

The Relation between Corporate Governance and Credit Risk, Bond Yields and Firm Valuation

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Abstract

This study examines the empirical relations between the governance structure of public corporations in the United States and the rating and pricing of their debt securities. We study an unbalanced panel of 775 unique U.S. firms from 2001 through 2007 and identify several statistically significant relations between corporate governance factors and credit ratings, bond spreads and firm values. We find that credit ratings are negatively related to the presence of antitakeover measures for firms with speculative grade ratings and positively related to the presence of antitakeover measures for firms with investment grade ratings. Moreover, we find that spreads are positively related to the presence of antitakeover measures, and this relation is significantly stronger for firms with less than investment grade credit ratings. Our findings also suggest that more stable boards, defined as having attributes relating to board tenure, director liability indemnification and classified board structures are related to higher credit ratings and lower bond spreads. We conjecture that boards with greater stability may be better positioned to take into consideration the longer term interests of the firm as a whole, thus benefiting the firm's creditors.

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I. Introduction and Summary

This study examines the empirical relation between the governance structure of public corporations in the United States and the rating and pricing of their debt securities. It also examines similarities and differences between the effects of corporate governance structures and practices on creditors and shareholders. We study an unbalanced panel of 775 unique US firms from 2001 through 2007. Our analysis proceeds in three steps. First we examine the extent to which a firm's various governance metrics or characteristics (ownership structure, board structure and effectiveness, state of incorporation, shareholder rights, transparency, disclosure and audit, executive compensation and turnover) are related to the credit rating assigned by Standard & Poor's ("S&P") to the firm's long-term unsecured debt, controlling for the firm's financial condition and industrial sector.⁶ The purpose of this exercise is to test whether credit ratings and credit quality are related to a firm's corporate governance structure. We then test whether governance metrics are related to the yields on corporate debt, given a firm's credit rating. Our purpose here is to examine the extent to which bond spreads may reflect governance factors that may not be explained by the firm's financial condition, sector and credit rating. In the third and final part of the study we examine the relations between governance factors and Tobin's Q, which is a common measure of the economic value of a firm. The purpose of this exercise is to determine whether governance factors affect the value of the firm as a whole, or whether they affect the firm's bondholders and stockholders differentially.

⁶ This study focuses exclusively on credit ratings assigned by S&P as an indicator of credit risk. S&P's credit ratings have been tested over time in various studies (see References), and have a demonstrated track record with regard to assessing credit risk and the potential for corporate debt default.

Our empirical results can be summarized as follows:

- The primary determinant of a firm's credit rating is its financial condition. This finding replicates the results found throughout the academic literature and serves as a building block for our subsequent analysis.
- Governance attributes relating to ownership structure, shareholder rights, the audit process, board structure and executive compensation also are shown to help explain differences in credit ratings that are not explained by the financial condition of the firm.
- A key finding is that holding a firm's financial condition and industrial sector constant, the relation between its credit rating and the presence of antitakeover mechanisms differs depending on whether the firm's credit rating is of investment or speculative grade. Specifically, we find a negative relation between antitakeover mechanisms and credit ratings for firms with below investment grade debt and a positive relation between antitakeover mechanisms and credit ratings for firms with investment grade debt. In other words the more antitakeover mechanisms (and implied management entrenchment), the worse the credit rating for below investment grade bonds. Conversely, we find a positive relation between antitakeover mechanisms and ratings for firms with investment grade debt. One possible explanation for these results is that the ratings reflect the fact that investment grade debt may lose value if the firm is taken over in a highly

leveraged transaction or by a firm that with a weaker credit profile. Clearly, antitakeover mechanisms reduce this possibility. On the other hand, holders of speculative grade debt could benefit from a takeover if an acquiring firm was in a better financial condition or if the combination would generate synergistic gains to the creditors of both firms from an operational perspective.

- Thus, our results are more nuanced than those reported in two recent papers that have focused on credit and credit ratings: Larcker, Richardson and Tuna (2004) and Ashbaugh-Skaife, Collins and LaFond (2006) (“ACL”). These authors report a positive relation between antitakeover provisions and credit ratings.⁷ The authors argue that strong antitakeover provisions indicate relatively weak stockholders’ rights which translate into strong creditors’ rights.

- These results are closely linked to perhaps the most important finding in our study: a significant positive relation between credit ratings and what we regard as attributes of *board stability and discretion*. We find that ratings are higher for firms with a higher percentage of directors with 15 years of service on the board, firms with a higher percentage of directors who hold stock, firms with classified boards and firms whose charter, bylaws and compensation agreements provide for director liability and indemnification. This cluster of attributes suggests that boards with greater tenure, firm and sector knowledge, financial exposure, and protection from liability may be better positioned to take a long term perspective and have a greater ability to exercise discretion relative to executive management.

⁷ They do not analyze separately investment and speculative grade debt.

In a fiduciary context, this suggests that more established directors and boards may be better equipped to act as longer term stewards for the firm as a whole – including creditors and possibly other non-financial stakeholders, and not focus exclusively, or disproportionately, on the potentially short-term interests of certain shareholders, which could include hedge funds. This finding is particularly interesting in that it challenges the conventional wisdom that long standing, indemnified and entrenched boards lose their objectivity over time to the influences of executive management. Indeed, our findings suggest the opposite might be the case, at least from a creditor’s perspective.

- In short, we find that credit ratings are higher for firms with stable boards and lower for firms with entrenched management. These two findings fit nicely together. It suggests that stable boards that may be better positioned to exercise discretion *vis a vis* management will also be better positioned to address takeover situations in ways that will balance the interests of shareholders, creditors – and perhaps other stakeholders as well.
- For the most part, the results of our analysis of bond spreads mirror those of our analysis of credit ratings.⁸ Credit ratings are the primary determinants of spreads – the higher the rating, the lower is the spread between the yield on the bond and the yield on a U.S. Treasury bond with the closest maturity. Our results indicate that, by and large, governance variables that are positively related to ratings are

⁸ All of the financial variables except for firm size and subordinated debt have the opposite signs in the ratings and spread regressions.

negatively related to spreads.⁹ Importantly, this is the case with regard to the index of board stability that we develop which proves statistically significant both for credit ratings and for bond spreads. We also find the relation between spreads (the risk premium) and antitakeover mechanisms is positive and stronger for firms with speculative grade debt. Since our analyses of bond ratings and bond yields are based on different samples, these results lend credibility to our methodologies and findings.

- Finally, we find that a number of our governance variables that affect bond ratings and bond yields – including our board stability index – are unrelated to Tobin’s Q, which is a measure of the economic value of the firm. We infer from these results that a number of governance factors that are significant for creditors are not relevant for stockholders—thus suggesting that creditor and shareholders may have differential preferences regarding corporate governance structures and mechanisms. It is worth noting, however, that the presence of blockholders is associated with a lower Tobin’s Q. This suggests the risk that both creditors and minority shareholders may be negatively impacted by the actions of block holders.¹⁰

⁹ The notable exception is the percentage of directors who hold none of the firm’s shares. This variable is negatively related to both credit ratings and credit spreads. This suggests that the market may interpret certain governance factors different from the implications reflected in credit ratings.

¹⁰ The literature refers to this phenomenon as the private benefits from control. See e.g. Barclay and Holderness (1989).

II. Research Contribution

We believe that the conclusions reached by this study have relevance both for practitioners and academics in better understanding how corporate governance impacts credit quality and the market's perception of credit risk. While there is an extensive and growing literature on the relation between governance attributes and security pricing, we believe that this study adds significantly to this burgeoning literature. Specifically, our study is distinguished from earlier research in terms of scope, methodology, and time horizon.

Our results are based on seven years of data (2001 – 2007), as opposed to other studies which typically provide only a one-year snapshot. A major benefit of our longer timeframe is that we are able to show that a number of results that have been reported in the literature are only relevant over a very short time period.

We employ additional governance variables in our analysis to test for relations with credit ratings and bond yields. We examine the yields of seasoned bonds that are trading in the market rather than the yields of newly issued bonds. Analyzing the prices of seasoned bonds trading in the market avoids potential distortions due to the uncertainties and transaction costs associated with a new issue, and this arguably presents a more refined view of the market's perception of risk as embodied in corporate bond yields.

The research team combines academic researchers with strong practical experience together with practitioners with a solid grounding in the research literature relating to

corporate governance. This academic/practitioner combination arguably blends theory together with practice, and contributes to the development and testing of research questions that are informed from professional or “clinical” experience.

Our research extends and tests the insights of recent corporate governance scholarship by examining whether there is a relation between credit quality and corporate governance and, if so, how this relation may affect the pricing of corporate bonds.

To date, corporate governance research has focused more extensively on measuring the link between good and bad governance and firm or equity valuation. The most notable papers in the US literature include Gompers, Ishii, and Metrick (GIM, 2003) and Bebchuk, Cohen and Ferrell (BCF, 2004). Both sets of authors show that valuation multiples during the 1990s are significantly related to corporate governance characteristics. The GIM Index (“GINDEX”) of twenty-four governance provisions, essentially created from IRRC’s database of listed firms’ antitakeover provisions in the 1990s, is a scoring system which rates firms as having either strong or weak shareholder rights. GIM show that firms with higher index values, i.e., weak shareholder rights, which they interpret as an indication of poor governance, have lower valuation multiples. BCF test GIM’s results and find that only six of the twenty-four governance provisions are material. Brown and Caylor (2005), using data from ISS, affirm BCF’s results by showing that only a small subset of governance factors in the public domain are related to firm valuation.

Several recent papers have attempted to link corporate governance and credit or bond ratings. There is a divergence of views relating to the trade off between good and bad governance and what benefits shareholders and bondholders. Adopting aspects of a corporate governance framework developed by S&P¹¹, Ashbaugh, Collins and LaFond (2006) (“ACL”) examine which factors are likely to affect the cost of debt financing and find that firms with higher values of the GINDEX the higher the firm’s credit rating-- e.g. credit ratings are higher when shareholders rights are weaker. They also find that credit ratings are negatively associated with both the number of block holders who own at least 5% and CEO power on the board while credit ratings are positively related to: 1) weaker shareholder rights in terms of takeover defenses; 2) the degree of financial transparency; 3) overall board independence, (4) board stock ownership and (5) board expertise. ACL show that moving from the lower quartile to the upper quartile of the GINDEX doubles a firm’s chances of receiving an investment grade credit rating. In so doing they also suggest that weak governance can result in firms incurring higher debt financing costs.

Several other papers have attempted to show a link between governance factors, credit ratings, and bond yields. Boraj and Sengupta (2003) link corporate governance mechanisms to higher credit ratings and lower bond yields, showing that firms with greater institutional ownership and stronger outside control of the board enjoy lower bond yields and higher ratings on their new bond issues. In addition, they suggest that the governance mechanisms which they tested can reduce information asymmetry between firms and lenders. A recent paper by Billett King and Mauer (2004) provides empirical

¹¹ See S&P’s corporate governance scoring criteria (in References). Note that this governance criteria has been applied separately and independently from S&P’s credit rating process.

evidence that takeovers can benefit bondholders because of a so-called co-insurance effect: the reduction of overall firm risk due to operational diversification of firm businesses after mergers. Klock, Mansi and Maxwell (2004) maintain that strong anti-takeover provisions are associated with a lower cost of debt financing while weak anti-takeover provisions are associated with a higher cost of debt financing. Larker, Richardson and Tuna (2004) conclude that firms with large boards and anti-takeover provisions tend to have better debt ratings and lower abnormal accruals while Litov (2005) builds evidence that firms with weak shareholder rights have lower bond yields when issuing debt and have higher credit ratings. Cremers, Nair and Wei (2006) investigate the effects of shareholder governance mechanisms and maintain that the impact of shareholder control on credit risk depends on takeover vulnerability. Shareholder control is associated with higher yields if the firm is exposed to takeovers.

To our knowledge, ours is the only study that examines the effects of a comprehensive set of governance factors on both bond ratings and bond yields. In contrast, much of the previous research examines either the relation between governance and only ratings, presuming that yields would be determined accordingly, or the relation between only a small set of governance factors and ratings and spreads (Bhoraj and Sengupta (2003)). While ratings are primary determinants of bond yields, we find that the market implicitly “prices” other factors, including factors related to the firm’s governance attributes.

III. Scope, Data Selection, and Sources

This paper addresses the importance of corporate governance from the perspective of corporate credit risk – namely the risk that a company may not be able or willing to honor contractual debt service obligations to its creditors. In many ways, creditors share similar interests with shareholders, since both typically have an interest in the firm’s financial and operational performance over time. Also, in many instances, the investment institutions may own both debt and equity securities of the same company. Moreover, past corporate governance scandals have affected not only equity valuations of scandal-affected companies, but also the value and credit quality of public and private debt issued by these same firms.

However, creditor and shareholder interests are not identical in many situations including takeovers, leveraged buyouts and when the company is operating in the vicinity of insolvency. Hence we believe there is need for a better understanding of creditors’ perspectives on corporate governance, including the extent to which governance factors are linked with measures of credit risk (using S&P credit ratings) as well as in the pricing of bonds that are traded in the marketplace.

A. Corporate Governance Variables and Data

Of course, the selection of independent variables capable of capturing the many facets of corporate governance is limited by data availability. Beyond this obvious limitation, we seek to select variables that allow us to assess the mechanism by which corporate governance factors affect credit quality or the perceptions of investors in the pricing of

corporate debt. To this end, we build on and extend a framework developed by S&P designed to measure and analyze corporate governance attributes dating back to the late 1990s. The framework is based on four main components or categories:

- Ownership Structure and External Influences
- Shareholder Rights and Stakeholder Relations
- Transparency, Disclosure and Audit
- Board Structure and Effectiveness

This same general S&P framework is also employed (and cited) in ACL. The S&P framework was first developed in 1999, and was based on factors arising in statute, “soft law” or codes of conduct, listing requirements and a vast literature relating to governance practices. These criteria were drafted with an eye toward global application and were guided in part by the transnational corporate governance principles published by the OECD in the late 1990s.¹² The focus was on assessing those factors that affect the relations between officers and directors on the one hand, and the firm’s financial stakeholders (shareholders and creditors) on the other.

We complement the S&P framework by adding three additional independent variables: (1) executive compensation; (2) executive turnover; and (3) whether the firm is incorporated in Delaware. Note that the original S&P framework actually includes executive compensation and turnover as a subset of broader category: board structure and effectiveness. For our study we deconstruct this group of governance variables and analyze each component separately. Francis, Hasan, John, and Waisman (2006) provide

¹² Organization of Economic Cooperation and Development, “OECD Principles of Corporate Governance,” 1999.

evidence that Delaware incorporated firms have higher cost of debt through higher bond spreads. They argue that different state laws, especially state antitakeover laws affect the cost of capital. The fiduciary orientation of directors in Delaware incorporated firms is also more clearly framed in terms of shareholder interests, as opposed to the interests of the firm as a whole, which can include stakeholders such as creditors.¹³ We thus include the Delaware incorporation dummy as a separate governance category.

While our study employs and extends the general framework developed by S&P, the governance variables we employ are not proprietary to S&P. All data are publicly available from either The Corporate Library (TCL) or Investor Responsibility Research Center (IRRC), who in turn obtain data from regulatory filings and disclosures including annual reports, 10Ks and proxy statements.

The basic corporate governance data are fundamentally “architectural” in nature, in that they represent architectural or structural features of corporate governance, for example, the levels of non-audit fees, the percentage of independent directors and the like. This has the benefit of allowing for a large number of companies in the sample with a transparent and objective basis of comparison. While there is merit in an architectural approach of this nature, it must be recognized that there are also limitations to this approach from an epistemological perspective. Perhaps most fundamentally, this approach focuses on data that are readily measurable, which is at best only a proxy for what we ultimately hope to measure or equate to corporate governance. Ultimately, this is a question of principles over rules. For example, we are less interested in understanding

¹³ See note 37 *infra*.

the percentage of independent directors on the board than we are in understanding if this is linked to more important, but less-directly measurable, attributes such as integrity, fairness, accountability and effectiveness. In this process of research we must recognize that these “softer” overarching principles are what ultimately reflect corporate governance in its truest sense, and that the data collected is a scientifically legitimate, but still imperfect, proxy to represent these principles in an empirical test. In this regard it is important to recognize specific architectural features of corporate governance should not be regarded as ends unto themselves. This is a limitation shared by other similar research approaches in governance, including some that may leave the impression that specific packages of corporate governance attributes are intrinsically the same thing as good or bad corporate governance.

It should also be noted that the variables in this study do not include aspects of stakeholder relations, corporate responsibility or social / environmental disclosure that are increasingly being linked to the mainstream discussion of corporate governance. However this suggests potential scope for a future research project stemming from our study to address how these broader social variables may help to explain credit rating levels or bond spreads.

We do not discuss each corporate governance variable used in the study. Tables 1 and 2 present definitions, type and the source of all of the data used in the study. However below we discuss the nature and relevance of each of the seven main categories of our analysis.

Ownership Structure. For this component we have three variables: shareholdings by all insiders, institutional ownership, and block shareholdings. These relate to differing degrees and forms of ownership. Ownership can be a critical dimension to overall corporate governance, particularly in cases where the interests of block holders may not be aligned with those of smaller financial stakeholders. While insider ownership may align the interests of a management and director team with that of shareholders, whether and to what extent this is beneficial to creditors is an empirical issue. In cases where ownership is widely dispersed, the governance risk is that no individual shareholder will be in a position to exert meaningful influence over the managers acting as the shareholders' agents. In such cases, institutional investors have the potential to play a more meaningful role in terms of influence and engagement than individual shareholders, which in principle is a positive feature.¹⁴ There are conflicting views and evidence as to whether specific forms of ownership are intrinsically positively or negatively related to a firm's financial performance. However other credit related research (ACL) has suggested that the presence of block holders has a negative impact on credit ratings. For purposes of our study we believe it is important to test for ownership structure, if nothing else as a control variable. We use the percentage of institutional shareholdings and the number of block holders as proxies for institutional and block holdings.

Shareholder Rights and Stakeholder Relations. Our shareholder rights variables have been featured prominently in many corporate governance research studies. This is in part because they are readily measurable, and because they link directly with the ability of

¹⁴ This is still an aspiration in terms of the behavior of many institutional investors.

shareholders to influence the governance of the company they own through exercising rights established in the company's charter or bylaws. Both GIM and BCF provide some empirical support for the notion that antitakeover measures lead to management entrenchment and decreased firm value. From a creditor perspective, however, the relevance of shareholder rights is less obvious, and possibly a source of conflict.

As much of the literature argues, antitakeover measures reduce the degree to which managers are monitored by agents in the market for corporate control, which leads to higher agency costs and lower equity values. Moreover, if the managers are sufficiently entrenched, they can unilaterally veto a takeover bid and preclude their stockholders from receiving a takeover premium. But for creditors, antitakeover provisions have quite different implications. Takeovers or other related activity, especially those with highly leveraged financing, increase the risk of current creditors and hence impact their wealth negatively. But mergers by companies in different lines can also decrease the overall risk level of the combined company through this operational diversification. This "co-insurance" effect can benefit creditors in specific cases. There is empirical evidence supporting both propositions.¹⁵

While GIM suggests that an index (the "GINDEX") composed of twenty-four major antitakeover provisions as an anti-takeover measure, BCF argue that most of the components in the GINDEX do not exert meaningful antitakeover forces. They find that a

¹⁵ While ACL, Larcker, Richardson, and Tuna (2004), Klock, Mansi, and Maxwell (2005) suggest that anti-takeover measures are viewed positively by either credit rating agencies or bond traders, Billett, King, and Mauer (2004) find that bonds of target firms earn positive announcement period returns during mergers and acquisitions, especially those with ratings below investment grade, which is consistent with our findings.

more refined entrenchment index (EINDEX), comprised of only six variables captures all the significance of GINDEX on firm valuation.¹⁶

Out of the twenty-four GINDEX components, we create a new index, termed BINDEX, by adding the indicator variables (0 or 1) for the presence of director liability protection, director indemnification, and a classified or staggered board. We argue that this index proxies for the level of board stability and discretion. A higher value of this index indicates that the director team may be more conservative or better positioned to exercise greater discretion to focus on the longer term perspective of the firm. We use the tenure of the CEO as a separate measure of management stability (entrenchment).

The entrenchment of executive managers or directors may create incentive problems that negatively impact a firm's shareholders. However, whether entrenchment is also harmful to creditors is not so obvious. On the one hand, creditors are also disadvantaged by potential incentive problems that may decrease the company's performance. On the other hand, however, entrenchment could also represent a more stable management/director team and hence suggest more stable corporate policies/strategies. Bertrand and Mullainathan (2003) provide evidence that entrenched management follow more conservative policies.

Transparency, Disclosure and Audit. High standards of transparency, disclosure and audit practices are governance attributes of importance to both shareholders and creditors, though in many cases credit rating agencies may benefit from direct access to corporate

¹⁶ See Table 2 for the components of EINDEX and GINDEX.

managers and information, and are therefore less constrained by what is publicly disclosed. A study by S&P of US listed companies concludes that disclosure does not differ notably from company to company, given the conformity to U.S. GAAP and SEC mandated disclosure standards.¹⁷ However, we have identified several relevant variables relating to the audit process in our study. These include: the percentage of non audit fees to total auditor fees, the number and frequency of restatements and incidents in which the SEC has found a material weakness in the firm's internal control as dictated by Section 404 of SOX.

Following recent developments in financial accounting, we entertain a variable that proxies for the quality of a firm's reported earnings. Ecker, Francis, Kim, Olsson and Schipper (2006) ("Ecker et al.") argue that the quality of a firm's earnings is a priced factor in establishing capital market equilibrium. They calculate what they refer to as "E-loadings" which reflect the quality of a firm's earnings. This E-loading variable can be viewed as a governance variable that proxies for responsible financial stewardship. The measure is based on the standard deviation of the residuals of a time-series of the firm's total current accruals on past, present, and future values of the firm's cash flows from operations, its most recent change in revenues and the level of the firm's property, plant and equipment for each of the preceding five years.¹⁸ The measure is further refined

¹⁷ Patel, Sandeep A. and Dallas, George S., "Transparency and Disclosure: Overview of Methodology and Study Results – United States," (October 16, 2002). Available at SSRN:<http://ssrn.com/abstract=422800> or DOI: 10.2139/ssrn.422800.

¹⁸ The intuition is that if there is a meaningful and sustaining relation between a firm's reported earnings and its cash flows, then we can conclude that the reported earnings are of high quality. Alternatively, if there is no relation between reported earnings and cash flow, then we can conclude that the reported earnings are of low quality.

by calculating the degree of volatility that can be attributed to managerial intervention and that which can be attributed to the inherent nature of the firm's businesses.

The E-loadings are then obtained by entertaining a four-factor asset pricing model that includes the Fama-French three factors (market return premium, firm size, market-to-book) and the above measure of earnings quality as the fourth factor. The E-loadings are the coefficients on this measure. Note that this measure represents the inverse of the quality of firm's earnings. A high E-loading value implies a high variance in the accruals' regression and a low quality of (reported) earnings. In order to facilitate exposition and provide a more intuitive interpretation of the effects of this variable on credit scores, we multiply the E-loading for each observation by -1 and denote the resulting variable Earnings Quality (EQ). Thus, in this reformulation, the higher EQ, the higher the quality of the firm's reported earnings and, presumably, the higher (better) the firm's credit rating.

Board Structure and Effectiveness. Board effectiveness is a key aspect of corporate governance, and both creditors and shareholders have mutual interest in a strong board to provide oversight of management for the protection of financial stakeholders. In our study, this category contains the greatest number of variables, in part reflecting the presumed importance of the board in overall corporate governance. It is also the case that a number of different aspects of board structure are directly measurable from data provided in proxy statements and other corporate disclosures. Several variables relating to committee structures and board independence (the percentage of independent directors,

and indicator variables designating if the audit committee is wholly independent, the compensation committee is wholly independent, and the nomination committee is wholly independent) are likely to be homogeneous among the sampled companies, given the influence of NYSE and NASDAQ listing rules. Other less homogenous variables include board size, the percentage of long tenured (over 15 years) directors, the percentage of “mature” directors (over 70 years old), the percentage of directors who hold at least 4 other directorships, the percentage of directors who failed to attend at least 80% of all board meetings, the percentage of directors who do not have any equity holding, whether the CEO is also chairman, whether there is a lead director, and a proxy for the normal functioning of the board such as the number of board meetings. Empirically, there is mixed evidence about certain governance attributes which are typically linked to board effectiveness. These include areas such as the role of board independence as well as whether the Chairman and CEO roles should be combined or separate.

State of Incorporation. The debate regarding whether competition among states for corporate charters create a “race to the bottom” or “race to the top” has been in the literature for the past three decades. Daines (2001) finds that Delaware incorporated firms have higher firm value. He argues that this is due to the higher likelihood of being taken over for Delaware incorporated firms relative to other jurisdictions that allow for more substantive takeover defenses. Subramanian (2004), however, challenges Daines’ conclusion by noting that the “Delaware effect” is mostly driven by small firms. While the question of whether state incorporation has a differential effect on firm performance is unsettled, Francis, Hasan, John, and Waisman (2006) provide evidence that Delaware

incorporated firms have a higher cost of debt through higher bond spreads. We further test whether Delaware incorporation (Delaware) has differential effect on firms' credit ratings and bond spreads in this paper.

Executive Compensation and Turnover. Since excesses in executive compensation stand out as a fundamental governance issue, this category warrants examination on its own. On the surface, executive compensation is more of a concern for shareholders than creditors, particularly in situations where options granted to executive management are not accompanied by pre-emption rights to existing shareholders or in situations where there is a large dilution overhang. Also, from a creditor's perspective, for many companies in our sample the interest coverage ratio for a CEO with compensation of \$20 million will not differ materially from the interest coverage ratio for a CEO with compensation worth \$2 million. At a deeper level, however, abuses of executive compensation signal weak board oversight generally, in a way that should be a concern both to creditors and shareholders. Consequently we include in this category a range of variables which may affect the quality of governance including: CEO base salary as a percentage of CEO total compensation, CEO bonus as a percentage of total compensation, and CEO percentage shareholdings, dilution as proxied by the options granted to executives as a percentage of total shares outstanding and CEO tenure. For the regression analysis on overall firm performance (Tobin's Q), we also include the percentage of total CEO compensation based on incentive contracts.

B. Credit Variables and Data

We use S&P's credit ratings as a measure of the credit risk of individual companies. Note that the credit rating process is fundamentally an assessment of a company's financial strength (specifically its vulnerability to default) and the operational or business risk factors that may influence a company's financial position over time. A multitude of factors are taken into consideration in individual credit ratings at S&P. This typically includes consideration of country risks, industry risks, competitive risks and financial risk relating to earnings, cash flows, liquidity and balance sheets. It also can include consideration of management and governance related factors that are viewed as material to a company's financial strength. These factors are assessed on a case by case basis by individual rating committees. It is important to note that in the S&P credit rating process, there is no formulaic algorithm employed to "score" a company's corporate governance in a way that has a mechanical relationship to the final rating outcome. Hence it is not circular to test for the relations of specific governance variables to S&P credit ratings.

Antitakeover defenses warrant particular attention in this regard. At S&P, shareholder rights are not an explicit component of the credit rating criteria and are not systematically assessed as part of the credit rating process. As discussed previously, takeovers, particularly highly leveraged takeovers, can have the effect of destabilizing a company in a way that can impact creditors more than shareholders, it is also the case that in other situations takeovers can be positive from a credit perspective. This can be the case when a takeover results in a stronger, more business profile and/or a stronger consolidated financial position. Ex ante, it is not possible to fully anticipate the magnitude or direction of a takeover event on a company's credit quality.

The ratings used in this project are S&P's long term issuer credit ratings as reported in COMPUSTAT, a product of S&P. For purposes of the econometric estimations, S&P credit ratings are grouped into seven categories (see Table 1 for the specific methodology for grouping).

Coding the dependent variable in this fashion is a recognition that S&P's ratings' are not scaled on a linear basis. Actual default and yield experience suggests that these relationships are in fact non-linear, particularly in the differences between the A and BBB categories and the BBB and BB categories (the latter distinction separating "investment grade" from "speculative grade" risk). The non-linearity in credit scores requires the use of ordered logistic regression in the empirical tests.

C. Bond Market Variables and Data

Our bond market yields are taken from a proprietary data base of S&P that contains prices of all rated corporate bonds at a particular point in time. We chose to sample firms after the first quarter of each year to best match in time the firms' disclosures relating to its financial statements and corporate governance structure. Specifically, we sampled bond prices as of the end of the trading day in March for the years 2002-2007. The sample includes only senior unsecured corporate debt. Based on the S&P data we compute each bond's yield-to-maturity and calculate the bond's spread by subtracting the yield-to-maturity of a U.S. Treasury bond with the closest maturity date.

D. Accounting/Financial Variables and Data

All credit ratings and financial ratios are taken from COMPUSTAT and are defined by Data Item(s) in Table 1.

IV. Empirical Evidence

A. Financial Condition, Governance and Credit Ratings

1. Full Sample

Our sample consists of an unbalanced panel of publicly traded corporations covering 2001 to 2007. After merging data from COMPUSTAT, CRSP, The Corporate Library (TCL), the Investor Responsibility Research Center (IRRC) and Thompson Financial (TF), we are left with roughly 500 firms in each year or 3,209 firm years representing 775 unique firms. (See Tables 1 and 2 for definitions and sources of the data used in this study.)

Table 3 presents our main results regarding the extent to which corporate credit ratings reflect a firm's financial condition on the one hand and its governance structure on the other. We begin with a model of credit ratings based on a firm's financial data which was developed by ACL.

Following ACL, we perform a series of Ordered-Logit Regressions in which the dependent variable is a seven-categorical grouping of the credit ratings assigned by S&P,

with the highest rating corresponding to the highest ordinal value.¹⁹ Reported in Table 3 are the estimates of the coefficients of five Ordered-Logit regressions. A positive coefficient indicates that higher values of the independent variable lead to higher (better) ratings for the firms' senior unsecured long-term debt.²⁰ A negative coefficient indicates that higher levels of the independent variable correspond to lower credit ratings. All of the regression models reported in this study include year and Fama and French 48-industry fixed effects. In addition all standard errors are "clustered" at the firm level.²¹

The independent variables in these regressions are broadly divided into six categories:

(1) Financial Data; (2) Earnings Quality²²; (3) Ownership Structure; (4) Executive Compensation and Tenure; (5) Board Structure; and (6) Governance Indexes. Model 1 in Table 3 reports the relations between a firm's credit rating, its financial condition and its GINDEX. Model 2 in the table reports the relations between our governance variables, earnings quality, GINDEX and credit ratings without regard to the firm's basic financial data. Model 3 includes both financial and governance variables.

¹⁹ Specifically, rate=1 if Rating<=CCC+; rate=2 if CCC+<Rating<=B+; rate=3 if B+<Rating<=BB+; rate=4 if BB+<Rating<=BBB+; rate=5 if BBB+<Rating<=A+; rate=6 if A+<Rating<=AA+; rate=7 if Rating>AA+. (COMPUSTAT Data Item 280).

²⁰ The rating assigned by S&P to a firm reflects its assessment of the risk (probability) that the firm will default on its senior, unsecured, long-term debt.

²¹ It is critical to cluster the standard errors by firm, since most of our independent variables are persistent through time. Failure to cluster the standard errors leads to an underestimate of the standard errors of the estimates and an overestimate of the t-statistics. See Petersen (2007). Since much of the literature ignores the effects of clustered standard errors, a number of results reported in this paper are inconsistent with much of the existing literature. We believe that these inconsistencies are due to the authors not clustering standard errors by firm. As noted elsewhere in another context, we can replicate the literature if we ignore clustering and other appropriate econometric issues.

²² Since our measure of earnings quality is based on accounting data as well as the extent of earnings management in the firm, it is not clear whether we should include it with the financial data or governance data. We therefore chose to report it separately, particularly since it is such a significant explanatory variable. However, to the extent it can be viewed as a proxy for responsible financial stewardship it appropriately can be regarded as a governance variable.

The results of Model 1 in Table 3 show that the coefficients on all of the financial variables have the expected signs and all are statistically different from zero. Thus, credit ratings are higher (1) the larger the firm's market capitalization; (2) the lower the firm's leverage ratio; (3) the higher the firm's return on assets; (4) if the firm has not realized negative earnings over the past two years; (5) if the firm has no subordinated debt outstanding; (6) the higher the firm's interest coverage; and (7) the more capital intensive the firm's production function. These relations are highly significant, robust to almost all specifications of the statistical model and are consistent with the findings reported by ACL.

Interestingly, Model 1 shows no significant relation between ratings and the GINDEX. Recall that the GINDEX is purported to measure the degree of shareholder power relative to the power of the firm's management.²³ A high GINDEX indicates that the firm has extensive antitakeover devices in place and is therefore under the control of its management. GIM call these firms "dictatorships", emphasizing the relative strength of management versus stockholders. On the other hand, a low GINDEX indicates that the firm has relatively few anti-takeover devices in place, which increases the power of stockholders and decreases the power of the firm's officers and directors.

Our finding that GINDEX is unrelated to credit scores is inconsistent with the findings reported by ACL. We should note that we can replicate the ACL results, including their results regarding the negative relation between GINDEX and credit ratings, for the one year of their study (2003) if we use their coarser industry classification – a dummy

²³See Table 2 for the variables included in the GIM index.

variable set equal to one if the firm is a utility or is in the financial services industry. However, when we extend the data from 2001 to 2007, and use the Fama-French 48-industry classifications, we find that this relation is insignificant.²⁴

Model 2 replaces the financial variables in Model 1 with the firms' governance variables, including the measure of earnings quality as developed by Ecker et al. and discussed in the previous section. The purpose here is twofold: first, to examine the relative importance of governance metrics relative to financial metrics in explaining credit ratings; and second, to identify the governance variables that are most related to credit ratings.

The results reported in Table 3 indicate that credit ratings are in fact significantly positively related to earnings quality, which suggests that S&P credit ratings do reflect the quality of a firm's reported earnings.²⁵ Indeed, looking across the row of the table, this variable is highly significant in all specifications of the model. Higher earnings quality is associated with higher credit ratings.

Two ownership-structure variables are negatively related to a firm's credit rating: the number of stockholders who hold 5% or more of the firm's outstanding stock and the percentage of shares held by insiders. One interpretation of the negative relation between ratings and the number of block holders stems from the fact that creditors may be wary of potential takeovers, since bondholders of target firms often suffer significant capital

²⁴ In our analysis we found a number of relations that hold in some periods (years) but not in others. Thus, researchers are to be cautioned about drawing general conclusions based on only one or two years of data.

²⁵ These results are consistent with S&P credit rating criteria.

losses²⁶ and a greater number of block holders increases the likelihood of a takeover bid.²⁷ Alternatively, a large number of block holders suggests that management would be more inclined to side with shareholders regarding any conflict of interest with bondholders. Finally, it is possible that large block holders derive certain “private benefits from control” that come at the expense of the firm’s other financial stakeholders – stockholders and creditors alike.²⁸ Of these three possibilities, the last is most consistent with the empirical results we report subsequently. We find that the number of block holders is negatively related to Tobin’s Q, which is a measure of the “economic” value of a firm. Thus, we find that both creditors and (diffuse) stockholders may be disadvantaged as the number of block holders increases.

The negative relation between credit ratings and the percentage of shares held by insiders is a curious result. One interpretation is that the more shares held by insiders the more sympathetic the management would be to its shareholders in any dispute involving the firm’s creditors. It is also the case that insider ownership might increase the potential for self dealing.

The results of Model 2 regarding executive characteristics indicate that credit ratings are lower the longer the tenure of a firm’s CEO. This result is understandable if tenure is a proxy for “entrenchment.” Managers who are immune from the pressures exerted by the forces in the market for corporate control, both internal and external, do not have the

²⁶ See, e.g., Bradley, Desia and Kim (1988)

²⁷ See Cremers, Martijn, and Nair (2005), who find that the number of block holders and takeover vulnerability increase the likelihood of a firm being taken over.

²⁸ See e.g. Barclay and Holderness (1989).

same incentives to maximize the value of the firm's securities and, as a result, the firm's credit rating suffers. An alternative explanation is that long-tenured CEOs may be the result of a family-controlled corporation, in which the operating strategy is not necessarily to maximize the value of the firm's outstanding securities. Interestingly, we find a negative relation between CEO salaries and credit ratings, although the statistical significance diminishes once the accounting variables are included in the model.

A number of variables relating to the structure of the board are significantly related to credit ratings. Board size is positively related to credit ratings, and this is true even when the size of the firm and its capital structure are held constant. (See Models 3-5.) This may be due to the simple fact that larger firms require larger boards in order to carry out the numerous fiduciary duties and responsibilities imposed by State and Federal regulations, the SEC and the various exchanges. This evidence is consistent with Anderson, Mansi, and Reeb (2004) and Larcker, Richardson, Tuna (2004). The data also indicate that the greater the percentage of independent directors on the board and the greater the percentage of directors with more than 15 years with the firm, the higher the firm's bond rating. These latter two results suggest that stable, outside directors are beneficial to a firm's credit quality.²⁹

Unlike the results regarding managers, credit ratings are positively related to the tenure of the board of directors, as measured by the percentage of board members who have served the firm for 15 years or more. Thus, credit ratings are higher the longer the tenure of the firm's board members and the shorter the tenure of the firm's CEO. This suggests that

²⁹See e.g., Bhagat & Black (2002) regarding the effectiveness of outside v. inside directors.

from a credit perspective, managers and directors are not viewed through the same lens. Another example of this is the fact that the greater the percentage of shares held by CEOs, the lower the credit rating, although this relation is not statistically significant. However, credit ratings are significantly negatively related to the percentage of directors who hold zero of the firm's equity. In sum, credit ratings are positively related to the length of service and the number of shares held by directors, but are negatively related to these variables with respect to CEOs. While on the surface this result is counterintuitive, the explanation from a credit perspective might also be linked to the potential for short term "equity capture" – for example, when a CEO or short term activist shareholders with a large equity stake may favor disproportionately or unfairly the interests of short term shareholders relative to creditors. More stable boards, on the other hand, may be more conservative in their strategies in a way that might be supportive of longer term interests of creditors and possibly other nonfinancial stakeholders. Finally, the results of Model 2 are consistent with those reported under Model 1 regarding the fact that there is no significant relation between credit scores and GINDEX.

Model 3 contains both financial and governance variables. The results show that the addition of the governance variables does not diminish the significance of the financial variables. All of the coefficients of the financial variables have the expected signs and all are highly significant. Moreover almost all of governance variables retain their signs and significance levels when the financial data are added to the model. This implies that there is information in the governance variables regarding credit ratings that is not reflected in the firm's financial data and vice versa.

Both the number of 5% block holders and the number of shares held by insiders continue to be negatively related to credit ratings even after the accounting variables are added to the model. Again, we conjecture that these results are due to the potential conflict between controlling stockholders and creditors. As in Model 2, the tenure of the management is negatively related to credit ratings, while credit ratings and the tenure of the board of directors are positively related. Again, as in Model 2, the results from Model 3 suggest that the number of shares held by the CEO is negatively related to credit ratings (although the relation is not statistically significant), whereas the percentage of the board that holds zero equity in the firm is negatively related to credit ratings. Board size continues to be positively related to credit ratings. Finally, note that the GINDEX is not related to credit ratings in this specification.

The results of Model 3 suggest that credit ratings reflect differences between managers and directors. The results suggest that credit ratings are higher the greater the percentage of the firm's directors with 15 or more years of service and the lower the percentage of directors who hold none of the firm's stock. In contrast, ratings are lower the greater the tenure of the firm's management and the more shares held by the firm's management.

In order to better examine the conflicting results regarding officers and directors, we combine a subset of the factors of GIM's GINDEX into two separate indices. The first is the "entrenchment index" (EINDEX) defined by Bebchuk et al. and is calculated as the sum of six indicator variables whose value is one if the indicated characteristic is present

and zero otherwise. The variables include: golden parachutes, limits to amend bylaws, limits to amend charter, poison pills, staggered boards and supermajority requirements. The second index we construct, BINDEX, is designed to capture the stability and discretion of the board in overseeing the affairs of the company. Specifically, BINDEX is equal to the sum of six indicator variables, each of which is equal to 1 if the stated condition is met and zero otherwise. The indicator variables are (1) the presence of charter amendments that limit the director's liability; (2) whether the directors are indemnified by the firm's charter or bylaws; (3) whether the directors are indemnified by contracts with the firm, and (4) whether the firm has a classified (staggered) board. The higher the value of the index, the greater is the stability and potential discretion of the board.

Note that the two indexes that we employ draw a distinction between directors and executive management. The vast majority of the literature in this area ignores any distinction between the two. From a credit perspective the distinction might reflect a tendency of executive management on the one hand to be "captured" by short term shareholder interests, and the resulting need for strong board directors on the other hand to temper undue equity bias – in the spirit of exercising long term fiduciary stewardship for the firm as a whole (including creditors and other stakeholders).

The careful reader will have noticed that the presence of a staggered board is included in both EINDEX and BINDEX. A staggered or classified board gives the directors a certain degree of stability of tenure, since each director comes up for election typically once ever

3 years. However, a number of legal scholars have argued that a staggered board is perhaps the most effective entrenchment device available to management.³⁰ Since a staggered (classified) board can have these two opposing effects, we include it in both indexes.³¹

The first thing to note in Model 4 is that the addition of these two independent variables (BINDEX and EINDEX) does not affect any of the signs of the independent variables in Model 3 nor their statistical significance. BINDEX, our index of board stability/discretion, is positively related to credit ratings. In contrast, EINDEX is negatively related to credit ratings. Thus, it appears that credit ratings positively reflect stable and unencumbered boards, but not entrenched management. The opposite signs on these two variables suggest that the positive relation between the GINDEX and credit scores that has been documented in the literature may not be due to antitakeover devices but rather board stability and discretion. To examine this issue further, we generate an interaction term equal to the product of EINDEX and a binary variable, BIG, that equals 1 if the firm's debt is below investment grade and zero otherwise.

The results of Model 5 demonstrate that the addition of this interaction variable does not affect either the signs or the statistical significance of most of the independent variables of Model 3. In addition, BINDEX remains significantly positively related to credit ratings. However, adding the interaction term “flips” the sign on EINDEX, which suggests that there is a differential relation between management entrenchment and credit

³⁰ Bebchuk, Coates and Subramanian (2002), and Bebchuk and Cohen (2005).

³¹ The simple correlation between EINDEX and BINDEX is 0.33.

ratings, depending on the level of the firm's credit rating. For firms that have investment grade credit ratings, the higher the management entrenchment the higher the rating, whereas for firms with below investment grade debt, the higher the management entrenchment the lower the rating.

The opposite signs on EINDEX (+) and the interaction term EINDEX * BIG (-) suggest that for firms with below investment grade debt, anti-takeover (entrenchment) devices are detrimental to creditors because if there were to be a merger, there is a chance that the credit quality of the acquirer may increase the credit quality of the target's debt – the so-called “co-insurance” effect. Thus, bondholders who hold less than investment grade debt may be hurt by antitakeover devices to the extent they both entrench management and thwart potentially positive takeover related activity. In contrast, bondholders who hold investment grade debt tend to benefit from antitakeover devices because in many cases, the financial impact of a takeover would have more negative than positive implications for investment grade firms.

Finally, the results for Model 5 demonstrate that credit ratings are lower for firms incorporated in Delaware. This result is consistent with those of Francis, Hasan, John, and Waisman (2006), who document greater when-issued spreads for bonds issued by Delaware corporations. They attribute the higher cost of debt for firms incorporated in Delaware to the potential of a takeover, as Delaware has few antitakeover statutes.³² However, the fact that we account for the probability of a takeover with other

³² Among the major state antitakeover statutes, Delaware only has a business combination statute that can be circumvented in a number of ways.

independent variables, namely EINDEX, suggests that the lower ratings for Delaware firms might be due to the more general conflict of interests between bondholders and stockholders³³ and not specifically the probability of a takeover.

2. Sub-Period Analysis

A number of independent variables from TCL are not available prior to 2003. Table 4 is a replication of Table 3 with the addition of nine new governance variables. Seven of the nine variables are available for 2003 through 2007 and are included in Models 1 and 2 of Table 4. Data regarding violations of Section 404 of the Sarbanes / Oxley Act and a variable representing the overhang of outstanding stock options are only available for the years 2005 through 2007. The results containing these two variables are reported in Models 3 and 4 of Table 4.

In Table 4 Models 1 and 3 include all available independent variables over the indicated time period, whereas Models 2 and 4 include only our governance variables. The results based on Models 1 and 3 reveal that all of the coefficients pertaining to the financial variables have the same signs as in Table 3 and all but two (interest coverage and capital intensity) are highly significant. In addition, as in the full sample, credit ratings are positively related to the quality of earnings.

Consistent with the results reported in Table 3, all of the ownership structure variables are negatively related to credit ratings. The number of 5% block holders, the percentage

³³ See note 37 *infra* for references regarding Delaware's pro-stockholder (anti-creditor) position regarding the fiduciary duties of corporate directors.

of shares held by insiders and the percentage held by institutions are all negatively related to ratings. This is perhaps attributable to potential conflicts of interest between creditors and stockholders.

The results in Table 4 show that the salary, number of shares held and the tenure of the CEO are negatively related to credit ratings. In contrast, the tenure of the board members is positively related to credit ratings and the percentage of directors who hold none of the firm's equity is negatively related to credit ratings. These results are consistent with those reported for the longer timeframe in Table 3.

Consistent with the results for the entire sample, we find that our index of board discretion (BINDEX) is positively related to ratings and our measure of entrenchment (EINDEX) is positively related to ratings for firms with investment grade ratings, and negatively related to rankings for firms with below investment grade ratings.

Only two of the nine additional governance variables included in the statistical models are significantly related to bond ratings. The percentage of non-audit fees to auditor fees is positively related to credit ratings. This is a curious finding, and runs counter to the principle that audit firms without non-audit fees are better positioned to conduct independent audits. Perhaps not as surprising upon reflection, there is a negative relation between the number of board meetings and credit ratings. Presumably, firms with lower credit ratings require relatively more attention by their board. It is interesting to note that

violations of Section 404 of the Sarbanes-Oxley bill reduce a firm's credit rating, but not significantly so.³⁴

B. Financial Condition, Credit Ratings, Governance and Bond Spreads

1. Full Sample

In this section we examine the extent to which bond spreads are related to governance factors, after controlling for the issuing firm's financial profile, sector, and credit rating. As presented in the previous section, governance factors are related to credit ratings after taking into consideration the effects of the firm's financial condition. Here we are assessing the extent to which credit ratings affect bond prices relative to governance-related factors. As presented in the previous section, governance factors are related to credit ratings even after taking into consideration the effects of the firm's financial condition.

Our sample of bond spreads is a proprietary database provided by S&P and consists of annual "snapshots" of all traded domestic corporate bonds that are rated by the firm. Each snapshot is taken at the end of March for each of the years 2002-2007. All of the bonds in the sample are senior, unsecured obligations. Most of the firms in the sample have more than one bond outstanding. There are 7,456 bond-year observations for 1,734 firm-year observations with an average of 4.3 bonds per firm.³⁵

³⁴ The t-statistics on the coefficients on the binary variable 404 violations is -1.43 and -1.46 for the two sub-periods, respectively.

³⁵ We also perform our tests on a subset of the sample that includes only the largest bond issue of each firm. Our results for this sub-sample are not materially different than those for the entire sample, and are therefore not reported.

Our results regarding the relation between bond spreads, credit ratings and governance variables are presented in Table 5. The dependent variable in these regressions is the spread (difference) between the bond's yield-to-maturity and the yield-to-maturity on a U.S. Treasury Bond with the closest year to maturity. The first thing to note is that bond spreads are significantly related to bond ratings. All of the rating categories are highly significant and, except for the two highest ratings categories,³⁶ the coefficients are monotonically related to bond spreads – the higher the credit rating, the lower the spread. Moreover, the ratings are highly significant in the full specification of the statistical model – Model 5.

In Model 2 we examine the relation between bond spreads, financial condition and governance factors, without regard to the firm's credit rating. We find no relation between spreads and the years to maturity (YTM) or the issue size. Consistent with our finding of a positive relation between earnings quality and credit ratings, here we find a negative relation between earnings quality and spreads. Higher quality earnings reduce the spread between the required yield on the firm's debt and the yield to U.S. treasuries. Note that this variable is highly significant in all specifications of the statistical model. Particularly noteworthy is the fact that Earnings Quality is highly significant in Model 5, which includes ratings. This suggests that bond traders assign a greater importance to the firm's earnings quality than is reflected in the bond's rating.

By and large, the coefficients on most of the financial variables have the opposite sign to those in the ratings regressions reported in Tables 3 and 4, which represents the logical

³⁶ The estimated coefficients for these two categories are not statistically different from each other.

relation between credit risk and the credit risk premium. Thus bond spreads are greater (1) if the firm had negative earnings in the prior two years; (2) the greater leverage; (3) the lower ROA; (4) if the firm has subordinated debt; and (5) the lower the firm's capital intensity. Note that leverage and the return on assets become insignificant when ratings are included in the model – Model 5. Presumably this information is already reflected in the bonds' ratings.

Curiously, size is positively related to spreads, but only significantly so in the full model. Recall that we have documented a positive relation between size and ratings – larger firms typically have higher credit ratings, which *should translate* into lower, not higher spreads. However, the fact that the relation is statistically significant only in the model containing ratings suggests that bond traders assign less importance to firm size than is reflected in a bond's rating. In other words, given a bond's rating, traders may apply a discount for size, which may be at odds with how ratings reflect the beneficial effects of firm size to bondholders.

The results of Models 2 – 5 indicate that the number of shareholders holding blocks of 5% or more of the firm's shares is positively related to bond spreads, which is consistent with the result we obtained in the ratings regressions. Again, concentrated ownership creates the possibility that the firm will be run in the interests of its shareholders, or the block holders themselves, at the expense of the firm's creditors -- should a conflict between the interests of the two groups arise.

The annual base pay of a firm's CEO is negatively related to the spread on its bonds in all specifications of the model. Indeed, the significance of the relation strengthens with the inclusion of additional independent variables. Recall that we found no relation between CEO base pay and credit score. Thus, it appears that bond traders may be more concerned about the base pay of the firm's CEO than is reflected in the firm's credit rating.

A surprising result is that the percentage of directors holding none of a firm's stock is negatively related to bond spreads. This is surprising because we found that this variable is negatively related to ratings as well – a potentially conflicting set of results. As reported in Tables 3 and 4, the greater the percentage of zero-shareholding directors, the lower is the firm's credit rating, and hence the higher *should be* the spread on the firm's bonds. Moreover, this variable remains significantly positive even after we add the firm's credit rating to the statistical model (Model 5). Thus, even though credit ratings are negatively related to the percentage of zero-shareholding directors, the spread between the yields on corporate and U.S. Treasury bonds are also lower the greater the percentage of zero-shareholding directors. This suggests that creditors may have greater concern about possible “equity capture” of board directors that might come with greater equity ownership by directors, whereas the credit rating appears to reflect more the positive incentive that equity ownership offers to engage its directors to perform diligently.

The results of Model 2 indicate that the GINDEX is unrelated to spreads, which contrasts with the findings in Klock, Mansi, and Maxwell (2005), who document a negative and significant relation between GINDEX and bond spreads for the period between 1990 and 2000.

The results of Model 3 show that BINDEX (board stability/discretion) is negatively related to spreads, which is consistent with what we found regarding the relation of this variable to credit ratings. EINDEX (antitakeover mechanisms) is positively related to spreads; however unlike in the case of credit ratings EINDEX does not show significant differentiation depending on whether or not the underlying debt is investment grade or speculative grade. Finally, consistent with our ratings' results, we find that EINDEX is associated with greater spreads for below investment grade bonds.³⁷

The last variable we entertain in the spread regressions is an indicator variable regarding Delaware incorporations. Consistent with the negative relation between this variable and ratings, the results show that the variable is significantly positively related to spreads in all specifications of the statistical model. Apparently, Delaware firms pay a penalty in both ratings and spreads when they issue corporate bonds. This is consistent with a recent Delaware decision that states emphatically that in Delaware, the fiduciary duties of officers and directors run exclusively to the corporation and its stockholders. Officers and directors owe only contractual duties to creditors.³⁸ This evidence is also consistent

³⁷ This result suggests that there may be different relations between investment and speculative issues more generally. We leave this possibility to future research.

³⁸ No. Am. Catholic Educational Programming v. Rob Gheewalla et al., Supreme Court of Delaware, 521 A.2nd 92 (Del. May, 2007) ("It is well established (*in Delaware*) that the directors owe their fiduciary

with the findings in Francis, Hasan, John, and Waisman (2006) and Chava, Dierker, Livdan, and Purnanandam (2007).

Before moving on to our sub period analysis of bond spreads, we pause to make two observations regarding the results reported in Table 5, especially Model 5. The first point is that while credit ratings are assigned by rating agencies, the price and hence the yield on corporate debt is determined by the market. In other words, credit ratings are determined by firm-specific characteristics, whereas the market prices (yields) of corporate debt, or any financial instrument for that matter, are determined by the interaction of supply and demand for credit. Spreads can be thought of as a description of market equilibrium, which involves both supply and demand factors in the financial markets, whereas credit ratings focus exclusively on the qualities of the rated issuer.

The second note of caution regarding the interpretation of the results reported in Model 5 of Table 5 is that the coefficients on the independent variables are conditioned on the firm's credit rating and, as we have seen previously, credit ratings are statistically related to a number of financial and governance variables. Thus, coefficients are to be interpreted conditionally.

2. Sub-Period Analysis

obligations to the corporation and its shareholders. While shareholders rely on directors acting as fiduciaries to protect their interests, creditors are afforded protection (*only*) through contractual agreements, fraud and fraudulent conveyance law, implied covenants of good faith and fair dealing, bankruptcy law, general commercial law and other sources of creditor rights.”).

Table 6 reports the results of the regressions of bond spreads with the expanded number of independent variables that we have access to only after 2003. The first column in the table is based on our sample from 2003 to 2007 and the second column reports results based on our sample of observations in the years 2005 and 2007.

Since the time periods of the data reported in Table 6 overlap with the time periods of the data reported in Table 5, it is not surprising that the results are similar. In fact, it is illustrative to see how the relations (coefficients) change with just the addition or deletion of one or two years. The results in Table 6 show that credit ratings are an important determinant of bond spreads in any time period and under numerous specifications of the statistical model. The coefficients on ratings are almost monotonic and are all highly significant. Earnings quality is significantly negative in the longer period, which is predictable. Once again size is shown to be significantly positively related to spreads.

Consistent with our findings regarding credit ratings, the data show that spreads are positively related to the number of block holders who hold 5% or more of the firm's stock. Again we see that spreads are positively related to CEO base pay and negatively related to CEO bonuses.

The results reported in table 6 regarding the board's structure are consistent with the results reported in Table 5. However the two statistically significant relations are inconsistent with our results regarding board structure and ratings. As is the case in Table 5, the data in Table 6 show that the percentage of board members that hold none of the

firm's shares is negatively related to spreads (the more shares held, the lower the spread relative to U.S. treasuries). Recall that we found that this variable is negatively related to ratings as well. As is the case for the data in Table 5, Table 6 shows that for both sub-periods, BINDEX is negatively related to spreads, EINDEX is positively related to spreads and the dummy variable indicating Delaware incorporation is positive.

Interestingly, none of the additional governance variables available after 2003, except for dilution overhang (Dilution), is significant. Dilution is positive and marginally significant at 10% level, which is consistent with its negative relation with credit ratings as in Table 4, even though the latter result is not significant. This result suggests that bond traders may view the dilution due to stock options awarded to high-profiled executives more negatively than reflected in firm's credit rating.

C. Financial Condition, Governance and Tobin's Q

In this section, we examine the relations between our governance variables and Tobin's Q, which is the ratio of a firm's market value to its book value.³⁹ Theoretically, the greater the ratio, the greater the value of the firm beyond its book value – the greater the value created by the operations of the firm. The purpose of this exercise is to examine whether the relations we found between ratings, yields and governance variables hold with respect to the value of the firm – a more explicit concern for shareholders as compared to creditors. For example, we find that the greater the number of block holders with 5% of the firm's shares, the lower the firm's credit rating, the higher the spread on

³⁹ Specifically, Tobin's Q is defined as $Q = \frac{\text{Total Assets} - \text{Book Equity} + \text{Market Value of Equity} - \text{Deferred Taxes}}{\text{Total Assets}}$

its bonds and, as we will see, the lower Tobin's Q. Thus, the presence of 5% block holders is not only associated with a lower credit quality of debt, but a lower value of the firm in general. In contrast, we find that while our board stability/discretion index is positively related to credit ratings, it is unrelated to Q. Thus, we can reasonably assume that the board's relative level of stability affects the firm's credit strength, but not the value of the firm. By inference, our board discretion index should be negatively related to the "value" of the firm's equity however measured.

Table 7 reports our results regarding the effect of governance variables on Tobin's Q. The first block of variables lists the "traditional" determinants of Tobin's Q. Thus we see that Q is positively related to the return on assets, the level of R&D, and the age of the firm. Q is negatively related to the size of the firm and the number of segments (industries) in which the firm operates.

Earnings quality is positively related to Q, but is only statistically significant for the whole sample period. The results indicate that Q is negatively related to the percentage of shares held by insiders and the number of 5% block holders. Executive compensation is positively related to Q as is the percentage of shares held by the CEO.

Curiously, we find that Q is negatively related to the number of board meetings per year. This may be due to the fact that firms in financial difficulties require more board attention (Vafeas (1999)). Finally, the data indicate that Q is unrelated to our measure of

board stability/discretion (BINDEX) and negatively related to EINDEX, which is consistent with the results reported by Bebchuk et al.

V. Conclusion

This paper has identified several statistically significant relations between corporate governance factors, credit ratings, bond spreads and firm value in 775 U.S. firms during the period 2001-2007. Among the numerous results of our panel study, one of the most interesting findings is that the presence of antitakeover mechanisms is more negatively related to credit ratings and more positively related to bond spreads, when the firm's credit rating is speculative (BB+ and below) than when it is investment grade (BBB- and above). In the case of credit ratings, such presence of antitakeover mechanisms is related to lower credit ratings for firms with speculative grade credit ratings, and higher credit ratings for firms with investment grade ratings. This is a new finding, and one that has an obvious interpretation. Bondholders of investment grade debt often have more to lose than gain when an investment grade company is the target of a takeover event, particularly if the takeover increases financial leverage. However for companies with speculative grade ratings, antitakeover provisions can be viewed as inhibiting potentially positive takeover events that could remove entrenched management or result in the company becoming part of an operationally and financially stronger organization.

Perhaps the most important finding of this paper relates to the relations we identified between certain director characteristics, credit ratings and bond spreads. We identify a cluster of attributes relating to board tenure, director liability indemnification and

classified board structures, which are related to higher credit ratings and lower bond spreads, after controlling for financial variables and industrial sector. We believe this cluster of attributes reflects the relative stability of the board. Our findings suggest that boards with greater stability, sector knowledge, firm knowledge, financial exposure and protection from liability may be more conservative and better positioned to exercise discretion relative to executive management in ways that are supportive of creditors' interests. Boards with greater stability arguably have a greater ability to take a long term perspective and, in a fiduciary context, to take into consideration the broader interests of the firm as a whole, including creditors and potentially other key stakeholders.

It is noteworthy that these characteristics of board stability are not statistically significant with regard to Tobins Q, a measure of firm value that perhaps has greater relevance to shareholders. This suggests that creditors and shareholders may benefit differentially depending on the degree of board stability. In particular, the positive relation between board stability and credit quality suggests that stable and seasoned boards may better be able to resist potential capture from short term equity interests. It is also noteworthy that some of those board attributes that are positively related to a company's credit quality (the presence of classified boards, director indemnification, director tenure) are typically seen as negative from a shareholders' perspective. Our findings challenge conventional wisdom in this regard, or at least suggest that creditors and shareholders have different preferences regarding different governance structures.

This paper builds on the existing literature concerning the relations between governance metrics, credit risk and financial performance. In particular we have replicated the findings of Ashbaugh, Collins and LaFond (ACL) and Bebchuck, Cohen and Ferrill (BCF). We find that the GINDEX (ACL's shareholder rights index) is not statistically significant in a broader time series beyond their one-year analysis. The more focused entrenchment index (EINDEX) developed by BCF is more resilient, and is statistically significant for both credit ratings and bond spreads over the period 2001-2007 and 2002-2007, respectively. However, our study adds nuance to BCF's results in that we identify a positive relation between management entrenchment (antitakeover mechanisms) and credit ratings for investment grade debt and a negative relation between management entrenchment and credit ratings for speculative grade debt.

While we have identified a number of statistically significant relations between governance attributes and credit risk, we are not asserting causality. However we do believe the relations we have identified can be logically explained and have a foundation in both theory and in professional practice. Our study has several distinctive attributes, including the range of governance variables employed, the use of seasoned bond spreads rather than when-issued bond spreads as in most of the literature and the seven-year time series we were able to construct.

We believe there is further scope in examining the relation between corporate governance and credit risk. A specific application in this regard could be to test for the relation of corporate governance factors to ratings transitions to better understand the dynamics of

how governance may affect changes in credit quality at individual companies. There is also scope for exploring further the extent to which governance preferences of creditors may differ from those of shareholders. In particular, the concept of board stability and discretion that we have developed can be developed further, and could link into the debate about the fiduciary responsibility of directors towards creditors and possibly other non-financial stakeholders.

An important extension of the methodologies developed in this paper would be to apply them to foreign firms, recognizing the different organizational and institutional differences in other countries. Clearly, many of our findings relate to aspects of U.S. law and takeover practices that are not present in other parts of the world. It would therefore be inappropriate to infer that the relations we identify between governance and credit risk here are appropriate for firms outside the US.

There is also scope for more research to better understand the relations between credit risk, bond spreads and other forms of “extra-financial” risk, including a firm’s environmental and social performance. While our study does not address these issues, we recognize that they are becoming increasingly important to investors for both financial and non-financial reasons. It also may be the case that a firm’s performance regarding the environment and its social responsibility provide an indication of the firm’s sustainability and overall management quality. We believe that these issues are fruitful areas for future research.

Table 1
Variable Definitions, Type and Sources

Dependent Variables	Definitions and Calculations	Type¹	Data Source²
RATE	Grouped 7 categories out of S&P bond ratings. Specifically, rate=1 if Rating<=CCC+; rate=2 if CCC+<Rating<=B+; rate=3 if B+<Rating<=BB+; rate=4 if BB+<Rating<=BBB+; rate=5 if BBB+<Rating<=A+; rate=6 if A+<Rating<=AA+; rate=7 if Rating>AA+. (data280)	C	COMPUSTAT
SPREAD	The difference between bond yield and treasury yield with same maturity	C	S&P Snapshot
Tobin's Q	$q = (\text{total asset} - \text{common equity} + \text{market value of equity} - \text{deferred taxes}) / \text{total asset}$; $q = (\text{data6} - \text{data60} - \text{data74} + \text{data199} * \text{data25}) / \text{data6}$	C	COMPUSTAT
Financial / Firm Variables			
LEV	Leverage ($= (\text{data9} + \text{data34}) / \text{data6}$)	C	COMPUSTAT
ROA	Return on asset ($= \text{data18} / \text{data6}$)	C	COMPUSTAT
LOSS	Equals 1 if ROA is negative in current and prior fiscal year	D	COMPUSTAT
INT_COV	Interest coverage ($= \text{data13} / (\text{data15} \text{ or } \text{data339})$)	C	COMPUSTAT
SIZE	Log of total assets ($\log(\text{data6})$)	C	COMPUSTAT
SUBORD	Equals 1 if the firm has subordinated debt (data80)	D	COMPUSTAT
CAP_INTEN	Capital intensity ($= \text{data7} / \text{data6}$)	C	COMPUSTAT
R&D	Annual Research & Development expenses divided by total asset	C	COMPUSTAT
BS_VOLAT	Black-Scholes implied volatility over the past 60-month period	C	COMPUSTAT EXECUCOMP
NUM_SEG	Log of number of business segments	C	COMPUSTAT SEGMENT
S&P500_INDX	Equals 1 if the firm is included in S&P 500 index	D	COMPUSTAT
FIRMAGE	Log of firm age in number of months since trading in the market	C	CRSP

¹ C denotes continuous variable; D denotes a binary variable equal to 1 if the specified condition is met and zero otherwise.

² TCL is The Corporate Library; CRSP is the Center for the Study of Security Prices, S&P Snapshot is a proprietary database of S&P containing coupons, prices and maturities of traded corporate bonds; SDC is the Securities Data Corporation division of Thompson Financial; IRRC is the Investor Responsibility Research Center.

Issue Characteristics

ISSUESIZE	Face amount of bond issue scaled by 10,000,000,000	C	S&P Snapshot
YTM	Years to maturity	C	S&P Snapshot

Ownership Structure

NUM_BLK5	number of at least 5% blockholders	C	CDA/Spectrum
PER_INSIDE	Percentage of shares held by top management and directors	C	TCL
PER_INST	percentage of institutional holding	C	CDA/Spectrum

Transparency, Disclosure and Audit

PER_NAUDIT	Percentage of non-audit fees	C	TCL
VIOLATE404	Equals 1 when the firm has 404 violation(s) in the same year	D	TCL
EARNINGS QUALITY	The loadings on the accrual quality (AQ) factor as augmented from the Fama-French three-factor model, where AQ is defined as the standard deviation of the residuals from the regressions of the change in working capital on past, current, and future cash flow from operations (Ecker, Francis, Kim, Olsson, and Schipper (2006)).	C	Frank Ecker of Duke University
DELAWARE	Equals 1 if the firm is incorporated in Delaware	D	COMPUSTAT

Board Structure and Effectiveness

ALL_IND_AUDIT	Equals 1 if the audit committee is fully independent	D	TCL
ALL_IND_COMP	Equals 1 if the compensation committee is totally independent	D	TCL
ALL_IND_NOM	Equals 1 if the nomination committee is totally independent	D	TCL
BDMTG	Number of board meetings	C	TCL
BOARD_SIZE	Board size	C	TCL

CEO_CHAIR	Equals 1 when CEO is also Chairman	D	TCL
DIRIND	Director Indemnification	D	IRRC
DIRINDC	Director Indemnification Contracts	D	IRRC
DIRLIAB	Charter Amendments That Limit the Director's Liability	D	IRRC
LEAD	Equals 1 if the board has a lead director	D	TCL
PER_15_TNUR	Percentage of directors over 15 years' tenure	C	TCL
PER_4BOARDS	Percentage of directors who sit on at least four other corporate boards	C	TCL
PER_70_AGE	Percentage of directors over 70	C	TCL
PER_EQTY_ZERO	Percentage of directors with zero equity	C	TCL
PER_MEET	Percentage of directors who fail to attend at least 80% of board meetings	C	TCL
PER_OUT	Percentage of independent directors	C	TCL

Executive Compensation and Turnover

CEO_BASE	Annual base salary of CEO as a percentage of total compensation	C	TCL
CEO_BONUS	Annual bonus of CEO as a percentage of total compensation	C	TCL
CEO_SHARES	CEO Share holding as a percentage of total shares outstanding	C	TCL
CEO_TENURE	CEO tenure	C	TCL
CEO_INCEN	Proportion of incentive part of CEO compensation	C	COMPUSTAT EXECUCOMP
DILUTION	Dilution overhang within 5% of industry peers	C	TCL

Table 2
Components of Governance Indexes

	GINDEX ¹	EINDEX ²	BINDEX ³
Golden Parachutes	√	√	
Limits to Amend Bylaws	√	√	
Limits to Amend Charter	√	√	
Poison Pills	√	√	
Staggered Board	√	√	√
Supermajority	√	√	
Anti-green Mail	√		
Blank Check	√		
Business Combination Law	√		
Cash Out Law	√		
Compensation Plans	√		
Director Duties	√		
Director Indemnification	√		√
Director Indemnification Contracts	√		√
Director Liability	√		√
Fair Price	√		
Limits to Special Meetings	√		
Limits to Written Consent	√		
No Cumulative Vote	√		
No Secret Ballot	√		
Pension Parachutes	√		
Severance Agreements	√		
Silver Parachutes	√		
Unequal Vote	√		

¹ “Governance Index” constructed by Gompers, Ishi and Metrick in “Corporate Governance and Equity Prices,” (2003)

² “Entrenchment Index” constructed by Bebchuk, Cohen and Ferrell in “What Matters in Corporate Governance?” (2005)

³ Board Discretion Index

Table 3

Ordered-Logistic Regression Results for Credit Ratings

All models include Finance & Utility companies. Samples cover the period 2001-2007. The dependent variable is firm's credit rating, defined as the grouped seven categories from S&P's ratings.¹ All models include Fama-French 48-industry and year dummy variables. Standard errors are adjusted for heteroscedasticity and clustered at the level of the firm. t-statistics are in brackets.

* significant at 10%; ** significant at 5%;*** significant at 1%

Independent Variables	Model 1	Model 2	Model 3	Model 4	Model 5
Financial Data					
SIZE	1.234*** [15.193]		1.122*** [12.255]	1.074*** [11.667]	0.976*** [9.928]
LEV	-2.515*** [4.262]		-2.142*** [3.598]	-2.235*** [3.810]	-1.601** [2.499]
ROA	9.273*** [6.375]		8.273*** [5.464]	8.158*** [5.379]	7.463*** [5.020]
LOSS	-1.763*** [6.750]		-1.589*** [5.996]	-1.589*** [5.965]	-1.304*** [4.225]
SUBORD	-0.983*** [6.331]		-0.911*** [5.686]	-0.837*** [5.209]	-0.297 [1.593]
INT_COV	0.006** [2.067]		0.006** [2.300]	0.006** [2.094]	0.009*** [3.235]
CAP_INTEN	0.664*** [2.933]		0.497** [2.273]	0.485* [2.097]	0.195 [0.884]
Earnings Quality		1.238*** [7.231]	1.064*** [5.688]	1.056*** [5.592]	1.193*** [5.760]
Ownership Structure					
NUM_BLK5		-0.368*** [7.596]	-0.162*** [3.370]	-0.165*** [3.395]	-0.142*** [2.857]
PER_INSIDE		-1.686*** [4.491]	-1.085** [2.502]	-1.033** [2.412]	-1.205** [2.532]
PER_INST		0.234 [0.394]	-0.352 [0.580]	-0.175 [0.292]	-0.696 [1.075]

¹Specifically, Rate=1 if Rating<=CCC+; Rate=2 if CCC+<Rating<=B+; Rate=3 if B+<Rating<=BB+; Rate=4 if BB+<Rating<=BBB+; Rate=5 if BBB+<Rating<=A+; Rate=6 if A+<Rating<=AA+; Rate=7 if Rating>AA+. (COMPUSTAT data280).

Independent Variables	Model 1	Model 2	Model 3	Model 4	Model 5
Executive Data					
CEO_TENURE		-0.022** [2.372]	-0.018* [1.960]	-0.016* [1.734]	-0.015 [1.334]
CEO_BASE		-1.661*** [7.416]	-0.129 [0.547]	-0.192 [0.815]	0.068 [0.258]
CEO_BONUS		0.061 [0.252]	-0.282 [1.177]	-0.331 [1.384]	-0.640** [2.465]
CEO_SHARES		-2.541 [0.252]	-1.761 [1.177]	-2.106 [1.384]	-2.781 [2.465]
Board Structure					
BOARD_SIZE		0.299*** [8.837]	0.122*** [3.328]	0.120*** [3.262]	0.129*** [3.495]
PER_15_TNUR		2.073*** [4.717]	2.060*** [4.608]	1.643*** [3.421]	1.383*** [2.682]
PER_EQTY_ZERO		-1.236*** [4.048]	-0.785*** [2.654]	-0.729** [2.372]	-0.773** [2.172]
PER_OUT		0.845** [2.103]	0.609 [1.473]	0.619 [1.500]	0.362 [0.804]
PER_70_AGE		-0.615 [0.988]	0.12 [0.177]	-0.052 [0.077]	0.275 [0.403]
PER_4BOARDS		1.704*** [3.468]	0.386 [0.767]	0.523 [1.031]	0.664 [1.245]
PER_MEET		-1.661* [1.650]	-0.81 [0.800]	-0.853 [0.835]	-0.485 [0.482]
Governance Indexes					
GINDEX	0.043 [1.435]	-0.018 [0.601]	0.007 [0.235]		
BINDEX				0.271*** [3.568]	0.253*** [3.221]
EINDEX				-0.163*** [2.579]	0.213*** [2.858]
EINDEX * BIG					-1.469*** [16.838]
Delaware Inc.		-0.199 [1.320]	-0.258 [1.624]	-0.297* [1.865]	-0.280* [1.691]
Observations	3209	3209	3209	3209	3209
Pseudo R²	0.31	0.21	0.34	0.35	0.47

Table 4

Ordered-Logistic Regression Results for Credit Ratings

All models include Finance & Utility companies. Samples cover the period 2003-2007 and 2005-2007. Dependent variable is firm's credit rating, defined as the grouped seven categories from S&P's ratings.¹ All models include Fama-French 48-industry and year dummy variables. Standard errors are adjusted for heteroscedasticity and clustered at the level of the firm. t-statistics are in brackets.

* significant at 10%; ** significant at 5%;*** significant at 1%

Independent Variables	2003 - 2007		2005 - 2007	
	MODEL 1	MODEL 2	MODEL 3	MODEL 4
Financial Data				
SIZE	1.053*** [9.472]		1.086*** [8.825]	
LEV	-1.565** [2.215]		-1.653** [2.091]	
ROA	7.440*** [4.072]		8.378*** [4.071]	
LOSS	-1.295*** [3.696]		-1.607*** [2.965]	
SUBORD	-0.412** [2.034]		-0.458* [1.849]	
INT_COV	0.008** [2.568]		0.006* [1.683]	
CAP_INTEN	0.287 [0.869]		0.422 [1.202]	
Earnings Quality	1.557*** [6.607]	1.531*** [7.752]	1.791*** [6.613]	1.633*** [6.965]
Ownership Structure				
NUM_BLK5	-0.119** [2.083]	-0.269*** [4.972]	-0.133* [1.799]	-0.270*** [4.086]
PER_INSIDE	-0.800 [1.221]	-1.247** [1.976]	-2.988* [1.939]	-5.111*** [3.413]
PER_INST	-1.511** [2.133]	-1.194* [1.660]	-1.911** [2.281]	-2.182** [2.569]

¹Specifically, Rate=1 if Rating<=CCC+; Rate=2 if CCC+<Rating<=B+; Rate=3 if B+<Rating<=BB+; Rate=4 if BB+<Rating<=BBB+; Rate=5 if BBB+<Rating<=A+; Rate=6 if A+<Rating<=AA+; Rate=7 if Rating>AA+. (COMPUSTAT data280).

Independent Variables	2003 - 2007		2005 - 2007	
	MODEL 1	MODEL 2	MODEL 3	MODEL 4
Executive Data				
CEO_BASE	0.094 [0.280]	-1.839*** [5.879]	-0.054 [0.111]	-2.137*** [4.938]
CEO_BONUS	-0.645** [2.044]	-0.184 [0.571]	-0.622 [1.560]	-0.242 [0.602]
CEO_SHARES	-2.895 [1.429]	-3.660* [1.700]	-0.905 [0.380]	-0.682 [0.301]
CEO_TENURE	-0.014 [0.931]	-0.024* [1.726]	-0.019 [1.213]	-0.029* [1.917]
Board Structure				
BOARD_SIZE	0.093** [2.179]	0.239*** [6.379]	0.096* [1.900]	0.259*** [5.804]
PER_15_TNUR	1.669*** [2.879]	1.253** [2.179]	1.662** [2.467]	1.250* [1.876]
PER_EQTY_ZERO	-0.745* [1.769]	-1.268*** [3.220]	-0.619 [1.187]	-1.345** [2.534]
PER_OUT	0.443 [0.857]	0.563 [1.117]	-0.199 [0.317]	-0.177 [0.294]
PER_70_AGE	0.72 [1.017]	0.437 [0.660]	0.487 [0.565]	0.485 [0.594]
PER_4BOARDS	0.613 [1.043]	1.537*** [2.623]	0.468 [0.637]	0.994 [1.391]
PER_MEET	0.400 [0.303]	-0.617 [0.497]	1.058 [0.592]	-1.048 [0.662]
Governance Indexes				
BINDEX	0.282*** [3.271]	0.332*** [4.051]	0.323*** [3.397]	0.357*** [3.943]
EINDEX	0.243*** [2.938]	0.111 [1.281]	0.264*** [2.907]	0.107 [1.165]
EINDEX * BIG	-1.442*** [15.559]	-1.523*** [17.201]	-1.376*** [13.132]	-1.493*** [15.226]

Independent Variables	2003 - 2005		2005 - 2007	
	MODEL 1	MODEL 2	MODEL 3	MODEL 4
Delaware Inc.	-0.196 [1.113]	-0.14 [0.862]	-0.093 [0.482]	-0.045 [0.257]
Additional Variables				
PER_NAUDIT	1.223** [2.396]	1.500*** [3.063]	2.310** [2.536]	2.529*** [2.892]
CEO_CHAIR	0.108 [0.596]	0.341* [1.960]	0.057 [0.280]	0.326 [1.633]
ALL_IND_AUDIT	0.239 [0.984]	0.103 [0.412]	0.488* [1.864]	0.378 [1.375]
ALL_IND_NOM	0.05 [0.186]	0.131 [0.505]	0.009 [0.028]	0.116 [0.367]
ALL_IND_COMP	-0.24 [0.912]	-0.348 [1.370]	-0.259 [0.909]	-0.418 [1.442]
LEAD	-0.098 [0.663]	-0.16 [1.127]	-0.074 [0.442]	-0.19 [1.213]
BDMTG	-0.050** [2.147]	-0.029 [1.229]	-0.053** [2.112]	-0.038 [1.431]
404 VIOLATIONS			-0.454 [1.425]	-0.479 [1.457]
DILUTION			-0.021 [1.643]	-0.017 [1.460]
Observations	2251	2251	1438	1438
Pseudo R²	0.48	0.39	0.49	0.40

Table 5

OLS Regression Results for Bond Spreads

All models include Finance & Utility companies. Sample covers the period 2002-2007. Dependent variable is spread, defined as the bond's yield-to-maturity minus treasury bond yield with the closest maturity. All models include Fama-French 48 industry and year dummies. Standard errors are adjusted for heteroscedasticity and clustered at the level of the firm.

* significant at 10%; ** significant at 5%; *** significant at 1%

Independent Variables	MODEL 1	MODEL 2	MODEL 3	MODEL 4	MODEL 5
Ratings Categories					
CCC ⁺ < R ≤ B ⁺	-6.104*** [3.441]				-5.099*** [3.767]
B ⁺ < R ≤ BB ⁺	-7.704*** [5.018]				-5.610*** [4.872]
BB ⁺ < R ≤ BB ⁺	-9.491*** [5.405]				-7.362*** [5.367]
BBB ⁺ < R ≤ A ⁺	-9.998*** [5.804]				-7.805*** [5.787]
A ⁺ < R ≤ AA ⁺	-10.438*** [6.079]				-8.137*** [6.147]
AA ⁺ < R	-10.285*** [5.924]				-7.777*** [5.780]
Issue Characteristics					
YTM	0.005 [1.172]	0.005 [1.186]	0.004 [1.073]	0.004 [1.023]	0.004 [0.972]
ISSUESIZE	-0.049 [0.195]	-0.284 [1.332]	-0.294 [1.371]	-0.307 [1.442]	-0.295 [1.449]
Earnings Quality					
		-0.756*** [2.827]	-0.744*** [2.858]	-0.694*** [2.727]	-0.505** [2.130]
Financial Data					
SIZE		0.017 [0.227]	0.056 [0.733]	0.116 [1.513]	0.224*** [3.027]
LOSS		2.918*** [3.519]	2.876*** [3.591]	2.532*** [3.252]	1.896*** [2.762]
LEV		1.759** [2.586]	1.878*** [2.767]	1.672*** [2.614]	0.748 [1.502]
ROA		-2.676* [1.840]	-2.641* [1.824]	-2.13 [1.534]	-0.217 [0.115]
INT_COV		-0.009 [1.335]	-0.01 [1.508]	-0.007 [1.094]	-0.005 [0.915]
SUBORD		-0.196 [1.325]	-0.279* [1.784]	-0.328** [2.186]	-0.306** [2.380]

Independent Variables	MODEL 1	MODEL 2	MODEL 3	MODEL 4	MODEL5
CAP_INTEN		-0.446 [1.583]	-0.495* [1.759]	-0.415 [1.529]	-0.443* [1.683]
Ownership Structure					
NUM_BLK5		0.259*** [4.258]	0.275*** [4.434]	0.266*** [4.601]	0.227*** [4.236]
PER_INSIDE		0.279 [0.681]	0.287 [0.716]	0.297 [0.762]	0.329 [0.955]
PER_INST		-0.638 [1.143]	-0.75 [1.330]	-0.554 [1.043]	-0.736 [1.453]
Executive Data					
CEO_BASE		1.025** [2.553]	1.058*** [2.740]	1.048*** [2.731]	1.022*** [3.311]
CEO_BONUS		-0.376 [1.386]	-0.38 [1.433]	-0.323 [1.280]	-0.489** [2.513]
CEO_SHARES		1.956 [1.048]	2.132 [1.096]	1.768 [1.002]	1.707 [1.204]
CEO_TENURE		-0.008 [1.189]	-0.01 [1.415]	-0.01 [1.519]	-0.012** [2.092]
Board Structure					
BOARD_SIZE		-0.043 [1.418]	-0.033 [1.148]	-0.027 [0.970]	-0.016 [0.564]
PER_OUT		-0.808 [1.555]	-0.84 [1.620]	-0.759 [1.520]	-0.531 [1.373]
PER_15_TNUR		-0.388 [0.748]	-0.058 [0.103]	0.229 [0.413]	0.365 [0.824]
PER_70_AGE		0.68 [1.140]	0.576 [0.979]	0.328 [0.607]	-0.011 [0.026]
PER_4BOARDS		0.200 [0.415]	0.111 [0.235]	0.067 [0.144]	0.007 [0.017]
PER_MEET		-0.76 [0.780]	-0.807 [0.832]	-0.858 [0.945]	-0.866 [0.942]
PER_EQTY_ZERO		-0.658* [1.961]	-0.745** [2.224]	-0.710** [2.119]	-0.767*** [2.632]

Independent Variables	MODEL 1	MODEL 2	MODEL 3	MODEL 4	MODEL 5
Governance Indexes					
GINDEX		0.029 [1.186]			
BINDEX			-0.193*** [2.885]	-0.163*** [2.624]	-0.106** [2.139]
EINDEX			0.148*** [2.689]	0.096* [1.958]	0.139*** [3.294]
EINDEX * BIG				[5.545]	[1.225]
Delaware Inc.		0.253* [1.761]	0.307** [2.137]	0.337** [2.430]	0.254** [2.238]
Observations	7456	7456	7456	7456	7456
Adjusted R²	0.36	0.37	0.37	0.39	0.43

Table 6**OLS Regression Results for Bond Spreads**

All models include Finance & Utility companies. Sample covers the period 2003-2007 and 2005-2007. Dependent variable is spread, defined as the bond's yield-to-maturity minus the treasury bond yield with the closest maturity. All models include Fama-French 48-industry and year dummy variables. Standard errors are adjusted for heteroscedasticity and clustered at the level of the firm. t-statistics are in brackets. significant at 10%; ** significant at 5%; *** significant at 1%

Independent Variables	2003-2007	2005-2007
Ratings Categories		
CCC ⁺ < R ≤ B ⁺	-5.650*** [3.937]	-5.869*** [3.781]
B ⁺ < R ≤ BB ⁺	-6.256*** [4.839]	-6.982*** [4.738]
BB ⁺ < R ≤ BB ⁺	-7.833*** [5.336]	-8.293*** [5.206]
BBB ⁺ < R ≤ A ⁺	-8.307*** [5.730]	-8.636*** [5.451]
A ⁺ < R ≤ AA ⁺	-8.439*** [5.823]	-8.510*** [5.372]
AA ⁺ < R	-8.234*** [5.491]	-8.347*** [5.176]
Issue Characteristics		
YTM	0.005 [1.167]	0.013*** [2.610]
ISSUE_SIZE	-0.294 [1.231]	-0.29 [1.247]
Earnings Quality	-0.551** [2.143]	-0.232 [0.961]
Financial Data		
SIZE	0.260*** [3.747]	0.271*** [3.588]
LOSS	1.619*** [2.588]	0.072 [0.120]
LEV	0.444 [0.874]	0.429 [0.743]
ROA	1.477 [0.716]	0.918 [0.388]
INT_COV	-0.007 [1.224]	-0.005 [0.747]
SUBORD	-0.256* [1.946]	-0.294* [1.815]

Independent Variables	2003-2005	2005-2007
CAP_INTEN	-0.361 [1.328]	-0.118 [0.486]
Ownership Structure		
PER_INSIDE	0.450 [0.922]	1.738** [2.307]
PER_INST	-0.577 [0.956]	0.967 [1.342]
NUM_BLK5	0.203*** [3.723]	0.132*** [2.671]
Executive Data		
CEO_BASE	1.354*** [3.538]	1.940*** [3.872]
CEO_BONUS	-0.722*** [3.242]	-0.914*** [3.631]
CEO_SHARES	2.163 [1.253]	3.06 [1.589]
CEO_TENURE	-0.011 [1.429]	-0.013 [1.545]
Board Structure		
BOARD_SIZE	0 [0.014]	0.005 [0.191]
PER_OUT	-0.741 [1.588]	-0.795* [1.762]
PER_15_TNUR	0.257 [0.698]	-0.051 [0.139]
PER_70_AGE	0.039 [0.087]	0.555 [1.203]
PER_4BOARDS	0.201 [0.452]	0.702 [1.625]
PER_MEET	-0.783 [0.674]	-0.634 [0.465]
PER_EQTY_ZERO	-1.013** [2.413]	-0.929** [2.117]

Independent Variables	2003-2007	2005-2007
Governance Indexes		
BINDEX	-0.122** [2.387]	-0.110** [2.109]
EINDEX	0.126*** [3.129]	0.112** [2.523]
EINDEX * BIG	-0.118 [0.807]	-0.114 [0.920]
Delaware Inc.	0.246** [2.103]	0.210** [2.125]
Additional Variables		
PER_NAUDIT	-0.321 [0.646]	-0.347 [0.712]
CEO_CHAIR	-0.079 [0.642]	0.064 [0.572]
ALL_IND_AUDIT	0.279 [1.137]	0.008 [0.042]
ALL_IND_NOM	-0.231 [0.717]	0.072 [0.306]
ALL_IND_COMP	0.167 [0.581]	0.24 [1.036]
LEAD	-0.038 [0.406]	0.004 [0.041]
BDMTG	0.005 [0.290]	-0.008 [0.491]
404 VIOLATIONS		-0.06 [0.230]
DILUTION		0.020* [1.953]
Observations	6073	3753
Pseudo R²	0.42	0.45

Table 7**OLS Regression Results for Tobin's Q¹**

All models include Finance & Utility companies. Sample covers the period 2001-2007. Dependent variable is Tobin's Q. All models include Fama-French 48-industry and year dummy variables. Standard errors are adjusted for heteroscedasticity and clustered at the level of the firm. t-statistics are in brackets.

significant at 10%; ** significant at 5%; *** significant at 1%

Independent Variables	2001 - 2007	2003-2007	2005 - 2007
Traditional Variables			
ROA	5.313*** [10.363]	4.874*** [9.138]	5.197*** [7.956]
SIZE	-0.275*** [6.341]	-0.312*** [7.141]	-0.350*** [7.385]
R&D	8.445*** [8.679]	7.248*** [8.282]	7.150*** [7.341]
S&P 500 INDEX	0.847*** [7.698]	0.799*** [7.354]	0.852*** [7.220]
NUM_SEG	-0.032** [2.455]	-0.024** [2.139]	-0.018 [1.355]
FIRM AGE	-0.084** [2.020]	-0.048 [1.163]	-0.081* [1.809]
LEV	0.229 [0.953]	0.401* [1.727]	0.506* [1.862]
INTAN	0.213 [1.276]	0.238 [1.487]	0.348* [1.962]
Earnings Quality	0.133** [2.451]	0.022 [0.417]	0.048 [0.766]
Ownership Structure			
PER_INSIDE	-0.288*** [2.704]	-0.059 [0.451]	-0.248 [1.197]
PER_INST	0.396*** [2.748]	0.151 [0.918]	0.031 [0.155]
NUM_BLK5	-0.114*** [8.671]	-0.092*** [6.564]	-0.082*** [4.932]

¹ The dependent variable in these regressions is Tobin's Q, calculated as

$$Q = \frac{\text{Total Assets} - \text{Book Equity} + \text{Market Value of Equity} - \text{Deferred Taxes}}{\text{Total Assets}}$$

Independent Variables	2001 - 2007	2003-2007	2005 - 2007
Executive Data			
CEO_BASE	0 [1.214]	0.000** [1.968]	0 [1.288]
CEO_BONUS	0 [0.907]	0 [0.786]	0 [1.634]
CEO_SHARES	0.000*** [2.896]	0.000*** [2.986]	0.000*** [2.062]
CEO_TENURE	-0.002 [0.526]	-0.003 [0.802]	-0.003 [0.779]
Board Structure			
BOARD_SIZE	-0.001 [0.074]	0 [0.021]	0.007 [0.450]
PER_OUT	-0.135 [0.888]	-0.117 [0.735]	0.061 [0.275]
PER_15_TNUR	0.09 [0.516]	-0.086 [0.567]	-0.186 [1.137]
PER_70_AGE	-0.032 [0.186]	0.055 [0.335]	0.145 [0.720]
PER_4BOARDS	0.396** [2.054]	0.274 [1.394]	0.215 [0.965]
PER_MEET	0.16 [0.479]	0.208 [0.568]	0.102 [0.218]
PER_EQTY_ZERO	0.084 [0.660]	0.01 [0.077]	-0.042 [0.257]
PER_NAUDIT		0.092 [0.736]	-0.047 [0.235]
CEO_CHAIR		-0.027 [0.493]	-0.024 [0.364]
ALL_IND_AUDIT		0.081 [1.428]	0.046 [0.748]
ALL_IND_NOM		0.113** [2.144]	0.061 [1.032]
ALL_IND_COMP		-0.122** [2.006]	-0.105 [1.635]
LEAD		0.063 [1.412]	0.074 [1.382]
BDMTG		-0.019*** [3.192]	-0.021*** [2.918]

Independent Variables	2001 - 2007	2003-2007	2005 - 2007
VIOLATE404			-0.09 [1.518]
DILUTION			-0.008** [2.502]
Governance Indexes			
BINDEX	-0.004 [0.164]	-0.016 [0.663]	-0.02 [0.730]
EINDEX	-0.047** [2.256]	-0.026 [1.310]	-0.012 [0.479]
Delaware	0.059 [1.134]	0.091* [1.786]	0.095* [1.658]
Observations	6071	4173	2770
Adjusted R²	0.41	0.43	0.43

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