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El capital social y el coste de los préstamos bancarios durante la crisis financiera

Abdelmajid Hmaittane, Mohamed Mnasri, Kais Bouslah and Bouchra M'Zali

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Corporate Social Responsibility as an Orderly System in a Chaotic Environment
La responsabilidad social de la empresa como sistema ordenado en un entorno caótico

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Article abstract

This study examines the effect of the lender's social capital on the link between the borrower's social capital and the cost of bank loans. We exploit the last financial crisis as an exogenous shock to trust during which social capital becomes more valuable. Our findings suggest that when a lender's social capital is high, borrowers with high social capital pay 46.22 basis points less on their bank loans than those with low social capital.

Social Capital and Cost of Bank Loans During the Financial Crisis

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Abdelmajid Hmaittane
LAREFA, ENCGA, Ibn Zohr University,
CAIMD-UM6P, Morocco

Mohamed Mnasri
Canada Research Chair in Risk Management,
HEC Montréal

Kais Bouslah
Centre for Responsible Banking & Finance,
School of Management, University of St Andrews, CAIMD-UM6P

Bouchra M'Zali
AICRI, CRSDD-ESG-UQAM,
Université du Québec à Montréal, CAIMD-UM6P

ABSTRACT

This study examines the effect of the lender's social capital on the link between the borrower's social capital and the cost of bank loans. We exploit the last financial crisis as an exogenous shock to trust during which social capital becomes more valuable. Our findings suggest that when a lender's social capital is high, borrowers with high social capital pay 46.22 basis points less on their bank loans than those with low social capital.

Keywords: Social capital, Loan cost, Lender, Borrower

Résumé

Cette étude examine l'effet du capital social du prêteur sur le lien entre le capital social de l'emprunteur et le coût des prêts bancaires. On a exploité la dernière crise financière, comme un choc exogène à la confiance des acteurs du marché financier, au cours duquel le capital social a pris plus de valeur. Nos résultats suggèrent que lorsque le capital social du prêteur est élevé, les emprunteurs ayant un capital social élevé paient 46,22 points de base de moins sur leurs prêts bancaires que les emprunteurs ayant un capital social faible.

Mots-Clés : Capital social, coût des prêts, Prêteur, Emprunteur

Resumen

En este trabajo se estudia el efecto del capital social del prestador sobre el vínculo entre el capital social del prestatario y el coste de los préstamos bancarios. Se ha aprovechado la última crisis financiera como un choque exógeno de confianza, durante la cual el capital social se volvió más valioso. Los resultados sugirieron que cuando el capital social de un prestador es alto, los prestatarios con alto capital social pagan 46.22 puntos básicos menos en sus préstamos bancarios que aquellos que lo tienen más bajo.

Palabras Clave: Capital social, Coste del préstamo, Prestador, Prestatario

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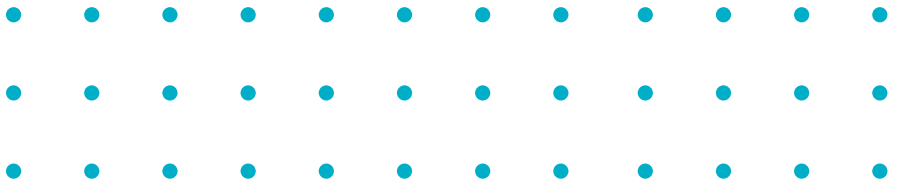


Bank loan is a financial contract whereby the bank accepts to provide funds today to a borrower in exchange for a promise of receiving more money in the future. Although, this contract gives the lender the ability to monitor the borrower and his compliance with the loan covenants, its realization depends also on the extent the bank trusts the borrower. Such trust and a borrower's social capital in general can help mitigate moral hazard problem and thereby can reduce asymmetric information and loan spread. Increasingly, borrowers' social capital reflected in their environmental, social and governance (hereafter ESG) ratings are incorporated by banks in their loan underwriting decisions.[1] The so-called sustainability or ESG-linked loans are an example of such trend. In these loans, the interest is linked to selected ESG indicators, which can be, for instance, carbon emissions or a specific ESG target. Borrowers that achieve their ESG targets benefit from lower interest rates, while a failure leads to higher rates.[2]

The existing empirical literature that examines the pricing of such social capital into debt securities is relatively scarce and inconclusive. While some scholars find evidence of a negative link between firm social capital and the cost of corporate debt (e.g. Goss and Roberts, 2011; Chava, 2014; Ge and Liu, 2015; Oikonomou, Brooks and Pavelin, 2014), others find no evidence of such relationship (e.g. D'Antonio, Johnsen, and Hutton, 1997; Sharfman and Fernando, 2008; Menz, 2010; Goss and Roberts, 2011; Hoepner, Oikonomou, Scholtens and Schröder, 2016). A key point in this literature is that lenders are assumed to discriminate between borrowers based on their social capital as reflected in their CSR scores when tailoring loan terms. However, lenders do not have the same incentives to do so and thereby they have heterogeneous valuation of borrower CSR scores. Consistent with this argument, a recent survey of Fitch Ratings in 2019 found that more than half of the 182 surveyed banks around the world "always" or "most of the time", incorporate ESG considerations in their credit risk-management processes.[3]

1. This is one of the main conclusion of the Fitch Ratings' report of the 07 January 2020 "Banks' Risk Management Embraces ESG" (available at https://www.fitchratings.com/site/re/10106505 and the Moody's report of the 1 July 2019 "Banking - Global: The impact of environmental, social and governance risks on bank ratings' (available at https://www.moodys.com/login?ReturnUrl=https%3a%2f%2fwww.moodys.com%2fresearchdocumentcontentpage.aspx%3fdocid%3dPBC_1162530).

2. Banks such as ING Groep NV and BNP Paribas have already structured loans where interest rates are linked to borrowers' environmental, social and governance ratings.

3. Fitch Ratings, "Banks' Risk Management Embraces ESG", 07 January 2020 (available at https://www.fitchratings.com/site/re/10106505).

Therefore, in this paper, we argue that due to reputational and/or liability risks, high social capital lenders have more incentives to discriminate between borrowers based on their social capital.

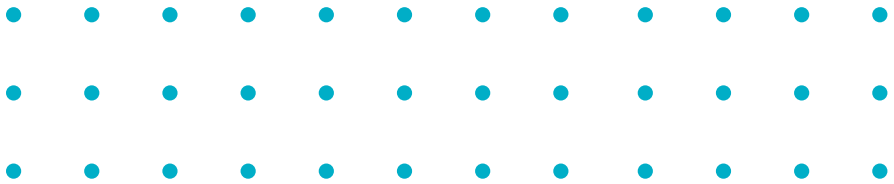
The bank's reputational risk represents damages to a bank's reputation related to its association with a debtor facing opposition against her/his social and/or environmental misconducts. These damages can materialize in the form of losses such as customer loss, employee and/or managers' loss, increase in the credit risk, increase in costs related to stricter vigilance (Perry and De Fontnouvelle, 2005), revenues' loss and ultimately in a reduction of a bank's shareholder wealth.

The bank's liability risk originates from taking possession of collateral assets and the legal obligations associated with them. These obligations may generate cash-outflows to clean the contaminated site up, and to pay regulatory fines, penalties and needed costs to address consequences generated by borrowers' operations (IFC, 2018).

In both cases, the consequences of increased reputational and/or liability risks could directly translate into higher credit risk which, in turn, will increase charged interest rates. Therefore, higher social capital banks are expected to pay more attention to a borrower's social and environmental activities relative to low social capital banks. Accordingly, we hypothesize that a lender's discrimination between high and low social capital borrowers when assessing the loan cost will depend on the level of social capital of this lender.

To test our prediction, we adopt the following empirical setting. First, we construct a sample of 1 547 U.S. loan facilities covering the period of 2006 to 2011. This sample is constructed after merging three databases: MSCI ESG STATS (formerly KLD Research & Analytics, Inc.) for CSR data, Loan Pricing Corporation' (LPC) DealScan for loan facilities information and Compustat for financial variables. Second, we use corporate social responsibility activities as a proxy for a firm's social capital following Amiraslani, Lins, Servaes and Tamayo (2017) and Lins, Servaes and Tamayo (2017) and we exploit the last 2008-2009 financial crisis as an exogenous shock to trust during which social capital commitment becomes more valuable. Third, we use the double and the triple difference-in-differences (DiD and DiDiD) approaches for our analyses.

Our results provide empirical evidence supporting our prediction. When lender social capital is high, borrowers with high social capital pay 46.22 basis points less



than those with low social capital on their bank loans after controlling for firm and loan characteristics as well as industry membership. Furthermore, the disaggregation of CSR scores into strengths and concerns reveals that our findings are driven by CSR concerns.

Our study contributes to the literature in different important ways. First, we contribute to the literature on the determinants of loan terms by considering the moderating role of the lender social capital. Second, we complement the literature which explored the role of the financial markets as a channel through which corporate social performance can affect a firm financial performance (e.g., Derwall and Verwijmeren, 2007; Sharfman and Fernando, 2008; Chava, 2010; El Ghoul *et al.,* 2011; Goss and Roberts, 2011; Ioannou and Serafeim, 2015) by showing that banks as creditors play a transmission role of CSR in their loan valuation. Third, we add to the literature on the effects of CSR during the 2008-2009 financial crisis. While Lins *et al.* (2017) and Amiraslani *et al.* (2017) show the benefits of social capital that accrued respectively to shareholders and bondholders during the financial crisis, we show that a firm's high social capital reduces the spread of bank loans when the lender social capital is high. Fourth, our results add to the stream of studies which demonstrates that financial monitoring provides value to borrowers (e.g. Leland and Pyle, 1977; Diamond, 1984; Allen, 1990) by showing that environmental, social and governance monitoring also does.

The remainder of this paper is organized as follows. Section 2 provides an overview of the related literature. Section 3 describes the data and variables. Section 4 presents the methodology used and findings while section 5 reports different tests to check the robustness of these findings. Finally, section 6 concludes.

Literature Review and Research Hypotheses

Although the concepts of "social capital" and "trust" are not new in social sciences (Coleman, 1988; Putnam, Leonardi and Nonetti, 1993) and are shown to have positive economic effects for societies, communities, organizations, and individuals (Hasan, Hoi, Wu and Zhang, 2017), the study of their financial implications at firm level is relatively recent. In this section, we review the prior literature on the relationship between a borrower's social capital and its cost of bank loans, and discuss how a lender's social capital might affect this relationship.

Borrower's Social Capital, Trust and the Cost of Bank Loan

In a bank loan contract, the bank accepts to provide funds today to a borrower in exchange for a promise of receiving more money in the future. The borrower can use his informational advantage to obtain private benefits at the expense of the bank, resulting in inherent moral hazard problem[4]. Although, this contract gives the lender the ability to monitor the borrower and his compliance with the loan covenants, its realization depends also on the extent the bank trusts the borrower. Such trust, which can be proxied by social capital accumulated by the borrower, can help mitigate moral hazard problems and thereby reduce asymmetric information and loan spreads (Amiraslani *et al.*, 2017; Hasan *et al.*, 2017). Basically, a borrower's social capital would affect loan contracting by discouraging firm' managers from enacting opportunistic behaviors against the bank (Hasan *et al.*, 2017). Therefore, it is expected that the overall bank loan spread to be lower when the social capital of the borrower is high as a result of reduced asymmetric information problems.

The empirical literature that examines the pricing of a borrower's social capital into bank loans and debt securities in general is scarce and the results are mixed. Some studies find a negative relationship between the social capital and the cost of debt, whereas others find no evidence of such relationship.[5]

Goss and Roberts (2011) show that firms with higher CSR concerns are penalized with higher bank loan spread relative to firms with lower CSR concerns.[6] Chava (2014) finds that lenders charge a higher interest rate on the bank loans issued to firms with environmental concerns..Similarly, Oikonomou *et al.* (2014) and Ge and Liu, (2015) provide evidence showing that corporate bond yield spreads are lower for borrowers with higher social performance. More recently, Hasan *et al.* (2017) find that firms headquartered in U.S. counties with higher levels of social capital incur lower bank loan and at-issue bond spreads. They conclude that debt holders perceive social capital as providing environmental

4. We follow Hasan *et al.* (2017) and define moral hazard as opportunistic and self-serving dealings that have the potential to benefit the borrower at the expense of the debtors.

5. Note that the literature examining the link between corporate social performance and financial performance provide mixed results (see e.g. Margolis and Walsh, 2003; Orlitzky, Schmidt and Rynes, 2003; Allouche and Laroche, 2005).

6. Since CSR is used as an indicator of social capital, we also consider the strengths and concerns of CSR as proxies of positive and negative social capital, respectively.

pressure that constrains opportunistic firm behaviors in debt contracting. Also, using the financial crisis as an exogenous shock to trust, Amiraslani *et al.* (2017) show that high-CSR firms benefited from lower bond spreads in the secondary market during the financial crisis compared to low-CSR firms.

Another strand of the literature finds no significant link between CSR and the cost of debt. For example, D'Antonio *et al.* (1997) find no difference in the risk-adjusted yields of bond mutual fund portfolios screened based on firms' social commitment. Also, Sharfman and Fernando (2008) do not find any significant effect of the level of environmental risk management on the firm's cost of debt. In the same vein, Menz (2010) finds no difference in the risk premium of bonds for more versus less socially responsible firms. Likewise, Goss and Roberts (2011) do not find a significant impact of CSR strengths on the cost of US bank loans. Finally, the results of Hoepner *et al.* (2016) are not supportive of the hypothesis that higher firm level sustainability reduces the interest rates charged on bank loans.

Overall, empirical studies provide mixed results and therefore the debate on the link between a borrower's social capital and the firm's cost of debt is still open. In the following section, we discuss how a lender's social capital might affect this link.

Lender's Social Capital and Borrower's Social Capital-Cost of Bank Loan Link

A key point in the literature on the relationship between a borrower's social capital and the firm's cost of loans is that lenders, when they tailor loan terms, are assumed to have the same assessment and therefore process loan applications similarly when discriminating between firms with low and those with high levels of social capital. However, such discrimination represents the average bank in the investigated sample and ignores lenders heterogeneity. We argue that given the differences among banks in their incentives to discriminate between companies with low versus those with high social capital, one can expect this heterogeneity to have an impact on the link between a borrower's social capital and the cost of bank loans. These incentives might be caused by the bank's reputational and/or liability risks.

First, the reputational risk is any action, event or circumstance that could impact an organization's reputation (Rayner, 2004). For banks, Basel Committee on Banking Supervision (2009, pp.19) defines this risk as the *"risk arising from negative perception on the part of customers, counterparties, shareholders, investors, debtholders, market analysts, other relevant parties or regulators that can adversely affect a bank's ability to maintain existing, or establish new, business relationships and continued access to sources of funding"*.

A bank's reputational risk could result from its association with a debtor facing opposition against his social and/or environmental wrongdoings. For instance, a bank could be seen as environmentally irresponsible owing to its financing to borrowers considered as polluters. In this regard, the case of Asian Pulp and Paper where the non-sustainable use of the forest resulted in both a credit default by the firm and a negative reputation for lending banks is an illustrative example (Weber and Remer, 2011). More generally, the damages to a bank's reputation caused by its association to borrowers with social and/or environmental concerns can materialize in the form of losses such as customer loss, employee and or managers' loss, increased credit risk, increased costs related to stricter vigilance (Perry and De Fontnouvelle, 2005), revenues' loss and ultimately a reduction of a bank's shareholder wealth.

To avoid such damages, it is more likely that high social capital banks will be associated with high social capital borrowers. In line with this expectation, an increased number of banks adopted the *Equator Principles*, launched in 2006, as a risk management framework. These principles aim to ensure that environmental and social impacts are considered in banks' projects lending decisions. Also, Kim, Surroca and Tribo (2014) show that the financing loosening impact of ethical behavior is found to be more pronounced when there is similarity of lenders and borrowers along their ethical domain.

Second, the bank's liability risk originates from taking possession of collateral assets and the legal obligations associated with them. These obligations may generate cash-outflows to clean-up the contaminated site, and to pay regulatory fines, penalties and needed costs to address consequences generated by borrowers' operations (IFC, 2018). These consequences could directly translate into an increased credit risk which, in turn, will increase charged interest rates.

In the most known case, the Fleet Factors of 1990, banks became legally responsible to pay heavy litigation costs for cleaning-up, due to land contaminations by borrowers, on foreclosed properties in which they held a secured interest (Gray and Bebbington, 2001; Menz, 2010). Since the lenders participated in the financial

management, they were considered able to influence the borrower's compliance with environmental laws and thereby to ensure the treatment of hazardous wastes.

Overall, due to their reputational risk and to their liability risk, banks with high social capital are more likely to pay more attention to borrowers' social and environmental activities than banks with low social capital. Accordingly, we hypothesize that a high social capital lender has more incentives to discriminate between borrowers based on their CSR commitment due to lender reputational and/or liability risks.

Data and Variables

Data

We obtain information about corporate social responsibility scores for borrowers as well as for lenders from the MSCI ESG STATS (formerly KLD Research & Analytics, Inc.)[7] database. We merge this data with the loan facilities variables gathered from the Loan Pricing Corporation' (LPC) Dealscan database as well as with the corresponding borrowers' financial variables obtained from Compustat. Then, we exclude financials (SIC codes 6000-6999) from the set of firms as borrowers and restrict the loan facilities to those with a single lender. The restriction to a single lender allows us to appropriately assess whether the lender's social capital affects the relationship between the borrower's social capital and the cost of bank loan. Our final sample consists of 1 547 U.S. loan facilities covering the 2006-2011 period.

Measures of Social Capital

We follow Amiraslani *et al.* (2017) and Lins *et al.* (2017) and use firm corporate social responsibility activities to proxy for social capital. We use the KLD database which assesses firms on seven qualitative screens (community, diversity, employee relations, environment, product, human rights, and corporate governance) and six exclusionary screens (alcohol, gambling, firearms, military, nuclear power, and tobacco). Whereas the qualitative screens indicators include both strengths and concerns, the exclusionary screens include concerns only. The KLD database assigns a score of one to each strength or concern, if any, and zero otherwise. Appendix 1 provides the list of the KLD qualitative screens strengths and concerns indicators.[8]

Following previous studies (e.g., Harjoto and Jo, 2008; Oikonomou, Brooks and Pavelin, 2012; Bouslah, Kryzanowski and M'Zali., 2013), we compute averages as our CSR variables and omit exclusionary screens. For each year, each firm and each one of the seven qualitative screens (or dimensions), two averages are measured, respectively, one for strengths and one for concerns. We sum strengths (concerns) averages over all the seven dimensions and obtain the total strengths (concerns) score. Then, we compute our main CSR variable which is the aggregated CSR score as the difference between the total strengths and the total concerns.

For the purpose of this study, we differentiate between firms with high versus those with low levels of CSR by creating a dummy variable (*B_HCSR* for borrowers and *L_HCSR* for lenders) which equals to one (zero) if a firm's CSR score falls into the highest (lowest) quintile during the pre-financial crisis period 2006-2007.

Cost of Bank Loans and Control Variables

We measure the cost of bank loans using the Dealscan initial all-in-drawn loan spread. It represents the amount that the borrower pays in basis points over the LIBOR rate for each loan dollar drawn down plus any annual facility fees paid to the lender. Following the bank loan literature, we use the natural logarithm of this variable to account for the effects of skewness in the data.

We follow prior research on the determinants of loan spread and use borrowers' and loans' characteristics to explain the loan spread. For the borrowers' characteristics, we use the same variables employed by Goss and Roberts (2011), namely, firm size measured by the logarithm of total assets, the market-to-book ratio, and the leverage ratio measured by the ratio of the book value of long-term debt scaled by the market value of equity. We also include the following

7. For simplicity, we use the KLD abbreviation instead of MSCI ESG STATS (former KLD Research & Analytics, Inc.).

8. Despite the critics addressed to KLD database, it remains one of the most comprehensive and widely-used source of CSR data (Mattingly and Berman, 2006). For Waddock (2003), it has proven itself to be factual, reliable, broad-ranging, and maintained with consistency and transparency. To assess a firm's social performance, KLD uses a combination of surveys, financial statements, press articles, academic journals, and government reports (Kim, Park and Wier, 2012).

profitability measures: the ratio of net working capital to total assets, the ratio of operating income to total assets, the ratio of retained earnings to total assets, and the ratio of earnings before interest and taxes to total assets. To account for firm risk, we use the following measures: distress probabilities calculated using a logistic transformation of the Altman's (1968) Z-score with updated coefficients as in Hillegeist, Keating, Cram and Lundstedt (2004), S&P rating dummy which takes the value of one if the long-term debt has an S&P credit rating at the moment of signing the bank loan and zero otherwise.

Following the bank loan literature, we control for loan characteristics that influence a loan spread, namely, the loan amount (in logarithm), the natural logarithm of the loan maturity in months, loan type, loan purpose and the quality of the loan (secured versus unsecured). In addition, we control in our regressions for the prevailing macroeconomic conditions, using the 3-month US dollar LIBOR rate at the time of the loan, and for industry fixed effects.

Descriptive Statistics

Table 1 provides summary statistics of our main variables. In particular, our measure of the bank loan cost which is the logarithm of the all-in-drawn spread has a mean (median) of 5.119 (5.298) for our sample. In table 2, we report the Pearson correlation coefficients among our main variables. The borrower CSR score (*B_CSR*) is significantly and negatively associated with the loan cost (*Logspread*) in line with our expectation. Also, the lender CSR score (*L_CSR*) is significantly and positively correlated with the loan cost (*Logspread*). This is consistent with earlier studies (e.g. Shapiro, 1983; Allen, 1984) suggesting that the reputation-spread relationship should generally be positive because lenders with high reputation usually use costly screening and monitoring and therefore must be compensated with a higher spread.

TABLE 1
Descriptive statistics

Variable	# Obs.	Mean	Median	Std. Dev	Minimum	Maximum
Logspread	1547	5.119	5.298	0.769	2.526	6.961
Logamount	1547	19.090	19.114	1.223	15.425	23.901
Logmaturity	1534	3.803	4.094	0.597	0.000	5.198
Distressprob	1437	0.008	0.009	0.003	0.000	0.015
Market_Book	1536	1.611	1.353	0.852	0.504	10.416
Debt_Equity	1536	2.324	0.780	22.946	0.020	805.499
Size	1543	7.561	7.411	1.449	3.548	13.569
EBIT_TA	1543	0.082	0.079	0.103	-1.658	0.909
NWC_TA	1492	0.142	0.114	0.166	-0.514	0.737
OI_TA	1543	0.129	0.122	0.102	-1.402	0.949
RE_TA	1535	0.059	0.139	0.675	-9.495	1.591
B_CSR	1547	-0.046	-0.048	0.096	-0.429	0.491
L_CSR	1547	0.013	-0.001	0.137	-0.283	0.430

This table displays descriptive statistics of our key variables. Logspread: logarithm of loan spread between the borrower i and the lender j; Logamount: logarithm of loan amount; Logmaturity: logarithm of loan maturity in months; Distressprob: distress probabilities calculated using a logistic transformation of the Altman's (1968) Z-score with updated coefficients as in Hillegeist *et al.* (2004); Market_Book: Market-to-book ratio; Debt_Equity: ratio of the book value of long-term debt scaled by the market value of equity; Size: logarithm of total assets; EBIT_TA: Earnings before interest and taxes to total assets; NWC_TA: Net working capital to total assets; OI_TA: Operating income to total assets; RE_TA: Retained earnings to total assets. For each year, each firm and each one of the seven KLD qualitative screens, two averages are measured, respectively, for strengths and concerns. We sum these averages over all the seven screens and obtain the total strengths and total concerns scores. Then, we compute CSR score (B_CSR for borrowers and L_CSR for lenders) as the difference between the total strengths and the total concerns. All the continuous variables are winsorized at the first and the 99th percentile.

Methodology and Results

To test our conjecture that a lender's social capital affects the link between a borrower's social capital and the firm's cost of bank loan, we exploit the 2008-2009 financial crisis as an exogeneous shock to trust in the financial markets and use the difference-in-differences (DiD) and the difference-in-difference-in-differences (DiDiD) approaches. These approaches have the advantage to correct for unobservable fixed effects and potential endogeneity issues such as the reverse causality between a borrower's social capital and the cost of bank loan which might make prior studies' results biased and inconsistent.

In fact, without exogenous variation in social capital as reflected in CSR scores, it is difficult to attribute changes in the cost of bank loans to a borrower's CSR. However, we follow Lins *et al.* (2017) in addressing this problem by employing

TABLE 2
Correlation matrix

	1	2	3	4	5	6	7	8	9	10	11	12
1 Logspread	1.000											
2 Logamount	-0.260***	1										
3 Logmaturity	0.100***	0.039	1									
4 Distressprob	0.301***	0.164***	0.051*	1								
5 Market_Book	-0.233***	-0.043	-0.025	-0.668***	1							
6 Debt_Equity	0.081***	0.033	-0.005	0.117***	-0.058***	1						
7 Size	-0.272***	0.630***	-0.100***	0.281***	-0.155***	0.019	1					
8 EBIT_TA	-0.231***	0.035	0.038	-0.432***	0.435***	-0.072***	0.012	1				
9 NWC_TA	-0.014	-0.226***	0.029	-0.403***	0.072***	-0.144***	-0.287***	0.078***	1			
10 OI_TA	-0.173***	0.027	0.015	-0.403***	0.451***	-0.061**	-0.044*	0.918***	0.005	1		
11 RE_TA	-0.245***	0.110***	-0.064**	-0.244***	-0.018	-0.043	0.152***	0.260***	0.043	0.193***	1	
12 B_CSR	-0.068***	0.063**	-0.054**	-0.138***	0.180***	-0.046*	0.028	0.052*	0.019	0.042	0.044*	1
13 L_CSR	0.250***	0.032	0.099***	0.064**	-0.056**	0.059**	-0.008	0.004	0.033	0.005	-0.018	0.033

This table reports the Pearson correlation coefficients among our main variables. All variables are as defined in the notes to Table 1. All the continuous variables are winsorized at the first and the 99th percentile. ***, **, * indicate significance at the 1%, 5% and 10% levels, respectively.

the 2008-2009 financial crisis, a period during which corporations, capital markets, and institutions faced an unexpectedly negative shock to public trust. Their rationale is that if a firm's social capital helps building stakeholder trust and cooperation then it should pay off when being trustworthy is more valuable, such as during the last financial crisis period.[9]

Our testing strategy is based on comparing the gap in the cost of bank loans between borrowers with low social capital and those with high social capital.[10] If there is an effect of a lender's social capital on the link between a borrower's social capital and the cost of the bank loan, then it is expected that this gap would be more pronounced for lenders with high social capital during the period of financial crisis relative to non-crisis periods.

In the following two sub-sections, we present our results for both the two-way sorts and the multivariate regression analyses.

Difference-in-Differences: Two-Way Sorts

Table 3 reports means and mean differences of the cost of bank loans for the whole sample (all lenders) as well as for the subsamples of lenders with high and those with low CSR scores. In the third column, we present the results for the samples with all lenders and where we distinguish the whole period, the non-crisis periods and the crisis period. While the mean for all borrowers and

9. This logic is also consistent with Godfrey (2005)'s argument which suggests that CSR can generate moral capital or goodwill among stakeholders and which, in turn, provides insurance-like protection during bad times such as in the event of a crisis.

10. Our testing strategy is somewhat similar to that of Butler and Cornaggia (2011) who investigate the effect of access to finance on productivity by using an exogenous shift in demand for a product. Importantly, by focusing on the gap, we avoid misinterpretation of a difference in loan costs as a premium or a penalty.

all periods is 180.94 basis points (hereafter bps), it equals respectively for borrowers with low and those with high CSR to 195.96 and 165.05 bps. The first difference is 30.91 bps and a two-tailed t-test reveals that this difference is statistically significant at 1% level.

Next, we differentiate between the financial crisis period and the remaining non-crisis periods. Similarly, we compute the mean cost of bank loans for borrowers with low and those with high CSR and then we calculate the first mean differences. These two first differences are 18.27 and 118.41 bps for the non-crisis periods and the crisis period, respectively. These differences are statistically significant.

Together, all the three computed first differences show that the average cost of bank loans is higher for borrowers with low CSR than the average for borrowers with high CSR. More interestingly, the second difference (difference-in-differences) between the first differences of the non-crisis and the crisis periods is equal to 100.10 bps and is significant at 1% level. This means that the gap in the average cost of bank loans, between borrowers with low CSR and those with high CSR, is larger during the financial crisis.

In the fourth (fifth) column, we present the results when we rerun the same analyses for the samples that include the lenders with high (low) CSR scores. All these results are qualitatively similar to those obtained using the samples of all lenders. In particular, the second difference is significant and equals to 137.50 (85.57) bps. Although, the difference between the two second differences, which is the third difference, seems to be large and positive with a value of 51.93 pbs, the two-tailed t-test shows that it is not statistically significant.

Overall, these results from the two-way sorts provide evidence that using the sample of all lenders and the separate samples of lenders with high versus those with low CSR, borrowers with high CSR pay lower cost of bank loans than borrowers with low CSR (first difference) and that this gap is larger during the financial crisis (second difference). However, all these performed analyses are based on two ways sorts of different samples and subsamples and ignore other variables that determine the cost of bank loans. In the next section, we perform multivariate regressions that control for borrower and loan characteristics to test our prediction.

TABLE 3
Difference-in-Differences: two-way sorts

		All lenders	Lenders with high CSR L_HCSR=1	Lenders with low CSR L_HCSR=0
All periods	All borrowers	180.941	197.302	168.87
	Borrowers with low CSR (B_HCSR=0)	195.960	211.202	184.409
	Borrowers with high CSR (B_HCSR=1)	165.055	182.122	152.818
	Mean difference low vs high	30.906***	29.080**	31.590***
Non Crisis periods	Borrowers with low CSR (B_HCSR=0)	178.657	195.808	164.734
	Borrowers with high CSR (B_HCSR=1)	160.383	178.658	146.875
	Mean difference low vs high	18.275**	17.150	17.859*
Crisis period	Borrowers with low CSR (B_HCSR=0)	317.448	366.167	295.303
	Borrowers with high CSR (B_HCSR=1)	199.034	211.563	191.875
	Mean difference low vs high	118.414***	154.604**	103.428***
Difference In Difference		100.10***	137.50**	85.57***
Triple Difference In Difference				51.93

This table provides means and mean differences of the loan spread depending on borrower and lender CSRs. B_HCSR for borrowers and L_HCSR for lenders are dummy variables which equal to one (zero) if firm's CSR score falls into the highest (lowest) quintile during the pre-financial crisis period 2006–2007. ***, **, * indicate significance at the 1%, 5% and 10% levels, respectively.

Regressions Specification: Difference-in-Differences

For our multivariate analyses, we perform double and triple difference-in-differences ordinary least squares regressions as follows:

$$Logspread_{i,t} = \beta_0 + \beta_1 B\_HCSR_i * Crisis_t + \beta_2 B\_HCSR_i + \beta 3\ Crisis_t + \Sigma_i \Sigma_t CV_{i,t} + \varepsilon_{i,t} \quad (1)$$

$$Logspread_{i,j,t} = \beta_0 + \beta_1 L\_HCSR_j * B\_HCSR_i * Crisis_t + \beta_2 L\_HCSR_j * B\_HCSR_i + \beta_3 L\_HCSR_j * Crisis_t + \beta_4 B\_HCSR_i * Crisis_t + \beta_5 L\_HCSR_j + \beta_6 B\_HCSR_i + \beta_7 Crisis_t + \Sigma_i \Sigma_t CV_{i,t} + \varepsilon_{i,j,t} \quad (2)$$

Where subscripts *i, j* and *t* denote borrower, lender and year respectively. *Logspread* is the logarithm of the loan spread. *B_HCSR* (*L_HCSR*) is a dummy variable which equals one if a borrower (lender)'s CSR score falls into the two highest quintiles during the pre-financial crisis period 2006-2007 and zero if a borrower (lender)'s CSR score falls into the two lowest quintiles for the same period. $Crisis_t$ is a dummy variable indicating the financial crisis period (2008-2009). It proxies for an exogenous negative shock to trust in corporations and in financial markets and thereby represents a natural experiment to check if a firm's social capital, as reflected in its CSR commitment, is more valuable in such period. Therefore, we aim to test if the gap in the cost of bank loans between borrowers with high and those with low CSR is different when the lender has high versus low CSR score. CV_{it} is a set of control variables measuring different firms and loans characteristics. Firm-level characteristics are firm size, market-to-book ratio, leverage ratio, profitability measures (net working capital to total assets, operating income to total assets, retained earnings to total assets, and earnings before interest and taxes to total assets), firm risk (distress probabilities) and S&P rating dummy (which equals one if the long-term debt has an S&P credit rating at the moment of signing the bank loan and zero otherwise). Loan characteristics are the loan amount (in logarithm), the natural logarithm of the loan maturity in months, loan type, loan purpose and the quality of the loan (secured versus unsecured). In addition, we control for industry fixed effects in our difference-in-differences regressions. In each regression, we include a number of interaction terms.

In equation 1, we focus on the effect of a borrower's CSR on the cost of bank loans. We include, separately and in interaction, the dummy variable *B_HCSR* and the 2008-2009 financial crisis indicator variable *Crisis*. The interaction term β_1 is the difference-in-differences (DiD) coefficient. If a borrower's CSR affects the cost of bank loans and is more valuable during crisis times, then we expect β_1 to be negative and significant when the whole sample with all lenders is used. Based on our conjecture, we particularly expect β_1 to be negative and significant (insignificant) for the sample of lenders with high (low) CSR.

In equation 2, we focus on the effect of a borrower's CSR on the cost of bank loans given the level of the lender's CSR. We include, separately and in interaction, the dummy variables *B_HCSR*, *L_HCSR* and the financial crisis variable *Crisis*. The interaction term β_1 is the difference-in-difference-in-differences (DiDiD) coefficient. If a borrower's CSR affects the cost of bank loans only when the lender's CSR is high, then we expect β_1 to be negative and significant when the pooled sample including all lenders is used.

Difference-in-Differences Regression Results

In Table 4, we report the main results of our multivariate regressions. In the first regression, we regress the cost of bank loans *Logspread* on the following variables: the dummy variable *B_HCSR*, the 2008-2009 financial crisis dummy variable *Crisis*, the interaction between *B_HCSR* and *Crisis* and a set of borrower and loan characteristics. We run the first regression using the whole sample independently of the level of the lender CSR. The findings show that the DiD coefficient is negative and statistically significant at 1% level. Given the log transformation of our dependent variable, we follow Goss and Roberts (2011) and use Kennedy's (1981) adjustment to correctly interpret this coefficient.[11] After controlling for firm and loan characteristics, the result suggests that borrowers with high CSR pay 33.60 basis points less on their bank loans compared to those with low CSR.

To run the second (third) regression, we restrict our sample to loan facilities with high (low) CSR lenders only. As expected in our conjecture, the DiD estimate is negative and significant at 1% level (insignificant) for the high (low) CSR lender sample. Thus, these findings reveal that high CSR borrowers are charged 53.15 basis points less interest rates in comparison with low CSR borrowers when the lender CSR is high.

11. The corrected coefficient is $\exp(\beta - 0.5(\sigma)^2) - 1$, where β is the regression coefficient and σ is the standard error. In our case, $\exp(-0.401 - 0.5(0.131)^2) - 1 = -0.336$.

We further investigate whether the two DiD coefficients are statistically different. We run a triple difference-in-differences regression using equation (2) using the pooled sample including all but differentiated (with high versus low CSR) lenders. The regression estimates are reported in the last column of Table 4. The findings show that the DiDiD coefficient is negative and statistically significant at 5% level. Hence, high CSR borrowers obtain 46.22 basis points less than low CSR borrowers on their cost of bank loans when the lender CSR is high.

Together, the results of Table 4 support our conjecture that borrowers with high CSR obtain lower cost of bank loans but only when the lender CSR is high. These findings are consistent with those of Lins *et al.* (2017) and those of Amiraslani *et al.* (2017) who use the last financial crisis as an exogenous shock to trust and show the benefits of CSR that accrued respectively to shareholders and bondholders during the financial crisis. Thus, we add to this stream of research by showing that the benefits of a firm's CSR carry across to another important asset class, bank loans and particularly when the lender social capital is high.

Robustness Checks

We subject our results in Tables 4 to various robustness tests including the use of alternative measures of CSR scores and checks of the internal validity of our DiD tests.

CSR Strengths and Concerns

An aggregated CSR score might hide important information because there could be compensating effects. Moreover, our CSR score aggregates KLD social strengths and concerns whereas these two constructs are both empirically and conceptually distinct and should not be combined (Mattingly and Berman, 2006). We, therefore, consider separately these two main components: CSR strengths and concerns.

Since CSR commitment aims to increase a firm's CSR strengths and to decrease its CSR concerns, we expect based on our prediction that a more (less) borrower's CSR strengths (concerns) to reduce the cost of bank loans. Accordingly, consistent with our earlier findings in Table 4, the DiD and DiDiD estimates are expected to be negative (positive) when using CSR strengths (concerns) scores.

TABLE 4
Difference-in-Differences regressions results

Variable	All lenders	L_HCSR=1	L_HCSR=0	Pooled
Crisis	0.360***	0.659***	0.118	0.241**
B_HCSR	-0.0415	-0.0457	-0.0526	-0.0473
Crisis# B_HCSR	-0.401***	-0.736***	-0.179	-0.193
L_HCSR				0.0979
Crisis # L_HCSR				0.415**
B_HCSR # L_HCSR				0.0246
Crisis# B_HCSR # L_HCSR				-0.586**
Libor	-0.151***	-0.129***	-0.163***	-0.144***
Logamount	-0.167***	-0.188***	-0.146***	-0.169***
Securedd	0.329***	0.349***	0.293***	0.335***
Logmaturity	0.118**	0.283***	0.00687	0.112**
Distressprob	66.56***	66.32***	67.89***	71.29***
Market_Book	0.0149	0.0139	-0.00161	0.0235
Debt_Equity	0.00275*	0.00206	0.0181*	0.00183
Size	-0.119***	-0.0446	-0.158***	-0.115***
EBIT_TA	-0.464	-1.629	0.190	-0.363
NWC_TA	0.0465	-0.172	0.333	0.0964
OI_TA	-0.132	0.615	-0.151	-0.181
RE_TA	-0.0793**	-0.0657	-0.100	-0.0710**
sp_rat_dum	0.0147***	0.00348	0.0211***	0.0147***
Constant	8.363***	7.681***	8.600***	8.272***
Loan type & Purpuse	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes
Observations	588	258	330	588
R-squared	0.674	0.702	0.692	0.683

This table reports results from OLS fixed effects regressions of the models in equation 1 and 2. Logspread is the dependent variable computed as the logarithm of the loan spread between the borrower i and the lender j. B_HCSR for borrowers and L_HCSR for lenders are dummy variables which equal to one (zero) if firm's CSR score falls into the highest (lowest) quintile during the pre-financial crisis period 2006-2007. Crisis is a dummy variable indicating the financial crisis period (2008-2009). Libor is the 3-month US dollar LIBOR rate at the time of the loan. Logamount: logarithm of loan amount. Securedd: a dummy variable that equals one if the loan is secured. Logmaturity: logarithm of loan maturity in months; Distressprob: distress probabilities calculated using a logistic transformation of the Altman's (1968) Z-score with updated coefficients as in Hillegeist et al. (2004); Market_Book: Market-to-book ratio; Debt_Equity: ratio of the book value of long-term debt scaled by the market value of equity; Size: logarithm of total assets; EBIT_TA: Earnings before interest and taxes to total assets; NWC_TA: Net working capital to total assets; OI_TA: Operating income to total assets; RE_TA: Retained earnings to total assets. sp_rat_dum is S&P rating dummy which takes the value of one if the long-term debt has an S&P credit rating at the moment of the signing of the bank loan and zero otherwise. All the continuous variables are winsorized at the first and the 99th percentile. ***, **, * indicate significance at the 1%, 5% and 10% levels, respectively.

We re-run our earlier regressions in Table 4 using CSR strengths and CSR concerns. The results are reported in Table 5. The coefficients of interest (DiD and DiDiD) are significant and are supportive to our earlier findings in Table 4 but only when CSR concerns are used. In particular, these results show that borrowers with high CSR concerns are charged 77.22 basis points more than borrowers with low CSR concerns when the lender CSR is high. Hence, our inferences using the aggregated CSR scores remain unchanged when CSR concerns scores are used.

CSR Strengths and Concerns Scores Using Principal Component Analysis

Instead of using averages to compute our CSR scores, we follow Goss and Roberts (2011) and use principal component analysis (PCA) to aggregate CSR strengths and CSR concerns. We repeat our analysis using these measures and the results are reported in Table 6.

Except for the first regression using the whole sample with all and undifferentiated lenders and CSR concerns in the fifth column, all the findings are qualitatively similar to those obtained in Table 5. Therefore, all our inferences remain unchanged.

Checks of the Internal Validity of the DID Parallel-Trend Assumption

According to the parallel trend assumption needed to ensure internal validity of difference-in-differences analyses, the difference between the "treatment" and "control" groups is invariant over time in the pre-treatment period (i.e. in the absence of treatment). While this assumption is statistically untestable, the literature provides some tests. The first one is the simple visual inspection of time-series graphs of the *Logspread* in Figure 1, 2 and 3, respectively, for the whole sample and the two subsamples of high and low CSR lenders.

Figure 1 shows a large gap in the cost of bank loans between high CSR and low CSR borrowers during the 2008-2009 financial crisis period. This gap is relatively larger (smaller) when the subsample of lenders with high (low CSR) is used in Figure 2 (3).

Following Almeida, Campello, Laranjeira and Weisbenner (2012), we repeat our difference-in-differences analyses for the sample covering the pre-financial crisis and the crisis periods (2006-2009) as our second test of the parallel trend assumption. By using the period before the financial crisis, we are able to see if the gap in the effect of a borrower's CSR on the cost of bank loan is restricted to the financial crisis period.

The results are reported in Table 7. All the findings are qualitatively similar to those obtained in Tables 4 and 5. Thus, all our inferences remain unchanged.

Conclusion

In this paper, we investigate our conjecture that borrowers with high social capital obtain lower cost of bank loans only when the lender's social capital is high. To test this conjecture, we exploit the last 2008-2009 financial crisis as an exogeneous shock to trust in corporations and in financial markets and use the difference-in-differences approach. Our sample consists of 1 547 U.S. loan facilities and covers the period of 2006 to 2011.

Our results using separate subsamples (lenders with high versus those with low CSR) and DiD analyses as well as the pooled sample and the DiDiD analyses support our expectation that borrowers with high CSR obtain lower cost of bank loans only when the lender's CSR is high.

We disaggregated CSR scores to strengths and concerns and show that our findings are driven only by CSR concerns. Also, we perform some tests to check the parallel trend assumption needed to ensure the internal validity of difference-in-differences analyses. The results of these tests are supportive of our earlier findings.

From a practical standpoint, our results have two implications. First, it is important for a high social capital borrower to choose a high social capital bank in order to benefit from lower cost of loans. Second, policymakers can not only encourage firms to undertake CSR initiatives and thereby increase their social capital, but also can encourage banks to pursue lending policies that can shape borrower social and environmental activities.

One important limitation of our results is that our CSR scores are aggregated measures (total, all strengths and all concerns). Such aggregation may hide important information and differences depending on the CSR dimensions (community, environment, employee relations, product, diversity and human rights). Future research could explore the impact of these individual CSR dimensions. Also, it might be fruitful to use social capital measures other than the KLD CSR ratings and to extend our study to non-US firms. Additionally, as CSR commitment is an important way to deal with a firm' ESG risks, it might be very insightful to explore the combined effect of CSR ratings and corporate risk management on the firm's cost of debt.

TABLE 5

Difference-in-Differences regressions results using CSR strengths and concerns

Variable	Borrower CSR strengths				Borrower CSR concerns			
	All Lenders	L_HCSR=1	L_HCSR=0	Pooled	All lenders	L_HCSR=1	L_HCSR=0	Pooled
Crisis	0.185*	0.285*	-0.0492	0.0681	0.0296	0.0257	0.0369	0.120
B_HCSR	-0.0655	-0.128	-0.0564	-0.0952	0.0262	-0.0140	0.0656	0.0498
Crisis# B_HCSR	0.0436	0.0370	0.104	0.199	0.379***	0.766***	0.181	0.204
L_HCSR				0.0500				0.162***
Crisis# L_HCSR				0.241				-0.191
B_HCSR# L_HCSR				0.0499				-0.0734
Crisis# B_HCSR # L_HCSR				-0.212				0.604**
Libor	-0.151***	-0.127***	-0.171***	-0.146***	-0.158***	-0.132***	-0.173***	-0.151***
Logamount	-0.157***	-0.213***	-0.106***	-0.153***	-0.148***	-0.186***	-0.113***	-0.148***
Securedd	0.325***	0.354***	0.300***	0.319***	0.285***	0.303***	0.263***	0.287***
Logmaturity	0.0607	0.158*	-0.0536	0.0572	0.0622	0.148*	0.0223	0.0553
Distressprob	57.79***	42.23*	48.86**	59.47***	63.54***	49.04**	56.60***	65.28***
Market_Book	-0.00212	0.00379	-0.0665	0.00261	0.00140	0.00955	-0.0249	0.00477
Debt_Equity	0.00316**	0.00235	0.0258**	0.00275*	0.00259*	0.00125	0.0162	0.00153
Size	-0.116***	-0.00112	-0.176***	-0.115***	-0.116***	-0.0524	-0.159***	-0.115***
EBIT_TA	-0.990	-2.264	-0.245	-1.084	-0.213	-1.059	0.245	-0.192
NWC_TA	0.0572	-0.215	0.302	0.0941	-0.0157	-0.182	0.158	0.0265
OI_TA	0.710	1.743	0.641	0.819	-0.108	0.298	-0.168	-0.102
RE_TA	-0.103***	-0.0874*	-0.240**	-0.0960**	-0.0988***	-0.0985**	-0.173**	-0.0946***
sp_rat_dum	0.0161***	0.00609	0.0201***	0.0158***	0.0105***	0.00838	0.0122**	0.0116***
Constant	8.400***	8.440***	8.472***	8.273***	8.322***	8.395***	8.220***	8.189***
Loan type & Purpuse	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	563	240	323	563	591	250	341	591
R-squared	0.648	0.663	0.678	0.651	0.677	0.722	0.686	0.687

This table reports results from OLS fixed effects regressions of the models in equation 1 and 2. Logspread is the dependent variable computed as the logarithm of the loan spread between the borrower i and the lender j. B_HCSR for borrowers is a dummy variable which equal to one (zero) if firm's CSR score falls into the highest (lowest) quintile during the pre-financial crisis period 2006-2007. L_HCSR for lenders is a dummy variable which equal to one (zero) if lender's CSR score falls into the highest (lowest) quintile during the pre-financial crisis period 2006-2007. *Crisis* is a dummy variable indicating the financial crisis period (2008-2009). Libor is the 3-month US dollar LIBOR rate at the time of the loan. Logamount: logarithm of loan amount. Securedd: a dummy variable that equals one if the loan is secured. Logmaturity: logarithm of loan maturity in months; Distressprob: distress probabilities calculated using a logistic transformation of the Altman's (1968) Z-score with updated coefficients as in Hillegeist *et al*. (2004); Market_Book: Market-to-book ratio; Debt_Equity: ratio of the book value of long-term debt scaled by the market value of equity; Size: logarithm of total assets; EBIT_TA: Earnings before interest and taxes to total assets; NWC_TA: Net working capital to total assets; OI_TA: Operating income to total assets; RE_TA: Retained earnings to total assets. sp_rat_dum is S&P rating dummy which takes the value of one if the long-term debt has an S&P credit rating at the moment of the signing of the bank loan and zero otherwise. All the continuous variables are winsorized at the first and the 99th percentile. ***, **, * indicate significance at the 1%, 5% and 10% levels, respectively.

TABLE 6

Difference-in-Differences regressions results using CSR - PCA scores

Variable	Borrower CSR strengths				Borrower CSR concerns			
	All Lenders	L_HCSR=1	L_HCSR=0	Pooled	All Lenders	L_HCSR=1	L_HCSR=0	Pooled
Crisis	0.169**	0.127	0.156	0.158	0.113	-0.217	0.229*	0.253**
B_HCSR	-0.0744*	-0.113*	-0.0284	-0.0370	-0.145***	-0.235***	-0.114	-0.0435
Crisis# B_HCSR	0.0464	-0.0355	-0.0306	-0.0102	0.0625	0.417**	-0.166	-0.237
L_HCSR				-0.0955*				-0.00670
Crisis# L_HCSR				0.0685				-0.273
B_HCSR# L_HCSR				-0.0431				-0.172**
Crisis# B_HCSR # L_HCSR				0.0810				0.568**
Libor	-0.150***	-0.190***	-0.128***	-0.142***	-0.142***	-0.180***	-0.124***	-0.137***
Logamount	-0.144***	-0.107***	-0.164***	-0.140***	-0.142***	-0.0785***	-0.171***	-0.135***
Secured	0.294***	0.311***	0.285***	0.314***	0.273***	0.298***	0.261***	0.293***
Logmaturity	0.0614	0.0676	0.0506	0.0609	0.0542	-0.00818	0.127*	0.0596
Distressprob	59.71***	47.54***	63.28***	63.74***	70.90***	76.90***	46.89*	79.82***
Market_Book	0.00226	-0.00317	0.00127	0.000650	0.0193	0.0653	-0.0552	0.0254
Debt_Equity	0.00338**	0.0382**	0.00316**	0.00343**	0.00284*	0.0268	0.00290*	0.00261*
Size	-0.114***	-0.137***	-0.0751**	-0.113***	-0.121***	-0.171***	-0.0515	-0.120***
EBIT_TA	-1.019*	-1.038	0.0114	-0.715	-2.280***	-2.733**	-1.026	-1.857**
NWC_TA	0.175	0.520**	-0.143	0.183	0.210	0.592***	-0.0121	0.268*
OI_TA	0.316	0.551	-0.452	0.220	1.141	0.946	0.666	0.890
RE_TA	-0.0521**	-0.0372	-0.176**	-0.0552**	-0.0566**	-0.0326	-0.255**	-0.0529**
sp_rat_dum	0.0141***	0.0127***	0.0120**	0.0130***	0.0166***	0.0167***	0.0172**	0.0153***
Constant	8.241***	7.829***	8.464***	8.129***	8.138***	7.637***	8.241***	7.885***
Loan type & Purpuse	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	726	397	325	722	592	323	265	588
R-squared	0.645	0.663	0.679	0.655	0.671	0.718	0.698	0.684

This table reports results from OLS fixed effects regressions of the models in equation 1 and 2 using PCA scores to compute CSR scores. Logspread is the dependent variable computed as the logarithm of the loan spread between the borrower i and the lender j. B_HCSR for borrowers is a dummy variable which equal to one (zero) if firm's CSR score falls into the highest (lowest) quintile during the pre-financial crisis period 2006-2007. L_HCSR for lenders is a dummy variable which equal to one (zero) if lender's CSR score falls into the highest (lowest) quintile during the pre-financial crisis period. *Crisis* is a dummy variable indicating the financial crisis period. Libor is the 3-month US dollar libor rate at the time of the loan. Logamount: logarithm of loan amount. Securedd: a dummy variable that equals one if the loan is secured. Logmaturity: logarithm of loan maturity in months; Distressprob: distress probabilities calculated using a logistic transformation of the Altman's Z-score with updated coefficients as in Hillegeist *et al.* (2004); Market_Book: Market-to-book ratio; Debt_Equity: ratio of the book value of long-term debt scaled by the market value of equity; Size: logarithm of total assets; EBIT_TA: Earnings before interest and taxes to total assets; NWC_TA: Net working capital to total assets; OI_TA: Operating income to total assets; RE_TA: Retained earnings to total assets. sp_rat_dum is S&P rating dummy which takes the value of one if the long-term debt has an S&P credit rating at the moment of the signing of the bank loan and zero otherwise. All the continuous variables are winsorized at the first and the 99th percentile. ***, **, * indicate significance at the 1%, 5% and 10% levels, respectively.

FIGURE 1
All Lenders

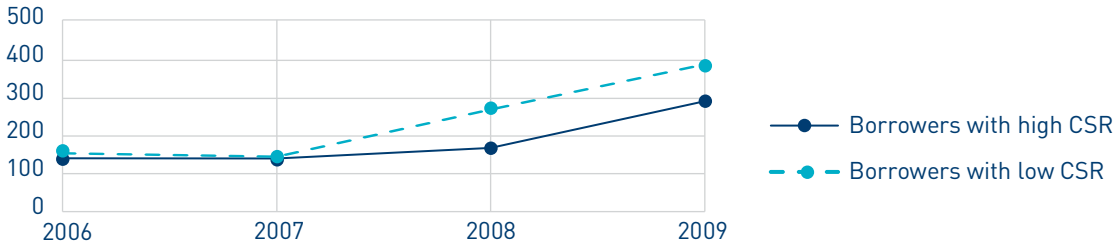


FIGURE 2
High CSR Lenders

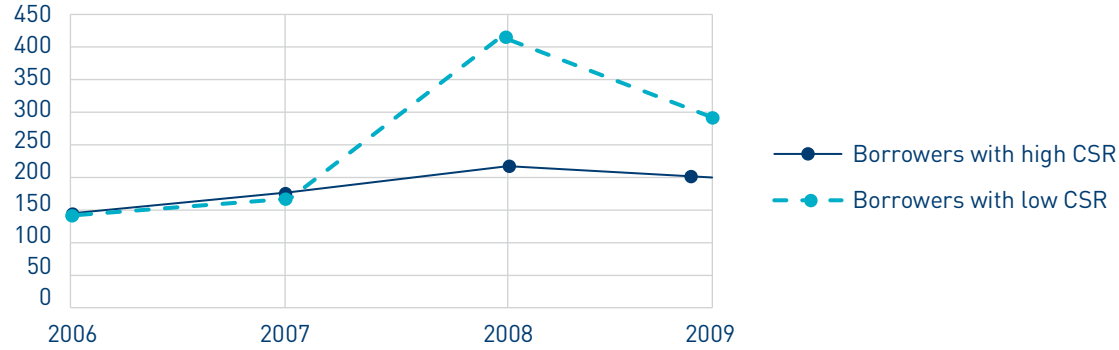
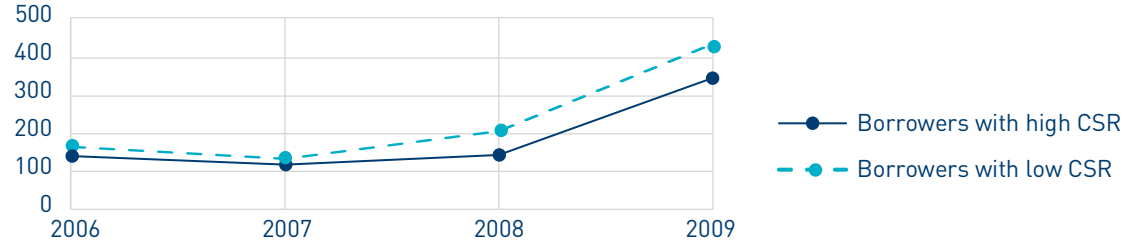


FIGURE 3
Low CSR Lenders



These figures provide time evolution plots of the average Logspread annually from 2006 to 2009 for borrowers with high versus low CSR scores for the sample of all lenders (Figure 1), the sample of lenders with high CSR (Figure 2) and lenders with low CSR scores (Figure 3). CSR scores and Logspread are computed as described in the note to Table 4.

TABLE 7

Check of the internal validity of the DiD's parallel trend assumption

	Borrower CSR strengths				Borrower CSR strengths				Borrower CSR concerns			
Variable	All Lenders	L_HCSR=1	L_HCSR=0	Pooled	All Lenders	L_HCSR=1	L_HCSR=0	Pooled	All Lenders	L_HCSR=1	L_HCSR=0	Pooled
Crisis	0.204	0.484	0.100	0.146	-0.235	-0.195	-0.405*	-0.334*	-0.200	0.0440	-0.234	-0.0900
B_HCSR	-0.0478	-0.0584	-0.0514	-0.0548	-0.0632	-0.188*	-0.0946	-0.105	0.0131	-0.0726	0.0495	0.0313
Crisis# B_HCSR	-0.379***	-0.693***	-0.201	-0.181	0.0229	0.129	0.152	0.180	0.390***	0.911***	0.224	0.225
L_HCSR				0.155**				0.0848				0.206***
Crisis# L_HCSR				0.358*				0.200				-0.229
B_HCSR# L_HCSR				0.0186				0.0849				-0.0645
Crisis# B_HCSR # L_HCSR				-0.565**				-0.220				0.594**
Libor	-0.194***	-0.158*	-0.173***	-0.175***	-0.281***	-0.241***	-0.283***	-0.278***	-0.225***	-0.0889	-0.259***	-0.217***
Logamount	-0.184***	-0.222***	-0.145***	-0.187***	-0.172***	-0.261***	-0.0972***	-0.167***	-0.168***	-0.231***	-0.109***	-0.167***
Securedd	0.343***	0.400***	0.297***	0.358***	0.348***	0.441***	0.311***	0.347***	0.295***	0.363***	0.244***	0.306***
Logmaturity	0.118**	0.234***	0.0111	0.113**	0.0504	0.0867	-0.0412	0.0488	0.0556	0.100	0.0195	0.0529
Distressprob	69.45***	62.72**	71.96***	73.26***	62.29***	41.54	61.85***	63.70***	70.35***	65.25**	60.74***	69.49***
Market_Book	0.0150	-0.0263	0.0108	0.0289	-0.0147	-0.0315	-0.0407	-0.00398	0.00913	0.0714	-0.0167	0.0192
Debt_Equity	0.00272*	0.00181	0.0123	0.00178	0.00302*	0.00181	0.0173	0.00262	0.00247*	0.000549	0.00840	0.00141
Size	-0.131***	-0.0462	-0.174***	-0.127***	-0.124***	0.0333	-0.192***	-0.124***	-0.112***	-0.0126	-0.170***	-0.111***
EBIT_TA	-0.818	-2.824	-0.117	-0.806	-1.888*	-5.098**	-0.804	-2.125**	-0.624	-1.822	-0.145	-0.725
NWC_TA	0.172	-0.0429	0.508*	0.223	0.246	0.124	0.487*	0.295	0.166	0.291	0.373	0.210
OI_TA	-0.0484	0.953	-0.118	-0.0496	1.343	3.496	0.984	1.586	0.0358	-0.465	-0.0767	0.0745
RE_TA	-0.0573	-0.0463	-0.0321	-0.0439	-0.0865**	-0.0421	-0.152	-0.0752*	-0.0681*	-0.0479	-0.101	-0.0581
sp_rat_dum	0.0153***	0.00270	0.0228***	0.0154***	0.0156***	0.00298	0.0194***	0.0151***	0.0114**	0.00766	0.0141**	0.0128***
Constant	9.021***	8.828***	8.746***	8.841***	9.505***	10.11***	8.848***	9.318***	9.025***	8.860***	8.678***	8.855***
Loan type & Purpuse	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	488	193	295	488	468	177	291	468	494	190	304	494
R-squared	0.655	0.710	0.674	0.669	0.638	0.675	0.671	0.645	0.657	0.740	0.668	0.673

This table reports results from OLS fixed effects regressions of the models in equation 1 and 2 using a sample covering the pre-financial crisis and the crisis periods (2006-2009). Logspread is the dependent variable computed as the logarithm of the loan spread between the borrower i and the lender j. B_HCSR for borrowers and L_HCSR for lenders are dummy variables which equal to one (zero) if firm's CSR score falls into the highest (lowest) quintile during the pre-financial crisis period 2006–2007. *Crisis* is a dummy variable indicating the financial crisis period (2008-2009). Libor is the 3-month US dollar LIBOR rate at the time of the loan. Logamount: is logarithm of loan amount. Securedd: a dummy variable that equals one if the loan is secured. Logmaturity: logarithm of loan maturity in months; Distressprob: distress probabilities calculated using a logistic transformation of the Altman's (1968) Z-score with updated coefficients as in Hillegeist *et al.* (2004); Market_Book: Market-to-book ratio; Debt_Equity: ratio of the book value of long-term debt scaled by the market value of equity; Size: logarithm of total assets; EBIT_TA: Earnings before interest and taxes to total assets; NWC_TA: Net working capital to total assets; OI_TA: Operating income to total assets; RE_TA: Retained earnings to total assets. sp_rat_dum is S&P rating dummy which takes the value of one if the long-term debt has an S&P credit rating at the moment of the signing of the bank loan and zero otherwise. All the continuous variables are winsorized at the first and the 99th percentile. ***, **, * indicate significance at the 1%, 5% and 10% levels, respectively.

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