Insiders Ownership Concentration and Firms Cost of Debt: Evidence from Bank Loans

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Abstract This paper investigates the relationship between insiders ownership concentration and firms cost of borrowing. Building on asset substitution and market for corporate control theories, we predict and show empirical evidence of a non-monotonic relationship, with cost of bank loans increasing and then decreasing with the level of ownership concentration. Leverage and anti-takeover provisions are found to moderate the relationship in a coherent fashion with the proposed theoretical arguments. Finally, we show that – while more costly – financial covenants are more effective than performance pricing clauses in reducing the sensitivity of loan prices to the ownership structure of the borrower.

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EFM classification: 110, 150, 210

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1 Introduction

Since Jensen and Meckling published in 1976 their work on agency costs and ownership structure, the relevance and impact of conflicts of interest between firms insiders on the one hand and other firms stakeholders on the other hand has been one of the most investigated topic in the field of corporate finance, as Shleifer and Vishny (1997) survey on corporate governance well illustrates. While empirical studies have mainly focused on the conflict of interest between insiders and minority shareholders (e.g. Gompers et al. 2003; Cremers and Nair 2005) conflicts exist as well between insiders and creditors. Empirical studies on this conflict have generally set their focus on wealth changes associated to certain events (e.g. Warga and Welch 2003; Billett et al. 2004) or investigated the impact of corporate governance mechanisms on the value of corporate bonds (e.g. Klock et al. 2005; Cremers et al. 2007).

Several previous studies on conflicts of interest between creditors and managers build on arguments specifically developed for the conflict of interest between managers and minority shareholders; however, as noted by Cremers et al. (2007), non-controlling shareholders and creditors interests are not necessarily always aligned. Arguments based on the risk of asset substitution (Jensen and Meckling 1976) and tunneling (Johnson et al. 2000) see minority shareholders and creditors interests quite aligned, and predict an increase in conflicts of interest when the separation between ownership and control increase. Market for corporate control (e.g. Stulz 1988) theories depict instead a different situation for the two classes of stakeholders: while an increase in insiders ownership can be beneficial for minority shareholders, it would harm creditors.

The two arguments thus predict opposite relationships between insiders ownership concentration and the strength of conflict of interests between insiders and creditors. As market for corporate control effects are more influential when control is disputable (i.e. when ownership concentration is low) we predict a non-monotonic relationship between the level of ownership by insiders and the relevance of their conflicts with creditors, and thus with cost of debt. We empirically investigate this relationship by studying how the level of ownership by firms insiders affect the cost of bank loans. We use a large sample of bank loans issued between 1996 and 2010 and, controlling for several borrower, loans, lenders, market and country law characteristics, we find that at 0.1% statistical confidence level the relationship between insiders ownership and firms cost of borrowing is inverse U-shaped, with the cost of debt increasing (decreasing) with insiders ownership when the latter is low (high). The turning point is found for a level of ownership by insiders of 43.1% – 49.3% (depending on the model), as control

becomes no longer disputable. Beside statistical significance, the effect of insiders ownership on firms cost of borrowing is economically sizable: ceteris paribus, a firm where insiders own 43% – 49.3% of equity pays on average 12.5% – 20% (or 20.5 – 32.5 bps) higher spreads on bank loans than a widely held firm and 21.5 – 22% (34 – 35.5 bps) higher than a firm where insiders hold all equity. The functional form is robust to the use of different empirical strategies to test it, such as using a piecewise linear regression or splitting our sample by levels of insiders ownership. Estimations accounting for potential panel unobserved effects and endogeneity in the ownership structure also confirm our main result. We provide further evidence of the role played by market for corporate control by studying how governance provisions protecting insiders from external challenge moderate the phenomenon. We find that the positive relationship between insiders ownership and loans spreads is not in place for borrowers characterized by multiple anti-takeover provisions.

We then turn our attention toward how the relationship between insiders ownership concentration and cost of borrowing is moderated by capital structure. Theory predicts that leverage reduces the sensitivity of the cost of debt to the ownership structure, as lower free cash flow reduce the discretionary use of resources by insiders (Jensen 1986). Moreover, high leverage reduce the role of market for corporate control, as creditors can gain more control on the firm (Burkart et al. 1997) and the likelihood of a takeover is reduced (Novaes 2002). Indeed, we find that the correlation between cost of debt and the separation of ownership and control is strongly reduced for high levels of leverage, and especially so for low levels of insiders ownership. The negative relationship found for high levels of ownership concentration is instead still in place, although mitigated.

Finally, we study how contingent clauses of loans contracts such as financial covenants and performance pricing moderate the relationship between ownership concentration and cost of debt. While both class of clauses as predictable reduce the sensitivity of debt price to insiders ownership, the former appear to be significantly more effective in doing so.

The determinants of bank loans pricing, contract and syndicate structure have recently received strong attention (e.g. Carey and Nini 2007; Sufi 2007; Gatev and Strahan 2009; Ivashina 2009; Mattes et al. 2013). In particular, few papers have investigated the relationship between firms ownership and the cost of bank loans. (e.g. Lin et al. 2011, 2012; Saunders and Steffen 2011; Roberts and Yuan 2010).

We add to the findings of previous literature in several ways: first, we document that the relationship between the separation of ownership and control - as measured by the share held by firms' insiders - and the cost of bank loans is *non-monotonic*. Few studies so far have assessed theoretically (e.g. Stulz 1988) and empirically (e.g. Morck et al. 1988; Wright et al. 1996) a potentially non-linear effect of

ownership concentration on operative performances or equity value. To the best of our knowledge, this is the first study to show empirical evidence of a non-monotonic effect of insiders ownership on loans pricing.

Second, we focus on insiders ownership concentration rather than different proxies for separation of ownership and control used in previous studies. Lin et al. (2011, 2012) use the difference between control rights and cash flow rights. This measure has long been used in the literature (e.g. Claessens et al. 2002; Faccio and Lang 2001); however, as noted by the authors it identifies a separation of ownership and control only in presence of "pyramidal structures, dual-class shares, and multiple control chains" (Lin et al. 2011; p. 5). We focus instead our attention on *insiders ownership concentration* (Grossman and Hart 1986; Hart and Moore 1990).[1] This variable allows us to consider the effect of the separation between ownership and control simply arising when insiders own less than 100% of firm's equity. Moreover, while it does not allow to consider the effect of particular control structures as the wedge between control and cash flow right does, it has the great advantage of being an information easily available for a large number of firms, allowing to study its effect on a broader sample.[2]

Finally, we contribute to the literature by studying how the influence of insiders ownership concentration on cost of bank loans is moderated by the capital structure of the firm and by the covenants and performance pricing clauses banks can include in loan contracts to protect themselves.

The rest of the paper proceeds as follow: in Section 2 we describe the dataset used. In Section 3 we discuss how theory predicts a non-monotonic relationship between insiders ownership concentration and the cost of debt, an present supporting empirical results. Section 4 reports additional empirical evidence on the role played by the market for corporate control in shaping the relationship between insiders ownership and cost of debt. In Section 5 we discuss the role played by borrowers leverage in moderating this relationship, and show related empirical results. Section 6 investigates to what extent

[1] Studies focusing on conflicts of interest between shareholders and managers often model these two entities as separated even when there is a shareholder with a relevant share of control rights (e.g. Shleifer and Vishny 1986). Given our goal to study conflicts of interests with creditors, we follow here the approach of Grossman and Hart (1986) and Hart and Moore (1990) among others to consider one of the actor involved to be a manager-owner, who benefit from controlling the firm while providing less than 100% of the capital. Incidentally, the same definition of manager-owner was assumed also by Jensen and Meckling (1976), even though their most interesting predictions relate to the case where the amount of capital provided by the manager tends toward zero. The crucial difference is that with our approach control under existing management is not exogenous, but exist exactly because managers have enough control rights to govern the firm. This in turns gives greater relevance to market for corporate control arguments (e.g. Manne 1965).

[2] In our most parsimonious model, we are able to include 6,423 distinct borrowers from 65 countries between 1996 and March 2010; Lin et al. (2011) study includes 3,468 borrowers from 22 countries between 1996 and 2008.

loans contract clauses are effective in reducing the relevance of potential conflicts of interest between insiders and creditors. Section 7 concludes.

2 Data

The two main datasets used in this study are the SDC Dealscan database, where we get information on bank loans, and the Worldscope database, where we get firm level data.

Worldscope dataset initially includes 67,526 firms, corresponding to 979,746 yearly observations between 1995 and 2009. Dealscan dataset includes, up to March 2010, 41,476 distinct firms codes associated to 106,613 loans packages[3] divided into 154,488 facilities. Following Ivashina (2009), we keep only one facility per package, using the biggest one starting at loan initiations. We decide to not use data before August 1996 as they are largely incomplete because they have been collected retroactively (e.g. Ivashina 2009). The portion of Dealscan we consider includes 35,261 borrowing firms and 83,551 deals.

Since Dealscan database appears to be more affected by duplicate identification codes for each firm, we use the Worldscope dataset as master in merging the two, meaning that multiple Dealscan identification codes may be associated to a single Worldscope id.

We start building our dataset cleaning Worldscope for: a) duplicates firms (by name, country and sector) and ADRs; b) observations where no variable is non-missing; c) observation where the year or the firm sector is missing. We are then left with 62,648 unique firms with 939,720 yearly observations between 1995 and 2009. In the spirit of Faccio et al. (2001), we drop observations characterized by suspicious values, such as negative assets or liabilities, or when total assets is not equal to the sum of total equity and liabilities (with an acceptable margin of error of 5%). After this check, we are left with 60,399 firms (432,594 observations) where at least sector, country and total assets of the firm are available. To further limit the potential for suspicious data to affect our results , we winsorize all Worldscope continuous variables at 1% level for each tail.[4]

We then merge Worldscope with Dealscan using firms name, country and sector (at 2-digit SIC code level); we find at least one correspondence for 15,623 Worldscope unique firms. We are further able to hand-match 1,195 entities, bringing the total number of Worldscope firms with a match in Dealscan to 16,818. The number of deals where we can identify the borrowing firm in Worldscope is then 34,648 –

[3] As usually done in the literature on syndicated loans, we use the terms “loan deal” and “loan package” as synonyms.

[4] However, we do not winsorize or main independent variable for insiders ownership concentration defined below, as it correctly varies between 0 and 1. All the main results presented in this paper holds using non winsorized data as well.

or 41.47% of the total – where for 27,954 of them (corresponding to 8,334 borrowers from 76 different countries) at least the 1 year lagged information about firm's country, sector and total assets is available. Table 1 shows the distribution of deals and borrowing firms by year and geographical area.

[Insert Table 1 about here]

The main dependent variable in our study is the spread over the reference index paid by the borrower for each deal. As customary in the literature on syndicated loans pricing (e.g. Lin et al. 2011) we use the all-in spread drawn in basis points (source: Dealscan), defined as the total annual cost, including a set of fees and fixed spread, paid for each amount effectively used under the loan commitment.

To measure insiders ownership concentration we use the percentage of Closely Held Shares (*CHS*, source: Worldscope) in decimals. *CHS* is defined as the share of equity held by insiders. It includes shares held by officers, directors and their immediate families; shares held in trust; shares of the company held by any other corporation; shares held by pension/benefit plans; shares held by individuals who hold more than 5% or more of the outstanding shares. *CHS* has been used in several previous study as a measure of insiders ownership concentration (e.g. Mitton 2002; Thomsen et al. 2006; Doidge et al. 2007).

In our analyses we include several controls that have been found in the literature to significantly influence the cost of corporate borrowing. Below are described all the borrowers, loans, lenders, legal environment and market rates characteristics included in this study; descriptive statistics for all variables are then reported in Table 2. Variables definition is summarized in Table 9, reported in the Appendix.

2.1 Borrowers characteristics

We use several firms characteristics relating to borrower credit quality and/or the level of asymmetric information between borrowers and lenders. The main control variable is the firm *Leverage*, which has long been recognized as the main firm-specific determinant of credit spreads (e.g. Collin-Dufresne et al. 2001). It is defined as the ratio of total liabilities over the sum of total liabilities and the market value of equity; in order to be able to include more observations, in our most parsimonious model we use a measure of leverage based only on accounting data (*Leverage accounting*), defined as the ratio of total liabilities over total assets. We use total liabilities instead of total debt - which is often used in the

literature - because non-financial liabilities tend to have a higher seniority than debt (Welch 2011), and thus play a relevant role on the credit risk for lenders. We control for firms dimension using the natural logarithm of Total Assets in thousands of USD (*LNTA*), as bigger firms are usually found to face lower costs of capital. The ratio of debt maturing within a year (short-term debt) over the sum of short and long-term debt (*SDTD*) account for the borrower debt maturity structure, as firms with higher credit quality tend to prefer short-term debt (Diamond 1991). The ratio of Intangible over Total Assets (*INTDA*) is included to proxy for the quality of the collateral (from the lenders' point of view) in case of default (e.g. Lin et al. 2011). We control for firms operative performance using the Return on Assets, defined as Net Income over Total Assets (*ROA*); we also include in our study the yearly percentage growth of Net Sales (*SG*), as growth opportunities increase potential conflicts of interests between shareholders and creditors (Myers 1977). All raw data for computing these variables come from Worldscope, and are lagged 1 year to reduce endogeneity.

Following Sufi (2007), we control for the natural logarithm of 1 plus the number of previous loans in Dealscan database to the same borrower (*ln(1 + n° of loans)*) to approximate for the information on the firm held by potential lenders. Since an high level of ownership concentration can be associated with Government ownership – especially in some countries[5] – and given that Government ownership significantly affects the cost of borrowing (Borisova and Megginson 2011), we also include a dummy variable equal to 1 if the borrower is indicated in Dealscan as a Government entity or a Government-owned enterprise (GOE) and 0 otherwise (*Government*).

2.2 Loans and lenders characteristics

We consider several deal characteristics typically included in all studies on bank loans. We control for: the natural logarithm of the facility amount in USD (*LNFA*); the number of facilities in each package (*Number of facilities*); the maturity expressed in months (*Maturity*); a dummy variable equal to 1 if the loan is senior debt and 0 otherwise (*Senior*); three dummy variables equal to 1 if respectively; a) there is a loan guarantor (*Guarantor*); b) the contract includes performance pricing clauses (*Performance Pricing*); or c) financial covenants (*Covenants*), and 0 otherwise. A series of indicators is used to control for the loan stated purpose. We follow Sufi (2007) and group purposes in 5 categories: Working Capital and corporate purposes, Refinancing, Acquisitions, Backup line and Other. As in Ivashina

[5] The incidence of GOEs is significantly (at 1% confidence level) higher in Europe and Asia than in the rest of our sample. GOEs exhibit a mean value of CHS of 0.582 while other firms average is 0.318, the difference being statistically significant at customary confidence levels.

(2009), we also include a dummy equal to 1 if the base rate is a prime rate and 0 otherwise (*Prime Rate*).

Together with loans characteristics, we also control for few relevant aspects of the lending group; first, we use a dummy variable equal to 1 if the loan is indicated as syndicate and 0 otherwise (*Syndication*); as shown in Table 2, syndicate loans account for 73% of our sample. We include the number of lenders (*N° of lenders*) and the percentage of loan retained by lead banks (*Lead Share*) because the level of concentration in lead lenders increase the effectiveness of monitoring, but at the same time a more disperse lending base allow to reduce the concentration of risk (e.g. Ivashina 2009). Finally, we use a dummy variable to control for the lead lender[6] and the borrower being from the same country (*Same Country*), as foreign banks are associated on average with higher costs of debt (Qian and Strahan 2007).

2.3 Legal environment

Several studies (e.g. Esty and Megginson 2003; Qian and Strahan 2007; Bae and Goyal 2009) have shown the relevance of laws on creditors protection in explaining cross-country differences in bank loans structure and pricing. To account for this, we use Qian and Strahan (2007, QS hereafter) creditor rights indicator for the borrower's country of origin derived from La Porta, Lopez-de-Silanes, Shleifer and Vishny (1997, LLSV hereafter) seminal paper on law and finance. For countries not considered in QS work we use original values reported in LLSV. As customary, we also use several indicators for the country legal framework, assigning each country to one of 6 possible law systems (English, French, German, Islamic, Scandinavian and Socialist).

2.4 Market rates

Studies on loan pricing usually do not consider among explanatory variables the general level of market interest rates and premia required by the market by the time the deal is settled. However, it seems fair to assume that these affect the cost of debt in a way that simply using year indicators cannot account for. To control for the term structure of interest rates, we use the value of the first three principal components of the US Treasury yield curve as on the day the loan becomes active; these components are usually thought of as representing the *Level*, *Slope* and *Curvature* of the yields term structure (Litterman and Scheinkman 1991). To control for the *Default Premium* required by the

[6] When more than one lead lender is present, we consider the one retaining the highest share.

market, we use the spread between the average yield on corporate bonds rated respectively Baa and Aaa by Moody's (e.g. Chen et al. 2009). All yields data are from the Federal Reserve website.[7]

[Insert Table 2 about here]

3 Insiders ownership concentration and the cost of debt

Within the agency theory framework, several different predictable effect of the separation between ownership and control for firm's stakeholders have been proposed. Surely, the conflict of interest most investigated is the one between insiders on the one hand and minority shareholders on the other hand. Two of the most prominent effects of the separation between ownership and control were already discussed by Jensen and Meckling (1976): *Tunneling* and *Asset Substitution* (also referred to as risk shifting).

Tunneling refers to "the transfer of resources out of a company to its controlling shareholder" (Johnson et al. 2000; p. 22). It is expected to affect minority shareholders and creditors alike, and it is the more likely the more the separation of ownership and control increase. An inverse relationship between insiders ownership concentration and agency costs affecting creditors is thus expected; if the latter are rational, they will make the shareholders bear the agency cost by asking higher interests on debt. As a result, insiders ownership concentration is predicted to have a negative effect on the cost of debt.

A similar prediction is associated with asset substitution; as the fraction of firm's capital held by insiders decrease, they have an incentive toward riskier investments regardless of their net present value, as they get a big upside potential without bearing financial losses if the investment fail. *Debt Overhang* problems identified by Myers (1977) are just a particular application of the asset substitution argument.

The negative relationship between insiders ownership concentration and cost of debt predicted by tunneling and asset substitution arguments has received empirical validation from several studies: in particular, Lin et al. (2011) focus on bank loans and show that the cost of debt increases with the wedge between control and ownership and decreases with the cash flow right retained by insiders.

Theoretical works discussed so far make the implicit assumption that insiders have a full control of the firm and its resources and that they cannot easily be substituted. However, if insiders own a small share of equity, the *Market for Corporate Control* (e.g. Manne 1965; Scharfstein 1988; Stulz 1988) is likely

[7] http://www.federalreserve.gov/releases/h15/data.htm#fn15

to exert a strong disincentive for insiders to extract private wealth, as external shareholders and even creditors in particular instances might take control of the firm. Insiders thus need a certain minimum level of ownership for the incentives toward tunneling and risk shifting not being overcompensated by the thread of losing control over the firm. It is interesting to notice that, while asset substitution and tunneling arguments see the interests of creditors and minority shareholders aligned, market for corporate control depicts a different situation for the two classes of stakeholder. On the one hand, an higher level of insiders ownership concentration translates into an higher premium paid in case of takeover as long as control is disputable (e.g. Stulz 1988; Song and Walkling 1993). For low levels of insiders ownership (i.e. when control is disputable), an increase in ownership concentration is thus beneficial for minority shareholders.

On the other hand, creditors do not beneficiate from this increase in the value of shares. A decrease in the disputability of control thus only translates for creditors into an higher likelihood of tunneling and risk shifting. As such, market for corporate control predicts a positive relationship between insiders ownership concentration and the strength of conflict of interests between insiders and creditors, which in turns translate into a positive relationship between insiders ownership and the cost of debt.

The relevance of market for corporate control for firms creditors has received as well empirical validation; for example, Klock et al. (2005) and Chava et al. (2009) show that anti-takeover provisions reduce ceteris paribus bonds yields and loans spread respectively. More to the point, Cremers et al. (2007) provide empirical evidence that ownership concentration is positively correlated with bonds yields when the firm is exposed to takeovers. To the best of our knowledge, no study has assessed so far how market for corporate control moderates the relationship between ownership structure and cost of debt in the context of bank loans.

Asset substitution and tunneling on the one hand and market for corporate control on the other hand thus predict opposite relationships between the level of insiders ownership concentration and the cost of firms borrowing. Moreover, as discussed above, the latter becomes irrelevant when insiders ownership concentration is high; on the contrary, asset substitution and risk shifting increase in relevance when control is hardly disputable.

For this, we predict that insiders ownership concentration and cost of debt have an inverse U-shaped relationship. When insiders ownership concentration is low, it positive correlate with the cost of debt due to market for corporate control effects; the relationship becomes instead negative when insiders ownership concentration is high, as asset substitution and tunneling concerns become more relevant.

3.1 Empirical evidence

To study empirically the relationship between insiders ownership and cost of debt, we formulate a pricing model for the spread paid on bank loans which include both *CHS* and its square value (*CHS^2*) among the determinants. We expect the coefficient for *CHS^2* to be significant and negative, while the coefficient for *CHS* should be positive and significant; the sum of the linear and quadratic effect of *CHS* on loan spread characterizes a situation where *CHS* increase the cost of debt as long as an higher *CHS* provide a stronger control to insiders; once *CHS* is high enough to grant insiders full control of the firm, an increase in *CHS* should actually decrease the cost of debt, as insiders have lower incentives to extract private benefits from the firm.

Following Lin et al. (2011) we use as dependent variable the natural logarithm of the all-in spread drawn in bps;[8] borrowers, loans, lenders, market rates and legal environment characteristics are the control variables presented in Section 2. In all models we include indicators for the country of loan origination because, as noted by Carey and Nini (2007), loans originated in Europe and Asia appear to be characterized on average by lower spreads. As customary, we include also indicators for the borrower industry (at 2-digit level SIC code) and for the year of loan issuance. Table 3 reports the OLS coefficient estimation for different specifications of the model, together with their standard errors robust to heteroskedasticity and clustered at firm level.

[Insert Table 3 about here]

Model (1) is the most parsimonious: we include as controls only the most relevant and frequently available borrower characteristics (*LNTA* and *Leverage accounting*) and loans characteristics and purpose, together with market interest rates and country, industry and year indicators. Model (2) augments Model (1) by controlling for the structure of the lending group. In Model (3) we use the market measure of borrower leverage (*Leverage*) and include additional borrower characteristics. In Model (4) we control for government ownership and for the legal environment of the borrower country of origin. Finally, in Model (5) we follow Qian and Strahan (2007) and exclude firms in the financial and public sector industries (1-digit SIC codes 6 and 9) because their risks might be substantially different from those of firms in other industries.

[8] All presented empirical results are qualitatively similar when directly using the all-in-spread drawn without the logarithm transformation

For all models *CHS* and *CHS^2* coefficients are respectively positive and negative and both highly significant (at 0.1% confidence level), giving empirical confirmation that the relationship between insiders ownership and cost of debt is non-monotonic; specifically, it is an inverse U-shaped relationship, with cost of debt increasing in *CHS* when the latter is low and decreasing in *CHS* when the latter is high. For example, when *CHS* is equal to 0.1 the marginal effect of an increase of CHS by 0.01 (i.e. 1%, from 10% to 11%) drives an increase of the spread by 0.45% – 0.64% depending on the model, meaning an average increase of the spread of 0.75 – 1.05 bps. Conversely, when CHS is equal to 0.9 an increase by 0.01 drives a *reduction* of the spread by 0.67% – 0.83% (1.10 – 1.35 bps). It is interesting to state that the marginal effect of *CHS* on *ln(spread)* changes in sign for values of *CHS* of 43.1% – 49.3%, i.e. fairly close to the value of 50% after which an increase in ownership by insiders does not grant them any additional control over the firm resources.[9]

Figure 1 represent graphically the relationship between *CHS* and the spread using Model (1) estimated coefficients; to make results more easily interpretable in terms of cost of debt, we compute the non-linear effect of *CHS* on the natural logarithm of the spread over the latter sample mean and reconvert the predicted results in basis points.[10] As can be seen, widely and closely held firms are those exhibiting ceteris paribus the lowest cost of debt, while firms with an high degree of separation of ownership and control *but* a sufficient ownership concentration as to avoid the pressure of potential external raiders are those paying the highest cost of debt. Aside from statistical significance, the estimated difference between this ownership structure and widely and closely held firm structures is economically sizable: ceteris paribus, a firm where insiders own 43% – 49.3% of equity pays on average 12.5% – 20% (or 20.5 – 32.5 bps) higher spreads on bank loans than a widely held firm and 21.5 – 22% (34 – 35.5 bps) higher than a firm where insiders hold all equity.

[Insert Figure 1 about here]

[9] Indeed, for Model (1) a nonlinear Wald-type test does not reject the null hypothesis that the peak of the inverse U-shaped relationship between *CHS* and *ln(spread)* occurs for *CHS* equal to 0.5. Anyway, insiders actually needs less than 50% of equity to assure themselves a non-disputable control in most of the cases; it thus makes sense that the positive effect of the market for corporate control evanish before the 0.5 threshold.

[10] i.e. $Spread\ in\ bps = \exp\left[\overline{\ln(spread)} + \beta_{CHS} CHS + \beta_{CHS\text{^}2} CHS\text{^}2\right]$, where $\overline{\ln(spread)}$ is the sample mean of the natural logarithm of the all-in spread drawn.

3.2 Robustness checks on the functional form

We use three alternative approaches to provide further evidence of the inverse U-shaped relationship between insiders ownership and loans spread.

First, we use a piecewise linear regression approach in the spirit of Morck et al. (1988), and substitute the variable *CHS* with four variables, *CHS0to0.1*, *CHS0.1to0.3*, *CHS0.3to0.5* and *CHS0.5to1*, defined as in Equation 1

$$
\begin{aligned}
CHS0to0.1 &= \begin{cases} CHS, & CHS < 0.1 \\ 0.1, & CHS \geq 0.1 \end{cases} \\
CHS0.1to0.3 &= \begin{cases} 0, & CHS < 0.1 \\ CHS - 0.1, & 0.1 \leq CHS < 0.3 \\ 0.2, & CHS \geq 0.3 \end{cases} \\
CHS0.3to0.5 &= \begin{cases} 0, & CHS < 0.3 \\ CHS - 0.3, & 0.3 \leq CHS < 0.5 \\ 0.2, & CHS \geq 0.5 \end{cases} \\
CHS0.5to1 &= \begin{cases} 0, & CHS < 0.5 \\ CHS - 0.5, & CHS \geq 0.5 \end{cases}
\end{aligned}
\tag{1}
$$

Thus, for example, if *CHS* is 0.4 we have *CHS0to0.1* equal to 0.1, *CHS0.1to0.3* equal to 0.2 and *CHS0.3to0.5* equal to 0.1. In this way each variable allows to capture the marginal effect of CHS for each interval of *CHS* itself.

The second approach we use is simply to split our sample by values of *CHS* and then use a first order model (i.e. including only *CHS* but not *CHS^2* among regressors) for the cost of debt. We use the same threshold for *CHS* as in the piecewise regression, namely 0.1, 0.3 and 0.5.

The choice of thresholds is somehow arbitrary but does not lack theoretical underpinning: 0.1 is the threshold usually used in the literature to define "large" shareholders (e.g. La Porta et al. 1999; Laeven and Levine 2008); 0.3 identifies in several countries the threshold for mandatory tender offers (e.g. Dyck and Zingales 2004), implying it can be considered a level of ownership granting a control that cannot be easily challenged; with an ownership by insiders higher than 50% of firm equity of course control and ownership tend to overlap.[11]

Finally, we control in Model (3) for unobserved panel-level effects by using an Arellano and Bond (1991) estimator, using for each firm-year the biggest deal in terms of facility amount. Also, we

[11] In unreported analyses, we use alternative thresholds, dividing for example CHS by distribution quartiles. Results are qualitatively similar.

account for the potential endogeneity of the ownership structure by treating *CHS* as endogenous and including among instruments the industrial (at 2-digits SIC code level) average of *CHS* in the spirit of Laeven and Levine (2009). Of course, since: a) only one deal per firm-year can be considered; b) ownership structure tend to be persistent and; c) not every borrower receive different loans in subsequent years, this empirical strategy strongly shrink the usable sample. For this, we only consider two subsamples (*CHS* < 0.3 and *CHS* > 0.5) to investigate the functional form of the relationship between insiders ownership and cost of borrowing.

Table 4 reports the results for these alternative models specification. Model (1) reports results for the piecewise regression, Model (2), (a) – (d) reports results for a first order model on split samples, using *CHS* as main independent variable; Model (3), (i) and (ii) reports Arellano and Bond (1991) estimations for the two subsamples considered. All models include also control variables used in Model (1) of Table 3.[12] To save space we do not report controlling variables coefficients; their sign, magnitude and statistical significance is however largely aligned with results reported in Table 3. As can be noticed, the inverse U-shaped relationship between *CHS* and spreads is confirmed: looking at Model (1) coefficients, we can see that a 0.01 higher level of ownership concentration significantly (at 0.1% confidence level) increase the spread on loans by 1.4% when *CHS* is lower than 0.1; when *CHS* is between 0.1. and 0.3 the effect is still positive and statistically significant (at 5% confidence level) but smaller in magnitude (the spread is 0.3% higher for an increase of 0.01 of *CHS*); between 0.3 and 0.5 we have a null marginal effect of CHS on loan spreads; finally, for values of *CHS* higher than 0.5 the marginal effect becomes significantly (at 1% confidence level) negative, and an increase of 0.01 of *CHS* is associated with a decrease of the spread by 0.3%. Model (2) coefficients draw a similar picture; the marginal effect of *CHS* is positive and significant (at 5% confidence level) for values of *CHS* below 0.3 and negative and significant when CHS is higher than 0.5, while is negative and only marginally (at 10% confidence level) significant in between. Finally, Model (3) shows that the effect of *CHS* is positive when *CHS* is lower than 0.3 and negative when it is higher than 0.5; coefficients for both subsample are significant at 10% confidence level. We can thus find robust confirmation for the predicted functional form.

[Insert Table 4 about here]

[12] Of course Model (3) does not include country and industry effects, as they are time-invariant characteristics of the borrower.

4 The role of market for corporate control: additional evidence

Section 3 presents robust empirical evidence of the inverse U-shaped relationship between insiders ownership and loans spread. In this Section we provide additional empirical evidence that market for corporate control is actually responsible for the observed functional form for low levels of *CHS*. To do so, we investigate how the presence of anti-takeover provisions moderate the effect of *CHS* on spreads; if market for corporate control is the reason why we observe a positive effect, this should be strongly reduced for firms presenting provisions making harder to challenge the control of exiting management.

To account for provisions protecting insiders from losing their control we use the Entrenchment Index ("E Index") proposed by Bebchuk, Cohen and Ferrell (2009, BCF hereafter).[13] The E index is built summing one point for each of the 6 corporate governance provisions – i.e. staggered boards, limits to shareholder amendments of the by-laws, supermajority requirements for mergers, supermajority requirements for charter amendments, poison pills and golden parachutes – identified by BCF as the most relevant in explaining the effect of corporate governance on firms financial performances. The E index thus varies between 0 and 6, where higher values identify an higher level of protection of insiders from market for corporate control. Data on provisions are from the Investor Responsibility Research Center (IRRC) reports. IRRC data are updated every 2-3 years, and each report covers 1,400-1,800 US firms (BCF, 2009). As customary for studies based on IRRC data (e.g. Gompers et al. 2003), for missing years we assign to the E index the last known value, as provisions at firm level tend to be quite stable across time.

Table 5 reports the distribution of deals and firms by (1 year lagged) values of the E index; overall, the index is available for around 9,000 deals in our sample; for c.a. 10% of the deals there is no anti-takeover provision, while in less than 4% of the cases the borrower presents more than 4 provisions.

[Insert Table 5 about here]

We estimate pricing models for firms with a low (i.e. <0.3) level of insiders ownership including, along with control variables, *CHS* and its interaction with the E Index (*E Index x CHS*). As insiders control gets shield by anti-takeover provisions, the share held by insiders should become irrelevant: we thus expect the interaction term to be significantly negative.

[13] Data on firms' E index are available at http://www.law.harvard.edu/faculty/bebchuk/data.shtml; for more details about the index construction see BCF (2009).

Table 6 reports estimated coefficients as well as the combined coefficient for each level of the E Index. Model (1) performs the analysis on the whole usable sample, while Model (2) excludes firms in the financial and public sectors. Both Models include all the control variables used in Models (4) and (5) of Table 4 but country-level law variables, as the E index is available only for US firms.[14]

As expected, the positive effect of *CHS* on the cost of debt is decreasing in the E index: while an increase by 1% of CHS results in a 0.7% – 0.9% increase in the cost of debt when no anti-takeover provision is present (significant at 0.1% confidence level), the relationship between CHS and cost of debt is no longer statistically significant when the E index is 4 or higher. These results are coherent with those by Cremers et al. (2007) on bonds yields, and confirms that market for corporate control effects can indeed explain the verified positive marginal effect of insiders ownership on cost of loans.

[Insert Table 6 about here]

5 The role of capital structure

Capital structure is often considered to play a relevant role in moderating conflicts of interests between shareholders and creditors (Hart 1995). Three main arguments can be used to explain why capital structure might influence the relationship between insiders ownership and cost of debt.

First, Jensen (1986) predicts that debt reduce the potential for suboptimal use of firm's capital by manager by reducing the amount of free cash flow they can dispose of. Since interests and debt repayments have an higher priority over investments or distribution of generated wealth to shareholders, an high level of debt reduce the insiders degree of discretion over the use of firms resources. In this sense, leverage should be expected to reduce the sensitivity of cost of debt to separation of ownership and control for any level of the latter.

Second, for high levels of leverage, creditors are likely to have an higher control over the firm (e.g. Burkart et al. 1997); this reduces the need for monitoring provided by the market for corporate control and the potential for tunneling by insiders.

Finally, an high leverage reduce the effectiveness of market for corporate control because it reduces the likelihood of a takeover (e.g. Novaes 2002).

[14] To address concerns about a potential selection bias, in unreported analysis we re-estimated our quadratic Models (4) and (5) presented in Table 4 using only observations where the E index is available. The inverse U-shaped functional form is confirmed. Notice that country of origination controls are still included as not all loans to US borrowers are originated in the US.

All in all, all these theoretical arguments predict a relevant moderating role of leverage on the conflict of interest between inside shareholders and creditor linked to the separation of ownership and control. Leverage is expected to decrease the sensitivity of cost of debt to ownership concentration, as insiders have lower discretion on the use of firms resources; but also to increase the relevance of risk shifting and tunneling for low levels of insiders ownership, as market for corporate control effects should be strongly mitigated.

To study empirically the effect of leverage on the relationship between ownership concentration on cost of debt, we introduce in our pricing models two interaction variables (*Leverage x CHS* and *Leverage x CHS^2*) representing the cross product between *Leverage* and *CHS* and *CHS^2* respectively.

Results are reported in Table 7; control variables included in Models (1) – (5) are the same used for models (1) – (5) in Table 3. The only exception is that, given the scope of these analyses, we use *Leverage* instead of *Leverage accounting* also in Models (1) and (2). Since we are studying a quadratic model with interaction terms, coefficients interpretation is more easily done by looking at the relationship between CHS and spreads for different level of leverage depicted graphically in Figure 2. Table 7 coefficients however confirm us that capital structure plays a relevant role in moderating this relationship: the coefficient for *Leverage x CHS* is statistically significant at 0.1% confidence level in all model specifications; also the coefficient for *Leverage x CHS^2* is statistically significant (at 5% confidence level) when financial and public sector firms are excluded (Model (5)); *CHS* and *CHS^2* coefficients still exhibit the same sign and statistical significance as in Table 3.

[Insert Table 7 about here]

Figure 2 reports the predicted relationship between *CHS* and the cost of loan for different levels of *Leverage*, namely 0.25, 0.5 and 0.75. As for Figure 1, we use the predicted spread in bps to make results more easy to interpret in terms of cost of debt. As can be seen, for low level of leverages the inverse U-shaped relationship between *CHS* and loans spread is in place; however, as leverage increases, the part of the curve previously exhibiting a positive slope tends to become flat or even downward sloping, while for high levels of *CHS* the negative relationship is still in place. Needless to say, firms with high leverage pay an higher spread than firms with low leverage; however, this difference is decreasing in *CHS*. All in all, the higher the leverage, the more *CHS* and cost of debt tend to be negatively correlated for all values of *CHS*. This result is highly coherent with the proposed theoretical arguments: the increase in cost of debt driven by an higher control by insiders is smoothed,

as market for corporate control becomes irrelevant; while mitigated, the potential for tunneling and risk shifting becomes the only effect in place, driving toward a (negative) monotonic relationship between insiders ownership concentration and cost of debt.

[Insert Figure 2 about here]

6 The role of loan contract clauses

One of the most investigated topic in the literature on bank loans, especially syndicated loans, is how the presence of asymmetric information and agency costs influence the loan characteristics and syndicate structure (e.g. Qian and Strahan 2007; Ivashina 2009; Lin et al. 2012). In this section we explore to what extent two main classes of provisions, namely financial covenants and performance pricing, are effective in moderating the effect of insiders ownership concentration on the cost of debt.

Both financial covenants and performance pricing are common clauses in bank loans contracts;[15] they link the ongoing of the loan contract terms to the borrower credit quality, usually measured in terms of credit rating or interest coverage. The main difference between these two class of provisions is that if performance requirements are not satisfied, financial covenants give the right to the lender to call the loan; on the contrary, performance pricing clauses set ex-ante a change in the interest paid by the borrower in case of a deterioration (or improvement) of her financial performances (Asquith et al. 2005). Performance pricing clauses have being introduced relatively recently, and have become popular especially in the syndicate loan market: this is because the break of financial covenants by the borrower, while giving the lender the right to call the debt, actually result in the bulk of cases in a renegotiation (e.g. Asquith et al. 1994). This process can be very costly, especially if several lenders (like in the case of syndicate loans) are involved. The expected cost of this process is usually transferred to the borrower in terms of higher spreads.[16]

On the other hand, performance pricing provisions require to set ex-ante the cost (or premium) for the borrower to deviate from the agreed credit quality; this might prove a hard task, as it requires to estimate not only the likelihood that credit quality will change for exogenous reasons, but also: a) the potential change in incentives for the manager to extract private benefits at the expense of creditors and b) the risk premia the market will require in the future. Thus, as conditions change, performance

[15] Financial covenants and performance pricing provisions appear in 39% and 29% of our sample respectively, as Table 2 shows.

[16] Indeed, our analyses reported in Table 4 show a significant positive effect of the presence of financial covenants on the cost of loans. Ivashina (2009) finds similar results.

pricing might prove not an effective deterrent for insiders; contract renegotiation allowed by financial covenants, while more costly, allows lenders to require the new agreement to reflect the new conditions by the time the negotiation is made. Thus, it seems fair to expect financial covenants to be more effective in reducing the effect of ownership retained by insiders on the cost of debt.

To test this hypothesis, we follow the same empirical strategy adopted in Sections 4 and 5 and include in our pricing model for loans the cross product of *CHS* and *CHS^2* with *Covenants* (*Covenants x CHS* and *Covenants x CHS^2*) and *Performance Pricing* (*Performance Pricing x CHS* and *Performance Pricing x CHS^2*).

Table 8 reports the estimated coefficients for these models. Models (1) – (3) include the two cross products with *Financial Covenants*; Model (1) is specified as Model (1) of Table 3, using *Leverage* instead of *Leverage accounting*; Model (2) use all the control variables of Model (4) of Table 3, while Model (3) is as Model (2) but estimated excluding financial and public sector firms; Model (4) – (6) are similarly specified for *Performance Pricing*; finally, Model (7) account for both clauses typologies moderating effect and use the same controls as Models (1) and (4).

Models (1) – (3) and (7) show how the presence of financial covenants strongly reduces the impact of insiders ownership on cost of debt: the coefficient for *CHS* is reduced by 0.68 – 0.85 (depending on the model) when financial covenants are present, while the coefficient for *CHS^2* is increased by 0.74 – 0.85; both effects are sizable compared to estimated coefficients for *CHS* and *CHS^2* and statistically significant at 0.1% confidence level. Altogether, financial covenants appear to strongly flatten the relationship between *CHS* and cost of debt especially for low levels of the former, as Figure 3 well illustrates. This result is coherent with those by Lin et al. (2012), who find loans covenants effective in reducing the effect of the wedge between control and cash flow rights on the cost of debt. Model (4) – (6) show that, while the sign of the interaction terms coefficients for performance pricing are the same, they are both smaller and less statistically significant than those for financial covenants. Moreover, when controlling for both clauses in Model (7), coefficients for Performance Pricing interaction with CHS are no longer significant (albeit close to significance).

[Insert Table 8 about here]

Figure 3 represents the effect of insiders ownership on cost of debt in presence of contract provisions. While performance pricing is on average related to lower costs of debt, it does not significantly reduce the sensitivity of cost of debt to the share retained by insiders. On the contrary, financial covenants

strongly moderate this relationship. While more costly, financial covenants thus appear to be more effective in reducing the agency costs associated with a separation of ownership concentration. This can explain why they are still preferred by lenders to performance pricing provisions in debt contracts (Asquith et al. 2005).

[Insert Figure 3 about here]

7 Conclusions

In this paper we investigate the relationship between the level of ownership retained by insiders and the firms cost of bank debt. Tunneling and asset substitution arguments on the one hand and market for corporate control on the other hand are associated with opposite predictions on the relationship between these two variables. Market for corporate control predicts a positive correlation between insiders ownership and agency costs for creditors; on the contrary, asset substitution and tunneling predict a negative correlation. As the former effect is stronger for low levels of insiders ownership, we suggest and find empirical evidence that the insiders ownership and cost of debt exhibit an inverse U-shaped relationship. When insider ownership is low, its increase is *detrimental* for creditors, who thus requires higher interest rates; when insiders ownership is high, its increase is associated with a reduction of the cost of debt. This non-monotonic effect of insiders ownership on the cost of debt is confirmed after several robustness checks and is economically meaningful: ceteris paribus, on average a firm where insiders own 40% – 50% of equity pay 33bps (36) higher spreads than a widely (closely) held firm. The positive correlation for low levels of insiders ownership is not in place for firms characterized by multiple anti-takeovers provisions, confirming the key contribute by market for corporate control to the verified functional form.

We then turn our attention toward the moderating role of capital structure; an higher leverage reduce free cash flow to equity and the relevance of market for corporate control. The cumulate effect is that, while of course firms with an higher leverage pay on average higher spreads, the difference in spreads between highly and lowly-levered firms is ceteris paribus bigger for low levels of insiders ownership concentration.

Finally, we investigate whether financial covenants and performance pricing provisions are effective in moderating the relationship between insiders ownership and cost of capital. Financial covenants are associated on average with an higher cost of debt because of costly debt renegotiation. However, they are also more effective in reducing the sensitivity of cost of debt to insiders ownership, as they do not

require to set ex-ante the cost for managers to deviate from the optimal behavior (from creditors perspective).

Our findings reconcile some pieces of empirical evidence reported in previous studies: Bhorjarj and Sengupta (2003) for example find ownership concentration to increase bond yields, while Lin et al. (2011) and Klock et al. (2005) find a negative effect of ownership concentration on the cost of debt. We show that both direction are plausible, with one or the other prevailing depending on the level of ownership concentration, leverage and on corporate governance mechanisms.

It is interesting to notice that our results are in stark contrast with those of the literature on ownership structure and the value of equity (e.g. Wright et al. 1996). These studies provide empirical evidence that conflicts of interest between insiders and minority shareholders decrease (increase) with ownership concentration when the latter is low (high). Our results suggest that the opposite holds when creditors instead of minority shareholders are considered.

Future research shall model altogether the non-monotonic effect of ownership structure on the value of equity and debt, in order to estimate how much of the value created for one stakeholder with a particular ownership structure comes at the expense of the other.

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Table 1 Sample distribution by year and country. This Table present the yearly sample distribution of observations where at least information about the borrower country, sector and total assets is available. Geographical distribution refers to the percentage of deals by borrowing firms' country

Year	**N° of deals**	**N° of borrowing firms**	**Geographical distribution**			
			Europe	**Asia**	**USA**	**Other**
1996	701	604	6.85%	14.27%	68.76%	10.13%
1997	2,204	1,594	5.26%	15.34%	71.96%	7.44%
1998	1,953	1,439	6.71%	14.90%	73.84%	4.56%
1999	2,233	1,647	9.36%	17.69%	67.53%	5.42%
2000	2,333	1,699	10.24%	21.86%	61.77%	6.13%
2001	2,294	1,669	8.50%	21.14%	60.46%	9.90%
2002	2,346	1,746	8.57%	27.37%	59.38%	4.69%
2003	2,404	1,744	8.36%	28.29%	59.07%	4.28%
2004	2,393	1,836	10.45%	22.23%	62.56%	4.76%
2005	2,443	1,796	12.32%	25.67%	55.06%	6.96%
2006	2,171	1,691	10.92%	23.63%	58.36%	7.09%
2007	2,125	1,575	8.75%	29.08%	54.82%	7.34%
2008	1,428	1,122	10.36%	28.71%	50.42%	10.50%
2009	843	734	10.32%	25.74%	58.01%	5.93%
2010	83	70	18.07%	45.78%	27.71%	8.43%
All dataset	*27,954*	*8,334*	9.17%	22.88%	61.40%	6.54%

Table 2 Descriptive statistics**.** Table 2 reports descriptive statistics for variables included in this study. All variables are as defined in Section 2 and in Table 9

					Percentile		
Characteristics	**Variable**	**N**	**Mean**	**Std. Dev.**	**25th**	**50th**	**75th**
	All-in spread drawn	20,732	163.82	139.68	57.5	125	240
Borrower	CHS	23,035	0.32	0.27	0.10	0.26	0.52
	Leverage	25,431	0.51	0.27	0.29	0.49	0.75
	Leverage accounting	27,954	0.66	0.32	0.48	0.64	0.86
	LNTA	27,954	14.26	2.22	12.66	14.18	15.95
	SDTD	26,790	0.33	0.32	0.06	0.23	0.53
	SG	25,036	0.23	0.69	0.01	0.11	0.25
	INTA	24,114	0.13	0.17	0	0.04	0.19
	ROA	27,547	0.01	0.24	0.01	0.03	0.06
	Government	27,954	0.01	0.11	0	0	0
	ln(1 + n° loans)	27,954	1.32	1.3	0	1.1	1.79
Loan	LNFA	27,951	18.46	1.65	17.28	18.6	19.58
	N° of facilities	27,954	1.4	0.84	1	1	2
	Maturity	26,975	44.88	36.06	23	36	60
	Guarantor	27,954	0.07	0.26	0	0	0
	Performance Pricing	27,954	0.29	0.45	0	0	1
	Covenants	27,954	0.39	0.49	0	0	1
	Senior	27,954	0.98	0.12	1	1	1
	Prime Rate	27,954	0.39	0.49	0	0	1
Loan purpose	Corporate Purpose/WC	27,954	0.57	0.49	0	1	1
	Takeover/LBO	27,954	0.11	0.31	0	0	0
	Refinancing	27,954	0.18	0.38	0	0	0
	Backup line	27,954	0.05	0.22	0	0	0
Lenders	Same Country	27,954	0.71	0.46	0	1	1
	N° of lenders	26,256	7.16	8.36	1	4	10
	Lead Share	26,256	13.86	27.28	0	0	15.89
	Syndication	27,954	0.73	0.45	0	1	1
	Level	27,954	0.13	2.32	-1.77	0.29	2.21
Market interest rates	Slope	27,954	-0.2	0.83	-0.94	-0.14	0.5
	Curvature	27,954	-0.03	0.18	-0.15	-0.01	0.08
	Default premium	27,954	0.94	0.38	0.72	0.86	1.03
	Credit rights	27,502	1.56	1.01	1	1	2
Legal environment	English law	27,951	0.81	0.39	1	1	1
	French law	27,951	0.06	0.24	0	0	0
	German law	27,951	0.1	0.3	0	0	0
	Islamic law	27,951	0	0.06	0	0	0
	Scandinavian law	27,951	0.02	0.13	0	0	0
	Socialist law	27,951	0.01	0.1	0	0	0

Table 3 Insiders ownership and loan prices. This table presents the results of OLS regression on the pricing model for bank loans. The dependent variable is the natural logarithm of the all-in spread drawn paid on the facility. All independent variables are as defined in Section 2 and Table 9. Year effects are year indicators. Industry effects are at 2-digits SIC code level. Country effects are on the country of loan syndication. Law effects include Creditor rights and indicators for the legal system. Models (1) – (4) are on the whole sample, while in Model (5) borrowers with a 1-digit SIC code equal to 6 or 9 are excluded. Standard errors robust to heteroskedasticty and clustered by firm are reported in round brackets. *,** and *** denote statistical significance at 5%, 1% and 0.1% confidence level respectively

	Whole sample				**Exl. Financials and Public Sector**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
CHS	0.808***	0.799***	0.582***	0.578***	0.593***
	(0.096)	(0.099)	(0.109)	(0.109)	(0.111)
CHS^2	-0.825***	-0.811***	-0.679***	-0.670***	-0.682***
	(0.112)	(0.115)	(0.134)	(0.134)	(0.140)
Leverage Accounting	0.361***	0.352***	-	-	-
	(0.076)	(0.078)			
Leverage	-	-	1.154***	1.161***	1.230***
			(0.045)	(0.045)	(0.046)
LNTA	-0.139***	-0.143***	-0.197***	-0.197***	-0.191***
	(0.013)	(0.013)	(0.011)	(0.011)	(0.012)
Same Country	-0.048*	-0.049*	-0.049*	-0.050*	-0.058*
	(0.021)	(0.022)	(0.023)	(0.023)	(0.023)
LNFA	-0.108***	-0.107***	-0.062***	-0.060***	-0.070***
	(0.012)	(0.013)	(0.012)	(0.013)	(0.014)
N° of facilities	0.147***	0.148***	0.131***	0.133***	0.134***
	(0.007)	(0.008)	(0.007)	(0.007)	(0.007)
Maturity	0.001*	0.001*	0.001*	0.001*	0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Guarantor	0.089***	0.091***	0.076***	0.077***	0.068***
	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)
Performance Pricing	-0.202***	-0.206***	-0.171***	-0.172***	-0.161***
	(0.017)	(0.018)	(0.019)	(0.019)	(0.020)
Covenants	0.047*	0.051*	0.045	0.047*	0.052*
	(0.020)	(0.021)	(0.023)	(0.023)	(0.024)
Senior	-0.912***	-0.895***	-0.871***	-0.875***	-1.068***
	(0.102)	(0.110)	(0.118)	(0.119)	(0.118)
Prime Rate	0.219***	0.221***	0.190***	0.190***	0.186***
	(0.023)	(0.024)	(0.027)	(0.027)	(0.028)
Corp. Purpose/WC	-0.181***	-0.188***	-0.170***	-0.164***	-0.141***
	(0.023)	(0.023)	(0.026)	(0.026)	(0.028)
Takeover/LBO	0.089***	0.086**	0.124***	0.127***	0.152***
	(0.026)	(0.026)	(0.030)	(0.030)	(0.032)
Refinancing	-0.075***	-0.083***	-0.133***	-0.126***	-0.129***
	(0.024)	(0.025)	(0.028)	(0.028)	(0.030)
Backup line	-0.668***	-0.679***	-0.603***	-0.593***	-0.601***
	(0.035)	(0.036)	(0.037)	(0.038)	(0.040)

(continue)

ln(1 + n° loans)	-	0.036*	0.000	-0.001	0.051***
		(0.015)	(0.015)	(0.015)	(0.014)
N° of lenders	-	-0.002*	-0.001	-0.001	-0.001
		(0.001)	(0.001)	(0.001)	(0.001)
Lead Share	-	0.000	-0.000	-0.000	-0.001*
		(0.000)	(0.000)	(0.000)	(0.000)
Syndication	-	0.063**	0.044*	0.042	-0.009
		(0.023)	(0.025)	(0.025)	(0.026)
SDTD	-	-	-0.126***	-0.131***	-0.120***
			(0.027)	(0.027)	(0.027)
SG	-	-	0.054***	0.054***	0.061***
			(0.009)	(0.009)	(0.010)
INTA	-	-	0.305***	0.304***	0.251***
			(0.047)	(0.047)	(0.048)
ROA	-	-	-0.095	-0.096	-0.096
			(0.102)	(0.103)	(0.103)
Government	-	-	-	-0.151	-0.167
				(0.097)	(0.118)
Level	-0.032***	-0.028***	-0.036***	-0.035***	-0.033***
	(0.008)	(0.008)	(0.009)	(0.009)	(0.009)
Slope	0.032*	0.034*	0.040*	0.041*	0.039*
	(0.016)	(0.016)	(0.018)	(0.018)	(0.019)
Curvature	-0.089*	-0.087*	-0.112*	-0.112*	-0.115*
	(0.043)	(0.044)	(0.050)	(0.050)	(0.052)
Default premium	0.088***	0.080***	0.086***	0.088***	0.097***
	(0.024)	(0.024)	(0.026)	(0.026)	(0.027)
Year effect	Yes	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes	Yes
Country effect	Yes	Yes	Yes	Yes	Yes
Law effect	No	No	No	Yes	Yes
N° observations	17,866	17,061	12,642	12,496	10,835
N° borrowers	6,423	6,186	4,694	4,627	4,058
R^2	0.60	0.60	0.66	0.66	0.65
Adjusted R^2	0.59	0.59	0.65	0.65	0.64

Table 4 Robustness checks for the functional form. This Table reports estimation for robustness checks on the loan pricing model functional form. The dependent variable is the natural logarithm of all-in spread drawn in bps. In Model (1) and (2) we use an OLS estimator. In Model (1) variable CHS is substituted with four piecewise variables (CHS 0 to 0.1, 0.1 to 0.30, 0.30 to 0.5 and 0.5 to 1) defined as in Equation 1. In Model (2), the sample is split in 4 using the same thresholds for CHS used for Model (1). In Model (5) we consider only the biggest deal per year for each firm and use an Arellano and Bond (1991) estimator, treating CHS as endogenous and using as instruments 1 year lags and the average CHS at industry level (2-digits SIC code). We include as control variables all other regressors used in Model (1) of Table 3. Standard errors robust to heteroskedasticity and clustered by firm are reported in round brackets. °, *,** and *** denote statistical significance at 10%, 5%, 1% and 0.1% confidence level respectively

	Whole sample	**Split Sample**					
	(1) Piecewise regression	**(2) OLS regression**				**(3) Arellano & Bond**	
		(a) 0 to 0.1	**(b) 0.1 to 0.3**	**(c) 0.30 to 0.5**	**(d) 0.5 to 1**	**(i) 0 to 0.3**	**(ii) 0.5 to 1**
CHS	-	1.131*	0.382*	-0.372°	-0.257*	0.485°	-0.437°
		(0.521)	(0.185)	(0.204)	(0.101)	(0.280)	(0.248)
CHS 0 to 0.1	1.456***	-	-	-	-	-	-
	(0.298)						
CHS 0.1 to 0.30	0.311*	-	-	-	-	-	-
	(0.138)						
CHS 0.30 to 0.5	0.100	-	-	-	-	-	-
	(0.128)						
CHS 0.5 to 1	-0.315**	-	-	-	-	-	-
	(0.098)						
Borrower characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Loan characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Syndicate characteristics	No	No	No	No	No	No	No
Additional borrower char.	No	No	No	No	No	No	No
Market rates	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes	Yes	No	No
Country effect	Yes	Yes	Yes	Yes	Yes	No	No
Law effect	No	No	No	No	No	No	No
N° of observations	17,866	4,831	5,523	3,337	4,175	1,658	388
N° of firms	6,423	1,837	2,726	2,009	2,206	701	215
R^2	0.60	0.60	0.58	0.63	0.63	-	-
Adjusted R^2	0.59	0.59	0.57	0.61	0.61	-	-

Table 5 Entrenchment Index. This table presents the frequency by deals and firms of the different possible values for the E Index proposed by Bebchuck, Cohen and Ferrell (2009) and defined as in Section 2 and in Table 9

E Index	N° deals	N° Firms
0	909	253
1	1,642	491
2	2,320	690
3	2,217	630
4	1572	401
5	312	79
6	29	7

Table 6 The role of Market for Corporate Control. This Table presents OLS estimates for loans pricing models excluding *CHS^2* and including the interaction between CHS and the Entrenchment Index (*E Index x CHS*). Analyses are limited to observations where CHS is lower than 0.3. Model (1) includes all firms, while Model (2) excludes firms in the Financial and Public Sector (1-digit SIC code 6 and 9). Both Models include all control variables of Models (4) and (5) of Table 3, excluding country-specific law variables as the E Index is only available for US firms. For each Model, the estimated CHS coefficients for different values of the E Index are also reported. Standard errors robust to heteroskedasticity and clustered by firms are reported in round brackets. *, **, and *** denote coefficients statistical significance at 5%, 1% and 0.1% respectively

	CHS<0.3	
	(1) Whole sample	**(2) No Fin. & Pub. Sec.**
CHS	0.737***	0.859***
	(0.202)	(0.208)
E Index x CHS	-0.139*	-0.184**
	(0.057)	(0.058)
N° observations	4,444	4,021
N° firms	1,245	1,112
R^2	0.66	0.67
Adjusted R^2	0.65	0.66
E Index	**CHS coefficient**	
1	0.599***	0.678***
	(0.167)	(0.172)
2	0.460**	0.492**
	(0.146)	(0.151)
3	0.321*	0.301*
	(0.146)	(0.150)
4	0.183	0.125
	(0.167)	(0.171)
5	0.044	-0.059
	(0.202)	(0.207)
6	-0.095	-0.242
	(0.246)	(0.251)

Table 7 Insiders ownership effect on loan spreads for different levels of leverage. This Table reports OLS estimation for the loan pricing model including the interaction between ownership concentration and borrower's financial leverage. The dependent variable is the natural logarithm of the all-in-spread drawn in bps. Leverage x CHS is the cross product of CHS and Leverage, while Leverage x CHS^2 is the cross product of CHS^2 and Leverage. Models (1) – (4) are estimated using the whole sample, while Model (5) has the same specification of Model (4) but excludes Financials and Public Sector firms (1-digit SIC code 6 and 9). Models (1) and (2) include all control variables of Models (1) and (2) of Table 3 but use Leverage instead of Leverage accounting. Models (3) - (5) include all control variables of Models (3) –(5) reported in Table 3. Standard errors robust to heteroskedasticity and clustered by firm are reported in round brackets. *, **, *** denote statistical significance at 5%, 1% and 0.1% confidence level respectively

	Whole sample				**Excl. Financials and Public Sector**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
CHS	1.079***	1.117***	1.103***	1.098***	1.308***
	(0.195)	(0.200)	(0.219)	(0.220)	(0.227)
CHS^2	-0.898**	-0.923**	-0.827**	-0.815**	-1.122***
	(0.275)	(0.282)	(0.286)	(0.288)	(0.305)
Leverage x CHS	-1.108**	-1.193**	-1.186**	-1.203**	-1.778***
	(0.389)	(0.397)	(0.448)	(0.447)	(0.453)
Leverage x CHS^2	0.579	0.633	0.418	0.432	1.178*
	(0.505)	(0.514)	(0.556)	(0.558)	(0.586)
Leverage	1.339***	1.352***	1.438***	1.446***	1.584***
	(0.068)	(0.069)	(0.080)	(0.080)	(0.079)
Borrower characteristics	Yes	Yes	Yes	Yes	Yes
Loan characteristics	Yes	Yes	Yes	Yes	Yes
Syndicate characteristics	No	Yes	Yes	Yes	Yes
Additional borrower char.	No	No	Yes	Yes	Yes
Market rates	Yes	Yes	Yes	Yes	Yes
Time effect	Yes	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes	Yes
Country effect	Yes	Yes	Yes	Yes	Yes
Law effect	No	No	No	Yes	Yes
N° observations	16,906	16,138	12,642	12,496	10,835
N° of firms	6,102	5,880	4,694	4,627	4,058
R^2	0.64	0.64	0.66	0.66	0.65
Adjusted R^2	0.64	0.64	0.65	0.66	0.65

Table 8 Moderation of loans contract specifications. This Table reports OLS estimations of pricing models including interaction terms between insiders ownership and loans provisions. Models (1) – (3) focus on the role of financial covenants, while Models (4) – (6) focus on performance pricing. Both are considered in Model 7. Control variables included in Model (1) , (4) and (7) ((2) and (5)) are the same as in Models (1) ((4)) of Table 3. Models (3) and (6) exclude financial and public sector firms from the sample as in Model (5) of Table 3. Standard errors robust to heteroskedasticty and clustered by firm are reported in round brackets. °, *, **, *** denote coefficients statistical significance at 10%, 5%, 1% and 0.1% confidence level respectively

	Financial Covenants			**Performance Pricing**			**Both**
	Whole sample		**Excl. Fin. and Pub. Sec.**	**Whole sample**		**Excl. Fin. and Pub. Sec.**	**Whole sample**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
CHS	0.950***	0.971***	1.017***	0.701***	0.729***	0.735***	0.922***
	(0.142)	(0.162)	(0.165)	(0.129)	(0.147)	(0.150)	(0.145)
CHS^2	-1.045***	-1.078***	-1.117***	-0.819***	-0.863***	-0.875***	-1.031***
	(0.182)	(0.197)	(0.210)	(0.162)	(0.178)	(0.188)	(0.186)
Coven. x CHS	-0.676***	-0.758***	-0.754***	-	-	-	-0.852***
	(0.157)	(0.181)	(0.183)				(0.194)
Coven. x CHS^2	0.744***	0.807***	0.786***	-	-	-	0.854***
	(0.204)	(0.227)	(0.238)				(0.244)
Perf. Pric. x CHS	-	-	-	-0.264°	-0.372*	-0.329°	0.267
				(0.146)	(0.171)	(0.173)	(0.179)
Perf. Pric. x CHS^2	-	-	-	0.405*	0.494*	0.462*	-0.133
				(0.187)	(0.213)	(0.222)	(0.221)
Covenants	0.121***	0.149***	0.155***	0.032°	0.047*	0.052*	0.057***
	(0.030)	(0.035)	(0.035)	(0.019)	(0.023)	(0.024)	(0.034)
Perf. Pricing	-0.176***	-0.175***	-0.164***	-0.153***	-0.135***	-0.130***	-0.235***
	(0.016)	(0.019)	(0.020)	(0.027)	(0.032)	(0.032)	(0.032)
Borrower charact	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Loan charact	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Syndicate charact.	No	Yes	Yes	No	Yes	Yes	No
Add. borrower ch.	No	Yes	Yes	No	Yes	Yes	No
Market rates	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Law effect	No	Yes	Yes	No	Yes	Yes	No
N° observations	16,906	12,496	10,835	16,906	12,496	10,835	16,906
N° firms	6,102	4,627	4,058	6,102	4,627	4,058	6,102
R^2	0.64	0.66	0.65	0.64	0.66	0.65	0.64
Adjusted R^2	0.64	0.65	0.65	0.64	0.65	0.64	0.64

Fig. 1 Insiders ownership and loan pricing. On the x-axis is the percentage of Closely Held Shares (*CHS*) in decimals. On the y-axis is the expected level of loan spread (in basis points). The expected spread is computed using estimated coefficients for *CHS* and its square *CHS^2* of Model (1) reported in Table 3. As Model (1) dependent variable is the natural logarithm of spread, the estimated spread is computed using the formula $Spread\ in\ bps = \exp\left[\overline{\ln(spread)} + \beta_{CHS}CHS + \beta_{CHS\text{^}2}CHS\text{^}2\right]$, where $\overline{\ln(spread)}$ is the sample mean of the natural logarithm of the all-in spread drawn

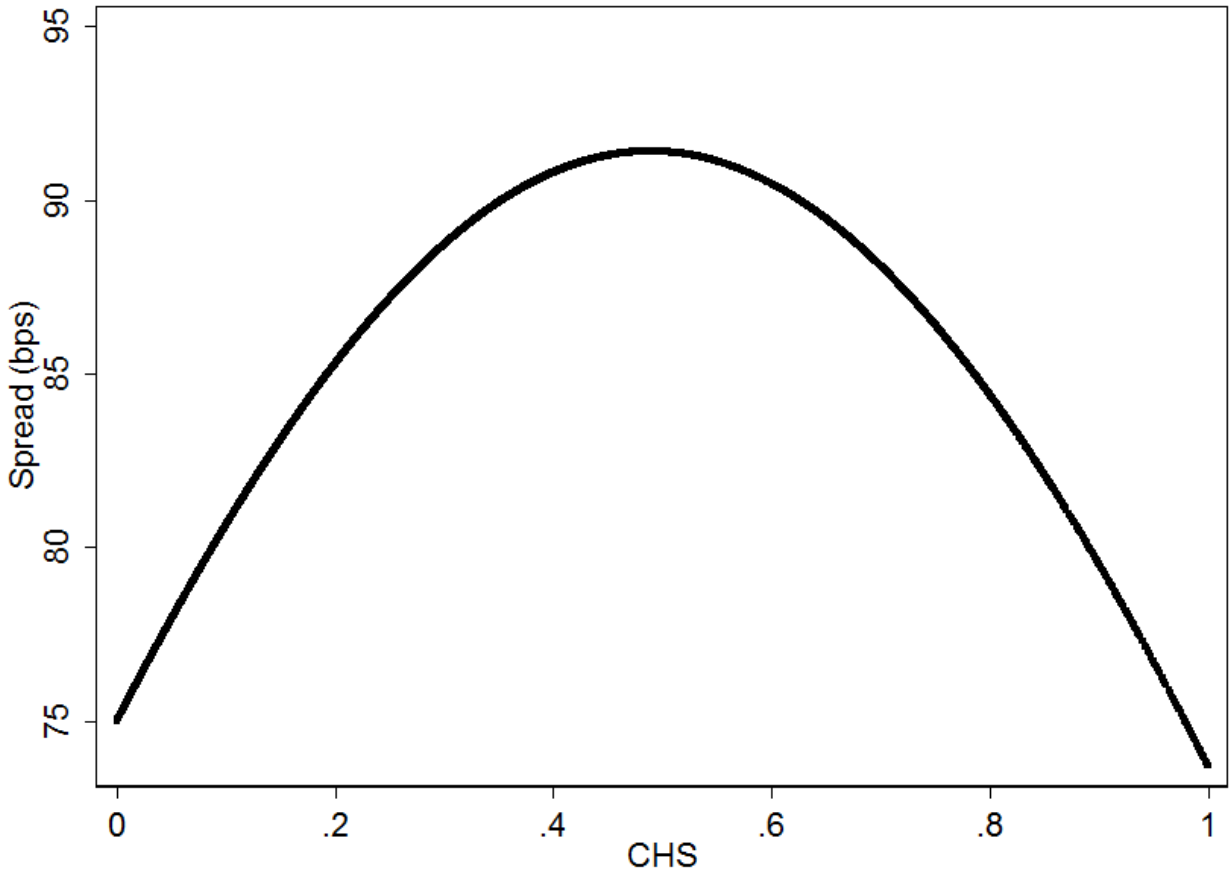


Fig. 2 Insiders ownership and loan pricing for different levels of leverage. On the x-axis is the percentage of Closely Held Shares (*CHS*) in decimals. On the y-axis is the expected level of loan spread (in basis points). The expected spread is computed for *Leverage* (defined as in Table 5) equals to 0.25 (light grey line), 0.30 (dark grey line) and 0.75 (black line), and using estimated coefficients from Model (1) of Table 5. The estimated natural logarithm of loan spread is converted into an expected spread in bps in a similar way as described in Fig. 1

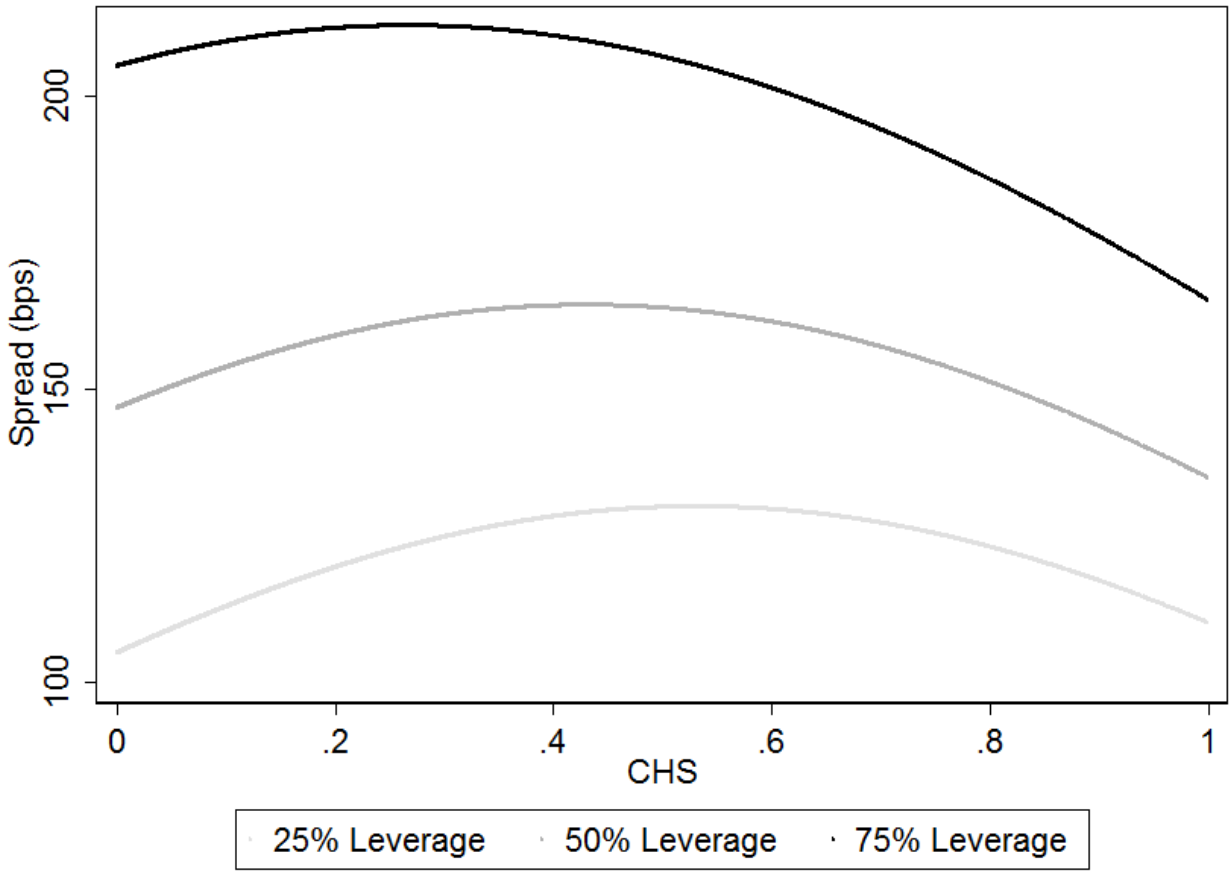
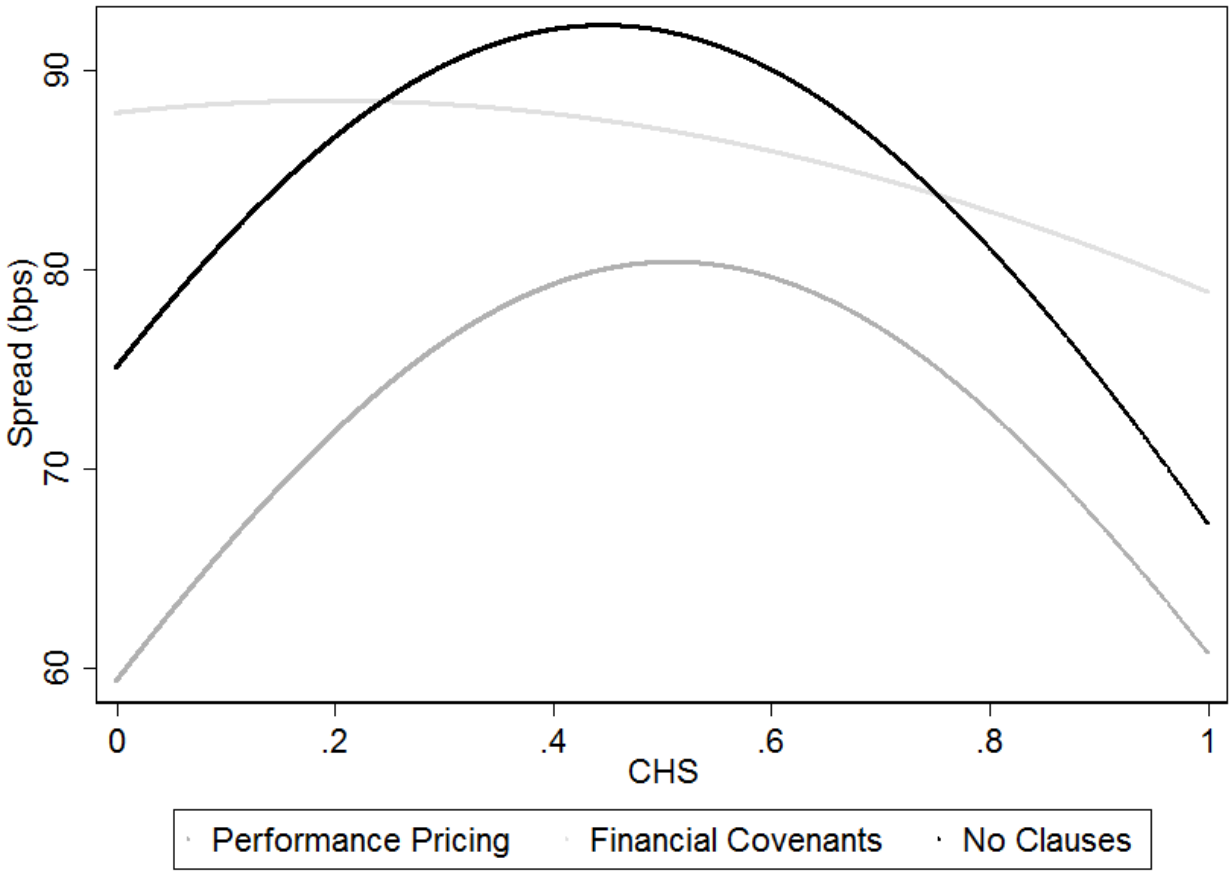


Fig. 3 Insiders ownership and financial covenants. On the x-axis is the percentage of Closely Held Shares (*CHS*) in decimals. On the y-axis is the expected level of loan spread (in basis points). The expected spread is using estimated coefficients from Model (7) of Table 8 for three different cases: when no financial clause is present (black line); when financial covenants are included in the loan contract (light grey line); and when performance pricing clauses are included (dark grey line). The estimated natural logarithm of loan spread is converted into an expected spread in bps in a similar way as described in Fig. 1



Appendix

Table 9 Variables definition. This table reports definition and source of all variables included in this study

Variable	Definition	Source
All-in spread drawn	The total annual cost, including a set of fees and fixed spread, paid for each amount effectively used under the loan commitment. Expressed as a spread in basis points over the reference rate	Dealscan
CHS	Closely Held Shares. It's the percentage (in decimals) of total equity held by: officers, directors and their immediate families; trusts; any other corporation; pension/benefit plans; individuals who hold 5% or more of the outstanding shares	Worldscope
Leverage	Total Liabilities/(Market Capitalization + Total Liabilities)	Worldscope
Leverage accounting	Total Liabilities/Total Assets	Worldscope
LNTA	ln(Total Assets in USD)	Worldscope
SDTD	Short-term Debt/(Short-term Debt + Long-term Debt)	Worldscope
SG	Sales Growth; it is the percentage yearly increase (in decimals) of Net Sales	Worldscope
INTA	Intangible Assets/Total Assets	Worldscope
ROA	Net Income/Total Assets	Worldscope
Government	A dummy equal to 1 if the borrower is indicated as a governmental entity or a fully or partially Government-owned enterprise and 0 otherwise	Dealscan
LNFA	ln(Facility Ammount in USD)	Dealscan
N° of facilities	Number of facilities in each deal	Dealscan
Maturity	Facility matuirty expressed in months	Dealscan
Guarantor	A dummy variable equal to 1 there is a loan guarantor and 0 otherwise	Dealscan
Performance Pricing	A dummy variable equal to 1 if the loan cotract includes performance pricing and 0 otherwise	Dealscan
Covenants	A dummy variable equal to 1 if the loan contract includes financial covenants and 0 otherwise	Dealscan
Senior	A dummy variable equal to 1 if the loan is senior and 0 otherwise	Dealscan
Prime Rate	A dummy variable equal to 1 if the interest rate is a prime rate and 0 otherwise	Dealscan
Corporate Purpose/WC	A dummy variable equal to 1 if the loan purpose is corporate or working capital and 0 otherwise	Dealscan
Takeover/LBO	A dummy variable equal to 1 if the loan purpose is a takeover or a levered buy-out	Dealscan
Refinancing	A dummy variable equal to 1 if the loan purpose is refinancing maturing debt and 0 otherwise	Dealscan
Backup line	A dummy variable if the loan purpose is a backup line and 0 otheriwse	Dealscan

(*continue*)

Same Country	A dummy variable equal to 1 if the borrower and the lead lender are from the same country and 0 otherwsie. In case of multiple lead lenders, the one retaining the highest share of the loan is considered.	Dealscan
ln(1 + n° loans)	For each deal, the natural logarithm of 1 plus the number of previous loans for the same borrower included in our dataset	Dealscan
N° of lenders	N° of lending banks	Dealscan
Lead Share	Share retained by leading banks	Dealscan
Syndication	Dummy variable equal to 1 if the the deal is a syndicated loan and 0 otherwise	Dealscan
Level	The first principal component of the US Treasury yield curve	Fed
Slope	The second principal component of the US Treasury yield curve	Fed
Curvature	The third principal component of the US Treasury yield curve	Fed
Default premium	The spread between average yields for corporate bonds rated Baa and Aaa by Moody's	Fed
Credit rights	An indicator from 1 to 4 of the level of creditors protection in each country	QS (2007); LLSV (1997)
English law	A dummy variable equal to 1 if the borrower comes from an English law country and 0 otherwise	QS (2007); LLSV (1997)
French law	A dummy variable equal to 1 if the borrower comes from a French law country and 0 otherwise	QS (2007); LLSV (1997)
German law	A dummy variable equal to 1 if the borrower comes from a German law country and 0 otherwise	QS (2007); LLSV (1997)
Islamic law	A dummy variable equal to 1 if the borrower comes from an Islamic law country and 0 otherwise	QS (2007); LLSV (1997)
Scandinavian law	A dummy variable equal to 1 if the borrower comes from a Scandinavian law country and 0 otherwise	QS (2007); LLSV (1997)
Socialist law	A dummy variable equal to 1 if the borrower comes from a Socialist law country and 0 otherwise	QS (2007); LLSV (1997)
E Index	Entrenchment Index from 0 to 6. 1 point is assigned for each of the following anti-takeover provision: staggered boards, limits to bylaw amendments, poison pills, golden parachutes, and supermajority requirements for M&As and charter amendments	BCF (2009)