International Review of Financial Analysis 63 (2019) 357–368

Contents lists available at ScienceDirect

International Review of Financial Analysis

Insider ownership and the cost of debt capital: Evidence from bank loans

Stefano Lugo

Utrecht University School of Economics, Kriekenpitplein 21-22, 3584 EC Utrecht, Netherlands

ARTICLE INFO

Article history:
Received 15 February 2016
Received in revised form 6 October 2016
Accepted 30 December 2016
Available online 3 January 2017

JEL classification:
G21
G30
G32

Keywords:
Ownership structure
Agency costs
Inverse U-shaped
Cost of debt
Bank loans

ABSTRACT

Agency theory predicts that the incentives for insiders to extract private benefits at the expense of creditors are negatively related to the level of ownership retained by insiders. However, the ability of insiders to effectively control the resources of the firm and engage in such activities is positively related to their level of ownership. Using a large international sample of bank loans, this paper demonstrates how these two contrasting forces result in an inverse U-shaped relationship between insider ownership and the firm's cost of borrowing. Consistent with the control argument, the positive relationship between insider ownership and cost of debt for low levels of insider ownership is found to be not in place when insiders are entrenched above and beyond their level of ownership. Finally, the relationship between insider ownership and cost of debt in presence of loan contract clauses is addressed.

1. Introduction

The relevance and impact of conflicts of interest between firm insiders (i.e., directors and controlling shareholders) on the one hand and the other stakeholders on the other hand has been one of the most investigated topics in the field of corporate finance, as the 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 & Nair, 2005), conflicts also exist between insiders and creditors. Empirical studies on this conflict have generally set their focus on wealth changes associated with specific events (e.g., Warga & Welch, 1993; 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).

In this paper, I address the conflict of interests between insiders and creditors by looking at the relationship between the level of equity ownership by insiders and the firm's cost of debt financing. Agency theories predict that insiders have stronger incentives to extract private benefit and undertake more risk when the fraction of shares they own is smaller. Rational creditors will ask for higher returns when insiders are more likely to engage in activities that would harm them. Thus, these theories predict a negative relationship between insider ownership and the cost of debt. At the same time, a low level of ownership endangers the control of the firm by insiders (e.g., Shleifer & Vishny, 1986) and thus their ability to effectively extract private benefits at the expense of creditors. As such, an increase in insider ownership can actually increase the (agency) cost of debt as long as the control of insiders is uncertain.

The ability of, and the incentives for, insiders to pursue interests in contrast with those of creditors are thus assumed to relate to the level of insider ownership in opposite ways. Together, these two arguments predict an inverse U-shaped relationship between insider ownership and the cost of debt: When insider ownership is low, an increase in the latter can augment the ability of insiders to extract private benefits more than it hampers their incentives to do so. When insider ownership is high, a further increase in ownership does not further improve their control over the resources of the firm; it only aligns their incentives with those of creditors.

To empirically address this hypothesis, I study the relationship between the level of ownership by firm insiders and the firm cost of borrowing using a large international sample of bank loans issued between 1996 and 2010. Controlling for several borrower, lender, loan, market and country characteristics, I find that the relationship is indeed inversely U-shaped. Ceteris paribus, the maximum cost of debt is estimated to be associated with a level of equity ownership by the insiders between 42.8% and 49.3% (depending on the model). The verified functional form is robust to the use of different empirical strategies to test it, such as using a piecewise linear regression or splitting the sample

E-mail address: s.lugo@uu.nl.

https://doi.org/10.1016/j.irfa.2016.12.007
1057-5219/

by levels of insider ownership. Estimations accounting for the potential panel unobserved effects, the endogeneity in the ownership structure, and the country heterogeneity also confirm this main result. Consistent with the control argument, I find that when insiders are entrenched above and beyond their level of ownership—as proxied by the presence of entrenching governance provisions (Gompers et al., 2003; Bebchuk et al., 2009)—the (positive) relationship between insider ownership and the firm cost of debt for low levels of insider ownership is significantly weaker.

Finally, this study addresses how contingent clauses of loan contracts such as financial covenants and performance pricing influence the relationship between ownership concentration and the cost of debt. Both classes of clauses are associated with a weaker positive (negative) relationship between insider ownership and the cost of debt when the former is low (high), suggesting that they are an effective tool in limiting the scope for opportunistic behavior by insiders.

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

This study adds to the findings of the previous literature mainly in two ways. First, it documents that the relationship between the separation of ownership and control—as measured by the share held by firm 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) the potentially non-linear effect of ownership concentration on operative performances or equity value. To the best of my knowledge, this is the first study to present empirical evidence of a non-monotonic relationship between insider ownership and loan pricing. The positive relationship between insider ownership and the cost of debt for low levels of insider ownership is interpreted as the result of insider control over the firm being positively related with their ownership. Consistent with this argument, I demonstrate that the (positive) relationship is not in place when insiders are entrenched above and beyond their level of ownership. Second, this work contributes to the literature studying the relationship between loan pricing and loan contract clauses (e.g., Asquith et al., 2005; Lin et al., 2011; Bradley & Roberts, 2015) by showing how the non-monotonic relationship between ownership structure and the cost of bank loans differs when financial covenants and performance pricing clauses are included.

The rest of the paper proceeds as follows: In Section 2, I discuss the theoretical background leading to empirical predictions. In Section 3, the data used in this study are presented. Section 4 reports the empirical evidence. Section 5 concludes.

2. Background and empirical predictions

When the control of the firm exerted by insiders is associated with a limited stake in the firm capital, a conflict of interest naturally arises between insiders and other stakeholders. When insiders own only a fraction of equity capital they have an incentive to extract resources out of the company, a phenomenon referred to as tunneling (Johnson et al., 2000).[1] The smaller is the stake owned by insiders, the stronger is the *incentive* to extract private benefits. Moreover, a smaller level of ownership provides insiders with an incentive to increase the level of risk undertaken by the company, and thus the level of risk experienced by creditors (Anderson et al., 2003; Faccio et al., 2011). As a result, an inverse relationship between insider ownership and agency costs affecting the creditors is expected; if the latter are rational, they will make the shareholders bear the cost by asking higher interests on debt. Insider ownership is then predicted to have a negative relationship with the cost of debt. For ease of exposition, I refer to this henceforth as the incentive argument. This argument has already received empirical validation from several studies: In particular, Lin et al. (2011) and Aslan & Kumar (2012) focus on bank loans and indicate that the cost of debt increases with the wedge between control and ownership and decreases with the cash-flow right retained by insiders.

In its most simple form, the argument discussed so far relies on the assumption that insiders exogenously control the firm. However, when insiders own a small fraction of equity, their control can be at risk. This can have severe consequences on their ability to pursue private interests at the expense of other stakeholders. Other shareholders can vote for substituting the managers who are extracting private benefits. A high value of control associated with limited protection of existing insiders would increase the likelihood of external raiders trying to take over the control of the firm; this in turn discourages insiders from undertaking measures harming other stakeholders (Scharfstein, 1988). To the extent that a decrease in insider ownership decreases their control over the firm, it can thus hamper their *ability* to engage in activities that are detrimental for creditors. As a result, as long as control is uncertain the cost of debt capital is expected to be positively related with the level of insider ownership. I refer to this henceforth as the control argument.

Altogether, the incentive and the control arguments illustrated above predict an inverse U-shaped relationship between insider ownership and the cost of debt: When insider ownership is high, a further increase in ownership does not increase their control over the resources of the firm; rather, it aligns their incentives with those of creditors, thus reducing the agency costs of debt. When insider ownership is low, the opposite is expected. A marginal increase in insider ownership can foster their ability to extract private benefits more than it hampers their incentives to do so, as the separation between ownership and control remains substantial.

The control argument relies on the assumption that, as long as insider ownership is low, a bigger stake owned by insiders is associated with a stronger control over the firm. However, direct ownership is not the only source of insider entrenchment; for example, Bebchuk, Cohen & Ferrell (2009, BCF hereafter) and Gompers, Ishii & Metrick (2003, GIM hereafter), among others have shown how governance provisions can allow insiders to be entrenched in the control of the firm even if they own a limited stake in the firm equity. When insiders are entrenched above and beyond their level of ownership, their ability to control the resources of the firm depends to a lesser extent on the share of equity they own. If an increase in the cost of debt is associated with higher insider ownership because the latter fosters the ability of insiders to control the resources of the firm, i.e., if the control argument holds, we should then expect such relationship to be significantly weaker when insiders are entrenched above their level of ownership. To the extent that governance provisions fully entrench insiders, the relationship between ownership and cost of debt should even be negative, as only the incentive argument then holds.

Bank loans can include different contract provisions in the agreement. These clauses are used to mitigate the risks associated with the conflict of interest between insiders and creditors. If the relationship between insider ownership and loan spreads depends on the ability and incentives of insiders to extract private benefits, this relationship is expected to be significantly weaker when such clauses are present. Indeed, Lin et al. (2011) demonstrate how the presence of contract clauses reduces the sensitivity of the cost of debt to the ownership structure of the borrower. In this study, I want to augment their results in two ways. First, I investigate how contract clauses moderate the relationship between insider ownership and the cost of debt when allowing for a

[1] A similar argument was already made by Jensen and Meckling (1976) in their seminal paper on the conflict between managers and owners.

quadratic functional form. Second, I explore the potential differences in the moderating effect of two of the most commonly used clauses in bank loan contracts, namely financial covenants and performance pricing.[2]

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) in financial performance (Asquith et al., 2005). Performance pricing clauses have been introduced relatively recently and have become popular especially in the syndicate loan market: This is because the break of the financial covenants by the borrower, while giving the lender the right to call the debt, actually results in the bulk of cases in a renegotiation (e.g., Asquith et al., 1994). This process can be very costly, especially if several lenders (as in the case of syndicate loans) are involved. The expected cost of this process is usually transferred to the borrower in terms of the higher spreads.[3] Performance pricing provisions require instead setting the cost (or premium) ex-ante for the borrower to deviate from the agreed credit quality. From a theoretical point of view, it is unclear which of the two clauses can be more effective in moderating the relationship between insider ownership and loan spreads. On the one hand, performance pricing clauses might not fully take into account the potential endogenous change in incentives for insiders as credit conditions change; the contract renegotiation associated with financial covenants allows lenders to require the new agreement to reflect the new conditions by the time the negotiation is made. On the other hand, the high costs associate with debt restructuring might hamper the effectiveness of financial covenants as a deterrent for opportunistic behavior by insiders. Which of the two clauses is more effective in moderating the relationship between insider ownership and cost of debt is thus ultimately an empirical question.

3. Data

The data used in this study are from two main sources. The information on bank loans is from the SDC Dealscan database; the firm level data have been retrieved from Worldscope.

The Worldscope dataset initially includes 67,526 firms, corresponding to 979,746 yearly observations between 1995 and 2009. The Dealscan dataset includes, through March 2010, 41,476 distinct firm codes associated with 106,613 loan packages[4] divided into 154,488 facilities. Following Ivashina (2009), I retain only one facility per package, using the biggest one starting at the loan initiations. Data before August 1996 are excluded, as they are largely incomplete because they have been collected retroactively (e.g., Ivashina, 2009). The portion of Dealscan I consider includes 35,261 borrowing firms and 83,551 deals. Because the Dealscan database appears to be more affected by duplicate identification codes for each firm, I use the Worldscope dataset as the master in merging the two, meaning that multiple Dealscan identification codes may be associated with a single Worldscope id.

I start building the dataset cleaning Worldscope for: a) duplicate firms (by name, country and sector) and ADRs; b) observations for which no variable is non-missing; and c) observations for which the firm sector is missing. I am then left with 62,648 unique firms with 939,720 yearly observations between 1995 and 2009. In the spirit of Faccio et al. (2001), I drop the 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, I am left with 60,399 firms (432,594 observations) for which at least the sector, country and total assets of the firm are available. To further limit the potential effect of suspicious data, all Worldscope continuous variables are winsorized at the 1% level for each tail.[5]

Worldscope and Dealscan are then merged using the firm name, country and sector (at the 2-digit SIC code level); I find at least one correspondence for 15,623 unique firms in Worldscope. I further hand-matched 1195 entities, bringing the total number of Worldscope firms with a match in Dealscan to 16,818. The number of deals for which I can identify the borrowing firm in Worldscope is then 34,648 – or 41.47% of the total. For 27,954 of the deals (corresponding to 8334 borrowers from 76 different countries), at least the 1-year lagged information regarding the firm country, sector and total assets is available. Table 1 presents the distribution of deals and borrowing firms by year and geographical area.

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

The principal explanatory variable I focus on is the level of insider ownership (Grossman & Hart, 1986; Hart & Moore, 1990). This variable allows to consider the effect of the separation between ownership and control simply arising when insiders own <100% of the firm equity. To measure insider ownership, I use the percentage of Closely Held Shares (*CHS*, source: Worldscope) in decimals. *CHS* is defined by Worldscope as the share of equity held by insiders, and it has been used in several previous studies as a measure of insider ownership (Mitton, 2002; Thomsen et al., 2006; Doidge et al., 2007 among others). The frequent use of *CHS* in the literature is favored by the fact that it is a time-varying variable readily available for a large number of firms. However, *CHS* presents also two clear limitations, which should be acknowledged upfront. First, it considers together all of the insiders of the firm, not distinguishing (for example) a managing director from a major shareholder who is not directly part of the board. Second, it does not account for the effective number of insiders or the heterogeneity in their level of ownership. In this sense, the use of *CHS* entails the implicit assumption that insiders can, at least to some extent, be considered a unified group with shared interests in potential contrast with those of the "outsiders" (e.g., creditors, other minority shareholders).

Several controls that have been found in the literature to significantly influence the cost of corporate borrowing are also considered. Below are described all of the variables included in the pricing models; the descriptive statistics for these variables are then reported in Table 2. The variable definitions are summarized in Table I, reported in the Appendix.

3.1. Borrowers characteristics

I use several firm 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

[2] Financial covenants and performance pricing provisions appear in 39% and 29% of the sample, respectively, as Table 2 indicates. Lin et al. (2011) do not address in their study the moderating role of performance pricing clauses.

[3] Indeed, Ivashina (2009) finds that financial covenants are associated with higher spreads.

[4] As is usually done in the literature on syndicated loans, I use the terms "loan deal" and "loan package" as synonyms.

[5] However, I do not winsorize the main independent variable for insider ownership, defined below, as it correctly varies between 0 and 1. All the main results presented in this paper hold using non-winsorized data as well.

Table 1
Sample distribution by year and country.
This table presents the yearly sample distribution. Only observations for which the borrower country, sector and total assets are available are considered. Geographical distribution refers to the percentage of deals by borrower country of origin.

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	2204	1594	5.26%	15.34%	71.96%	7.44%
1998	1953	1439	6.71%	14.90%	73.84%	4.56%
1999	2233	1647	9.36%	17.69%	67.53%	5.42%
2000	2333	1699	10.24%	21.86%	61.77%	6.13%
2001	2294	1669	8.50%	21.14%	60.46%	9.90%
2002	2346	1746	8.57%	27.37%	59.38%	4.69%
2003	2404	1744	8.36%	28.29%	59.07%	4.28%
2004	2393	1836	10.45%	22.23%	62.56%	4.76%
2005	2443	1796	12.32%	25.67%	55.06%	6.96%
2006	2171	1691	10.92%	23.63%	58.36%	7.09%
2007	2125	1575	8.75%	29.08%	54.82%	7.34%
2008	1428	1122	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	27954	8334	9.17%	22.88%	61.40%	6.54%

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; to be able to include more observations, the most parsimonious model includes a measure of leverage based only on the accounting data (*Leverage accounting*), defined as the ratio of total liabilities over total assets. I use total liabilities instead of total debt—which is often used in the literature—because the non-financial liabilities tend to have a higher seniority than debt (Welch, 2011), and thus play a relevant role in the credit risk for lenders. I control for the dimension of the firm using the natural logarithm of total assets in thousands of USD (*LNTA*); 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*) accounts 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 lender point of view) in the case of default (e.g., Lin et al., 2011). I control for firm performance using the ratio of net income over total assets (*NITA*); I also include the yearly percentage growth of net sales (*SG*), as growth opportunities increase the potential conflicts of interests between the shareholders and creditors (Myers, 1977). All raw data for computing these variables are from Worldscope and are lagged 1 year to reduce endogeneity.

Following Sufi (2007), I control for the natural logarithm of 1 plus the number of previous loans in the Dealscan database to the same borrower ($\ln(1 + n^\circ\ of\ loans)$) to approximate for the information on the firm held by the potential lenders. Because a high level of insider ownership can be associated with government ownership—especially in

Table 2
Descriptive statistics.
This table reports the descriptive statistics for the variables included in this study. The quartiles 25th, 50th and 75th refer to the distribution percentiles. All variables are as defined in Section 3 and in Table I of the Appendix.

Characteristics	Variable	N	Mean	Std. dev.	25th	50th	75th
Borrower	All-in spread drawn	20732	163.82	139.68	57.5	125	240
	CHS	23035	0.32	0.27	0.10	0.26	0.52
	Leverage	25431	0.51	0.27	0.29	0.49	0.75
	Leverage accounting	27954	0.66	0.32	0.48	0.64	0.86
	LNTA	27954	14.26	2.22	12.66	14.18	15.95
	SDTD	26790	0.33	0.32	0.06	0.23	0.53
	SG	25036	0.23	0.69	0.01	0.11	0.25
	INTA	24114	0.13	0.17	0	0.04	0.19
	NITA	27547	0.01	0.24	0.01	0.03	0.06
	Government	27954	0.01	0.11	0	0	0
	ln(1 + n° loans)	27954	1.32	1.3	0	1.1	1.79
Loan	LNFA	27951	18.46	1.65	17.28	18.6	19.58
	N° of facilities	27954	1.4	0.84	1	1	2
	Maturity	26975	44.88	36.06	23	36	60
	Guarantor	27954	0.07	0.26	0	0	0
	Performance pricing	27954	0.29	0.45	0	0	1
	Covenants	27954	0.39	0.49	0	0	1
	Senior	27954	0.98	0.12	1	1	1
	Prime rate	27954	0.39	0.49	0	0	1
Loan purpose	Corporate purpose/WC	27954	0.57	0.49	0	1	1
	Takeover/LBO	27954	0.11	0.31	0	0	0
	Refinancing	27954	0.18	0.38	0	0	0
	Backup line	27954	0.05	0.22	0	0	0
Lenders	Same country	27954	0.71	0.46	0	1	1
	N° of lenders	26256	7.16	8.36	1	4	10
	Lead share	26256	13.86	27.28	0	0	15.89
	Syndication	27954	0.73	0.45	0	1	1
Market interest rates	Level	27954	0.13	2.32	−1.77	0.29	2.21
	Slope	27954	−0.2	0.83	−0.94	−0.14	0.5
	Curvature	27954	−0.03	0.18	−0.15	−0.01	0.08
	Default premium	27954	0.94	0.38	0.72	0.86	1.03
Legal environment	Credit rights	27502	1.56	1.01	1	1	2
	English law	27951	0.81	0.39	1	1	1
	French law	27951	0.06	0.24	0	0	0
	German law	27951	0.1	0.3	0	0	0
	Islamic law	27951	0	0.06	0	0	0
	Scandinavian law	27951	0.02	0.13	0	0	0
	Socialist law	27951	0.01	0.1	0	0	0
Governance	E Index	9001	2.33	1.34	1	2	3
	G Index	9001	8.89	2.62	7	9	11

some countries[6]—and given that government ownership significantly affects the cost of borrowing (Borisova & Megginson, 2011), I 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*).

3.2. Loans and lenders characteristics

Several deal characteristics typically included in all studies on bank loans are considered. I 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 a) there is a loan guarantor (*Guarantor*); b) the contract includes performance pricing clauses (*Performance Pricing*); or c) the contract includes financial covenants (*Covenants*); and 0 otherwise. A series of indicators is used to control for the loan stated purpose. Following Sufi (2007), these are grouped into 5 categories: Working Capital and corporate purposes, Refinancing, Acquisitions, Backup line and Other. As in Ivashina (2009), I also include a dummy equal to 1 if the base rate is a prime rate and 0 otherwise (*Prime Rate*).

Together with the loan characteristics, I also control for the few relevant aspects of the lending group; first, I use a dummy variable equal to 1 if the loan is indicated as syndicate and 0 otherwise (*Syndication*); as displayed in Table 2, syndicate loans account for 73% of the sample. I include the number of lenders (*N° of lenders*) and the share of the loan retained by lead banks (*Lead Share*) because the level of concentration in lead lenders increases the effectiveness of monitoring, but at the same time a more disperse lending base allows a reduction in the concentration of risk (e.g., Ivashina, 2009). Finally, I use a dummy variable to control for the lead lender[7] and the borrower being from the same country (*Same Country*), as foreign banks are associated on average with higher costs of debt (Qian & Strahan, 2007).

3.3. Legal environment

Several studies (e.g., Esty & Megginson, 2003; Qian & Strahan, 2007; Bae & Goyal, 2009) have demonstrated the relevance of the laws for creditor protection in explaining cross-country differences in bank loan structure and pricing. To account for this, I use the Qian & Strahan (2007, QS hereafter) creditor rights indicator for the borrower's country of origin derived from the seminal paper by La Porta, Lopez-de-Silanes, Shleifer & Vishny (1997, LLSV hereafter) on law and finance. For countries not considered in the QS work, I use the original values reported in LLSV. As customary, I 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).

3.4. Market rates

Similar to Lugo (2014), I consider among explanatory variables the general level of market interest rates and premia required by the market by the time the deal is settled. To control for the term structure of interest rates, I 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. To control for the *Default Premium* required by the market, I use the spread between the average yield on corporate bonds rated Baa and Aaa by Moody's. All yield data are from the Federal Reserve website.[8]

3.5. Insider entrenchment

I proxy for the level of insider entrenchment above and beyond ownership using two indexes for the presence of entrenching corporate governance provisions: the Governance Index (*G index*) proposed by GIM (2003) and the Entrenchment Index (*E index*) proposed by BCF (2009).[9] Both indexes are based on the Investor Responsibility Research Center (IRRC) reports. IRRC data are updated every 2–3 years, and each report covers 1400–1800 US firms (BCF, 2009). As is customary for studies based on IRRC data (e.g., GIM, 2003), for years when the indexes are missing, the last known value is considered, as provisions at the firm level tend to be quite stable across time. The *G index* varies between 1 and 24, whereas the *E index* varies between 0 and 6. For both proxies, higher values identify the presence of more governance provisions allowing for insider entrenchment.

4. Empirical evidence

In this Section, I present the empirical results. In Section 4.1, the relationship between insider ownership and the cost of debt is addressed. Section 4.2 presents robustness checks for the main result. Sections 4.3 and 4.4 are dedicated to address how the relationship differs when insiders are entrenched and when different contract clauses are included in the loan, respectively.

4.1. Insider ownership and cost of debt

To study empirically the relationship between insider ownership and the cost of debt, I formulate a pricing model for the spread paid on bank loans including both the *CHS* and its square value (*CHS^2*) among the determinants. From the discussion presented in Section 2, I expect the coefficient for *CHS^2* to be negative (an inverse U-shaped functional form), whereas the coefficient for *CHS* should be positive (an inflection point associated with a strictly positive value of *CHS*).

Following Lin et al. (2011), I use as the dependent variable the natural logarithm of the all-in spread drawn in bps; the borrowers, loans, lenders, market rates and legal environment characteristics are the control variables presented in Section 2. In all of the models, I include the indicators for the country of loan origination because, as noted by Carey and Nini (2007), the loans originated in Europe and Asia appear to be characterized on average by lower spreads. As is customary, I include indicators for the borrower industry (at the 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 the firm level.[10]

Model (1) is the most parsimonious: I include as controls only the most relevant and frequently available borrower characteristics (*LNTA* and *Leverage accounting*) and loan characteristics and purpose, together with the market interest rates and the country, industry and year indicators. Model (2) augments Model (1) by controlling for the structure of the lending group. In Model (3), I use the market measure of borrower leverage (*Leverage*) and include the additional borrower characteristics. In Model (4), I control for government ownership and for the legal environment of the borrower country of origin. Finally, in Model (5) I follow Qian and Strahan (2007) and exclude firms in the financial

[6] The incidence of GOEs is significantly (at the 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, whereas the average for other firms is 0.318. The difference is statistically significant at the customary confidence levels.

[7] When more than one lead lender is present, I consider the one that retains the highest share.

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

[9] G index data are available at http://faculty.som.yale.edu/andrewmetrick/downloads/Governance.xls; E index data are available at http://www.law.harvard.edu/faculty/bebchuk/data.shtml; for details about the indexes construction, see GIM (2003) and BCF (2009).

[10] Similar levels of statistical significance are found using standard errors clustered by country instead of by firm.

Table 3
Insider ownership and loan spreads.
This table presents the results of the 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 3 and Table I of the Appendix. Year effects are the year indicators. Industry effects are at the 2-digit 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), the borrowers with a 1-digit SIC code equal to 6 or 9 are excluded. Extreme point is the value of CHS associated to the vertex of the parabola. Inv. U-shaped t is the t-statistic for a test on the null hypothesis that the relationship is monotonic (or positive U-shaped). Standard errors robust to heteroskedasticity and clustered by firm are reported in round brackets. *,** and *** denote statistical significance at the 10%, 5% and 1% confidence level, respectively.

	Whole sample				Excl. financials and public sector
	(1)	(2)	(3)	(4)	(5)
CHS	0.808***	0.800***	0.582***	0.579***	0.593***
	(0.096)	(0.099)	(0.109)	(0.109)	(0.111)
CHS^2	−0.825***	−0.812***	−0.680***	−0.670***	−0.683***
	(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)
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)
NITA	–	–	−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
Extreme point	0.489	0.493	0.428	0.432	0.434
Inv. U-shaped t	6.01***	5.71***	4.56***	4.44***	4.26***

Table 3 (*continued*)

	Whole sample				Excl. financials and public sector
	(1)	(2)	(3)	(4)	(5)
N° observations	17,866	17,061	12,642	12,496	10,835
N° borrowers	6423	6186	4694	4627	4058
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

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.

All models support the predicted functional form. The *CHS* and *CHS^2* coefficients are positive and negative, respectively, and both are statistically significant (at the 1% confidence level). I also report in Table 3 the t-statistic for a test on an inverse U-shaped relationship as proposed by Lind and Mehlum (2010). It is a joint test on the two null hypotheses that the slope is not positive for low values of *CHS* and it is not negative for high values of *CHS*, respectively. The reported statistics are computed using the two extreme values of *CHS* (i.e., 0 and 1); the null of no inverse U-shaped relationship is rejected at the 1% confidence interval for all of the Models. Tests performed using alternative low and high values for *CHS* (e.g., 0.2 and 0.8) render similar results. Table 3 also reports the values of *CHS* associated to the estimated vertex of the parabola (*Extreme point*). It is interesting to notice how the marginal effect of *CHS* changes in sign for the values of *CHS* of 0.43–0.49 (depending on the model), i.e., close to the 0.50 threshold for the absolute majority. Aside from statistical significance, the difference in the cost of debt among companies characterized by different levels of insider ownership appears to be economically sizable: Ceteris paribus, a firm in which insiders own 43%–49.3% of equity pays on average 12.5%–20% higher spreads than a widely held firm and 21.5–22% higher spreads than a firm in which insiders hold all of the shares.

4.2. Robustness checks

Before focusing on insider entrenchment and the role of contract clauses, I present some additional robustness checks for the main result of this study. Section 4.2.1 is dedicated to alternative empirical approaches to test for the functional form. Additional robustness checks focusing on differences at country level are presented in Section 4.2.2.

4.2.1. Robustness checks on the functional form

I use three alternative approaches to provide further evidence of the inverse U-shaped relationship between insider ownership and the loan spread. First, in the spirit of Morck et al. (1988) a piecewise linear regression approach is considered; I substitute the variables *CHS* and *CHS^2* with four variables, *CHS0to0.1*, *CHS0.1to0.3*, *CHS0.3to0.5* and *CHS0.5to1*, defined as in Eq. 1 as

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

For example, if *CHS* is 0.4 then *CHS0to0.1* is equal to 0.1, *CHS0.1to0.3* is equal to 0.2, and *CHS0.3to0.5* is equal to 0.1. In this way, it is possible for each variable to capture the marginal effect of *CHS* for each interval of *CHS* itself. The choice of thresholds is somehow arbitrary but does not lack theoretical underpinning: 0.1 is the threshold typically used in the literature to define "large" shareholders (e.g., La Porta et al., 1999; Laeven & Levine, 2008); 0.3 identifies in several countries the threshold for mandatory tender offers (Dyck & Zingales, 2004), implying that it can be considered a level of ownership granting a substantial control over the firm; when *CHS* is higher than 0.5, insiders own the absolute majority of shares.[11]

The second approach I use is to split the sample by the values of *CHS* and then use a first-order model (i.e., including only *CHS* but not *CHS^2* among the regressors) for the cost of debt. I use the same threshold for *CHS* as in the piecewise regression, namely, 0.1, 0.3 and 0.5. Finally, I control for unobserved panel-level effects by using an Arellano and Bond (1991) estimator, using for each firm-year the biggest deal in terms of the facility amount. In addition, the model accounts for the potential endogeneity of the ownership structure. In the spirit of Laeven and Levine (2009), I include among the instruments the industrial (at the 2-digit SIC code level) average of *CHS*. This empirical strategy considerably reduces the usable sample; for this reason, I only consider two subsamples, i.e., *CHS* < 0.3 and *CHS* > 0.5.

Table 4 reports the results for these alternative model specifications. Model (1) reports the results for the piecewise regression, Model (2) (a)–(d) reports the results for a first-order model on split samples using *CHS* as the main independent variable; Model (3) (i) and (ii) reports the Arellano and Bond (1991) estimations for the two subsamples considered. All models also include the control variables used in Model (1) of Table 3.[12] To save space, the controlling variable coefficients are not reported; their sign, magnitude and statistical significance are, however, largely aligned with the results illustrated in Table 3. The inverse U-shaped relationship between *CHS* and the spreads is confirmed both by using a piecewise regression and an OLS regression on the split samples: The coefficient of *CHS* is positive and statistically significant for the low values of the latter and monotonically decreases with the level of *CHS* considered. When *CHS* is high, the coefficient becomes negative and statistically significant at least at the 5% confidence level. Consistent results are obtained also when an Arellano and Bond (1991) estimator is used. The coefficient for *CHS* is positive when *CHS* is lower than 0.3 and negative when it is higher than 0.5; the coefficients for both subsamples are significant at the 10% confidence level.

4.2.2. Country heterogeneity

The predicted relationship between insider ownership and cost of debt depends on the possibility for insiders to engage in behaviors that are detrimental for creditors; one would thus expect this relationship to be weaker in countries where the rights of creditors are better protected. Indeed, Lin et al. (2011) find a weaker relationship between loan spreads and ownership structure where creditor rights are higher. I address again this moderating factor in the context of a non-monotonic relationship. Model (1) and Model (2) of Table 5 present coefficient estimates for a basic pricing model estimated including only observations in countries where *credit rights* is lower than two (Model (1)) or only

[11] As a further robustness check, in unreported analyses the variable *CHS0.5to1* has been replaced with two variables, *CHS0.5to0.7* and *CHS0.7to1*, defined in similar fashion. Results are consistent with those presented in Table 4.

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

Table 4
Robustness checks for the functional form.
This table reports the estimation for robustness checks on the loan pricing model functional form. The dependent variable is the natural logarithm of the all-in spread drawn in bps. In Model (1) and (2), we use an OLS estimator. In Model (1), the variable CHS is substituted with four piecewise variables (CHS 0 to 0.1, 0.1 to 0.3, 0.3 to 0.5 and 0.5 to 1) defined as in Eq. 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 1-year lags and the average CHS at the industry level (2-digit SIC code) as instruments. All of the other variables used in Model (1) of Table 3 are included as controls. Standard errors robust to heteroskedasticity and clustered by firm are reported in round brackets. *,** and *** denote statistical significance at the 10%, 5% and 1% confidence level, respectively.

	Whole sample	Split sample					
		(2) OLS regression				(3) Arellano & Bond	
	(1) Piecewise regression	(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**	0.511*	−0.426*
		(0.521)	(0.185)	(0.204)	(0.101)	(0.279)	(0.235)
CHS 0 to 0.1	1.456***	–	–	–	–	–	–
	(0.298)						
CHS 0.1 to 0.3	0.311**	–	–	–	–	–	–
	(0.138)						
CHS 0.3 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	4831	5523	3337	4175	1657	388
N° of firms	6423	1837	2726	2009	2206	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	–	–

observations where it is higher than or equal to two (Model (2)). As expected, the (inverse U-shaped) relationship is mainly driven by firms in countries with a low value of *credit rights*. The coefficients for CHS and CHS^2 are positive and negative, respectively, for both models; but they are statistically significant at customary confidence levels only for Model (2).

For Models (3) and (4), the basic pricing model is estimated splitting the sample excluding or including only US firms, respectively. United States are the most represented country in the dataset; it is thus important to address to what extent the inverse U-shaped relationship holds for each of the two samples separately. The test proposed by Lind and Mehlum (2010) rejects the null hypothesis of no inverse U-shaped

Table 5
Country heterogeneity.
This Table reports estimates for robustness checks linked to potential geographical differences in the verified pricing model. The dependent variable is the natural logarithm of the all-in spread drawn in bps. The models include all of the control variables used in Model (1) of Table 3. For Model (1) and (2), the sample is split between observations characterized by a low (i.e., lower than 2) or high (i.e., higher than or equal to 2) value of credit rights. Model (3) and (4) are estimated excluding and including only US firms, respectively. Model (5) includes indicators for each combination of vintage and country of syndication. Standard errors robust to heteroskedasticity and clustered by firm are reported in round brackets. *,** and *** denote statistical significance at the 10%, 5% and 1% confidence level, respectively.

	Credit rights		US firms		Country × year effect
	(1) low	(2) high	(3) excluded	(4) only	(5)
CHS	0.899***	0.245	0.315	0.940***	0.802***
	(0.104)	(0.267)	(0.199)	(0.110)	(0.097)
CHS^2	−0.921***	−0.356	−0.429**	−0.944***	−0.821***
	(0.123)	(0.263)	(0.209)	(0.129)	(0.113)
Borrower char.	Yes	Yes	Yes	Yes	Yes
Loan char.	Yes	Yes	Yes	Yes	Yes
Syndicate char.	No	No	No	No	No
Add. borrower char.	No	No	No	No	No
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	No	No
Country × year effect	No	No	No	No	Yes
Extreme point	0.488	0.344	0.367	0.498	0.488
Inverse U-shaped	6.10***	0.92	1.59*	5.92***	5.90***
N° observations	14,913	2707	4113	13,753	17,866
N° of firms	5073	1245	1887	4538	6423
R^2	0.58	0.62	0.61	0.56	0.62
Adjusted R^2	0.58	0.60	0.60	0.56	0.60

Table 6
Insider entrenchment.
This Table reports coefficient estimates for the amount equations of Heckman selection models (Panel A) and the correspondent conditional marginal effects of CHS (Panel B) to test whether the relationship between CHS and the cost of debt differs significantly for borrowers characterized by different levels of insider entrenchment beyond ownership. Analyses are limited to observations for which CHS is lower than 0.3. Models (1) and (2) are based on the E index. Models (3) and (4) are based on the G index. The dependent variable is the natural logarithm of the all-in-drawn spread. Models (3) and (6) focus on observations characterized by high values of the E index (i.e., >2) and the G index (i.e., >9), respectively. Models (2) and (4) focus on observations characterized by low values of the E index and the G index, respectively. The selection into firms with a high or low level of the E index (or the G index) is modeled as a function of all of the borrower's characteristics (including CHS) as described in Table 2. The amount equations include all of the control variables used in Models (4) and (5) of Table 3, with the exception of the country-specific law variables. For each Model, the number of observations and firms refer to the number of selected observations only. Panel B reports the marginal effect of CHS conditional on: the E index being low (Model (1)); the E index being high (Model (2)); the G index being low (Model (3)); the G index being high (Model (4)). All marginal effects are computed at CHS = 0.1 and setting all of the other variables equal to their sample mean. Standard errors robust to heteroskedasticity and clustered by firm are reported in round brackets. *, **, and *** denote statistical significance at 10%, 5% and 1%, respectively.

Panel A: Estimated coefficients

	CHS < 0.3			
	E index		G index	
	(1) E low	(2) E high	(3) G low	(4) G high
CHS	0.449**	−0.464*	0.572***	−0.439*
	(0.226)	(0.239)	(0.187)	(0.256)
Borrower char.	Yes	Yes	Yes	Yes
Loan char.	Yes	Yes	Yes	Yes
Syndicate char.	Yes	Yes	Yes	Yes
Add. borrower char.	Yes	Yes	Yes	Yes
Market rates	Yes	Yes	Yes	Yes
Time effect	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes
Country effect	Yes	Yes	Yes	Yes
Law effect	No	No	No	No
N° observations	2056	2388	2201	2243
N° of firms	670	682	749	589

Panel B: Conditional marginal effect of CHS

	E low	E high	Diff.	G low	G high	Diff.
At CHS = 0.1	0.637***	0.166	0.471*	0.684***	0.095	0.589**
	(0.198)	(0.173)	(0.263)	(0.177)	(0.209)	(0.274)

relationship at least at the 10% confidence level in both cases.[13] Finally, Model (5) includes a set of indicators for each possible combination of country of syndication and loan vintage. This is done to control for potential different macro trends in the cost of debt in different countries. The magnitude and statistical significance of the coefficients is similar to those reported for Model (1) of Table 3.

4.3. Insider entrenchment

The verified positive relationship between the cost of bank loans and insider ownership for low levels of the latter is predicted by the control argument. Focusing on the subsample of observations characterized by a low (i.e., *CHS* < 0.3) level of insider ownership, in this section I provide further empirical evidence of how insiders control over the firm contributes to the expected functional form. Previous studies (e.g., Fields et al., 2012; Francis et al., 2012) have already investigated the direct relationship between governance and cost of debt; broadly speaking, a lower quality of governance has been found to be associated with higher cost of debt. In this section I study whether governance—and in particular governance clauses allowing for insider entrenchment—also significantly moderate the relationship between CHS and loan spreads. As discussed in Section 2, a testable implication of the control argument is that the positive relationship between CHS and spreads should be significantly weaker (or even reversed) when governance measures allow for insider entrenchment.

A potential source of concern is that governance measures are clearly not exogenous: in particular, insiders could substitute ownership and governance provisions as a way to keep a stable control over the firm. To account for this, a Heckman selection model is used. Observations are classified as being characterized by a high or low level of insider entrenchment beyond ownership using either the *E index* or the *G index*. In both cases, a firm is considered to have a high level of insider entrenchment if the index value is higher than its median value in the initial dataset. As shown in Table 2, the median value for the *E index* (*G index*) is 2 (9). The selection into firms with a high level of insider entrenchment is modeled as a function of borrower's characteristics, including *CHS*. The amount equation includes all of the control variables used in Models (4) and (5) of Table 4 with the exception of country-level law variables, as the *E index* and the *G index* are available only for US firms.[14] Coefficient estimates for the amount equations are reported in Panel A of Table 6. To better address how the relationship between insider ownership and loan spreads varies with insider entrenchment, Panel B presents the marginal effect of *CHS* conditional on the level of insider entrenchment being low versus high. In both cases, marginal effects are computed setting *CHS* equal to 0.1, whereas control variables are set equal to their sample mean. The marginal effects of *CHS* conditional on a low or high level of insider entrenchment are thus compared for otherwise similar firms and loans.

As shown in Panel A, the estimated coefficient for *CHS* is positive only for observations characterized by a low level of insider entrenchment (Models (1) and (3)), whereas the coefficient is negative when insider entrenchment is high (Models (2) and (4)). Looking at marginal effects, a 1 percentage point increase in *CHS* is predicted to be associated with a 0.64% (0.68%) increase in the loan spread when the *E index* (*G index*) assumes a low value. This marginal effect is statistically significant at the 1% confidence level. Conditioning on a high level of insider entrenchment, the computed marginal effect is instead not statistically different from zero at customary confidence levels. The difference

[13] In unreported analyses, I estimate again Models (3) and (4) splitting the sample by country of syndication, rather than by country of origin of the borrower. The null hypothesis is in this case rejected at least at the 5% confidence level.

[14] Notice that country-of-origination controls are still included, as not all loans to US borrowers are originated in the US.

between the two conditional marginal effects is statistically significant at least at the 10% confidence level. As a robustness check, in unreported analyses I re-estimate Models (1) to (4) excluding firms in the financial or public sector. Results are coherent with those presented in Table 6. The verified moderating role of insider entrenchment is fully consistent with the control argument.

4.4. The role of loan contract clauses

In this Section I address how the inclusion of financial covenants and performance pricing clauses moderates the relationship between insider ownership and the cost of debt capital. Similar to what is done for the analyses presented in Section 4.3, a Heckman selection model is used. As explained by Bradley and Roberts (2015), this is important in this context because the cost of debt and the clauses included in the loan contract are determined simultaneously. Both the selection and the amount equations include *CHS*, *CHS^2* and all of the control variables presented in Table 2. Models focusing on the inclusion of financial covenants (performance pricing) clauses of course do not include *FC* (*PP*) among the regressors. Contract clauses are predicted to smooth the relationship between *CHS* and the cost of debt. The positive (negative) marginal effect of *CHS* when the latter is low (high) is thus expected to be smaller conditioning on contract clauses being included, rather than excluded.

Table 7 reports the estimated coefficients for the amount equations (Panel A), as well as the conditional marginal effects for *CHS* computed for different levels of insider ownership (Panel B). Again, marginal effects are computed setting other explanatory variables equal to their sample mean. As shown in Panel A, an inverse U-shaped relationship between insider ownership and cost of debt is still in place for both loans with and without financial covenants and performance pricing clauses. The estimated coefficient for *CHS^2* is negative and statistically significant at least at the 5% confidence level for all of the Models. Conditional marginal effects however clearly reveal how the relationship between the cost of debt and insider ownership is significantly weaker when clauses are included. Focusing on financial covenants for example, when *CHS* is equal to 0.1 a 1 percentage point increase in insider ownership results in a 0.62% increase in spreads conditional on $FC = 0$. Conditioning on financial covenants being included, the expected marginal effect for an otherwise similar observation is only 0.26%. The difference (0.36%) is statistically significant at the 5% confidence level. For $CHS = 0.9$, the marginal effect conditional on $FC = 0$ (1) is a 0.85% (0.35%) reduction in the spread. Again, the difference is statistically significant at customary confidence levels. Similar results are obtained for performance pricing clauses. It is interesting to notice how the difference in marginal effects becomes smaller for values of *CHS* approaching 0.5. For $CHS = 0.5$, conditional marginal effects (with the exception of the case where $PP = 0$) and differences in marginal effects are not statistically different from zero at customary confidence levels. Also, no appreciable difference between the marginal effects conditional on the inclusion of *FC* versus *PP* is observed. Taken together, these results suggest that both financial covenants and performance pricing clauses are effective in smoothing the relationship between the ownership structure of the borrower and the pricing of its debt.

Table 7
Loan contract specifications.
This Table reports coefficient estimates for the amount equations of Heckman selection models (Panel A) and the correspondent conditional marginal effects of CHS (Panel B) to test whether the relationship between CHS and the cost of debt differs significantly depending on whether Financial Covenants (FC, Models (1) and (2)) or Performance Pricing (PP, Models (3) and (4)) clauses are included into the loan contract. The dependent variable is the natural logarithm of the all-in-drawn spread. The selection into loans with or without FC (PP) is modeled as a function of all of the variables included in Models (4) and (5) of Table 3, excluding FC (PP) itself. For each Model, the number of observations and firms refer to the number of selected observations only. Panel B reports the marginal effect of CHS conditional on whether FC or PP clauses are included or not. Marginal effects are computed at various levels of CHS and setting all of the other variables equal to their sample mean. Standard errors robust to heteroskedasticity and clustered by firm are reported in round brackets. *, **, and *** denote statistical significance at 10%, 5% and 1%, respectively.

Panel A: Estimated coefficients

	Financial covenants		Performance pricing	
	(1) FC = 0	(2) FC = 1	(3) PP = 0	(4) PP = 1
CHS	0.798***	0.335***	0.745***	0.297**
	(0.164)	(0.120)	(0.148)	(0.122)
CHS^2	−0.949***	−0.384**	−0.881***	−0.307**
	(0.194)	(0.149)	(0.177)	(0.152)
Borrower char.	Yes	Yes	Yes	Yes
Loan char.	Yes	Yes	Yes	Yes
Syndicate char.	Yes	Yes	Yes	Yes
Add. borrower char.	Yes	Yes	Yes	Yes
Market rates	Yes	Yes	Yes	Yes
Time effect	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes
Country effect	Yes	Yes	Yes	Yes
Law effect	Yes	Yes	Yes	Yes
N° observations	5960	6536	7187	5309
N° of firms	2997	2781	3619	2322

Panel B: Conditional marginal effect of CHS

	FC = 0	FC = 1	Diff.	PP = 0	PP = 1	Diff.
At CHS = 0.1	0.622***	0.258***	0.364**	0.551***	0.240**	0.311**
	(0.125)	(0.092)	(0.155)	(0.114)	(0.094)	(0.148)
At CHS = 0.3	0.254***	0.106**	0.148*	0.219***	0.111**	0.108
	(0.068)	(0.047)	(0.083)	(0.061)	(0.049)	(0.078)
At CHS = 0.5	−0.115	−0.046	−0.069	−0.114*	−0.019	−0.095
	(0.073)	(0.055)	(0.091)	(0.065)	(0.058)	(0.087)
At CHS = 0.7	−0.484***	−0.198*	−0.286*	−0.447***	−0.148	−0.299*
	(0.133)	(0.105)	(0.169)	(0.121)	(0.107)	(0.162)
At CHS = 0.9	−0.854***	−0.351**	−0.503*	−0.783***	−0.278*	−0.505**
	(0.205)	(0.162)	(0.261)	(0.186)	(0.164)	(0.248)

5. Conclusions

In this paper, I investigate the relationship between the level of ownership retained by insiders and the firm cost of bank debt. According to agency theories, a decrease in ownership gives insiders stronger incentives to extract private benefits at the expense of creditors. As such, insider ownership is expected to be negatively related to the cost of debt. Several previous studies demonstrate this relationship. However, those studies (e.g., Lin et al., 2011) typically focus on firms where a controlling shareholder owns (directly or indirectly) a large share of the firm's equity. When insider ownership is low, an increase can enhance the control of insiders over the firm—and thus their ability to extract private benefits at the expense of creditors—more than it endangers their incentives to do so. Based on these arguments, I predict an inverse U-shaped relationship between insider ownership and the cost of debt. Using a large international sample of bank loans during the period from 1996 to 2010, I find strong empirical evidence in support of the expected functional form. Consistent with the control argument, I also find that the (positive) relationship between insider ownership and the cost of debt is not in place when governance provisions allow insiders to be entrenched beyond their level of ownership. Finally, I demonstrate that financial covenants and performance pricing clauses protecting creditors against opportunistic behavior are effective in weakening the relationship between insider ownership and the cost of debt. These findings provide new evidence on the role played by the ownership structure of the borrower in determining its cost of debt, and highlight the importance of control versus incentive mechanisms in shaping this relationship.

Albeit the main results presented in this paper are robust to several robustness checks, some limitations apply. First, the variable Closely Held Shares (CHS) does not allow to take into account the effective number of insiders, nor their typology. Second, due to data limitations some potentially key moderating and control factors have not been considered. Remuneration schemes are a prominent example of such factors. For a given level of ownership, the incentives for executive directors could be more or less aligned to those of the other insiders (and/or to those of other stakeholders) depending on their compensation. Future research should address the non-monotonic relationship between ownership and the cost of debt while taking such factors into account. Finally, the governance variables used in this study are only available for US firms; it would be interesting to extend to other countries the analyses on the moderating role of governance provisions.

As mentioned in the Introduction, previous studies have addressed a potential non-monotonic relationship between insider ownership and the value of a firm (and of its equity in particular). It is thus interesting to read the results presented in this paper in light of this literature. In principle, the arguments presented in this paper apply to the conflict of interest between insiders and creditors and to the conflict between insiders and other (minority) shareholders in a similar fashion. Morck et al. (1988) for example use similar arguments to explain why the value of the firm appears to decline and then increase with the level of ownership by the board of directors. However, Morck et al. (1988) as well as other studies (e.g., McConnell & Servaes, 1990; Davies et al., 2005) also document a positive relationship between ownership and value for (particularly) low levels of ownership. The latter result—which is in partial contrast with the simple control argument—is typically explained using the control premium argument proposed by Stulz (1988). Whereas a higher level of ownership can result in insider entrenchment, it can also increase the market value of the control premium. The latter is in principle a positive effect for shareholders—and it can more than compensate the negative effect due to insider entrenchment—but not for creditors. This can explain why, when insider ownership is low, an increase in ownership can be associated with a positive effect for minority shareholders and a negative effect for creditors. Future research could simultaneously investigate the non-monotonic relationship between insider ownership and the value (or cost) of equity on the one hand and debt on the other hand; and under which circumstances and for which ownership structures the two relationships differ.

Acknowledgments

Part of this research was conducted while the author was visiting at the Price College of Business. For helpful suggestions and discussions I would like to thank Sabri Boubaker (the editor), two anonymous referees, Panayiotis Andreou, Fabio Bertoni, Douglas Cumming, Peter Jan Engelen, Veljko Fotak, Rients Galema, Omrane Guedhami, Clemens Kool, Bill Megginson, Bruce Seifert, Günter Strobl and the seminar participants at the Utrecht University School of Economics, the EFMA 2014 Annual Meeting, and the 2015 Paris Financial Management Conference. All remaining errors are the sole responsibility of the author.

Appendix A

Table I
Variables definition.
This table reports the definitions and sources for all of the 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. The percentage (in decimals) of total equity held by insiders, including: officers, directors and their immediate families; trusts; any other corporation; pension/benefit plans; and 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
NITA	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 amount in USD)	Dealscan
N° of facilities	Number of facilities in each deal	Dealscan
Maturity	Facility maturity 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 contract 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 otherwise	Dealscan
Same country	A dummy variable equal to 1 if the borrower and the lead lender are from the same country and 0 otherwise. In case of multiple lead lenders, the one retaining the highest share of the loan is considered.	Dealscan

(continued on next page)

Table I (*continued*)

Variable	Definition	Source
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 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 creditor 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.	BCF (2009)
G Index	Governance Index from 1 to 24.	GIM (2003)

References

Anderson, R., Mansi, D., & Reeb, D. (2003). Founding family ownership and the agency cost of debt. *Journal of Financial Economics*, *68*, 263–285.

Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *Review of Economic Studies*, *58*, 277–297.

Aslan, H., & Kumar, P. (2012). Strategic ownership structure and the cost of debt. *Review of Financial Studies*, *25*, 2257–2299.

Asquith, P., Beatty, A., & Weber, J. (2005). Performance pricing in bank debt contracts. *Journal of Accounting and Economics*, *40*, 101–128.

Asquith, P., Gertner, R., & Scharfstein, D. (1994). Anatomy of financial distress: An examination of junk-bond issuers. *Quarterly Journal of Economics*, *109*, 625–658.

Bae, K. H., & Goyal, V. K. (2009). Creditor rights, enforcement, and bank loans. *Journal of Finance*, *64*, 823–860.

Bebchuk, L., Cohen, A., & Ferrell, A. (2009). What matters in corporate governance? *Review of Financial Studies*, *22*, 783–827.

Billett, M. T., King, T. H. D., & Mauer, D. C. (2004). Bondholder wealth effects in mergers and acquisitions: New evidence from the 1980s and 1990s. *Journal of Finance*, *59*, 107–135.

Borisova, G., & Megginson, W. L. (2011). Does government ownership affect the cost of debt? Evidence from privatization. *Review of Financial Studies*, *24*, 2693–2737.

Bradley, M., & Robers, M. R. (2015). The structure and pricing of corporate debt covenants. *Quarterly Journal of Finance*, *5*, 1550001.

Carey, M., & Nini, G. (2007). Is the corporate loan market globally integrated? A pricing puzzle. *Journal of Finance*, *62*, 2969–3007.

Collin-Dufresne, P., Goldstein, R. S., & Martin, J. S. (2001). The determinants of credit spreads changes. *Journal of Finance*, *56*, 2177–2208.

Cremers, K. J. M., & Nair, V. B. (2005). Governance mechanisms and equity prices. *Journal of Finance*, *60*, 2859–2894.

Cremers, K. J. M., Nair, V. B., & Wei, C. (2007). Governance mechanisms and bond prices. *Review of Financial Studies*, *20*, 1359–1388.

Davies, J. R., Hillier, D., & McColgan, P. (2005). Ownership structure, managerial behavior and corporate value. *Journal of Corporate Finance*, *11*, 645–660.

Diamond, D. W. (1991). Debt maturity structure and liquidity risk. *Quarterly Journal of Economics*, *106*, 709–737.

Doidge, C., Karolyi, G. A., & Stulz, R. M. (2007). Why do countries matter so much for corporate governance? *Journal of Financial Economics*, *86*, 1–39.

Dyck, A., & Zingales, L. (2004). Private benefits of control: An international comparison. *Journal of Finance*, *59*, 537–600.

Esty, B. C., & Megginson, W. L. (2003). Creditor rights, enforcement, and debt ownership structure: Evidence from the global syndicated loan market. *Journal of Financial and Quantitative Analysis*, *38*, 37–59.

Faccio, M., Lang, L., & Young, L. (2001). Dividends and expropriation. *American Economic Review*, *91*, 54–78.

Faccio, M., Marchica, M. T., & Mura, R. (2011). Large shareholder diversification and corporate risk-taking. *Review of Financial Studies*, *24*, 3601–3641.

Fields, L. P., Fraser, D. R., & Subrahmanyam, A. (2012). Board quality and the cost of debt capital: The case of bank loans. *Journal of Banking & Finance*, *36*, 1536–1547.

Francis, B., Hasan, I., Koetter, M., & Wu, Q. (2012). Corporate boards and bank loan contracting. *Journal of Financial Research*, *35*, 521–552.

Gatev, E., & Strahan, P. E. (2009). Liquidity risk and syndicate structure. *Journal of Financial Economics*, *93*, 490–504.

Gompers, P., Ishii, J., & Metrick, A. (2003). Corporate governance and equity prices. *Quarterly Journal of Economics*, *118*, 107–155.

Grossman, S. J., & Hart, O. D. (1986). The costs and benefits of ownership: A theory of vertical and lateral integration. *Journal of Political Economy*, *94*, 691–719.

Hart, O. D., & Moore, J. (1990). Property rights and the nature of the firm. *Journal of Political Economy*, *98*, 1119–1158.

Ivashina, V. (2009). Asymmetric information effects on loan spreads. *Journal of Financial Economics*, *92*, 300–319.

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, *3*, 305–360.

Johnson, S., La Porta, R., Lopez-de-Silanes, F., & Shleifer, A. (2000). Tunneling. *American Economic Review*, *90*, 22–27.

Klock, M. S., Mansi, S. A., & Maxwell, W. F. (2005). Does corporate governance matter to bondholders? *Journal of Financial and Quantitative Analysis*, *40*, 693–719.

La Porta, R., Lopez-de-Silanes, F., & Shleifer, A. (1999). Corporate ownership around the world. *Journal of Finance*, *54*, 471–517.

Laeven, L., & Levine, R. (2008). Complex ownership structures and corporate valuations. *Review of Financial Studies*, *21*, 579–604.

Laeven, L., & Levine, R. (2009). Bank governance, regulation and risk taking. *Journal of Financial Economics*, *93*, 259–275.

Lin, C., Ma, Y., Malatesta, P., & Xuan, Y. (2011). Ownership structure and the cost of corporate borrowing. *Journal of Financial Economics*, *100*, 1–23.

Lin, C., Ma, Y., Malatesta, P., & Xuan, Y. (2012). Corporate ownership structure and bank loan syndicate structure. *Journal of Financial Economics*, *104*, 1–22.

Lind, J. T., & Mehlum, H. (2010). With or without U? The appropriate test for a U-shaped relationship. *Oxford Bulletin of Economics and Statistics*, *72*, 109–118.

Lugo, S. (2014). Discretionary ratings and the pricing of subprime mortgage-backed securities. *Journal of Banking & Finance*, *48*, 248–260.

McConnell, J. J., & Servaes, H. (1990). Additional evidence on equity ownership and corporate value. *Journal of Financial Economics*, *27*, 595–612.

Mitton, T. (2002). A cross-firm analysis of the impact of corporate governance on the East Asian financial crisis. *Journal of Financial Economics*, *64*, 215–241.

Morck, R., Shleifer, A., & Vishny, R. W. (1988). Management ownership and market valuation : An empirical analysis. *Journal of Financial Economics*, *20*, 293–315.

Myers, S. C. (1977). Determinants of corporate borrowing. *Journal of Financial Economics*, *5*, 147–175.

Qian, J., & Strahan, P. E. (2007). How laws and institutions shape financial contracts: The case of bank loans. *Journal of Finance*, *62*, 2803–2834.

Roberts, G., & Yuan, L. E. (2010). Does institutional ownership affect the cost of bank borrowing? *Journal of Economics and Business*, *62*, 604–626.

Saunders, A., & Steffen, S. (2011). The costs of being private: Evidence from the loan market. *Review of Financial Studies*, *24*, 4091–4122.

Scharfstein, D. (1988). The disciplinary role of takeovers. *Review of Economic Studies*, *55*, 185–199.

Shleifer, A., & Vishny, R. W. (1986). Large shareholders and corporate control. *Journal of Political Economy*, *94*, 461–488.

Shleifer, A., & Vishny, R. W. (1997). A survey of corporate governance. *Journal of Finance*, *52*, 737–783.

Stulz, R. (1988). Managerial control of voting rights : Financing policies and the market for corporate control. *Journal of Financial Economics*, *20*, 25–54.

Sufi, A. (2007). Information asymmetry and financing arrangements: Evidence from syndicated loans. *Journal of Finance*, *62*, 629–668.

Thomsen, S., Pedersen, T., & Kvist, H. K. (2006). Blockholder ownership: Effects on firm value in market and control based governance systems. *Journal of Corporate Finance*, *12*, 246–269.

Warga, A., & Welch, I. (1993). Bondholder losses in leveraged buyouts. *Review of Financial Studies*, *6*, 959–982.

Welch, I. (2011). Two common problems in capital structure research: The financial-debt-to-asset ratio and issuing activity versus leverage changes. *International Review of Finance*, *11*, 1–17.

Wright, P., Ferris, S. P., Sarin, A., & Awasthi, V. (1996). Impact of corporate insider, blockholder, and institutional equity ownership on firm risk taking. *Academy of Management Journal*, *39*, 441–463.