SHAREHOLDER RIGHTS AND NON-PRICE LOAN CONTRACT TERMS

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Abstract

This thesis analyzes the impact of shareholder rights on non-price loan contract terms. Using a large sample of syndicated loans borrowed by U.S. firms between 1991 and 2006, I find that stronger shareholder rights significantly enhance the stringency of loan contract design. The likelihood of having collateral significantly increases with the strength of shareholder rights. Loan maturity of firms with strongest shareholder rights is 13.1% shorter. The loan size of the same borrowing firms is 8.4% smaller. These results are robust to different proxies of shareholder rights and are robust to the instrumental variable approach controlling for simultaneous determination of loan contract terms, such as collateral and maturity. This study complements the existing literature on the impact of shareholder rights on loan pricing and has important implications for understanding the impact of companies' governance structure on loan contract design.

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1. Introduction

Shareholders and debtholders of a firm often have conflicting objectives (see e.g., Jensen and Meckling (1976); Myers (1977); Smith and Warner (1979)). The root of the shareholder-debtholder conflicts is the different nature of cash-flow claims that they are each entitled to. The actual power possessed by shareholders depends upon the specific rules of corporate governance (Gompers, Ishii, and Metrick (2003)). For example, when governance discipline reserves more power for shareholders, the firm's owners can more easily replace the board of directors, who in turn hire and fire top management. As the agent of shareholders, management nowadays is motivated by equity-based compensation and concerned about the possibility for voting shareholders to fire her. Under this circumstance, firm management is more aligned with shareholders and is likely to undertake more risky investment strategies. In addition, a firm with strong shareholder rights can be targeted for a leveraged buyout much more easily, and such a buyout will lead to an increase in leverage due to recapitalization (Chava, Livdan, and Purnanandam (2009); Bharath, Dahiya, and Hallak (2016)). These risk-seeking behaviors are aligned with goals of shareholders while expropriate the wealth from creditors and exacerbate the shareholder-creditor conflicts. Creditors are concerned about firms' risk-taking activities that are associated with strong shareholder rights (and shareholder-friendly management). Ultimately, the risk of expropriation is expected to be reflected in the borrowing cost or a debt contract design (Jiang, Li, and Shao (2010)).

Evidence provided by Chava, Livdan, and Purnanandam (2009) shows that stronger shareholder rights significantly increase the loan spread. A more recent research conducted by Bharath, Dahiya, and Hallak (2016) suggests that firm with greater shareholder rights

have higher risk-shifting incentives. They have established a causal relationship between shareholder rights and syndication structure, and their results show that borrowers with strong shareholder rights have more concentrated loan syndication to ensure more intensive monitoring.

This thesis is motivated by these findings that show how a borrowers' shareholder rights affect the loan price and creditor control. This study intends to fill a gap in the existing literature by asking a question: do shareholder rights affect other important loan contract terms? I especially focus on three important non-price loan contract terms: collateral requirements, loan maturity, and loan size. These non-price terms of loan contract provide an *ex-ante* protection to creditors and ensure they won't be exploited by excessive firm risk taking (Chava and Roberts (2008)).

My thesis uses syndicated loans as the laboratory to examine the impact of shareholder rights on non-price loan contract terms. A number of studies propose multiple proxies of shareholder rights, such as the Governance Index of Gompers, Ishii, and Metrick (2003), the Entrenchment Index of Bebchuk, Cohen, and Ferrel (2004), and the takeover protection index of Cremers and Nairs (2005), etc. I mainly use the Governance Index (*G Index*) as the key measurement of shareholder rights and also check the robustness by introducing alternative proxies of shareholder rights. Using a panel data set of approximate 10,000 loan facilities issued to U.S. publicly traded firms between 1991 and 2006, I show that strong shareholder rights of a firm increase the possibility of collateral requirements, shorten the loan maturity by 13%, and also reduce the loan size by 8%. One interpretation of these results is that creditors are concerned about the risk-shifting incentives associated with strong shareholder rights and therefore impose more stringent non-price loan contract

terms to protect their wealth. These results are robust to different measurements of shareholder rights.

While prior literature recognizes the important role of shareholder rights in loan contract design (Chava, Livdan, and Purnanandam (2009)), the empirical evidence has focused on a single contract feature, the loan price. In practice, the syndication processes are in several discrete steps (Standard & Poor (2013)). Loan size is typically firstly determined based on firm's capital need. At this stage, the other loan contract terms are determined simultaneously to accommodate the creditor's preferences and constraints, such as collateral requirements and maturity. At the last stage of the processes, loan price is determined based on the borrower's creditworthiness and the syndication market conditions (Dennis, Nandy, and Sharpe (2000); Bharath et al. (2011)). After controlling for the simultaneous determination of non-price loan contract terms, I continue to find that strong shareholder rights of borrowers increase the likelihood of collateral requirements, shorten loan maturity, and reduce the loan size.

The remainder of the thesis is as follows. Section 2 discusses the related literature and develops the hypotheses. Section 3 describes sample selection. The methodology and descriptive statistics are presented in Section 4. Main results are reported in Section 5. Section 6 briefly discusses the channels through which the impact of shareholder rights takes place. I conclude in Section 7.

2. Hypothesis development

2.1 Shareholder rights, agency costs, and firm risk

Shareholder rights are the actual power-sharing relationship between shareholders (the voters that the company's decision is rested with) and management. Shareholders

control the corporation through the right to elect the board of directors, who, in turn, hire and fire management[1]. Shareholders also have the right to vote on stockholder matters of great important, such as a takeover, and the right to share proportionally in dividends and in assets remaining after liabilities have been paid in a liquidation. The strength of shareholder rights depends upon the rules of governance, and there is also a significant variation in corporate governance rules across different companies (Gompers, Ishii, and Metrick (2003)). One extreme governance rules grant extensive power to shareholders (strong shareholder rights), resulting in lower agency costs and higher risk-shifting incentives (Bharath, Dahiya, and Hallak (2016)).

I firstly discuss why strong shareholder rights may reduce the agency cost. For firms with stronger shareholder rights, shareholders can exercise their rights more easily and effectively. For example, when shareholders are not satisfied with managers, shareholders with stronger rights can re-elect the board of directors quickly and then replace unqualified managers indirectly. Because management is concerned about the possibility for strong voting shareholders to fire her, she is more aligned with powerful shareholders to protect job security and thus is more likely to make good decisions from shareholders' viewpoint, resulting in a lower agency cost. Shareholders can also rely on corporate control market as a governance device, and typically the discipline imposed by corporate control market is likely to benefit the shareholders by controlling managerial agency problems. That is, firms that are poorly managed are more attractive as acquisitions than well-managed firms because a greater profit potential exists (Lang, Stulz, and Walking (1989)), and shareholders of the potential target firm are generally willing to vote for such a takeover

[1] In my thesis, I do not distinguish between managers and the board of directors

because firm value will increase and incompetent management will be replaced after the takeover. For this reason, it is also reasonable to expect that shareholders with stronger rights generally have a stronger influence on accepting such an unsolicited takeover.

The next question is, why do stronger shareholder rights increase the firm's risk? Firstly, shareholders are willing to take risky investments because such investments may increase share value of the firm. If the risky project succeeds, shareholders keep most of the gains. Though there is the possibility that the investments fail, shareholders still wish to take the investment because they can share the downside losses with debtholders (Jensen and Meckling (1976)). Secondly, as aforementioned, firms with strong shareholder rights have a greater level of shareholder-management alignments, and managers of these firms are more likely to act in the best interest of shareholders and to make corporate decisions from shareholders' viewpoint. For this reason, firms with strong shareholder rights have shareholder-friendly managers who would have higher risk-shifting incentives as shareholders do. Besides, the influence of strong shareholder rights on accepting an unsolicited takeover introduce uncertainties into companies as well (Chava, Livdan, and Purnanandam (2009)). For example, when the target firm is with a lower level of financial risk and the acquire firm is at greater financial risk, the target firm's financial risk would increase significantly after the takeover. Several empirical studies provide evidence that a target firm's financial leverage increases significantly after a takeover (see e.g., Warga and Welch (1993); Ghosh and Jain (2000); Cremers and Nair (2005)), resulting in increased financial risk in the eyes of debtholders. On the flip side, Giroud and Mueller (2010) provide evidence that the adoption of antitakeover laws (which reduce the shareholder rights by imposing restrictions on voting for accepting a takeover) increases managerial slack, making managers less inclined to undertake risk-shifting investments.

The general idea of shareholder rights is "one share, one vote", yet some firms have more than one class of common stock, and usually the classes are created with unequal voting rights.[2] Firms with dual-class shares typically have some groups of minority shareholders with a majority of voting rights relative to cash-flow rights, and management with greater control rights are more likely to pursue private benefits at the expense of outside shareholders. Using corporate control market as the laboratory, Cremers and Ferrell (2014) show that a dual-class voting structure provides sufficient power to insulate the firm from unsolicited takeover bids without the use of antitakeover defenses. Thus, it is reasonable to assume that a dual-class voting structure is somewhat an anti-takeover device which reduces the rights of outside shareholders on voting for unsolicited takeover offers. In my analysis, borrowing firms with dual-class voting structure occupy less than 7% of my sample. Because the wide variety of voting and ownership differences across these firms makes it difficult to compare their governance structures with those of single-class firms, I exclude those firms with dual-class common stock.

2.2 Shareholder rights and loan contracts

Firms with stronger shareholder rights are more shareholder-friendly, and therefore these firms are more likely (relative to less shareholder-friendly firms) to indulge in risk-shifting actions benefiting equity. These risky investments, however, are at the expense of debtholders (Jensen and Meckling (1976)). This conflict of interest between shareholders and creditors have been broadly comprehended (see e.g., Jensen and Meckling (1976); Myers (1977)): shareholders keep most of the profits if the risky investment succeeds, but they would shareholder the downside losses with debtholders when the risky project fails.

[2] Preferred stockholders usually have no voting privileges, therefore firms with preferred shares will not have a meaningful effect on shareholder rights.

The root of the conflict of interest between shareholders and debtholders is the different nature of cash claims that they are each entitled to. Shareholders have a residual claim on the company and therefore they have incentives to increase firm risk. Debtholders, on the contrary, have a fixed claim on the same company which means they have no claim on the extra gains of the upside of the project. Thus, the debtholders of the same firm are risk-averse and they are concerned about risks associated with the strong shareholder rights. Previous studies summarize two channels through which strong shareholder rights increase firms' risk. The first channel is that firms with stronger shareholder rights have higher risk-shifting incentives (e.g., the excessive payout to shareholders, the restructuring of business, and other risk-shifting behavior) (Bharath, Dahiya, and Hallak (2016)). The second channel is the takeover channel, that is, firms with powerful voting shareholders are more likely to accept an unsolicited takeover offer, and such a takeover may increase the default risk of the target firm (Chava, Livdan, and Purnanandam (2009)). These two channels are generally beneficial for shareholders while are detrimental to debtholders of the same firm.

One important question arise immediately from above discussions: What can debtholders do to address the concern associated with risks from strong shareholders rights? Debtholders could either protect their "hard claim" from such opportunistic behavior by tightening the debt contracts *ex-ante,* or compensate themselves for expropriation risk by increasing the cost of debt (Jiang, Li, and Shao (2010)). For example, Chava, Livdan, and Purnanandam (2009) find evidence that firms with stronger shareholder rights pay a higher cost of bank loans because creditors of strong shareholder rights firms are concerned about increases in financial risk consequent to a takeover and demand higher loan price to protect themselves. Bharath, Dahiya, and Hallak (2016) argue that firms with greater shareholder rights have higher risk-shifting incentives which, in turn, requires more intensive

monitoring by the lenders. They provide causal evidence that the reduction in shareholder rights of a firm leads to a more diffuse loan syndicate structure for its future loans. Though previous studies focus on the impact of shareholder rights on loan price or syndication structure, the relationship between shareholder rights and other important non-price terms in loan contracts has not been recognized. My thesis attempts to shed new light on the impact of shareholder rights on non-price loan contract terms.

2.3 Hypothesis development

Melnik and Plaut (1986) model bank loans as a package of *n* contract terms that cannot be split and traded separately. Banks offer an *n*-dimensional array of bundles from which to choose their optimal choice (also see Bharath et al. 2011). Therefore, non-price terms of syndicated loan contracts are important monitoring devices available for creditors in debt contracting. Specifically, I focus on collateral requirements, loan maturity, and loan amount and discuss how shareholder rights of a borrower affect these three non-pricing terms.

Let's discuss how shareholder rights affect collateral requirements first. Banking theories predict that collateral requirement is a crucial contractual design that affects both lenders and borrowers, and lenders are more likely to require collateral and use collaterals to control for *ex-post* moral hazard of risky borrowers when lending to riskier borrowers (see e.g., Bester (1985); Stultz and Johnson (1985); Boot, Thakor, and Udell (1991)). This is because providing collateral can credibly commit to lower risk-shifting of borrowers and protect lenders from this risk-seeking behaviors *ex-ante* through two channels (Cerqueiro, Ongena, and Roszbach (2016)). First, collateral facilitates enforcement against a defaulting borrower and helps lenders to seize the secured assets when the borrower defaults. Second,

collateral protects lenders from competing claims by other creditors in a liquidation. When a borrowing firm has strong shareholder rights, loan lenders, as a major type of debtholders, would be more concerned about the opportunistic behavior of their powerful shareholders and therefore are more likely to impose collateral requirements on the same firm. This leads to the first hypothesis:

Hypothesis 1: *The probability of pledging collaterals increases with the strength of shareholder rights.*

Next, I discuss the maturity structure of loan contract. Because the strong power of shareholders can result in a more shareholder-friendly firm with excessive risk-taking activities, lenders perceive borrowers' strong shareholder rights as a source of risks and hence require more intensive monitoring (Bharath, Dahiya, and Hallak (2016)). Diamond (1991) predicts that lenders would only provide short-term loans when borrowers require intense monitoring. Furthermore, longer maturity exposes lenders of a shareholder-friendly borrower to greater risk because the probability of the borrower being recapitalized increases with the life of loans (Chava, Livdan, and Purnanandam (2009)). Therefore, the need to shortening the debt maturity increases when the lenders are concerned about the excessive risk taking activities induced by strong shareholder rights. This yields the second hypothesis:

Hypothesis 2: *The lenders will commit to more intensive monitoring by offering shorter maturity loans when the borrower is with stronger shareholder rights.*

An additional impact of borrowers' shareholder rights is on the loan amount. Previous studies argue that if the monitoring and additional information collection performed by the financial intermediary cannot completely eliminate the information asymmetry and investment distortions from shareholder-debtholder conflicts, then a

company's credit may be rationed (see e.g., Stiglitz and Weiss (1981); Faulkender and Petersen (2006)). Thus lenders may be prone to provide smaller loans when borrowers are associated with strong shareholder rights. Correspondingly, I test the following hypothesis:

> ***Hypothesis 3:*** *The borrower associated with stronger shareholder rights may be provided a smaller amount loan compared to the borrower with weaker shareholder rights.*

In practice, collateral requirements and debt maturity are likely to be determined at the same time (see e.g., Dennis, Nandy, and sharpe (2000); Bharath et al. (2011)). For example, creditors can either require collaterals or shorten the debt maturity (or require both) to limit borrowers from risk-shifting activities (Myers (1977)). Secured status and loan maturity, therefore, can be treated as substitutes or complements for controlling borrowers' risk-seeking incentives. As in Dennis, Nandy, and Sharpe (2000), I assume a bidirectional relationship between secured status and maturity, and this relationship can be described as the structural equation discussed in Section 5.4. Normally, loan size is considered to be predetermined because the borrower has to raise a certain amount of capital to support their investment activities and other needs. Therefore, in this study, I assume that secured status and debt maturity are simultaneously determined. A detailed discussion regarding the valid instruments and structural equation specifications can be found in Section 5.4. As for the measurement of shareholder rights, I follow Gompers, Ishii, and Metrick (2003) to measure strong shareholder rights as fewer number of anti-takeover provisions or low Governance Index (*G-index*). Section 3.2 provides a detailed description of the governance index.

3. Data and Sample Selection

3.1 Sample selection

The data examined in this thesis is obtained from various databases. Data on individual loan facilities is from the Reuters Loan Pricing Corporation's (LPC) DealScan syndicated loan database. LPC Dealscan has been assembling loan information of large U.S. corporations mainly through lenders' self-reporting and SEC filings. Borrowers accounting information and stock pricing information are respectively from Standard & Poor's COMPUSTAT database and the Center for Research in Security Prices (CRSP) tapes. Gompers, Ishii, and Metrick (2003) collect the governance data from the Investor Responsibility Research Center (now RiskMetrics) publications to construct the governance index (*G-index*), and the *G-index* is available for the year of 1990, 1993, 1995, 1998, 2000, 2002, 2004, and 2006. The *G-index* data in this study is obtained from Andrew Metrick.[3] Gompers, Ishii, and Metrick (2003) point out that the *G-index* is extremely persistent, thus I follow their research to use previously available data until a new update is available.

The sample construction starts from merging LPC Dealscan database with COMPUSTAT data, CRSP data, and Gompers, Ishii, and Metrick (2003) *G-index* data through a link between Dealscan and COMPUSTAT provided by Michael R. Roberts.[4] The sample period is from 1991 to 2006 to match with the period of the *G-index* data. LPC Dealscan database contains more than 90,000 U.S. loan facilities, but after merging with

[3] The Governance Index Data is available from Andrew Metrick's website: http://faculty.som.yale.edu/andrewmetrick/data.html.

[4] The Dealscan-Compustat Link Data is available from Micheal R. Roberts's website: http://finance.wharton.upenn.edu/~mrrobert/styled-9/styled-12/index.html.

COMPUSTAT, CRSP, and IRRC databases and screening by excluding financial service firms (SIC codes 6000-6999) and firms with dual-class voting structure[5], I am left with 9,635 loan facilities associated with 1,576 nonfinancial U.S. public companies between 1991 and 2006. The drop in the sample size is mainly caused by the firms covered in IRRC *G-index* data[6][7].

3.2 The shareholder rights measurement

Throughout the thesis, the key independent variable "the shareholder rights" is measured by the *governance index* (*G-Index*). The *G-Index* focuses on anti-takeover provisions, which limit the influence of shareholder rights on accepting an unsolicited takeover and thus reduce the probability of an attractive offer being received and accepted by the board, resulting in a re-balanced power relationship between shareholders and managers in corporate control market (Gompers, Ishii, and Metrick (2003)). The construction of *G-Index* is by adding one point for every provision that restricts shareholder rights (increases managerial power). The higher value of the *G-Index* means a greater number of anti-takeover provisions documented in the corporate charter, corresponding to more restrictions on voting for accepting a takeover offer and increases managerial entrenchment, namely weaker shareholder rights. Arguably, by its construction, *G-Index* is also an effective measurement of takeover defense level the firm (see e.g., Gompers, Ishii,

[5] Firm with dual-class make up less than 7% of the total borrowers, and the proportion of dual-class borrowers is very similar to the proportion in previous studies (see e.g., Gompers, Ishii, and Metrick (2003); Cremers and Ferrell (2014)). I omit firms with dual-class common stock because the wide variety of voting and ownership differences across these firms makes it difficult to compare their governance structures with those of single-class firms. In addition, the overall estimated results continue when I include a dual-class dummy instead of drop dual-class borrowers.

[6] I check that there is no systematic differences between Dealscan borrowers that could be matched with IRRC and those that could not. The overall averages of loan maturity, loan size, and loan collateral requirement indicator are similar for both sample.

[7] Seniority is a credit risk factor which may affect the loan contract design (Standard & Poor's (2013)). According to the information of loan facilities from Dealscan, nearly all of loan facilities are senior loans (in my sample, only 3 out of 9,638 loan facilities are not senior). Based on this ranking, syndicated loan lenders are the senior-most creditors who are first in right of payment, and thus main results are not driven by seniority.

and Metrick (2003); Chava, Livdan, and Purnanandam (2009)), so the higher value of *G-Index* is equivalent to the higher level of takeover defense, which decreases the probability of being taken over. The negative association between the value of *G-Index* and the shareholder rights/takeover possibilities would lead to an indirect interpretation of the results. Thus, I follow Chava, Livdan, and Purnanandam (2009) to construct a new variable *Prob(takeover)* which proxy for the probability of being taken over. *Prob(takeover)* is simply an inverted *G-Index* where *Prob(takeover) = 24 – G.*[8] Higher value of *Prob(takeover)* refers to a lower number of anti-takeover provisions in the corporate charter, which corresponds to higher shareholder rights (higher possibility to be targeted for a takeover). In the following part, *Prob(takeover)* is the key explanatory variable of this study.

While the *G-Index* constructed by Gompers, Ishii, and Metrick (2003) is usually called the governance index by many studies, I argue that the *G-Index* itself is more a direct proxy for shareholder rights rather than the overall soundness of corporate governance. According to Shleifer and Vishny (1997), corporate governance comprises two approaches: (1) ownership by large shareholders (matching significant control rights with significant cash flow rights) and (2) legal protection of minority rights and legal prohibitions against expropriation by managers. A sound corporate governance system is a combination of these two components, and indeed firms in advanced economies including the U.S. are governed through this combination. As for *G-Index*, it is the measurement of the firm's vulnerability

[8] The total number of governance rules in the Gompers, Ishii, and Metrick (2003) "Governance Index" is 24. For example, if a company has an extreme governance discipline and documents all 24 anti-takeover provisions in the charter, the G index value is 24. This is equivalent to *prob(takeover)*=24-24=0, which proxy for the weak shareholder rights and low risk exposure to takeover risks in the future. The interpretation of using this inverted *G-index* is more direct and intuitive than using original *G-index.*

of an unsolicited takeover. Shleifer and Vishny (1997) suggest that takeover mechanism can be solely viewed as an example of large shareholders exercising their rights (the first approach of corporate governance). For this reason, the governance index (*G-Index*) is a more direct measurement of (large) shareholder rights instead of the overall soundness of corporate governance.

4. Methodology

4.1 Model specifications

4.1.1 Multivariate test of H1

To test H1 that "*The probability of pledging collaterals increases with the strength of shareholder rights."* I employ the following Logit regression model:

$$Secured = \beta_0 + \beta_{1m}(Prob(takeover_m)) + \beta_2(loan\ concentration) + \sum \beta_i(Loan\ Characteristics_{is}) + \sum \beta_j\big(Borrower\ Characteristics_j\big) + \sum \beta_k(Controls_k) + \mu. \quad (1)$$

The dependent variable *Secured* is a dummy variable which equals to one if the loan is secured by collaterals and zero otherwise. *Prob(takeover)* is simply an inverse of *G-index* where *Prob(takeover) = 24 – G*. I expect *Prob(takeover)* has a significantly positive coefficient. For loan characteristics, I control for variables including 1) a revolving line of credit dummy equals to one if the loan facility is a revolver, and zero if it is a term loan (*revolver*)[9]; 2) the natural logarithm of loan amount (*log(loan amount)*); 3) the natural

[9] A term loan is an installment loan that the borrower would use for a specific project and usually draw on the loan during a short commitment period (Standard & Poor's (2013)). Therefore, the main purpose of borrowing a term loan is driven by specific financing needs. Therefore, for term loans, loan size would be determined by the borrower's needs, and the effects of shareholder rights on loan size may not significantly meaningful. Another major type of a syndicated loan is a revolving credit line (generally referred to a revolver) which acts like a corporate credit card, and loan lenders set the

logarithm of loan maturity (*log(loan maturity)*); and 4) four primary loan purposes including debt repayment, leveraged buyouts, general corporate purposes, and all the other purposes.[10]

For borrower characteristics, I control for variables including 1) the firm's leverage ratio (*lev*), as highly levered borrowers face a higher possibility of default, all else remaining equal; 2) book to market ratio (*b2m*), which is related to the borrower's investment opportunities; 3) the firm's profitability (*roa*), which is measured by return on assets; 4) the firm's tangibility (*tangible*), which is measured by the ratio of property, plant, and equipment to total assets; 5) the firm's default probability that is measured by modified Altman's Z-score without leverage (*altmanexlev*), as a low Z-score should lead to an increased borrowing cost; 6) an indicator of the borrower participant relationship (*borrowerrelationship*),[11] which is equal to one if at least one of the lenders have had lending relationship with the borrower before, otherwise zero; 7) the borrower's S&P long-term domestic issuer credit rating (*sprate*). A higher value corresponds to lower rating and missing ratings are assigned to zero; 8) an indicator variable takes a value of one if the borrower does not have the S&P credit rating, and zero otherwise *(notsprated).* I also control for industry fixed effects by including industry dummies based on the one-digit SIC code of the borrower and year fixed effects by including year dummies. In model 1, I also

amount that they are willing to lend. Typically, revolvers involve a complex fee structure including an up-front fee, a fixed interest rate markup on drawn funds, and a usage or commitment fee based on undrawn funds. Importantly, revolvers reflects the importance in fostering the bank-customer relationship (Dennis, Nandy, and Sharpe (2000)). Nearly 21% loan facilities in my sample are term loans and 79% are revolving credit line. For this reason, I include a revolver/term loan dummy to control for the potential impact arises with term loans in each following regression.

[10] The amount of loan facilities which are borrowed for project finance may not be significantly affected by agency problems because project financings are highly transparent to creditors and tend to be large-scale projects that require a great deal of debt (and/or equity) capital (Bodnar (1996)). However, less than 0.5% loan facilities in my sample are made for funding project finance (loans having "project finance" as the main purpose only make up 0.6% of all loan facilities from Dealscan). Thus, loans borrowed for project finance purpose would not affect the estimation.

[11] The realization of the past borrower-lender's relationship is followed by Bharath et al. (2011). I thank Pei Shao for kindly providing me the borrower participant relationship data (Li, Saunders, and Shao (2015)).

include loan concentration ($\frac{\text{Loan amount}}{\text{Existing debt + Loan amount}}$) as a control variable. If a particular loan facility is a significant portion of the borrower's debt, the loan is more likely to be secured (Berger and Udell (1990); Boot, Thakor, and Udell (1991); Bharath et al. (2011)). For this reason, loan concentration will be the instrumental variable for secured status in the two-equation structural models in Section 5.4. I provide robust *t-statistics* that adjust for the clustering at the firm level in all regression models.[12] Definitions of the variables are provided in the Appendix.

4.1.2 Multivariate test of H2

To test H2 that the lenders offer shorter maturity loans when the borrower is with stronger shareholder rights, I use the following pooled OLS regression to test the second hypothesis:

$$log(Maturity) = \beta_0 + \beta_{1m}\big(Prob(takeover_m)\big) + \beta_2(utility) + \beta_3\big(log(asset\ maturity)\big) + \sum \beta_i(Loan\ Characteristics_{im}) + \sum \beta_j\big(Borrower\ Characteristics_j\big) + \sum \beta_k\big(Controls_j\big) + \mu. \quad (2)$$

The dependent variable *log(loan maturity)* is the natural logarithm of the stated loan maturity (in months). *Utility* is a dummy variable equals to one for firms in the utility industry under the Fama and French (1997) industry classification and zero otherwise. Barclay and Smith (1995) argue that utility industry represents an important factor that affects loan maturity structure. In addition, borrowers are prone to match their debt maturity

[12] As Gompers, Ishii, and Metrick (2003) point out that *G-index* of firms is extremely persistent, and the inclusion of firm fixed effects would result the identification of the *G-index* only from these changes. Besides, charter provisions tend to cluster within firms, suggesting that firms may differ significantly in the balance of power between investors and management. For these reasons, I obtain standard errors by clustering at the firm level.

to asset maturity, which motives me to include the firm's *asset maturity* into the regression. Both *utility* and *asset maturity* are instrumental variables for IV estimation in Section 5.4. All other control variables are consistent with controls described in Section 4.1.1, expect for including secured status (*secured*) on the right-hand side. Definitions of the variables are provided in the Appendix.

4.1.3 Multivariate test of H3

To test whether stronger shareholder rights are associated with smaller size loans (H3), I estimate the following multivariate model:

$$\begin{aligned} log(loan\ amout) \\ &= \beta_0 + \beta_{1m}\big(Prob(takeover_{m})\big) + \sum \beta_i (Loan\ Characteristics_{ia}) \\ &+ \sum \beta_j \big(Borrower\ Characteristics_j\big) + \sum \beta_k \big(Controls_j\big) \\ &+ \mu. \end{aligned} \tag{3}$$

The dependent variables *log(loan amount)* is the natural logarithm of the loan amount in millions of year 2006 dollar. I do not include secured status (*secured*) and loan maturity (*log(maturity)*) in model 3 because I assume loan amount is predetermined based on the borrower's needs, and thus I suppose there is no simultaneous determination relationship between loan size and other non-price loan contract terms. All other control variables are consistent with controls described in Section 4.1.1. Definitions of the variables are provided in the Appendix.

4.2 Descriptive statistics

Table 1 Panel A reports the sample of 9,635 loan facilities across the value of shareholder rights proxy, *Prob(takeover).* The composition of bank loans across the inverse

of *G-Index* is similar to the distribution of firm numbers across the inverse of *G-Index* in Gompers, Ishii, and Metrick (2003).

Panel B of Table 1 presents the correlations of *Prob(takeover)* with facility-level and firm-level characteristics. *Prob(takeover)* is negatively correlated (19%) with loan size *log(loan amount)*, positively correlated (16%) with collateral requirement *Secured*. Interestingly, the univariate correlation between *Prob(takeover)* and the loan maturity *log(loan maturity)* is positive (9%). Albeit preliminary, this positive correlation is encouraging since it is against the prediction of H2 that stronger shareholder rights are associated with shorter maturity loans. I return to this positive relationship by controlling the simultaneity issue between *Prob(takeover)* and *log(loan maturity)* in Section 5.4.

Panel C of Table 1 reports the descriptive statistics of both loan characteristics and borrower characteristics. The sample mean of the key explanatory variable *Prob(takeover)* is 15 (equivalent to 9 of *G-Index* value, which means that averagely the borrowers in the sample have 9 antitakeover provisions documented in the corporate charter). Dealscan provides loan information on the indicator of secured status, the maturity of loan facility, and the loan facility amount. About 40% of the loans are secured by colletral (*Secured*). The sample mean of loan facility amount (*$Mil(Loan amount)*) is around $430 million in 2006 dollars, and the sample average maturity (*Maturity*) is 44 months. On average, 50% of loans in the sample are borrowed from relationship lenders (*borrowerrelationship*). 40% borrowers of the sample do not have credit rating information (*Not rated*).

Panel D reports the means and medians of key variables for borrowing firms that are ranked in each decile of *Prob(takeover)*. With the increase of the value of *Prob(takeover)*, there is a downward trend of loan maturity and is an upward trend of

secured status, which are motivating because it is consistent the hypotheses. However, the trend of the mean of loan maturity across different deciles of *Prob(takeover)* is not clear.

Table 1

Descriptive statistics and the correlation matrix

Panel A: Takeover probability and the number of loan facilities (1991 - 2006)

Prob(takeover)	9	10	11	12	13	14	15	16	17	18	19	20	21	Total
# of Loans	224	260	604	816	1179	1217	1325	1299	1058	720	547	285	125	9635
% Cumulative	2%	5%	11%	19%	32%	44%	58%	72%	82%	90%	96%	99%	100%	

Panel B: The correlation matrix

		1	2	3	4	5	6	7	8	9	10	11
1	*Prob(takeover)*	1										
2	*Leverage*	0.001	1									
3	*b2m*	-0.003	-0.123	1								
4	*Log(assets)*	-0.213	0.143	-0.035	1							
5	*roa*	0.021	-0.199	-0.313	-0.133	1						
6	*altmanexlev*	0.005	-0.467	0.005	-0.209	0.480	1					
7	*Tangibity*	-0.090	0.217	0.095	0.196	0.009	-0.310	1				
8	*Log(loan amount)*	-0.186	0.127	-0.091	0.748	0.014	-0.090	0.151	1			
9	*Log(loan maturity)*	0.086	0.118	-0.028	-0.208	0.007	-0.023	-0.020	0.002	1		
10	*Secured*	0.159	0.192	0.086	-0.339	-0.136	-0.130	-0.087	-0.239	0.278	1	
11	*Borrower relationship*	-0.120	0.073	-0.019	0.289	0.012	-0.020	0.051	0.305	-0.035	-0.134	1

Panel C: Descriptive statistics for key loan and borrower characteristics

Variables	N	Mean	Std. dev.	Min	25th Percentile	Median	75th Percentile	Max
				Borrower characteristics				
Prob(takeover)	9635	14.89	2.69	9	13	15	17	21
Leverage	9569	0.31	0.20	0	0.17	0.30	0.42	0.98
b2m	9541	0.50	0.49	-1.07	0.26	0.43	0.66	3.22
Roa	9557	0.15	0.09	-0.14	0.10	0.14	0.19	0.45
Revolver	9635	0.80	0.40	0	1	1	1	1
Tangible	9471	0.35	0.23	0.00	0.17	0.30	0.52	0.91
altmanexlev	9186	1.86	1.11	-1.65	1.09	1.81	2.53	5.16
S&P Rating	9635	7.03	6.31	0.00	0.00	8.00	12.00	28.00
Not rated	9635	0.40	0.49	0.00	0.00	0.00	1.00	1.00
				Loan characteristics				
Log(loan amount)	9635	5.33	1.30	1.11	4.53	5.38	6.22	8.16
$Mil(Loan amount)	9635	431.34	603.34	3.03	92.40	216.44	504.00	3512.20
Log(loan maturity)	9283	3.57	0.71	1.79	3.00	3.87	4.09	4.66
Month(Maturity)	9283	43.55	23.54	6	20	48	60	106
Secured	9635	0.38	0.49	0	0	0	1	1
borrowerrelationship	9085	0.51	0.50	0	0	1	1	1

Panel D: Descriptive statistics for loan facilities in different decile of takeover probabilities

Prob(takeover)	10th	20th	30th	45th	60th	70th	80th	90th	top
				Means					
Month(Maturity)	41.95	41.62	42.04	41.86	42.99	44.72	45.13	45.22	47.30
$Mil(Loan amount)	532.61	468.26	465.67	465.58	470.55	409.33	375.11	321.21	320.44
Secured	0.26	0.28	0.33	0.35	0.37	0.42	0.49	0.48	0.49
borrowerrelationship	0.62	0.56	0.57	0.55	0.52	0.46	0.46	0.40	0.41
Leverage	0.32	0.30	0.34	0.30	0.29	0.29	0.31	0.27	0.32
b2m	0.50	0.56	0.47	0.47	0.52	0.50	0.53	0.57	0.45
roa	0.15	0.15	0.15	0.15	0.16	0.15	0.15	0.16	0.17
revolver	0.85	0.83	0.81	0.83	0.81	0.78	0.73	0.79	0.74
tangible	0.37	0.36	0.41	0.35	0.35	0.36	0.35	0.33	0.34
altmanexlev	1.86	1.99	1.81	1.78	1.85	1.76	1.87	2.03	1.98
S&P Rating	8.47	7.69	8.21	7.02	6.90	6.88	6.45	5.46	5.67
Not rated	0.20	0.29	0.28	0.37	0.41	0.44	0.50	0.55	0.55
Prob(takeover)	10th	20th	30th	45th	60th	70th	80th	90th	top
				Medians					
Month(Maturity)	48.00	48.00	43.00	37.00	44.00	48.00	48.00	48.00	49.00
$Mil(Loan amount)	336.19	266.81	272.06	251.22	225.95	181.51	175.30	132.28	136.03
Secured	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
borrowerrelationship	1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
Leverage	0.32	0.30	0.33	0.30	0.28	0.27	0.30	0.24	0.31
b2m	0.47	0.47	0.44	0.42	0.43	0.41	0.44	0.43	0.40
roa	0.14	0.15	0.14	0.14	0.14	0.14	0.14	0.15	0.15
revolver	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
tangible	0.32	0.33	0.36	0.29	0.29	0.31	0.30	0.27	0.26
altmanexlev	1.86	1.86	1.69	1.70	1.76	1.68	1.75	2.12	1.99
S&P Rating	9.00	9.00	9.00	8.00	8.00	8.00	2.00	0.00	0.00
Not rated	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00

5. Results

5.1 Evidence on Hypothesis 1

From the discussion in Section 2.3, we know that borrowers can credibly commit to lower risk-shifting by providing collateral (see e.g., Stultz and Johnson (1985); Boot, Thakor, and Udell (1991); Holmstrom and Tirole (1997)). Thus collateral is a contractual mechanism that can protect lenders from the borrower's moral hazard incentives. If firms with strong shareholder rights usually have high risk-shifting incentives, I expect that

lenders would impose collateral requirements on those firms (H1). To test this prediction, I run the Logit model specified in Section 4.1.1.

Results are demonstrated in Table 2. The dependent variable *Secured* is a dummy variable which equals to one if the loan is secured by collaterals and zero otherwise.[13] Model 1 presents the estimate using the continuous shareholder rights measure *Prob(takeover)*. The coefficient of *Prob(takeover)* is 0.048, which is positive and significant at the 1% level, indicating that when a borrower is with the stronger shareholder rights, it is more likely to be required providing collateral. I also compare the likelihood of having collateral between the borrower portfolio with highest takeover risks (strong shareholder rights) and the borrower portfolio with lowest takeover risks (weak shareholder rights). In model 2, the explanatory variable *takeover risk 90%(10%)* is an indicator equals to one if a borrower is ranked in highest decile (lowest decile) as ranked by *Prob(takeover)*. The *takeover risk 80%(20%)* is an indicator equals to one if a borrower is ranked in highest quintile (lowest quintile) as ranked by *Prob(takeover)*. The results of model 2 and model 3 show that borrowers with high takeover risks groups (*takeover risk 90%&80%*) are associated with significantly positive coefficient, indicating that compared with borrowers who are associated with medium or weak shareholder rights, borrowers with stronger shareholder rights are more likely to have collateral requirements. Albeit not significant, the coefficients of *takeover risk 10%/20%* are negative which provide evidence that a borrower with weak shareholder rights is less likely to be required collaterals. These results are consistent with the Hypothesis 1 that the probability of having collaterals as a loan

[13] 3,712 out of 9,635 loan facilities in the sample do not have information on whether the loans were secured by collateral or nor. I treat such loans as unsecured loans. I also run the main tests by excluding all observations for which collateral status was missing, and the results remain unchanged.

contract non-price term increases if the borrower is with stronger shareholder rights, holding all else equal.

Table 2

Effect of shareholder rights on collateral requirements

	Model 1		Model 2		Model 3	
Secured			90% 10% cut-off		80% 20% cut-off	
Prob(takeover)	0.048	(2.81)***				
takeover risk 90%			0.197	(1.83)*		
takeover risk 10%			-0.165	(-1.17)		
takeover risk 80%					0.259	(2.72)***
takeover risk 20%					-0.143	(-1.15)
loan concentration	1.281	(5.96)***	1.278	(5.92)***	1.128	(5.96)***
lev	2.518	(7.81)***	2.515	(7.81)***	2.503	(7.78)***
b2m	0.448	(5.42)***	0.486	(5.44)***	0.490	(5.43)***
roa	-1.232	(-2.16)**	-1.173	(-2.06)**	-1.222	(-2.14)**
tangibility	-0.583	(-2.49)**	-0.604	(-2.58)***	-0.589	(-2.51)**
log(loan maturity)	0.464	(7.23)***	0.461	(7.18)***	0.465	(7.24)***
log(loan amount)	-0.278	(-6.35)***	-0.280	(-6.36)***	-0.280	(-6.36)***
revolver	-0.608	(-7.02)***	-0.612	(-7.12)***	-0.605	(-6.98)***
altmanexlev	-0.111	(-2.03)**	-0.116	(-2.12)**	-0.115	(-2.11)**
borrowerrelation	-0.084	(-1.02)	-0.087	(-1.05)	-0.085	(-1.04)
S&P Rating	4.307	(9.94)***	4.361	(9.27)***	4.303	(9.15)***
not rated	11.336	(9.08)***	11.488	(9.79)***	11.324	(8.98)***
Constant	-13.164	(-9.42)***	-12.842	(-9.13)***	-12.740	(-8.93)***
Observations	8,671		8,671		8,671	
Loan purpose	YES		YES		YES	
Industry Fixed Effects	YES		YES		YES	
Time Fixed Effects	YES		YES		YES	

The three model specifications of this table provide the Logit regression that estimates (correct for heteroscedasticity and clustering at firm level) of the following logit model:

$$Secured = \beta_0 + \beta_{1m}(Prob(takeover_m)) + \beta_2(loan\ concentration) + \sum \beta_i(Loan\ Characteristics_{is}) + \sum \beta_j(Borrower\ Characteristics_j) + \sum \beta_k(Controls_k) + \mu. \quad (1)$$

Definitions of all variables are provided in the Appendix. The dependent variable *Secured* is a dummy variable which equals to one if the loan is secured by collaterals and otherwise zero. In the model (1), *Prob(takeover)* is the continuous measure of the inversed G index which proxies for the potential takeover risk. In the model (2) and model (3), I transfer the continuous *Prob(takeover)* into two pairs of indicator variables: *takeover risk 90% (10%)* equals to one if a borrower is ranked in the highest (lowest) decile as ranked by *Prob(takeover)*; *takeover risk 80% (20%)* equals to one if a borrower is ranked in the highest (lowest) quintile as ranked by *Prob(takeover)*. All three regressions include dummies for the S&P long-term domestic issuer credit rating, with not-rated borrowers considered as a separate group. In addition to the variables reported, the regressions also control for the stated purpose of the loan facility, industry dummies based on one-digit SIC code of the borrowers, and calendar year dummies. The numbers in parentheses are *z-statistics* corrected for heteroscedasticity and firm-level clustering. ***, **, and * denote significance at the 1%, 5% and 10% levels, respectively.

5.2 Evidence on Hypothesis 2

Next, I focus on how a borrower's shareholder rights affect the loan maturity. Banking literature predicts that the low-quality borrowers require intense monitoring, and thus lenders would only provide short-term loans (Diamonds (1991)). As discussed in Section 2, the probability of being taken over associated with borrowers' strong shareholder rights can increase the default risk of borrowers by increasing the financial leverage of target firms. Another concern arisen with shareholder rights is that the probability of the borrower's risk-shifting behavior increases with the life of loans (Chava, Livdan, and Purnanandam (2009)). Since strong shareholder rights are associated with higher risk, I predict that there is a negative relationship between shareholder rights and the loan maturity (H2).

To test H2, I run the pooled OLS regression model discussed in Section 4.1.2. The results are reported in Table 3. The dependent variable *log(loan maturity)* is the natural log of the stated loan maturity of loan facility (in months). I find that the coefficient of the key explanatory variable *Prob(takeover)* is -0.003. Though the sign of the coefficient is consistent with the prediction, the coefficient itself is neither economically nor statistically significant. The insignificant result may be driven by the interdependent relationship between collateral requirements and the loan maturity. As discussed in Section 2.3, secured status and debt maturity can be treated as substitute or complement mechanisms for controlling borrowers' risk-seeking incentives (Dennis, Nandy, and Sharpe (2000)). In Section 5.4, I re-estimate the relationship between loan maturity and shareholder rights by employing an instrumental variable approach to control for the simultaneous relationship between the two.

Table 3

Effect of shareholder rights on loan maturity

	Model 1		Model 2		Model 3	
Log(loan maturity)						
Prob(takeover)	-0.003	(-0.93)				
takeover risk 90%			0.027	(1.18)		
takeover risk 10%			0.041	(1.72)*		
takeover risk 80%					-0.003	(-0.14)
takeover risk 20%					0.028	(1.32)
log(asset maturity)	0.053	(2.15)**	0.053	(2.16)**	0.053	(2.15)**
utility	-0.235	(-3.92)***	-0.231	(-3.71)***	-0.232	(-3.73)***
lev	0.155	(2.78)***	0.153	(2.74)***	0.155	(2.78)**
b2m	0.006	(0.29)	0.006	(0.28)	0.006	(0.26)
roa	0.375	(3.01)***	0.371	(2.97)***	0.375	(3.01)***
tangible	-0.013	(-0.17)	-0.011	(-0.15)	-0.013	(-0.17)
secured	0.166	(8.84)***	0.165	(8.77)***	0.166	(8.85)***
log(loan amount)	0.099	(11.44)***	0.100	(11.55)***	0.099	(11.48)***
revolver	-0.351	(-18.76)***	-0.351	(-18.76)***	-0.351	(-18.75)***
altmanexlev	0.023	(2.02)**	0.024	(2.09)**	0.024	(2.04)**
borrowerrelation	-0.011	(-0.75)	-0.010	(-0.70)	-0.011	(-0.74)
S&P Rating	0.386	(7.91)***	0.389	(7.96)***	0.388	(7.96)***
not rated	1.086	(8.60)***	1.092	(8.65)***	1.092	(8.66)***
Constant	2.250	(11.17)***	2.177	(11.58)***	2.193	(11.46)***
Observations	8,665		8,665		8,665	
R-squared	0.336		0.336		0.336	
Loan purpose	YES		YES		YES	
Industry Fixed Effects	YES		YES		YES	
Time Fixed Effects	YES		YES		YES	

The specification of this table provide the OLS estimation (correct for heteroscedasticity and clustering at firm level) of the following model:

$$log(Maturity) = \beta_0 + \beta_{1m}\big(Prob(takeover_m)\big) + \beta_2(utility) + \beta_3\big(log(asset\ maturity)\big) + \sum \beta_i(Loan\ Characteristics_{im}) + \sum \beta_j\big(Borrower\ Characteristics_j\big) + \sum \beta_k\big(Controls_j\big) + \mu. \quad (2)$$

Definitions of all variables are provided in the Appendix. The dependent variable *Log (loan maturity)* is the natural log of the stated loan maturity of loan facility (in months). In the model, *Prob(takeover)* is a continuous measure of the inversed G index which proxies for the potential takeover risk. The regression includes dummies for the S&P long-term domestic issuer credit rating, with not-rated borrowers considered as a separate group. In addition to the variables reported, the regressions also control for the stated purpose of the loan facility, industry dummies based on one-digit SIC code of the borrowers, and calendar year dummies. The numbers in parentheses are *t-statistics* corrected for heteroscedasticity and firm-level clustering. ***, **, and * denote significance at the 1%, 5% and 10% levels, respectively.

5.3 Evidence on Hypothesis 3

The next non-price loan contract term of interest is loan amount. Previous banking literature suggests that the borrower's credit may be rationed if lenders can not eliminate the investment distortions from shareholder-creditor conflicts through monitoring (see e.g., Stiglitz and Weiss (1981); Faulkender and Petersen (2006)). When the borrower's shareholder rights are high, the risk-taking incentives are high, and hence lenders of the same firm may try to tighten the credit availability and provide smaller size (H3). To test this hypothesis, I estimate the pooled OLS regression discussed in Section 4.1.3.

Table 4 presents the results of the effect of shareholder rights on loan amount. The dependent variable is the natural logarithm of the loan amount in millions of year 2006 dollar *log(loan amount)*. The model 1 reports the estimate for the continuous shareholder rights measure *Prob(takeover)*. Model 2 and model 3 provide the estimates for pairwise indicator variables that represent borrowers are ranked in the highest level of shareholder rights (*takeover risk 90%/80%*) versus in the lowest level of shareholder rights (*takeover risk 10%/20%*) as ranked by *Prob(takeover)*. In model 1, the coefficient of *Prob(takeover)* is -0.15 and it is negative and significant at the 1% level, indicating that stronger the shareholder rights are associated with smaller size loans. Strikingly, -0.15 can be interpreted as adding one more takeover defense provision into ccorporate governance rules would result in a 1.5% increase in loan amount. In model 2 and model 3, I find that comparing with borrowers who are associated with medium or high takeover risks, borrowers in low takeover risks groups (*takeover risk 10%/20%*) are associated with significantly larger amount loans. For example, the loan size of borrowers who are ranked

in lowest decile of shareholder rights is 8.4% larger ($36 million on average in my sample). Overall, these results are consistent with H3 that, holding all else equal, the borrower associated with stronger shareholder rights tend to be provided smaller amount loans.

Table 4

Effect of shareholder rights on loan amounts

Log(loan amount)	Model 1		Model 2 90% 10% cut-off		Model 3 80% 20% cut-off	
Prob(takeover)	-0.015	(-2.74)***				
takeover risk 90%			-0.061	(-1.59)		
takeover risk 10%			0.084	(2.04)**		
takeover risk 80%					-0.048	(-1.44)
takeover risk 20%					0.065	(2.02)**
lev	0.470	(5.53)***	0.477	(5.08)***	0.482	(5.15)***
b2m	-0.041	(-1.40)	-0.042	(-1.39)	-0.424	(-1.44)
roa	0.974	(5.11)***	0.966	(5.06)***	0.965	(5.06)***
size	0.633	(38.84)***	0.633	(39.14)***	0.634	(39.05)***
tangible	-0.021	(-0.26)	-0.017	(-0.21)	-0.017	(-0.21)
revolver	0.337	(9.35)***	0.334	(9.40)***	0.333	(9.36)***
altmanexlev	0.056	(3.46)***	0.057	(3.53)***	0.057	(3.54)***
borrowerrelation	0.225	(9.28)***	0.226	(9.33)***	0.226	(9.32)***
S&P Rating	-0.108	(-1.41)	-0.111	(-1.18)	-0.107	(-1.13)
not rated	-0.344	(-1.37)	-0.356	(-1.41)	-0.340	(-1.43)
Constant	8.746	(23.02)***	8.490	(23.08)***	8.460	(23.29)***
Observations	8,673		8,673		8,673	
R-squared	0.633		0.633		0.633	
Loan purpose	YES		YES		YES	
Industry Fixed Effects	YES		YES		YES	
Time Fixed Effects	YES		YES		YES	

The three specifications of this table provide the OLS estimation (correct for heteroscedasticity and clustering at firm level) of the following model:

$$log(loan\ amout) = \beta_0 + \beta_{1m}\big(Prob(takeover_{m)}\big) + \sum \beta_i(Loan\ Characteristics_{ia}) + \sum \beta_j\big(Borrower\ Characteristics_j\big) + \sum \beta_k\big(Controls_j\big) + \mu$$

Definitions of all variables are provided in the Appendix. The dependent variables of three models are the natural logarithm of loan amount in millions of year 2006 dollar. In the model (1), *Prob(takeover)* is a continuous measure of the inversed G index which proxy for the potential takeover risk. In the model (2) and model (3), I transfer the continuous *Prob(takeover)* into two pairs of indicator variables: *takeover risk 90% (10%)* equals to one if a borrower is ranked in the highest (lowest) decile as ranked by *Prob(takeover)*; *takeover risk 80% (20%)* equals to one if a borrower is ranked in the highest (lowest) quintile as ranked by *Prob(takeover)*. All three regressions include dummies for the S&P long-term domestic issuer credit rating, with not-rated borrowers considered as a separate group. In addition to the variables reported, the regressions also control for the stated purpose of the loan facility, industry dummies based on one-digit SIC code of the borrowers, and calendar year dummies. The numbers in parentheses are *t-statistics* corrected for heteroscedasticity and firm-level clustering. ***, **, and * denote significance at the 1%, 5% and 10% levels, respectively.

5.4 IV estimation of collateral requirements and loan maturity

As described in Section 2, loan syndication processes involve several discrete steps. According to the S&P Guide to the U.S. Loan Market (2013), syndication starts from the borrower appointing the lead arranger, who conducts due diligence and makes efforts to settle non-price loan contract terms such as amount, maturity, collateral, and all kinds of covenants. The borrower's information hammered out at this stage will be used to set the final loan price with other syndicate members (also see Bharath et al. (2011)). Loan amount usually is predetermined depending on the borrower's demand. Loan collateral and maturity are simultaneously determined before the loan price to be settled. Therefore, a richer alternative would be to estimate a simultaneous equation model incorporating the interdependencies between collateral and maturity, and the following two-equation structural models are more appropriate to test the relationship between shareholder rights and the two non-price terms of syndicated loans:

$$collateral = \rho_{1n}(Prob\ takeover_n) + \rho_2(log(maturity)) + \sum \rho_i(exo\_controls_{cj}) + \epsilon$$

$$log(maturity) = \gamma_{1n}(Prob\ takeover_n) + \gamma_2(collateral) + \sum \gamma_i(exo\_controls_{mj}) + \epsilon$$

The ρ_i and γ_i are structural parameters. The $exo\_controls_{ij}$ includes all exogenous control variables that affect the corresponding dependent variable. I employ the two-stage-least-square (2SLS) framework using instrumental variables for both maturity and collateral. First, for collateral I use loan concentration as the instrument variable. This is because the greater the current loan concentration, the greater the likelihood of being required pledging collateral (Berger and Udell (1990)). For loan maturity, I follow Barclay and Smith (1995) constructing two instrumental variables: (1) the borrower's asset maturity

and (2) "utility industry" dummy. For the borrower's asset maturity, Hart and Moore (1994) predict that the optimal repayment path would depend on the maturity structure of project payoffs and durability of assets, and hence firms would try to match their debt maturity to their asset maturity. The construction of the asset maturity is followed Barclay, Marx, and Smith (2003), which is the weighted average of maturity of current assets and Net PPE.[14] As for "utility industry" dummy, utility industry represent a highly regulated industry which can be an important factor to affect companies' debt maturity structure (Barclay and Smith (1995)). Higher regulatory oversight for utility companies should result in lower agency cost of debt, which, in turn, should result in greater use of longer maturity debt. Alternatively, if these highly regulated utility firms have access to longer maturity debt instruments from the capital market, it might result in greater use of shorter maturity bank loans.

The results of IV estimation are reported in Table 5. Panel A reports the estimation for the effect of shareholder rights on collateral requirements after controlling for the issue of simultaneity. *Secured* is a dichotomous variable and thus I use an IV probit estimation instead of a linear regression. Column (1) presents the result of Probit estimation without controlling for simultaneity. Colum (2), (3), and (4) report the results of IV estimation. As expected, the coefficient of the continuous measurement of shareholder rights *Prob(takeover)* is significantly positive at 1% level. Besides, the coefficient of borrowers with weak shareholder right (*takeover risk 10%/20%)* is significantly negative, indicating that those borrowing firms are less likely to be required providing collateral. Overall, these results are consistent with the prediction of H1 that the stronger (weaker) shareholder rights

[14] Asset maturity = $\frac{\text{CA}}{\text{CA+NPPE}} * \frac{\text{CA}}{\text{COGS}} + \frac{\text{NPPE}}{\text{CA+NPPE}} * \frac{\text{NPPE}}{\text{Depreciation}}$.

are associated with the higher (less) likelihood of collateral requirements. Loan concentration *loancctt*, the exogenous measure of *secured*, has a significantly positive coefficient, suggesting that it is an appropriate instrument for the collateral dummy.

Panel B of Table 5 reports the estimation for the effect of shareholder rights on loan maturity after controlling for the issue of simultaneity. The dependent variable is the natural log of loan maturity. Column 1 reports the results without controlling for the simultaneous determination. Column 2, 3, and 4 of Panel B present the results of IV estimations that address the issue of simultaneity. Results in column 2 show that there is a significantly negative relationship between loan maturity and the strength of the shareholder rights. This coefficient (-0.016) can be interpreted that one more anti-takeover provision added into governance rules would result in a 1.6% increase in loan maturity on average. In column 3 and column 4 of Panel B, I also find that borrowers with weak shareholder rights (low takeover risks) are provided longer maturity loans, and also borrowers who are with strong shareholder rights are offered significantly short maturity loans. To quantify the results, if a borrower were to change the governance discipline from lowest quintile of shareholder rights (*takeover risk 20%*) to highest quintile of shareholder rights (*takeover risk 80%*), such a change would result in a decline of around 13% (or 6 months on average) in loan maturity. The coefficients of exogenous measures for loan maturity (*utility* and *log(asset maturity))* are both significant, suggesting that they are appropriate instruments for loan maturity. In sum, the evidence presented in Table 5 suggests that the results as to the impact of shareholder rights on secured status and loan maturity are robust to the simultaneous determination of non-price terms of syndicated loan contracts.

Table 5

Instrumental variables estimation of collateral and loan maturity

Panel A Instrumental variables estimation of the collateral requirement

Secured	(1) Probit		(2) IV		(3) IV 90% 10% cut-off		(4) IV 80% 20% cut-off	
Prob(takeover)	0.030	(3.11)***	0.027	(3.76)***				
takeover risk 90%					0.070	(1.23)		
takeover risk 10%					-0.131	(-2.82)***		
takeover risk 80%							0.126	(3.20)***
takeover risk 20%							-0.107	(-2.36)**
log(loan maturity)	0.271	(7.51)***	1.131	(2.73)***	1.135	(2.72)***	1.132	(2.28)***
loancctt	0.739	(5.76)***	0.316	(2.32)**	0.293	(1.92)**	0.309	(2.33)**
Other controls	As in model 1 of table 4		As in model 1 of table 4		As in model 2 of table 4		As in model 3 of table 4	
Test of endogeneity:								
Wald's chi-square			5.760	0.016	5.470	0.019	4.870	0.027
Weak Instrument test:			25.210 (Stock-Yogo critical value:					
Cragg-Donald F-stat			19.93)					
Observations	8665		8665		8665		8665	

Panel B Instrumental variables estimation of the loan maturity

log(loan maturity)	(1) OLS		(2) IV		(3) IV 90% 10% cut-off		(4) IV 80% 20% cut-off	
Prob(takeover)	-0.003	(-0.93)	-0.016	(-4.16)***				
takeover risk 90%					-0.013	(-0.53)		
takeover risk 10%					0.101	(3.93)***		
takeover risk 80%							-0.053	(-2.39)**
takeover risk 20%							0.079	(2.98)***
secured	0.166	(8.84)***	1.392	(8.02)***	1.396	(7.70)***	1.393	(9.03)***
log(assetmaturity)	0.053	(2.15)**	0.110	(4.38)***	0.108	(3.31)***	0.111	(3.95)***
utility	-0.235	(-3.92)***	-0.089	(-1.78)*	-0.078	(-1.71)*	-0.085	(-1.78)*
Other controls	As in the model of table 5		As in the model of table 5		As in the model of table 5		As in the model of table 5	
								(Continued)
Test of endogeneity:								
DWH's chi-square			88.131	0.000	93.882	0.000	94.291	0.000
Weak Instrument test: Cragg-Donald F-stat			118.049 (Stock-Yogo critical value: 16.38)					
Observations	8665		8665		8665		8665	

(Continued)

Definitions of all variables are provided in the Appendix. This table provides estimations of the equation system using instrumental variables to estimate the impact of shareholder rights on collateral requirements and the loan maturity. The dependent variable in Panel A *Secured* is a dummy variable which equals to one if the loan was secured by collaterals and otherwise zero; the dependent variable in Panel B *Log(loan maturity*) is the natural log of the stated loan maturity of a loan facility in months. The Wald's test is for IV probit model for collateral requirements, and the null hypothesis is that collateral and maturity are exogenous. The rejection of the null implies that collateral requirements and loan maturity are endogenous. The Durbin-Wu-Hausmann (DWH) test provides a similar test for IV regression for loan maturity. The two IV models include dummies for the S&P long-term domestic issuer credit rating, with not-rated borrowers considered as a separate group. In addition to the variables reported, the regressions also control for industry dummies based on one-digit SIC code of the borrowers, dummies for the stated purpose of the loan facility, and calendar year dummies. Numbers in the parentheses are *z-statistics* which are estimated by using bootstrapping with fifty replications. ***, **, and * denote significance at the 1%, 5%, and 10% levels respectively.

The choice of instruments is intrigued by prior empirical research and anecdotal evidence, but the instrumental variables need to be econometrically validated as well. Valid instruments must be correlated with the endogenous variable and must affect the dependent variable through the association with the endogenous variable. In the bottom of Panel A, I include the Cragg-Donald *F*-statistic of the weak instrument test.[15] Using the 2SLS model, the Cragg-Donald *F*-statistic for weak instruments test is 25.210, which is also higher than the 10% threshold of Stock-Yogo critical value of 19.93. This test result suggests that the instruments *utility* and *asset maturity* are relevant to loan maturity. For the maturity regression in Panel B of Table 5, I estimate the Durbin-Wu-Hausman (DWH) chi-square test to confirm the endogeneity of collateral, and the null hypothesis is that *secured* is exogenous to *log(loan maturity).* When using loan concentration (*loancctt*) *as* the instrument of collateral requirements, I obtain the DWH chi square test statistic of 88.131. This DWH test result strongly rejects the null hypothesis (*p-value = 0.000*), indicating that collateral is indeed endogenous to loan maturity. I also conduct the weak instrument test by calculating the Cragg-Donald *F*-statistic. In the bottom of Panel B, the reported Cragg-Donald *F*-statistic equals to 118.049, which is higher than the 10% Stock and Yogo (2005) threshold of 16.38. This test result implies that the instrument for collateral (loan concentration) is relevant.

[15] The reduced form in IV probit of collateral follows $log(maturity) = \gamma_1(asset\ maturity) + \gamma_2(utility) + \sum \gamma_i(exo_i) + \epsilon$. The reduced form in an IV probit model is still a linear equation as appears in a standard 2SLS estimation framework, and it is the linear reduced form of IV probit that maters for determining weak instruments (Wooldridge (2010)). Therefore, the weak instruments diagnostics can be conducted by treating the structural equation as linear.

5.5 Evidence using alternate takeover defense measures

I confirm the robustness of the main results by re-estimating all the regressions using an alternative measure of takeover defense, the Bebchuk, Cohen, and Ferell (2004)'s entrenchment index, to proxy for shareholder rights. The entrenchment index (*E index*) is based on six provisions among the twenty-four governance provisions tracked by IRRC.[16] Consistent with the construction of *Prob(takeover)*, I create a new variable *E-risk = 6 – E*. By construction, *E-risk* is an inverse of *E index*, and high E-risk value corresponds to a low E index or a low number of provisions.[17] Table 6 displays the results of both pooled OLS regressions and the 2SLS estimations using *E-risk* as the key RHS variable. Overall, the multivariate results from estimations are consistent with the predicted relationship between shareholder rights and the three non-price terms of loan contracts. The main test results are robust to the different measure of corporate governance.

[16] The six provisions include staggered boards, limits to shareholder bylaw amendments, poison pills, golden parachutes, and supermajority requirements for mergers and charter amendments. The correlation between the *E index* and the *G index* is 0.74, because the E index is a significant element of the *G index*.

[17] The data on firms' entrenchment index levels is available at http://www.law.harvard.edu/faculty/bebchuk/data.shtml. After merging the Dealscan loan data with the E index data and screening the data using the criteria in Section 3.1, I am left with 6,812 loan facilities for 1,023 nonfinancial U.S. public corporations between 1991 to 2006. The drop in the sample size is mainly attributable to the firms covered in E index and the dual-class voting structure. The sample mean of E index is 2.4, which is very close to the sample mean of E index in Bebchuk, Cohen, and Ferell (2004). Expect for using *E-risk* as a measurement of takeover exposure, all the other variables' definitions and model specifications in this section are consistent with those I use in the main analyses.

Table 6

Robustness check using E-Index proxy for shareholder rights

	(1) *Secured*				(2) *Log(loan maturity)*				(3) *Log(loan amount)*	
VARIABLES	Logit		IV Probit		OLS		IV		OLS	
E-risk	0.032	(1.23)	0.029	(1.96)**	-0.020	(-2.56)***	-0.036	(-4.15)***	-0.029	(-2.34)**
secured					0.174	(7.74)***	1.332	(7.03)***		
log(loan maturity)	0.463	(7.59)***	1.120	(1.34)						
log(loan amount)	-0.343	(-9.44)***	-0.228	(-11.87)***	0.093	(9.07)***	0.143	(10.74)***		
lev	2.640	(9.52)***	1.000	(1.12)	0.070	(1.30)	-0.385	(-3.88)***	0.470	(4.39)***
b2m	0.459	(5.27)***	0.216	(2.02)**	-0.015	(-0.55)	-0.101	(-3.54)***	-0.081	(-2.11)**
roa	-0.571	(-1.17)	-0.533	(-1.97)**	0.344	(2.16)**	0.381	(2.55)**	0.648	(2.81)***
borrowerrelation	-0.028	(-0.38)	-0.025	(-0.70)	-0.006	(-0.33)	0.032	(1.38)	0.231	(8.36)***
altmanexlev	-0.163	(-3.60)***	-0.102	(-3.39)***	0.033	(2.21)**	0.074	(5.23)***	0.086	(4.34)***
S&P Rating	4.953	(16.31)***	1.800	(1.47)	0.400	(7.74)***	-0.016	(-0.19)	-0.086	(-0.83)
not rated	13.105	(16.22)***	4.762	(1.48)	1.090	(7.49)***	-0.056	(-0.24)	-0.346	(-1.24)
tangible	-0.605	(-3.13)**	-0.460	(-4.24)***	0.009	(0.10)	-0.021	(-0.24)	0.096	(0.98)
revolver	-0.627	(-6.89)***	0.028	(0.05)	-0.353	(-14.30)***	-0.155	(-3.81)***	0.326	(7.46)***
log(asset maturity)					0.069	(2.14)**	0.136	(6.51)***		
utility					-0.200	(-2.48)**	-0.047	(-0.76)		
loan concentration	1.347	(7.28)***	0.364	(2.07)**						
Constant	-14.123	(-12.93)***	-8.16	(-13.92)***	2.27	(9.77)***	2.428	(8.40)***	0.184	(0.46)
Test of endogeneity:										
Wald's chi-square			2.82	0.092						
DWH's chi-square							59.05	0.000		
Observations	6,184		6,184		6,184		6,184		6,184	
R-squared					0.337				0.662	
Loan purpose	YES		YES		YES		YES		YES	
Industry Fixed Effects	YES		YES		YES		YES		YES	
Time Fixed Effects	YES		YES		YES		YES		YES	

(Continued)

Definitions of all variables are provided in the Appendix. This table provides the robustness check using Entrenchment Index (Bebchuk, Cohen, and Ferrel 2008) to estimate the impact of shareholder rights on loan amount, collateral requirements, and the loan maturity. Similar to the construction of *Prob(takeover)*, *E-risk* can also proxy for the probability of being taken over, which simply equals to 6 minus the value of Entrenchment Index (equivalent to an inversed E-Index). The dependent

variable in model (1) is the natural logarithm of loan amount in millions of year 2006 dollar, the dependent variable in model (2) is a dummy variable which equals to one if the loan was secured by collaterals and otherwise zero (*Secured*), and the dependent variable in model (3) is the natural log of the stated loan maturity of loan facility in months (Log (loan maturity)). The Wald's test is for IV probit model for collateral requirements. The null hypothesis is that collateral and maturity are exogenous. The rejection of the null implies that collateral requirements and loan maturity are endogenous. The Durbin-Wu-Hausmann (DWH) test provides a similar test for IV regression for loan maturity. The two IV models include dummies for the S&P long-term domestic issuer credit rating, with not-rated borrowers considered as a separate group. In addition to the variables reported, the regressions also control for the stated purpose of the loan facility, the industry dummies based on one-digit SIC code of the borrowers, and calendar year dummies. Numbers in the parentheses are the *t-statistics* for OLS regressions and *z-statistics* for logit model & probit model which are corrected for heteroscedasticity and firm level clustering. For models under the IV framework, standard errors are estimated by using bootstrapping with fifty replications. ***, **, and * denote significance at the 1%, 5%, and 10% levels respectively.

6. Discussion

While the results presented so far provide strong evidence that the strength of shareholder rights have significant impacts on non-price terms of syndicated loan contracts, one important question arises immediately from these findings: what is the exact channel through which this effect takes place? Strong shareholder rights are a cause for concern to the loan lenders for multiple reasons, and it is worthwhile to explore these potential channels in future research. First of all, since the main measure of shareholder rights throughout the thesis is comprised of multiple corporate takeover defense rules, the risk consequent to a takeover event comes as a natural candidate that banks are concerned about. It is reasonable to expect that loan lenders worry about the possibility of risk-increasing takeovers and design a more stringent loan contract to borrowers with strong shareholder rights (low takeover defenses). Secondly, stronger shareholder rights imply greater needs for monitoring by the lead lender (i.e. shorter maturity). That is, managers of strong shareholder rights companies are more aligned with shareholders, and thus they are more likely to undertake investment strategies that seek to transfer wealth from the debt-holders to shareholders via "risk-shifting", hence exacerbating the shareholder-debtholder conflicts (see e.g., Morellec and Smith (2007)). These wealth-transfer activities, such as risk-shifting behaviors, excessive payments of dividends, and business restructures, will also be potential sources of concern to the lenders. Besides, the connection between anti-takeover provisions and these possible channels providing another interesting and important issue.

Indeed, these channels should be examined in future research, but my basic results, that strong shareholder rights increase the likelihood of requiring collateral, shorten the

loan maturity, and reduce the loan amount, remain interesting in themselves independently of the exact channel.

7. Conclusion

The objectives of a firm's shareholders and creditors diverge from one another. Borrowers with strong shareholder rights usually are more vulnerable to unsolicited takeover bids, have higher risk-shifting incentives, and are with shareholder-friendly management. Loan lenders worry about risks associated with strong shareholder rights of borrowers and would protect themselves against those risks by, such as, imposing more stringent loan contract terms. Using the governance index (Gompers, Ishii, and Metrick (2003)) to proxy for the shareholder rights of borrowing firms, I find that stronger shareholder rights of borrowers increase the likelihood of collateral requirements, shorten loan maturity, and reduce loan size. I show that a change from lowest quintile of shareholder rights group to highest quintile of shareholder rights group shortens loan maturity by around 13.1% (or 6 months on average in my sample) and decreases loan amount by 8.4% (or $36 million on average in my sample). These results hold after controlling for the issue of simultaneity between loan maturity and collateral requirements using an instrumental variable approach. The results are also robust to different proxies of shareholder rights. Collectively, this study implies that the company's governance structure has significant impacts on non-price terms of loan contracts and it complements the existing research on borrowers' shareholder rights and loan price. Overall, the stronger shareholder rights can lead to more stringent loan contract design. This study has important implications for the optimal power-sharing relationship between shareholders and creditors within a company.

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Appendix

Variables of Interest	Variable Definitions
Prob(takeover)	Following Chava, Livdan, and Purnanandam (2009), I construct a variable *Prob(takeover)* which proxy for the probability of being taken over. *Prob(takeover)* simply equals to 24 minus Gompers, Ishii, and Metrick (2003)'s G-Index value (equivalent to an inversed G-index).
takeover risk 90%	*takeover risk 90%* is an indicator variable equals to one if the borrower is ranked in the highest decile as ranked by *Prob(takeover)*.
takeover risk 10%	*takeover risk 10%* is an indicator variable equals to one if the borrower is ranked in the lowest decile as ranked by *Prob(takeover)*.
takeover risk 80%	*takeover risk 80%* is an indicator variable equals to one if the borrower is ranked in the highest quintile as ranked by *Prob(takeover)*.
takeover risk 20%	*takeover risk 20%* is an indicator variable equals to one if the borrower is ranked in the lowest quintile as ranked by *Prob(takeover)*.
log (loan amount)	Natural logarithm of the loan facility amount in 2006 dollars.
Secured	An indicator variable takes a value of one if a loan is secured by collateral, and zero otherwise.
log (loan maturity)	Natural logarithm of the loan facility maturity in months.
E-risk	Similar to the construction of *Prob(takeover)*, *E-risk* can also proxy for the probability of being taken over, which simply equals to 6 minus Bebchuk, Cohen, and Ferrel (2008)'s Entrenchment Index value (equivalent to an inversed E-Index).
Loan Characteristics	
revolver	A dummy variable equals to one for revolving line of credit, and zero for term loans.
loan concentration	Measured as the fraction of the loan size to the sum of existing debt plus the loan size: (loan amount)/(Existing debt + Loan amount). If a particular loan facility is a significant portion of the firm's debt, it is more likely to be secured (Berger and Udell (1990); Boot, Thakor, and Udell (1991); Dennis, Nandy, and Sharpe (2000)).
loan purposes	Including 1) debt repayment, 2) leveraged buyouts, 3) general corporate purposes, and 4) the other purposes. All four loan purpose indicators are dummies which equal to one if the primary purpose of the loan is for debt repayment/leveraged buyouts/corporate purposes/other purposes and zero otherwise.
Borrower Characteristics	
lev	The borrower's total debt to total assets.
b2m	The borrower's book-to-market ratio, measured as TA/(TA+MKVALF-CEQ), where TA is the book value of borrower's total assets, MKVALF is the market value of the firm at the fiscal year end, and CEQ is the book value of total common equity.
roa	The borrower's profitability *roa* is calculated as the ratio of net income to assets.
altmanexlev	Altman bankruptcy Z-score is calculated as Z = 1.2A + 1.4B + 3.3C + (0.6D) + E, where A is working capital/total assets, B is retained earnings/total assets, C is earnings before interest and taxes/total assets, D is market value equity/book value of total liabilities, and E is sales/total assets (Altman 1968). In regressions, I use Altman bankruptcy Z-scores excluding the term D.

borrowerrelation	As defined in Li, Saunders, and Shao (2015), *borrowerrelation* is an indicator variable taking the value of one if at least one of the participating lenders having had lent money to the borrower before, and zero.
tangibility	Borrower's property, plant, and equipment (NPPE) scaled by borrower's total assets.
log(asset maturity)	The natural log of borrower's asset maturity, where asset maturity is the weighted average of current assets divided by cost of goods sold, and Net PPE divided by depreciation and amortization - as defined in Barclay, Marx, and Smith (2003). Asset maturity = CA/(CA+NPPE) * CA/COGS + PPE/(CA+NPPE) * NPPE/(Depreciation).
utility	*utility* is a dummy variable that equals one for firms in the Utilities industry under the Fama-French industry classification and zero otherwise.
S&P Rating	The borrower's S&P long-term domestic issuer credit rating. A higher value corresponds to lower rating. Missing ratings are assigned to zero.
not rated	An indicator variable takes a value of one if the borrower does not have the S&P credit rating, and zero otherwise.