The Effects of Corporate Governance on Firms' Credit Ratings

Hollis Ashbaugh
University of Wisconsin – Madison
hashbaugh@bus.wisc.edu

Daniel W. Collins *
University of Iowa
daniel-collins@uiowa.edu

Ryan LaFond
University of Wisconsin – Madison
rzlafond@wisc.edu

March 2004
Revised, June 2004

———————————

* Corresponding author

The Effects of Corporate Governance on Firms' Credit Ratings

Abstract

Using a framework for evaluating corporate governance recently developed by Standard & Poor's, this study investigates whether firms that exhibit strong governance benefit from higher credit ratings relative to firms with weaker governance. We document, after controlling for risk characteristics, that firm credit ratings are: (1) negatively associated with the number of blockholders that own at least a 5% ownership in the firm; (2) positively related to weaker shareholder rights in terms of takeover defenses; (3) positively related to the degree of financial transparency; and (4) positively related to over-all board independence, board stock ownership and board expertise, and negatively related to CEO power on the board. We also provide evidence that CEOs of firms with speculative grade credit ratings are overcompensated to a greater degree than their counterparts at firms with investment grade ratings, and that the overcompensation exceeds the CEO's share of additional debt costs related to lower credit ratings. Our study provides insights into the characteristics of governance that are likely to affect the cost of debt financing and provides one explanation for why some firms continue to operate with weaker governance when doing so may mean lower credit ratings.

The Effects of Corporate Governance on Firms' Credit Ratings

I. Introduction

This paper investigates whether firms that possess strong corporate governance benefit from higher overall credit ratings relative to firms with weak governance. Firms' overall credit ratings reflect a rating agency's opinion of an entity's overall creditworthiness and its capacity to satisfy its financial obligations (Standard and Poor's 2004). Credit agencies are concerned with governance because weak governance can impair a firm's financial position and leave debt stakeholders (hereafter referred to as bondholders) vulnerable to losses (FitchRatings 2004). To structure our analysis, we adopt the framework recently developed by Standard and Poor's for rating firms' corporate governance structures and practices (Standard & Poor's 2002). The S&P Corporate Governance Scoring system focuses on four major components: Ownership Structure and Influence, Financial Stakeholder Rights and Relations, Financial Transparency and Information Disclosure, and Board Structure and Processes The governance attributes we examine within each of these components are designed to increase the monitoring of management's actions to promote effective decision making, limit their opportunistic behavior and reduce the information asymmetry between the firm and its lenders. We investigate what effect, if any, these governance features have on firms' overall credit ratings.

Our analysis yields several key findings. First, we find variables that capture each of the four major components of corporate governance enumerated above help explain overall credit ratings after controlling for firm characteristics that prior research has shown to be related to debt ratings. Specifically, we find that firms' overall credit ratings are: (1) negatively associated with the number of blockholders that own at least a 5% ownership in the firm; (2) positively related to weaker shareholder rights in terms of takeover defenses; (3) positively related to the degree of financial transparency; and (4) positively related to over-all board independence, board stock ownership, board expertise, and negatively related to CEO power on the board. To provide an indication of the economic significance of our results, we find that moving from the lower quartile to the upper quartile of the governance variables nearly

1

doubles a firm's likelihood of receiving an investment grade credit rating--from .48 to .92.[1] During the time frame of our analysis, the average yield for firms with investment grade debt with a ten year maturity was approximately 6.00%. In contrast, the average yield for firms with speculative grade debt with a ten year maturity was approximately 14.0%. This 800-basis point spread translates into an annual interest cost differential of $74.7 million for the median firm in our sample with $934 million of outstanding debt.

Our results suggest that weak governance can result in firms incurring higher debt financing costs. So why are some firms willing to bear additional debt costs by not practicing good governance? We approach this question by considering how CEOs can appropriate rents from weak governance. One way CEOs can appropriate these rents is through excess compensation. To investigate this conjecture, we estimate CEO excess compensation following the work of Core, Holthausen and Larcker (1999). We document that CEOs of firms with weaker governance (greater CEO power or management entrenchment) receive more excess compensation relative to the CEOs of firms with stronger governance (less management entrenchment). Furthermore, we show that firms with speculative grade debt have a greater propensity to overcompensate their CEOs than do firms with investment grade debt. For firms with speculative grade credit ratings, we then compare CEO excess compensation to their share of additional debt costs that these firms bear due to weak governance. We find that the median excess compensation far outweighs the CEO's share of the additional after-tax interest cost from having speculative grade debt versus investment grade debt, thus providing one explanation for why all firms do not practice good governance.

This paper makes several contributions to the extant literature on corporate governance. Much of the prior literature that investigates the effect of various corporate governance mechanisms focuses on equity financing (McConnell and Servaes, 1990; Yermack, 1996; Karpoff, Malatesta and Walkling, 1996;

---

[1] For purposes of this analysis, we hold the firm characteristic variables (ROA, LEV, SIZE, etc.) constant at the mean values for the sample. For those governance attributes found to be positively (negatively) related to credit ratings, our benchmark probability is determined by assigning governance values equal to the first (third) quartile and then moving to the third (first) quartile value. For governance attributes measured as 0-1 dummy variables, the benchmark probability is determined with the zero (one) value when the governance attribute is positively (negatively) related to credit ratings.

Gompers, Ishii and Metrick, 2003). Two recent studies investigate the effects of corporate governance on debt ratings and cost of debt financing, but restrict their analysis to a limited set of governance variables. Sengupta (1998) finds a negative relationship between firms' disclosure quality ratings and the cost of debt financing as reflected in realized yields on new debt issues. Bhojraj and Sengupta (2003) find that firms with a higher percentage of outside directors on the board and with greater institutional ownership enjoy lower bond yields and higher ratings on their new debt issues. We extend these two studies by considering a broader set of governance variables thereby providing a more comprehensive analysis of the relevance of corporate governance from the perspective of bondholders.

Our study also provides insights into the potential conflict between bondholders and shareholders in terms of governance features. Although generally aligned, the interests of bondholders and shareholders can diverge when there are differing stakes in firm performance and differing views on management's investment policies (FitchRatings, 2004). Gompers, et al. (2003) find that firms with stronger shareholder rights have higher share values and enjoy a lower cost of equity capital. In this study, we find that firms with stronger shareholder rights have lower credit ratings implying a higher cost of debt financing. Our study is one of the first to demonstrate that governance mechanisms that benefit shareholders may do so at the expense of bondholders.[2] Thus, governance mechanisms designed to give more power to shareholders can have wealth redistribution effects that leave bondholders worse off.

The remainder of the paper is organized as follows. Section II briefly describes the role of governance in mitigating agency conflicts between bondholders and management and between bondholders and stockholders. Section III sets forth the framework recently adopted by Standard and Poor's for evaluating the strength of firms' corporate governance mechanisms and develops empirical proxies to capture various elements within this framework. Section IV describes our sample, data sources, and variable measurements and provides descriptive statistics. Section V presents the empirical models used to investigate the relation between various corporate governance mechanisms and firms' credit ratings along

---

[2] Our results are consistent with a concurrent study by Klock, Mansi and Maxwell (2004) who find that firms with stronger anti-takeover provisions (weaker shareholder rights) enjoy a lower cost of debt financing relative to firms with weaker anti-takeover provisions.

with the main empirical results. In Section VI we present evidence on CEO excess compensation related to weak governance, address endogeneity issues, and conduct sensitivity analyses. Section VII concludes and offers suggestion for future research.

II. Why Governance Matters to Bondholders and Credit Rating Agencies.

Firm credit ratings are determined by rating agencies' assessment of the probability distribution of future cash flows to bondholders, which in turn, depends on the future cash flows to the firm. Under the assumption of normality, this reduces to estimating the mean and variance of a firm's future cash flows. A firm's creditworthiness is determined by assessing the likelihood that its future cash flows will be sufficient to cover debt service costs and principal payments. As the mean of the future cash flow distribution shifts downward or the variance of future cash flows increases, the likelihood of default increases and the firm's credit rating will decline.

Within the Jensen and Meckling (1976) agency theory framework, governance features impact credit ratings by controlling agency costs that result from conflicts between managers and all stakeholders as well as between bondholders and shareholders. Many of the governance features we examine are designed to reduce the agency conflict between managers and all stakeholders. Governance mechanisms that provide independent monitoring of management promote effective managerial decision making that increases firm value (e.g., investing in positive NPV projects) and guard against opportunistic management behavior that decreases firm value (e.g., over-consumption of perks, overcompensation, shirking and over-investing). Governance mechanisms promoting better managerial decision making and limiting opportunistic behavior benefit all stakeholders. We posit that if governance is weak, the firm's distribution of future cash flows will shift to the left relative to what it would be with effective governance. This increases the likelihood of default resulting in a lower credit rating.

Shareholder and bondholder interests are generally aligned when better monitoring of management occurs. However, certain elements of corporate governance have a more ambiguous impact on bondholders (FitchRatings, 2004). For example, some features of governance can place greater power in the hands of shareholders (or selected subsets of shareholders) who can assert their influence to obtain

preferential treatment at the expense of other stakeholders (e.g., greenmail or targeted share repurchases [Dann and DeAngelo, 1983]). Alternatively, shareholders can use their power to encourage management to undertake risky investments or engage in ownership changes that can harm bondholder interests. Taking on risky projects presents the classic conflict between bondholders and shareholders that can increase the likelihood of default, resulting in lower credit ratings. Some of the governance features we consider below (e.g., shareholder rights) have the potential for effecting wealth transfers between bondholders and shareholders. Hence, while beneficial from the shareholders perspective, certain governance features potentially can be harmful to bondholders.[3] Or, alternatively, governance features that weaken shareholder rights may actually be viewed positively from the bondholder's perspective.

In sum, the governance variables introduced in the next section proxy not only for the agency conflicts between outside stakeholders (stockholders and bondholders) and management, but also potential conflicts between bondholders and stockholders that can result in wealth transfer effects between these two stakeholder groups.

III. Framework for Evaluating Corporate Governance

The recent increased interest in corporate governance as a result of monumental market failures has prompted various credit rating agencies to develop more comprehensive and formal ways of evaluating firms' governance practices [Standard & Poor's, 2002; FitchRatings, 2004). In July 2002, Standard and Poor's (S&P) implemented its Corporate Governance Scoring (CGS) system. CGSs are based on over one hundred standardized questions designed to measure the quality or strength of a firm's corporate governance practices. In outlining their criteria for evaluating corporate governance strength, S&P states: "A company Corporate Governance Score (CGS) reflects Standard and Poor's assessment of a company's corporate governance practices and policies and the extent to which these serve the interests of the company's financial stakeholders" (Standard & Poor's 2002, p. 4). However, S&P is quick to point out

---

[3] For example, shareholders will only approve mergers or acquisitions that serve their interests. But bondholders do not always benefit under all takeover scenarios (see Asquith and Wizman 1990, and Warga and Welch 1993). So giving shareholders greater power to determine ownership changes may well be viewed as an additional risk factor by bondholders and rating agencies

"while corporate governance can affect a company's creditworthiness and equity attractiveness, the score does not itself express an opinion about a company's credit quality or share valuation" (Standard & Poor's 2002, p. 5). Thus, while it is clear that S&P views a firm's corporate governance as an important input into its assessment of a firm's creditworthiness, the quality of corporate governance is not a sufficient statistic for determining a firm's credit rating. Moreover, which elements of governance are most important in assessing firms' creditworthiness is very much an open question.

The S&P framework encompasses the major relevant dimensions of corporate governance and provides a useful template for evaluating firms' corporate governance mechanisms and structure.[4] The S&P framework is comprised of four major components, which we now discuss along with the empirical proxies used to capture the major elements within each category.

III.1 Ownership Structure and Influence

Typically, corporate governance is viewed from the perspective that publicly traded firms have dispersed shareholders who demand governance to protect their residual claims. Ownership structure is an important element of corporate governance, especially when there are large blockholders or significant institutional ownership in the firm. Jensen (1993) and Shleifer and Vishny (1997) argue that blockholders or institutional investors that hold large debt or equity positions in a company are important to a well-functioning governance system because they have the financial interest and independence to view firm management and policies in an unbiased way, and they have the power to put pressure on management if they observe self-serving behavior. Consistent with this view, Gordon and Pound (1993) find that the structure of share ownership significantly influences voting outcomes on shareholder-sponsored proposals to change corporate governance structure. Outside blockholders and institutions (when institutional holdings are relatively concentrated) tend to align with the proposal sponsor, while insiders and outside directors who hold significant stock positions tend to align strategically with management, who often oppose the shareholder-sponsored proposals. Nesbitt (1994) finds that firms targeted by the California

---

[4] While we would like to use CGSs in our analysis, these scores are propriety and only made public with permission of the firms that have agreed to be evaluated. To date, only one U.S. company, Fannie Mae, has agreed to make its CGS public.

Public Employees' Retirement System (CalPERS) experience positive long-run stock returns, and Opler and Sokobin (1997) find that firms experience above-market performance the year after being targeted by the Council of Institutional Investors. These results suggest that blockholders and active institutional shareholders lead to more efficient monitoring of management, which benefits all shareholders. To the extent that blockholder and institutional investor monitoring leads to less managerial opportunistic behavior, bondholders will also benefit from these ownership concentrations.

A competing view in the literature (see e.g., Bhojraj and Sengupta 2003), suggests that concentrated ownership allows blockholders to exercise undue influence over management and that blockholders will use this influence to secure benefits that are detrimental to other providers of capital including bondholders. For example, large shareholders can exercise their influence to force managers to take on more risky investments where shareholders receive the benefits of successful outcomes, but bondholders bear a disproportionate share of the failures.

We capture the ownership effects of governance with three variables. BLOCK is the number of outside blockholders that own 5% or more of a firm's outstanding voting stock.[5] %INST measures the percentage of shares held by institutional investors. The relation between these two ownership structure variables and firm credit ratings depends on whether these ownership concentrations, on average, are beneficial to bondholders or further the interests of shareholders at the expense of bondholders. Because we have no way of predicting, a priori, which effect is likely to dominate, we leave the prediction on these two variables unsigned. The third variable, %INSIDE, is the percentage of shares held by officers or directors.[6] We predict that %INSIDE will be negatively related to RATING under the assumption that insiders will use their voting power to expropriate firm resources for their personal benefit or resist

---

[5] An alternative construct to capture the power of significant ownership is to use the percentage of shares held by the largest shareholder. Board Analyst has a variable labeled dominant shareholder, which reflects whether the firm has a shareholder holding a significant proportion of shares. There are 151 of our 906 sample firms that have a dominant shareholder owning more than 10% of the outstanding shares. When we estimate our model that includes a dummy variable that captures firms that have a dominant shareholder, we find the coefficient on the dominant shareholder variable to be insignificant.

[6] Although this measure includes holdings by both officers and directors, the vast majority of %INSIDE is made up of officer shareholdings. Thus, we expect this measure to largely proxy for managements' self-interests rather than board member incentives to monitor the actions of management.

shareholder-sponsored proposals to increase the monitoring of their actions (Gordon and Pound, 1993), both of which are likely to lead to greater agency risks for bondholders. In addition, we predict a negative relation between %INSIDE and RATING because increasing insider ownership results in stronger incentives for officers and managers, as residual claimants, to invest in projects that have very high returns when successful but have very low probabilities of success (Jensen and Meckling, 1976); projects that increase bondholders' risk due to the differential payoff structure between bondholders and shareholders.

III.2 Financial Stakeholder Rights and Relations

Financial stakeholder relations reflect a company's treatment of its debt and equity stakeholders and the balance of power between these stakeholder groups and management. A key element of this dimension of corporate governance is whether the company maintains a level playing field for corporate control and whether it is open to changes in management and ownership that provide increased shareholder value. However, provisions that provide increased shareholder value do not necessarily translate into increased bondholder value as we will see. Takeover defenses and other restrictions of shareholder rights like staggered terms of directors, golden parachutes for management, supermajority voting requirements for approval of mergers and ownership changes, and limits on shareholders' ability to meet and act places more power in the hands of management vis-à-vis shareholders and can make it difficult to remove management. Governance mechanisms tilted in favor of management can lower overall firm value, resulting in losses to both shareholders and bondholders. However, giving greater power to shareholders to determine changes in ownership control does not necessarily always make bondholders better off (FitchRatings, 2004). For example, Asquith and Wizman (1990) and Warga and Welch (1993) find that pre-buyout bondholders suffer significant wealth losses in leveraged buyouts. Billett, King and Mauer (2004) examine the impact of takeover announcements on bondholder wealth using a sample of 940 mergers and acquisitions during the period 1979-1997 and find that acquiring firm bondholders earn significantly negative announcement period returns. These results suggest that bondholders do not always benefit under all takeover scenarios. Therefore, governance mechanisms that

limit takeovers may actually be viewed positively by bondholders and credit rating agencies. Consistent with this conjecture, Klock, Mansi and Maxwell (2004) find that firms with stronger anti-takeover provisions (weaker shareholder rights) have a lower cost of debt financing relative to firms with weaker anti-takeover provisions.

Using the incidence of 24 governance provisions, Gompers, et al. (2003) construct a 'Governance Index', referred to as a G_SCORE, to measure the power-sharing relationship between investors and management. The 24 provisions are broken down into five categories: (1) tactics for delaying hostile bids; (2) voting rights; (3) director/officer protection; (4) other takeover defenses; and (5) state takeover laws. Higher G_SCORES indicate lower shareholder rights and greater management power.[7] We use the Gompers, et al. G_SCORE metric to proxy for the stakeholder rights component of governance. However, given the mixed evidence on whether greater shareholder power translates into benefits for bondholders or potential conflict of interests between shareholders and bondholders, we make no directional prediction for this variable.

III.3 Financial Transparency and Information Disclosure

Transparent financial reporting is critical to reducing the information asymmetry between the firm and its capital suppliers. Sengupta (1998) conjectures that firms with more timely and informative disclosures are perceived to have a lower likelihood of withholding value-relevant unfavorable information, and, as a result, are expected to be charged a lower risk premium by creditors. Consistent with this prediction, he finds that firms with higher AIMR disclosure ratings enjoy a lower effective interest cost of issuing new debt. As AIMR disclosure ratings are no longer available, we use a market-based proxy for financial transparency and timeliness of disclosure that we label FIN_TRANS.[8] We

---

[7] Using a sample of 1500 firms during the 1990s, Gompers, et al. find that taking a long position in firms with the strongest shareholder rights and a short position in firms with the weakest shareholder rights yields an average abnormal return of 8.5 percent per year. Moreover, they find that firms with stronger shareholder rights had higher firm value, higher profits, higher sales growth, lower capital expenditures, and lower corporate acquisitions suggesting that these firms largely avoided the over-investment problem that often occurs with entrenched management and weak governance (Jensen, 1993).

[8] To validate this construct, we correlate FIN_TRANS measured in earlier periods with AIMR disclosure ratings of similar periods and find the correlations to be significant in the expected direction.

describe the measurement of FIN_TRANS in detail in Section IV. In brief, FIN_TRANS is the squared residual from regressing returns on earnings allowing for separate intercepts and slopes for profit and loss firms (Gu, 2002). Earnings that better articulate with market returns are deemed to be more transparent and timely in that they better reflect the economic events that are priced by the market. A high squared residual indicates that earnings are less transparent/timely. To facilitate the interpretation of this variable, we multiply it by negative one and predict a positive relation with firms' credit ratings.

The reliability of financial information is due, in part, to the quality and integrity of the audit process. To proxy for the quality and integrity of the audit process, we use three measures: (1) the total fees (audit plus non-audit) charged to the client firm divided by the total revenues of the audit firm (TOTFEES); (2) %AUD_IND is the percentage of the audit committee made up of outside independent directors; and (3) a dummy variable, FIN_EXPERT coded one if the firm's audit committee has at least one individual deemed to be a "financial expert," and zero otherwise. Using the attributes of a financial expert set forth by the Securities and Exchange Commission (SEC, 2003) this variable is coded one if the audit committee has an outside independent director that is a CPA or who has experience as a chief financial officer of another company.[9]

DeAngelo (1981) posits that auditor independence is threatened as the economic bond between the auditor and client firm increases. Concern over economic bonding between the client firm and its auditor was the major impetus behind the restrictions that Sarbanes-Oxley placed on the kinds of nonaudit services that auditing firms can perform for their clients (U.S. Congress 2002). However, the evidence on whether economic bonding between the audit firm and its client impairs auditor independence as proxied

---

[9] The SEC recently adopted this provision of the Sarbanes-Oxley Act (SEC 2003) and defined an "audit committee financial expert" to mean a person who has the following attributes:
(1) An understanding of financial statements and generally accepted accounting principles;
(2) An ability to assess the general application of such principles in connection with the accounting for estimates, accruals and reserves;
(3) Experience preparing, auditing, analyzing or evaluating financial statements that present a breadth and level of complexity of accounting issues that are generally comparable to the breadth and complexity of issues that can reasonably be expected to be raised by the registrant's financial statements, or experience actively supervising one or more persons engaged in such activities;
(4) An understanding of internal controls and procedures for financial reporting; and
(5) An understanding of audit committee functions.

by biased financial reporting is mixed. While Frankel, Johnson and Nelson (2002) find evidence consistent with economic bonding impairing auditor independence, Ashbaugh, LaFond and Mayhew (2003), Chung and Kallapur (2003) and DeFond, Raghunandan and Subramanyam (2002) do not find evidence of independence impairment. We use our TOTFEES variable to measure the economic bonding between the audit firm and its client.[10] If credit rating agencies perceive that auditor independence, and thus the quality of financial statements is impaired due to economic bonding, then we expect a negative relation between this variable and firms' credit ratings. However, if credit rating agencies perceive that the economic bond between auditors and their audit clients do not threaten the quality of firms' financial reporting, as some of the studies noted above indicate, then we expect to find no relation between TOTFEES and credit ratings.

The conventional wisdom is that audit committees more effectively carry out their oversight of the financial reporting process if they include a strong base of independent outside directors. To the extent that better monitoring of the financial reporting process leads to less managerial opportunism and better financial transparency, this should lead to lower default risk and agency risk for bondholders. Accordingly, we predict a positive relation between %AUD_IND and credit rating. Likewise, to the extent having a financial expert on the audit committee is likely to improve board effectiveness and enhance the integrity of the financial reporting process, we predict a positive relation between FIN_EXPERT and credit ratings.

III.4 Board Structure and Processes

This component of corporate governance deals with such things as: (1) board size and composition in terms of proportion of inside, outside and affiliated directors; (2) board leadership and committee structure; (3) how competent and engaged board members are; (4) whether there are a sufficient number of outside independent directors on the board that represent the interests of all stakeholders, and how those members are distributed across the various committees; and (5) whether board members are remunerated and motivated in ways that ensure the long-term success of the company.

---

[10] We consider alternative ways of measuring this construct in the "sensitivity analysis" section below.

The first three elements address the board's role and ability to provide independent oversight of management performance and hold management accountable to stakeholders for its actions. Boards often delegate oversight of key functions or decision making to standing committees—e.g., audit, compensation, nominating or governance, finance and investment. These committees, made up of subsets of board members, meet separately from the full board and generally have specific, narrowly defined functions.

Prior research generally posits a positive relation between board and committee independence and firm performance. Better firm performance should benefit all stakeholders leading to higher credit ratings. However, research findings on the relation between board and committee composition and overall firm performance are mixed. Baysinger and Butler (1985) and Hermalin and Weisbach (1991) find no significant association between the percentage of outsiders on the board and same-year measures of corporate performance. Bhagat and Black (2000) find no relation between overall board independence and four measures of firm performance (Tobins' Q, return on assets, market adjusted stock returns and ratio of sales to assets) measured over a three year window. Agrawal and Knoeber (1996) investigate the relation between firm performance (Tobin's Q) and seven control mechanisms including percentage of non-officer board members. Using a simultaneous equations framework to control for the interdependence among the various control mechanisms, Agrawal and Knoeber find a significant *negative* relation between outside membership on the board and firm performance, leading them to conclude that boards seem to have too many outsiders.

Klein (1998) extends the previous research on board composition and firm performance by examining the relation between the composition of the overall board and of various committees and firm performance. Consistent with prior evidence, Klein finds no association between firm performance and overall board composition. Moreover, she finds no association between the level of independence on audit, compensation and nominating committees and firm performance. Interestingly, she does find a significant *positive* association between the percentage of *inside* directors on finance and investment committees and accounting and stock market performance measures. One explanation for this result is

that inside board members bring specialized institutional and industry-specific knowledge to the table that helps these committees select long-term investment and financing strategies that enhance firm value. Thus, inside board members appear to serve a useful role in overall corporate governance if strategically placed on committees that have more of an operating focus than a monitoring focus.

Finally, and more germane to bondholder interests, Bhojraj and Sengupta (2003) posit that firms with a greater proportion of outside directors on the board have stronger governance and face reduced agency risks, which should lead to superior bond ratings and lower debt yields. Consistent with this conjecture, they find that firms with a higher proportion of nonofficer directors enjoy lower bond yields and higher ratings on new bond issues.

Based on the literature reviewed above, we use %BRD_IND to measure the percentage of board made up of independent outside (nonaffiliated) directors. In articulating its core governance principles for protecting bondholders, FitchRatings (2004) notes:

> "Assessing a company's governance practices begins with its board of directors. An independent, active, and committed board of directors is an essential element of a robust governance framework. A board that is not committed to fulfilling its fiduciary responsibilities can open the door for ineffective, incompetent, and, in some cases, unscrupulous management behavior." (p. 5).

Consistent with this view and the literature reviewed above, we expect a positive relation between %BRD_IND and credit ratings.

Imhoff (2003) argues that board governance is severely compromised when the current or former CEO of the company also serves as chairman of the board. This is because the board chairman frequently sets the board's agenda and, therefore, controls issues brought before the board. Moreover, CEOs that serve as board chair frequently have significant influence on the slate of candidates for board seats, thereby increasing the risk that new board appointees will not be independent of management even though they are "outsiders". CEOs can also exert significant influence over the board through the committees they serve on. We use CEOPOWER as a composite measure of the influence that the CEO exercises over the board. A firm receives one point if the CEO is chairman of the board and one point for

each committee that the CEO serves on. We predict this variable will be negatively related to credit ratings.

Ceteris paribus, we expect that boards comprised of members who are more competent or knowledgeable will do a better job of monitoring the activities of management and make better decisions leading to less default risk. Similar to Klein (1998), we measure board competency or expertise by the percentage of outside board members that sit on boards of other companies (%BRD_EXPERT). We predict a positive relation between this variable and credit ratings.

Board compensation is another element of the 'Board Structure and Process' component of governance. Key issues are whether board members are remunerated and motivated in ways that ensure the long-term success of the company. In a recent paper, Yermack (2003) finds that director stock and option awards are positively related to firms' investment opportunities and subsequent firm performance. Yermack shows that tying directors' pay more closely to stock performance through the use of options and other equity awards generally leads to increased performance. We use %BRD_STOCK to measure the percentage of outside directors that hold stock in the company and predict a positive relation between this variable and credit ratings.

Recently the SEC endorsed the proposals of the NYSE and NASDAQ that firms adopt a formal governance policy that outlines the roles and responsibilities of directors and establishes an explicit code of business conduct and ethics for directors (SEC, 2003). We expect that having such a formal governance policy places increased responsibility on board members and increases their legal liability leading to greater attentiveness on the part of board members. We code GOVERNANCE_POLICY with a one if a firm has a formal governance policy, and zero otherwise, and predict a positive relation between this variable and credit ratings.

Finally, we use %FINCOM_INSIDE to measure the percentage of insiders on finance committees.[11] Based on Klein's (1998) results that having insiders on finance and/or investment committees improves firm performance, we expect this committee structure variable to be positively related to credit ratings since improved firm performance is expected to improve a firm's creditworthiness.

IV. Sample, Variables and Descriptive Statistics

IV.1. Sample and Data Sources

Data for this study are compiled from four sources:

- Governance measures, audit/non-audit fees and share ownership data – Board Analyst data base and firm proxy statements

- G_SCORES – Gompers, et al. (2003)

- Credit ratings and accounting variables – Standard and Poor's Compustat

- Stock return data- CRSP

We obtain the majority of the corporate governance measures from the Board Analyst data base compiled by The Corporate Library, an independent research firm that provides data and analysis of corporate governance issues.[12] This data base contains detailed governance, audit/non-audit fee data and stock ownership data (including institutional and inside ownership) for over 2000 U.S. companies and profiles on over 22,000 individual directors. The data used in our primary analysis are from the 2003 proxy season covering the board and committee structures of firms for the 2002 fiscal year.

G_SCORES that measure the power-sharing relationship between investors and management were obtained from Gompers, et al. (2003). These G_SCORES are available for approximately 1500 firms and are based on the incidence of 24 governance provisions related to shareholder rights and take-over defenses found in 2002 proxy statements.

---

[11] For those firms without finance committees, we used the percentage of insiders on the overall board for this variable because, in the absence of a finance committee, the overall board would be charged with voting on financial policy matters (see Klein (1998) for similar treatment).

[12] Board Analyst does not provide information on finance and investment committees. This information was hand-gathered from 2003 proxy statements.

For firm credit ratings (RATING) we use the long-term issuer credit ratings compiled by Standard & Poor's and reported on Compustat (data item 280). The ratings range from AAA (highest rating) to D (lowest rating—debt in payment default). These ratings reflect S&P's assessment of the creditworthiness of the obligor with respect to its senior debt obligations. For purposes of our analysis, the multiple ratings are collapsed into seven categories according to the schedule provided in Table 1. To facilitate the discussion of the economic significance of our results, we also estimate our logistic regression model using a two category classification scheme—investment grade and speculative grade. The assignment of the credit rating groups into these two classifications are also shown in Table 1.

[Insert Table 1 here]

Table 2, Panel A summarizes the sample selection procedure and number of firms lost because of minimum data requirements from each data source. Essentially, our final sample for the credit rating analysis is determined by the intersection of firms for which required data are available on the four data sources noted above.[13]

[Insert Table 2 here]

Panel B of Table 2 provides details on board and committee composition for our sample firms. Out of 906 sample firms, all have audit committees, 99.6% (902) have compensation committees, 90.7% (822) have nominating committees, but only 26.7% (242) have finance committees. The average board (committee) size is 10 (4) directors. The incidence of insiders on audit, compensation and nominating committees is relatively rare, ranging from 0.7% (6 / 906) for audit committees to 4.6% (42 / 906) for nominating committees. Similar to Klein (1998), we find a much higher incidence of insiders on finance committees (73 /242 = 30.2%) presumably reflecting the fact that insiders bring valuable institutional-and industry-specific knowledge and expertise to this committee. Roughly 73% of our sample firms have

---

[13] In general, our sample firms are larger than the average firm on Compustat with sample means of assets, sales, market value of equity, and long-term debt (in millions) of $20,765, $7,502, $8,982, and $4,021, respectively. In addition, 84%, 15% and 1% of the sample firms' shares trade on the New York Stock Exchange, NASDAQ, and the American Stock Exchange, respectively.

CEOs that serve as Chairman of the Board, and the more common committees that CEOs serve on are the nominating and finance committees.

IV.2. Independent Variables

Corporate Governance Measures

The variables identified in Section III that we use to capture key governance attributes within the S&P framework are summarized in Panel A of Table 3 along with their predicted relation with RATING. Except for our measure of financial transparency, the variable measurements were described in detail in Section III when introduced, so we do not take time to repeat them here.

[Insert Table 3 here]

Our measure of financial transparency is derived from the following regression equation based on work by Gu (2002), which measures the value relevance and timeliness of earnings levels and changes.

$$RET_{it} = \beta_0 + \beta_1 NIBE_{it} + \beta_2 LOSS_{it} + \beta_3 NIBE_{it} * LOSS_{it} + \beta_4 \Delta NIBE_{it} + \varepsilon_{it} \qquad (1)$$

where

RET_{it} = the market adjusted return for firm i over fiscal year t (from CRSP),
$NIBE_{it}$ = net income before extraordinary items (Compustat # 18) scaled by beginning of period market value of equity for firm i in period t (Compustat # 25 * Compustat # 199),
$LOSS_{it}$ = one if *NIBE* is negative, zero otherwise,
$\Delta NIBE_{it}$ = the change in net income before extraordinary items (Compustat # 18) scaled by beginning of period market value of equity (Compustat # 25* Compustat # 199),
$NIBE_{it} * LOSS_{it}$ = interaction term that allows for a differential market reaction for loss versus profit firms.

We estimate the above regression cross-sectionally within one, two and three digit SIC codes requiring a minimum of ten firms in each industry grouping.

Gu (2002) argues that the squared residuals from this model can be conveniently interpreted as the degree of price movement (returns) that is not explained by contemporaneous accounting earnings. Higher squared residuals imply lower value relevance of earnings. To facilitate interpretation of our results, we multiply this measure by negative one. Thus, larger (less negative) values imply greater value relevance. One can think about financial statement quality/transparency as encompassing the relevance and reliability dimensions of accounting information. The more information about the firm's current economic activities that is embedded in current earnings and the more precise that information (i.e., the

17

more relevant and reliable it is), then the more transparent the economic activities of a company is to its stakeholders. Higher quality, more transparent earnings information means less information asymmetry between the firm and its bondholders, leading to less uncertainty about default risk which, in turn, should lead to higher credit ratings. Barth and Landsman (2003) provide empirical support for this claim in that they find that firms with more value relevant earnings enjoy a lower cost of debt. We use the Gu measure of value relevance as a proxy for financial transparency as it captures both the timeliness of firms' financial information and relevance of the financial information for assessing firms' current economic conditions.

Control Variables—Firm Characteristics

Additional firm-specific explanatory variables are included in the RATING models based on a survey of prior research on the determinants of corporate bond ratings (e.g., Horrigan 1966, Kaplan and Urwitz 1979, Boardman and McEnally 1981, Lamy and Thompson 1988, and Ziebart and Rieter 1992). The measurements of these variables along with their predicted relation with RATING are summarized in Table 3.

Table 4 presents descriptive statistics for the various governance and firm-characteristic control variables. Within the "Ownership Structure and Influence" component of governance, we find the average (median) number of blockholders that own 5% or more or the firm's stock is 4.4 (4.0). The average (median) percentage of shares held by institutional investors is 63% (67%) while the average (median) percentage of shares held by insiders (officers and directors) is 8% (4%). For the "Financial Stakeholder Rights" dimension of corporate governance, the average G_SCORE of our sample firms is 9.60, which is similar to the mean G_SCORE reported by Gompers, et al., of 9.15. Sixty-two of our sample firms (6.8%) fall into Gompers et al.'s dictatorship portfolio (G_SCORES > 13 indicating greater management power) while forty-two firms (4.6%) fall into their democracy portfolio (G_SCORES < 6 indicating greater shareholder rights).

[Insert Table 4 here]

Turning to the "Financial Transparency and Information Disclosure" dimension, the average (median) squared residual from equation (1) (multiplied by -1) is -0.10 (-0.03). The measure of economic bonding between the firm and its auditor is our TOTFEES variable.[14] Because of its small magnitude, we multiply this variable by 100. Before this scaling adjustment, the median firm's total fees paid to its auditor amount to only .04% of the audit firm's total revenues. Ninety-two percent of the average firm's audit committee is comprised of outside independent board members, with over three-quarters of the sample firms having 100% independent audit committees. Finally, 26% of our sample firms have an outside financial expert (CPA or CFO) serving on their audit committee.

Within the "Board Structure and Process' dimension, the descriptive statistics indicate that the average (median) percentage of outsiders on the board is 70% (73%) and the lower quartile value is 58%. Consistent with the evidence in Table 2, the majority of our sample firms have CEOs that also serve as Chairman of the Board or on other board committees. On average, 36% of outside directors serve on other boards and 87% of the directors hold stock in the company. Forty-two percent of the sample firms have a formal governance policy. The average percentage of outsiders on the compensation (nominating) committee is 90% (79%), while the average percentage of insiders on the finance committee is 16%.[15]

For brevity, we do not take time to describe the summary statistics for the firm characteristic variables. Turning to the dependent variables, we note that the median credit rating is 4.0 implying a debt rating in the BBB+ to BBB- range, and that sixty-three percent of our sample firms have an investment grade credit rating.

Table 5 presents correlations among the firm characteristic variables (Panel A) and governance variables (Panel B) and between these variables and credit ratings. The upper right hand portion of each panel presents Pearson product-moment correlations while the lower left hand portion presents the

---

[14] Recall we measure this as total fees (audit and non-audit) paid by the client divided by the audit firm's total revenue.
[15] Recall that in coding this variable, if a firm does not have a standing finance committee, we used the percentage of insiders on the overall board for %FINCOM_INSIDE because the board de facto votes on all major financing decisions in the absence of a finance committee. This explains why the percentage of insiders on this committee appears to be smaller than the numbers imply in Table 2.

Spearman rank-order correlations. In Panel A, the simple correlations between each of the firm characteristics and our RATING variable are in the predicted directions and are statistically significant at the .01 level or below except for the capital intensity variable which is negative and insignificant. Specifically, we find that ROA, INT_COV, SIZE and whether a firm is in a regulated industry (financial institution or utility) are significantly positively correlated with credit ratings. Leverage, whether a firm has reported a loss within the last two years and whether they have subordinated debt are significantly negatively correlated with ratings. Not surprisingly, several of the firm characteristic variables exhibit high intercorrelations suggesting that the standard errors on these variables' coefficients in the multivariate logit model presented in the next section are likely to be inflated, leading to conservative test results.

[Insert Table 5 here]

Panel B of Table 5 presents the correlations between the various governance variables and between these variables and RATING. Thirteen of the sixteen governance variables exhibit Pearson correlations with the RATING variable that are significant at .01 or below. The correlations among the various governance variables generally fall below .30 except for the board and committee independence measures (shown in shaded cells) which are generally in the .40 to .55 range. The high intercorrelations between the committee and board independence measures are to be expected because the committees are drawn from the board membership. Because of these high correlations, we include only the board and audit committee independence measures in our logit model.

V. Empirical Tests and Results

V.1 Ordered Logit Results

Our empirical tests are derived from a general model that represents credit ratings as a function of corporate governance components and firm characteristics.

Credit rating = f (corporate governance components, firm characteristics).

To test the predicted relations between corporate governance components and credit ratings, we estimate a series of ordered logit models. We use ordered logit models because the seven categories of

credit ratings convey ordinal risk assessments; we can rank order firms' preferences across the rating categories but cannot assume uniform differences in benefits (costs) between the categories.

[Insert Table 6 here]

We begin by estimating the model using only the firm characteristic variables to provide a benchmark from which to assess the incremental effect of various corporate governance mechanisms on credit ratings. The benchmark results are reported in the Model 1 column of Table 6. All of the estimated coefficients on the firm characteristics have the expected sign and are significant at the 0.01 level or better. The results document that credit ratings are positively related to ROA, INT_COV, SIZE, CAP_INTEN, and negatively related to LEV, LOSS and SUBORD. We also document that utilities and financial institutions are likely to have better credit ratings. The benchmark model yields a Likelihood ratio χ^2 of 678.94, which is significant at the .01 level, and has a generalized R-square of 53 percent.

The remaining columns of Table 6 report the results of testing whether the various components of corporate governance within the S&P framework are associated with firms' credit ratings. In Column 2 of Table 5, we report the results of estimating the model incorporating the "Ownership Structure and Influence" component of corporate governance. We find a significant positive coefficient on %INST, a significant negative coefficient on BLOCK, and a marginally significant negative coefficient (p < .10) on %INSIDE. The significant positive coefficient on %INST is consistent with the conjecture that institutional investors contribute to more efficient monitoring of management and that the benefits of better monitoring are shared by all stakeholders. The negative coefficient on BLOCK indicates that firms with a larger number of blockholders have lower credit ratings. This finding is consistent with the claim that blockholders can exercise undue influence on management to secure benefits that are detrimental to bondholders. This result corroborates the findings of Bhojraj and Sengupta (2003) who document that blockholders have an adverse impact on bond ratings. The negative coefficient on %INSIDE implies that inside ownership adversely affects credit ratings, but only marginally. The Wald χ^2 of 41.22 (significant at .01) indicates that the addition of the ownership structure and influence variables, as a group, add significant incremental explanatory power to the benchmark credit rating model.

The results of estimating the model using G_SCORE as our proxy for "Financial Stakeholder Rights and Relations" are reported in the Model 3 column of Table 6. We find a positive and highly significant coefficient on G_SCORE and the Wald χ^2 of 14.25 is statistically significant at the .01 level. Recall that the smaller the G_SCORE, the greater the shareholder rights. Our results suggest that stronger shareholder rights (lower g-scores) are associated with *lower* firm credit ratings. Gompers, et al. (2003) find that firms with stronger shareholder rights have higher firm value, higher profits and less evidence of the free-cash-flow over-investment problem. Thus, our results suggest that potential wealth transfer effects associated with stronger shareholder rights outweigh the positive firm value effects documented in Gompers, et al. (2003). Our finding of a positive association between G_SCORE and credit ratings is consistent with the work of Asquith and Wizman (1990) and Warga and Welch (1993) who find that certain kinds of ownership changes can result in significant wealth transfers from bondholders to shareholders. Our results are also consistent with Klock, et al. (2004) who find that firms with stronger anti-takeover provisions (weaker shareholder rights) have a lower cost of debt financing relative to firms with weaker anti-takeover provisions.

The Model 4 column of Table 6 displays the results from estimating the credit rating model using the "Financial Transparency and Information Disclosure" variables after controlling for firm characteristics. As predicted, we find that firms whose earnings are more transparent and timely have higher credit ratings. We also find evidence that the quality of the audit process affects a firm's credit rating in that firms having more independent directors serving on their audit committees and having an independent financial expert on the audit committee have better credit ratings. We fail to find a significant association between TOTFEES and RATING. The Wald χ^2 of 68.43 indicates that the variables comprising the financial transparency and information disclosure component significantly improve the explanatory power of the RATING model.

The results of investigating whether the "Board Structure and Processes" component of corporate governance affects credit ratings are reported in the Model 5 column of Table 6. As predicted, we find a positive coefficient on %BRD_IND, which indicates that the greater the board's ability to provide

independent oversight of management the better the credit rating. This result is consistent with Bhojraj and Sengupta (2003) who find that firms with a greater proportion of independent outside directors on the board have higher bond ratings. The positive coefficient on %BRD_EXPERT indicates that when a greater proportion of the board is comprised of knowledgeable individuals, as proxied by their service to other boards, the higher the firm credit rating. We also document a positive relation between %BRD_STOCK and RATING. This result indicates that as more members of the board have an equity stake in the firm, they have greater incentives to restrict managerial opportunism or to monitor management decision making leading to lower default risk. Finally, the documented positive coefficient on GOVERNANCE_POLICY suggests that firms receive benefits in the form of better credit ratings by having formal governance policies. Overall, the Wald χ^2 of 43.32 indicates that the board structure and processes component is a significant determinant of firms' credit ratings.

The last column of Table 6 reports the full model, where we jointly test whether the four components of the corporate governance framework are associated with firms' credit ratings. The model is highly significant with a Wald χ^2 of 132.18. While the coefficients on the firm characteristic variables remain significant and in the predicted relation to credit ratings, the results indicate that within each component of governance, there appears to be a dominant governance mechanism that affects firms' credit ratings. Specifically, after incorporating all four components of governance into the RATING model, we find BLOCK, G_SCORE, and FIN_TRANS are governance attributes that are significant determinants of credit ratings. In addition, we find that four of the six governance provisions related to board structure and processes are significant. Specifically, we find the coefficients on %BRD_IND, %BRD_EXP, and %BRD_STOCK to be positive and significant at conventional levels. We also find a marginally significant negative coefficient on CEOPOWER. This latter result suggests that it is costly for firms, in terms of default risk, to cede the chief executive officer with too much board control.

V.2 Investment vs. Speculative Grade Analysis

As stated above, credit ratings convey ordinal risk assessments. Because of the difficulty in quantifying the marginal effects of changes in each governance variable on credit ratings with multiple

categories, we use an alternative classification scheme that partitions credit ratings into two categories--investment grade or speculative grade. Many bond portfolio managers are restricted from owning speculative grade bonds, and as such, firms incur significant costs if they receive a speculative bond rating. Classifying credit ratings by investment or speculative grade aligns with the rating process for the credit quality of a debt issue. Furthermore, using a dichotomous credit rating classification allows us to more readily assess the economic impact of corporate governance on firms' expected cost of debt.

Table 7 displays the results of estimating six logitistic regressions using INVESTMENT_GRADE as the dependent variable, where INVESTMENT_GRADE is coded one if the firm's credit rating is BBB- or better, and zero otherwise. The results are similar to the results of the RATING analyses reported in Table 6 with a few exceptions. First, the coefficient on INT_COV is insignificant in five of the six INVESTMENT_GRADE analyses whereas it was highly significant in all of the RATING analyses. Second, when considering the financial transparency and information disclosure component of corporate governance in isolation, the coefficients on %AUD_IND and FIN_EXPERT are not significant. Third, the coefficient on %BRD_EXPERT is not significant in either Model 5 or Model 6. Finally, unlike the RATING analysis, the coefficient on %BRD_IND is insignificant in the full model. When we estimate the INVESTMENT_GRADE model that incorporates all four corporate governance components, we find once again that BLOCK is negatively related to credit ratings and G_SCORE, FIN_TRANS, and %BRD_STOCK are positively related to credit ratings.

[Insert Table 7 here]

In order to provide some insight into the economic significance of our results, we calculate the change in probability of receiving an investment grade credit rating as a result of changing the levels of various corporate governance variables. The change in probability is calculated using the following steps. First, we calculate the probability of achieving an investment grade credit rating from our logitistic regression model using the following expression:

24

$$\pi(X) = e^{\beta'X} \big/ (1 + e^{\beta'X})$$ (2)

where β is the vector of coefficients from Model 6 in Table 7 and X is the vector of independent variables set equal to their mean values. Next, we calculate the marginal changes in the probability of a firm receiving an investment grade credit rating as a result of a one unit change in each of our governance variables. This marginal effect is measured by $\partial\pi(X)/\partial x_i = \beta_i\pi(X)[1-\pi(X)]$, which is again calculated at the mean value of the regressors. These marginal effects are reported in column 3 of Table 8 for the governance variables after standardizing each non-binary variable by its mean and dividing by its standard deviation.[16] The marginal effects measure the change in the probability of receiving an investment grade rating for a one standardized unit change in each governance variable while holding the firm characteristics at their mean values.

An alternative way of assessing the effect of various governance variables on the likelihood of receiving an investment grade credit rating that is easier to interpret is to calculate the values of the logit function, $\pi(X)$, at selected x_i values such as their lower and upper quartiles (Agresti 2002, p. 167). This entails substituting the quartile values for each x_i explanatory variable into eqn. (2) while holding the other variables constant at their means. The linear approximation to changes in $\pi(X)$ is obtained by multiplying the interquartile range of x_i values (see Table 4 for the interquartile ranges) by the marginal effects based on the unstandardized value of the variables (Agresti 2002, Chapter 5). These values are reported in the last column of Table 8.

[Insert Table 8 here]

Moving from the first quartile to the third quartile of BLOCK decreases the probability of receiving an investment grade credit rating by approximately .19. The change in probabilities for G_SCORE and FIN_TRANS are approximately .05 and .08, respectively, while the change in probabilities for %BRD_IND and %BRD_STOCK are .045 and .054 respectively. Although the probability changes due

---

[16] We use standardized values because the various governance variables are measured in different units. Without standardization the marginal probabilities are difficult to compare and interpret (Agresti 2002, Chapter 5).

to any one governance variable may not appear to be all that dramatic, the aggregate effect across all dimensions of corporate governance can be substantial.

To demonstrate this point, we first calculate the probability of receiving an investment grade credit rating for a hypothetical firm that takes on the lower (upper) quartile values of governance variables that are positively (negatively) related to credit ratings while holding all the firm-specific variables at their mean values.[17] This yields a probability of receiving an investment grade credit rating of .48. We next repeat this process but now use upper (lower) quartile values of governance variables that are positively (negatively) related to credit ratings. This yields a probability of receiving an investment grade credit rating of .92. Thus, a firm could nearly double the probability of receiving an investment grade credit rating by implementing desired levels of governance along multiple dimensions.[18] During the time frame of our analysis, the average yield for firms with investment (speculative) grade debt with a ten year maturity was approximately 6.00% (14.0%). This 800 basis-point spread translates into an annual savings of $74.7 million in before-tax interest costs for the median firm in our sample with $934 million of outstanding debt. Therefore, governance mechanisms that increase firms' likelihood of receiving an investment grade debt rating have significant implications for assessing debt financing costs.

VI. Additional Analyses

VI.1 Why Don't All Firms Practice Good Governance?

The preceding analysis suggests that firms with weak governance incur significantly higher debt costs. This raises the question of why some firms are willing to bear additional debt financing costs by not practicing good governance. One way to think about answering this question is to consider how

---

[17] For governance attributes measured as a 0-1 dummy variable, the benchmark probability is determined with the zero (one) value when the governance attribute is negatively (positively) related to credit ratings.

[18] We hasten to note that this illustration does not reflect the typical firm in our sample because any given firm will likely not start from a position of having weak governance (low quartile) along all of the multiple dimensions we consider. Nor is it likely that any given firm would be able to move to a position of having strong governance along all dimensions (upper quartile). Governance structures tend to be sticky and generally can only be changed by majority vote of shareholders.

managers can appropriate some or all of the rents from outside stakeholders by resisting better governance.

Recent evidence by Core, et al. (1999) suggests one way that managers can extract rents from weak governance. They find that CEOs with greater power over the board or that are more entrenched earn greater compensation after controlling for standard economic determinants of pay. Moreover, they find that the estimated component of overcompensation is significantly negatively related with subsequent firm operating and stock performance. Their results suggest that firms with weaker governance structures exhibit greater overcompensation of CEOs and face greater agency problems. Generalizing the Core et al. (1999) results to the setting of our research, it may be rational for managers to resist efforts to improve governance and monitoring as long as they receive more overcompensation relative to their share of increased debt costs due to weaker governance.

To investigate this possibility, we model CEO pay in 2002 as:

CEO_PAY = f (economic determinants, board and ownership structure attributes).

Following Core et al. (1999), we measure CEO_PAY in three different ways: Salary, Salary+Bonus and Total Compensation. The definitions of the alternative measures of CEO_PAY, the specific board and ownership structure variables and the economic determinants are detailed in the Appendix. As noted in Core et al. (1999), the portion of CEO_PAY explained by the board and ownership variables represents overcompensation. Under the optimal contracting view there should be no association between these governance provisions and CEO compensation, i.e., CEO compensation is only a function of economic determinants.

The results of estimating the cross-sectional models of CEO_PAY for sample firms (Equation A1) are presented in Panel A of Table 9. As shown, the economic and board and ownership variables explain from 39% (for Total Compensation) to 52% (for Salary + Bonus) of the variation in CEO pay. The F-tests on the incremental explanatory power of the set of board and ownership variables relative to the economic determinants of pay are significant at .001 level and below.

[Insert Table 9 here]

To estimate the proportion of the CEO's compensation that represents overcompensation (OVERCOMP), we first calculate for each sample firm the predicted excess compensation by multiplying the estimated board and ownership coefficients by the sample firm's board and ownership variables' values. We then scale predicted overcompensation (OC) by the relevant CEO_PAY value (which we label OC_Salary, OC_Salary+Bonus and OC_TotalComp).

Our major findings related to overcompensation are summarized in Panel B of Table 9. The mean (median) overcompensation percentage for firms in our Investment Grade sample ranges from 35% (32%) for OC_Salary to 57% (52%) for OC_TotalComp. For the firms in our Speculative Grade sample, the corresponding mean (median) overcompensation percentages range from 39% (35%) for OC_Salary to 60% (62%) for OC_TotalComp. For two of the three compensation measures (Salary and Salary + Bonus), the Speculative Grade sample exhibits significantly greater overcompensation of CEOs relative to the Investment Grade sample after controlling for standard economic determinants of pay.

To give some idea of the incentives that CEOs of Speculative Grade firms have for trading off higher firm debt cost due to weaker governance for higher overcompensation paid directly to them, we scale the CEO's overcompensation by his share of additional financing costs that the firm incurs by having Speculative Grade debt. To calculate the CEO's share of the higher financing costs, we multiply the CEO's percentage ownership in the firm by the after-tax cost of the additional financing costs to the firm.[19] The results of this comparison are presented in Panel C of Table 9. The median value of OC_Salary is $240,000 (not tabled) which is roughly 121 times the CEO's share of the additional after-tax interest cost from having speculative grade debt versus investment grade debt. For OC_Salary+Bonus, the median overcompensation is $646,000 with a multiple of 334, and for OC_TotalComp the median

---

[19] The additional after-tax financing costs are determined by multiplying the firm's long-term debt at the beginning of 2002 times 8% (the spread between investment grade and speculative grade debt with 10 year maturity in 2002) times 65% (1 – marginal corporate tax rate).

overcompensation is $1,808,000, which translates into a multiple 905 times the CEO's share of the after-tax interest cost differential.[20]

To statistically test the CEO's benefits-to-cost ratio of weak governance, we partition firms in our Speculative Grade sample into two groups. The first group represents the sub-sample of firms for which the CEO's overcompensation is less than or equal to the CEO's share of the interest expense. The other group is the sub-sample of firms for which the CEO's overcompensation is greater than his portion of interest costs due to weak governance. The latter group reflects the firms for which the CEO benefits outweigh the costs of weak governance. Consequently, these are firms where the CEO is expected to impede governance improvements as they would result in a net loss to the CEO, given the his degree of overcompensation and ownership stake in the firm. The $\chi2$ test results suggest that for the vast majority of firms in the Speculative Grade debt sample, the degree of CEO overcompensation outweighs his share of the additional debt costs that may result from weaker governance.

If, as the results presented here suggest, it is easier for CEOs of firms with weaker governance to garner excess compensation and the CEO's share of the additional debt costs are low, then there are clear incentives for managers to resist efforts to strengthen governance. Thus, this provides one potential explanation for why some firms continue to operate with weaker governance when doing so may mean lower credit ratings.

VI.2 Endogeneity

The preceding analysis treats governance attributes as being exogenously determined. Under the assumption of optimal contracting, a firm's governance structure is unique in equilibrium and endogenously determined (Bushman, Chen, Engel and Smith, 2004; Hermalin and Weisbach, 2003). If governance provisions are endogenously determined such that there is a factor or set of factors that affect governance and also affect credit rating agencies' assessment of firms' creditworthiness, then our study

---

[20] A major reason for these relatively large multiples is because CEOs of most firms in the speculative grade sample hold such a small percentage of the firm's shares. For example, 169 of the 245 speculative grade firms have CEOs that own less than one-tenth of 1% of the firm's stock. Thus, the typical CEO's share of the higher after-tax interest costs is quite small.

suffers from a potential correlated omitted variable problem.[21] This misspecification causes the parameter estimates to be inconsistent, which clouds the interpretation of results.

The econometric solution to endogeneity is to use two-stage procedures that rely on instrumental variables to generate predicted values of the independent variables (in our case, the set of governance variables) that are uncorrelated with the error term in the structural model. Unfortunately, instrumental variables are very difficult to identify in most accounting research settings (Ittner and Larcker, 2001). This is particularly true with respect to governance attributes in that there is no well developed theory or model of the economic determinants of governance (Hermalin and Weisbach, 2003).

The lack of theory on the determinants of corporate governance draws into question the adequacy of any instrumental model to deal with potential endogeneity issues in our setting. There is limited empirical evidence (Hermalin and Weisbach 1991, and Bhagat and Black 2000), however, that poor past performance (both accounting and stock market) leads to increases in board independence. Therefore, past performance is potentially a correlated omitted variable, at least with respect to our board independence measure.

In Table 10, we expand our full model (Model 6 in Table 6) to include two past performance measures: (1) accounting rate of return (PP_ROA); and (2) stock returns (PP_RET).[22] Both measures are industry-adjusted and we present results for one, three and five-year prior performance horizons.[23] With one exception (G_SCORE, 5-year prior performance) all of the variables that were significantly related to credit ratings in our original model continue to be significant in the augmented model. Thus, inclusion of past performance measures has little influence on our conclusions regarding the importance of governance on credit ratings.

---

[21] Endogeneity is caused whenever an explanatory variable is a choice variable that is correlated with the random error in the structural model.

[22] Including past performance measures in our base model along with the set of governance variable is equivalent to using two stage procedures where we first regress each of the governance variables on the past performance variables and then include the predicted values from the first stage model into the structural model. We choose the one-step approach because it is simpler to implement with fourteen separate governance variables in our structural model.

[23] We also conducted analyses using raw performance and market-adjusted performance measures and the results are qualitatively the same as those reported here.

[Insert Table 10 here]

In addition to these prior performance results, there are other features of our setting that suggest correlated omitted variables are not driving our results. In Table 6 we show that there are seven distinct governance variables that are significantly related to credit ratings. There is at least one variable from each of the four S&P framework components of governance that exhibits significant explanatory power, and there is relatively low correlation among these seven governance variables (see Table 5). Thus, there is no single omitted variable that could simultaneously be correlated with all seven of these governance variables in such a way to provide an alternative explanation for our results. Moreover, it's hard to imagine that there would be a set of omitted economic variables that would be highly correlated with our governance variables and be correlated with credit ratings in a fashion that's consistent with our findings.[24]

Another feature of our setting that suggests that we have appropriately modeled credit ratings is there is ample observable evidence from credit rating agencies themselves that indicates that governance features are an important input into the credit rating process. For example, in a recent special report on credit policy entitled, "Evaluating Corporate Governance: The Bondholders' Perspective"[25], Fitch Ratings (2004) states the following:

> "The purpose of this global criteria report is to inform the marketplace of Fitch Ratings' approach to evaluating and incorporating the quality of a company's corporate governance within the overall credit ratings process. While Fitch always has taken aspects of corporate governance into account, this report formalizes a more systematic framework for reviewing governance practices that affect credit quality . . ." Fitch's framework is grounded in agency theory and defines corporate governance from a creditor perspective. . . . .Ultimately, companies that are found to have exceptionally weak corporate governance (or disclosure practices) could face a downgrade or other negative rating action, while those with very strong practices might warrant a special or favorable mention in the credit analysis." (p. 1).

---

[24] We also acknowledge that there could be other economic variables omitted from the model that are correlated (some positively and some negatively) with credit ratings. We have included all the major economic determinants of credit ratings in our model based on evidence provided in prior research. If there are major economic variables that have been omitted from our model, then these have been systematically overlooked by a vast literature on determinants of debt ratings, and we believe this is unlikely.

[25] Fitch Ratings, Credit Policy, Special Report, "Evaluating Corporate Governance: The Bondholders' Perspective," April 12, 2004.

Statements like these by major credit rating agencies clearly indicate that governance factors are direct inputs to the credit rating process. Moreover, three major rating agencies (S&P, Moody's and Fitch Ratings) have developed infrastructures and invested significant resources to evaluate firms' governance structures. These actions clearly signal that governance is important to the credit rating process.

VI.3 Sensitivity Tests

In our original model, we use total audit fees paid to a firm's auditor to proxy for the economic bond between the auditor and client, which potentially threatens auditor independence. Contemporaneous literature investigating the quality of accounting information in the presence of threats to auditor independence uses alternative measures of economic bonding (e.g., Frankel, et al., 2002; Ashbaugh, et al., 2003). To test the robustness of our results related to the quality of the audit function in governance, we substitute two alternative proxies of economic bonding for the TOTFEE variable in the full model (not tabled). The first substitution uses the ratio of non-audit fees to total fees (FEERATIO) for TOTFEE. The second substitution is a dummy variable coded one if TOTFEE is in the upper quartile of the distribution of TOTFEE and zero otherwise (FEEDUMMY). We expect observations falling into the upper quartile of TOTFEE to be firms where auditor independence is more likely to be threatened. The coefficients on FEERATIO and FEEDUMMY are insignificant at conventional levels (.37 and .32 level, one tailed test, respectively). Thus, we continue to find no evidence that measures of economic bonding between the auditor and client firm adversely affects credit ratings.

Our second set of sensitivity tests relate to our proxy for transparent and timely financial reporting. Recall that FIN_TRANS is defined as negative one times the squared residual from a cross-sectional regression of returns on the levels and changes in earnings. We substitute two alternative measures of FIN_TRANS in our full model. The first substitution defines FIN_TRANS as negative one times the variance of the squared residuals from firm-specific time-series regressions, where we require firms to have a minimum (maximum) of eight (ten) years of data to estimate equation (1). The coefficient on this specification of FIN_TRANS is positive and significant at the .001 level or better.

Gelb and Zarowin (2002) provide an alternative specification of the relation between returns and earnings. Specifically, they posit and provide evidence that current price is reflective of the informativeness of future earnings. Thus, our second substitution for FIN_TRANS is the negative squared residual from the regression of returns on contemporaneous and future earnings and earnings changes after controlling for future returns. Once again, the coefficient on this specification of FIN_TRANS is positive and significant at the .001 level or better.

We use the %BRD_EXPERT, the percentage of outside directors that sit on other boards, as a measure of board competency or expertise following Klein (1998). However, there is evidence in the literature that when board members sit on too many boards monitoring of management is compromised and, as a consequence, firm performance deteriorates (Bhagat and Black, 1999; Klein, 1998). As an additional sensitivity test (not tabled), we include a variable for the percentage of board members that sit on four or more boards. We find no evidence that board members being "too busy" adversely affects credit ratings, and adding this variable does not detract from the significance of our %BRD_EXPERT variable.

The results of these sensitivity tests indicate that our inferences are robust to alternative measures of governance attributes.

VII. Summary and Conclusions

Weak corporate governance has been singled out as the leading cause for recent high-profile cases of corporate fraud and for the increased incidence of earnings restatements. Using a framework for evaluating corporate governance structures recently developed by Standard & Poor's, this study investigates whether firms that exhibit strong governance benefit from higher overall firm credit ratings relative to firms with weak governance. We present compelling evidence that a variety of governance mechanisms do help explain firm credit ratings after controlling for firm characteristics that prior research has shown to be related to debt ratings. Specifically, we find that firm credit ratings are: (1) negatively associated with the number of blockholders that own at least a 5% ownership in the firm; (2) positively related to weaker shareholder rights in terms of takeover defenses; (3) positively related to the degree of

financial transparency; and (4) positively related to over-all board independence, board stock ownership and board expertise and negatively related to CEO power on the board. We show that a hypothetical firm that possesses desirable governance characteristics from the bondholder's viewpoint nearly doubles its likelihood of receiving an investment grade credit rating. Given the spread between investment grade and speculative grade bond yields, better governance can translate into significant debt costs savings for firms.

Our primary analysis documents that firms' governance affects firms' credit ratings. Our secondary analysis provides insights into why all firms do not possess strong governance. We note that the cost of weak governance is borne by all stakeholders whereas the benefits of weak governance can accrue to managers when they can appropriate some or all of the rents from outside stakeholders by resisting better governance. We report compelling evidence that suggests that CEOs of weak governance firms can garner overcompensation in excess of their share of debt costs due to weak governance. Thus, we provide one explanation for why all firms do not practice good governance.

A number of organizations and companies (Standard & Poor's, Board Analyst, The Board Institute, Moody's Investor Services, and FitchRatings) have begun to compile company ratings of corporate governance practices along several dimensions. Investigating whether these composite ratings are useful determinants of credit ratings is one avenue of future research. Another avenue of future research is to focus on the benefits of governance to equity stakeholders by investigating the relation between governance and firms' cost of capital.

References

Aboody, D. M. Barth and R. Kasznik. 2004. "Do Firms Manage Stock-Based Compensation Expense Disclosed Under SFAS 123?" working paper, University of California at Los Angeles and Stanford University.

Agrawal, A. and C. Knoeber. 1996. "Firm Performance and Mechanisms to Control Agency Problems between Managers and Shareholders," *Journal of Financial and Quantitative Analysis* 31: 377-397.

Agresti, A. 2002. *Categorical Data Analysis,* John Wiley and Sons, New York.

Ashbaugh, H., R. LaFond and B. Mayhew. 2003. "Do Nonaudit Services Compromise Auditor Independence? Further Evidence," *Accounting Review* 78: 611-640.

Asquith, P. and T. Wizman. 1990. "Event Risk, Covenants, and Bondholder Returns in Leveraged Buyouts," *Journal of Financial Economics* 27: 195-213.

Barth, M. and W. Landsman. 2003. "Cost of Capital and the Quality of Financial Statement Information," Working paper, Stanford University.

Baysinger, B. and H. Butler. 1985. "Corporate Governance and the Board of Directors: Performance Effects of Changes in Board Composition," *Journal of Law, Economics and Organizations* 1: 101-124.

Bhagat, S. and B. Black. 1999. "The Uncertain Relationship Between Board Composition and Firm Performance," *Business Lawyer* 54: 921-963.

Bhagat, S. and B. Black. 2000. "Board Independence and Long-Term Performance," Working paper, Stanford Law School, Stanford, CA.

Bhojraj, S. and P. Sengupta. 2003. "Effect of Corporate Governance on Bond Ratings and Yields: The Role of Institutional Investors and the Outside Directors," *The Journal of Business* 76: 455-475.

Billett, M., T. King, and D. Mauer. 2004. "Bondholder Wealth Effects in Mergers and Acquisitions: New Evidence from the 1980's and 1990's," *The Journal of Finance* 59: 107-135.

Bushman, R., Q. Chen, E. Engel and A. Smith. 2004. "Financial Accounting Information, Organizational Complexity and Corporate Governance Systems," *Journal of Accounting & Economics*, forthcoming.

Boardman, C. and R. McEnally. 1981. "Factors Affecting Seasoned Corporate Bond Prices," *Journal of Financial and Quantitative Analysis* 16: 207-216.

Chung, H., and S. Kallapur. 2003. "Client Importance, Nonaudit Services, and Abnormal Accruals," *Accounting Review* 78: 931-955.

Core, J., R. Holthausen and D. Larcker. 1999. "Corporate Governance, Chief Executive Officer Compensation, and Firm Performance," *Journal of Financial Economics* 51: 371-406.

Dann, L. and H. DeAngelo. 1983. "Standstill Agreements, Privately Negotiated Stock Repurchases, and the Market for Corporate Control," *Journal of Financial Economics* 11: 275-300.

DeAngelo, L. 1981. "Auditor Size and Audit Quality," *Journal of Accounting & Economics* 3: 183-200.

DeFond, M., K. Raghunandan and K.R. Subramanyam. 2002. "Do Non-Audit Service Fees Impair Auditor Independence? Evidence from Going Concern Audit Opinions," *Journal of Accounting Research* 40: 1247-1274.

FitchRatings, 2004. Credit Policy Special Report, "Evaluating Corporate Governance: The Bondholders' Perspective", New York.

Frankel, R., M. Johnson and K. Nelson. 2002. "The Relation Between Auditors' Fees for Nonaudit Services and Earnings Management," *Accounting Review* 77: 71-105.

Gelb, D. and P. Zarowin. 2002. "Corporate Disclosure Policy and the Informativeness of Stock Prices," *Review of Accounting Studies* 7: 33-52.

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

Gordon, L. and J. Pound. 1993. "Information, Ownership Structure, and Shareholder Voting: Evidence from Shareholder-Sponsored Corporate Governance Proposal," *Journal of Finance* 48: 697-718.

Gu, Z. 2002. "Cross-Sample Incomparability of R^2s and Additional Evidence on Value Relevance Changes Over Time," Working paper, Carnegie Mellon University.

Hermalin, B. and M. Weisbach. 1991. "The Effect of Board Composition and Direct Incentives on Firm Performance," *Financial Management* 21(4): 101-112.

Hermalin, B. and M. Weisbach. 2003. "Boards of Directors as an Endogenously Determined Institution: A Survey of the Economic Literature," *Economic Policy Review* 9: 7-26

Horrigan, J. 1966. "The Determinants of Long-Term Credit standing with Financial Ratios," *Journal of Accounting Research* 4: 44-62.

Imhoff, E. A. 2003. "Accounting Quality, Auditing, and Corporate Governance," *Accounting Horizons Supplement* 17: 117-128.

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

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

Kaplan, R., and G. Urwitz. 1979. "Statistical Models of Bond Ratings: A Methodological Inquiry," *Journal of Business* 52: 231-261.

Karpoff, J., P. Malatesta, and R. Walkling. 1996. "Corporate Governance and Shareholder Initiatives: Empirical Evidence," *Journal of Financial Economics* 42: 365-395.

Klein, A. 1998. "Firm Performance and Board Committee Structure," *Journal of Law and Economics* 41: 275-303.

Klein, A. 2003. "Do Audit Committees with Financially Literate Directors Experience Less Earnings Management," Working paper, Stern School of Business, New York University.

Klock, M., S. Mansi and W. Maxwell, 2004. "Corporte Governance and the Agency Cost of Debt," Working paper, George Washington University.

Lamy, R., and R. Thompson. 1988. "Risk Premia and the Pricing of Primary Issue Bonds," *Journal of Banking and Finance* 12: 585-601.

McConnell, J. and H. Serves. 1990. "Additional Evidence on Equity Ownership and Corporate Value," *Journal of Financial Economics* 27: 595-612.

Nesbitt, S. 1994. "Long-Term Rewards from Shareholder Activism: A Study of the 'CalPERS' Effect," *Journal of Applied Corporate Finance* 6: 75-80.

Opler, T. and J. Sokobin. 1997. "Does Coordinated Institutional Activism Work? An Analysis of the Activities of the Council of Institutional Investors," Working paper, Ohio State University.

Securities and Exchange Commission. 2003. *NASD and NYSE Rulemaking: Relating to Corporate Governance*. Release No. 34-48745. Washington, D. C.: Government Printing Office.

Sengupta, P. 1998. "Corporate Disclosure Quality and the Cost of Debt," *Accounting Review* 73: 459-474.

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

Standard & Poor's. 2002. "Standard & Poor's Corporate Governance Scores: Criteria, Methodology and Definitions", New York. McGraw-Hill Companies, Inc.

U.S. Congress. 2002. *The Sarbanes-Oxley Act of 2002*. 107th Congress of the United States of America. H.R. 3763. Washington, D.C.: Government Printing Office.

Warga, A. and I. Welch. 1993. "Bondholder Losses in Leveraged Buyouts," *Review of Financial Studies* 6: 959-982.

Yermack, D. 1996. "Higher Market Valuation of Companies with a Small Board of Directors," *Journal of Financial Economics* 40: 185-211.

Yermack, D. 2003. "Remuneration, Retention, and Reputation Incentives for Outside Directors," forthcoming, *Journal of Finance*.

Ziebart, D., and S. Reiter. 1992. "Bond Ratings, Bond Yields and Financial Information," *Contemporary Accounting Research* 9: 252-282.

Appendix

We use the following alternative measures of CEO pay (see Core, et al. 1999; Aboody, Barth and Kasznik, 2004) to derive measures of overcompensation:

Salary = the dollar value ($000) of the base salary (cash and non-cash) earned by the CEO during fiscal 2002,
Salary+Bonus = current compensation ($000) comprised of salary and bonus earned by the CEO during fiscal 2002,
TotalComp = total compensation ($000) earned by the CEO during fiscal 2002, comprised of the following: salary, bonus, other annual, total value of restricted stock granted, total value of stock options granted (using Black-Scholes), long-term incentive payouts, and all other total.

Following Core, et al. (1999), we use the following variables to measure the economic determinants of CEO pay:

Sales = the natural log of Compustat data 12,
MB = the average market to book ratio as of the end of fiscal 2001 (Compustat data 25 x data 199 divided by data 60) where firms are required to have a minimum of three and a maximum of five years of prior data,
OPROA = operating income divided by total assets (Compustat data13 minus data 14 divided data 6) for the 2001 fiscal year,
RET = the buy and hold return over the 2001 fiscal year,
STD_OPROA = the standard deviation of OPROA as of the end of the 2001 fiscal year where firms are required to have a minimum of three and a maximum of five years of OPROA,
STD_RET = the standard deviation of buy and hold returns for the fiscal year where firms are required to have a minimum of three and a maximum of five years of RET.

We use the following board structure and ownership structure variables to capture CEO power/management entrenchment [the predicted relation with CEO compensation is shown in parentheses—see Core, et al. (1999) and previous discussion in this paper]:

CEOPOWER = Composite score representing the power of the CEO where a firm receives one point if the CEO is the chairman of the board, and one point for each of the committees (compensation, nominating, audit) that the CEO sits on. (In some instances the CEO does not have voting power yet still is identified as being part of the committee) (source Board Analyst) (+),
%COMP_CEOAPP = the percent of outside independent directors on the compensation committee appointed by the CEO (+),
BRDSIZE = the number of directors on the board (+),
%BRD_INSIDE = the percent of the board made up of insiders (?),
%OUT_BUSY = the percent of outside independent directors that sit on more than 4 boards (number of outside independent directors sitting on more than 4 boards divided by total outside independent directors) (+),
%BRD_ActiveCEOs = the percent of the board that are currently employed as CEO's (+),

%INST = % of shares held by institutional investors multiplied by 100 (source Board Analyst) (-),
BLOCK = Number of block holders, where block is defined at the 5% ownership level (source Compact Disclosure) (-),
IND_DUM = industry dummies based on firms' two digit SIC codes and are included for each two-digit SIC group having at least 10 observations, for a total of 23 industry dummies.

The following cross-sectional OLS model is used to estimate the determinants of CEO compensation using fiscal year 2002 data for our sample firms:

$$CEO\_COMP_i = \sum_{n=1}^{23} b_{01} IND\_DUM_{ni} + b_1 Sales_i + b_2 MB_i + b_3 OPROA_i + b_4 RET_i$$

$$+ b_5 STD\_OPROA_i + b_6 STD\_RET_i + b_7 CEOPOWER_i + b_8 \%COMP\_CEOAPP_i$$

$$+ b_9 BRDSIZE_i + b_{10} \%BRD\_INSIDE_i + b_{11} \%OUT\_BUSY_i + b_{12} \%BRD\_ActiveCEOs_i$$

$$+ b_{13} CEO\_Ownership_i + b_{14} \%INST_i + b_{15} BLOCK_i + \varepsilon_i \qquad (A1)$$

Table 1: Credit Rating Classifications

S&P Debt Rating	Compustat Data280	Issuer Long Term Credit Rating	Grade
AAA	2	7	Investment
AA+	4	6	Investment
AA	5	6	Investment
AA-	6	6	Investment
A+	7	5	Investment
A	8	5	Investment
A-	9	5	Investment
BBB+	10	4	Investment
BBB	11	4	Investment
BBB-	12	4	Investment
BB+	13	3	Speculative
BB	14	3	Speculative
BB-	15	3	Speculative
B+	16	2	Speculative
B	17	2	Speculative
B-	18	2	Speculative
CCC+	19	1	Speculative
CCC or CC	20,23	1	Speculative
C	21,24	1	Speculative
D or SD	27,29,90	1	Speculative

Table 2 Sample Details

Panel A: Sample Construction (fiscal year 2002)

	Number of Firms	Firms Lost
Number of firms in the main Board Analyst Data Set	2050	0
Number of firms having complete governance data from Board Analyst	1867	183
Number of firms having necessary Compustat data for ratings model	1705	162
Number of firms having g-scores	1404	301
Number of firms having debt ratings on Compustat	906	498

Panel B: Sample Firms' Board Composition

Breakdown of Inside, Outside And Affiliate Directors by Whole Board and by Committee
for Sample Firms in Fiscal Year 2002

	Board as a Whole	Audit Committee	Compensation Committee	Nominating Committee	Finance Committee
Number of Firm Having Committee	906	906	902	822	242
Average number of directors	10.04	3.92	3.72	3.98	4.31
Average number of Insider directors	1.67	0.01	0.02	0.06	0.39
Average number of Outside directors	7.02	3.63	3.36	3.45	3.42
Number of firms having at least one insider on	897	6	17	42	73
Number of firms having the CEO as chairman of the board or on committee	661	3	10	31	65

Table 3 Variable Definitions

Variables	Predicted Sign	Definitions and Data Source
Ownership Structure and Influence:		
BLOCK	?	Number of block holders, where block is defined at the 5% ownership level (source Compact Disclosure)
%INST	?	% of shares held by institutional investors (source Board Analyst)
%INSIDE	−	% of shares held by insiders (officers and directors) (source Board Analyst)
Financial Stakeholder Rights & Relations:		
G_SCORE	?	Shareholder rights governance score (source Gompers, Ishii and Metrick (2003))
Financial Transparency & Information Disclosure:		
FIN_TRANS	+	Negative one times the squared residual from the following regression $RET = \beta_0 + \beta_1 NIBE + \beta_2 LOSS + \beta_3 NIBE*LOSS + \beta_4 \Delta NIBE + \varepsilon$ where the regression is estimated by three, two, or one-digit SIC code conditional on having at least 10 firms in each SIC group. RET= the market adjusted return over the fiscal year (from CRSP); NIBE= net income before extra ordinary items (Compustat # 18) scaled by beginning of period market value of equity (Compustat # 25* Compustat # 199); LOSS= one if NIBE is negative, zero otherwise; ΔNIBE= the change in net income before extra ordinary items (Compustat # 18) scaled by beginning of period market value of equity (Compustat # 18* Compustat # 199)
TOTFEES	−	Total fees paid by the firm to its auditor divided total revenues of the audit firm multiplied by 100 (source firms' proxy statements, *Accounting Today* Top 100 firms and D&B's Million Dollar Database)
%AUD_IND	+	% of audit committee made up of independent directors (source Board Analyst).
FIN_EXPERT	+	One if the firm has an independent financial expert on the audit committee,wherefinancial expertise is defined as the audit committee member being a CFO or having a CPA, zero otherwise (source Board Analyst)
Board Structure and Processes:		
%BRD_IND	+	% of independent directors on the board (source Board Analyst)
CEOPOWER	−	Composite score representing the power of the CEO where a firm receives one point if the CEO is the chairman of the board, and one point for each of the committees (compensation, nominating, audit) that the CEO sits on. (In some instances the CEO does not have voting power yet still is identified as being part of the committee) (source Board Analyst)
%BRD_EXPERT	+	% of independent directors that hold seats on other boards (source Board Analyst)
%BRD_STOCK	+	% of the directors that own stock in the company (source Board Analyst)
GOVERNANCE_POLICY	+	One if the firms has a formal governance policy, zero otherwise. (source Board Analyst)
%FINCOM_INSIDE	+	% of insiders on the finance committee (source firm's proxy statements)
%NOM_IND	+	% of independent directors on the nominating committee (source Board Analyst)
%COMP_IND	+	% of independent directors on the compensation committee (source Board Analyst)
Firm Characteristics:		
LEV	−	Total debt (Compustat #9 plus Compustat #34) divided by total assets (Compustat #6).
ROA	+	Net income before extra ordinary items (Compustat #18) divided by total assets.
LOSS	−	One if the net income before extra ordinary items is negative in the current and prior fiscal year, zero otherwise.

INT_COV	+	Operating income before depreciation (Compustat #13) divided by interest expense (Compustat #15) or (Compustat #339).
SIZE	+	Natural log of total assets.
SUBORD	−	One if the firm has subordinated debt, zero otherwise.
CAP_INTEN	+	Gross PPE (Compustat #7) divided by total assets.
FIN_UTILITY	+	One if firm is a financial institution (one-digit SIC code 6) or a utility (two-digit SIC code 49), zero otherwise.

Table 4 Summary Statistics on Credit Rating Variables

Variables	Mean	Standard Deviation	Median	25%	75%
Ownership Structure and Influence:					
BLOCK	4.43	2.79	4.00	2.00	6.00
%INST	0.63	0.24	0.67	0.51	0.80
%INSIDE	0.08	0.11	0.04	0.02	0.08
Financial Stakeholder Rights& Relations:					
G_SCORE	9.60	2.59	10.00	8.00	11.00
Financial Transparency and Information Disclosure:					
FIN_TRANS	-0.10	0.17	-0.03	-0.10	-0.01
TOTFEES	0.11	0.21	0.04	0.02	0.10
%AUD_IND	0.92	0.16	1.00	1.00	1.00
FIN_EXPERT	0.26	0.44	0.00	0.00	1.00
Board Structure and Processes:					
%BRD_IND	0.70	0.16	0.73	0.58	0.83
CEOPOWER	0.78	0.50	1.00	0.00	1.00
%BRD_EXPERT	0.36	0.22	0.36	0.20	0.50
%BRD_STOCK	0.87	0.20	0.92	0.82	1.00
GOVERNANCE_POLICY	0.42	0.49	0.00	0.00	1.00
%FINCOM_INSIDE	0.16	0.12	0.14	0.08	0.22
%NOM_IND	0.79	0.32	1.00	0.67	1.00
%COMP_IND	0.90	0.20	1.00	0.83	1.00
Firm Characteristics:					
LEV	0.31	0.17	0.30	0.19	0.41
ROA	0.02	0.08	0.03	0.01	0.06
LOSS	0.13	0.34	0.00	0.00	0.00
INT_COV	10.52	17.18	5.14	2.79	10.18
SIZE	8.47	1.50	8.20	7.39	9.46
SUBORD	0.19	0.39	0.00	0.00	0.00
CAP_INTEN	0.54	0.40	0.48	0.19	0.84
FIN_UTILITY	0.24	0.43	0.00	0.00	0.00
RATING	3.83	1.11	4.00	3.00	5.00
INVESTMENT_GRADE	0.63	0.48	1.00	0.00	1.00

Variable definitions:
RATING= S&P LT Domestic Issuer Credit Rating (Compustat #280), see Table 1 for numeric coding;
INVESTMENT_GRADE= 1 if a firm's credit rating is investment grade as noted in Table 1, zero otherwise.
See Table 3 for other variable definitions.

Table 5 Correlations

Panel A: Firm Characteristics

	RATING	LEV	ROA	LOSS	INT_COV	SIZE	SUBORD	CAP_ INTEN	FIN_ UTILITY
RATING		**-0.28**	**0.44**	**-0.41**	**0.29**	**0.50**	**-0.19**	-0.03	**0.25**
LEV	**-0.27**		**-0.22**	**0.21**	**-0.44**	-0.04	**0.21**	**0.29**	-0.04
ROA	**0.38**	**-0.22**		**-0.60**	**0.35**	0.06	-0.04	-0.01	0.00
LOSS	**-0.40**	**0.17**	**-0.55**		**-0.18**	**-0.16**	0.01	0.07	**-0.18**
INT_COV	**0.44**	**-0.52**	**0.72**	**-0.42**		-0.02	**-0.15**	-0.07	**-0.14**
SIZE	**0.51**	-0.06	**-0.10**	**-0.15**	-0.04		-0.02	**-0.21**	**0.42**
SUBORD	**-0.21**	**0.19**	**-0.12**	0.01	**-0.18**	-0.06		**-0.08**	-0.05
CAP_INTEN	-0.05	**0.34**	0.02	0.08	0.04	**-0.20**	**-0.10**		**-0.19**
FIN_UTILITY	**0.27**	-0.04	**-0.16**	**-0.18**	**-0.23**	**0.40**	-0.05	**-0.25**	

Bold text indicates significance at the 0.01 level or better

Panel B: Governance Variables

		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
RATING	A		-0.36	0.11	-0.17	0.19	0.38	0.26	0.03	0.06	0.18	0.16	0.11	0.07	0.30	0.25	0.25	-0.10
BLOCK	B	-0.39		0.23	0.13	-0.05	-0.09	-0.20	-0.01	0.01	-0.05	-0.06	-0.01	-0.06	-0.06	-0.12	-0.09	0.04
%INST	C	0.01	0.36		-0.19	0.12	0.06	0.02	0.05	0.08	0.18	0.21	0.12	-0.02	0.20	0.05	0.15	-0.04
%INSIDE	D	-0.33	0.29	-0.08		-0.22	-0.04	-0.15	-0.05	-0.11	-0.39	-0.30	-0.20	-0.06	-0.24	-0.14	-0.15	0.19
G_SCORE	E	0.21	-0.06	0.09	-0.17		0.14	-0.07	0.09	0.09	0.26	0.25	0.18	0.04	0.19	0.23	0.12	-0.20
FIN_TRANS	F	0.27	-0.12	0.01	-0.06	0.06		0.02	-0.04	0.03	0.02	0.02	0.07	0.08	0.04	0.13	0.10	0.01
TOTFEES	G	0.26	-0.16	0.04	-0.29	0.04	-0.01		-0.05	0.06	0.09	0.07	0.05	0.07	0.28	0.06	0.20	-0.05
FIN_EXPERT	H	0.04	-0.01	0.05	-0.06	0.10	-0.04	-0.02		0.09	0.09	0.13	0.08	0.00	0.05	0.01	0.04	-0.05
%AUD_IND	I	0.03	0.04	0.08	-0.11	0.07	0.04	0.04	0.08		0.51	0.38	0.42	0.04	0.27	0.06	0.09	-0.12
%BRD_IND	J	0.18	-0.03	0.16	-0.38	0.27	0.05	0.12	0.09	0.46		0.56	0.55	0.13	0.54	0.16	0.23	-0.49
%NOM_IND	K	0.13	-0.04	0.18	-0.22	0.20	0.01	0.06	0.13	0.42	0.55		0.44	0.02	0.36	0.17	0.24	-0.26
%COMP_IND	L	0.10	0.00	0.10	-0.18	0.16	0.05	0.05	0.10	0.43	0.51	0.50		0.00	0.31	0.09	0.14	-0.14
CEOPOWER	M	0.07	-0.06	-0.01	-0.12	0.05	0.07	0.09	0.00	0.05	0.15	0.01	0.01		0.12	0.07	0.06	-0.09
%BRD_EXPERT	N	0.30	-0.05	0.17	-0.35	0.20	0.02	0.34	0.05	0.27	0.54	0.36	0.31	0.13		0.14	0.33	-0.32
%BRD_STOCK	O	0.29	-0.16	-0.02	-0.19	0.28	0.05	0.13	-0.01	0.07	0.24	0.18	0.15	0.10	0.21		0.15	-0.09
GOVERNANCE POLICY	P	0.25	-0.09	0.12	-0.20	0.12	0.06	0.21	0.04	0.08	0.22	0.21	0.14	0.08	0.33	0.18		-0.23
%FINCOM_INSIDE	Q	-0.15	0.04	-0.01	0.24	-0.21	-0.02	-0.16	-0.06	-0.11	-0.49	-0.18	-0.14	-0.07	-0.35	-0.18	-0.23	

Bold text indicates significance at the 0.01 level. RATING= S&P LT Domestic Issuer Credit Rating (Compustat #280), see Table 1 for numeric coding. See Table 3 for other variable definitions.

Table 6 Logistic Regression Results of the Effects of Corporate Governance Mechanisms on Firm Credit Ratings (Dependent Variable = RATING)

Variables	Predicted Sign	Estimated Coefficient					
		Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Firm Characteristics:							
LEV	−	-2.121***	-1.918***	-2.107***	-2.227***	-2.070***	-1.979***
ROA	+	0.109***	0.113***	0.108***	0.100***	0.103***	0.097***
LOSS	-	-1.054***	-0.997***	-0.999***	-0.985***	-1.139***	-0.964***
INT_COV	+	0.018***	0.017***	0.020***	0.019***	0.020***	0.019***
SIZE	+	0.878***	0.786***	0.876***	0.851***	0.791***	0.697***
SUBORD	−	-0.748***	-0.644***	-0.686***	-0.748***	-0.665***	-0.588***
CAP_INTEN	+	0.867***	0.817***	0.830***	0.851***	0.744***	0.686***
FIN_UTILITY	+	0.466***	0.340**	0.465***	0.372**	0.533***	0.317*
Ownership Structure and Influence:							
BLOCK	?		-0.162***				-0.163***
%INST	?		0.604**				0.343
%INSIDE	−		-0.988*				0.122
Financial Stakeholder Rights & Relations:							
G_SCORE	?			0.096***			0.043*
Financial Transparency & Information Disclosure:							
FIN_TRANS	+				3.571***		3.463**
TOTFEES	−				0.404		0.264
%AUD_IND	+				0.845**		0.068
FIN_EXPERT	+				0.201*		0.123
Board Structure and Processes:							
%BRD_IND	+					1.023**	0.829*
CEOPOWER	-					-0.102	-0.186*
%BRD_EXPERT	+					0.777**	0.914**
%BRD_STOCK	+					1.415***	1.178***
GOVERNANCE_POLICY	+					0.239**	0.171
%FINCOM_INSIDE						0.436	0.282
Generalized R-square		0.53	0.55	0.53	0.56	0.55	0.60
Likelihood ratio χ^2		678.94***	721.62***	693.15***	747.83***	721.67***	821.67***
Wald χ^2			41.22***	14.25***	68.43***	43.32***	132.18***
Sample Size		906	906	906	906	906	906

*** indicates significance at the 0.01 level or better, **indicates significance at the 0.05 level or better, *indicates significance at 0.10 level or better. RATING= S&P LT Domestic Issuer Credit Rating (Compustat #280), see Table 1 for numeric coding. See Table 3 for other variable definitions.

Table 7 Logistic Regression Results of the Effects of Corporate Governance Mechanisms on Firm Credit Ratings (Dependent Variable = INVESTMENT_GRADE)

Variables	Predicted Sign	Estimated Coefficient					
		Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Firm Characteristics:							
INTERCEPT	?	-8.429***	-6.745***	-9.676***	-8.220***	-10.326***	-8.076***
LEV	−	-3.409***	-3.227***	-3.339***	-3.831***	-3.515***	-3.536***
ROA	+	0.145***	0.149***	0.140***	0.134***	0.140***	0.134***
LOSS	-	-1.365***	-1.224***	-1.311***	-1.228***	-1.472***	-1.085***
INT_COV	+	0.008	0.008	0.012*	0.005	0.009	0.009
SIZE	+	1.111***	0.997***	1.088***	1.094***	1.077***	0.972***
SUBORD	−	-1.495***	-1.449***	-1.404***	-1.528***	-1.429***	-1.428***
CAP_INTEN	+	1.348***	1.256***	1.263***	1.271***	1.283***	1.067***
FIN_UTILITY	+	0.637***	0.430*	0.639***	0.558**	0.522**	0.265
Ownership Structure and Influence:							
BLOCK	?		-0.219***				-0.225***
%INST	?		0.690*				0.551
%INSIDE	−		-1.458**				-0.399
Financial Stakeholder Rights & Relations:							
G_SCORE	?			0.148***			0.075**
Financial Transparency & Information Disclosure:							
FIN_TRANS	+				4.190***		4.051***
TOTFEES	−				0.419		-0.075
%AUD_IND	+				0.533		-0.343
FIN_EXPERT	+				0.052		-0.026
Board Structure and Processes:							
%BRD_IND	+					1.275**	0.824
CEOPOWER	−					-0.104	-0.187
%BRD_EXPERT	+					0.201	0.567
%BRD_STOCK	+					1.571***	1.382***
GOVERNANCE_POLICY	+					0.183	0.055
%FINCOM_INSIDE	+					0.012	-0.180
Generalized R-square		0.43	0.45	0.44	0.45	0.44	0.48
Likelihood ratio χ^2		507.55***	543.66***	522.58***	544.06***	528.99***	596.25***
Wald χ^2			33.66***	14.57***	30.11***	21.02***	71.19***
Sample Size		906	906	906	906	906	906

*** indicates significance at the 0.01 level or better, **indicates significance at the 0.05 level or better, *indicates significance at 0.10 level or better. INVESTMENT_GRADE= 1 if a firm's credit rating is investment grade as noted in Table 1, zero otherwise. See Table 3 for other variable definitions.

Table 8 Assessment of Changes in Probabilities of Receiving an Investment Grade Credit Rating for Selected Changes in Governance Variable Values*

Variables	Predicted Sign	Marginal Effect Standardized Variables	Change in Probability Q1 vs. Q3 Values
Ownership Structure and Influence:			
BLOCK	?	-0.134	-0.192
%INST	?	0.028	0.034
%INSIDE	−	-0.009	-0.006
Financial Stakeholder Rights & Relations:			
G_SCORE	?	0.041	0.048
Financial Transparency & Information Disclosure:			
FIN_TRANS	+	0.147	0.079
TOTFEES	−	-0.003	-0.001
%AUD_IND	+	-0.011	0.000
FIN_EXPERT	+	-0.005	-0.005
Board Structure and Processes:			
%BRD_IND	+	0.029	0.045
CEOPOWER	−	-0.020	-0.040
%BRD_EXPERT	+	0.026	0.036
%BRD_STOCK	+	0.058	0.054
GOVERNANCE_POLICY	+	0.012	0.012
%FINCOM_INSIDE	+	-0.005	-0.005

* Changes in probabilities of each governance variable are computed while holding firm characteristics constant at their mean values. See Table 3 for variable definitions.

Table 9 Money on the Table Analysis			
Panel A: OLS Model of CEO Compensation			
	Dependent Variable		
	Salary	Salary+Bonus	Total Compensation
Economic Determinants			
Sales	123.60***	332.78***	1871.80***
MB	-1.63	13.53	104.53*
OPROA	228.35	829.49	-752.99
RET	27.53	197.10**	-288.85
STD_ OPROA	-54.73	-255.01	3446.53
STD_RET	-42.02	-50.10	1140.14**
Governance Determinants			
CEOPOWER	49.68**	100.14	591.07*
%COMP_CEOAPP	80.72***	491.03***	909.40**
BRDSIZE	14.10***	46.55***	149.00***
%BRD_INSIDE	-93.36	-238.84	-905.40
%OUT_BUSY	118.76	594.74**	1547.82
%BRD_ActiveCEOs	44.20	66.87	666.30
CEO Ownership	-244.63**	190.68***	23.61
%INST	1.05**	3.68**	11.96
BLOCK	-4.22	-47.10***	-202.61***
Adj R^2	0.47	0.52	0.39
F-stat Governance Determinants	5.65	8.38	2.80
p-value F-stat	*0.00*	*0.00*	*0.00*

Table 9 continued

Panel B: Estimates of Overcompensation by Grade			
Overcompensation estimates	INVESTMENT_GRADE n=497	SPECULATIVE_GRADE n=245	P-value
OC_ Salary % (mean)	0.35	0.39	0.00
OC_ Salary % (median)	0.32	0.35	0.01
OC Salary+Bonus %(mean)	0.53	0.60	0.00
OC Salary+Bonus %(median)	0.47	0.57	0.01
OC_ Total Comp %(mean)	0.57	0.60	0.24
OC_ Total Comp %(median)	0.52	0.62	0.25

Panel C: Overcompensation to Share of Interest Costs Ratio – Speculative Grade Firms (n=245)			
Non Investment Grade Firms (245)	Q1	Median	Q3
OC_ Salary/CEOSHARE_INTEXP	51.043	121.591	433.207
OC Salary+Bonus /CEOSHARE_INTEXP	134.330	334.230	1222.470
OC_ Total Comp /CEOSHARE_INTEXP	374.844	905.243	3229.780

Panel D: Test of Significance			
	# firms where ratio is less than or equal to 1	# firms where ratio is greater than 1	χ^2
OC_ Salary/CEOSHARE_INTEXP	5	240	225.41***
OC Salary+Bonus /CEOSHARE_INTEXP	4	241	229.26***
OC_ Total Comp /CEOSHARE_INTEXP	4	241	229.26***

*** indicates significance at the 0.01 level or better, **indicates significance at the 0.05 level or better, *indicates significance at 0.10 level or better.

Salary is equal to the dollar value in thousands of the base salary (cash and non-cash) earned by the CEO during fiscal 2002. Salary+Bonus is equal to the current compensation in thousands comprised of salary and bonus earned by the CEO during fiscal 2002. Total Compensation is equal to total compensation in thousands earned by the CEO during fiscal 2002, which is comprised of the following: salary, bonus, other annual pay, total value of restricted stock granted, total value of stock options granted (using Black-Scholes), long-term incentive payouts, and all other total pay. OC_ Salary % is defined as the dollar amount of Salary due to the governance determinants divided by salary; Salary+Bonus % is defined as the dollar amount of Salary+Bonus due to the governance determinants divided by Salary+Bonus; OC_ Total Comp % is defined as the dollar amount of Total Compensation due to the governance determinants divided by Total Compensation. INVESTMENT_GRADE and SPECULATIVE_GRADE are based on a firm's credit rating as noted in Table 1. Median differences are assessed using the Wilcoxon rank sum test for differences in the distributions. All p-values are two sided. # For the purpose of this analysis the RATINGS groups are collapsed into five groups instead of the original seven used in the primary analysis due to the small number of firm having the necessary data for the compensation analysis in the lowest (n=2) and highest (n=8) debt ratings groups. To calculate the CEO's portion of avoidable interest (CEOSHARE_INTEXP), we multiple 8% (spread between investment grade and non-investment grade debt) times 0.65 (tax benefit to debt) times the CEO's ownership stake in the firm times the total debt outstanding. For CEO's with zero ownership in the firm, we set the OC/ CEOSHARE_INTEXP to the sample median for the respective compensation figure. See Table 3 for other variable definitions.

Table 10 Sensitivity Tests with Prior Period Performance				
Variables	Predicted Sign	1-year Prior Performance	3- year Prior Performance	5-year Prior Performance
Firm Characteristics:				
LEV	−	-2.339***	-2.020***	-2.032***
ROA	+	0.093***	0.083***	0.083***
LOSS	-	-1.027***	-1.131***	-1.109***
INT_COV	+	0.010**	0.018**	0.014***
SIZE	+	0.725***	0.702***	0.694***
SUBORD	−	-0.507***	-0.487***	-0.508***
CAP_INTEN	+	0.817***	0.701***	0.615***
FIN_UTILITY	+	0.365**	0.490***	0.512***
PP_ROA	+	0.038***	0.051***	0.076***
PP_RET	?	-0.006***	-0.007**	-0.016***
Ownership Structure and Influence:				
BLOCK	?	-0.151***	-0.154***	-0.155***
%INST	?	-0.028	0.060	-0.061
%INSIDE	−	0.625	0.720	0.706
Financial Stakeholder Rights & Relations:				
G_SCORE	?	0.050*	0.049*	0.043
Financial Transparency & Information Disclosure:				
FIN_TRANS	+	3.693***	3.755***	3.532***
TOTFEES	−	0.177	0.244	0.182
%AUD_IND	+	0.185	0.111	-0.339
FIN_EXPERT	+	0.147	0.122	0.120
Board Structure and Processes:				
%BRD_IND	+	1.047*	1.227**	1.134*
CEOPOWER	-	-0.190*	-0.204*	-0.226*
%BRD_EXPERT	+	0.965**	0.998**	1.162***
%BRD_STOCK	+	1.028***	1.187***	1.170***
GOVERNANCE_POLICY	+	0.086	0.136	0.168
%FINCOM_INSIDE	+	0.157	0.565	0.942*
Generalized R-square		0.61	0.61	0.61
Likelihood ratio χ^2		819.50	790.96***	743.78***
Wald χ^2		126.51***	124.61***	104.98***
Sample Size		879	837	788

Table 10 Continued

Variable definitions:

PP_ROA is equal to the prior period(s) return on assets, in the 3 and five year columns it is set to the average ROA over the past 3, 5 years. PP_RET is equal to the prior period(s)return over the fiscal year, in the 3 and five year columns it is set to the average return over the past 3, 5 years. Both PP_ROA and PPRET are industry-adjusted performance measures, where industry groups are defined by four, three, two, and one digit SIC codes with a minimum of 10 firms in each industry group. See Table 3 for other variable definitions.