Short-term institutional investors and agency costs of debt

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Abstract

We conjecture that the presence of short-term institutional investors exacerbates agency conflicts between shareholders and creditors because short-term institutions might force firm managers to take myopic actions and thus increase the credit risk by reducing cash on hand and the assets available for meeting debt obligations. Using the data on bank loans to U.S. firms over the period 1990 - 2010, we find that the investment horizon of institutions is negatively correlated with the number of covenants in the loans. We also document that short-term (long-term) institutional ownership is positively (negatively) correlated with the number of covenants and that banks charge higher spreads on loans issued to firms with more short-term institutional ownership. These findings are consistent with our conjecture: lenders impose higher costs on loans to firms largely owned by short-term institutions because they anticipate higher agency costs.

JEL classification: G32; G21

Key words: bank loan; covenant; institutional investor; investment horizon; agency cost

"Many managers yearn to focus on the long term but don't think it's an option. Because investor's median holding period for shares is now about 10 months, executives feel pressure to maximize short-term returns. Many worry that if they don't meet the numbers, they will be replaced by someone who will. The job of a manager is thus reduced to sourcing, assembling, and shipping the numbers that deliver short-term gains."[1]

Short-term institutional investors and loan covenants

1. Introduction

Ownership by institutional investors has increased during the last 30 years and now institutional investors own more than 70% of the outstanding equity in the 1,000 largest U.S. corporations.[2] The increasing portion of institutional ownership has a positive effect on the value of widely held corporations. This group of large investors has the incentives and resources to monitor management and reduce agency conflicts between managers and shareholders, thus increasing the value of equity (Grossman and Hart, 1980; Shleifer and Vishny, 1986). Although the effect of institutional ownership on reducing agency costs of equity has been the subject of an extensive body of literature, its effect on the agency cost of debt has received less attention. In general, monitoring by institutional investors improves firm governance, enhances long-term firm value, and should benefit all long-term investors, including debt holders. However, the interests of shareholders and debt holders can diverge, and polices aimed at decreasing agency costs of equity can increase agency costs of debt (Jensen and Meckling, 1976; Myers, 1977).

Institutional investors are a heterogeneous group that includes mutual funds, ETFs, hedge funds, pension funds, and insurance companies. These investors have different characteristics, are subject to different level of regulation, and exhibit different degree of

[1] The capitalist's dilemma, Harvard Business Review, June 2014.
[2] The Conference Board, 2010 Institutional Investment Report: Trends in Asset Allocation and Portfolio Composition.

activism on corporate governance (e.g. Gilan and Starks, 2000). One important differentiating characteristic is that the institutions vary in the horizons of their investments. For instance, pension funds tend to have long-term investment horizons but mutual funds and hedge funds have short-term horizons. Institutions with long-term investment horizons are likely to engage in monitoring to promote policies aimed at increasing the long-term value of the firm, and debt holders should benefit from those polices (Gaspar et al., 2005; Hao, 2014). On the other hand, institutions with short-term investment horizons seek short-term trading profits by influencing corporate policies and exploiting informational advantage, which can be harmful to the long-term value of the firm. The incentives promoted by short-term investors have been blamed for less investment in R&D and for managerial decisions to forego positive value-enhancing investments to meet short-term earnings targets (Graham et al., 2005).[3]

Previous literature document that the activism by short-term oriented investors can hurt creditors by shifting the balance of power between creditors and shareholders and exacerbating shareholder-creditor conflicts. The short-term institutional activists often force the firm management to sell assets, repurchase shares, and increase dividends, which can increase the credit risk by reducing cash on hand and the assets available for meeting debt obligations. Klein and Zur (2011) find positive returns to shareholders and negative returns to bondholders around hedge fund activism, which suggests an expropriation of wealth from bondholders to shareholders. Sunder et al. (2014) also find that the spreads of bank loans

[3] Consistent with the survey of Graham et al. (2005), Bushee (1998) finds that high turnover and momentum trading by institutional investors encourages managers' myopic investment behavior when such institutional investors have extremely high levels of ownership in a firm. Similarly, Gaspar et al. (2005) and Chen et al. (2007) find that investors in firms with shorter investment horizons fare worse in takeovers whether they are investors of targets or acquirers. Burns et al. (2010) document that the likelihood and severity of financial misreporting are positively related to ownership by transient institutions. Derrien et al. (2014) also find that, for undervalued firms, investment and equity financing increase with investor horizons, and payouts decrease with investor horizons.

increase when the hedge fund activism relies on the market for corporate control or financial restructuring. Thus, to assess the effect of institutional ownership on stakeholders' value, it is necessary to understand the implications for the different contractual relationships in which the firm serves as a nexus of contracts. The objective of our study is to provide empirical evidence on the effect of the ownership of heterogeneous institutions on the contracting relationship between debt holders and firms. The different incentives of short- and long-term institutional investors suggest an asymmetric effect of these investors on agency costs of debt: monitoring by long-term institutional investors should increase the firm capacity to generate cash flows, thereby reducing the agency costs of debt, whereas short-term institutional investors are more likely to induce managerial short-termism and risk shifting leading to higher agency costs of debt. The main hypothesis of the research is that lenders rationally perceive higher risk in lending as short-term institutional investors are likely to induce policies that have a negative effect on debt value.

We use a sample of private debt, mostly bank debt, issued to U.S. industrial firms and examine the relation between the investment horizon of institutional investors and the pricing and non-pricing terms of the debt. The sample of private debt offers two advantages for our study. First, banks are informationally more efficient than public debt holders because they accumulate information on the credit risk of firms through relationship lending. Thus, bank loan officers can calibrate loan terms by ex-ante recognizing the increase in credit risk stemming from the incentives of short-term institutional investors. Second, new private debt includes non-price terms like covenants as well as interest terms reflecting the credit risk of borrowers because private debt tend to contain and recently use more covenants than public debt (Bradley and Roberts, 2004). Therefore, the research on loan terms allows us to evaluate

how debt holders perceive the potential risk stemming from the policy changes of firms forced by short-term institutional investors.

Covenants and monitoring are presumed to be the means by which creditors mitigate agency costs. Smith and Warner (1979) show that creditors can use the covenants in debt agreements to restrict the behavior of managers to mitigate conflicts and reduce the agency costs between shareholders and creditors. Dichev and Skinner (2002) find that private lenders use covenants as trip wires that provide them with an option to step in and take action when circumstances warrant. However, Diamond (1984) shows that monitoring through covenants is costly to lenders because of the information asymmetry between the borrower and the lender. First, writing and monitoring loan covenants incur significant costs because lenders have to collect the information on the borrowers. Second, overly restrictive covenants ex ante can also reduce operating flexibility and provide firm managers with a disincentive to take positive NPV projects. Accordingly, restrictive covenants can decrease the value of debt ex post. Third, when violation of a covenant occurs, borrowers and lenders need to renegotiate the terms of debt, which is also costly. As a result, lenders might rely on long-term institutional investors to protect their interests if those institutions play a monitoring role. In contrast, short-term institutions tend to increase the agency costs between shareholders and lenders by inducing firm managers to take short-term-focused actions. Therefore, we conjecture that lenders set loan covenants more restrictively when designing loan contracts for firms with a large ownership of transient institutions because they anticipate higher agency costs. The lenders should require more restrictive covenants to protect their investments and higher risk premiums ex ante.

We analyze a sample of 10,587 loan packages issued to 2,472 unique firms over the

period of 1990 - 2010, which we obtained from the *Dealscan* database. We measure institutional investors' investment horizons using the turnover and duration of their investments. We then calculate the number of specific covenant restrictions (covenant intensity index) and the number of financial ratio covenants (financial covenant score).[4] After defining short-term institutions as those who have high-portfolio turnover, we divide our sample into two sub-samples with higher short-term and long-term institutional ownership, respectively. We first find that the mean covenant intensity index (financial covenant score) is 2.25 (1.45) for loans to firms with higher short-term institutional ownership, whereas it is 1.99 (1.28) for loans to firms with higher long-term institutional ownership. The results suggest that lenders make loan contracts more restrictively when they provide capital to firms with higher ownership by short-term institutional investors than when they provide capital to firms with higher ownership by long-term institutional investors. The mean (median) loan spread is about 186 (175) basis points (bps) for the former and about 177 (150) bps for the latter. The differences are statistically significant at a 1% confidence level.

Then, we test the relation between the horizon of institutional investors and loan covenants in multivariate regressions after controlling for other determinants. We find that the turnover ratios of institutional investors are positively related to the covenant intensity index and financial covenant score. We also find that short-term institutional ownership is positively related to the number of covenants, whereas long-term institutional ownership is negatively related to the number of covenants. In addition, we find that lenders tend to charge higher spreads when making loans to firms with high-turnover shareholders. We obtain similar results even when we use an institution's duration as a measure of its investment

[4] Refer to Bradley and Roberts (2004) and Chakravarty and Rutherford (2013) for the measures of covenant intensity index and financial covenant index.

horizon. The results verify our conjecture that lenders tend to charge higher costs for loans to firms held largely by short-term institutions.

Our study contributes to the extant literature on the role of covenants in reducing agency problems of debt (Smith and Warner, 1979; Begley and Feltham; 1999; Tirole, 2006; Guay, 2008; Chava and Roberts, 2008; Sufi, 2009). These studies postulate that covenants should be more restrictive when agency costs of debt are more severe. Our analysis suggests that lenders consider the incentives of influential shareholders when stipulating the covenant provisions in loan contracts. Consistent with the implication of previous literature, we document that covenants in private debt are more restrictive in the presence of short-term institutional investors. The findings also add to the literature that investigates the adverse effect of a short institutional shareholder horizon (for instance, Bushee, 1998; Gaspar et al., 2005). Our results suggest that the presence of short-term oriented institutions among a firm's investors increases the cost of private debt.

The organization of the rest of the paper is as follows. In section 2, we review related literature and develop the preceding arguments more fully. Section 3 outlines the data used in this study and Section 4 analyzes the empirical relation between the investment horizon of institutions and loan covenants. Section 5 provides our conclusions.

2. Literature review

2.1 Previous research related to the horizon of institutional investors

This research sheds light on how the presence of short-term institutional investors affects the debt financing of firms. Kahn and Winton's (1998) and Maug's (1998) models suggest that institutional investors actively monitor the firms they own, or they maximize

their private benefits by trading on information. Institutional investors can influence the board of directors and management to change corporate policies; in extreme cases, they can change the management. However, Gilan and Starks (2000) argue that not all institutional investors engage in shareholder activism because they differ in their trading styles, incentives for managers, clienteles, legal and regulatory environments, and ability to gather and process information.

Some researchers argue that short-term institutions are sophisticated investors that trade frequently to take advantage of their superior information. For instance, Yan and Zhang (2009) find that trading by short-term institutions forecasts future stock returns and is positively correlated with future earnings surprises. They also find that short-term institutional trading has stronger power for small and growth stocks than for large and value stocks, which indicates that the informational advantage of short-term institutions is greater for the stocks with larger information uncertainty.

In a different perspective, previous literature documents empirical evidence that certain types of institutional investors play a monitoring role. For instance, Brickley et al. (1988) find that pressure-resistant institutions are more likely to oppose management proposals on antitakeover amendments than pressure-sensitive institutions. Almazan et al. (2005) focus on the difference in monitoring costs faced by investment advisors and investment companies (active institutions) vs. banks and insurance companies (passive institutions). They find that pay-for-performance sensitivity is positively related to the ownership concentration of active institutions and insignificantly related to that of passive institutions. Chen et al. (2007) document that the presence of larger holdings by independent institutions with long-term investment horizons leads to better post-merger abnormal returns,

post-merger change in industry-adjusted ROA, and post-merger changes in analyst earnings forecasts. Woidtke (2002) also finds that firm value is positively related to ownership by private pension funds and negatively related to ownership by public pension funds.

Recent literature also focuses on the different incentives of institutional investors based on their turnover ratio. For instance, Bushee (1998) finds that firms with shorter investment horizons decrease R&D expenditures to meet short-term earnings targets. Gaspar et al. (2005) also document that target firms owned by high portfolio turnover institutions are more likely than other firms to receive an acquisition bid, but they also get lower premiums. Likewise, bidder firms with short-term institutions experience significantly worse abnormal returns around the merger announcement than other firms. Investment horizons also affect the tradeoff between share repurchases and dividends (Gaspar et al., 2012). In addition, Hao (2014) finds that firms with more short-term institutional shareholders experience significantly more negative abnormal returns at the announcement of seasoned equity offerings. All those results suggest that short-term institutions have fewer monitoring incentives and can lead managers to engage in myopic behaviors.

Our study is directly related to the literature that investigates the relation between the cost of capital and the institutional investor's investment horizon. Attig et al. (2013) document that the presence of institutional investors with long-term investment horizons is associated with significantly lower equity financing costs. Elyasiani et al. (2010) argue that based on the stability of institutional ownership, institutions can learn about investee firms and exert effective monitoring, which is likely to reduce information asymmetry between outsiders and insiders. They find a negative relation between the yield on public debt and institutional ownership stability. It is unclear, however, that their measure of stability reflects

the investment horizon of institutional investors.[5] In comparison, we add to this line of research by focusing on the relation between the non-pricing terms of private debt and institutional investment horizons. Because short-term institutional investors tend to pressure managers to maximize short-term profits at the expense of long-term firm value, private lenders might try to protect their interests by including more restrictive covenants in loan contracts to firms with more short-term institutional investors.

2.2 Previous research related to loan covenants

According to agency theory, debt financing reduces the free cash flow available to managers (who try to maximize their own benefits) to better align managers' interests with shareholders'. However, debt financing increases agency costs between shareholders and debt holders such as risk shifting and underinvestment problems. To reduce the agency costs, lenders normally include loan covenants in debt contracts as monitoring devices. The covenants are usually designed to curb the managers' incentives to overinvest in risky projects or engage in other myopic behaviors. They vary in types from financial covenants (restrictions on key financial ratios) to nonfinancial covenants (restrictions on dividend payments, collateral, M&A, etc.).

Previous literature analyzes the role of covenants as monitoring devices to reduce agency problems between shareholders and bond holders (Smith and Warner, 1979; (Smith

[5] Elyasiani et al. (2010) measure stability as the sum of the standard deviation of the proportions owned by institutional shareholders divided by the proportion held by these investors. This measure does not represent their investment horizons. For instance, a firm with no long-term institutional investors can be classified as more stable than another firm with long-term institutions that have increased their ownership over time. Another concern with this measure is that, ceteris paribus, firms with more ownership by institutional investors have a greater stability value regardless of the investors' characteristics. A second proxy for stability, institutional investor persistence, raises similar concerns.

and Warner, 1979; Tirole, 2006; Guay, 2008; Chava and Roberts, 2008; Sufi, 2009). This body of literature suggests that covenants should become more restrictive as the agency costs of debt increase. Begley and Feltham (1999) examine non-convertible public debentures and find that the presence of covenants is negatively related to the ratio of cash compensation to total compensation for the firm's manager. They argue that a large CEO bonus aligns the CEO's interests with debtholders', but large CEO equity holdings align the CEO's interests with equityholders'. Chava et al. (2010) also investigates the effects of managerial agency risk on the design of bond covenants. They find that factors enhancing managerial entrenchment have a positive relation to the likelihood of adding more covenants. Dichev and Skinner (2002) also find that, in the presence of restrictive financial ratio covenants, firms modify their accounting decision-making choices to ensure compliance with the covenants, which is consistent with the debt covenant hypothesis. These results indicate that firms with higher agency costs of debt agree to include more covenants in the debt they issue.

Recent literature recognizes the role of creditors in monitoring borrowing firms by renegotiating loan contracts before the firms default. Dichev and Skinner (2002) find that covenant violations occur in 30% of loans and that the violations do not necessarily indicate that the borrowing firms are in financial distress. They argue that private lenders use covenants as trip wires to give them an option to intervene in the firm's management. Consistent with that argument, Chava and Roberts (2008) find that capital investment declines sharply following a financial covenant violation, and the reduction in investment is concentrated in situations in which agency and information problems are more severe. Nini et al. (2012) also find that covenant violations are followed immediately by a decline in acquisitions and capital expenditures, leverage, and dividend payouts, and by an increase in

CEO turnover. These results indicate that loan negotiations after covenant violations reduce borrower risk by limiting risk shifting and improving corporate governance.

These studies suggest that covenants should be more restrictive when institutional investors have less incentive to monitor and more incentive to promote managerial decisions that have a negative effect on the value of debt. Private debt, mostly bank debt, tends to include more covenants as a monitoring mechanism than public debt. Through a long-term relation with borrowers, banks accumulate borrower-specific information, often proprietary in nature. Through this information gathering, banks can ex ante recognize the risk created by the influence of short-term institutions on firm management. Thereafter, banks include more covenants in their loan contracts, which reduces the managers' ability to underrate value-enhancing projects, and thereby to destroy long-term value. We propose the following testable hypothesis:

Hypothesis: Short-term institutional investors can shift the balance of power between creditors and shareholders and exacerbate shareholder-creditor conflicts. Ex-ante, bank lenders should demand more restrictive covenants in their loan contracts and charge higher spreads when anticipating higher agency costs. In comparison, monitoring by long-term institutional investors should reduce the agency costs of debt, and thus bank lenders should require less restrictive covenants and spreads.

3. Data and Research Design

3.1 Sample construction

For our sample, we obtain the terms of bank loans issued to U.S. industrial firms from Thomson Reuters Loan Pricing Corporation (LPC) *DealScan* database. The database

contains detailed information such as loan spreads, covenants, loan size, maturity, presence of syndication, the type and purpose of a loan, and lender information for individual loans, referred to as facilities or tranches. The basic unit of observation in the *Dealscan* database is a loan (facility). A borrower may engage in multiple loans with different maturities and repayment schedules on the same date under a "Package"; therefore, a package can contain multiple loans or facilities. We retrieve accounting and financial information for borrowers from *Compustat* and then match borrowers in the *Dealscan* database with financial data from the *Compustat* database using the link table provided by Chava and Roberts (2008). We further require that firms have institutional ownership data from Thomson Reuters' Institutional (13F) Holdings. We exclude financial firms with SIC codes from 6000 to 6999 and regulated firms with SIC codes from 4900 to 4949 because their financial decisions are heavily regulated by the government. The final sample contains 10,587 loan packages (14,443 facilities) obtained by 2,472 unique firms between 1990 and 2010.

3.2 Covenant restrictiveness and loan spreads

In this study, we investigate the effect of institutional investors' investment horizon on covenant restrictiveness and loan pricing. Loan contracts tend to include several types of covenants.[6] For instance, mandatory prepayment covenants (asset sales sweep, debt issue sweep, and equity issue sweep) under certain conditions require that cash from selling assets and issuing new debt and equity be used to repay the outstanding loan. Also, the loan can be secured and dividend payments might be restricted by covenant. Financial covenants prevent the creditors from deviating too far from the interests of lenders by establishing financial ratio benchmarks. Following Bradley and Roberts (2004), we measure the restrictiveness of

[6] For detailed explanations on loan covenants, refer to Appendix A.

covenants by constructing a covenant intensity index based on six covenants; collateral, dividend restriction, asset sales sweep, equity issuance sweep, debt issuance sweep, and the presence of more than two financial covenants. Each of the six covenants takes a value of 1 if it is present in a loan contract and 0 otherwise, and covenant intensity index is the sum of the six indicators. Borrowers with higher numbers of covenants have less flexibility with respect to operating and financing decisions that could violate covenant restrictions. We measure the restrictiveness of financial covenants in the same way. Financial covenants place restrictions on accounting-related variables such as coverage, leverage, liquidity, net worth, capital expenditures, etc. In our sample, the financial covenant score (the number of financial covenants) ranges from 0 to 7.

As another measure for loan cost, we use loan spread, calculated as the amount that the borrower pays in basis points over a benchmark rate, the 6-month London Interbank Offering Rate (LIBOR) plus annual fees paid to lenders (All-In-Drawn from the *Dealscan* database). We use a natural logarithm of the spread as a dependent variable in the multivariate analyses. Covenants are drafted at the loan package level and thus, we run regressions at the package level to measure the effect of investment horizon on covenant restrictiveness, but we estimate coefficients at the facility level when the dependent variable is a loan spread.

3.3 Institutional investors' investment horizons

To examine the effect of investment horizon on covenant strictness and loan pricing, we must measure institution investors' investment horizons. Following Gasper et al. (2005), we compute an institutional investor's churn rate, how frequently the institution buys and sells all of its stocks, as follows:

$$CR_{i,t} = \frac{\sum_{j \in Q} | N_{j,i,t} P_{j,t} - N_{j,i,t-1} P_{j,t-1} - N_{j,i,t-1} \Delta P_{j,t} |}{\sum_{j \in Q} \frac{N_{j,i,t} P_{j,t} + N_{j,i,t-1} P_{j,t-1}}{2}} \quad ,$$

where Q is a set of stocks an investor i hold, $P_{j,t}$ is the prices of shares, and $N_{j,i,t}$ is the number of shares of a company j held by institutional investor i at quarter t. Then, for a set of investors, S, for a firm k, we compute the investor turnover of the firm (Turnover) which is the weighted average of total portfolio churn rates of the firm's investors over four quarters:

$$Investor \quad Turnover_k = \sum_{i \in S} W_{k,i,t} \left[\sum_{r=1}^{4} CR_{i,t-r+1} \right] \quad ,$$

where weight of investor i, $w_{k,i,t}$, is the fraction of investor i's ownership to the total institutional investors' ownership at quarter t. Alternatively, we consider the length/duration of institutional investors' holding stock. We measure institutional investor's investment duration separately for each stock in the portfolio and then compute the mean investment duration of all institutions that hold the firm's stock. To determine the investment duration of institution k in stock i in the firm ($Duration_{k,i.t}$), we count the number of quarters that the institution holds stock i between purchase and the last quarter at year t. Then, the investment duration of stock i in year t is the weighted average of the investment duration of all institutions:

$$Duration_{i,t} = \sum W_{k,i,t} * \log(Duration_{k,i,t})] \quad ,$$

where $W_{k,i,t}$ is the fraction of firm i's total institutional ownership held by institution k at the end of year t and $\log(Duration_{k,i,t})$ is a natural logarithm of the number of quarters institution k has held stock i at the end of year t. We use the natural logarithm of investment duration in the regression due to the high skewness of the investors' duration.

3.4 Descriptive statistics

Table 1 presents loan and borrower characteristics for the sample.[7] Panel A of Table 1 shows the mean, standard deviation, median, 25th percentile, and 75th percentile of each variable representing the loan characteristics. The mean (median) covenant intensity index is 2.16 (2.00), and the mean (median) financial covenant score is 1.41 (1.00). The mean loan size is $378 million with a mean maturity of about 45 months. Also, 92% of loans are syndicated, 26% are term loans, and 50% have a performance pricing option. In 25% of the sample, the same lead bank arranged other loans for the same firm over the previous three years.

[Insert Table 1]

Panel B of Table 1 presents descriptive statistics for borrowers. The mean (median) institutional investor's turnover ratio for sample firms is 0.32 (0.31), and the mean (median) institutional investor duration is 13.05 (11.42) quarters. The mean institutional ownership is 50%, and the mean institutional ownership concentration (H-index) is 2.25. The mean log of total assets is 7.09, and the mean market-to-book ratio of assets is 2.75. The mean leverage (a ratio of total debt to total assets) is 0.31, the mean ROA (return on assets) is 0.05, and the mean tangibility (a ratio of property, plant, and equipment to total assets) is 0.56. The dummy variable, Loss, takes a value of 1 if a firm's income before taxes is negative, and 0 otherwise. Firm age is the number of years that the firm appears in *Compustat* database. About 20% of our sample firms have a net loss and the mean age of the firms is about 23 years. To measure the default risk of sample firms, we use Altman Z-score, S&P senior debt rating, and an investment-grade dummy for the rating. Altman Z-score predicts a business failure (Hammer,

[7] For a detailed description of each variable, refer to Appendix B.

1983) is measured as 1.2*(current assets - current liabilities) + 1.4*(retained earnings/total assets) + 3.3*(earnings before interest and taxes/total assets) + 0.6*(market value of equity/book value of total liabilities) + 1.0*(sales/total assets). We use numbers from 1 for a D rating to 21 for a AAA rating for the S&P senior debt rating (Rating). Alternatively, we consider a dummy variable (Investment grade) which is equal to 1 if the S&P senior debt rating is BBB- or higher, and 0 otherwise. The mean Z-score is 3.58 while the mean credit rating is 11.84. Also, 51% of firms have investment-grade ratings.

4. Empirical findings

4.1 Univariate tests

For univariate tests, we split the sample into two groups according to the relative ownership of short-term and long-term institutional investors. Institutional investors' investment is considered long-term or short-term depending on whether the borrowing firm has a higher ownership by long-term institutions than by short-term institutions. We define institutions as short-term (long-term) investors if the weighted average of their churn rates (based on Gaspar et al., 2005) is in the top half overall. The sample is divided into the sub-sample with higher short-term institutional ownership and the sub-sample with higher long-term institutional ownership. Table 2 compares the two sub-samples' loan and firm characteristics. Both mean and median difference tests indicate significant differences in variables representing loan and borrower characteristics. We find that loan deals to firms with higher short-term institutional ownership have a mean (median) covenant intensity index of 2.25 (2.00), whereas loans to firms with higher long-term institutional ownership have a mean (median) index of 1.99 (2.00). The differences are statistically significant at a 1%

confidence level. The median spread on loans to firms with higher short-term institutional ownership is 25 bps higher than that on loans to firms with higher long-term institutional ownership. Loans to firms with higher short-term institutional ownership tend to be smaller and have longer maturities, and they have less previous lending experience. In addition, loans to firms with higher short-term institutional ownership have a higher percentage of performance pricing options and are more likely to be term loans.

We also find that borrowing firms with higher short-term institutional ownership are smaller and have a higher market-to-book ratio than those with long-term shareholders. The firms with short-term-horizon shareholders have higher profitability and less tangibility. Also, those firms tend not to experience net loss, and they tend to be younger. In addition, they tend to have a higher default risk in terms of Z-score, credit rating, and investment-grade rating.

[Insert Table 2]

Table 3 presents correlation coefficients among our main variables.[8] We find that loan spread and covenant restrictiveness are positively related as presented in Panel A. The covenant intensity index is negatively related to loan size and positively related to maturity. In Panel B of Table 3, we show that the covenant intensity index is negatively related to investment duration but positively associated with investor turnover, which indicates that loans to firms with higher short-term institutional ownership are more restrictive. Also, the result indicates that the investor's horizon is negatively associated with loan spread.

[Insert Table 3]

4.2 Multivariate analyses

[8] Firm size is highly correlated with firm age and the investment-grade dummy. However, we confirm that multicollinearity is unlikely to influence regression analyses by checking the variance inflation factor (VIF).

We run multivariate regressions to investigate the effect of investment horizon on loan covenants after controlling for other determinants. We include a variety of loan attributes and firm characteristics as control variables in the analyses. Loan size is an important determinant of covenant restrictiveness and loan pricing. Prior studies document that larger loans are priced at a lower rate (Beatty et al., 2002; Bharath et al., 2007). We compute the loan size by a natural logarithm of the facility amount. The relation between maturity and the cost of debt is not straight forward. Longer maturity loans can be associated with higher costs (Mullineaux and Yi, 2006). Riskier firms want to avoid inefficient liquidation (Guedes and Opler, 1996) and try to lengthen loan maturities because they have difficulties in rolling over debts. In contrast, lenders tend to issue long-term debts to larger and healthier firms, implying a negative relationship between maturity and loan spreads. We also include a dummy variable (Syndication) equal to 1 if the loan is syndicated and 0 otherwise because most loans in our sample are syndicated. Previous lending is an indicator variable equal to 1 when the borrowing firm has a prior lending relationship with the same lender, and 0 otherwise. Prior studies find that a previous lending relationship is an important determinant of bank loan pricing (Bharath et al., 2007; Bharath et al., 2011; Schenone, 2010). The performance pricing option allows pricing to be contingent upon the financial performance of the borrowing firm and is expected to lower the cost of debt (Asquith et al., 2005). We include a dummy variable (Performance Pricing) equal to 1 if the loan contains a performance pricing clause and 0 otherwise. Loan type can also affect both the pricing and non-pricing terms of a loan. We include a term loan dummy equal to 1 if the loan is a term loan and 0 otherwise. Prior studies find that term loans pay lower interest rates than revolver loans because revolver loans are more flexible and can be drawn on demand (Zhang, 2008; Asquith et al., 2005).

In our empirical analyses, we also include firm size, market-to-book ratio, leverage, ROA, tangibility, a loss firm dummy, and the age of a firm to control for firm characteristics. Larger firms tend to face lower cost of debt because they have less information asymmetry and more public information. Market-to-book and leverage ratio are expected to show positive relations with the cost of debt. ROA and tangibility are expected to show negative relations with the cost of debt. We also include firm age because older firms have built a reputation that might lead to a lower cost of debt. Finally, we include year dummies and industry dummies. Industry dummies are based on the 12 Fama and French industries.

Table 4 reports the estimation results for ordered logit models. We run ordered logit regressions because the dependent variable is the covenant intensity index, which has numerical values ranging from 0 to 6. We do not control for default risk in model 1, but we do in models 2, 3, and 4 using Z-score, S&P rating, and a dummy variable for investment-grade rating, respectively. However, the number of observations in models 3 and 4 decreases by more than half because credit ratings are not available for many firms. The coefficients on our main variable, Turnover, are significantly positive in models 1, 2, and 4, which indicates that the weighted average turnover ratio of institutions investing in the firms is positively associated with the number of covenants in bank loans. The coefficient in model 1 indicates that the number of covenants increases by about 0.2 (about 10% of the mean number of covenants) as the weighted average turnover ratio of institutional investors increases by one standard deviation of 0.1. The finding corroborates the univariate test results that banks tend to include more covenants in loans issued to firms with more short-term shareholders.

[Insert Table 4]

The relation between other control variables and the covenant intensity index is in

line with previous empirical studies that have found mixed results. The coefficients on deal size and maturity are significantly positive in all models, which suggests that lenders make loans more restrictive because larger and longer-maturity loans are riskier (for instance, see Chakravarty and Rutherford, 2013). The coefficients on the dummy variable indicating syndicated loan are significant only in models 1 and 2, and the coefficients on previous lending are not significant. The results also indicate that loans with the performance pricing option tend to be more restrictive. We further find that loans to larger borrowers with more tangible assets and a higher market-to-book ratio tend to be less restrictive, as expected. The coefficients on Z-score, credit rating, and investment-grade dummy in models 2, 3, and 4 indicate that loans to borrowers with a higher default risk are more restrictive.

In Table 5, we use the financial covenant score as a dependent variable to investigate the relation between institutional investors' investment horizon and loan restrictiveness. The coefficients on turnover are statistically significant only in models 1 and 2, which indicates that loans to firms with short-term-oriented institutions tend to be more financially restrictive than those to firms with long-term-oriented institutions. Other results in Table 5 are qualitatively similar to those in Table 4.

[Insert Table 5]

In Tables 4 and 5, we have used institutional investors' churn rates (Turnover) to measure their investment horizons. We use short-term (long-term) institutional ownership as the main explanatory variables and the covenant intensity index as the dependent variable in Table 6. In model 1, we first use institutional ownership as a main explanatory variable and find that its coefficient is not significant. The finding is not consistent with Shleifer and Vishny's (1986) argument that large shareholders play a monitoring role in mitigating

managerial agency problems. The insignificant result might stem from the opposite effects of short-term and long-term institutional ownership on loan restrictiveness. The previous literature finds that concentrated investors monitor managers in a cost-effective way (e.g., Holderness, 2003). To test this possibility, we consider institutional ownership concentration (H-index) in model 2. To measure H-index, we first calculate institutional investors' ownership as the number of shares held by all institutional investors divided by the total number of shares outstanding. Then, we calculate the institutional ownership concentration of firm i in year t as $Hindex_{k,t} = 100\sum_{k=1}^{N} S_{k,t}^{2}$, where $S_{k,t}$ is the fraction of firm i's shares held by institution k in year t. We find that the coefficient on the H-index is positive and marginally significant, which indicates that institutional ownership concentration decreases the number of covenants in the loans.

We then divide institutional ownership into short-term and long-term institutional ownership (STIO and LTIO) based on the median of the investors' churn rates and use those variables as the main explanatory variables in models 3, 4, 5, and 6. The coefficients on STIO are significantly positive at a 1% confidence level in all models, which indicates that lenders increase the number of covenants in loans to firms with more short-term institutional ownership. However, we find that the coefficients on LTIO are significantly negative in models 3 and 4, which indicates that long-term institutional ownership tends to lessen loan restrictiveness.

[Insert Table 6]

In untabulated tests, we use financial covenant score as a dependent variable. We find that the coefficients on STIO are significantly positive and the coefficients on LTIO are

insignificant. These suggest that lenders tend to include more financial ratio restrictions on loans to firms with more short-term-oriented institutions.

The results from Table 2 to Table 6 consistently suggest that institutional investors' investment horizon and the number of covenants have a negative relation. These results support our argument that lenders are more likely to seek more restrictive covenants to closely monitor a borrower's future activities when they design debt contracts for firms with more short-term-oriented institutional investors.

We have investigated the effect of institutional investor's investment horizon on the non-pricing terms (covenants) of loans. Another cost of a loan is the loan spread, which is measured as loan rate minus base rate, where the base rate is the monthly average 6-month LIBOR taken directly from the *Dealscan* database. We report the results of multivariate regressions using the natural log of the loan spread as a dependent variable in Table 7. The coefficients on turnover are significantly positive in all models, which indicates that banks charge a higher spread on loans to firms with transient shareholders. Consistent with the results in the previous section, this finding suggests that firms with more short-term oriented shareholders face higher costs when they issue debt.

[Insert Table 7]

We also find that the coefficients on control variables representing loan and firm characteristics are mostly in line with the results found in previous literature (for instance, Bharath et al, 2011; Chakravarty and Rutherford, 2013). The loan spread is negatively related to loan size and positively associated with maturity. The banks tend to charge less spread on loans to firms with previous lending relation due to less information asymmetry and to charge more spread on term loans. Also, the loan spread is negatively related to firm size and

market-to-book ratio and positively associated with leverage. In addition, the loan spread is negatively related to profitability, measured as ROA and tangibility. Finally, banks tend to charge a higher spread on loans to firms with higher default risk measured using Z-score, credit rating, or a dummy variable indicating investment-grade rating.

In untabulated tests, we investigate the relation between loan spread and short-term (long-term) institutional ownership. We find that the loan spread is positively (negatively) related to short-term (long-term) institutional ownership. This finding corroborates the evidence documented in Table 7 that banks tend to charge higher costs when designing loan contracts for firms with more short-term institutional ownership.

4.3 Robustness tests

In the previous section, we have used their past trading behavior (portfolio turnover) over the entire portfolio companies to classify short-term or long-term institutional investors. The classification cannot avoid the possibility that an institution might have different investment horizons across the firms in which it invests. To overcome this limitation, we use the length of institutions' investments (Duration) for each firm as a measure of investment horizon, as developed by Lee (2013). The advantage of using duration is that it identifies institutions that stay in a firm's ownership structure long enough to learn about the firm and have time and opportunity to influence management to increase the long-term value of the firm. We report the results of regressions using duration as the main explanatory variables in Table 8. As the dependent variable, we use covenant intensity index in model 1, financial covenant score in model 2, and loan spread in model 3, respectively. We find that institutional investors' investment horizon is negatively related to the number of covenants or financial ratio restrictions and loan spread despite measuring the investment horizon using duration

instead of turnover. The finding corroborates our previous results that the institutional investor's investment horizon is negatively related to loan cost.

[Insert Table 8]

5. Conclusion

Here we have focused on analyzing the effect of institutional investors' investment horizons on the non-pricing and pricing terms of bank loans. We conjecture that banks are more likely to include more covenants and charge higher spreads when making loans to firms with more short-term-oriented institutions because they expect higher agency costs between shareholders and lenders. Consistent with this conjecture, our empirical results confirm that the number of covenants and the loan spread increase in the presence of institutional investors with a short-term investment horizon.

We contribute to the extant literature about the effect of institutional investors' investment horizon on corporate policies and the cost of capital. Previous literature documents that the heterogeneity of institutional investors affects corporate policies such as R&D investment, payout policy, M&A, and the cost of equity. We add to this literature by finding the effect of investors' horizons on the non-pricing and pricing terms of bank loans. Our empirical evidence confirms that the heterogeneity of institutional investors matters for capital providers as well as firm managers.

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Appendix A
Explanation of loan covenants

1. Types of Financial Covenant Restrictions

Covenant Type	Description
Max. Debt to EBITDA	Debt to EBITDA
Min. Interest Coverage	EBITDA to interest expense
Min. Fixed Charge Coverage	EBITDA to interest expense, principal payment, income tax, and dividend on preferred stock
Max. Leverage Ratio	Debt divided by capitalization (or equity).
Max. Capex	Capital expenditures
Max. Senior Debt to EBITDA	Senior debt to EBITDA
Min. EBITDA	Earnings before interest, taxes, depreciation, and amortization
Min. Current Ratio	Current assets to current liabilities
Max. Debt to Tangible Net Worth	Debt to tangible net worth
Min. Debt Service Coverage	EBITDA to interest expense and principal payment
Min. Quick Ratio	Current assets minus inventory to current liabilities
Min. Cash Interest Coverage	Cash flows from operating activities to interest expense
Max. Debt to Equity	Debt to equity
Max. Senior Leverage	Debt divided by capitalization (or equity).
Max. Loan to Value	Loan's size to the value of the property that secures the loan
Other Ratio	Other

2. Six Covenants for Covenant Intensity Index

Covenant Type	Description
Asset Sales Sweep	Principal must be repaid from excess asset sales
Debt Issue Sweep	Principal must be repaid from excess debt issuance
Equity Issue Sweep	Principal must be repaid from excess equity issuance
Collateral	Loan is secured
Dividend Restriction	Restricts dividend to be less than a given percent of net income
Financial Covenants	More than 2 financial covenants

Appendix B
Variable description

Variable	Descriptions
Dependent Variable:	
Covenant Intensity Index	The sum of six covenant indicators (collateral, dividend restriction, more than two financial covenants, asset sales sweep, equity issuance sweep, and debt issuance sweep) available in the *Dealscan* database (Bradeley and Roberts, 2004))
Financial Covenant Score	Number of financial covenants in a loan contract
Loan Spread	Loan rate minus base rate, where the base rate is the monthly average 6-month LIBOR taken directly from the *Dealscan* database
Institutional investors' characteristics:	
Turnover	Weighted average of the total portfolio churn rates of a firm's institutional investors
Duration	Weighted average of the length of investment of institutional investors in a firm. Duration is computed as $Duration_{i,t} = \Sigma[W_{k,i,t}*\log(Duration_{k,i,t})]$, where $W_{k,i,t}$ is the fraction of firm i's total institutional ownership by institution k at the end of year t. Investment duration of institution k in stock i is the number of quarters that institution k has held the stock at the end of year t
Institutional Ownership	Total institutional ownership of the firm
STIO	Institutional ownership by short-term investors whose turnover is in the top half overall
LTIO	Institutional ownership by long-term investors whose turnover is in the bottom half overall
H-index	Herfindahl index of institutional ownership. H-index of firm i is defined as $H\text{-}index_{i,t}= 100*\Sigma S_{i,t}^2$, where $S_{i,t}$ is the fraction of firm i's shares held by investor k in year t.
Loan characteristics:	
Loan Size	The log of loan amount at the facility (deal) level
Deal Size	The log of deal amount at the package level
Maturity	The log of loan maturity in months. Average maturity is used at the Package level
Secured Dummy	1 if loan is secured and 0 otherwise
Syndication Dummy	1 if loan is syndicated and 0 otherwise
Previous Lending	1 if over the previous three years the same lead bank arranged other loans for the same firm, and 0 otherwise
Performance Pricing	1 if the loan has performance pricing and 0 otherwise
Term Loan Dummy	1 for term loan and 0 for other types of loans

Firm characteristics:	
Firm Size	The log of total assets
ROA	Return on assets
Leverage	Total debt divided by total assets
Market-to-Book	Borrower's market-to-book ratio of assets
Tangibility	Property, plant, and equipment scaled by total assets
Loss Dummy	1 if a firms has a loss, and 0 otherwise
Z-Score	Altman's Z-score computed as 1.2*(current assets - current liabilities) + 1.4*(retained earnings/total assets) + 3.3*(earnings before interest and taxes/total assets) + 0.6*(market value of equity/book value of total liabilities) + 1.0*(sales/total assets)
Rating	S&P's long-term domestic issuer credit rating in the range of 1-21 where 21 represents AAA and 1 stands for D
Investment Grade	1 if S&P senior debt rating is BBB- or above and 0 otherwise

TABLE 1
Descriptive statistics

This table presents distributional statistics for loan and firm characteristics. Panel A presents means, medians, standard deviations, 25th percentile, and 75th percentiles of loan characteristics. Panel B shows summary statistics of firm characteristics. The sample contains 14,443 loans for the period between 1990 and 2010. All variables are defined in Appendix B.

Panel A: Loan characteristics

Variable	Mean	Std. Dev.	Median	P25	P75
Covenant Intensity Index	2.16	1.78	2.00	1.00	3.00
Financial Covenant Score	1.41	1.34	1.00	0.00	2.00
Loan Spread (bps)	180.00	137.00	150.00	74.00	250.00
Loan Size (m$)	378.00	910.00	150.00	48.50	387.00
Maturity	44.79	22.93	48.00	25.00	60.00
Syndication Flag	0.92	0.27	1.00	1.00	1.00
Term Loan	0.26	0.44	0.00	0.00	1.00
Performance Pricing	0.50	0.50	0.00	0.00	1.00
Previous Lending	0.25	0.43	0.00	0.00	0.00

Panel B: Borrower characteristics

Variable	Mean	Std. Dev.	Median	P25	P75
Turnover	0.32	0.10	0.31	0.26	0.36
Duration	13.05	8.71	11.42	6.54	17.74
Institutional Ownership	0.50	0.25	0.55	0.34	0.73
H-index	2.25	2.15	1.77	0.87	2.96
Firm Size	7.09	1.81	7.04	5.79	8.30
Market-to-Book	2.75	3.65	2.10	1.32	3.47
Leverage	0.31	0.20	0.29	0.17	0.42
ROA	0.05	0.11	0.05	0.01	0.09
Tangibility	0.56	0.37	0.49	0.26	0.80
Loss Dummy	0.20	0.40	0.00	0.00	0.00
Firm Age	22.76	16.51	17.00	9.00	36.00
Z-Score	3.58	2.94	2.94	1.89	4.45
Rating	11.84	3.38	12.00	9.00	14.00
Investment	0.51	0.50	1.00	0.00	1.00

Table 2

Comparison of samples with higher short-term or long-term institutions' ownership

This table compares both loan and firm characteristics between two sub-samples according to the relative ownership of short-term versus long-term institutional investors. Institutional investors' investment is considered long-term or short-term depending on whether the borrowing firm has a higher ownership by long-term institutions than by short-term institutions. We define institutions as short-term (long-term) investors if the weighted average of their churn rates (based on Gaspar et al., 2005) is in the top half overall. The sample contains 14,443 observations between 1990 and 2010. All variables are defined in Appendix B.

	Sample with higher ST institutional ownership		Sample with higher LT institutional ownership		Mean Diff.	Median Diff.
Variable	Mean	Median	Mean	Median	t-stat	z-stat
Covenant Intensity Index	2.25	2.00	1.99	2.00	6.16***	6.51***
Financial Covenant Score	1.48	2.00	1.28	1.00	7.39***	7.33***
Loan Spread (bps)	185.91	175.00	177.10	150.00	3.37***	1.97**
Loan Size (m$)	292.00	125.00	417.00	130.00	9.01***	1.33
Maturity	45.42	48.00	42.44	44.00	7.53***	7.57***
Syndication Flag	0.91	1.00	0.91	1.00	0.59	0.59
Term Loan	0.27	0.00	0.23	0.00	5.45***	5.44***
Previous lending	0.22	0.00	0.25	0.00	3.63***	3.63***
Performance Pricing	0.51	1.00	0.48	0.00	4.22***	4.22***
Duration	10.97	9.48	16.24	14.79	36.34***	33.01***
Institutional Ownership	0.55	0.58	0.46	0.46	22.68***	21.42***
Firm Size	6.87	6.85	6.95	6.86	2.47**	1.15
Market-to-book	2.92	2.22	2.52	1.94	6.39***	11.29***
Leverage	0.30	0.29	0.30	0.28	0.11	0.09
ROA	0.05	0.06	0.03	0.05	11.00***	11.72***
Tangibility	0.53	0.45	0.58	0.52	7.07***	9.28***
Loss	0.18	0.00	0.24	0.00	7.27***	7.26***
Firm Age	20.07	14.00	26.73	22.00	23.59***	24.28***
Z-score	3.70	2.96	3.58	32.94	7.96***	4.50***
Rating	11.18	11.00	12.88	13.00	20.96***	19.18***
Investment	0.43	0.00	0.64	1.00	17.43***	17.07***

TABLE 3
Correlation Table

This table shows the correlation matrix of the variables. Panel A presents correlation coefficients between dependent variables and other loan-specific variables. Panel B presents coefficients between dependent variables and firm-specific variables. All variables are defined in Appendix A. Significance at 10%, 5%, and 1% levels is indicated by *, **, ***, respectively.

Panel A: Correlations matrix for loan variables

Variables		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Loan Spread	(1)	1.00								
Covenant Intensity Index	(2)	0.48***	1.00							
Financial Covenant Score	(3)	0.31***	0.61***	1.00						
Loan Size	(4)	-0.47***	-0.07***	-0.12***	1.00					
Maturity	(5)	0.13***	0.24***	0.19***	0.11***	1.00				
Syndication Flag	(6)	-0.13***	0.17***	0.12***	0.44***	0.18***	1.00			
Previous	(7)	-0.20***	-0.06***	-0.09***	0.24***	-0.05***	0.10***	1.00		
Performance Pricing	(8)	-0.06***	0.12***	0.46***	0.18***	0.19***	0.22***	0.01	1.00	
Term Loan	(9)	0.32***	0.28***	0.14***	-0.15***	0.29***	-0.01	-0.07***	-0.11***	1.00

Panel B: Correlations matrix for dependent and firm-specific variables

Variables		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
Loan Spread	(1)	1.00																
Covenant Intensity Index	(2)	0.48***	1.00															
Financial Covenant Score	(3)	0.31***	0.61***	1.00														
Duration	(4)	-0.37***	-0.18***	-0.16***	1.00													
Turnover	(5)	0.16***	0.05***	0.06***	-0.42***	1.00												
H-index	(6)	0.12***	0.09***	0.08***	0.03***	-0.08***	1.00											
Inst Own	(7)	-0.09***	0.05***	0.08***	0.17***	-0.10***	0.59***	1.00										
Firm Size	(8)	-0.50***	-0.14***	-0.24***	0.43***	-0.18***	0.02*	0.34***	1.00									
Market-to-Book	(9)	-0.18***	-0.07***	-0.05***	0.02***	0.04***	-0.07***	0.04***	0.08***	1.00								
Leverage	(10)	0.20***	0.25***	0.07***	-0.07***	0.05***	0.06***	-0.08***	0.13***	-0.12***	1.00							
ROA	(11)	-0.25***	-0.10***	-0.01	0.03***	-0.02*	-0.07***	0.10***	0.09***	0.17***	-0.16***	1.00						
Tangibility	(12)	-0.04***	-0.06***	-0.06***	0.11***	-0.03***	-0.03***	-0.09***	0.07***	-0.04***	0.12***	-0.05***	1.00					
Loss Dummy	(13)	0.29***	0.11***	0.03***	-0.10***	0.05***	0.07***	-0.12***	-0.17***	-0.12***	0.13***	-0.68***	0.05***	1.00				
Firm Age	(14)	-0.40***	-0.17***	-0.19***	0.51***	-0.19***	-0.06***	0.11***	0.50***	0.02**	-0.04***	0.04***	0.09***	-0.10***	1.00			
Z-Score	(15)	-0.14***	-015***	-0.05***	-0.04***	0.03***	-0.07***	0.01	-0.11***	0.29***	-0.37***	0.36***	-0.14***	-0.21***	-0.07***	1.00		
Rating	(16)	-0.81***	-0.57***	-0.44***	0.49***	-0.27***	-0.31***	-0.22***	0.60***	0.24***	-0.46***	0.32***	-0.01	-0.34***	0.49***	0.43***	1.00	
Investment	(17)	-0.72***	-0.60***	-0.42***	0.42***	-0.24***	-0.23***	-0.16***	0.53***	0.15***	-0.42***	0.25***	0.04***	-0.27***	0.45***	0.35***	0.84***	1

TABLE 4
Investor turnover and covenant intensity index

This table reports results from ordered logit regressions examining the effect of institutional investors' ownership turnover on covenant tightness. The dependent variable measures the intensity of covenants in the loan contracts (Covenant Intensity Index) by getting the sum of six covenant indicators in a bank loan contract from the *Dealscan* database; collateral, dividend restriction, asset sales sweep, equity issuance sweep, debt issuance sweep, and more than two financial covenants. Standard errors are robust to heteroscedasticity and clustered at the firm level. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. All variables are defined in Appendix B.

	Dependent var. = Covenant Intensity Index			
VARIABLES	(1)	(2)	(3)	(4)
Turnover	1.92***	2.14***	0.92	1.67***
	(7.09)	(7.47)	(1.61)	(2.82)
Deal Size	0.35***	0.37***	0.43***	0.36***
	(9.46)	(9.54)	(7.12)	(6.19)
Maturity	0.33***	0.36***	0.19**	0.17**
	(7.37)	(7.67)	(2.35)	(2.10)
Syndication Dummy	0.45***	0.45***	0.39	0.23
	(5.89)	(5.52)	(1.47)	(0.91)
Previous Lending	-0.05	-0.06	-0.11	-0.14*
	(-0.70)	(-0.93)	(-1.39)	(-1.70)
Performance Pricing	0.32***	0.31***	0.32***	0.38***
	(5.30)	(5.03)	(3.25)	(4.01)
Firm Size	-0.65***	-0.69***	-0.46***	-0.52***
	(-18.98)	(-19.14)	(-7.38)	(-8.60)
Market-to-Book	-0.03***	-0.02**	-0.01	-0.03***
	(-3.61)	(-2.26)	(-1.31)	(-2.76)
Leverage	2.05***	1.81***	0.54**	0.91***
	(12.53)	(9.00)	(2.06)	(3.65)
ROA	-0.10	0.50*	0.23	-0.46
	(-0.35)	(1.73)	(0.45)	(-0.88)
Tangibility	-0.50***	-0.68***	-0.54***	-0.49***
	(-5.04)	(-6.80)	(-3.79)	(-3.55)
Loss Dummy	0.34***	0.34***	-0.02	0.12
	(4.00)	(4.01)	(-0.14)	(1.01)
Firm Age	-0.01***	-0.01***	-0.01	-0.01*
	(-5.48)	(-5.28)	(-1.47)	(-1.68)
Z-Score		-0.06***		
		(-5.52)		
Rating			-0.43***	
			(-18.65)	
Investment Grade				-2.26***
				(-18.02)
Year dummy	Yes	Yes	Yes	Yes
Ind. dummy	Yes	Yes	Yes	Yes
Constant	Yes	Yes	Yes	Yes
Observations	8,062	7,508	3,557	3,557
R-squared	0.10	0.10	0.17	0.17

TABLE 5
Investor turnover and financial covenant

This table reports results from ordered logit regressions examining the effect of institutional investors' ownership turnover on covenant tightness. The dependent variable measures the tightness of financial covenants in the loan contracts (Financial Covenant Score) by getting the sum of financial covenant indicators in a bank loan contract. Standard errors are robust to heteroscedasticity and clustered at the firm level. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. All variables are defined in Appendix B.

	Dependent var. = Financial Covenant Score			
VARIABLES	(1)	(2)	(3)	(4)
Turnover	1.03***	1.13***	-0.05	0.66
	(3.48)	(3.65)	(-0.09)	(1.04)
Deal Size	0.14***	0.12***	0.34***	0.30***
	(3.25)	(2.63)	(5.95)	(5.35)
Maturity	0.27***	0.28***	0.29***	0.32***
	(6.70)	(6.63)	(4.64)	(5.16)
Syndication Dummy	0.01	0.01	0.08	-0.03
	(0.06)	(0.09)	(0.30)	(-0.14)
Previous Lending	-0.06	-0.04	-0.03	-0.04
	(-1.06)	(-0.69)	(-0.41)	(-0.57)
Performance Pricing	2.18***	2.14***	2.75***	2.78***
	(32.06)	(30.09)	(23.02)	(23.80)
Firm Size	-0.52***	-0.52***	-0.48***	-0.55***
	(-13.93)	(-13.44)	(-8.33)	(-9.77)
Market-to-Book	-0.02***	-0.02*	-0.01	-0.02**
	(-2.96)	(-1.93)	(-1.01)	(-2.06)
Leverage	0.87***	0.69***	0.48*	0.81***
	(5.23)	(3.44)	(1.73)	(2.94)
ROA	0.83***	1.40***	0.34	-0.33
	(3.08)	(4.68)	(0.66)	(-0.64)
Tangibility	-0.40***	-0.50***	-0.53***	-0.53***
	(-4.57)	(-5.35)	(-3.84)	(-3.86)
Loss Dummy	0.09	0.07	-0.08	0.01
	(1.11)	(0.83)	(-0.66)	(0.07)
Firm Age	-0.00**	-0.01***	0.00	-0.00
	(-2.28)	(-2.66)	(0.51)	(-0.26)
Z-Score		-0.05***		
		(-4.07)		
Rating			-0.24***	
			(-10.84)	
Investment Grade				-0.95***
				(-9.27)
Year dummy	Yes	Yes	Yes	Yes
Ind. dummy	Yes	Yes	Yes	Yes
Constant	Yes	Yes	Yes	Yes
Observations	10,421	9,617	5,066	5,066
R-squared	0.19	0.19	0.25	0.25.

TABLE 6
Short-term vs. long-term institutional ownership and covenants

This table reports results from ordered logit regressions examining the effect of institutional investors' ownership turnover by short-term and long-term investors on covenant tightness. The dependent variable in Panel A measures the intensity of covenants in the loan contracts (Covenant Intensity Index) which is the sum of six covenant indicators in a bank loan contract in the *Dealscan database*; collateral, dividend restriction, asset sales sweep, equity issuance sweep, debt issuance sweep, and more than two financial covenants. In Panel B, the dependent variable measures the tightness of financial covenants in the loan contracts (Financial Covenant Score) by getting the sum of financial covenant indicators in a bank loan contract. Standard errors are robust to heteroscedasticity and clustered at the firm level. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. All variables are defined in Appendix B.

	Dependent var. = Covenant Intensity Index					
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Institutional ownership	0.02					
	(0.16)					
H-index		0.03*				
		(1.87)				
STIO			1.46**	1.50***	1.03***	1.17***
			(8.66)	(8.49)	(4.26)	(4.92)
LTIO			-0.84***	-1.01***	-0.15	-0.52
			(-3.48)	(-4.05)	(-0.44)	(-1.56)
Deal Size	-0.25***	0.38***	0.35**	0.37***	0.42***	0.35***
	(-8.62)	(9.80)	(9.59)	(9.61)	(6.97)	(6.00)
Maturity	0.56***	0.32***	0.31***	0.34***	0.17**	0.15*
	(11.51)	(7.40)	(6.98)	(7.37)	(2.15)	(1.90)
Syndication Dummy	0.52***	0.40***	0.38***	0.38***	0.36	0.23
	(6.53)	(5.00)	(4.99)	(4.65)	(1.38)	(0.89)
Previous Lending	-0.15**	-0.06	-0.05	-0.06	-0.13	-0.15*
	(-2.15)	(-0.94)	(-0.70)	(-0.88)	(-1.53)	(-1.83)
Performance Pricing	0.33***	0.30***	0.30***	0.29***	0.31***	0.37***
	(5.34)	(4.75)	(4.89)	(4.55)	(3.14)	(3.89)
Firm Size		-0.70***	-0.70***	-0.73***	-0.46***	-0.52***
		(-19.50)	(-19.20)	(-19.04)	(-7.45)	(-8.65)
Market-to-Book	-0.03***	-0.02*	-0.03***	-0.02**	-0.01	-0.03***
	(-2.79)	(-1.86)	(-3.68)	(-2.22)	(-1.31)	(-2.72)
Leverage	2.05***	1.84***	2.17***	1.86***	0.76***	1.12***
	(10.38)	(9.01)	(12.85)	(9.08)	(2.78)	(4.29)
ROA	0.33	0.54*	-0.29	0.37	0.11	-0.56
	(1.18)	(1.87)	(-1.05)	(1.29)	(0.22)	(-1.10)
Tangibility	-0.63***	-0.68***	-0.44***	-0.63***	-0.49***	-0.44***
	(-6.16)	(-6.80)	(-4.48)	(-6.25)	(-3.51)	(-3.18)
Loss Dummy	0.36***	0.35***	0.33***	0.35***	-0.01	0.14
	(4.37)	(4.05)	(3.97)	(4.10)	(-0.05)	(1.15)
Firm Age	-0.03***	-0.02***	-0.01***	-0.01***	-0.01	-0.01
	(-9.47)	(-5.55)	(-4.90)	(-4.56)	(-1.46)	(-1.49)
Z-Score	-0.04***	-0.06***		-0.06***		
	(-3.36)	(-5.32)		(-6.00)		
Rating					-0.43***	
					(-18.65)	
Investment Grade						-2.25***
						(-18.04)

Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
Ind. dummy	Yes	Yes	Yes	Yes	Yes	Yes
Constant	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7,508	7,508	8,062	7,508	3,557	3,557
R-Squared	0.07	0.10	0.10	0.10	0.17	0.17

TABLE 7
Investor turnover and loan spread

This table reports results from OLS regressions examining the effect of institutional investors' ownership turnover on loan pricing. The dependent variable is loan spread. Standard errors are robust to heteroscedasticity and clustered at the firm level. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. All variables are defined in Appendix B.

	Dependent var. = Loan Spread			
VARIABLES	(1)	(2)	(3)	(4)
Turnover	0.87***	0.93***	0.36***	0.86***
	(9.24)	(9.25)	(3.21)	(6.01)
Loan Size	-0.11***	-0.10***	-0.13***	-0.15***
	(-11.36)	(-10.04)	(-8.23)	(-9.62)
Maturity	0.08***	0.07***	0.07***	0.07***
	(6.62)	(5.57)	(5.39)	(5.18)
Syndication Dummy	-0.03	-0.03	0.09*	0.01
	(-0.93)	(-1.11)	(1.68)	(0.12)
Previous Lending	-0.07***	-0.07***	-0.08***	-0.09***
	(-3.85)	(-3.50)	(-3.98)	(-4.34)
Performance Pricing	-0.00	-0.01	0.01	0.09***
	(-0.24)	(-0.43)	(0.67)	(3.99)
Term Loan Dummy	0.32***	0.32***	0.31***	0.35***
	(21.11)	(21.40)	(15.25)	(16.31)
Firm Size	-0.14***	-0.16***	0.04**	-0.04**
	(-13.27)	(-13.99)	(2.12)	(-2.28)
Market-to-Book	-0.02***	-0.01***	-0.00*	-0.01***
	(-5.92)	(-4.02)	(-1.76)	(-4.92)
Leverage	0.93***	0.77***	0.26***	0.52***
	(17.73)	(12.44)	(3.08)	(6.65)
ROA	-0.46***	-0.12	-0.27*	-0.82***
	(-4.33)	(-1.06)	(-1.74)	(-4.36)
Tangibility	-0.16***	-0.18***	-0.15***	-0.15***
	(-5.21)	(-5.46)	(-4.09)	(-3.73)
Loss Dummy	0.16***	0.18***	-0.02	0.05
	(6.06)	(6.80)	(-0.57)	(1.49)
Firm Age	-0.01***	-0.01***	-0.00	-0.00***
	(-7.57)	(-7.43)	(-0.83)	(-2.68)
Z-Score		-0.03***		
		(-7.59)		
Rating			-0.18***	
			(-23.08)	
Investment Grade				-0.76***
				(-20.98)
Constant	6.90***	7.17***	8.32***	7.24***
	(44.47)	(45.61)	(32.93)	(27.46)
Observations	14,444	13,398	7,179	7,179
R-squared	0.59	0.60	0.78	0.72

TABLE 8
Institutional investors' duration and the cost of debt

This table presents the relationship between institutional investors' duration on the tightness of covenants and loan pricing. The dependent variables are Covenant Intensity Index, Financial Covenant Score, and Loan Spread. Standard errors are robust to heteroscedasticity and clustered at the firm level. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. All variables are defined in Appendix B.

	Models		
VARIABLES	1	2	3
	Covenant Intensity Index	Financial Covenant Score	Loan Spread
Duration	-0.33***	-0.19***	-0.15***
	(-7.88)	(-4.72)	(-11.48)
Loan Size	0.37***	0.13***	-0.10***
	(9.52)	(2.85)	(-10.09)
Maturity	0.32***	0.20***	0.07***
	(7.30)	(5.29)	(5.94)
Syndication Dummy	0.42***	0.02	-0.05*
	(5.22)	(0.14)	(-1.95)
Previous Lending	-0.02	-0.02	-0.05**
	(-0.31)	(-0.42)	(-2.57)
Performance Pricing	0.33***	2.15***	-0.01
	(5.31)	(30.28)	(-0.49)
Term Loan Dummy			0.31***
			(21.18)
Firm Size	-0.66***	-0.52***	-0.15***
	(-18.29)	(-13.25)	(-13.07)
Market-to-Book	-0.02**	-0.02**	-0.01***
	(-2.23)	(-1.97)	(-3.82)
Leverage	1.76***	0.69***	0.74***
	(8.61)	(3.42)	(11.84)
ROA	0.46	1.37***	-0.16
	(1.58)	(4.64)	(-1.44)
Tangibility	-0.59***	-0.45***	-0.14***
	(-5.78)	(-4.68)	(-4.19)
Loss Dummy	0.33***	0.06	0.17***
	(3.77)	(0.69)	(6.47)
Firm Age	-0.01***	-0.00	-0.01***
	(-3.49)	(-1.35)	(-5.15)
Z-Score	-0.06***	-0.05***	-0.03***
	(-5.52)	(-3.94)	(-7.37)
Year dummy	Yes	Yes	Yes
	Yes	Yes	Yes
Constant	Yes	Yes	7.64***
			(50.38)
Observations	7508	9,617	13,397
R-squared	0.10	0.19	0.61