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# Governance, Takeover Probability, and the Cost of Private Debt



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## Abstract

Using a sample of bank loans issued to US firms from 2000-2009 we find that creditors price governance mechanisms mitigating agency costs between borrowers and stakeholders. However, creditors find acquisitions of borrowers costly, and therefore increase spreads for borrowers at greater probability of takeover. In higher states of takeover probability, creditors lower spreads to financially stronger borrowers with staunch takeover defenses. Creditors therefore price both internal and external governance mechanisms in borrowers, though whether agency or borrower acquisition costs dominate the pricing function is determined by both borrower takeover probability and borrower financial strength.

**Keywords:** Corporate governance; Cost of debt; Private debt; Takeover probability.

**JEL Codes:** G21; G32; G34.

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## 1 Introduction

Corporate governance literature focusing on the relationship between a firm and its shareholders finds ample evidence that mechanisms mitigating agency conflicts between managers and shareholders improves firm performance and share prices. These mechanisms include firm ownership structure, the power of shareholders to voice concerns and provide guidance, board size and composition, compensation practices, and vulnerability to the market for corporate control<sup>1</sup>.

Like shareholders, creditors play an active role in corporate governance outside of default states. Governance mechanisms that mitigate agency conflicts between managers and stakeholders, inclusive of creditors, lower the cost and increase the market value of firm debt (Agrawal and Knoeber, 1996; Chava, Livdan and Purnanandam, 2009; Chava, Kumar and Warga, 2010; Billett, Hribar and Liu, 2011; Nini, Smith and Sufi, 2012). However, creditor and shareholder interests may diverge with regard to external govern-

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<sup>1</sup> See, for example, McCahery, Saunter and Starks (2016), Aggarwal, Saffe and Sturgess (2015), Cornelli, Kominek and Ljungqvist (2013), Dennis and McConnell (2003), and a survey of earlier literature by Shleifer and Vishny (1997).

ance, the market for corporate control. For example, Chava *et al.* (2009) and Klock, Mansi and Maxwell (2005) find that bond yields are increasing in takeover vulnerability, arguing that creditors are exposed to asset substitution risk if a borrower is acquired by a weaker bidder. Cremers, Nair and Wei (2007) show that the absence of event risk covenants increases bond yields for companies at greater risk of being acquired. On the other hand, Qiu and Yu (2009) find that creditors may benefit from a coinsurance effect, lowering bond yields, when borrowers are exposed to the market for corporate control; such exposure disciplines managers and/or invites bids from stronger firms (Shastri, 1990).

Ultimately, extant literature suggests that governance matters to bondholders, as they must price the benefits as well as the risks posed by different governance structures. When shareholder and creditor interests are in alignment, governance that mitigates agency risk between managers and shareholders is valuable to creditors, lowering the cost of borrowing. When shareholder and creditor interests diverge, however, creditors may reward firms with governance that mitigates risk to creditors regardless of the effects on shareholders.

The majority of recent studies on the relation between governance and loan characteristics has dealt with public bonds, where the endogeneity of the link between governance and loan prices is likely a concern (Klock *et al.*, 2005; Cremers *et al.*, 2007; Chava *et al.*, 2010)<sup>2</sup>. In contrast, our study examines the role of governance on the *initial* pricing of private loans. The study of private credit agreements is an ideal setting in which to empirically examine governance and contract theory for several reasons. Private debt is the largest source of external finance for firms, larger than public debt and equity issuance combined (Gorton and Winton, 2003, Gomes and Phillips, 2007). More importantly, governance variables studied in our paper are persistent and are less likely to change immediately prior to or following the negotiation of a private credit agreement. Consequently, governance characteristics are expected to be the exogenous determinants of initial loan spreads. Finally, private agreements governing syndicate and single-lender loans are concentrated securities for lenders, and thus well represent the environments of theoretical contract theory and security design literatures.

Since recent literature suggests a strong link between loan characteristics and the borrowers' propensity to be acquired (e.g. Chava *et al.*, 2009; Qiu and Yu, 2009; Cremers *et al.*, 2007), we study the effects of governance on credit agreements for the a sample of private loans, as well as for subsamples of borrowers more and less likely to be acquired. However, in contrast to previous studies that measured generalized acquisition propensity by the number of anti-takeover provisions employed by the firm, we calculate an ex-ante takeover probability. We thus analyze the differential effects of governance mechanisms on the cost of borrowing based on an empirical probability the borrower is acquired, a direct measurement, rather than the vulnerability to takeover, a generalized assessment.

To our knowledge, our paper is the first to investigate the relationship between specific, as opposed to aggregated, measures of governance, e.g. board characteristics, restrictions of shareholder power, antitakeover provisions, and ownership structure, on the cost of private debt. We investigate the following four issues: First, do banks differentially price the benefits and risks of specific means of governance, especially the internal mechanisms, generally understood to mitigate the agency costs arising from the separation of ownership and control?

<sup>2</sup> One notable exception is Chava *et al.* (2009) who study the spreads of private loans as a function of takeover defenses utilized by the borrowers.

Second, do banks seek compensation for the potential costs – such as asset substitution risk, renegotiation, due diligence, and liquidity costs – resulting from a higher likelihood that the borrower is acquired?<sup>3,4</sup> Third, do lenders price governance differently for borrowers at higher or lower takeover risk? Fourth, do lenders distinguish between the potentially different effects of governance in financially healthy (stronger) vs. distressed (weaker) borrowers?

Based on a sample of 2,683 loans issued by 947 unique borrowers between 2000 and 2009, we find the following. First, lenders assess and price risks in line with agency and contract theory. Firms more accountable to shareholder monitoring enjoy a lower cost of borrowing. Specifically, we find that borrowing costs are increasing in shareholder restrictions and decreasing in board independence. Second, takeover probability is a statistically positive and economically meaningful determinant of the cost of borrowing. Firms at greater risk of takeover pay higher spreads. Additionally, lenders adjust spreads in relation to governance mechanisms mitigating the risk of borrower acquisition. Specifically, spreads are decreasing in insider ownership, CEO-Chairman duality, and poison pills while increasing in institutional ownership. Third, the financial strength of the borrower determines whether agency risk or takeover probability dominates the pricing function. Agency risk pricing dominates for weaker borrowers while takeover risk pricing dominates for stronger borrowers.

This paper extends the corporate governance and debt literatures; firm governance informs loan contracts. Our results present evidence that creditor and shareholder interests diverge with regard to the market for corporate control, as increased takeover probability increases the cost of borrowing for all firms. Finally, we find that the degree to which the cost of takeover probability is mitigated by firm takeover defenses is dependent upon the financial strength of the borrower.

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## 2 Hypotheses

Previous research has established that stronger internal governance is linked to higher market and equity values due to its mitigating effect on agency costs. Stronger internal governance is typically associated with the following characteristics: *(i)* independent boards, boards without CEO-Chairman duality, and smaller boards, *(ii)* absence of limits to the ability of shareholders to monitor (e.g., act by written consent, call special meetings, or amend corporate charters), and *(iii)* concentrated equity positions and sophisticated monitors, i.e. higher institutional ownership. If stronger internal governance mitigates agency risk for all stakeholders then lenders should prefer to contract with these firms, granting firms with strong internal governance lower spreads. Thus,

<sup>3</sup> There are at least three reasons why lenders may incur costs when borrowers get acquired. First, Chava *et al.* (2009) attribute lower costs of debt charged to borrowers with stronger anti-takeover covenants to asset substitution risk, resulting in losses to lenders whenever a strong borrower is acquired by a relatively riskier bidder. Second, regardless of whether an acquisition weakens the loan, lenders are likely to incur renegotiation and/or due diligence costs, especially in the case that the acquiring firm does not have a current or recent relationship with the lender(s). Third, lenders may face liquidity and/or reputational costs in the event of a borrower acquisition. If a borrower whose loan has been sold to primary or secondary market participants is acquired by a bidder not to an investor's liking, it is possible that although there is no explicit recourse the investor may request that the bank buy back the investor's share in the loan. Gorton and Pennacchi (1995) provide some evidence that implicit guarantees are present in loan sales. Reputational costs may be relevant to lead arrangers if borrower acquisitions decrease the likelihood that syndicate members or secondary investors participate in future deals.

<sup>4</sup> Due diligence costs may be particularly severe when the loan is already sold in the secondary market.

*H1: Stronger internal corporate governance employed by borrowers is associated with a lower cost of debt.*

External governance exemplified by the functioning of the market for corporate control may exhibit bidirectional pricing in credit agreements. Chava *et al.* (2009) and Klock *et al.* (2005) show that borrowers with weaker anti-takeover defenses are charged higher spreads. The authors interpret such findings as evidence that lenders tend to suffer losses, primarily linked to asset substitution, when borrowers are acquired. Conversely, creditors to a relatively weaker firm may benefit if the firm is acquired by a stronger borrower through a coinsurance effect; their claims are now backed by stronger combined entity (Shastri, 1990; Qiu and Yu, 2009). Consequently we have a dual hypothesis:

*H2 [H2a]: Borrowers at greater risk of acquisition are associated with higher [lower] borrowing costs. The presence of strong anti-takeover defenses results in lowering [increasing] the cost of debt, especially for borrowers in higher states of takeover probability.*

Cremers *et al.* (2007) show that stronger shareholder control, proxied by the presence of large institutional block holders, lowers credit risk and therefore the yield spreads of public bonds only when borrowers have strong anti-takeover defenses in place. It may be that bondholders fear asset substitution risk in vulnerable borrowers regardless of internal governance effects. These findings suggest that firms that benefit from internal governance by way of lower borrowing costs should be firms at low risk of acquisition. Thus:

*H3: If stronger internal corporate governance employed by borrowers is associated with lower cost of debt, then such benefits should be primarily associated with firms that are less likely to be acquired.*

If stronger internal governance benefits debt holders then borrowers who are financially weaker ex-ante should reap the majority of price concessions. Financially stronger borrowers should be able to negotiate lower borrowing costs regardless of governance. However, if lenders face the risks of asset substitution, diminished liquidity, and renegotiation and due diligence costs if a borrower is acquired, then financially healthier firms at greater risk of acquisition should be charged the bulk of increased spreads. Weaker borrowers can actually benefit from acquisitions due to coinsurance gains, as such targets are likely to be acquired by better-performing bidders. Therefore:

*H4: If stronger internal corporate governance employed by borrowers is associated with lower borrowing costs then such benefits should be primarily associated with firms that are financially weaker ex ante (and at greater risk of distress).*

*H5: If borrowers at greater risk of acquisition bear higher borrowing costs then these should be primarily borne by firms that are financially stronger (at less risk of distress). Further, if takeover defenses lower borrowing costs then benefits should proportionally accrue to financially stronger borrowers.*

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### 3 Data and Descriptive Statistics

#### 3.1 Loan information

We collected information on all bank loans with covenant information from 2000 to 2009 wherein both banks and firms are US incorporated and domiciled firms, from

**Table 1:** Loan summary statistics

	N	Mean	10th	Median	90th	St. Dev.
Borrowers	947					
Aggregated Facilities	2,683					
Spread, bps over LIBOR	2,683	156.93	40.00	125.00	300.00	119.47
Structural Intensity	2,683	2.00	0.00	1.00	5.00	1.63
Previous Loan	2,683	0.51	0.00	1.00	1.00	0.50
Tenor (months)	2,683	51.37	36.00	60.00	62.00	14.68
Number of Lenders	2,683	11.26	3.00	9.00	22.00	8.82
Deal Size to Assets	2,683	0.38	0.06	0.18	0.43	8.65
Pricing Grid	2,683	0.86	0.00	1.00	1.00	0.35
Revolving Loan (>13 months)	2,683	0.86	0.00	1.00	1.00	0.35
Amended	2,683	0.18	0.00	0.00	1.00	0.39
Stated Purpose of Loan:						
Corporate Purposes	2,683	0.36	0.00	0.00	1.00	0.48
Debt Repayment	2,683	0.10	0.00	0.00	1.00	0.30
Acquisition Line	2,683	0.11	0.00	0.00	1.00	0.31
Working Capital	2,683	0.37	0.00	0.00	1.00	0.48

Summary statistics of loans issued to US non-financial firms 2000-2009. Spread is in basis points over LIBOR, inclusive of annual administration fees, if any.

the Loan Pricing Corporation's DealScan database. We exclude utility and financial borrowers<sup>5</sup>. We also exclude all loans issued with a tenor of less than 13 months as the more frequent due diligence processes potentially substitute for higher spreads and/or the need for protective covenants. The resulting sample includes 2,683 aggregated loans inclusive of 9,761 tranches to 947 unique borrowers.

Loan data are comprehensive, including information on loan size and stated purpose, the cost of the loan, the circumstances under which material provisions of the deal change, whether or not the loan had been amended, loan ratings, and detailed covenant information (Table 1).

The mean (median) spread of all tranches of all loans, including any annual fees paid by the borrower to the lender(s), is 157 (125) basis points above LIBOR on an aggregated basis. The mean (median) size of sample loans is \$656 (\$350) million, which represents the mean (median) proportion of assets equal to 38 (18) percent. The median loan term is 60 months and the mean syndicate size is nine lenders.

### 3.2 Structural intensity

Each of the 9,761 tranches in the sample has covenant information. The median number of covenants, both financial and general, in the sample is 2. We follow Bradley and Roberts (2004) to create an index of structural intensity that assigns one point for the presence of each of the following in the loan agreement for a maximum value of six: dividend restrictions, more than two financial ratio covenants, asset, debt, and equity sweeps, and collateral requirements. Mean (median) structural intensity is 2 (1), though there is significant dispersion in intensity; 13.67% of loans have no covenant restrictions and 14.19% have five or more.

<sup>5</sup> As is typical given increased governmental regulation of such firms.

**Table 2:** Firm summary statistics

	Mean	Median	St. Dev.
<b>Governance</b>			
Governance Index	9.23	9.00	2.53
Entrenchment Index	4.06	4.00	1.19
Duality, dummy	0.88	1.00	0.32
Institutional Majority, dummy	0.65	1.00	0.48
Board Size	9.09	9.00	2.44
% of Board, Employees	0.11	0.09	0.08
% of Board, Linked	0.07	0.04	0.09
% of Board, Independents	0.83	0.84	0.12
% of Board, Insiders	0.18	0.16	0.12
Golden Parachutes	0.47	0.00	0.50
Limits: Act by Written Consent	0.39	0.00	0.49
Limits: Call Special Meeting	0.47	0.00	0.50
Limits: Amend Charter	0.30	0.00	0.46
Limits: Amend Bylaws	0.43	0.00	0.50
ermajority to Approve Merger	0.16	0.00	0.37
Severance Agreement	0.05	0.00	0.21
Change in Control	0.75	1.00	0.43
Classified Board	0.59	1.00	0.49
Poison Pill	0.51	1.00	0.50
<b>Ownership</b>			
Insiders, Percentage	15.80	6.80	19.60
Institutional Blockholder	0.99	1.00	0.10
Institutional, Percentage	62.10	71.20	45.70
Institutional Majority	0.65	1.00	0.48
<b>Financials</b>			
Assets	6.34	6.33	1.93
Market Capitalization	6.22	6.31	2.01
EBITDA to Sales	-0.12	0.12	8.77
Total Debt to Sales	0.29	0.24	4.37
Total Debt to Assets	0.29	0.24	4.39
Current Ratio	2.26	1.76	2.92
Cash to Assets	0.12	0.06	0.16
Capital Expenditures to Assets	0.06	0.04	0.08
Net Worth to Assets	0.42	0.46	2.71
Market to Book Ratio	2.27	0.88	281.47
<b>Information Asymmetry Proxies</b>			
Company Age	43.33	30.00	37.72
Distance from IPO, in quarters	7.90	7.50	6.18
Rated	0.65	1.00	0.48
Investment Grade	0.63	1.00	0.48
Previous Loan with Lender	0.51	1.00	0.50

Firm governance, ownership, and financial data on 2,973 borrowers, 2000-2009. The Government (GIM) Index is per Gompers, Ishii, and Metrick (2003). The Entrenchment Index is as per Bebchuck, Cohen, and Ferrell (2009). Other than indices and board size, governance data are indicator variables, i.e. at the mean, 39% of borrower firms restricted shareholder rights to act by written consent. Firm assets and market capitalization are expressed in natural logs. Company age is in years.

### 3.3 Governance data

Governance data is collected from RiskMetrics and the Corporate Library. Table 2 reports summary statistics on firm governance, financials, and information asymmetry measures.

As RiskMetrics and some Corporate Library data are only reported every other year, and because governance data are typically persistent, we assume that governance data are the same in year  $t$  as in  $t - 1$  (that is, until reported otherwise) to fill in missing observations; results are robust to alternative methods of interpolation.

### 3.3.1 *Governance indices*

The Governance Index (GIM Index) is an index giving equal weight to 24 governance provisions monitored by the Investor Responsibility Research Center (IRRC). The index is maintained by the developers of the index, Gomers, Ishii, and Metrick (2003). Similarly, Bebchuck, Cohen, and Ferrell's (2009) Entrenchment Index is an empirically concentrated governance index such that it includes only those six provisions found by the authors to be most significantly related to firm valuation: staggered (classified) boards, poison pills, shareholder restrictions to amendments to bylaws, charters, and merger agreements, and golden parachute provisions. In both cases, the index gets one point for each restriction; «good» – more democratic and shareholder friendly – governance therefore has lower index scores. Higher index scores are more despotic in terms of corporate governance and are reflective of more entrenched management. Both studies, and numerous extensions of the GIM study, show a negative relationship between firm valuation and performance and the GIM/Entrenchment indices.

### 3.3.2 *Monitoring characteristics*

We group variables that affect stakeholders' ability to monitor executives together as monitoring governance variables. *Duality* is an indicator variable with a value of one if the CEO is also chairman of the board of directors. 88% of the CEOs in the sample also chair the board. *% Board, Independent* is the percentage of the board not identified as insiders or «linked» to management, i.e. wherein an «independent» board member has a significant relationship with the CEO. Mean board independence in our sample is 83%. Ownership data are collected from Execucomp. *Insiders Percentage* is the percentage of outstanding firm shares owned by insiders. From an entrenchment perspective, a higher percentage of shares owned by insiders is indicative of more entrenched management, lowering the power of other stakeholders to monitor effectively; the mean (median) percentage of shares held by insiders is 15.8% (6.8%). The percentage of outstanding firm shares owned by institutions, *Institutional Percentage*, is meant to capture the monitoring effect of sophisticated shareholders. Higher institutional ownership has been shown to decrease debt yields, purportedly due to the monitoring power and effectiveness of institutional owners (Bhojraj and Sengupta, 2003). Institutional ownership for borrower shares is 62% at the mean and 71% at the median. Board size has also been shown to inform monitoring effectiveness, with smaller boards argued to be more effective (Yermack, 1996). Mean and median board size of sample firms is nine members; board size is *Directors* henceforth. Finally, to control for the possibility that more complex firms require larger boards (Coles, Daniel and Naveen, 2008) we calculate Tobin's Q, a proxy for firm complexity, and multiply it by the size of the board. The *Complex* variable is therefore an interaction term meant to control for non-linearity in the relationship between firm complexity and board size.



### 3.3.3 Takeover defenses

We group variables that make firm acquisition more difficult for prospective bidders into takeover defenses. The first, *Classified Board*, is an indicator variable equal to one if the board has staggered elections. 59% of sample borrowers have classified (staggered) boards. We investigate three common restrictions to the shareholders' ability to act, namely limits on shareholders' ability to call special meetings, act by written consent, and amend the firm's charter and/or bylaws. 47% of sample firms restrict shareholders' ability to call special meetings and 39% do not allow shareholders to act by written consent. 43% and 30% of firms limit shareholders' ability to amend the firm bylaws and charter, respectively. We find that shareholder restrictions are highly collinear, and therefore only include limits to shareholders' ability to amend the corporate bylaws or charter, *Amend Charter*, in subsequent analysis. Inclusion of other shareholder limits in regressions does not alter other results, though charter restrictions appear to be more significant to lenders. A formidable takeover defense is *Change in Control Provisions*, wherein CEO pension payouts are accelerated and/or important firm assets are shifted to a new entity in the case of a hostile takeover attempt. 75% of sample firms have change-in-control provisions in place. Similarly, *Golden Parachutes* are provisions accelerating the vesting of CEO compensation or pension payouts; 47% of sample firms have golden parachute provisions. *Poison Pill* is an indicator variable equal to one if the firm vastly dilutes shares around a hostile bidder in a takeover attempt, making the acquisition of target shares prohibitively expensive for a would-be acquirer. 51% of sample firms have poison pills in place.

## 3.4 Control variables

We control for variables shown in the literature to be significant determinants of debt structure and cost. These include the natural log of firm assets, a cash and equivalents to assets ratio, firm leverage equal to the total debt to assets ratio, and firm profitability as measured by the return on assets. We control for industry effects using 2-digit SIC codes. Because the time period encompasses both a recession at the beginning and a financial crisis at the end of the decade we control for lending conditions with the percentage of banks reporting tightening commercial lending standards, as reported by the St. Louis Federal Reserve.

We control for loan characteristics that also affect borrowing costs. We capture the effects of information asymmetry between borrowers and lenders with *Previous Loan*, a dummy variable equal to one if the firm borrowed previously from any current syndicate participant. Most loans are syndicate loans wherein the loan deal is shared among several lenders who jointly bear the risk of default. We assume the firm had a significant previous relationship with a bank if at any time during the sample period, and in the ten years prior to our sample time period, a bank was a leading or a co-leading lender to the firm. The average number of loans per firm in the sample is three, and most loans are comprised of several tranches. Tranches may have different leading banks, different stated uses of the capital, different tenors, etc. We assume that any remaining tranche or loan, after having

dropped all loans less than 13 months in tenor, would provide ample motivation for a rigorous due-diligence process by the lender(s)<sup>6</sup>. If a loan is deemed a revolving loan we assign *Revolver* equal to one presuming that revolving loans, even those of several years in maturity, have greater monitoring than non-revolving loans. 86% of sample loans are deemed revolving. Loans that have a *Pricing Grid* allow for lenders to adjust the terms of loan, usually increasing spreads charged, if borrower financials deteriorate over the term of the loan. 86% of loan arrangements include a pricing grid. *Tenor* is the stated maturity of the loan at origination, in months. *Number of Lenders* is the syndicate size, inclusive of participants who are not lead arrangers, and *Deal Size* is the ratio of loan proceeds to borrower total assets. At the median, debt issues are five year loans with nine lenders representing 18% of borrower assets. We also control for the stated purpose of loan proceeds. The majority of loans are for amorphous «corporate purposes,» and thus it is our base case. We control for other common stated purposes of loan proceeds with *Acquisition*, *Debt Repayment*, and *Working Capital* purpose dummies.

Finally, in order to equally weight the study, we aggregate all tranches of a deal on a specific date with a firm as one «deal» so as to not have several observations of firm/governance and loan data bias findings against a single firm/governance loan observation.

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#### 4 Methodology and Results

Cost of capital regressions are multivariate generalized least squares panel regressions with errors clustered by firm. The dependent variable is the all-in spread in basis points over LIBOR. The first series of tests considers whether monitoring, takeover defenses, and compensation mechanisms are significant determinants of the cost of private debt. Our base model specification is

$$(1) \quad Spread_{ijt} = \beta_g G_{it} + \beta_c Controls + \varepsilon$$

where *Spread* is the all-in spread in basis points over LIBOR for a loan package between firm *i* and bank *j*, *G* is a vector of firm governance variables (monitoring related to internal governance, takeover defenses related to external governance) of firm *i*, and *Controls* is a vector of loan, firm, time, industry, and other control variables.

Subsequently we attempt to disentangle bidirectional pricing of governance in the presence/absence of a relatively higher likelihood of being acquired. We calculate the ex-ante probability that a borrower becomes a takeover target. We then compare the pricing of governance in and out of states of high takeover probability to identify any differences in the way lenders welcome or punish governance mitigating these risks. If creditor and shareholder interests are in alignment we expect pricing in line with agency theory. On the other hand, if creditor and shareholder interests diverge with regard to the market

<sup>6</sup> One should note, however, that even loans with a tenor greater than 13 months are often considered «revolving» by lenders. Revolving loans may have different due diligence processes than non-revolving loans and as such may have different costs and covenant structures, which we capture by an additional control variable, *Revolver*.

for corporate control we expect the *same* governance mechanism to be priced differently dependent upon takeover probability. Our model specification is therefore

$$(2) \quad Spread_{ijt} = \beta_{to} TOProb_{i,t-1} + \beta_g G_{it} + \beta_t T_{it} + \beta_c Controls + \varepsilon$$

where *TOProb* is the quarterly rolling annual probability, in percent, that firm *i* is a takeover target, *T* is a vector of governance variables interacted with an indicator variable equal to one if the firm is at high risk of takeover (see discussion below), and other variables are identical to those in equation (1).

#### 4.1 Comprehensive governance indices and the cost of debt

Before we analyze the relation between loan spreads and individual characteristics of governance, we examine the power of aggregated governance metrics (GIM and Entrenchment) to explain loan spreads. This analysis will allow us to compare and contrast our results with the findings of previous studies that found a negative link between governance index values and loan spreads for the samples of public bonds (e.g. Klock *et al.*, 2005; Cremers *et al.*, 2007). Since higher governance index values are associated with firms with greater managerial entrenchment, insulating them from external governance discipline, the above studies suggest that public bond lenders value takeover defenses in borrowers.

Table 3 reports results of the analysis of the effects of governance indices. Model (1) only considers variables shown in previous studies to be determinants of spreads. Models (2) and (3) include the Entrenchment and GIM Index values, respectively.

We find that loans with longer maturities and more syndicate participants have statistically lower spreads. Revolving loans, even those longer than 13 months in duration, charge statistically and economically significant lower spreads, possibly due to the increased frequency of thorough due-diligence processes by banks when choosing whether to renew revolving loans. Similarly, loans with a performance grid, such that the spread charged varies with the performance of the firm over the duration of the loan, are priced lower than fixed loans at origination. This is consistent with adjustable pricing lowering the likelihood that the bank will not be compensated for future increases in risk (Asquith, Beatty and Weber, 2005). Firms facing higher spreads are also more likely to face more restrictions as measured by structural intensity, as spreads and deal structure are jointly determined. In terms of firm characteristics, we find that larger firms and more profitable firms pay lower spreads. Unsurprisingly, firms with greater leverage pay higher spreads, as do firms with greater cash reserves, the latter finding consistent with theories of the agency cost of free cash flow (Jensen, 1986).

Most importantly, we find that neither the Entrenchment Index nor the GIM Index are statistically significant determinants of loan spreads. In addition, entrenched management, as measured by the Entrenchment Index, show a positive relationship between entrenchment and spreads. This suggests that lenders may in fact reward borrowers willing to be disciplined by the market for corporate control, consistent with agency theory. The insignificance of the link between governance indices and loan spreads is inconsis-

Table 3: Cost of capital – Government Index (GIM) and Entrenchment Index

	(1)	(2)	(3)
Governance Index			
Entrenchment Index		0.404 (1.578)	
GIM Index			-0.514 (0.759)
Loan Characteristics			
Previous Loan	6.194* (3.691)	6.236* (3.674)	6.160* (3.689)
Revolver	-32.305*** (7.898)	-32.324*** (7.900)	-32.265*** (7.905)
Pricing Grid	-50.052*** (8.469)	-50.094*** (8.474)	-49.865*** (8.508)
Tenor	-1.251*** (0.273)	-1.251*** (0.273)	-1.252*** (0.272)
Number of Lenders	-1.073*** (0.270)	-1.072*** (0.270)	-1.077*** (0.270)
Deal Size	6.220 (7.099)	6.278 (7.113)	6.005 (7.175)
Loan Purpose			
Acquisition	7.186 (6.446)	7.139 (6.436)	7.285 (6.432)
Debt Repayment	-3.627 (7.312)	-3.609 (7.322)	-3.747 (7.315)
Working Capital	0.760 (4.056)	0.749 (4.041)	0.780 (4.052)
Covenants			
Structural Intensity	25.669*** (1.755)	25.683*** (1.760)	25.622*** (1.749)
Firm Characteristics			
ln Assets	-4.280* (2.534)	-4.260* (2.545)	-4.149 (2.540)
Cash and Equivalents	48.804** (20.948)	49.175** (21.001)	47.774** (20.874)
Leverage	84.089*** (20.617)	84.087*** (20.605)	83.646*** (20.671)
Profitability	-646.178*** (204.298)	-646.243*** (204.225)	-646.204*** (204.561)
Other			
Constant	261.357*** (26.992)	259.475*** (28.576)	265.513*** (26.711)
Industry Controls	Yes	Yes	Yes
Time/Macro Controls	Yes	Yes	Yes
Aggregated Facilities	2,683	2,683	2,683
Borrowers	947	947	947
Adjusted R <sup>2</sup>	0.444	0.445	0.444

This table reports results of regressions of the cost of capital and extant governance indices. The dependent variable is loan spread in basis points over LIBOR. Independent variables include firm and loan characteristics, and governance indices. Governance and structural intensity variables are defined in section 3. *Leverage* and *Cash* are total debt and cash and equivalents to total assets, respectively. Errors robust to firm heteroskedasticity are in parentheses. Statistical significance is designated as \*\*\*, \*\*, and \* at the 1%, 5%, and 10% levels, respectively.

ent with findings of Klock *et al.* (2005) and Cremers *et al.* (2007). It should be noted that while the previous studies dealt primarily with public bonds, our sample contains exclusively private debt contracts. It is therefore possible that firms in our sample are less able to issue public debt, increasing the likelihood creditors benefit from coinsurance in the event of borrower acquisition. If so, the negative consequences of acquisitions for

target debt holders (asset substitution risk, renegotiation, due diligence, and liquidity/reputation costs) may play a smaller role in our sample of private loans. As importantly, the absence of a significant relation between governance indices and the cost of debt still leaves the possibility that there are specific governance characteristics that are directly linked to the cost of debt.

#### 4.2 Internal governance characteristics and the cost of debt

We next investigate whether and to what extent specific measures of internal governance contribute to the cost of private debt capital. Table 4 reports results of the expanded cost of private debt model to include monitoring and takeover defenses variables. Most loan and firm control variables have similar coefficient signs, size, and significance as those in table 3, though we note that the inclusion of more precise monitoring variables lessens the importance of *Revolving* and *Cash* to assets variables; these are now insignificant.

Importantly, we find that monitoring generally lowers spreads, consistent with hypothesis H1. Specifically, firms whose boards are comprised of a greater percentage of independent directors enjoy lower spreads, a finding that is both statistically and economically significant<sup>7</sup>. At the means, a board that is 71% comprised of independent members, equivalent to a one standard deviation decrease in independence, faces increased borrowing costs of 52 basis points. This finding is in agreement with agency theory in that independent boards are thought to be more objective or better monitors of firm management than insiders (Bhojraj and Sengupta, 2003), decreasing agency risk and the monitoring cost of other stakeholders. Board independence reduces the monitoring costs of private lenders and decreases the risk of manager-creditor agency costs. Interestingly, firms wherein insiders own a larger percentage of outstanding firm shares are also rewarded with lower spreads. The effects of larger insider ownership on agency costs is uncertain. Insider ownership may mitigate principal-agent problems, but it may also increase entrenchment (e.g. Morck, Shleifer and Vishny, 1988). Our findings suggest that the benefits of concentrated inside ownership outweigh costs.

We do not have specific expectations for the effects of defensive tactics on cost of debt (outside of the environment characterized by the threat of takeover, which is covered by hypothesis H2), since those provisions can be considered *barriers* to external governance, rather than direct internal or external governance mechanisms. The results in Table 3, in fact, show that the aggregate numbers of anti-takeover provisions as proxied by the GIM and Entrenchment indices are unrelated to the cost of debt. Table 4, however, documents that the presence of specific defensive tactics affects private loan spreads. Mostly, our results support Klock *et al.* (2005) and Cremers *et al.* (2007), as the existence of a classified board structure, a hurdle to potential bidders, decreases loan spreads. However, the signs on the coefficients, though statistically insignificant in the specification, suggest

<sup>7</sup> Independent members are those not identified as insiders or «significantly» tied to management. Significant relationships include legal counsel, consultants, previous managers, etc.

**Table 4:** Cost of capital vs. monitoring, takeover defenses, and compensation

Monitoring	
Duality	-10.590 (16.611)
% Board, Independent	-52.234* (28.724)
Insiders Percentage	-34.877* (19.692)
Institutional Percentage	-2.581 (4.714)
Directors	3.578** (1.818)
Large Board, Complex Firm	-1.576*** (0.334)
Takeover Defenses	
Classified Board	-11.072* (5.980)
Amend Charter	-1.469 (20.111)
Change in Control Provisions	11.935 (7.403)
Golden Parachute	3.407 (5.178)
Poison Pill	-7.796 (6.678)
Firm Characteristics	
ln Assets	-15.128*** (4.349)
Cash and Equivalents	32.131 (26.365)
Leverage	93.134*** (22.349)
Profitability	-687.050*** (106.201)
Loan Characteristics	
Previous Loan	-4.658 (4.595)
Revolver	-16.880 (13.449)
Pricing Grid	-42.590*** (13.625)
Tenor	-0.633** (0.246)
Number of Lenders	-0.338 (0.246)
Deal Size	-17.093 (21.136)
Loan Purpose	
Acquisition	20.354* (10.901)
Debt Repayment	30.610** (11.957)
Working Capital	16.498*** (6.020)
Covenants	
Structural Intensity	18.065*** (2.447)
Other	
Constant	316.647*** (49.832)
Industry Controls	Yes
Time/Macro Controls	Yes
Aggregated Facilities	665
Borrowers	369
Adjusted R <sup>2</sup>	0.589

This table reports results of the regression of the cost of capital and detailed governance metrics. The dependent variable is loan spread in basis points over LIBOR. Takeover defenses are indicator variables equal to one if the firm has, for example, a *Classified Board*. *Duality* and *Large Board, Complex Firm* are indicator variables; governance variables are defined in section 3. Errors robust to firm heteroskedasticity are in parentheses. Statistical significance is designated as \*\*\*, \*\*, and \* at the 1%, 5%, and 10% levels, respectively.

that change in control provisions and golden parachute payouts increase spreads. The latter are more consistent with agency theory.

The above findings support arguments that lenders price both agency and takeover risk. We now turn to tests that include the probability that the firm will be acquired over the term of the loan in order to determine (a) whether lenders price takeover risk more for the firms actually threatened by acquisitions and (b) whether lenders price governance differently for borrowers in higher and lower ex-ante states of takeover probability.

### 4.3 Predicting ex-ante takeover probability

In order to disentangle the pricing effects of agency versus takeover risk we need to estimate takeover probability. We follow Billett and Xue (2007) in modeling latent takeover probability ( $Takeover^*$ ) as a linear relation:

$$(3) \quad TOprob^* = \beta_i z_{i,t-1} + u_i, \quad u_i \in N(0, \sigma_1^2)$$

where  $z$  are quarterly rolling annual firm characteristics and a constant term. Of course,  $Takeover^*$  is unobservable in practice. We collect all takeovers from 1999-2009 from the SDC Mergers and Acquisitions database of all non-financial, non-utility public firms to create an indicator variable  $Acquired$  equal to one if a firm announces an acquisition, such that

$$(4) \quad Acquired_{it} = \begin{cases} 1 & \text{if } Takeover^* > 0 \\ 0 & \text{otherwise} \end{cases}$$

We model the latent probability that a firm becomes an acquisition target using a probit model:

$$(5) \quad TOprob_{it} = prob(Acquired_{it} = 1) = \Phi(z_{i(t-1)}\beta_i)$$

where  $\Phi(\cdot)$  is the cumulative distribution function of a standard normal distribution and  $z_{i,t-1}$  is a vector of firm characteristics shown by previous studies to be determinants of a firm receiving a takeover bid<sup>8</sup>.  $TOprob$  is the resulting predicted values from the model and is therefore a quarterly rolling annual probability that a firm becomes a takeover target. Thus, a lender negotiating terms of a loan this quarter would, in theory, assess the probability of borrower acquisition based on information from the previous four quarters.  $TOprob$  is used in regressions in equation (2) to identify the pricing of agency and takeover risks, if any. During our sample period, 12.24% of borrower firms are takeover targets. Firms are acquired *after* the loan is issued, as acquired firms disappear from the database ex-post. Not surprisingly, a significant determinant of takeover probability is concurrent industry acquisition activity. Simply counting the number of quarterly acquisi-

<sup>8</sup> For a comparison of studies predicting takeover activity, and the challenges therein, see Billet and Xue (2007), Powell (1997), Billett (1996), Ambrose and Megginson (1992), and Palepu (1986).

**Table 5:** Predicting ex-ante takeover probability

Probit model specification	Coefficient	z-score
Industry Takeovers	0.0273	2.48**
iROA	-0.1153	-1.1
Sales Growth	-0.0814	-1.59
Market to Book	-0.0112	-0.67
Size	-0.0195	-1.99**
iLeverage	0.0430	0.8
Net PPE	-0.0597	-0.75
Non-Operating Income	0.4337	0.57
Time controls		Yes
Observations		83,854
Log pseudolikelihood		-2,220.46
Model specification test		
Toprob(hat)	-0.7331	-0.11
RangeToprob(hat)^2	-0.3348	-0.26
Observations		83,854
Log pseudolikelihood		-2,220.43
Pairwise correlations of regression variables with takeover probability		
Size		-0.5834
Leverage		0.1655
Cash and Equivalents		0.1354
Profitability		-0.3271
Market to Book		-0.1641
Ex-ante takeover probability descriptive statistics		
Mean		0.409
Median		0.3941
Standard Deviation		0.0947
Range		0.0004-2.5680

Ex-ante takeover probability is calculated by fitting a probit model wherein the dependent variable is an indicator equal to one if the firm is a takeover target in that quarter. Takeover targets are firms that announced a complete acquisition by another firm, an acquisition of majority interest, or a merger. Independent variables are lagged by one quarter. *Industry Takeovers* are the number of firms in the same 4-digit SIC code that are takeover targets. *iROA* is the firm return on assets ratio minus the industry median ROA. *iLeverage* is the firm's total debt to firm assets ratio minus the industry median ratio. Both *iROA* and *iLeverage* compute median industry ratios using a 2-digit SIC code. *Sales Growth* is the natural log of the ratio of sales this quarter to sales last quarter. *Size* is the natural log of firm market capitalization. *Net PPE* is net property, plant, and equipment. Pairwise correlations are computed for ex-ante takeover probability and firm control variables used in subsequent regressions. Standard errors are Huber-White quasi-maximum likelihood errors and are robust to firm heterogeneity.

tions in each 4-digit SIC code we construct *industry takeovers*, an independent variable capturing concurrent industry acquisition activity. Other independent variables include firm sales growth, the market to book ratio, the natural log of market capitalization, net property plant and equipment, and non-operating income. Return on assets and total debt to assets ratios are computed, then adjusted by the industry median in the same 2-digit SIC code, resulting in the *iROA* and *iLeverage* ratios, respectively. To limit the effects of outliers, we winsorize all variables at the 1% and 99% levels. Further, we calculate Huber-White quasi-maximum likelihood standard errors robust to firm heterogeneity.

Table 5 reports results of our estimation. Industry takeover activity is the greatest predictor that a firm will become a target, while firms with larger market capitalizations are significantly less likely to become targets, in support of extant literature. The mean takeover probability for all firms in all quarters is 0.41%, while the range of probability is 0.00% to a high of 2.57% that a firm will become a target in that quarter. Rolling annual takeover probability ranges from 0.31% to 7.72% during this time period. We conduct a link test for single equation models to determine if the model is well-specified. If so, the square of the predicted takeover probability should not be a significant determinant of



takeovers. As  $Toprob(hat)^2$  is not significant, we conclude that the model is well-specified. Finally, though we took care to construct variables for the probit estimation that are different from those in subsequent regressions, a common concern is that firm variables that have some power to predict takeover activity may also be variables that are determinants of loan spreads. We calculate Pearson pairwise correlations of ex-ante *takeover probability* as predicted by the probit model with firm controls used in the second stage regressions, concluding that the correlations are not high enough to significantly bias results.

#### 4.4 Takeover probability, governance, and the cost of debt

In order to isolate the effect that ex-ante takeover probability has on the cost of private debt we first revisit model (1) of table 4 to establish a «base case» scenario inclusive of takeover probability; the only addition is our estimation of ex-ante takeover likelihood. The base scenario is presented as model (1) in table 6. Model (2) attempts to disentangle potential bidirectional pricing of internal and external governance in states of higher or lower takeover probability. We interact each governance variable with an indicator variable *hiTOP* equal to one if the firm is at greater than median risk of becoming a takeover target. Thus, controlling for takeover probability itself, each governance variable becomes two: the original variable, which is meant to capture the pricing of agency risk, and the interaction variable, meant to capture the additive pricing effects of the governance mechanism in states of greater takeover probability.

Results are presented in Table 6. In both model specifications takeover probability is a positive and economically meaningful determinant of the cost of private debt, significant at better than the 1% level. At the means, a one standard deviation increase in takeover probability increases loan spreads by 82-84 basis points. This result strongly supports hypothesis *H2*. Interestingly, the addition of takeover probability as a regressor decreases the size of the intercept term going forward, suggesting that a portion of the base spread is in fact lender compensation for the potential of borrower acquisitions and the costs therein, namely asset substitution, renegotiation, due diligence and liquidity costs.

The coefficients on governance variables in model (2) measure the effect of said mechanisms on firm borrowing costs for firms at lower risk of becoming a takeover target. The interaction variables (*\*hiTOP*) measure the additive effect of governance when a firm is at greater than median risk of acquisition. Overall, our results strongly support hypothesis *H3* that lenders assess firm governance differently depending upon takeover probability. For example, board independence is highly valued by creditors when firms are at low risk of acquisition. A one standard deviation increase in board independence lowers borrowing costs by 67 basis points at the mean. As before, however, change in control provisions are punished, even in states of low takeover probability; lenders charge higher spreads to firms with change in control provisions in place. Both results are supportive of agency theory. In states of higher takeover probability, however, we find bidirectional pricing of both board independence and change in control provisions; the sign of the coefficient changes from negative to positive for the former and positive to negative for the latter.

**Table 6:** The cost of capital and takeover probability

	(1)	(2)
Takeover Probability	82.194*** (14.606)	83.930*** (25.232)
Monitoring Duality		-1.829 (17.029)
Duality*hiTOP		-39.387 (28.712)
% Board, Independent		-67.076** (33.121)
% Board, Independent*hiTOP		61.926 (64.521)
Insiders Percentage		-16.912 (21.389)
Insiders Percentage*hiTOP		-25.550 (43.373)
Institutional Percentage		-5.010 (5.772)
Institutional Percentage*hiTOP		27.332** (13.841)
Directors		1.802 (1.902)
Directors*hiTOP		9.808** (4.414)
Large Board, Complex Firm		-0.614* (0.357)
Large Board, Complex Firm*hiTOP		-4.139** (1.682)
Takeover Defenses Classified Board		-11.510* (6.114)
Classified Board *hiTOP		16.905 (13.639)
Amend Charter		6.556 (25.051)
Amend Charter *hiTOP		4.624 (33.951)
Change in Control Provisions		14.558** (7.139)
Change in Control Provisions *hiTOP		-4.172 (18.062)
Golden Parachute		4.148 (5.884)
Golden Parachute *hiTOP		-4.926 (9.055)
Poison Pill		1.643 (6.501)
Poison Pill *hiTOP		-46.946*** (15.695)
Covenants Structural Intensity	24.172*** (1.663)	16.711*** (2.537)
Other Constant	101.355*** (40.374)	121.482*** (60.035)
All Previous Controls Aggregated Facilities	Yes 2,459	Yes 614
Borrowers	903	346
Adjusted R <sup>2</sup>	0.479	0.633

This table reports results of regressions of the cost of capital, ex-ante takeover probability, and detailed governance metrics. The dependent variable is loan spread in basis points over LIBOR. Takeover defenses are indicators variables equal to one if the firm has, for example, a Classified Board. Variable\*hiTOP are interaction terms between variable and a binary indicator equaling one if the firm has a takeover probability greater than the median firm in sample. Errors robust to firm heteroskedasticity are in parentheses.

Statistical significance is designated as \*\*\*, \*\*, and \* at the 1%, 5%, and 10% levels, respectively.

Given the significance of board independence coefficients in differential states of takeover probability it appears that lenders view board independence as additive in value.

In states of higher takeover probability we find that lenders price governance that affects the likelihood of borrower acquisition. Firms with greater institutional ownership are more likely to become targets (Smith, 1996) as are firms with larger boards (Yermack, 1996). At the means, a one standard deviation increase in institutional ownership and board size face higher borrowing costs of 27 and 10 basis points, respectively, though firm complexity (Coles *et al.*, 2008) mitigates the latter finding somewhat (4 basis points). The presence of poison pills is significantly welcomed by lenders in higher states of takeover probability, a finding that is highly negatively significant and economically meaningful, reducing borrowing costs by 47 basis points at the mean. It is interesting to note the difference in pricing of two staunch takeover defenses, poison pills and change in control provisions. Lenders charge higher spreads to firms with either provision in states of low takeover likelihood, in line with agency theory, and lower spreads to firms with either mechanism in states of higher likelihood of acquisition. However, lenders price change in control provisions as value destroying (positive and significant in low takeover states) while poison pills, on balance, appear to be value enhancing (negative and significant in high takeover states).

#### 4.5 Risk of financial distress, internal governance characteristics, and the cost of debt

If firms more likely to be acquired are associated with higher private loan spreads then these extra costs should be borne primarily by financially stronger borrowers, especially if increased costs are due to increased risk of asset substitution. Creditors face a greater probability of losses when strong borrowers are acquired as there is a lower probability that strong borrowers are acquired by even stronger bidders. Consequently, takeover defenses should be valued in strong borrowers but not rewarded in weak borrowers; in the latter case target debt holders can actually benefit from acquisitions due to coinsurance gains. Therefore, lenders should be more interested in, and reward with lower spreads, internal governance mitigating agency risk in relatively weaker firms and external governance lowering takeover vulnerability in financially healthier firms. Financially stronger firms should be able to borrow at lower loan spreads regardless of their governance attributes.

We now investigate whether banks price risks differently based upon the financial health of the borrower in and out of states of heightened acquisition probability. We first calculate a common measure of risk of financial distress, Altman's Z-score (Altman, 2000)<sup>9</sup>. Higher «Z» firms are financially stronger and are at lower risk of default. We calculate Altman's Z within four digit SIC codes for all firms in the S&P 1500 and divide firms

<sup>9</sup> Altman's Z is calculated according to the following formula, wherein component variables are found to be significant determinants of default at the following levels:  $Z = 0.012X_1 + 0.014X_2 + 0.033X_3 + 0.006X_4 + 0.999X_5$ .  $X_1$  is the ratio of working capital to total assets,  $X_2$  is the ratio of retained earnings to total assets,  $X_3$  is the ratio of EBIT to total assets,  $X_4$  is the ratio of market value of equity to the book value of total liabilities, and  $X_5$  is sales (turnover, net) to total assets. All data is from Compustat.

**Table 7:** Spreads, takeover probability and financial strength

	Hi Alt-Z (1)	Low Alt-Z (2)
Takeover Probability	81.014* (43.348)	83.800*** (31.237)
Monitoring Duality	-0.064 (17.871)	8.011 (27.559)
Duality*hiTOP	-89.436*** (34.0009)	-8.395 (36.018)
% Board, Independent	-43.145 (42.416)	-83.377* (52.577)
% Board, Independent*hiTOP	24.455 (77.226)	77.104 (87.216)
Insiders Percentage	12.088 (24.320)	-24.031 (39.725)
Insiders Percentage*hiTOP	-87.673 (93.932)	6.382 (60.350)
Institutional Percentage	0.897 (5.516)	-6.269 (13.855)
Institutional Percentage*hiTOP	80.596* (47.216)	19.629 (18.370)
Directors	3.619* (2.044)	0.624 (3.143)
Directors*hiTOP	20.875*** (7.728)	3.680 (5.904)
Large Board, Complex Firm	-0.614 (0.403)	-1.358 (0.890)
Large Board, Complex Firm*hiTOP	-7.620*** (2.169)	-3.070 (2.549)
Takeover Defenses Classified Board	-8.608 (7.827)	-13.560 (10.027)
Classified Board *hiTOP	-14.750 (17.326)	36.525* (21.269)
Amend Charter	5.869 (19.753)	13.848 (27.077)
Amend Charter *hiTOP	0.000 (0.000)	8.097 (45.644)
Change in Control Provisions	13.685 (9.621)	11.356 (12.018)
Change in Control Provisions *hiTOP	6.625 (20.501)	-19.414 (23.748)
Golden Parachute	0.588 (7.247)	8.066 (9.102)
Golden Parachute *hiTOP	-17.912 (12.434)	10.410 (13.057)
Poison Pill	0.123 (7.165)	8.257 (11.311)
Poison Pill *hiTOP	-46.359 (31.331)	-48.752** (22.529)
Covenants Structural Intensity	16.297*** (3.285)	16.631*** (3.055)
Other Constant	125.113* (65.097)	101.061 (105.160)
All Previous Controls	Yes	Yes
Aggregated Facilities	320	294
Borrowers	202	173
Adjusted R <sup>2</sup>	0.661	0.652

This table reports results of regressions of the cost of capital and ex-ante takeover probability in firms of heterogeneous financial strength. The dependent variable is loan spread in basis points over LIBOR. Takeover defenses are indicator variables equal to one if the firm has, for example, a *Classified Board*. *Hi/Low Alt-Z* represent groups of firms of higher/lower Altman's Z Score, a proxy for financial strength. High Z firms are stronger, financially. Takeover probability, governance and compensation variables are as previously defined. *Variable\*hiTOP* are interaction terms between *variable* and a binary indicator equaling one if the firm has a takeover probability greater than the median firm in sample. Errors robust to firm heteroskedasticity are in parentheses. Statistical significance is designated as \*\*\*, \*\*, and \* at the 1%, 5%, and 10% levels, respectively.

into lesser or greater than the industry median. We have 202 borrowers at greater than median industry-adjusted  $Z$  at loan origination and 156 at less than median industry-adjusted  $Z$ . We then rerun the regressions of the governance-related determinants of the cost of debt for the two subsamples. Model (1) represents the subsample of financially stronger firms while model (2) is the sample of low  $Z$  firms.<sup>10</sup>

Table 7 reports results. Importantly, we find that lenders charge significantly larger spreads to firms at greater risk of takeover, regardless of borrower financial strength, as *Takeover Probability* in itself is significantly positive in both models. This finding suggests that asset substitution risk is likely not the only cost leading to loan spread increase for potential takeover targets. After all, lenders must undergo another due diligence process if a borrower is acquired, regardless of whether the loan portfolio is theoretically strengthened or weakened by the new borrower and these costs may be non-trivial. Interestingly, poison pills are rewarded even in low- $Z$  firms, suggesting that pills mitigate the risk of takeover costs and supporting the notion that costs are non-trivial regardless of borrower financial strength.

For low  $Z$  firms we find evidence to support *H4*; governance mitigating agency risk is rewarded in weaker borrowers but not in stronger borrowers. Independent boards significantly lower spreads for weaker borrowers but not for stronger borrowers. In states of higher takeover probability, weaker firms are punished with higher spreads if the firm has a classified board structure, suggesting lenders welcome the disciplining effects of the market for corporate control in weaker borrowers but not in stronger borrowers.

We also find support for *H5* that lenders reward governance mitigating takeover risk in financially stronger borrowers. Specifically, in states of high takeover probability CEO-chairman duality significantly reduces the cost of borrowing to an economically meaningful degree. As before, institutional ownership and large boards are punished with higher spreads as these increase the likelihood that a borrower is acquired. These effects are not present in weaker borrowers.

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## 5 Conclusion

Creditors assess and price borrower firm governance. In states of low takeover probability, lenders charge lower spreads to firms whose internal governance mitigates agency risk between managers and stakeholders. However, lenders find acquisitions of borrowers costly; lenders are exposed to asset substitution, due diligence, renegotiation, reputational, and liquidity risk in the event of borrower takeover. Lenders charge higher spreads to firms in states of higher takeover probability.

Creditors also price governance mechanisms that mitigate the risk of borrower acquisition, e.g. poison pills, higher inside ownership, and CEO-chairman duality. The bulk of these price concessions accrue to financially stronger borrowers, since acquisition of these borrowers are most likely to expose creditors to asset substitution risk.

<sup>10</sup> It should be noted that the statistical significance of coefficients in Table 7 is expected to be lower due to diminished number of observations after splitting the borrowers into subsamples.

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