CAPITAL STRUCTURE, CORPORATE GOVERNANCE, AND THE EFFECT OF SARBANES-OXLEY

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ABSTRACT

The Sarbanes-Oxley Act represented a major legislative action designed to increase transparency and accountability in U.S. corporations. Within the context of agency theory and corporate governance, the expectation is that the enactment of Sarbanes-Oxley impacted the agency relationship of firms and hence affected the corporate governance structure. With these changes, the question arises as to the capital structure decisions of corporations which have previously been shown to be related to agency measures and corporate governance. It is the objective of this research to examine the capital structure of U.S. firms as they relate to corporate governance measures and to determine the effect, if any, of Sarbanes-Oxley.

Keywords: Sarbanes-Oxley, Agency Theory, Governance, Capital Structure
JEL Classification: G18; G32; G34; G38

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I. INTRODUCTION

The Sarbanes-Oxley Act of 2002 (SOX) was adopted in the United States as a legislative response to the perceived lack of accountability and transparency on the part of many U.S. corporations. There were a number of highly visible failures such as Enron and WorldCom, among others. In an effort to reduce the likelihood of future failures, Sarbanes-Oxley contained provisions that hold managers more accountable for the accuracy of financial statements and also that provide for greater transparency in terms of the operations of firms. Further provisions related to the composition of corporate boards.

One effect of this Act is a change in the agency relationship between shareholders and managers. There is an agency cost when the interests of managers diverge from the interest of the shareholders. Dating back to the work of Berle and Means (1932) and the classic work of Jensen and Meckling (1976) and later Jensen (1986), agency issues have been widely documented in the financial literature. Clearly, actions that minimize any agency costs are viewed positively. Many aspects of corporate decision making and strategy have been shown to be related to agency issues including dividend decisions, capital structure decisions, research and development and long term capital investment.

The objective in this research is to focus on the impact of the Sarbanes-Oxley Act of 2002 on the capital structure decision of a firm. The empirical tests will examine capital structure before and after the adoption of Sarbanes-Oxley while controlling for measures of corporate governance and other firm-specific factors. While Sarbanes-Oxley represents a more direct means of mitigating agency costs, capital structure decisions reflect a implicit type of

managerial monitoring. That is, research over the years has suggested that in order to mitigate agency costs, shareholders may, through their actions, force firms to undertake a greater level of debt. The argument is that by going to the debt markets, the firm will be more subject to the scrutiny of the marketplace through bond ratings agencies, for instance. That is, the discipline of the marketplace itself can then serve to mitigate agency costs. If Sarbanes-Oxley mitigates agency costs, then one might expect to see a resulting change in capital structure if one assumes that legislative actions are a substitute means of monitoring the firm.

The paper proceeds as follows. A review of existing literature is provided in Section II. The data and empirical methodology is presented in Section III, with the statistical results given in Section IV. Section V offers conclusions and implications for future research.

II. REVIEW OF SELECTED LITERATURE

The issue of firm financial decisions has attracted much attention in the research literature for many years. As attention has focused on agency relationships, many studies have attempted to identify their impact on capital structure and the degree to which agency relationships affect the level of debt. Of course, a strong corporate governance structure will provide for sound monitoring of managerial decision making. Monitoring of management can be either explicit or implicit. An example of explicit monitoring would be the requirements of the Sarbanes-Oxley Act, while examples of implicit monitoring include dividend policy and financial leverage. Empirical studies related to the role of dividends in controlling agency costs have been done by Rozeff (1982), Easterbrook (1984), Borokhovich et. al (2005) and Jiraporn and Ning (2006). With regard to dividends, many argue that higher dividends result in firms raising funds by going to the external capital markets and hence facing monitoring by analysts

and rating agencies. In other words, the external monitoring provided by analysts and bond rating agencies becomes a proxy for monitoring by shareholders who may be unwilling or unable to effectively monitor the firm's decisions.

In a similar manner, financial leverage has been used as a means of controlling agency costs. Just as with dividends, the use of greater debt has the effect of forcing a firm to return to the capital markets to finance new investment. This requires the involvement of investment bankers as well as bond rating agencies. Hence, the monitoring is shifted to the marketplace as new investors evaluate the risk and return parameters for new debt or equity. In a widely cited work, Jensen (1986) makes the argument that financial leverage can indeed reduce agency costs. Friend and Lang (1988) find that firms tend to use less leverage in order to avoid the scrutiny of the market. They reach this conclusion by finding an inverse relationship between insider ownership and leverage. Amihud et. al (1990) and Kim and Sorenson (1986) reach the opposite conclusion, however. A recent work by DeAngelo and DeAngelo (2007) offers a good review of the theoretical literature on capital structure.

Within the context of agency relationships, Sarbanes-Oxley was adopted as a response to the corporate scandals experienced in the U.S. Since the adoption, many firms have argued that the costs of compliance remain too high and that the realistic effect of SOX has been minimal. Much has been written not only in the finance and accounting areas, but also in the law area. Romano (2004) provides a sound argument that the corporate governance provisions of SOX were not well founded in the literature and in fact, that they should be repealed or at least made not mandatory. Ribstein (2002) echoes this view. More recently, Kang and Liu (2007) conclude that managers did become more risk averse subsequent to Sarbanes-Oxley. Specifically, firms

with strong corporate governance structures appear to be more careful in their longer run investments.

One difficulty in empirical work that examines corporate governance is the determination of an appropriate measure of corporate governance. In an effort to capture multiple elements of corporate governance, Gompers, Ishii and Metrick (2003) developed an index known as the Gompers Governance Index. Incorporating this index into the empirical analysis of capital structure and agency costs, Jiraporn and Gleason (2007) conclude that there is an inverse relationship between financial leverage and shareholder rights, as measured by the Gompers Index. The results of Jiraporn and Gleason (2007) suggest that financial leverage acts as a substitute rather than a complement to other means of controlling agency costs. However, they do not consider any effects that may have resulted from the adoption of SOX.

III. DATA and METHODOLOGY

A. Data

The primary focus of this paper is to empirically examine the relationship and impact of regulatory changes (i.e., Sarbanes-Oxley) on capital structure, while controlling for measures of corporate governance and firm-specific characteristics. Our data is drawn from several sources. First, we secure data from the Investor Responsibility Research Center (IRRC) data files for the period 1998 - 2004. The IRRC dataset provides a great deal of information on governance features, including the governance index (Gompers *et al.*, 2003), the size of the firm's board, the proportion of independent outside directors, as well as other factors. To capture the effect of insider ownership, we determine the percent of insider ownership using ExecuComp. In addition, we draw firm-level control data from Standard and Poor's Compustat. The Gompers

Index is calculated every other year. Hence, our analyses are for the years 1998, 2000, 2002, and 2004. We exclude both financial and utility companies due to the implications of their regulation.

B. Model

The model we employ is as follows:

$$Leverage_{i,t} = \alpha + \beta_1 Governance_{i,t} + \beta_2 Firm_{i,t} + \varepsilon_{i,t}. \quad (1)$$

To measure our dependent variable, *Leverage*, we use the market value debt ratio of firm *i* at time *t*. The market value debt ratio is calculated as the book value of long-term debt divided by the market value of assets, where the market value of assets is equal to the book value of assets plus the market value of equity minus the book value of equity.

The *Governance* vector includes three measures of corporate governance: the governance index, the size of the board of directors, and the proportion of independent outside directors. The governance index is a measure of shareholders rights introduced by Gompers et al. (2003) that focuses on managerial entrenchment, primarily through antitakeover defenses. Specifically, the index is a sum of binomial variables that examine tactics for delaying hostile bidders, voting rights, director/officer protection, state laws and other takeover defenses. A lower index value corresponds to a higher level of shareholder rights, and therefore a greater degree of corporate governance.

In addition, we include the natural log of the size of the board of directors. Board size has been shown to be significantly related to the value of the firm (Lipton and Lorsch, 1992; Jensen, 1993; Yermack, 1996; and Denis and Sarin, 1999), where smaller boards are hypothesized to be more effective monitors of managerial actions. The natural log is used to account for the fact that there is a greater effect on governance when the board decreases from 6

members to 5 than when it decreases from 20 to 19. Our third measure of corporate governance is the proportion of independent outside directors on the board, using the IRRC measure of outside directors. Previous research has hypothesized that the independence of directors leads to more effective monitoring (see Hermalin and Weisbach, 1991; Cotter, Shivdasani, and Zenner, 1997; Mayers, Shivdasani, and Smith, 1997; and Bhagat and Black, 2001). In addition to these variables, inside ownership has been shown to affect many decisions within a firm. We include the percentage of shares owned by managers as a measure of managerial entrenchment.

Our final set of variables control for the characteristics of the *Firm*. We include the natural log of the book value of assets to control for firm size. This may also proxy for the age of the firm. It is hypothesized that the larger the book value of assets (or older the firm), the greater the leverage. That is, firms with high levels of tangible assets provide greater protection for debt holders. We also control for profitability using EBIT divided by the book value of assets. Firms with greater levels of operating income or profitability are better able to service debt, and are more likely to have higher leverage ratios. Our third control variable, market-to-book, measures the growth opportunities of the firm and is calculated as the market value of assets divided by the book value of assets. High growth firms usually have greater risk and lower levels of debt. In addition, we use an alternative measure of growth defined as investment divided by sales. Investment is the sum of research and development expenditures and capital expenditures.

IV. RESULTS

Table 1 presents the means and medians of all our capital structure, governance, and firm variables. The first column contains the mean and median for the overall sample. Columns two

through five present the same information, but for each of the four years of data. The final column shows the mean and median difference in each variable between 2000 and 2004.

Due to some outliers, the mean debt ratio is substantially higher using market values rather than book values, although median values are similar. Both, however, significantly decrease from 2000 to 2004. This is consistent with the argument that the Sarbanes-Oxley Act increased transparency and decreased agency conflicts, thus acting as a substitute for the monitoring provided through leverage. The decrease in leverage also corresponds with a market downturn due to the technology stock bubble issue, though the decrease in leverage extends beyond the downturn in 2000 and 2001.

Table 1 also documents significant changes in corporate governance mechanisms around the adoption of Sarbanes-Oxley. The governance index significantly increases, which characterizes firms insulating themselves from the market discipline of hostile takeovers. The size of the board of directors is also significantly increasing during this time. Both of these changes are generally viewed as a reduction in the effectiveness of the board and a reduction in corporate governance. Conversely, the proportion of independent outside directors is significantly increasing and the percentage of managerial ownership is significantly decreasing. While the increase in independent directors is associated with greater levels of corporate governance, the impact of the change in managerial ownership is less clear. Increases in ownership may result in the interest of managers being better aligned with those of shareholders. Alternatively, increases in ownership may lead to managerial entrenchment.

Leverage and governance are not the only components of the firm changing during this time. The book value of assets is significantly increasing, while profitability is significantly decreasing. The decrease in profitability also corresponds with the market downturn.

Examining the yearly statistics, profitability decreases from 1998 to 2002, then increases in 2004. Market-to-book ratios follow a similar pattern.

While Table 1 documents significant changes in leverage, governance, and other firm characteristics, the univariate statistics describe each variable in isolation. Certainly, governance mechanisms and firm characteristics are related to one another. For this reason, we examine the correlations among variables, as well as multivariate regressions.

Table 2 presents the correlation matrix for our variables, including the Pearson correlation coefficients and their corresponding p-values. In terms of governance variables, the market value debt ratio is inversely related to the proportion of independent outside directors. This is consistent with the increased monitoring associated with leverage being a substitute for the increased monitoring provided by independent outside directors. Table 2 also documents significant correlations among our governance variables, as would be expected. The governance index and the proportion of independent directors are positively correlated with board size. The percentage of managerial ownership is negatively correlated with all other governance variables. In addition, firm size is positively correlated with profitability and profitability is positively correlated with the market-to-book ratio, though firm size and market-to-book are not correlated.

We present the results of our multivariate regression models in Table 3. Specifically, we report two models for each of three time periods. The first time period examines the overall sample, including all four years of observations. The second time period focuses on just the years prior to the enactment of Sarbanes-Oxley (i.e., 1998, 200, and 2002). The third time period includes the post-Sarbanes-Oxley year, 2004. Coefficients from OLS estimations are reported, with p-values below.

We illustrated in Table 1 that leverage ratios, as well as levels of governance and other firm characteristics, were changing over time. Our focus now shifts to examining the determinants of capital structure, where capital structure is measured by the market value debt ratio. The first model in each time period examines only the governance index as a measure of corporate governance. It is clear by the results in Table 3 that neglecting other governance mechanisms is hazardous. For the overall sample, the governance index is significantly positively related to the market value debt ratio. However, the inclusion of other measures of corporate governance reverses the sign of the governance index, and it remains negative and/or insignificant in the remaining models. Firms with lower levels of the governance index are those with greater shareholders rights and lower barriers to hostile takeovers. These firms tend to have higher levels of leverage, inconsistent with a substitution effect of monitoring mechanisms.

While board size is not found to be a significant factor of capital structure, the proportion of independent outside directors is for the overall sample. Consistent with the substitution hypothesis, decreases in the proportion of independent directors are associated with increases in leverage. That is, with greater monitoring by independent directors, there is less need for the monitoring effect of higher leverage. In addition to governance, firm characteristics are significantly related to the market value debt ratio. The larger the firm, the greater the leverage, and the lower the levels of both profitability and growth opportunities, the greater the leverage ratio. While the sign on market-to-book is consistent with previous literature showing high growth firms preferring equity financing, the relation between leverage and profitability is surprising. We hypothesized that more profitable firms would be better equipped to service higher levels of debt. One possible explanation is that poorly performing firms experience lower levels of profitability, as well as a reduction in their market values. Decreasing market values

would result in increasing market value debt ratios and a negative relation between profitability and leverage.

Examining the impact of our governance and firm characteristic variables before and after Sarbanes-Oxley yields few differences. In both periods, the governance index is negatively related to leverage, although it is positive and highly insignificant in the full model post-Sarbanes-Oxley. Board size and the proportion of independent outside directors are both negative, but insignificant, in models before and after Sarbanes-Oxley. Our firm characteristics are consistent, as well. Larger firms support greater leverage, and more profitable firms and firms with higher market-to-book ratios are less levered, both before and after Sarbanes-Oxley.

Our univariate results suggest changes occurred in leverage, governance, and firm characteristics pre- and post-Sarbanes-Oxley. However, multivariate analysis indicates that the factors impacting the capital structure decision are not significantly changing in response to the Act. Those variables that are significant factors in determining leverage before Sarbanes-Oxley also tend to be significant factors in determining leverage after Sarbanes-Oxley.

We examine the robustness of our multivariate results in Table 4. Specifically, we make three adjustments to our model. First, as seen in Table 1, the volatility of market value debt ratios is greater than book value debt ratios. Therefore, we replace the market value debt ratio with the more stable book value debt ratio as the dependent variable. Second, it is possible that managerial ownership plays a significant role in the level of agency conflicts in the firm. The exact impact of that role is uncertain. It may be the case that increasing managerial ownership better aligns the incentives of managers with those of shareholders. Alternatively, it may be that increases in managerial ownership increase managerial entrenchment in a way consistent with increases in the governance index. To test this, we include the percentage of managerial

ownership as an additional governance variable. Third, the market-to-book ratio is often used to explain a variety of different value-related variables, including growth opportunities and relative valuation. It is also impacted by changing market conditions that may be independent of a firm's growth opportunities. To remove these barriers from our interpretation, we replace the market-to-book ratio with an investment to sales ratio, where investment is the sum of capital expenditures and research and development.

Using the more stable book value measure yields some differences. The governance index is positive and significant in all models and all time periods. In other words, as the index increases and shareholder rights decrease, leverage increases. This is, consistent with a monitoring trade-off and the results of Jiraporn and Gleason (2007). Likewise, the size of the board of directors is positive and significant, consistent with a monitoring substitution effect. As boards increase in size and become less effective monitors, leverage increases. The proportion of independent outside directors and percentage of managerial ownership are not significant factors in determining capital structure.

The coefficients on our firm characteristic variables are also strengthened. Firm size continues to be significantly positively related to leverage, both before and after Sarbanes-Oxley. Profitability remains negatively related to leverage in all time periods. However, our alternative measure of growth opportunities is not a significant factor in determining capital structure.

It should also be noted that all of our models in Table 3 and Table 4 were tested for multicollinearity by estimating variance inflation factors. No variance inflation factor was greater than two, which is far below generally accepted levels. Therefore, there is no reason to believe that multicollinearity has an impact on our interpretation of coefficients.

V. CONCLUSIONS AND IMPLICATIONS

The objective of the research was to empirically examine the financial leverage of firms in the years surrounding the adoption of the Sarbanes-Oxley Act of 2002, while considering the previously documented effects of corporate governance factors and inside ownership. Using data from 1998 to 2004, we conduct both univariate and regression analyses. The evidence does offer some indication that leverage ratios declined from 2000 to 2004, with a possible explanation being the greater transparency and reduction in agency conflicts that occurred. The governance index actually increases, suggesting some diminished effect for shareholder rights. Again, this supports the substitution hypothesis that the various means of mitigating agency costs can substitute for each other.

Our results suggest significant changes in leverage and governance variables, as well as other firm characteristics, in the years surrounding the adoption of Sarbanes-Oxley. In addition, we identify factors that are significantly associated with the leverage ratio, including the governance index, board size, book value of assets, and profitability. However, while changes in these variables occur during our sample period, the factors that significantly impact capital structure do not.

In terms of implications of the findings, there is some evidence, at least through the univariate analysis, that subsequent to Sarbanes-Oxley, some of the variables did indeed change. As more time elapses since the adoption of SOX, further research will be able to better define longer run changes in capital structure decisions. Clearly, corporate governance issues impact capital structure. The question is still the degree to which legislative action, as opposed to market discipline, can serve to mitigate agency costs.

References

Amihud, Y., Lev, B. and Travlos, N. (1990), "Corporate Control and the Choice of Investment Financing: The Case of Corporate Acquisitions," *Journal of Finance*, Vol. 45, No. 2, pp. 603-616.

Berle, A.A. and Means, G.C. (1932), *The Modern Corporation and Private Property,* Macmillan, New York, NY.

Bhagat, S. and Black B. (2001), "The Non-Correlation between Board Independence and Long Term Performance," *Journal of Corporate Law*, Vol. 27, pp. 231-274.

Borokhovich, K., Brunarski, K.R., Harman, Y., and Kehr, J. B. (2005), "Dividends, Corporate Monitors and Agency Costs," *Financial Review*, Vol. 40, pp. 37-65.

Cotter, J., Shivdasani A., and Zenner, M. (1997), "Do Independent Directors Enhance Target Shareholder Wealth During Tender Offers?" *Journal of Financial Economics*, Vol. 43, pp. 195-218.

DeAngelo, Harry and DeAngelo, Linda, "Capital Structure, Payout Policy, and Financial Flexibility" (October 10, 2007). Marshall School of Business Working Paper No. FBE 02-06

Denis, D.J. and Sarin, A. (1999), "Ownership and Board Structures in Publicly Traded Corporations," *Journal of Financial Economics*, Vol. 52, pp. 187-224.

Easterbrook, F. H. (1984), "Two Agency-Cost Explanations of Dividends," *American Economic Review*, Vol. 74 No. 4, pp. 221-230.

Friend, I. and Lang, L. (1988), "An Empirical Test of the Impact of Managerial Self-Interest on Corporate Capital Structure," *Journal of Finance*, Vol. 43, No. 2, pp. 271-281.

Gompers, P., Ishii, J., and Metrick, A. (2003), "Corporate Governance and Equity Prices," *Quarterly Journal of Economics,* Vol. 118, pp. 107-155.

Hermalin, B. and Weisbach M. (1991), "The Effects of Board Composition and Direct Incentives on Firm Value," *Financial Management*, Vol. 20, pp. 101-112.

Jensen, M. (1986), "Agency Costs of Free Cash Flow, Corporate Finance and Takeovers," *American Economic Review*, Vol. 76, pp. 323-339.

Jensen, M. (1993), "The Modern Industrial Revolution, Exit, and the Failure of Internal Control Systems," *Journal of Finance*, Vol. 48, pp. 831-880.

Jensen, M. and Meckling W. (1976), "Theory of the Firm: Managerial Behavior, Agency Costs, and Capital Structure," *Journal of Financial Economics*, Vol. 3, pp. 305-360.

Jiraporn, P. and Ning, Y. (2006), "Dividend Policy, Shareholder Rights, and Corporate Governance," *Journal of Applied Finance*, Vol. 16, No. 2, pp. 24-36.

Jiraporn, P., and Gleason, K. (2007), "Capital Structure, Shareholder Rights, and Corporate Governance," *The Journal of Financial Research*, Vol. 30, No. 1, pp. 21-33.

Kang, Qiang and Liu, Qiao , "The Sarbanes-Oxley Act and Managerial Risk Taking: A Structural Assessment" (March 1, 2007). Available at SSRN: http://ssrn.com/abstract=967950

Kim, W. and Sorenson, E., (1986), "Evidence on the Impact of the Agency Costs of Debt on Corporate Debt Policy. *Journal of Financial and Quantitative Analysis*, Vol. 21, pp. 131–144.

Lipton, M. and Lorsch, J. (1992), "A Modest Proposal for Improved Corporate Governance," *Business Lawyer*, Vol. 48, pp. 59-77.

Mayers, D., Shivdasani, A., and Smith, C. (1997), "Board Composition and Corporate Control: Evidence from the Insurance Industry," *Journal of Business*, Vol. 70, pp. 33-62.

Ribstein, Larry E., "Market vs. Regulatory Responses to Corporate Fraud: A Critique of the Sarbanes-Oxley Act of 2002". *Journal of Corporation Law*, Vol. 28, No. 1, pp. 2-74. (2002).

Romano, Roberta, (2005), "The Sarbanes-Oxley Act and the Making of Quack Corporate Governance" *Yale Law Journal*, Vol. 114, pp. 1521-1543.

Rozeff, M.S. (1982), "Growth, Beta and Agency Costs as Determinants of Dividend Payout Ratios," *Journal of Financial Research*, Vol. 5, pp. 249-259.

Shleifer, A. and Vishny, R.W. (1997), "A Survey of Corporate Governance," *The Journal of Finance*, Vol. 52, pp. 737-783.

Yermack, D. (1996), "Higher Market Valuation of Companies with a Smaller Board of Directors," *Journal of Financial Economics*, Vol. 40, pp. 185-211.

Table 1: Descriptive Statistics

The data for corporate governance measures come from the Investor Responsibility Research Center (IRRC). Ownership data come from ExecuComp, and firm-specific control variables are from the Compustat database. All data are for the years 1998, 2000, 2002, and 2004. The governance index is that from Gompers et al. (2003). MV Assets is the market value of assets defined as the book value of assets minus the book value of equity plus the market value of equity. BV Assets is the book value of assets. Investment is defined as the sum of research and development expenditures and capital expenditures. Medians are presented in parentheses below means. The 2004-2000 column reports mean and median differences between 2004 and 2000, where ***, **, and * represent significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

	Overall Sample	1998	2000	2002	2004	2004-2000
Capital Structure Variables						
Long-term Debt / MV Assets	0.9029 (0.1637)	0.5501 (0.1762)	1.8179 (0.1957)	1.0189 (0.1851)	0.3288 (0.1233)	-0.1981*** (-0.0151)***
Long-term Debt / BV Assets	0.2095 (0.1824)	0.2229 (0.1984)	0.2230 (0.2003)	0.2061 (0.1782)	0.1888 (0.1617)	-0.0268*** (-0.0166)***
Governance Variables						
Governance Index	8.8679 (9.0000)	8.6397 (8.0000)	8.8743 (9.0000)	8.9228 (9.0000)	9.0335 (9.0000)	0.4164*** (0.0000)***
Log of Board Size	2.1607 (2.1972)	2.1639 (2.1972)	2.1606 (2.1972)	2.1518 (2.1972)	2.1656 (2.1972)	0.0132* (0.0000)*
Proportion of Independent Outside Directors	0.6338 (0.6667)	0.5828 (0.6000)	0.6118 (0.6364)	0.6560 (0.6667)	0.6993 (0.7143)	0.0730*** (0.0635)***
Percentage of Managerial Ownership	42.1056 (8.7158)	49.2625 (9.9147)	45.2899 (9.5064)	39.1455 (8.1534)	35.4508 (7.6306)	-10.1138*** (-1.2364)***
Firm Characteristics						
Log of Assets	7.1387 (6.9731)	6.9934 (6.8441)	7.2236 (7.0525)	7.0459 (6.8582)	7.2973 (7.1307)	0.2552*** (0.2428)***
EBIT / Assets	0.1258 (0.1319)	0.1421 (0.1451)	0.1414 (0.1444)	0.0969 (0.1141)	0.1265 (0.1269)	-0.0226*** (-0.0213)***
Market-to-book	2.0112 (1.5328)	2.1863 (1.6116)	2.1602 (1.4699)	1.6758 (1.3858)	2.0610 (1.6974)	-0.3019*** (0.0992)
Investment / Sales	0.4185 (0.0880)	0.1720 (0.0960)	0.2482 (0.0819)	0.8388 (0.0901)	0.3406 (0.0843)	0.0523 (-0.0088)***

Table 2: Correlation Matrix

The data for corporate governance measures come from the Investor Responsibility Research Center (IRRC). Ownership data come from ExecuComp, and firm-specific control variables are from the Compustat database. All data are for the years 1998, 2000, 2002, and 2004. The governance index is that from Gompers et al. (2003). MV Assets is the market value of assets defined as the book value of assets minus the book value of equity plus the market value of equity. BV Assets is the book value of assets. Investment is defined as the sum of research and development expenditures and capital expenditures. Medians are presented in parentheses below means. Each cell contains the Pearson correlation coefficient, with p-values in parentheses.

	Long-term Debt / MV Assets	Long-term Debt / BV Assets	Governance Index	Log of Board Size	Proportion of Independent Outside Directors	Percentage of Managerial Ownership	Log of Assets	EBIT / Assets	Market-to-book
Long-term Debt / MV Assets	1								
Long-term Debt / BV Assets	0.0757 (0.0001)	1							
Governance Index	-0.0176 (0.1952)	0.0341 (0.0117)	1						
Log of Board Size	0.0213 (0.1478)	0.1492 (0.0001)	0.2835 (0.0001)	1					
Proportion of Independent Outside Directors	-0.0268 (0.0685)	-0.0124 (0.3998)	0.2818 (0.0001)	0.1023 (0.0001)	1				
Percentage of Managerial Ownership	-0.0058 (0.6945)	-0.0685 (0.0001)	-0.1727 (0.0001)	-0.1691 (0.0001)	-0.2848 (0.0001)	1			
Log of Assets	-0.0009 (0.9480)	0.1794 (0.0001)	0.1967 (0.0001)	0.5494 (0.0001)	0.1558 (0.0001)	-0.1858 (0.0001)	1		
EBIT / Assets	-0.0299 (0.0277)	-0.0792 (0.0001)	0.0787 (0.0001)	0.1085 (0.0001)	-0.0116 (0.4298)	0.0329 (0.0256)	0.2036 (0.0001)	1	
Market-to-book	-0.0291 (0.0321)	-0.1334 (0.0001)	-0.0737 (0.0001)	-0.0637 (0.0001)	-0.0052 (0.7251)	0.0172 (0.2433)	0.0017 (0.9009)	0.2646 (0.0001)	1
Investment / Sales	0.0082 (0.6297)	0.0295 (0.0841)	-0.0180 (0.2894)	-0.0781 (0.0001)	0.0192 (0.2979)	-0.0108 (0.5566)	-0.0721 (0.0001)	-0.2597 (0.0001)	-0.0017 (0.9214)

Table 3: Multivariate Analysis

The dependent variable is the market value debt ratio. The data for corporate governance measures come from the Investor Responsibility Research Center (IRRC). Ownership data come from ExecuComp, and firm-specific control variables are from the Compustat database. All data are for the years 1998, 2000, 2002, and 2004. The Pre-Sarbanes-Oxley period includes 1998, 2000, and 2002. The Post-Sarbanes-Oxley period includes 2004. The governance index is that from Gompers et al. (2003). P-values are presented in parentheses below the coefficients. ***, **, and * represent significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

	Overall Sample		Pre-Sarbanes-Oxley		Post-Sarbanes-Oxley	
Governance Variables						
Governance Index	1.7906**	-0.0199*	-0.1220	-0.0249*	-0.0339***	0.0003
	(0.0446)	(0.0766)	(0.2122)	(0.0824)	(0.0044)	(0.9643)
Log of Board Size		-0.0275		-0.0292		-0.1399
		(0.8206)		(0.8472)		(0.1122)
Proportion of Independent Outside Directors		-0.3400**		-0.2350		-0.0330
		(0.0334)		(0.2431)		(0.7861)
Firm Characteristics						
Log of Assets	-0.9884	0.0981***	0.0929	0.1104***	0.1361***	0.0947***
	(0.5510)	(0.0001)	(0.6095)	(0.0002)	(0.0001)	(0.0001)
EBIT / Assets	-42.7694**	-1.6997***	-2.9866	-1.8708***	-0.9408***	-0.6480***
	(0.0305)	(0.0001)	(0.1334)	(0.0001)	(0.0010)	(0.0059)
Market-to-book	0.1383	-0.1178***	-0.2322	-0.1257***	-0.1042***	-0.0763***
	(0.9325)	(0.0001)	(0.1429)	(0.0001)	(0.0001)	(0.0001)
Intercept	-0.5677	0.7049***	2.3372	0.7089**	-0.0247	0.1104
	(0.9665)	(0.0025)	(0.1044)	(0.0145)	(0.8963)	(0.5300)
Number of Observations	6,448	4,599	3,996	3,510	1,425	1,089
Adjusted R^2	0.0008	0.0299	0.0009	0.0292	0.0512	0.0850

Table 4: Robustness Tests

The dependent variable is the book value debt ratio. The data for corporate governance measures come from the Investor Responsibility Research Center (IRRC). Ownership data come from ExecuComp, and firm-specific control variables are from the Compustat database. All data are for the years 1998, 2000, 2002, and 2004. The Pre-Sarbanes-Oxley period includes 1998, 2000, and 2002. The Post-Sarbanes-Oxley period includes 2004. The governance index is that from Gompers et al. (2003). Investment is defined as the sum of research and development expenditures and capital expenditures. P-values are presented in parentheses below the coefficients. ***, **, and * represent significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

	Overall Sample		Pre-Sarbanes-Oxley		Post-Sarbanes-Oxley	
Governance Variables						
Governance Index	0.0040*** (0.0002)	0.0057*** (0.0001)	0.0031** (0.0298)	0.0057*** (0.0001)	0.0057** (0.0121)	0.0054** (0.0188)
Log of Board Size		0.0390*** (0.0046)		0.0297* (0.0620)		0.0666** (0.0145)
Proportion of Independent Outside Directors		0.0390 (0.5742)		0.0255 (0.2475)		0.0608 (0.1245)
Percentage of Managerial Ownership		-0.0000 (0.2293)		-0.0000 (0.7126)		-0.0001 (0.1650)
Firm Characteristics						
Log of Assets	0.0235*** (0.0001)	0.0181*** (0.0001)	0.0245*** (0.0001)	0.0194*** (0.0001)	0.0280*** (0.0001)	0.0151*** (0.0006)
EBIT / Assets	-0.2290*** (0.0001)	-0.2990*** (0.0001)	-0.1716*** (0.0001)	-0.2803*** (0.0001)	-0.3837*** (0.0001)	-0.3993*** (0.0001)
Investment / Sales	-0.0000 (0.9310)	0.0005 (0.8715)	-0.0000 (0.9544)	0.0006 (0.8532)	0.0035* (0.0715)	-0.0112 (0.8150)
Intercept	0.0081 (0.5945)	-0.0565** (0.0310)	0.0104 (0.6059)	-0.0499 (0.1043)	-0.0434 (0.1682)	-0.1385** (0.0127)
Number of Observations	4,037	2,724	2,481	2,011	941	713
Adjusted R^2	0.0537	0.0899	0.0433	0.0847	0.1016	0.1243