/24/2000	36.08%	cash
UNILEVER	BESTFOODS	5/2/2000	47.51%	cash
CERNER CORP	CITATION COMPUTER SYS INC	5/15/2000	66.76%	both
SCIENTIFIC GAMES CORP	SCIENTIFIC GAMES HLDGS CORP	5/19/2000	44.29%	cash
II-VI INC	LASER POWER CORP	6/5/2000	118.98%	both
INVITROGEN CORP	DEXTER CORP	7/9/2000	58.32%	cash
OPENWAVE SYSTEMS INC	SOFTWARE.COM INC	8/9/2000	18.31%	stock
HOVNANIAN ENTRPRS INC	GETTHERE INC	8/28/2000	82.17%	cash
SABRE HOLDINGS CORP	WASHINGTON HOMES INC	8/28/2000	46.09%	cash
PRIMEDIA INC	ABOUT.COM INC	10/30/2000	53.42%	stock
GENERAL DYNAMICS CORP	PRIMEX TECHNOLOGIES INC	11/9/2000	11.15%	cash
AGCO CORP	AG CHEM EQUIPMENT INC	11/20/2000	120.93%	both
WOLTERS KLUWER	LOISLAW.COM INC	12/19/2000	322.90%	cash
MARATHON OIL CORP	PENNACO ENERGY INC	12/22/2000	40.36%	cash
DATA CRITICAL CORP	VITALCOM INC	3/12/2001	-11.07%	stock
FIRST VIRTUAL COMMUNICATIONS	CUSEEME NETWORKS INC	3/22/2001	28.81%	stock
JOHNSON & JOHNSON	ALZA CORP	3/27/2001	30.15%	stock
OCA INC	ORTHALLIANCE INC	5/17/2001	28.66%	stock
EXCELON CORP	C-BRIDGE INTERNET SOLTNS INC	5/23/2001	9.69%	stock
DIVINE INC	ROWECOM INC	5/24/2001	44.71%	stock
AVIS BUDGET GROUP INC	GALILEO INTERNATIONAL INC	6/18/2001	2.28%	both
ABBOTT LABORATORIES	VYSIS INC	10/24/2001	43.95%	cash
CONOCOPHILLIPS	CONOCO INC	11/18/2001	0.00%	stock
SYMMETRICOM INC	DATUM INC	5/23/2002	47.39%	stock
COCA-COLA FEMSA DE C V	PANAMERICAN BEVERAGES	12/23/2002	135.82%	cash
AUTOMATIC DATA PROCESSING	PROBUSINESS SERVICES INC	1/6/2003	78.77%	cash
SYNOPSIS INC	NUMERICAL TECHNOLOGIES INC	1/13/2003	102.35%	cash
AUTONOMY CORP PLC	VIRAGE INC	7/10/2003	20.36%	cash
DRS TECHNOLOGIES INC	INTEGRATED DEFENSE TECH INC	8/18/2003	12.65%	both
CEPHALON INC	CIMA LABS INC	8/21/2003	40.07%	cash
CUBIC CORP	ECC INTERNATIONAL CP	8/21/2003	14.12%	cash
CONEXANT SYSTEMS INC	GLOBESPANVIRATA INC	11/3/2003	2.73%	stock
CREDENCE SYSTEMS CORP	NPTEST HOLDING CORP	2/23/2004	41.98%	both
GENERAL ELECTRIC CO	INVISION TECHNOLOGIES INC	3/15/2004	33.03%	cash

PITNEY BOWES INC	GROUP 1 SOFTWARE INC	4/13/2004	45.55%	cash
RC2 CORP	FIRST YEARS INC	6/7/2004	10.59%	cash
THOMSON CORP	INFORMATION HOLDINGS INC	6/28/2004	5.93%	cash
ARCELOR MITTAL	INTERNATIONAL STEEL GRP INC	10/25/2004	31.13%	cash
SEARS HOLDINGS CORP	SEARS ROEBUCK & CO	11/17/2004	29.24%	both
CADENCE DESIGN SYSTEMS INC	VERISITY LTD	1/12/2005	49.86%	cash
EASTMAN KODAK CO	CREO INC	1/31/2005	12.83%	cash
VERIZON COMMUNICATIONS INC	MCI INC	2/14/2005	32.50%	both
AVID TECHNOLOGY INC	PINNACLE SYSTEMS INC	3/21/2005	53.51%	both
OCE	IMAGISTICS INTERNATIONAL INC	9/16/2005	28.38%	cash
NATUS MEDICAL INC	BIO-LOGIC SYSTEMS CORP	10/17/2005	45.77%	cash
AMGEN INC	ABGENIX INC	12/14/2005	63.45%	cash
EMERSON ELECTRIC CO	ARTESYN TECHNOLOGIES INC	2/2/2006	9.67%	cash
ICONIX BRAND GROUP INC	MOSSIMO INC	4/3/2006	23.55%	both
SERVICE CORP INTERNATIONAL	ALDERWOODS GROUP INC	4/3/2006	18.15%	cash
SANDISK CORP	MSYSTEMS LTD	7/30/2006	20.17%	stock
RENT-A-CENTER INC	RENT WAY INC	8/8/2006	31.91%	cash
ILLINOIS TOOL WORKS	CLICK COMMERCE INC	9/5/2006	43.51%	cash

## APPENDIX B

### Test for Multicollinearity Using Variance Inflation Factors (VIF)

#### Model 1

. estat vif

Variable	VIF	1/VIF
_02_dummy	1.00	1.000000
Mean VIF	1.00	

#### Model 2

. estat vif

Variable	VIF	1/VIF
tgt_roa	1.06	0.945844
tgt_de	1.05	0.951082
_02_dummy	1.02	0.984473
tgt_mtb	1.00	0.997471
Mean VIF	1.03	

#### Model 3

. estat vif

Variable	VIF	1/VIF
tgt_roa	1.06	0.945819
tgt_de	1.05	0.949884
_02_dummy	1.02	0.983045
aq_tgt_mkt~p	1.01	0.989232
tgt_mtb	1.01	0.989758
Mean VIF	1.03	

## Model 4

. estat vif

variable	VIF	1/VIF
cash_stock	1.20	0.831026
_02_dummy	1.11	0.903396
tgt_roa	1.10	0.911285
aq_tgt_mkt~p	1.09	0.916951
tgt_de	1.05	0.949774
tgt_mtb	1.02	0.980677
Mean VIF	1.10	

## Model 5

. estat vif

variable	VIF	1/VIF
cash_stock	1.21	0.825089
aq_tgt_mkt~p	1.12	0.891213
_02_dummy	1.11	0.902602
tgt_roa	1.10	0.909914
tgt_de	1.06	0.940486
aq_mtb	1.04	0.957728
tgt_mtb	1.02	0.979804
Mean VIF	1.10	

## Model 6

. estat vif

variable	VIF	1/VIF
aq_roa	1.76	0.568742
tgt_roa	1.47	0.680576
cash_stock	1.28	0.781009
aq_mtb	1.21	0.826480
tgt_de	1.17	0.857669
aq_de	1.13	0.885327
aq_tgt_mkt~p	1.13	0.885746
_02_dummy	1.12	0.893376
tgt_mtb	1.02	0.976336
Mean VIF	1.25	