Agency Costs, Leverage, and Corporate Social Responsibility: A Test of Causality

Elizabeth Webb*
Federal Reserve Bank of Philadelphia

Abstract

This paper focuses on different avenues of corporate social responsibility as alternative methods for alleviating agency problems between shareholders and bondholders. Specifically, the paper documents the relationship between capital structure (leverage) and corporate social responsibility. Using agency theory, a positive causal relationship is shown between leverage and certain corporate social responsibility measures and a lower cost of debt financing for firms with strong levels of corporate social responsibility. Increasing corporate involvement in current environmental and diversity issues "Granger causes" increases in firm leverage (and vice versa). However, this is not the case for other areas of corporate social responsibility including community contributions.

I. Introduction

A substantial body of literature addresses the agency problem inherent between corporate managers and shareholders. Two principle solutions to the problem exist: increasing effectiveness of monitoring the managers, and aligning incentives between shareholders and managers. Both solutions come at a non-trivial cost to equity holders who must balance the marginal benefits with marginal costs of each option. Similar resolutions can be made for other corporate agency problems, although little research has been done in these areas.

In this paper, agency problems between bondholders and shareholders and potential alleviation of the problem through different avenues of corporate social responsibility are examined. Specifically, the relationship between capital structure (leverage) and corporate social responsibility is studied. Using agency theory, this paper documents a positive causal relationship between leverage and certain corporate social responsibility measures and a lower cost of debt financing for firms with strong levels of corporate social responsibility. Increasing corporate involvement in both environmental and diversity issues has an impact on firm leverage since the expropriation of wealth from shareholders to bondholders is reduced and incentives are more closely aligned as the goal becomes one of maximizing firm value rather than shareholder value when a discrepancy occurs between the two. However, this is not the case for other areas of corporate social responsibility including community and, to some extent, employee contributions.

By studying the agency problem between bondholders and shareholders and by introducing corporate social responsibility (CSR) as a means to alleviate these problems, this paper contributes to the literature by offering a unique perspective on agency theory. In addition, it

* I would like to thank participants at the 2005 Midwest Finance Association meeting for helpful comments and suggestions. The views expressed in this article are my own and do not necessarily represent those of the Federal Reserve System.

adds to the substantial literature of corporate social responsibility, which until now has focused mainly on its relationship with firm performance. Instead, this paper examines the causal relationship between CSR and leverage.

The rest of the paper is organized as follows: Section 2 summarizes the literature in the areas of agency theory, leverage, and corporate social responsibility; Section 3 describes the data and methodology; Section 4 reports results; and Section 5 concludes.

II. Literature Review

Jensen and Meckling (1976) describe several conditions where agency problems exist at the firm. In each context, there exist non-trivial costs to help alleviate the problem to the principal. For instance, outside equity holders must monitor the managers of the firm to alleviate agency problems inherent between shareholders and managers. Likewise, bondholders assert their need for protective covenants and monitoring devices to ward off possible wealth expropriation by shareholders. The authors find that the optimum capital structure exists where the firm minimizes total agency costs (the sum of agency costs of debt and equity.) Thus, reducing agency costs to either debt or equity could alter the optimal capital structure and realized debt levels of the firm.

According to Fama and Miller (1972) shareholders are said to expropriate wealth from bondholders by investing in new projects that are riskier than current firm undertakings. Shareholders will do this because they tend to capture most of the gains while bondholders must accept a larger portion of the costs. However, this problem can potentially be alleviated through increases in the number and importance of other fixed claimants. Many fixed claimants include firm stakeholders, and with enhancement of stakeholder consideration on the part of the firm, bankruptcy avoidance and firm survival would be of greater concern to these entities than increased risk-taking and maximization of shareholder wealth.

In firms where other stakeholders, in addition to shareholders, are important to managers, there may be less expropriation from bondholders to stockholders since other stakeholders are involved. Additionally, stakeholders have incentives to monitor the shareholders in terms of risk-taking as their continued involvement and benefit from the firm relies upon the firm's existence and survival. In this scenario, agency costs between bondholders and stockholders are diminished while other agency problems (between various stakeholders and equity holders) are created. Total agency costs, however, remain the same since the market balances marginal costs with the marginal benefits of expropriation of various principals. Overall, the increase in entities concerned more with firm value maximization rather than shareholder value maximization (when divergence occurs between the two) decreases agency problems, and therefore costs, between equity holders and bondholders.

Consider firm X. Total agency costs to firm X include agency costs of equity (S) and agency costs of debt (B) as shown in equation (1). When firm X introduces other stakeholders (employees, for example) that rely on fixed claims from the firm, this minimizes total agency costs between bondholders and stockholders by reducing agency cost of debt. Equation (2)

$$A_T(X) = A_S(X) + A_B(X) \tag{1}$$

shows total agency costs for firm *X* resulting from agency costs between stockholders *(S)* and bondholders *(B)* plus agency costs between stockholders *(S)* and employees (*E)*.

$$A_T(X) = [A_S(X) + A_B(X)] + [A_S^*(X) + A_E^*(X)] \quad (2)$$

Total agency costs in equation (2) remain the same (since shareholders arrive at the point where marginal costs equal marginal benefits). By introducing additional agency relationships (and costs) as that between shareholders (*S*) and employees (*E*), costs between *S* and *B* must decline.

As agency costs of debt financing decrease, optimal leverage structure, as diagramed by Jensen and Meckling (1976), shifts. Consider Figure 1, which shows the optimal capital structure, *X*, prior to the introduction of outside stakeholder agency relationships. Figure 2 displays the shift in optimal capital structure, to *X**, when agency cost of debt declines due to additional agency conflicts between shareholders and other stakeholders. Notice that *X** is greater than *X* since agency costs of debt decrease.

Anderson, Mansi, and Reeb (2003) use a similar argument to explain the decreased cost of debt in firms where founding family stock ownership is large. They propose that due to reputation and firm survival concerns, divergence of interests between bondholders and shareholders is less severe in firms where families own large portions of company stock. They find that the cost of debt financing (yield spread) is lower for these firms than for non-family owned firms. Furthermore, Mao (2003) finds that contrary to past literature, agency cost of debt does not monotonically increase with increases in leverage. She proposes a model that incorporates both Jensen and Meckling's risk-shifting problem (whereby shareholders have an incentive to increase the risk of the firm's investments) and Myer's (1977) under-investment problem (shareholders under-invest in positive NPV projects when leverage increases). By analyzing the two problems concurrently, as opposed to each in isolation, she finds that agency costs of debt do not uniformly increase with leverage.

In a survey paper on corporate governance research, Shleifer and Vishny (1997) suggest that agency conflicts between managers and shareholders are impacted by large undiversified owners. They purport that these shareholders, who are typically long-term investors, have stronger motivation to alleviate agency conflicts with bondholders than do other equity owners since they desire lower costs of debt for purposes of re-entering debt markets for financing.

Those concerned with long-term firm survival and monitoring include other entities beneficially affected by the firm's activities in addition to family or undiversified shareholders. Stakeholders include any party that is affected by firm actions, such as customers, suppliers, the community, employees, and shareholders. Firms that have a record of generous giving to area charities or support the local population through education and other relations, for instance, would be considered those firms that have positive relationships with the community. On the other hand, firms that have had recent employee safety or health standard violations or under-funded pension programs would be classified as having negative or weak relationships with employees, another stakeholder group. Considering the above model of agency costs, the relationship between firm performance and measures of stakeholder consideration may not provide clear results since stakeholder concern may have a greater impact on agency costs than on performance.

The summation of positive and negative stakeholder relationships characterizes the firm's overall level of corporate social responsibility. According to Carroll (1991), corporate social responsibility (CSR) "refers to a business entity's attention to and fulfillment of responsibilities to multiple stakeholders which exist at various levels: economic, legal, ethical, and philanthropic." Therefore, firms considered "socially responsible" are those considered to be positively affecting a broad class of stakeholders.

There is a rich body of research regarding the relationship between corporate social responsibility and firm performance. Agreement on measures and results between authors, however, is rare. For instance, McGuire, Sundgren and Schneeweis (1988) find that prior firm performance is closely related to CSR and that subsequent performance is not. Waddock and Graves (1997), however, find that the relationship goes both ways in that prior financial performance (CSR) is related to current CSR (financial performance). Other authors, such as McWilliams and Siegel (2000) presume that results of past analyses are misspecified due to omitted variables. Others still, like Hillman and Keim (2001), suggest that misspecification arises from using broad measures of CSR in the models.

According to Harrison and Freeman (1999) current research on corporate social responsibility focuses more on specific measures of social responsibility and less on combined social performance measures. For instance, Hillman and Keim (2001) separate social performance into two components: stakeholder management and social issue participation. Primary stakeholders include, among others, shareholders, employees, and customers, and they find that this measure is directly related to shareholder value creation. However, social issue participation, which refers to the use of corporate resources for social issues outside firm strategy, such as avoidance of nuclear energy, refraining from alcohol, tobacco, and gambling industries, etc., is found to be negatively related to shareholder wealth.

In this paper, concepts from agency theory, optimal capital structure, and corporate social responsibility are combined to analyze the impact, if any, CSR has on a firm's capital structure policy. The hypothesis is that firms with high levels of CSR have more incentive to mitigate agency conflicts between shareholders and bondholders, and have lower agency cost of debt financing due to the increased number of shareholder-stakeholder agency relationships. This lower cost of debt financing thus increases leverage in optimal capital structure. Additionally, since overall measures of CSR may misspecify the model, individual measures of CSR representing various stakeholders including community, diversity, employees and environment are tested. Causal relationships are again tested between leverage and each measure of CSR, with the hypothesis being that higher levels of employee, diversity, community, and environment strength characteristics lead to higher debt, and vice versa.

III. Data

To measure corporate social responsibility, the KLD Socrates Database from 1993 to 2000 is used. This database reports an index that reflects company ratings on the various degrees of social responsibility including community, diversity, employee interests, environment, and shareholder interests. This index is superior to alternative measures of CSR because it is compiled by an independent rating service that focuses on a wide range of firms over a broad

spectrum of CSR screens. KLD Socrates uses a sample of firms consisting of over 3,000 US corporations, including every company on Standard & Poor's and Russell 3,000. Alternative measures of CSR focus on a small sample of firms or use a narrow CSR screen. Each screen in the KLD database is summarized in terms of "strengths" and "concerns." I calculate the score both as a summation of strengths and weaknesses (SCORE) and as a weighted average of the overall indices (W_SCORE) to assess the total CSR score, as in Waddock and Graves (1997). The variable SCORE in the sample ranges from -11 to 11, with an average of 0.243 and standard deviation of 2.705. The minimum weighted score (W_SCORE) is -1.07 and the maximum is 1.738. Average and standard deviation for the weighted score are 0.11 and 0.312, respectively.

Strength ratings for community, diversity, employee, and environment are used. KLD assigns a rating of "1" if the qualitative screen is present in the firm and "0" if not. Firms earn a rating of "1" for community strength for the following characteristics: generous giving, innovative giving, support for housing, support for education, indigenous peoples relations, and non-US charitable giving. For diversity, firms earn a rating of "1" in each of the following strength categories: CEO is a woman or other minority, one-third of the board of directors is composed of women and/or minorities, family benefits, women/minority contracting, employment of the disabled, and progressive gay/lesbian policies. For employee strengths, the following characteristics are assigned a "1": strong union relations, no-layoff policy, cash profit sharing, employee involvement, and strong retirement benefits. Environmental strengths are given a "1" rating for the following qualitative characteristics: beneficial products and services, pollution prevention, recycling, alternative fuels, internal communications for environmental best practices, and above average environmental performance for industry.[1]

As in Anderson, et al (2003), the ratio of long-term debt to total assets is used to measure leverage. Harris and Raviv (1991) show that leverage is correlated with firm size and growth. Firm size is measured by annual returns, return on assets, and total sales. Goyal, Lehn, and Racic's (2002) proxy for growth, where growth equals capital expenditures divided by total assets, is employed. Industry is included as a control variable due to differences in optimal capital structure. In addition, cost of debt is measured using S&P's long-term domestic issuer credit rating and current credit rating (SPDRC and data item 280 in Compustat). The total number of observations in the panel dataset over the period 1993 to 2000 is 5,288 (661 firms in each panel-year). However, missing data for some firms in the panel reduces the sample size in the statistical analyses to 485 firms per firm-year.[2]

Industry definitions are described in Table 1. Industries are coded according to SIC number and divided into fifteen categories as in Sanning (2003). Any firm not listed as one of the fifteen industries is characterized as "non-classified." Descriptive statistics by industry are reported in Table 2. The means and medians are reported for annual returns, return on assets, leverage, the natural logarithm of net income, the natural logarithm of total sales, annual dividends, and growth by industry. Out of the sample, firms in the construction industry have the lowest leverage (average equals 0.06) while communications firms have the highest (0.31). Growth ranges from 0.036 (wholesale trade) to 0.128 (mining). Business services industry ranked highest in terms of annual return with 29.42% while wholesale trade yielded the smallest return (7.95%).

[1] For more information regarding each category, please see http://www.kld.com/research/ratings.html.
[2] Average sample size for regressions is 3,144 since lag lengths reduce number of usable years.

IV. Methodology and Results

The hypothesis in this paper states that a strong social responsibility score should be positively related to leverage, since agency costs of debt should decrease. This implies that agency cost of debt financing should be lower for firms with high levels of corporate social responsibility. This is tested using both parametric and non-parametric difference in means and medians tests.

The sample is divided into firms with social responsibility scores greater than the median (HISCORE = 1) and less than the median (HISCORE = 0). The sample is further divided into above- and below- median weighted social responsibility scores (W_HISCORE = 1, 0, respectively). For each classification, tests for differences in means and medians of both S&P long-term domestic issuer credit rating current (SPDRC) and S&P long-term domestic issuer credit rating (CREDIT) are performed. Both variables proxy for the cost of debt financing and lower scores imply good credit ratings. Results of the social responsibility score sample are reported in Panel A of Table 3. Both SPDRC and CREDIT means and medians are lower for firms that have high social responsibility scores than for firms with low CSR scores. Firms with high CSR scores (HISCORE = 1) have a mean SPDRC (CREDIT) of 9.603 (8.330) with corresponding median of 9.00 (8.00). Both means and medians are statistically significantly different between samples at the 0.01 level. Results from the weighted CSR sample are summarized in Panel B of Table 3. Again, both means and medians of SPDRC and CREDIT are statistically significantly different between firms with high weighted CSR scores (W_HISCORE = 1) and firms with low scores in the hypothesized direction.

Since agency costs of debt financing appear to be lower for firms with higher levels of corporate social responsibility, the causality between CSR and leverage is analyzed since differences in agency costs should impact optimal capital structure. To address the link between CSR and leverage, a Granger causality approach is utilized. This method, developed by Granger (1969) involves regression models in the form shown in equations (3) and (4).

$$SCORE_t = a_0 + a_1SCORE_{t-1} + a_2SCORE_{t-2} + a_3LEV_t + a_4LEV_{t-1} + a_5LEV_{t-2} + e_t \quad (3)$$

$$LEV_t = a_0 + a_1LEV_{t-1} + a_2LEV_{t-2} + a_3SCORE_t + a_4SCORE_{t-1} + a_5SCORE_{t-2} + e_t \quad (4)$$

If the coefficients a_3, a_4, or a_5 are significantly different from zero, one can conclude that leverage "Granger causes" social responsibility. Similarly, if coefficients b_3, b_4, or b_5 are significant, one can infer causality from CSR to leverage. AIC (Akaike's Information Criterion) can be used to determine optimal number of lag lengths. However, using additional lag lengths significantly reduces the sample size in a panel dataset, therefore, two lags are used for LEV, SCORE, and W_SCORE. Since SCORE and W_SCORE (and their lags) are qualitative variables by nature, these variables may result in biased coefficient estimates in OLS regression methodology. Since both variables have more than 3 levels (SCORE has 22 and W_SCORE is continuous on the order from -1.07 to 1.738), a multinomial logit model is not appropriate in this case. Table 4 provides descriptive statistics for each social responsibility score. As noted in Table 4, variables are transformed by taking the natural logarithm of SCORE + 12 and the natural logarithm of W_SCORE + 2 in order to create continuous variables. The constants 12 and 2 are added to create a positive value for SCORE and W_SCORE in cases where the variables

are negative.[3] Categorized social responsibility scores, including community, diversity, employee, and environment, are transformed into continuous variables by taking the natural log of each score as noted in Table 4. Several control variables are added in subsequent models including previous year's annual returns, return on assets, natural logarithm of total assets, growth, and industry.

Before discussing results, a comment on model specification is in order. The typical problem that arises in OLS regression when lagged dependent variables are included as regressors is serial correlation in the error terms, rendering the parameter estimates biased and inconsistent. Tests using the method of Maddala (1971) reveal that serial correlation is not a problem in the model.

Results from the OLS regression models are documented in Table 5. Each model uses a Granger causality specification. From each of the six models, there appears to be persistence in both social responsibility score (column 1), weighted SR score (column 3), and leverage (columns 2, 4, 5, and 6). In other words, one- and two-year lagged values of the dependent variables are significantly related to changes in the corresponding dependent variables. Leverage, however, does not appear to "Granger cause" CSR score (nor weighted CSR score), and CSR scores do not appear to Granger cause leverage. Adding control variables into the regression specifications does not change the relationship between leverage and CSR score, although control variables, including stock returns, ROA, total assets, and growth are highly significant in the model.

Using a panel dataset requires a fixed-effects regression approach to account for correlation in the error term. A fixed-effects regression model allows for estimating the effects of the independent variables on the dependent variable while holding constant the unobserved variables over time. Fixed-effects regression is incorporated into the Granger causality model specification using CSR score and leverage as dependent variables. Specifically, the model now includes *n* intercepts (*n* = number of firms in the panel dataset) that are represented by a set of indicator variables, as shown in equations (5) and (6) where $a_i = ß_0 + ß_1 Z_i$, and Z_i represents the

$$SCORE_t = a_0 + a_1 SCORE_{t-1} + a_2 SCORE_{t-2} + a_3 LEV_t + a_4 LEV_{t-1} + a_5 LEV_{t-2} + a_i + e_t \quad (5)$$

$$LEV_t = a_0 + a_1 LEV_{t-1} + a_2 LEV_{t-2} + a_3 SCORE_t + a_4 SCORE_{t-1} + a_5 SCORE_{t-2} + a_i + e_t \quad (6)$$

unobserved variable that varies from one firm to another but does not change over time. The variables $a_1, \ldots, a_n$ are treated as unknown intercepts to be estimated, one for each firm. In this model, the errors, e_t, are assumed to be uncorrelated over time, conditional on the independent variables.

Since overall corporate social responsibility score (and its weighted counterpart) may not detect nuances between different measures of CSR, Granger causality of four categories from KLD's Socrates database is analyzed. The KLD database rates companies on eight different screens of social responsibility. Each screen focuses on "strengths" and "concerns" of a particular social indicator. Strength ratings for community, diversity, employee relations, and environment are employed in the fixed-effects Granger causality models to see if separating several "stakeholder management" indicators from the overall social responsibility score provides a stronger

[3] As per Neter, Kutner, Nachsheim, and Wasserman (1996) page 132.

relationship with shareholder wealth. Specifically, the following regression models specified by equations (7) and (8) are analyzed, substituting the log of scores on employee relations, environment, diversity, and community for SRPERF, and using one- and two-year lags for each variable.

$$LEV_t = b_0 + b_1LEV_{t-1} + b_2LEV_{t-2} + b_3SRPERF_t + b_4SRPERF_{t-1} + b_5SRPERF_{t-2} + a_i + e_t \quad (7)$$

$$SRPERF_t = a_0 + a_1SRPERF_{t-1} + a_2SRPERF_{t-2} + a_3LEV_t + a_4LEV_{t-1} + a_5LEV_{t-2} + a_i + e_t \quad (8)$$

Results from fixed-effects models of Granger causality using leverage as the dependent variable are shown in Table 6. Consistent with the OLS regression results from Table 5, CSR score and weighted CSR score do not appear to Granger cause leverage since coefficients for current and lagged values are not statistically significant (Models 1 and 6 of Table 6). These results are not surprising since research has long showed inconclusive relationships between overall corporate social responsibility measures and firm-specific variables such as performance.

Separating total CSR score into four stakeholder areas, however, yields significant results. Specifically, in Model 3, the current value for firms' strength in diversity issues is positively and significantly (at the 5% level) related to leverage. Firms that engage in diversity strengthening issues, such as having women and minorities on the board of directors, tend to have more debt in the capital structure than firms that do not rank highly in diversity strength. Thus, diversity is said to Granger cause leverage.

The coefficient on current employee strength score (Model 4) is positive and significantly related to leverage at the 10% level. Additionally, the coefficient on one-year lagged employee strength score is negative and statistically significant (at the 10% level) in the model. The coefficient for environmental strength in Model 5 is positive and significant at the 5% level. From this result, it can be said that current environment strength ratings Granger causes leverage. Community strength (Model 2) is not significantly related to leverage. However, the positive influence on leverage from diversity, current employee, and environmental strength supports the hypothesis that stronger corporate social responsibility measures are related to higher levels of debt.

Table 7 reports results from fixed-effects models of Granger causality using the corporate social responsibility measures as dependent variables. Most notable in the models is the persistence of CSR variables over time. That is, lagged scores for CSR score and weighted score, community strength, employee strength and environmental strength are significantly related to current social responsibility measures. Granger causality from leverage to CSR score is not present in three of the six models in Table 6. However, coefficients on current leverage are positive and significant in Models 3, 4, and 5, indicating that leverage Granger causes diversity strength, employee strength, and environmental strength ratings. Again, the coefficient of one-year lagged leverage in Model 4 is negative and significant, indicating that as leverage increases, scores on employee strength tend to decline. These results complement Table 6, which shows that diversity, employee and environmental scores Granger causes leverage.

Since it appears that community strength is not causally related to leverage, focus is placed on the remaining categories of corporate social responsibility. In Table 8, control variables

including lagged returns, return on assets, natural logarithm of sales, and growth (capital expenditures divided by total assets) into the fixed-effects models of Granger causality are incorporated. In four of the six models, the strength and direction of the causal relationships remains the same, despite the addition of the control variables. In Models 3 and 4, the addition of the control variables appears to eliminate the Granger causality between employee strength and leverage as seen in Tables 6 and 7. The coefficient on leverage is positive and significant in Model 1, indicating Granger causality from leverage to diversity strength. Likewise, the coefficient on leverage in Model 5 is positive and significant, indicating Granger causality from leverage to environmental strength. Diversity and environmental strength are also said to Granger cause leverage as indicated in Models 2 and 6 where the coefficients for DIV_STR, and ENV_STR are significantly related to leverage at the .10 and .05 levels, respectively.

V. Conclusions

The literature on corporate social responsibility and firm performance has been, to a large extent, mixed and inconclusive. Neither have attempts to dissect overall CSR measures into smaller subgroups led to decisive results on the subject. In this paper, however, corporate social responsibility, in particular diversity, employee and environmental strength ratings, are documented as having an impact on agency cost of debt and subsequently, on optimal capital structure.

Using a panel data set of over 3,000 firm-year observations across a wide range of industries, the cost of debt financing is shown to be lower for firms with stronger corporate social responsibility ratings than for firms with low ratings. Further, using both OLS and fixed-effects models of Granger causality, overall social responsibility scores are shown to have no impact on leverage. When overall score is separated into smaller subgroups, however, firms with strong diversity and environmental ratings are shown to Granger cause leverage (and vice versa). Scores on employee concerns appear to be related to leverage, but when analyzed with control variables present in the model, the relationship is diluted. Community issues do not appear to be related to leverage.

These results support the hypothesis that firms with stronger corporate social responsibility ratings, particularly in areas of diversity and environment, have more debt financing than do firms with low CSR ratings. Since agency cost of debt financing is lowered due to adherence to other stakeholders outside of stockholders, the reduction causes a shift in Jensen and Meckling's (1976) optimal debt structure (increasing debt).

Several implications evolve from these results. First, shifts in agency costs of debt (or equity) can affect the optimal capital structure of the firm. Second, corporate social responsibility has strong effects on the agency cost of debt as opposed to firm performance. This implication is especially relevant to investors and managers who support corporate social responsibility yet see no immediate impact on performance. Third, research on agency problems should focus on alternative methods of alleviating costs between principals and agents, such as through corporate social responsibility. Fourth, diversity and environmental issues are important in leverage causality whereas community (and to some extent employee) issues are not. This understanding should focus future research in the subject of corporate social responsibility on areas pertaining to diversity and environmental issues and their impact on other corporate finance decisions.

References

Anderson, R. C.; S. A. Mansi, and D. M. Reeb (2003), "Founding Family Ownership and the Agency Cost of Debt," *Journal of Financial Economics* 68, 263-285.

Carroll, A. (1991), "CSP Measurement: A Commentary on Methods for Evaluating an Illusive Construct," *Research in Corporate Social Performance and Policy*, 12.

Fama, E. and M. Miller (1972), *The Theory of Finance* (Dryden Press, Hinsdale, IL).

Goyal, V., K. Lehn, and S. Racic (2002), "Growth Opportunities and Corporate Debt Policy: The Case of the U.S. Defense Industry," *Journal of Financial Economics* 64, 35-59.

Granger, C.W.J. (1969), "Investigating Causal Relations by Econometric Models and Cross-Spectral Methods," *Econometrica* 37, 428-438.

Harris, M., and A. Raviv (1991), "The Theory of Capital Structure," *Journal of Finance* 46, 297-355.

Harrison, J. S. and R. E. Freeman (1999), "Stakeholders, Social Responsibility, and Performance: Empirical Evidence and Theoretical Perspectives," *Academy of Management Journal* 42, 479-485.

Hillman, A., and G. Keim (2001), "Shareholder Value, Stakeholder Management, and Social Issues: What's the Bottom Line?" *Strategic Management Journal* 22, 125-139.

Jensen, M. and W. Meckling (1976), "Theory of the Firm: Managerial Behavior, Agency Costs, and Ownership Structure," *Journal of Financial Economics* 2, 305-360.

Maddala, G. S. (1971). "Generalized Least Squares with an Estimated Variance-Covariance Matrix," *Econometrica* 39, 23-33.

Mao, C. X. (2003), "Interaction of Debt Agency Problems and Optimal Capital Structure: Theory and Evidence," *Journal of Financial and Quantitative Analysis* 38, 399-423.

McGuire, J., A. Sundgren and T. Schneeweis (1988), "Corporate Social Responsibility and Firm Financial Performance," *Academy of Management Journal* 31, 854-872.

McWilliams, A. and D. Siegel (2000), "Corporate Social Responsibility: A Theory of the Firm Perspective," *Academy of Management Review* 26, 117-127.

Myers, S. (1977), "Determinants of Corporate Borrowing," *Journal of Financial Economics* 5, 147-175.

Neter, J., M. Kutner, C. Nachtsheim, and W. Wasserman (1996), *Applied Linear Statistical Models* (McGraw-Hill, Boston, MA).

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

Sanning, L. E. (2003), "Executive Stock Options and Leverage: Perverse Incentives or Optimal Contracting, a Test of Causality," Working Paper, Indiana University.

Waddock, Sandra A. and Samuel B. Graves (1997), "The Corporate Social Performance-Financial Performance Link," *Strategic Management Journal* 18, 303-319.

Figure 1: Optimal Capital Structure without Stakeholder Consideration

This figure shows Jensen and Meckling's (1976) model of agency costs and optimal capital structure. The x-axis measures the percentage agency cost per unit of leverage, on the y-axis. Leverage is measured as debt/(debt + equity). Agency costs of debt and equity are denoted by A_B and A_S, respectively. The dashed line denotes total agency costs and X marks the optimal capital structure where total agency costs are minimized.

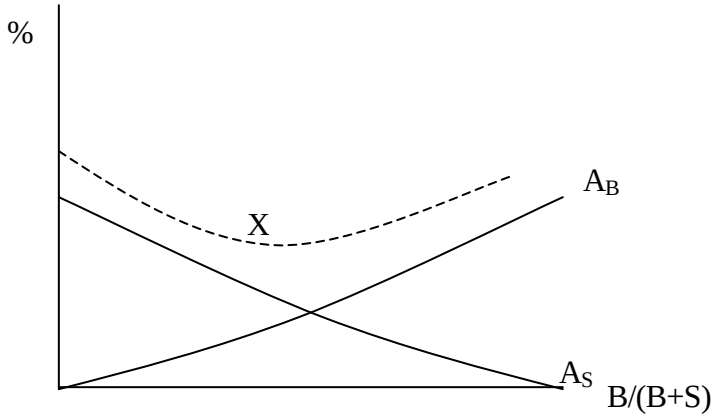

Figure 2: Optimal Capital Structure with Additional Stakeholder Agency Conflicts

This figure shows Jensen and Meckling's (1976) model of agency costs and optimal capital structure with the introduction of stakeholder relationships. The x-axis measures the percentage agency cost per unit of leverage, on the y-axis. Leverage is measured as debt/(debt + equity). Agency costs of debt and equity are denoted by A_B and A_S, respectively. The dashed curve denoted A'_B is the new agency cost of debt once stakeholder considerations are added to the model. The dashed line denotes total agency costs and X marks the optimal capital structure where total agency costs are minimized. The lower dashed line denotes the new total agency cost where X' is the new optimal capital structure (more debt financing).

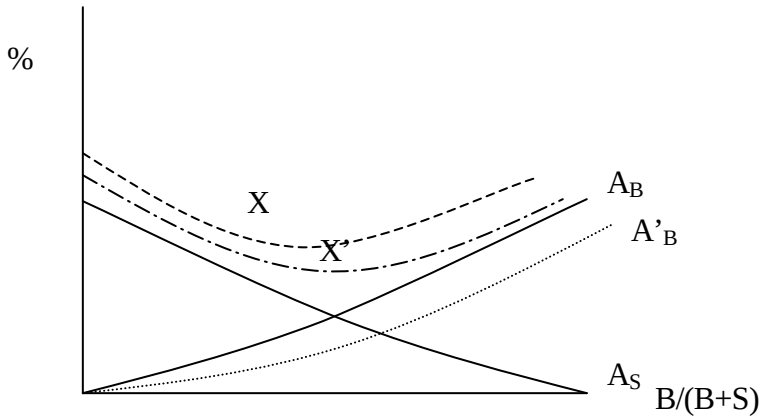

Table 1: Industry Definitions

This table displays the industry classifications used in this study. The SIC codes are used to identify the industry classification. Variable name is the name of the industry classification as used in this study. Firm-observations represents the number of firm-year observations within each industry in the sample over the years 1993 – 2000.

Industry	SIC	Variable name	Firm-observations
Mining	1000 – 1500	MINING	160
Construction	1600 – 1800	CONSTRUCT	16
Tobacco Products	2100 – 2200	TOBACCO	24
Textile Mill Products	2200 - 2400	TEXTMILL	80
Lumber and Wood Products	2400 - 2700	WOOD	208
Chemical & Rubber Products	3300 - 3500	CHEMICAL	456
Primary Metal Industries	3300 - 3500	METAL	160
Industrial Machinery & Equipment	3500 – 3700	EQUIP	656
Transportation Equipment	3700 – 3800	TRANS	168
Instrumentation Products	3800 – 3900	INSTR	192
Transportation	4000 – 4800	TRANSP	120
Communications	4800 – 4900	COMMUN	120
Wholesale Trade	5000 – 5200	WHOLETRADE	112
Retail Trade	5200 – 6000	RETAILTRADE	424
Business Services	7300 – 7500	BUSSVC	264
All Other Un-Classified	Else	NONCLASS	1672

Table 2: Descriptive Statistics by Industry

This table displays Mean, (Median), and *number of firm-year observations* for the sample used in this study separated by industry. RET is the annual common stock returns. ROA represents return on assets. LEV is calculated as long-term debt divided by total assets. LNI is the natural log of annual net income, while LSALES is the natural log of annual sales. DIV is the annual dividend paid (in dollars). GROWTH is calculated as capital expenditures divided by total assets.

Industry	RET	ROA	LEV	LNI	LSALES	DIV	GROWTH
MINING	11.810 (8.766) *122*	1.059 (2.452) *112*	0.217 (0.217) *160*	4.627 (4.687) *121*	6.980 (6.946) *152*	0.491 (0.283) *160*	0.128 (0.111) *152*
CONSTRUCT	12.770 (5.020) *11*	5.509 (6.614) *10*	0.060 (0.065) *16*	4.226 (4.334) *16*	8.071 (8.087) *16*	0.516 (0.455) *16*	0.095 (0.098) *16*
TOBACCO	18.336 (16.996) *23*	21.498 (10.180) *18*	0.198 (0.205) *18*	7.264 (6.552) *18*	8.966 (8.167) *18*	1.981 (1.660) *16*	0.039 (0.033) *18*
TEXTMILL	8.139 (6.206) *72*	6.505 (5.307) *66*	0.231 (0.214) *79*	3.702 (3.527) *69*	7.213 (7.126) *71*	0.441 (0.280) *80*	0.051 (0.046) *71*
WOOD	8.648 (6.270) *158*	5.858 (5.520) *145*	0.207 (0.193) *200*	4.828 (4.934) *177*	7.981 (7.915) *192*	0.826 (0.704) *199*	0.066 (0.065) *192*
CHEMICAL	14.792 (11.744) *381*	8.457 (7.860) *345*	0.153 (0.138) *447*	5.611 (5.517) *423*	8.059 (8.221) *453*	0.869 (0.680) *455*	0.069 (0.064) *442*
METAL	12.227 (7.915) *134*	5.583 (5.839) *125*	0.185 (0.175) *160*	4.906 (4.930) *143*	7.950 (8.042) *160*	0.709 (0.638) *160*	0.063 (0.054) *160*
EQUIP	28.402 (16.716) *434*	7.333 (6.729) *410*	0.127 (0.106) *638*	4.682 (4.718) *558*	7.313 (7.332) *618*	0.381 (0.150) *634*	0.072 (0.058) *618*
TRANS	11.522 (11.374) *135*	4.143 (4.531) *123*	0.170 (0.162) *158*	5.771 (5.853) *134*	8.832 (8.808) *150*	1.314 (0.940) *155*	0.052 (0.047) *150*
INSTR	20.661 (16.912) *116*	7.687 (6.974) *109*	0.131 (0.112) *185*	4.738 (4.772) *171*	7.252 (7.264) *187*	0.416 (0.200) *185*	0.049 (0.042) *186*
TRANSP	13.379 (9.748) *101*	3.463 (3.841) *95*	0.253 (0.233) *119*	5.496 (5.779) *105*	8.386 (8.247) *119*	0.533 (0.300) *119*	0.120 (0.105) *119*
COMMUN	21.232 (10.526) *60*	5.241 (5.860) *54*	0.313 (0.283) *107*	6.313 (6.859) *87*	8.533 (9.157) *107*	0.858 (0.740) *106*	0.105 (0.109) *107*
WHOLETRADE	7.954 (8.413) *75*	5.968 (6.622) *69*	0.164 (0.179) *111*	4.615 (4.989) *99*	8.327 (8.592) *111*	0.560 (0.560) *112*	0.036 (0.031) *111*
RETAILTRADE	12.708 (6.884) *297*	7.898 (7.552) *264*	0.171 (0.154) *419*	5.005 (5.116) *393*	8.372 (8.568) *420*	0.308 (0.180) *420*	0.100 (0.094) *407*
BUSSVC	29.420 (22.218) *118*	7.551 (6.291) *110*	0.073 (0.018) *239*	4.864 (4.941) *219*	7.140 (7.397) *246*	0.244 (0.000) *244*	0.048 (0.041) *244*
NONCLASS	17.062 (14.025) *1097*	4.407 (3.338) *959*	0.205 (0.201) *1628*	5.422 (5.613) *1473*	7.962 (8.040) *1563*	0.963 (0.870) *1627*	0.048 (0.042) *1276*

Table 3: Credit Ratings and Social Responsibility

This table reports the results of differences in means and medians tests. Panel A uses the sample of firms divided between above-median CSR score and below-median CSR score (HISCORE = 1 and HISCORE = 0, respectively). Panel B uses the sample of firms divided between above-median weighted CSR score and below-median weighted CSR score (W_HISCORE = 1 and W_HISCORE = 0, respectively). SPDRC represents S&P's long-term domestic issuer credit rating (current), while CREDIT represents S&P's long-term domestic issuer credit rating. Test statistics from difference in means tests (t) and Wilcoxon-rank sum (Z) are reported. *,**,*** represents statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A

	HISCORE	n	Mean	Median	Difference (1 – 0) Mean/ Median	t/Z
SPDRC	0	2304	10.439	10.00		
	1	1216	9.603	9.00	0.836 / 1.00	7.77***/8.55***
CREDIT	0	1924	9.312	9.00		
	1	1165	8.330	8.00	0.983 / 1.00	9.42***/9.99***

Panel B

	W_HISCORE	n	Mean	Median	Difference (1 – 0) Mean/ Median	t/Z
SPDRC	0	2151	10.535	10.00		
	1	1369	9.545	9.00	0.990 / 1.00	9.47***/10.30***
CREDIT	0	1774	9.378	9.00		
	1	1315	8.353	8.00	1.025 / 1.00	10.05***/10.72***

Table 4: Descriptive Statistics of Social Responsibility Scores

This table displays mean, number of firm-year observations, minimum, and maximum values for each social responsibility score type as per the KLD Socrates database. Transformation describes the transformation of each variable for use in the regressions that follow.

	N	Mean	Minimum	Maximum	Transformation
SCORE	3966	0.2426	-11	11	Log(SCORE + 12)
W_SCORE	3963	0.1096	-1.07	1.738	Log(W_SCORE + 2)
COM_STR	3966	0.4123	0	4	Log(COM_STR)
DIV_STR	3966	0.7234	0	7	Log(DIV_STR)
EMP_STR	3966	0.5305	0	4	Log(EMP_STR)
ENV_STR	3966	0.2989	0	4	Log(EMP_STR)

Table 5: Multiple Regression of Social Responsibility and Leverage

This table reports the coefficients (t-statistics in parentheses) from six OLS regression calculations. Sample period is from 1993 to 2000. SCORE represents the log of the overall social responsibility score from the KLD Socrates Database + 12, while W_SCORE is the log of the *weighted* social responsibility score from the database + 2. LEV is calculated as long-term debt divided by total assets. RET is the annual common stock returns. ROA represents return on assets. LEV is calculated as long-term debt divided by total assets. LTA is the natural log of annual total assets. GROWTH is calculated as capital expenditures divided by total assets. INDUSTRY is a dummy variable representing 16 industries used in the study. *,**,*** represents statistical significance at the 10%, 5%, and 1% levels, respectively.

	SCORE	LEV	W_SCORE	LEV	LEV	LEV
INTERCEPT	0.120 (3.03)***	0.020 (12.02)***	0.218 (8.95)***	0.182 (1.83)*	0.009 (2.14)**	0.138 (1.30)
SCORE		0.000 (0.07)			0.000 (0.17)	
$SCORE_{t-1}$	0.812 (45.35)***	-0.001 (-0.97)			-0.001 (-0.90)	
$SCORE_{t-2}$	0.109 (5.94)***	0.001 (0.73)			0.000 (0.33)	
LEV	0.028 (0.07)		0.002 (0.46)			
LEV_{t-1}	-0.021 (-0.04)	0.876 (48.21)***	-0.007 (-1.11)	0.855 (41.67)***	0.860 (44.74)***	0.849 (39.36)***
LEV_{t-2}	-0.343 (-0.84)	0.026 (1.47)	-0.001 (-0.16)	0.050 (2.46)**	0.041 (2.21)**	0.057 (2.68)***
W_SCORE				0.38 (0.46)		0.040 (0.47)
W_SCORE_{t-1}			0.828 (41.60)***	-0.069 (-0.66)		-0.061 (-0.56)
W_SCORE_{t-2}			0.085 (4.14)***	-0.032 (-0.39)		-0.029 (-0.33)
RET_{t-1}					-0.000 (-3.97)***	-0.0001 (-3.37)***
ROA_{t-1}					0.000 (1.74)*	0.0004 (2.15)**
LTA_{t-1}					0.000 (3.44)***	0.0003 (0.43)
$GROWTH_{t-1}$					0.040 (1.84)*	0.039 (1.56)
INDUSTRY					0.000 (1.03)	-0.00001 (-0.04)
N	3132	3132	2445	2445	2889	2246
F-statistic	2272.17***	2925.47***	1899.17***	2154.92***	1352.36***	983.40***

Table 6: Granger Causality of Leverage

This table shows the results of fixed-effects models of Granger causality. Sample is from 1993 – 2000. LEV is calculated as long-term debt divided by total assets. The independent variables (current, one-year, and two-year lag) are: SCORE, which represents the log of the overall social responsibility score from the KLD Socrates Database + 12, W_SCORE, which is the log of the *weighted* social responsibility score from the database +2, and the log of each of KLD's measures for community strength (COM_STR), diversity strength (DIV_STR), employee strength (EMP_STR), and environment strength (ENV_STR). If an independent is significant in the model, it is said to "Granger cause" leverage. t-values in parentheses. *,**, and *** represent statistical significance at the 10%, 5%, and 1% levels, respectively.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
INTERCEPT	0.088 (3.29)***	0.059 (1.63)	-0.011 (-0.23)	0.072 (2.29**	0.002 (0.05)	-0.279 (-0.94)
LEV_{t-1}	0.593 (29.92)***	0.593 (29.93)***	0.592 (29.83)***	0.594 (30.02)***	0.590 (29.75)***	0.470 (20.48)***
LEV_{t-2}	-0.069 (-3.44)***	-0.068 (-3.40)***	-0.069 (-3.44)***	-0.069 (-3.47)***	-0.067 (-3.37)***	-0.055 (-2.40)**
SCORE	0.006 (0.71)					
$SCORE_{t-1}$	-0.006 (-0.61)					
$SCORE_{t-2}$	0.000 (-0.04)					
W_SCORE						0.117 (1.28)
W_SCORE_{t-1}						0.071 (0.72)
W_SCORE_{t-2}						-0.033 (0.36)
COM_STR		-0.002 (-0.09)				
COM_STR_{t-1}		0.018 (0.91)				
COM_STR_{t-2}		0.0008 (0.05)				
DIV_STR			0.041 (2.07)**			
DIV_STR_{t-1}			-0.029 (-1.27)			
DIV_STR_{t-2}			0.035 (1.61)			
EMP_STR				0.030 (1.76)*		
EMP_STR_{t-1}				-0.034 (-1.74)*		
EMP_STR_{t-2}				0.013 (0.79)		
ENV_STR					0.055 (2.55)**	
ENV_STR_{t-1}					0.009 (0.38)	
ENV_STR_{t-2}					-0.012 (-0.59)	
N	3133	3133	3133	3133	3131	2445
F-statistic	231.97***	232.12***	233.92***	232.95***	234.52***	99.04***

Table 7: Granger Causality of Corporate Social Responsibility Measures

This table shows the results of six fixed effects models of Granger causality. Sample is from 1993 – 2000. LEV is calculated as long-term debt divided by total assets. The following independent variables (current, one-year, and two-year lag) are included: SCORE, which represents the log of the overall social responsibility score from the KLD Socrates Database + 12, W_SCORE, which is the log of the *weighted* social responsibility score from the database +2, and the log of each of KLD's measures for community strength (COM_STR), diversity strength (DIV_STR), employee strength (EMP_STR), and environment strength (ENV_STR). If an independent is significant in the model, it is said to "Granger cause" leverage. t-values in parentheses. *,**, and *** represent statistical significance at the 10%, 5%, and 1% levels, respectively.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	SCORE	COM_STR	DIV_STR	EMP_STR	ENV_STR	W_SCORE
INTERCEPT	1.454 (27.94)***	1.037 (30.51)***	0.981 (22.96)***	0.834 (26.26)***	0.919 (30.37)***	1.712 (27.77)***
LEV	0.031 (0.71)	-0.002 (-0.09)	0.040 (2.07)**	0.039 (1.76)*	0.045 (2.55)**	0.007 (1.28)
LEV_{t-1}	-0.012 (-0.23)	-0.021 (-0.83)	0.033 (1.43)	-0.049 (-1.89)*	0.005 (0.22)	-0.006 (-0.99)
LEV_{t-2}	-0.002 (-0.04)	-0.015 (-0.69)	-0.011 (-0.54)	0.001 (0.05)	-0.017 (-0.96)	0.002 (0.33)
$SCORE_{t-1}$	0.479 (24.12)***					
$SCORE_{t-2}$	-0.066 (-3.42)***					
COM_STR_{t-1}		0.459 (23.89)***				
COM_STR_{t-2}		-0.071 (-3.75)***				
DIV_STR_{t-1}			0.510 (24.69)***			
DIV_STR_{t-2}			0.034 (1.59)			
EMP_STR_{t-1}				0.575 (29.97)***		
EMP_STR_{t-2}				-0.062 (-3.24)***		
ENV_STR_{t-1}					0.571 (30.59)***	
ENV_STR_{t-2}					-0.125 (-6.85)***	
W_SCORE_{t-1}						0.422 (18.81)***
W_SCORE_{t-2}						-0.108 (-4.91)***
N	3133	3133	3133	3133	3131	2445
F-statistic	129.77***	127.80***	195.00***	226.20***	213.95***	72.68***

Table 8: Granger Causality between Leverage, Diversity and Environment

This table shows the results of four fixed-effects models of Granger causality. Sample is from 1993 – 2000. LEV is calculated as long-term debt divided by total assets. The following independent variables (current, one-year, and two-year lag) are included: the log of KLD's measures for diversity strength (DIV_STR), employee strength (EMP_STR), and environment strength (ENV_STR). Control variables are: RET, the annual common stock returns, ROA, return on assets, LSALES, the natural log of annual sales and GROWTH, which is calculated as capital expenditures divided by total assets. If an independent is significant in the model, it is said to "Granger cause" social responsibility measure. t-values in parentheses. *,**, and *** represent statistical significance at the 10%, 5%, and 1% levels, respectively.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	DIV_STR	LEV	EMP_STR	LEV	ENV_STR	LEV
INTERCEPT	0.876 (19.01)***	-0.067 (-1.30)	0.775 (18.27)***	-0.022 (-0.55)	0.937 (24.07)***	-0.086 (-1.83)*
LEV	0.034 (1.74)*		0.026 (1.17)		0.046 (2.48)**	
LEV_{t-1}	0.028 (1.19)	0.571 (27.12)***	-0.040 (-1.49)	0.573 (27.22)***	0.001 (0.03)	0.569 (27.05)***
LEV_{t-2}	-0.014 (-0.68)	-0.048 (-2.29)**	-0.009 (-0.39)	-0.048 (-2.32)**	-0.018 (-0.92)	-0.046 (-2.21)**
DIV_STR		0.036 (1.74)*				
DIV_STR_{t-1}	0.485 (22.36)***	-0.038 (-1.55)				
DIV_STR_{t-2}	0.006 (0.28)	0.026 (1.12)				
EMP_STR				0.021 (1.17)		
EMP_STR_{t-1}			0.561 (28.19)***	-0.032 (-1.55)		
EMP_STR_{t-2}			-0.071 (-3.55)***	0.009 (0.53)		
ENV_STR						0.055 (2.48)**
ENV_STR_{t-1}					0.566 (28.90)***	0.004 (0.18)
ENV_STR_{t-2}					-0.126 (-6.57)***	-0.021 (-1.01)
RET_{t-1}	0.00005 (0.17)	-0.00007 (-2.47)**	0.00002 (0.69)	-0.00008 (-2.53)**	0.00002 (0.73)	-0.00007 (-2.48)**
ROA_{t-1}	0.0005 (1.95)*	-0.0002 (-0.84)	0.00009 (0.33)	-0.0002 (-0.76)	-0.0002 (-0.71)	-0.0002 (-0.76)
$LSALES_{t-1}$	0.027 (7.61)***	0.012 (3.34)***	0.012 (3.17)***	0.014 (3.90)***	-0.0009 (-0.29)	0.014 (3.93)***
$GROWTH_{t-1}$	-0.049 (-1.21)	0.078 (1.85)*	-0.034 (-0.72)	0.079 (1.87)*	0.013 (0.35)	0.077 (1.83)*
N	2890	2890	2890	2890	2889	2889
F-statistic	111.77***	123.94***	112.34***	123.65***	105.55***	124.66***