

Large bank shareholders and terms of bank loans during the global financial crisis

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Abstract

This paper analyzes the influence of large bank shareholders on the terms of bank loans for a sample of 12,045 loans to 3,290 borrowers from 45 countries over the period 2004–2013. We investigate the effects of bank control over bank loan terms during the global financial crisis, regardless of whether the bank shareholder is a lender or not. In line with a monitoring effect, the results suggest that firms with bank shareholders that are non-lenders borrowed at lower interest rates and longer maturities during the period of crisis. However, borrowers paid higher spreads and were offered shorter maturities when they borrowed from banks that are also shareholders. This effect is consistent with banks obtaining private benefits as large shareholders as a consequence of the informational hold-up problems affecting borrowers.

KEYWORDS

bank loans, bank ownership, loan maturity, loan spread

JEL CLASSIFICATION

G01; G21; G32

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1 | INTRODUCTION

The financial literature analyzing the role of banks in the governance of non-financial firms has mainly focused on countries where the percentage of firms controlled by financial institutions is high, such as Japan and Germany, considering its effect on corporate performance. Morck et al. (2000) have shown a negative effect for Japan, pointing to an expropriation effect on the part of banks in those firms in which they are shareholders. Conversely, other papers have revealed a positive effect resulting from the monitoring of German firms by banks (Cable, 1985; Gorton & Schmid, 2000). Finally, there are other studies that do not find a clear-cut relationship (e.g., Prowse, 1992). These papers have mainly analyzed the effect of bank ownership or the presence of large bank shareholders on corporate performance. However, other papers have studied the effect of bank ownership on corporate investment. Hoshi et al. (1991) reveal that members of Japanese business groups are less likely to be credit rationed and that their investment is less sensitive to cash flow. Gibson (1995) shows that the investment of Japanese firms related to low credit rating banks is lower than that of firms related to higher credit rating banks. Espenlaub et al. (2012) report that while connections between banks and firms facilitated corporate investment mitigating financial constraints faced by Thai companies in the East Asian pre-crisis period, they lost their value in the post-crisis period.

The global financial crisis affected the solvency of banks and renewed interest in understanding the consequences of shocks to the financial health of banks for non-financial firms. Banks are the main providers of debt financing in most countries (Aslan & Kumar, 2012; Demirgüç-Kunt & Levine, 2001; Drucker & Puri, 2007). The financial condition of banks is central to economies because it may have consequences for business activity if borrowing firms are unable to substitute bank loans by alternative sources of external financing, as shocks affecting the financial health of banks may impose significant costs on the non-financial sector through restricted credit supply. For instance, Santos (2011) finds that US firms paid higher loan spreads during the financial crisis and that this increase was higher when borrowing during the crisis from banks that incurred larger losses. Papers such as Carvalho et al. (2015) and Kahle and Stulz (2013) have analyzed the consequences of the crisis for firms largely dependent on bank borrowing, providing contrasting results. On the one hand, Carvalho et al. (2015) find that firms that relied more on lending relationships before the crisis cut their investment to a greater extent during the crisis than similar firms. Kahle and Stulz (2013), on the other hand, obtain evidence indicating that bank-dependent firms did not decrease capital expenditures more than their matched control firms during the crisis.

In this context and focusing particularly on the role of banks as shareholders, the present paper examines the link between the existence of large bank shareholders and firm value through the lending channel. Specifically, we analyze the impact of the presence of large bank shareholders on the terms of bank loans during the global financial crisis.¹ We study the effect of the presence of large bank shareholders on bank loan cost and maturity for a sample of 12,045 loan tranches corresponding to 3,290 borrowers from 45 countries over the period 2004–2013.

The paper contributes to the literature in several ways. First, we analyze the effect of the presence of large bank shareholders on bank loan terms during the crisis depending on whether the bank shareholder is a lender or not. Ferreira and Matos (2012) investigate the effects of bank control on bank loans terms whether by representation on boards of directors or by the holding of shares, considering only the bank ownership of the lead arrangers of the syndicated loans. By considering the influence of all significant bank shareholdings on loan terms and the joint effect together with the banks' status as participants (or not) in the loan deals, we do not confine our analysis to the role of bank shareholders solely when they are lenders, as in Ferreira and Matos (2012). We thus offer comprehensive evidence on the conflicting interests of banks as lenders and shareholders and how this relationship has shifted due to the variation in the lenders' risk exposure during the global financial crisis.

Second, we extend previous evidence on the effect of the global financial crisis (GFC) on the banking sector both geographically and temporarily. The consideration of a longer time span for the analysis of the effects of the GFC on the behavior of banks as shareholders and lenders is relevant given that the effects of the crisis on the banking sector spread at different speeds among different countries. The crisis hit Europe in September 2008 and extended over a longer period than in the USA. While the US economy was in clear recovery, the crisis reached systemic influence in 2009 in countries such as Denmark, Germany, Greece, and Ireland, and in 2011 in Spain. For instance, the European Commission approved €4.5 trillion of aid between October 2008 and October 2011 to support financial institutions. By using a multi-country sample which includes European economies and considers an extended period for the development of the GFC (2008–2013), we gain a deeper understanding of the behavior of banks as shareholders and lenders throughout all the stages of evolution of said crisis, not just in the early stages of the credit crunch that affected the USA in 2007 and 2008.

Finally, the paper also extends the evidence related to the negative consequences of the GFC for non-financial firms. Several papers show that, following the onset of the financial crisis, syndicated lending declined, firm investment was reduced, debt maturity was shortened, and US firms paid higher loan spreads (Almeida et al., 2011; Campello et al., 2010; González, 2015; Ivashina & Scharfstein, 2010; Santos, 2011). Our paper contributes to this strand of the literature, revealing an increase in interest rate spread and a reduction in the maturity of bank loans during the GFC for a worldwide sample of firms.

Our results indicate that during the GFC, the loans received by firms with banks as large shareholders presented higher interest rates and shorter maturity when the banks are not only shareholders, but also lenders. In fact, a one standard deviation increase in the ownership held by banks when they are also lenders is associated with an increase in loan spread of 21.23 basis points and a decrease in loan maturity of 8.15 months during the crisis period. This effect reflects that banks obtained private benefits as large shareholders as a consequence of the informational hold-up problems affecting borrowers. Moreover, large bank shareholders are associated with lower bank loan spreads and longer maturities during the period of crisis when they are not lenders. A one standard deviation increase in the ownership held by banks when they are not lenders is associated with a reduction of 13.53 basis points in loan spread and an increase in loan maturity of 6.11 months during this period. This effect is in line with a monitoring behavior by large bank shareholders that are not lenders. We also obtain evidence indicating that firms borrowed at higher interest rates and shorter maturities during the crisis.

Our results complement the findings by Ferreira and Matos (2012) in two ways. First, we provide evidence relative to the role of banks as shareholders when they are not lenders, obtaining results in line with the existence of benefits from the involvement of banks in the firms' equity. Second, considering the role of banks as both shareholders and lenders, we reveal the existence of costs for firms associated with the dual role of banks as providers of funds.²

The remainder of the paper proceeds as follows. Section 2 presents the hypotheses tested in the paper. Section 3 reports the data, variables, and methodology used. Section 4 discusses the empirical results. Section 5 provides robustness analyses of our results. Finally, our conclusions are set out in Section 6.

2 | THEORETICAL BACKGROUND AND HYPOTHESES

Agency theory suggests that managerial and external shareholders' interests diverge when management owns a small number of shares (Jensen & Meckling, 1976), as managers holding low levels of the firm's equity have greater incentives to pursue their own interests. In this context, ownership

concentration in the hands of large shareholders is a corporate governance mechanism that helps to limit agency problems arising from the divergence of interest between shareholders and managers (Shleifer & Vishny, 1997). Large shareholders contribute to mitigating the free rider's problem that plague firms with scattered ownership structures, given that the size of their ownership stakes make it economically efficient to incur in monitoring costs. Moreover, large shareholders address the agency problem because they have both a general interest in value maximization and sufficient control over the assets of the firm to make their interests respected. The presence of large shareholders will result in reductions in agency costs, as it is easier for these shareholders to monitor managers. The existence of large shareholders could also provide the firm with knowledge and skills (Andrés-Alonso et al., 2010). In this context, banks as large shareholders could help firms in the decision-making process for financing decisions, leading to better terms in bank loans.

However, the presence of large shareholders could lead to the extraction of private benefits at the expense of minority shareholders. Large blockholders might divert corporate resources for their own use or to finance unprofitable investments that provide them with private benefits. These incentives to engage in expropriation activities will not only affect minority shareholders, but also debtholders, as they could result in increases in the expected costs associated with financial distress and in impairing the value of collateral. Both situations will increase the agency costs of debt, thus leading to worse financing conditions. In this context, our first hypothesis is as follows:

H1 Firms with large bank shareholders borrowed at lower interest rates and longer maturities during the global financial crisis when the monitoring effect is predominant over the expropriation effect.

Banks may maintain ties with firms as a consequence of being both lenders and shareholders. The dual role of banks as shareholders and lenders may have both positive and negative effects on the conditions of financing. On the one hand, the arguments for the dual role of banks leading to better conditions in bank loans are based on the reduction of asymmetric information problems. First, in their efforts to measure the risk of a borrower, bank lenders will benefit from the internal knowledge gained from their position as shareholders. The participation of banks in a firm's equity improves their capability and incentives to collect and screen information (Allen, 1990) and monitor management (Diamond, 1984). Moreover, if the shareholder bank decides not to lend funds to a firm, it reveals negative private information to other lenders which would result in worse loan conditions offered by other lenders.

Second, the different payoff structures of debt and equity lead to divergent objectives in the management of the firm (Dewatripont & Tirole, 1994; Jensen & Meckling, 1976), possibly giving rise to a conflict of interest due to the fact that managers, acting on behalf of the shareholders, may take decisions that maximize shareholders' wealth rather than the firm's value. Conflicts of interest could lead to the underinvestment and asset substitution problems. The simultaneous ownership of both equity and debt claims by banks reduces the conflicts of interest between shareholders and creditors (Prowse, 1990), limiting debt agency costs. This fact is consistent with the evidence that banks as shareholders provide firms with better chances of raising external funds (Hoshi et al., 1990).

These arguments lead to predicting a positive relationship between bank ownership and the terms of banks loans, giving rise to a reduction in their cost and a lengthening of their maturity when the bank plays a dual role as a shareholder and lender to the firm. In line with this argument, Santos and Wilson (2017) show that US firms which borrow from banks that have control over a portion of their voting rights borrowed at lower interest rates.

On the other hand, the dual role of banks as shareholders and lenders may also lead to worse conditions in debt financing if the banks use their influence on the firm as large shareholders to pursue private benefits as lenders; for example, by arranging more demanding terms in bank loans. The asymmetric information problems between alternative lenders and the firm enable banks to extract rents from the firm (Sharpe, 1990; Rajan, 1992). Along these lines, Ferreira and Matos (2012) and Santos and Winton (2008) provide evidence that informed banks benefit from bank-firm links. Ferreira and Matos (2012) show that lead arranger banks charge higher spreads to firms when banks own equity in the firms. Santos and Winton (2008) find that banks raise their rates more for bank-dependent firms than for non-bank-dependent firms, suggesting increases in information hold-up problems that informed banks are able to exploit by increasing their rates during recessions.

Our sample is composed of publicly traded firms that have raised large amounts of debt in the form of syndicated loans. When firms need to raise large amounts of debt with long maturity, syndicated loans constitute the natural alternative to public bonds (Altunbaş et al., 2010). Therefore, resorting to bank syndicated loans instead of publicly traded bonds for these large amounts of debt financing suggests that these companies may be considered bank-dependent firms on account of their specific features or the features of the financial markets in which they operate. Moreover, the substantial investment made by banks in syndicated loans, in conjunction with the long-lasting nature of such lender–borrower relationships, provides strong incentives for the bank to acquire information about the borrower firm (Boot & Thakor, 2010), thereby exacerbating hold-up problems. Hence, we consider it likely that the lock-in effect will be relatively strong for these companies. The above discussion regarding the potential effects of bank-firm relationships on bank loan terms leads us to our second hypothesis:

H 2 Large bank shareholders provided borrower firms with worse conditions in bank loans during the global financial crisis.

3 | DATA

3.1 | Sources of data, sample construction and variables

The data used in this paper fall into three main categories: data on bank loans, the lender firm's ownership structure, and firm-specific variables. We begin with a sample of bank loans made to large borrowers from 87 countries. The information on bank loans was collected from the Dealscan database, provided by Thomson Reuters, which contains historical information on the terms and conditions of over 200,000 loan transactions in the global commercial loan market. For most countries other than the USA, this database starts in 1994. We collect data on bank loans from 2004 to 2013.³ The total number of bank loans is 42,070. Among other characteristics of the loans, the data allow us to identify the interest rate, the maturity of the loan, whether or not the loan is secured, the type of loan, the purpose of the loan, whether the loan is senior or not, and the name of the banks participating in the loan. Data on ownership structure were obtained from Osiris and reflect the percentage of ownership held by bank and non-bank shareholders. We were able to collect data on the ownership structure of recipient firms for 25,962 lending operations occurring between 2004 and 2013. We consider a shareholder a bank in accordance with the Osiris classification.⁴ Firm-level data were obtained from Compustat.

In order to build the final sample of the study, the observations of the Dealscan and Compustat databases were linked using tables provided by Chava and Roberts (2008). The linking of the Osiris

and Compustat databases was carried out based of the CIK codes provided in both databases. Finally, a significant number of Dealscan observations that remained unmatched were manually linked to the other databases on the basis of the name of the company. This resulted in a sample of 12,045 loan tranches to 3,290 borrowers from 45 countries over the period 2004–2013.⁵ Borrowers occasionally enter into more than one loan tranche on the same date. In this case, in line with previous papers (Bae & Goyal, 2009; Qian & Strahan, 2007), our unit of analysis is each loan tranche instead of aggregating multiple tranches into a single loan deal. To correct for the limited influence of countries with a small number of observations, we use a weighted regressions approach that assigns a country-specific weight that is equal to the inverse number of bank loans in each country. We test whether the presence of large bank shareholders influence term loans using the following regression:

$$DV_{ij} = a_0 + a_1 \text{Bank_own}_{ij} + a_2 \text{Dcrisis} + a_3 \text{Bank_own}_{ij} \times \text{Dcrisis} + a_4 X_i + a_5 Y_j + \varepsilon_{ij} \quad (1)$$

We used two different dependent variables (DV): (1) the interest rate spread of the loan measured as the natural logarithm of all-in-spread drawn over the London Interbank Offered Rate (LIBOR) or LIBOR equivalent (LN_SPREAD) (Chava et al., 2009; Lin et al., 2011; Qian & Strahan, 2007); and (2) the maturity of the loan measured as the natural logarithm of loan maturity expressed in months (LN_MAT). The models for these two variables are estimated by ordinary least squares with standard errors clustered by borrower firm level.⁶

The presence of large bank shareholders (BANK_OWN) is measured by the percentage of bank ownership held by banks with an equity stake higher than 1%, this variable being measured at the end of the year prior to the granting of the bank loan. Additionally, another two complementary variables are considered: BANK_LENDER and BANK_NONLENDER. These correspond to the percentages of bank ownership held by banks with an equity stake higher than 1% if the bank shareholder is also a lender in the bank loan or not, respectively. These three variables capture the difference in the terms of bank loans between borrowers with or without banks as large shareholders. DCRISIS is a dummy variable that takes the value of 1 for the period 2008–2012 and 0 otherwise and measures the difference in the terms of bank loans between the crisis period and the non-crisis period. The interaction term between BANK_OWN and DCRISIS measures the difference in the terms of bank loans between borrowers with and without banks as large shareholders in the crisis period compared to the non-crisis period. The interactions of BANK_LENDER and BANK_NONLENDER with DCRISIS capture the same effects, respectively, for bank shareholdings when the bank also acts (or not) as a lender of the firm.

Additionally, bearing in mind that the intensity of the crisis has not been the same among different countries, we checked the robustness of our results by considering a measure of the intensity of the crisis in each country. We used the bank Z-score (ZSCORE) of each country's banking system for this purpose. This score captures the probability of default of a country's banking system, comparing the buffer of a country's banking system (capitalization and returns) with the volatility of these returns.⁷ The Z-score is a measure of the number of standard deviations by which returns would have to drop from the mean to wipe out the bank's entire equity (Boyd & Runkle, 1993). Thus, a higher Z-score indicates that the bank is more stable and this variable is inversely related to the probability of banking system insolvency. ZSCORE measures the difference in the terms of bank loans between safer and riskier banking systems, while the interaction term DCRISIS*ZSCORE measures the difference in the terms of bank loans between safer and riskier banking systems and between the crisis and the non-crisis period.

We likewise control for loan and borrower characteristics in the estimations. As for loan characteristics, we consider the size of the bank loan (LOANSIZE), the size of the bank syndicate

(SYND_SIZE), whether the loan is senior or not (DSENIOR), whether the loan is secured or not (DSECURED, VSECURED), the purpose of the loan (PURP_ACQUIS, PURP_CORP, PURP_BACKUP, PURP_WK), and the type of the loan (DCREDIT_LINE, DTERM_LOAN, DBRIDGE_LOAN).

To ascertain whether heterogeneity in borrower risk would affect the terms of bank loans, we include several variables in the estimations so as to control for firm risk. We control for firm size (FIRM_SIZE), profitability (PROFIT), leverage (LEV), tangibility (TANG), growth opportunities (GROWTH), and rating (VRATING and DRATING). We also use a proxy of ownership concentration, LARGE3, which is the percentage of ownership held by the firm's three largest shareholders. Bank ownership is excluded from this measure of ownership concentration so as to capture the differential effect of bank ownership. All these borrower variables are lagged by one year to control for potential problems of endogeneity. Appendix A provides the definitions of the variables used in the empirical analysis. We also include borrower firm industry dummies and borrower firm country dummies to control for unobservable country and industry heterogeneity.

One concern regarding the influence of bank ownership on bank loan terms is the issue of endogeneity, as banks could tend to have ownership in low- or high-quality firms, thus leading to a selection bias that could affect the results. We address this issue by estimating instrumental variables regressions, using an instrument that is correlated with the bank's involvements in firm ownership, but which does not directly affect bank loan terms. Following Ferreira and Matos (2012), we consider the index of regulatory restrictions on mixing banking and commerce from the World Bank survey of bank regulation (Barth et al., 2004). In fact, the instrument we use is the measure of the extent to which banks may own and control non-financial firms from the second survey on bank regulation that was conducted in 2003.⁸ Subsequently, we perform a Durbin-Wu-Hausman (DWH) test of overidentifying restrictions for each estimation. The DWH test verifies the null hypothesis that the introduction of instrumental variables has no influence on the coefficients of the estimations. The results of the DWH F test are reported in the bottom row of each table. When the p -value of the F test falls below 10%, the null hypothesis is rejected and the instrumental variables estimations are reported. Otherwise, the estimation with the observed values of the bank ownership variables are provided.

3.2 | Descriptive statistics

Table 1 provides descriptive statistics of the variables used in this paper. The mean (median) of the SPREAD variable is 192.11 (165.00) basis points, while the mean (median) of maturity is 51.35 (60.00) months. The mean (median) percentage of ownership held by banks with an equity stake higher than 1% is 14.73 (12.88), 0.75% corresponding to banks that are also lenders and 13.97% to banks that do not participate in the loan deal. The mean (median) percentage of equity held by the three largest non-bank shareholders is 31.66 (22.89) %.

Table 2 presents the correlation matrix.⁹ LN_SPREAD shows a positive correlation with maturity, revealing that borrowers who pay higher interest rates are also more likely to be offered longer maturities. The interest rate spread of the bank loans has a positive correlation with BANK_OWN and BANK_NONLENDER, showing that the existence of large bank shareholders in the firm's equity is associated with higher interest rates. The two DV have a positive correlation with ownership concentration. DCRISIS is positively correlated with LN_SPREAD and negatively correlated with LN_MAT, suggesting that there was an increase in LN_SPREAD and a reduction in LN_MAT during the crisis.

TABLE 1 Descriptive statistics

	Mean	Standard deviation	Percentile						
			1%	10%	25%	50%	75%	90%	99%
SPREAD	192.11	152.70	15.00	42.00	87.50	165.00	250.00	350.00	775.00
LN_SPREAD	4.95	0.86	2.71	3.74	4.47	5.11	5.52	5.86	6.65
MATURITY	51.35	24.63	6.00	14.00	36.00	60.00	60.00	72.00	120.00
LN_MATURITY	3.80	0.60	1.79	2.64	3.58	4.09	4.09	4.28	4.79
BANK_OWN (%)	14.73	13.39	0.00	0.00	2.25	12.88	23.30	32.75	53.26
BANK_LENDER (%)	0.75	2.52	0.00	0.00	0.00	0.00	0.00	2.39	10.45
BANK_NONLENDER (%)	13.97	12.85	0.00	0.00	1.94	12.09	22.27	31.31	50.79
DCRISIS	0.49	0.50	0.00	0.00	0.00	0.00	1.00	1.00	1.00
LARGE3 (%)	31.66	25.21	0.24	8.79	14.89	22.89	40.04	71.64	100.00
FIRM_SIZE	14.53	1.89	10.04	12.16	13.24	14.50	15.87	17.05	18.73
PROFIT (%)	4.95	13.91	-37.61	-4.37	1.74	5.42	10.00	15.49	32.88
LEV (%)	4.69	8.89	0.00	0.00	0.05	1.33	5.40	13.34	37.61
TANG (%)	34.00	24.96	0.87	5.50	12.85	28.33	52.49	71.02	91.56
GROWTH	12.93	709.02	-7.27	0.64	1.13	1.78	2.90	4.74	18.85
VRATING	2.36	2.43	0.00	0.00	0.00	3.00	5.00	6.00	6.00
DRATING (%)	48.64	49.98	0.00	0.00	0.00	0.00	1.00	1.00	1.00
SYND_SIZE	1.88	0.93	0.00	0.69	1.39	1.95	2.56	3.00	3.64
LOANSIZE	19.16	1.58	15.22	17.03	18.13	19.28	20.23	21.13	22.53
DSENIOR	0.99	0.05	1.00	1.00	1.00	1.00	1.00	1.00	1.00
VSECURED	1.03	0.89	0.00	0.00	0.00	1.00	1.00	2.00	2.00
DSECURED	0.39	0.49	0.00	0.00	0.00	0.00	1.00	1.00	1.00
PURP_ACQUIS	0.14	0.34	0.00	0.00	0.00	0.00	0.00	1.00	1.00
PURP_CORP	0.45	0.50	0.00	0.00	0.00	0.00	1.00	1.00	1.00

(Continues)

TABLE 1 (Continued)

	Mean	Standard deviation	Percentile							
			1%	10%	25%	50%	75%	90%	99%	
PURP_BACKUP	0.02	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PURP_WK	0.18	0.38	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00
DCREDIT_LINE	0.58	0.49	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00
DTERM_LOAN	0.38	0.48	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00
DBRIDGE_LOAN	0.02	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00

Note: The table reports the descriptive statistics of the variables for the total sample. SPREAD is the interest rate spread on a loan (over the LIBOR) plus any associated fees in originating the loan; LN_SPREAD is the natural logarithm of SPREAD; MAT is the loan maturity expressed in months; LN_MAT is the natural logarithm of MATURITY; BANK_OWNS is the percentage of bank ownership held by banks with an equity stake higher than 1%; BANK_LENDER is the percentage of bank ownership held by banks with an equity stake higher than 1% if the bank shareholder is also a lender in the bank loan; BANK_NONLENDER is the percentage of bank ownership held by banks with an equity stake higher than 1% if the bank shareholder is not a lender in the bank loan; DCRISIS is a dummy variable that takes the value of 1 for the period 2008–2012 and 0 otherwise; LARGE3 is the percentage of ownership held by the three largest shareholders of the firm excluding bank shareholders; FIRM_SIZE is the natural logarithm of the firm's total assets; PROFIT is the ratio between earnings before interest and taxes and total assets; LEV is the ratio between the book value of debt and the book value of total assets; TANG is the ratio between property, plant, and equipment and total assets; GROWTH is the ratio of the market value of equity to the book value of equity; VRATING is a firm risk index using Moody's and S&P ratings that ranges from one to six, a value of one being assigned to an Aaa rating, a value of two indicating an Aa rating, ..., and six indicating a B rating or worse—we assign a zero to borrowers without a rating; DRATING is a dummy variable that takes the value of one if the rating of the firm is missing and zero otherwise; SYND_SIZE is the natural logarithm of the number of banks participating in the loan; LOAN_SIZE is the natural logarithm of the loan; DSENIOR is a dummy variable that takes the value of one if the bank loan is senior and zero otherwise; YSECURED is an index where we assign a value of one if the bank loan is not secured, a value of two if the bank loan is secured, and a value of zero if we do not know whether the bank loan is secured or not; DSECURED is a dummy variable that takes the value of one if we do not know whether the bank loan is secured or not and zero otherwise; PURP_ACQUIS is a dummy variable that takes the value of one if the bank loan is for an acquisition and zero otherwise; PURP_CORP is a dummy variable that takes the value of one if the bank loan is for corporate purposes and zero otherwise; PURP_BACKUP is a dummy variable that takes the value of one if the bank loan is for backup and zero otherwise; PURP_WK is a dummy variable that takes the value of one if the bank loan is for financing working capital and zero otherwise; DCREDIT_LINE is a dummy variable that takes the value of one if the loan is a credit line and zero otherwise; DTERM_LOAN is a dummy variable that takes the value of one if the loan is a term loan and zero otherwise; and DBRIDGE_LOAN is a dummy variable that takes the value of one if the loan is a bridge loan and zero otherwise.

TABLE 2 Correlations

	LN_SPREAD	LN_MAT	BANK_OWN	BANK_LENDER	BANK_NONLENDER	LARGE3	DCRISIS	FIRM_SIZE
LN_MAT	.06***							
BANK_OWN	.12***	-.00						
BANK_LENDER	-.00	-.02	.29***					
BANK_NONLENDER	.12***	.00	.98***	.12***				
LARGE3	.04***	.04***	-.18***	-.02**	-.18***			
DCRISIS	.24***	-.04***	.28***	.09***	.28***	-.02***		
FIRM_SIZE	-.37***	-.05***	.18***	.11***	.17***	.03***	-.00	
PROFIT	-.26***	.05***	.06***	.01	.06***	-.02***	-.01	.13***
LEV	-.02**	-.01	-.21***	-.03***	-.22***	.07***	.07***	-.09***
TANG	.01	.01	-.05***	-.01	-.05***	-.02**	.02*	.09***
GROWTH	.00	-.01	-.01	-.00	-.01	-.02**	.01	.02*
VRATING	.11***	.04***	.18***	.05***	.18***	-.05***	-.09***	.35***
DRATING	.08***	.02**	-.19***	-.06***	-.19***	.08***	.10***	-.49***
LOANSIZE	-.32***	.03***	.23***	.14***	.22***	.04***	-.03***	.73***
SYND_SIZE	-.32***	.15***	.10***	.13***	.08***	.00	-.00	.48***
DSENIOR	-.06***	-.05***	.01	-.08***	.02*	-.01	.00	-.02*
VSECURED	.36***	.09***	.01	-.03***	.02*	-.03***	-.02**	-.31***
DSECURED	-.25***	-.05***	-.08***	.00	-.08***	.05***	.02**	.19***

Note: The table presents the correlation matrix. LN_SPREAD is the natural logarithm of the interest rate spread on a loan (over the LIBOR) plus any associated fees in originating the loan; LN_MAT is the natural logarithm of the loan maturity expressed in months; BANK_OWN is the percentage of bank ownership held by banks with an equity stake higher than 1%; BANK_LENDER is the percentage of bank ownership held by banks with an equity stake higher than 1% if the bank shareholder is also a lender in the bank loan; BANK_NONLENDER is the percentage of bank ownership held by banks with an equity stake higher than 1% if the bank shareholder is not a lender in the bank loan; DCRISIS is a dummy variable that takes the value of 1 for the period 2008–2012 and 0 otherwise; LARGE3 is the percentage of ownership held by the three largest shareholders of the firm excluding bank shareholders; FIRM_SIZE is the natural logarithm of the firm's total assets; PROFIT is the ratio between earnings before interest and taxes and total assets; LEV is the ratio between the book value of debt and the book value of total assets; TANG is the ratio between property, plant, and equipment and total assets; GROWTH is the ratio of the market value of equity to the book value of equity; VRATING is a firm risk index using Moody's and S&P ratings that ranges from one to six, a value of one being assigned to an Aaa rating, a value of two indicating an Aa rating, ..., and six indicating a B rating or worse—we assign a zero to borrowers without a rating; DRATING is a dummy variable that takes the value of one if the rating of the firm is missing and zero otherwise; SYND_SIZE is natural logarithm of the number of banks participating in the loan; LOANSIZE is the natural logarithm of the loan; DSENIOR is a dummy variable that takes the value of one if the bank loan is senior and zero otherwise; VSECURED is an index where we assign a value of one if the bank loan is not secured, a value of two if the bank loan is secured, and a value of zero if we do not know whether the bank loan is secured or not; and DSECURED is a dummy variable that takes the value of one if we do not know whether the bank loan is secured or not and zero otherwise. ***, **, and * represent significance at the 1%, 5%, and 10% level, respectively.

4 | RESULTS

In our regression models, we begin by testing how the presence of large bank shareholders in the firm's equity affects the price and maturity of banks loans. By testing our hypotheses, we intend to provide evidence regarding the behavior of banks as shareholders during the global financial crisis.

PROFIT	LEV	TANG	GROWTH	VRATING	DRATING	LOANSIZE	SYND_ SIZE	DSENIOR	VSECURED
-.14***									
-.05***	.01								
.00	-.01	.03***							
-.04***	-.21***	.07***	.02*						
-.03***	.23***	-.07***	-.01	-.95***					
.16***	-.20***	.08***	.01	.38***	-.49***				
.15***	.01	.07***	.01	.19***	-.27***	.54***			
.01	-.01	-.01	.00	.02*	-.02**	.01	.02**		
-.16***	-.05***	-.01	.02*	.09***	.02**	-.22***	-.19***	.02*	
.09***	.10***	.02*	-.01	-.11***	.04***	.09***	.10***	-.02**	-.91***

We include the interaction terms between DCRISIS, a dummy variable that takes the value of one during the period 2008–2012 and zero otherwise, and the variables of the presence of large bank shareholders. Our proxies of bank ownership show the effect of these variables on bank loan terms during the period of non-crisis, while the interaction terms reflect the differential effect of these bank ownership stakes during the period of crisis.

TABLE 3 Interest rate spread and large bank shareholders during the crisis

	(1)	(2)	(3)	(4)
Constant	4.44*** (12.37)	4.27*** (11.95)	4.47*** (12.25)	4.28*** (11.70)
BANK_OWN	0.07*** (18.89)		0.07*** (18.29)	
BANK_LENDER		0.24*** (2.85)		0.24*** (2.71)
BANK_NONLENDER		0.07*** (14.82)		0.07*** (13.14)
DCRISIS	1.15*** (8.47)	1.31*** (9.36)	1.27*** (7.48)	1.30*** (7.81)
ZSCORE			-0.01** (-1.98)	-0.00 (-0.19)
DCRISIS*ZSCORE			-0.01 (-1.55)	0.00 (0.11)
DCRISIS*BANK_OWN	-0.08*** (-7.76)		-0.08*** (-7.63)	
DCRISIS*BANK_LENDER		0.13 (1.56)		0.13 (1.53)
DCRISIS*BANK_NONLENDER		-0.10*** (-8.82)		-0.10*** (-8.63)
LARGE3	0.00 (0.36)	0.00 (0.04)	0.00 (0.17)	0.00 (0.03)
FIRM_SIZE	-0.03*** (-3.19)	-0.03*** (-3.28)	-0.03*** (-3.15)	-0.03*** (-3.25)
PROFIT	-0.70*** (-5.91)	-0.68*** (-5.87)	-0.69*** (-5.83)	-0.68*** (-5.86)
LEV	0.27** (2.05)	0.24* (1.78)	0.26** (1.99)	0.24* (1.75)
TANG	0.05 (1.49)	0.05 (1.37)	0.05 (1.35)	0.05 (1.32)
GROWTH	-0.00*** (-5.39)	-0.00*** (-7.12)	-0.00*** (-5.62)	-0.00*** (-7.19)
VRATING	0.40*** (27.28)	0.40*** (27.26)	0.40*** (27.30)	0.40*** (27.27)
DRATING	1.92*** (24.48)	1.92*** (24.49)	1.92*** (24.52)	1.92*** (24.49)
LN_MAT	0.05*** (2.90)	0.06*** (3.55)	0.06*** (3.37)	0.06*** (3.56)
SYND_SIZE	-0.02** (-2.11)	-0.02** (-2.20)	-0.02** (-2.20)	-0.02** (-2.20)
LOANSIZE	-0.07*** (-8.41)	-0.07*** (-8.14)	-0.07*** (-8.12)	-0.07*** (-8.05)
DSENIOR	-0.62** (-2.27)	-0.63** (-2.30)	-0.62** (-2.25)	-0.63** (-2.29)
VSECURED	0.27*** (11.77)	0.26*** (11.57)	0.27*** (11.68)	0.26*** (11.56)
DSECURED	0.35*** (8.55)	0.34*** (8.47)	0.34*** (8.47)	0.34*** (8.46)
Country effects	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes
# observations	12,045	12,045	11,702	11,702
R squared (%)	64.59	64.83	64.64	64.82
F test	129.20***	127.75***	121.92***	122.39***
DWH test	292.07***	154.77***	288.97***	148.39***

Note: Regressions are estimated using OLS with standard errors clustered by borrower firm level. The dependent variable (LN_SPREAD) is the natural logarithm of interest rate spread on a loan (over the LIBOR) plus any associated fees in originating the loan; BANK_OWN is the percentage of bank ownership held by banks with an equity stake higher than 1%; BANK_LENDER is the percentage of bank ownership held by banks with an equity stake higher than 1% if the bank shareholder is also a lender in the bank loan; BANK_NONLENDER is the percentage of bank ownership held by banks with an equity stake higher than 1% if the bank shareholder is not a lender in the bank loan; DCRISIS is a dummy variable that takes the value of 1 for the period 2008–2012 and 0 otherwise; ZSCORE is the bank Z-score of each country's banking system; LARGE3 is the percentage of ownership held by the three largest shareholders of the firm excluding bank shareholders; FIRM_SIZE is the natural logarithm of the firm's total assets; PROFIT is the ratio between earnings before interest and taxes and total assets; LEV is the ratio between the book value of debt and the book value of total assets; TANG is the ratio between property, plant, and equipment and total assets; GROWTH is the ratio of the market value of equity to the book value of equity; VRATING is a firm risk index using Moody's and S&P ratings that ranges from one to six, a value of one being assigned to an Aaa rating, a value of two indicating an Aa rating, ..., and six indicating a B rating or worse—we assign a zero to borrowers without a rating; DRATING is a dummy variable that takes the value of one if the rating of the firm is missing and zero otherwise; SYND_SIZE is natural logarithm of the number of banks participating in the loan; LOANSIZE is the natural logarithm of the loan. Firm industry dummies and borrower firm country dummies are included in the estimations: DSENIOR is a dummy variable that takes the value of one if the bank loan is senior and zero otherwise; VSECURED is an index where we assign a value of one if the bank loan is not secured, a value of two if the bank loan is secured, and a value of zero if we do not know whether the bank loan is secured or not; and DSECURED is a dummy variable that takes the value of one if we do not know whether the bank loan is secured or not and zero otherwise. ***, **, and * represent significance at the 1%, 5%, and 10% level, respectively.

4.1 | Bank ownership and loan spread during the global financial crisis

Table 3 provides the results for loan spread. The variable proxying the presence of large bank shareholders, *BANK_OWN*, has a positive coefficient, showing that borrowers with banks as large shareholders paid higher interest rates. However, the interaction term between *BANK_OWN* and *DCRISIS* reveals that these borrowers paid less for bank loans during the period of crisis.¹⁰ Although the sum of the coefficients of *BANK_OWN* and *DCRISIS*BANK_OWN* is negative, it is not statistically significant, revealing that there is no effect of bank ownership on loan spreads during the crisis period. Furthermore, the positive and significant coefficient of *DCRISIS* highlights an increase in the spread of bank loans during the crisis. When we distinguish between the presence of bank shareholders according to their simultaneous role as lenders, the results show that the effects of *BANK_OWN* and *DCRISIS*BANK_OWN* in column (1) are due to the bank shareholders that are not lenders, as the coefficients for *BANK_NONLENDER* and *DCRISIS*BANK_NONLENDER* are positive and negative, respectively. The larger size of the coefficient of the interaction term reveals that there was a reduction in loan spreads due to bank ownership during the crisis, this effect being statistically significant. Moreover, the positive coefficient of *BANK_LENDER* and the non-significant coefficient of *DCRISIS*BANK_LENDER* suggest that the dual role of the banks as large shareholders and lenders led to an increase in loan spread, regardless of the crisis.

In terms of economic significance, the coefficients reported in column (2) suggest that a one standard deviation increase in *BANK_LENDER* is associated with an increase in loan spread of 12.90 basis points during the period of non-crisis and of 21.23 basis points during the period of crisis. However, when we consider those bank shareholders that are not lenders, a one standard deviation increase in *BANK_NONLENDER* is associated with an increase in loan spread of 29.29 basis points during the period of non-crisis and a reduction of 13.51 basis points during the period of crisis.

Ownership concentration in non-bank shareholders does not seem to have an effect on the cost of bank loans, given that the coefficient of *LARGE3* is not statistically significant. The sign of the coefficients for borrower-level variables is as expected. Larger firms borrow at lower interest rates. This result is consistent with small firms suffering from greater informational asymmetries between shareholders and lenders and with large borrowers having easier access to both internal and external financing, longer tracks records and lower default risk, as they are typically more diversified. More profitable firms borrow at lower interest rates, reflecting that banks face lower probabilities of default when the borrowers are more profitable. In this context, firms with higher levels of current profits will be able to borrow from banks on relatively good terms. High leverage is associated with higher interest rates, which could reflect that firms with high leverage face a greater likelihood of future insolvency. Moreover, moral hazard problems are greater in these firms. Firms with higher growth opportunities borrow at lower interest rates, suggesting that growth firms are less likely to engage in risky activities to expropriate creditors. Riskier borrowers (firms with a higher value of the *VRATING* variable) obtain loans at higher interest rates, while firms without a rating (*DRATING*) also face higher costs.

Besides firm-specific variables, we also include several loan-specific characteristics in our estimations. Prior empirical work on bank loan pricing has led us to introduce the number of lenders, the size of the loan, whether the loan is senior or not, whether the loan is secured or not, whether information about the collateral is provided or not, the type of loan, and the purpose of the loan.¹¹ Loans from larger syndicates and loans that are larger in size have lower spreads. Bridge loans and non-senior loans pay higher spreads. Loans without information as to whether the loan is secured or not pay higher spreads, while secured loans also pay higher interest rates. This last result is inconsistent with the notion that this non-price term can be used as a trade-off feature for price. However, this result is in line with the evidence reported by Berger and Udell (1990) and Bharath et al. (2011), who also find

TABLE 4 Maturity and large bank shareholders during the crisis

	(1)	(2)	(3)	(4)
Constant	1.91*** (4.53)	2.01*** (4.94)	1.09*** (2.60)	1.27*** (3.06)
BANK_OWN	0.00** (2.06)		−0.02*** (−3.58)	
BANK_LENDER		−0.67*** (−8.45)		−0.34*** (−4.08)
BANK_NONLENDER		0.02*** (3.36)		−0.01 (−0.92)
DCRISIS	−0.08*** (−2.81)	−0.32** (−2.34)	0.13 (0.81)	0.04 (0.25)
ZSCORE			0.07*** (14.09)	0.06*** (10.84)
DCRISIS*ZSCORE			−0.00 (−0.86)	−0.00 (−1.18)
DCRISIS*BANK_OWN	−0.00 (−0.47)		−0.00 (−0.43)	
DCRISIS*BANK_LENDER		−0.08 (−1.02)		−0.01 (−0.15)
DCRISIS*BANK_NONLENDER		0.03** (2.54)		0.01 (0.72)
LARGE3	0.00 (1.28)	0.00* (1.68)	0.00* (1.93)	0.00** (2.05)
FIRM_SIZE	−0.06*** (−7.38)	−0.05*** (−6.90)	−0.06*** (−7.34)	−0.06*** (−7.19)
PROFIT	0.33*** (4.86)	0.31*** (4.69)	0.29*** (4.37)	0.28*** (4.37)
LEV	−0.28 (−1.27)	−0.25 (−1.09)	−0.24 (−1.10)	−0.23 (−1.05)
TANG	−0.03 (−0.74)	−0.02 (−0.43)	−0.00 (−0.14)	−0.00 (−0.07)
GROWTH	−0.00*** (−15.88)	−0.00*** (−11.84)	−0.00*** (−15.30)	−0.00*** (−12.64)
VRATING	0.14*** (8.94)	0.13*** (8.71)	0.12*** (8.24)	0.12*** (8.29)
DRATING	0.66*** (8.34)	0.64*** (8.20)	0.60*** (7.64)	0.60*** (7.71)
LN_SPREAD	0.05*** (3.08)	0.07*** (3.70)	0.07*** (3.50)	0.07*** (3.71)
SYND_SIZE	0.12*** (10.33)	0.13*** (10.54)	0.13*** (11.03)	0.13*** (11.00)
LOANSIZE	0.09*** (10.96)	0.09*** (10.55)	0.08*** (9.67)	0.08*** (9.66)
DSENIOR	−0.04 (−0.16)	−0.03 (−0.10)	−0.03 (−0.10)	−0.02 (−0.09)
VSECURED	0.06*** (2.91)	0.06*** (3.03)	0.07*** (3.21)	0.07*** (3.25)
DSECURED	0.11*** (2.74)	0.11*** (2.73)	0.11*** (2.90)	0.11*** (2.90)
Country effects	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes
# observations	12,045	12,045	11,702	11,702
R squared (%)	26.68	28.52	29.96	30.24
F test	122.63***	40.29***	78.07***	47.87***
DWH test	2.30	104.49***	18.14***	27.70***

Note: Regressions are estimated using OLS with standard errors clustered by borrower firm level. The dependent variable (LN_MAT) is the natural logarithm of the loan maturity expressed in months; BANK_OWN is the percentage of firm's equity held by the main bank shareholder; BANK_OWN is the percentage of bank ownership held by banks with an equity stake higher than 1%; BANK_LENDER is the percentage of bank ownership held by banks with an equity stake higher than 1% if the bank shareholder is also a lender in the bank loan; BANK_NONLENDER is the percentage of bank ownership held by banks with an equity stake higher than 1% if the bank shareholder is not a lender in the bank loan; DCRISIS is a dummy variable that takes the value of 1 for the period 2008–2012 and 0 otherwise; ZSCORE is the bank Z-score of each country's banking system; LARGE3 is the percentage of ownership held by the three largest shareholders of the firm excluding bank shareholders; FIRM_SIZE is the natural logarithm of the firm's total assets; PROFIT is the ratio between earnings before interest and taxes and total assets; LEV is the ratio between the book value of debt and the book value of total assets; TANG is the ratio between property, plant, and equipment and total assets; GROWTH is the ratio of the market value of equity to the book value of equity; VRATING is a firm risk index using Moody's and S&P ratings that ranges from one to six, a value of one being assigned to an Aaa rating, a value of two indicating an Aa rating, ..., and six indicating a B rating or worse—we assign a zero to borrowers without a rating; DRATING is a dummy variable that takes the value of one if the rating of the firm is missing and zero otherwise; SYND_SIZE is the natural logarithm of the number of banks participating in the loan; LOANSIZE is the natural logarithm of the loan; DSENIOR is a dummy variable that takes the value of one if the bank loan is senior and zero otherwise; VSECURED is an index where we assign a value of one if the bank loan is not secured, a value of two if the bank loan is secured, and a value of zero if we do not know whether the bank loan is secured or not; and DSECURED is a dummy variable that takes the value of one if we do not know whether the bank loan is secured or not and zero otherwise. Firm industry dummies and borrower firm country dummies are included in the estimations. ***, **, and * represent significance at the 1%, 5%, and 10% level, respectively.

that borrowers that are required to put up collateral are also more likely to be paying higher interest rates. Furthermore, there is a positive relationship between the interest rate of bank loans and maturity, revealing that banks charge higher interest rates on long-term loans.

In columns (3) and (4), the effect of ZSCORE on the spread of bank loans is negative, indicating that safer banking systems charged lower spreads compared to less safer banking systems, although the coefficient of ZSCORE is only statistically significant in column (3). The coefficient of DCRISIS*ZSCORE is negative in column (3), in line with safer banking systems charging lower spreads during the crisis, although the coefficient is not statistically significant. The coefficients of DCRISIS in columns 3 and 4 are positive and significant, showing that borrowers suffered an increase in the spread of bank loans during the crisis.

4.2 | Bank ownership and loan maturity during the global financial crisis

Table 4 reports the results for loan maturity. The percentage of ownership held by banks has a positive and significant coefficient in the non-crisis period. The interaction term between DCRISIS and BANK_OWN is not significant, suggesting that the percentage of ownership held by banks has a positive effect on maturity, regardless of the period considered. When we consider bank control separately according to whether the bank shareholder is a lender or not, it can be seen that the coefficient associated with BANK_LENDER is negative and significant, while the interaction term of this variable with DCRISIS is not significant. These findings suggest that bank ownership leads to reductions in the maturity of loans when the bank shareholder is also a lender, regardless of the crisis. As for the results of bank ownership when banks are not lenders to a firm, we observe positive effects on loan maturity both before and during the financial crisis, although these effects are not maintained once the safety of the banking system had been controlled. Furthermore, bank loan maturities during the crisis were reduced, considering that the coefficient of DCRISIS is negative and significant in columns (1) and (2).

To aid the interpretation of this result, we calculated the economic effect considering the coefficients reported in column (2). These coefficients suggest that a one standard deviation increase in BANK_LENDER is associated with a decrease in loan maturity of 7.57 months during the period of non-crisis and of 8.15 months during the period of crisis. However, when we consider those bank shareholders that are not lenders, a one standard deviation increase in BANK_NONLENDER is associated with an increase in loan maturity of 2.22 months during the period of non-crisis and of 6.11 months during the period of crisis.

Ownership concentration has a positive effect on maturity, although the coefficients are not always significant. As for the firm-level variables, loan maturity increases with the firm's profitability, but decreases with the firm's size and the market-to-book ratio. Safer borrowers, that is, those with a higher rating, obtain loans at shorter maturities, while firms without a rating borrow at longer maturities. This result is in line with both the signaling and liquidity risk arguments of debt maturity. According to the signaling argument, a firm's choice of debt maturity structure can signal insider information about a firm's quality when insiders are better informed than outside investors (Flannery, 1986). In this context, high-quality firms signal their quality by issuing short-term debt. The liquidity risk argument also predicts that high-quality firms tend to issue short-term debt, as the incentives to lengthen the maturity of debt increases with the risk of not being able to repay it.

Loans with larger syndicates and larger amounts have longer maturities. Furthermore, there is a positive relationship between the interest rate of bank loans and loan maturity, revealing that loans with higher spreads are also loans with long-term maturities. As for the effect of collateral on the maturity of bank loans, we show that secured bank loans have longer maturities, as the coefficient of

TABLE 5 Robustness analysis for LN_SPREAD: different lengths for the crisis period

	(1)	(2)	(3)	(4)	(5)	(6)
Constant	4.45*** (13.01)	4.42*** (13.10)	4.35*** (12.51)	4.33*** (12.37)	4.26*** (11.78)	4.19*** (11.36)
BANK_LENDER	0.52*** (9.94)	0.47*** (8.39)	0.74*** (8.56)	0.78*** (8.95)	0.35*** (4.46)	0.37*** (4.49)
BANK_NONLENDER	0.07*** (19.92)	0.08*** (19.11)	0.07*** (18.15)	0.07*** (17.30)	0.07*** (15.86)	0.07*** (12.87)
DCRISIS	1.67*** (8.09)	3.42*** (11.83)	1.02*** (6.32)	1.62*** (7.84)	1.28*** (8.84)	1.36*** (7.90)
ZSCORE		-0.01 (-1.40)		-0.01 (-1.38)		0.00 (0.79)
DCRISIS*ZSCORE		-0.10*** (-9.14)		-0.04*** (-5.62)		-0.00 (-0.49)
DCRISIS*BANK_LENDER	0.52*** (3.73)	-0.37* (-1.93)	0.78*** (7.73)	0.62*** (5.40)	0.03 (0.43)	0.04 (0.48)
DCRISIS*BANK_NONLENDER	-0.17*** (-10.81)	-0.07*** (-3.71)	-0.13*** (-10.26)	-0.10*** (-7.04)	-0.10*** (-8.40)	-0.10*** (-8.22)
Borrower controls	Yes	Yes	Yes	Yes	Yes	Yes
Bank loan controls	Yes	Yes	Yes	Yes	Yes	Yes
Country effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes
# observations	12,045	11,702	12,045	11,702	12,045	11,702
R squared (%)	65.51	65.84	65.30	65.45	64.73	64.73
F test	131.78***	125.34***	129.17***	123.12***	126.09***	122.19***
DWH test	356.89***	368.33***	302.22***	300.23***	231.99***	213.06***

Note: This table provides the robustness of our results considering different lengths for the crisis period, the dependent variable being LN_SPREAD. DCRISIS is a dummy variable that takes the value of 1 for the years 2008 and 2009 (columns (1) and (2)), 2008–2010 (columns (3) and (4)), 2008–2011 (columns (5) and (6)), and zero otherwise. Regressions are estimated using OLS with standard errors clustered by borrower firm level. Borrower and loan controls are included as in Tables 3 and 4. Firm industry dummies and borrower firm country dummies are included in the estimations. ***, **, and * represent significance at the 1%, 5%, and 10% level, respectively.

TABLE 6 Robustness analysis for LN_MAT: different lengths for the crisis period

	(1)	(2)	(3)	(4)	(5)	(6)
Constant	2.02*** (5.06)	1.48*** (3.60)	2.07*** (4.96)	1.50*** (3.61)	2.03*** (5.04)	1.24*** (2.99)
BANK_LENDER	-0.48*** (-9.26)	-0.29*** (-5.18)	-0.27*** (-3.13)	-0.25*** (-2.88)	-0.59*** (-7.75)	-0.34*** (-4.27)
BANK_NONLENDER	0.02*** (4.66)	0.00 (0.33)	0.01*** (3.50)	-0.00 (-0.08)	0.02*** (4.58)	-0.00 (-0.65)
DCRISIS	-0.93*** (-4.90)	-0.52* (-1.73)	-0.93*** (-5.85)	-0.68*** (-3.58)	-0.56*** (-4.05)	0.06 (0.33)
ZSCORE		0.04*** (9.55)		0.05*** (9.73)		0.06*** (10.32)
DCRISIS*ZSCORE		-0.00 (-0.13)		0.01* (1.85)		-0.01** (-2.47)
DCRISIS*BANK_LENDER	0.14 (0.97)	0.21 (0.99)	0.31*** (2.83)	0.33*** (2.73)	-0.07 (-1.04)	-0.00 (-0.02)
DCRISIS*BANK_NONLENDER	0.05*** (3.03)	0.02 (1.15)	0.04*** (2.86)	0.01 (0.46)	0.04*** (3.55)	0.02 (1.25)
Borrower controls	Yes	Yes	Yes	Yes	Yes	Yes
Bank loan controls	Yes	Yes	Yes	Yes	Yes	Yes
Country effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes
# observations	12,045	11,702	12,045	11,702	12,045	1,1702
R squared (%)	29.53	30.45	29.25	30.40	28.77	30.27
F test	52.69***	68.61***	128.21***	84.06***	96.07***	62.28***
DWH test	46.75***	19.21***	4.53**	5.82***	87.19***	30.30***

Note: This table provides the robustness of our results considering different lengths for the crisis period, the dependent variable being LN_MAT. DCRISIS is a dummy variable that takes the value of 1 for the years 2008 and 2009 (columns (1) and (2)), 2008–2010 (columns (3) and (4)), 2008–2011 (columns (5) and (6)), and zero otherwise. Regressions are estimated using OLS with standard errors clustered by borrower firm level. Borrower and loan controls are included as in Tables 3 and 4. Firm industry dummies and borrower firm country dummies are included in the estimations. ***, **, * and * represent significance at the 1%, 5%, and 10% level, respectively.

TABLE 7 Robustness analysis for LN_SPREAD: excluding US firms

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	5.14*** (11.58)	5.68*** (9.69)	4.97*** (11.27)	5.20*** (7.60)	5.27*** (11.45)	5.28*** (6.59)	5.21*** (11.16)	5.47*** (7.35)
BANK_LENDER	0.19** (2.05)	0.84*** (6.73)	1.04*** (6.03)	1.34*** (6.24)	-0.11 (-1.14)	0.61*** (4.66)	-0.40*** (-4.02)	0.28** (2.21)
BANK_NONLENDER	0.07*** (9.00)	0.06*** (6.94)	0.06*** (7.52)	0.05*** (5.47)	0.09*** (9.53)	0.07*** (7.26)	0.09*** (8.20)	0.07*** (7.13)
DCRISIS	2.18*** (8.27)	2.76*** (6.78)	1.57*** (6.89)	1.86*** (5.45)	1.72*** (7.24)	1.46*** (4.95)	1.64*** (6.59)	1.22*** (4.18)
ZSCORE		-0.00 (-0.78)		-0.01 (-1.52)		-0.01* (-1.79)		-0.01 (-1.03)
DCRISIS*ZSCORE		-0.02** (-2.54)		-0.01* (-1.71)		0.01** (1.99)		0.00 (0.48)
DCRISIS*BANK_LENDER	0.42*** (5.52)	-0.10 (-0.76)	0.51*** (8.07)	0.09 (0.85)	0.38*** (5.88)	0.16** (2.22)	0.62*** (8.15)	0.46*** (6.06)
DCRISIS*BANK_NONLENDER	-0.21*** (-9.75)	-0.19*** (-6.40)	-0.19*** (-10.15)	-0.16*** (-6.36)	-0.16*** (-8.29)	-0.14*** (-6.04)	-0.16*** (-8.02)	-0.13*** (-5.42)
Borrower controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank loan controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# observations	3,942	3,599	3,942	3,599	3,942	3,599	3,942	3,599
R squared (%)	58.84	61.16	59.84	61.17	58.42	60.70	58.86	60.89
F test	40.14***	40.89***	43.45***	40.55***	39.51***	43.17***	43.12***	45.41***
DWH test	55.90***	93.00***	63.58***	69.85***	48.21***	79.74***	23.49***	45.20***

Note: This table provides the robustness of our results considering different lengths for the crisis period, the dependent variable being LN_SPREAD. DCRISIS is a dummy variable that takes the value of 1 for the years 2008 and 2009 (columns (1) and (2)), 2008–2010 (columns (3) and (4)), 2008–2011 (columns (5) and (6)), years 2008–2012 (columns (7) and (8)), and zero otherwise. Regressions are estimated using OLS with standard errors clustered by borrower firm level. Borrower and loan controls are included as in Tables 3 and 4. Firm industry dummies and borrower firm country dummies are included in the estimations. ***, **, and * represent significance at the 1%, 5%, and 10% level, respectively.

VSECURED is positive. Moreover, those loans without information as to whether the loan is secured or not also have longer maturities. Columns 3 and 4 show positive and statistically significant coefficients for ZSCORE, while its interaction term with DCRISIS is not significant. These results are indicative of safer banking systems lengthening the maturity of bank loans, regardless of the financial crisis.

Summing up, on the one hand, the dual role of banks as large shareholders and lenders increased the interest rate spread of bank loans, regardless of the period considered. Similarly, this dual role also reduced the maturity of bank loans. These results reveal that the dual role of banks as shareholders and lenders meant worse terms on bank loans for borrowers, suggesting the expropriation behavior of banks when they act as both shareholders and lenders.

On the other hand, the role played by bank shareholders that are not lenders suggests a monitoring effect during the crisis. In fact, shareholdings of these types of banks led to borrowing with lower spreads during this period. Consequently, the role of banks exclusively as shareholders provided benefits for firms during the crisis, whereas the dual role of banks as shareholders and lenders led to worse loan conditions.

Additionally, during the global financial crisis, firms borrowed at higher interest rates and shorter maturities, revealing the imposition of more stringent credit conditions for borrowers. In this context, our paper complements the strand of the literature analyzing the negative consequences of the financial crisis for firms (Almeida et al., 2011; Campello et al., 2010; González, 2015; Ivashina & Scharfstein, 2010; Santos, 2011).

5 | ROBUSTNESS

In the above analyses, we used a relatively long period for the crisis, as our study included different countries in which the length of the crisis varied. To test the robustness of our results, we first consider alternative lengths for the crisis period. We separately consider dummy variables identifying three different crisis periods: 2008–2009, 2008–2010, and 2008–2011. For each of these periods, we define a dummy variable that takes the value of one for the periods 2008–2009, 2008–2010, and 2008–2011, respectively, and zero otherwise. The results using these three dummy variables are shown in Table 5 when the dependent variable is the interest rate spread of a loan (LN_SPREAD), and in Table 6 when this variable is loan maturity (LN_MAT). In both tables, columns (1) and (2) show the results when the crisis period is defined as 2008–2009, columns (3) and (4) show the results for the period 2008–2010, and columns (5) and (6) for the period 2008–2011. The results reveal that the effects of bank ownership on loan spread and maturity during the period of crisis are qualitatively similar to those shown in Tables 3 and 4, as borrower firms with bank shareholders that are non-lenders borrowed at lower interest rates during the period of crisis and at higher interest rates when firms borrowed from banks that are also shareholders. Borrowers paid higher bank loan spreads and obtained shorter maturities during the crisis, regardless of the length of the crisis period. Moreover, firms in countries with safer banking systems borrowed at lower interest rates during the early years of the crisis. Our results for loan maturity mostly confirm the evidence provided in Table 4, indicating longer maturities during the crisis associated with non-lender shareholder banks. However, when the considered period of crisis is 2008–2010, we also find similar evidence for shareholder bank lenders, although the sum of the coefficients of BANK_LENDER and DCRISIS*BANK_LENDER is not statistically significant.

Second, in order to test whether our results were driven by US firms, which dominate the sample under study, we estimate the results of Table 3 excluding bank loans to US firms and considering throughout the previous analysis different lengths of the crisis period.¹² The results for interest rate

spread (LN_SPREAD) using the four dummy variables identifying different lengths of the crisis period are shown in Table 7.¹³ Columns (1) and (2) show the results when the crisis period is defined as 2008–2009, columns (3) and (4) show the results for the period 2008–2010, columns (5) and (6) for the period 2008–2011, and columns (7) and (8) for the period 2008–2012.

The results reveal that the effects of bank ownership on loan spread during the period of crisis are qualitatively similar to those shown in Tables 3 and 5. They show that the coefficients for DCRISIS*BANK_LENDER are positive and statistically significant. Therefore, during the crisis period, bank ownership tended to increase loan spread when banks act as shareholders and lenders. The result indicating that the dual role of banks as both shareholders and lenders leads to worse price terms on bank loans during the crisis holds, regardless of whether US observations are included in the estimation sample or not. Likewise, similar to the results reported in Table 3, the effect for bank shareholders that are not lenders consisted in a reduction in the interest rate spread of bank loans during the crisis.

Furthermore, borrowers paid higher bank loan spreads during the crisis, regardless of the length of the crisis period considered. Comparing the coefficients of DCRISIS in column (1) in Table 3 and in column (7) in Table 7, it can be seen that non-US borrowers paid higher spreads during the crisis than US borrowers. We also find evidence indicating that firms paid higher interest rates during the early years of the crisis in less safe banking systems. In sum, our results regarding the role of bank ownership during the crisis are robust to alternative compositions of the sample under study.

6 | CONCLUSIONS

This paper analyzes the effect of bank ownership on the terms of bank loans for a sample of 12,045 loans from 45 countries over the period 2004–2013, considering whether this effect depends on the bank shareholder being a lender or not. On the one hand, we contribute to the literature by providing evidence related to the effect of banks as shareholders on bank loan terms during the global financial crisis. Our findings are mostly consistent with the existence of monitoring behavior during said financial crisis on the part of bank shareholders that are non-lenders. During the non-crisis period, the presence of large bank shareholders that are non-lenders is associated with higher spreads. During the crisis, however, firms with this type of shareholder borrowed at lower interest rates. These effects are economically significant: A one standard deviation increase in the ownership of the bank results in an increase of 29.29 basis points in loan spread before the crisis and a reduction of 13.51 basis points during the crisis. Thus, access to better conditions on bank loans during the crisis implies that the monitoring effect of large bank shareholders that are non-lenders predominated over the expropriation effect.

Regarding the results when bank shareholders are also lenders to firms, these show that these banks provided worse conditions on bank loans. Borrowers paid higher spreads and obtained shorter maturities when they borrowed from banks that are shareholders. These effects are not significantly different between the crisis and non-crisis period. During the crisis, loan spread increases 21.23 basis points and loan maturity decreases 8.15 months when bank ownership increases by one standard deviation. This effect of bank ownership on interest rates and maturity is consistent with banks obtaining private benefits as large shareholders.

The paper also offers evidence regarding the influence of the global financial crisis. During crisis, firms borrowed at higher interest rates and shorter maturities. The crisis had several important consequences for the role of banks as shareholders when comparing the differences in their behavior during the periods of crisis and non-crisis. Shareholder and non-lender banks increased the spread of bank loans during the period of non-crisis, but did the opposite during the crisis. This evidence reveals the

existence of benefits and costs of the role of banks as shareholders and the existence of intertemporal smoothing of loan rates.

Our results suggest that the financial crisis systematically affected the conditions of bank loans, although it did so contingent on the presence of large bank shareholders in the firm's equity. The effect of controlling bank shareholders has proven to be particularly critical when the banks are also lenders, with banks extracting rents from borrowers. This opportunistic behavior on the part of banks that are both shareholders and lenders has potential policy implications, as it reveals the existence of costs when these banks use their influence as large shareholders to capture private benefits from their deals as lenders. However, the results also reveal a monitoring effect of shareholder banks during the crisis when they are not lenders.

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ENDNOTES

- ¹ We consider that a bank is a large shareholder when it holds a significant equity stake higher than 1% before the granting of the bank loan.
- ² Ferreira and Matos (2012) show that an institutional holdings link is associated with fifteen-basis-points-higher spreads charged to bank-linked borrowers during the 2003–2006 credit boom. The effect of an institutional holding link is reduced during the crisis, although the difference is not statistically significant.
- ³ The availability of data on the ownership structure of firms is poor prior to 2003.
- ⁴ The Osiris database considers the following categories of shareholders: Bank, Employees/Managers/Directors, Financial company, Foundation/Research Institute, Hedge funds, Industrial company, Insurance company, Mutual & Pension Fund/Nominee/Trust/Trustee, One or more named individuals or families, Other unnamed shareholders (aggregated), Private Equity firms, Public authority, State and Government, Self-ownership, Unnamed private shareholders (aggregated), and Venture capital.
- ⁵ Appendix B shows the number of bank loans by country. 67% of these loan tranches are to US firms. The Dealscan database has a larger coverage of loans for US firms than non-US firms. Bae and Goyal (2009) reveal, for instance, that almost 70% of the loan tranches included in their sample corresponds to US firms.
- ⁶ Petersen (2009) show that the standard errors clustered by firm are unbiased and produce correctly sized confidence intervals, regardless of whether the firm effect is permanent or temporary.
- ⁷ This is estimated as $(ROA + (\text{equity/assets})) / SD(ROA)$; $SD(ROA)$ is the standard deviation of ROA. ROA, equity, and assets are country-level aggregate figures. Data are obtained from the World Bank, calculated from underlying bank-by-bank unconsolidated data from Bankscope.
- ⁸ The database on bank regulation and supervision for more than 180 countries covers the period from 1999 through to 2011. Four surveys were carried out during this period. Survey I, including over 300 questions, covered 118 countries and was mostly completed in 1999. The questionnaire was extended and revised for the second survey. Released by the World Bank in 2003, Survey II provides information on bank regulatory and supervisory policies in 2002. We consider the second survey, as it is prior to our data on bank ownership.
- ⁹ The proxies for the purpose of the loan and the type of the loan are not included in order to save space.

- ¹⁰ In untabulated analysis, we obtain evidence suggesting that these results correspond to large controlling ownership stakes higher than 20%.
- ¹¹ While these two variables are included in the estimations, their coefficients are not shown in order to save space.
- ¹² We previously used weighted regressions in Tables 3 and 4 in which the weights are the inverse of the number of bank loans in each country. Weighted regressions are also used when we exclude US firms from the estimations.
- ¹³ The results for LN_MAT are not shown for the sake of brevity, as we obtain few significant results for the effect of bank ownership on this variable for the whole sample.

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APPENDIX A

Variables

The table shows the definition of variables used in the paper and their sources.

Name	Definition	Source
<i>Dependent variables</i>		
LN_SPREAD	The natural logarithm of all-in-spread drawn, which measures the interest rate spread on a loan (over the LIBOR) plus any associated fees in originating the loan.	Dealscan
LN_MATURITY	The natural logarithm of the loan maturity expressed in months.	Dealscan
<i>Bank ownership variables</i>		
BANK_OWEN	The percentage of bank ownership held by banks with an equity stake higher than 1%; this variable is measured at the end of the year prior to the granting of the bank loan.	Osiris
BANK_LENDER	The percentage of bank ownership held by banks with an equity stake higher than 1% if the bank shareholder is also a lender in the bank loan.	Osiris
BANK_NONLENDER	The percentage of bank ownership held by banks with an equity stake higher than 1% if the bank shareholder is not a lender in the bank loan.	Osiris
OWNERSHIP STRUCTURE VARIABLES		
LARGE3	The percentage of ownership held by the three largest shareholders of the firm, excluding bank shareholders.	Osiris
<i>Crisis variables</i>		
DCRISIS	A dummy variable that takes the value of one for the period 2008–2012 and zero otherwise.	
ZSCORE	The bank Z-score of each country's banking system. This captures the probability of default of a country's banking system, comparing the buffer of a country's banking system (capitalization and returns) with the volatility of these returns.	World Bank
<i>Borrower firm control variables</i>		
SIZE	The natural logarithm of total assets.	Compustat
PROFIT	The ratio between earnings before interest and taxes and total assets.	Compustat
LEV	The ratio between the book value of financial debt (short- and long-term debt) and the book value of total assets.	Compustat
TANG	The ratio between property, plant, and equipment and total assets.	Compustat
GROWTH	The ratio of the market value of equity to the book value of equity.	Compustat / Osiris

(Continues)

APPENDIX A (Continued)

Name	Definition	Source
VRATING	We construct an index on firm risk using Moody's and S&P ratings that ranges from one to six. Specifically, we assign a value of one to an Aaa rating, a value of two to an Aa rating, a value of three to an A rating, a value of four to a Baa rating, a value of five to a Ba rating and a value of six to a B rating or worse; a higher number thus reflects a lower rating. We assign a value of zero to firms without a rating.	Dealscan
DRATING	A dummy variable that takes the value of one if the rating of the firm is missing and zero otherwise.	Dealscan
<i>Loan characteristics control variables</i>		
LOANSIZE	The natural logarithm of the loan.	Dealscan
SYND_SIZE	The natural logarithm of the number of banks participating in the loan.	Dealscan
DSENIOR	A dummy variable that takes the value of one if the loan is senior and zero otherwise (subordinated, senior subordinated, junior or mezzanine).	Dealscan
VSECURED	We construct an index assigning a value of one if the bank loan is not secured, and a value of two if the bank loan is secured. We assign a value of zero to bank loans where we do not know whether they are secured or not.	Dealscan
DSECURED	A dummy variable that takes the value of one if the information as to whether the bank loan is secured or not is not provided and zero otherwise.	Dealscan
PURP_ACQUIS	A dummy variable that takes the value of one if the bank loan is for an acquisition and zero otherwise.	Dealscan
PURP_CORP	A dummy variable that takes the value of one if the bank loan is for corporate purposes and zero otherwise.	Dealscan
PURP_BACKUP	A dummy variable that takes the value of one if the bank loan is for backup and zero otherwise.	Dealscan
PURP_WK	A dummy variable that takes the value of one if the bank loan is for financing working capital and zero otherwise.	Dealscan
DCREDIT_LINE	A dummy variable that takes the value of one if the loan is a credit line and zero otherwise.	Dealscan
DTERM_LOAN	A dummy variable that takes the value of one if the loan is a term loan and zero otherwise.	Dealscan
DBRIDGE_LOAN	A dummy variable that takes the value of one if the loan is a bridge loan line and zero otherwise.	Dealscan

APPENDIX B**Sample**

The table reports the number of observations by country.

Country	Number of observations
Australia	243
Austria	16
Belgium	36
Brazil	21
Canada	334
Cayman Islands	4
Chile	18
China	81
Denmark	16
Finland	29
France	294
Germany	275
Greece	8
Hong Kong	130
India	186
Indonesia	12
Ireland	12
Israel	4
Italy	99
Japan	128
South Korea	86
Kuwait	4
Malaysia	3
Mexico	10
Netherlands	68
New Zealand	14
Norway	37
Philippines	5
Poland	19
Portugal	17
Qatar	4
Romania	5
Russia	66
Saudi Arabia	7

(Continues)

APPENDIX B (Continued)

Country	Number of observations
Singapore	54
South Africa	9
Spain	186
Sweden	38
Switzerland	62
Taiwan	937
Thailand	3
Turkey	2
USA	8,103
United Arab Emirates	11
United Kingdom	349
Total	12,045