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SPILLOVERS AND RELATIONSHIPS IN CROSS-BORDER BANKING: THE CASE OF CHILE *

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Abstract
This paper assesses the spillovers from the global financial crisis on the cost and structure of cross-border funding of Chilean banks. To do so it uses a novel dataset of individual debt transactions between Chilean banks and their foreign counterparties between 2008 and 2016. We find that global banks that experienced the largest hike in their funding costs charged the highest spreads to Chilean banks in this period. We also find that after the financial crisis of 2008 and 2009 the Chilean banking system underwent a significant shift in its sources of funding, with a larger reliance on bond issuance and a shift to new bank counterparties. We find evidence that distance matters for the cost of cross-border borrowing, as well as the intensity and age of banking relationships. Hence, shifting sources of funding is a costly process, but over time as banking relationships develop with new counterparties, the cost of this shift decreases.

Resumen
En este documento se estudian los efectos de la crisis financiera global en el costo y estructura del financiamiento externo de los bancos que operan en Chile. Para ello se utiliza una novedosa base de datos de créditos individuales entre un banco en Chile y una contraparte extranjera entre los años 2008 y 2016. Concluimos que aquellos bancos globales que experimentaron la mayor alza en sus costos de financiamiento, cobraron los mayores spreads a los bancos en Chile en el periodo analizado. También, se documenta que luego de la crisis financiera de 2008 y 2009, el sistema bancario chileno experimentó cambios significativos en sus fuentes de financiamiento, con una mayor dependencia en la emisión de bonos y un cambio hacia nuevas contrapartes bancarias. Finalmente, encontramos evidencia que la distancia es importante para el costo de los préstamos externos, así como también la intensidad y el tiempo de duración de las relaciones entre bancos. De esta forma, cambiar las fuentes de financiamiento es un proceso costoso, pero con el tiempo a medida que las relaciones bancarias se desarrollan con nuevas contrapartes, el costo de este cambio disminuye.

*The views are those of the authors and do not represent those of the Central Bank of Chile or the Inter-American Development Bank. We thank Roberto Álvarez for comments to previous versions of this paper, and especially the insightful comments and suggestions from an anonymous Central Bank of Chile referee. Emails: aalegria@bcentral.cl, kevinco@IADB.ORG y pgarciasilva@bcentral.cl.

1. Introduction

The Chilean banking system maintains a diversified set of funding sources, including those from foreign counterparties. Over the period 2008 to 2016 close to 7% of total liabilities where loans from foreign banks. Over time, however, the importance of banks has decreased relative to other sources of external funding (figure 1).

During the global financial crisis, as was the case for banks in most economies, Chilean banks saw a significant deterioration in the terms at which they accessed funds from foreign banks – both for trade and for general funding. Borrowing costs increased significantly – as base rates (Libor and Euribor) and the spreads charged above these rates to Chilean banks increased following the collapse of Lehman Brothers in late 2008 (figure 2). Maturities also decreased during these periods of financial stress, reflecting the premium global banks where paying for longer-term funding and concern about credit risk.

In the aftermath of the financial crisis, banks established in Chile have modified their sources of cross-border funding. This has taken place in two dimensions. First, Chilean banks have increased their reliance on bonds issued in external markets (figure 2). Whereas in 2009 external bonds were a negligible fraction of their cross-border funding, by 2015 this component had risen to more than 50% of total external borrowing. Second, they have switched the banks from which they borrow. For instance, in 2009, 50% of cross-border borrowing operations of Chilean banks were with banks based in the US, whereas during 2015 the United States accounted for 33% of such operations (figure 3).

These facts are the motivation for the present study. On the one hand, we seek to understand how financial conditions in major banking markets and for global banks spillover to local banks in an emerging economy. This spillover has effects on the real economy, as highlighted by several recent papers that document how deteriorating access to cross-border funding affects lending decisions by local banks and hence the output and financing decisions of local firms.[1] On the other, we seek to understand the decisions of Chilean banks to shift sources of

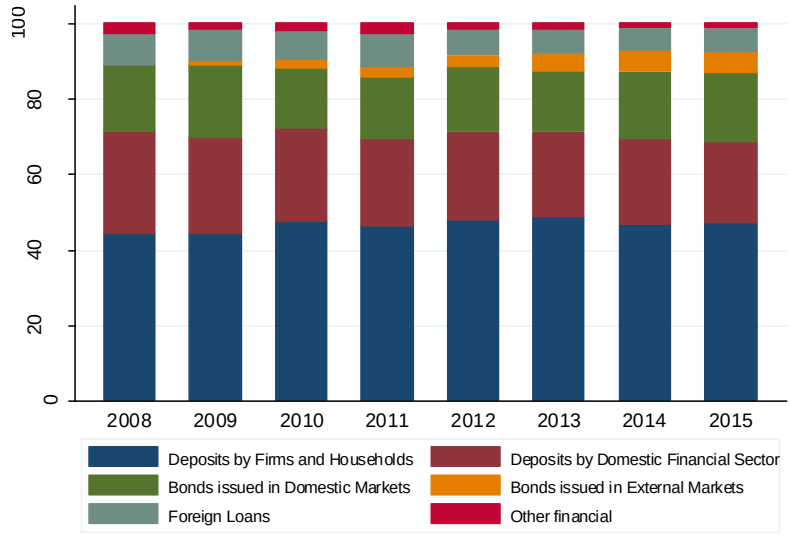
[1]/ Aiyar (2012) finds that UK banks dependent on foreign funding cut back on loan supply to firms and households more than their peers during the global financial crisis. This is consistent with the results obtained for Eastern Europe by Ongena et al. (2015), where foreign owned banks and banks dependent on cross-border funding were those that reduced the supply of credit the most, and by and Popov and

funding institutions after the Great Recession. This ability to switch sources of funding, without incurring significant increases in funding costs, is a key determinant of funding liquidity risk and can inform regulatory, prudential and financial stability policy making.

Therefore, the contribution of this paper is first to present evidence of the magnitude of international banking and global capital market transmission of shocks to domestic banking in a small open emerging-market economy with a floating exchange-rate regime through cross-border funding. Second, it also presents evidence on the switch of funding sources following an international financial crisis, both from cross-border bank lending to international bond issuance, and to new providers in sometimes new countries. Our results suggest that the costs associated with the loss of lending relationships imply that the structure of lending does not change often. Finally, it uses individual transaction-level data and relies on interest rates rather than volumes, which presents several advantages, an approach that has not been used before in the literature.

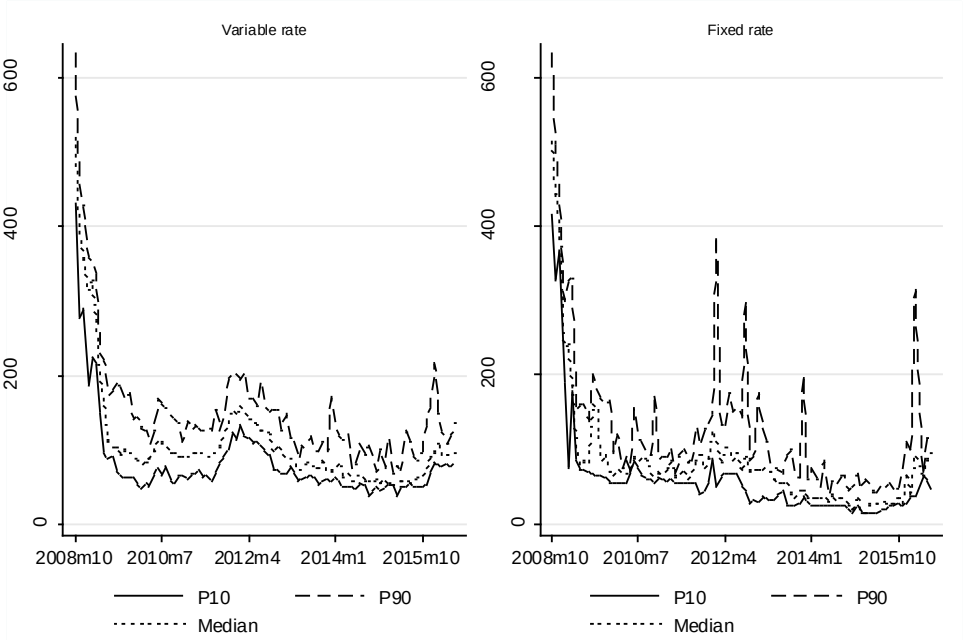
Udell (2012) who find that the financial conditions of parent banks impacted the lending decisions of local subsidiaries. Schnabl (2012) finds similar results for Peruvian firms around the time of the Asian Crisis of the late 90s.

Figure 1: Composition of liabilities of the Chilean banking system (*)
(percent of total liabilities)



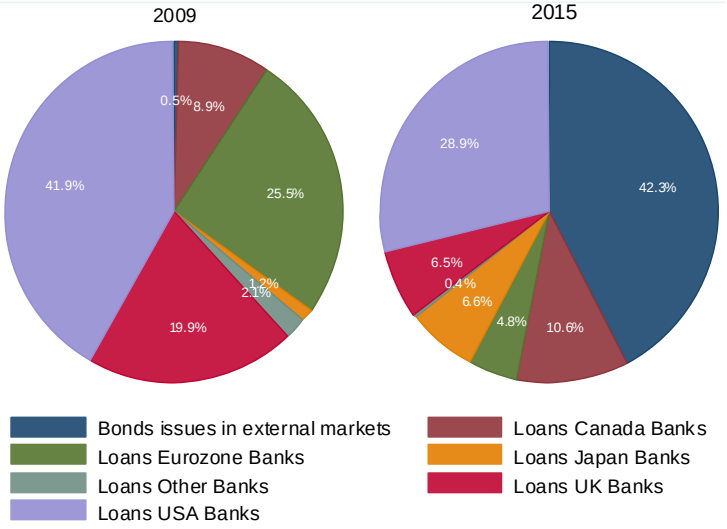
(*) Excluding other deposits, other financial liabilities, derivatives, taxes, provisions and other liabilities.
Source: Central Bank of Chile.

Figure 2: Interest rates by type
(basis points)



Source: Authors´ calculations based on Central Bank of Chile data.

Figure 3: Share of foreign funding by geographical jurisdictions
(percent of total loans)



Source: Authors´ calculations based on Central Bank of Chile data.

Specifically in this paper we use a non-public database of all individual external debt contracted by Chilean banks with foreign counterparties collected by the Central Bank of Chile.[2] This includes bank loans, bond issuance, and commercial paper issuance. The dataset includes the main characteristics of the loans (e.g. size, maturity, interest rates, and currency of denomination) and identifies the counterpart bank and the country in which it is registered. Section 2 of the paper describes the data in detail.

Apart from the overall contribution to the literature described above, this paper adds to four specific strands. The first is the large and growing literature that analyses the role played by cross-border banking in transmitting the 2008 financial crisis from the US and European markets to the global economy. In the period following the collapse of Lehman Brothers, cross-border lending and lending by subsidiaries of global banks fell significantly. The challenge is to identify to what extent this collapse was due to supply-side effects, originating in the liquidity or capital positions of the source bank, or due to falling demand in the recipient economies.

Several papers have approached this issue using the aggregate data on cross-border bank operations produced by the BIS. Within this group, Cetorelli and Goldberg (2011) find that cross-border lending from banks with greater exposures to dollar liquidity shocks fell the

[2]/ This data set was already used in previous work by Cowan and García (2013).

most. Cerutti (2015), in turn, emphasizes the roles played by liquidity pressures in dollar funding markets and risk aversion in reducing cross-border loans.

The limitations of using aggregate data have motivated a series of papers that use bank level data to analyze the contraction in cross-border loans after 2008. This literature has found larger contractions in foreign lending in those banks most exposed to a global liquidity shock (de Haas and van Horen 2012), banks with lower levels of capital prior to the crisis (Düwel et al. 2011), or banks that operate in markets that saw the largest stress in their short term USD markets (Buch and Goldberg 2015).

Bank level data has also been used to understand the decisions of foreign bank subsidiaries around the time of the crisis. Following the seminal work of Peek and Rosengen (2000), Cetorelli and Goldberg (2012) find that subsidiaries of the US banks exposed to liquidity shocks in 2008 see the largest contraction in credit to firms and households. Jeon et al. (2013) obtain similar results for a sample of global banks, differentiating across banks by the liquidity and capital positions of their parent banks. De Hass and van Lelyveid (2011) and Pontines and Siregar (2014) compare the contraction in loans by locally owned banks and subsidiaries of global banks around the time of the crisis – finding a significantly larger drop in subsidiaries.

This paper is also related to a second strand of literature – which has analyzed the determinants of the location of cross-border bank activity – be it cross-border flows or subsidiary operations. This literature has emphasized the role of financial frictions in international banking – finding evidence of significant effects of distance variables in the decisions of global banks to lend abroad and evidence that prior experience also plays a part in this decision.[3] For example, Buch et al. (2013) analyze the decisions of German banks to lend directly abroad (or via branches or subsidiaries), finding that distance and language matter both before and after the crisis. In a similar line, but using aggregate data, Cerutti et al. (2015) analyze total cross-border loans and syndicated loans, finding that distance plays a role, in particular following the crisis. This is consistent with findings by de Haas and van Horen (2014) who document larger drops in syndicated loans for more distant transactions and in banks with less foreign experience. In turn, in a sample of US banks Temesvary (2015)

[3]/ The role of distance variables in financial transactions was first introduced by Portes and Rey (2005).

finds that entry/exit decisions are not only closely related to the balance sheet of the parent bank but also to whether it has previous international experience.[4]

Thirdly, this paper is part of the literature that has studied the funding market for Chilean banks. Calani and Díaz (2012) investigate the cost of foreign loans for Chilean banks, and find a positive relationship with both the amounts granted and the maturities at which the transactions were agreed upon. Cowan and García-Silva (2013) link borrowing costs for Chilean banks with risks measures of individual counterparties and their home countries.

Finally, in this paper we link the previous strands of the literature with the evidence that the relationships between bank and their clients has value. Bharath et al. (2007) show that lenders can benefit from durable relationships with their clients, as the client-specific information garnered from said relationship allows the lender to better sell information-sensitive products. Bae et al. (2002) show that relationships between banks and their clients have value, as shocks to the banks also impact the value of client firms. We apply these insights here to the cross-border relationship between local Chilean banks and their funding counterparties.

The paper makes two main contributions to the existing strand of literature mentioned above. On one hand, it contributes to the literature that uses micro data to understand the propagation of financial shocks through the banking sector by using data on borrowing spreads instead of loan volumes.[5] In particular, it analyses how shocks to the funding costs of global banks impact the spreads they charge Chilean banks. The advantage of using spreads is that it reduces concerns about identification present when studying the volume of loans. If banks in Chile face falling demand for credit, it will not lead to higher spreads on their cross-border borrowing.

On the other, it explores how banks in an emerging economy choose their sources of cross-border finance. If time invariant factors, such as distance, affect the terms of loans to Chilean banks, then one would expect that the higher borrowing costs of reducing concentration

[4]/ See for instance Herrmann and Mihaljek (2010), McGuire and Tarashev (2008).
[5]/The only other paper that does this is de Haas and van Horen (2012), that uses a database on spreads and tenors of syndicated loans. The authors find that distance variables play a role in determining both variables, and that this effect does not change after the crisis.

would be traded off against the benefits from reducing funding liquidity risk. Moreover, as time goes by, newer relationships accrue value and these benefits could be shared between lender and borrower. To our knowledge this is the first paper that explores determinants of diversification in external funding from the perspective of borrowing banks in a financially integrated emerging economy.

This paper is organized as follows. The next section reviews the main stylized facts of credits from foreign banks to Chilean banks between October 2008 and June 2016. Section 3 presents the results of econometric estimations of the determinants of the cost of credit, using simple equations that link the cost of credit to global and lending bank financial conditions, and Chilean sovereign risk. Section 4 assesses the impact of the changes in the structure of credit providers, by looking at the impact of concentration, relationship building, and distance. Section 5 concludes.

2. Foreign Loan Data

This section describes the loan level data set used in this paper.

The Central Bank of Chile collects administrative records for each foreign credit operation of banks registered in Chile. These records span the entire universe of cross-border operations, and include loans from foreign banks, bond issuance or other sources of financing. Each record contains detailed information on the operation, including size, currency, type of interest rate (fixed or variable, and if it is variable also the benchmark rate), contractual term, and, in the case of loans reported, use of the loan (foreign trade[6] or other), and counterparty name. With the name of the counterparty, we can infer the country where the creditor bank´s headquarters are located.[7]

This paper draws on a subset of this data: loans issued over the period spanning from October 2008 to 2016. The time frame is determined by data retrieval restrictions – as the records began being systematically incorporated into a database only in mid-2008.

[6]/ This is a credit requested to finance a foreign trade operation.

[7]/ This inference of the location of the creditor bank headquarter is a proxy to the location of registration of the entity which is providing the loan. The latter information is not available in our dataset.

The resulting dataset contains roughly 6,000 loans, with more than 80 creditor banks in 29 countries (see table 1). In the full sample, banks headquartered in the United States make up the largest fraction of loans granted to banks in Chile, in terms of both the number of operations (52%) and the amount lent (50%). Of the universe of banks established in Chile, 17 made at least one operation with a foreign counterparty in the sample period. While most of the loans are denominated in US dollars (98% of total operations), there have also been some operations in euros, sterling pounds, yen and more recently in renminbi. Of all operations, 68% involve a variable interest rate, while the rest are set at a fixed rate. Furthermore, of all the operations, 84% go to finance foreign trade operations. Given the dominance of US dollar operations, we focus our study on loans denominated in USD, which leaves a final sample of 5,900 operations.

Table 1: Characteristics of loans
(percent)

	Foreign trade	**Other**
Use of the credit	83.9%	16.1%
	Variable	**Fixed**
Type of rate	68.5%	31.5%
	USD	**Other**
Currency	97.6%	2.4%

Source: Authors´ calculations based on Central Bank of Chile data.
Note: The table summarizes the main statistics for the sample of cross-border loans to Chilean banks over the period 2008 to 2016.

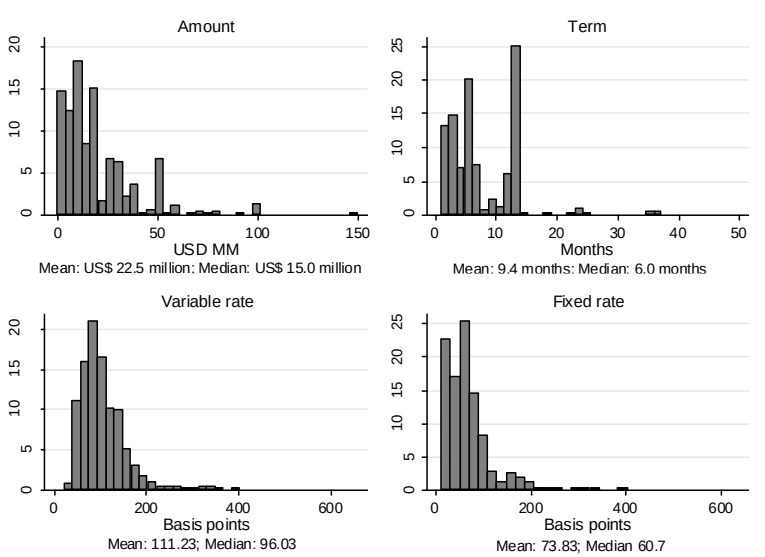
The median loan size is of 15 million USD, the median spread over Libor is 55bp and the median term is 6 months (table 1 and figure 4). Amounts lent are concentrated below 50 million dollars. A large portion of loans is set at a 13-month maturity, due mainly to the Chilean reserve requirement legislation, which increased the effective cost of all term obligations under 13 months.[8]

[8]/ Chapter III.A.I – Compendium of Financial Regulations, Central Bank of Chile.

Over time, both the average size and the average maturity of each transaction has increased, peaking towards the end of the sample period, while spreads have fallen to record lows, also showing differences in levels for fixed-rate and variable-rate credits.

The database recording external credits includes the name of the creditor bank. Using this information, loan data was matched with data on credit default swaps (CDS) for each creditor bank (when available) and the CDS of the country in which the bank was headquartered. The Libor is also included for each day.

Figure 4: Distribution of main loan characteristics
(US$ million, months and basis points)



Source: Authors´ calculations based on Central Bank of Chile data.
Note: The figure summarizes the main statistics for USD-denominated cross-border loans to Chilean banks over the period 2008 to 2016.

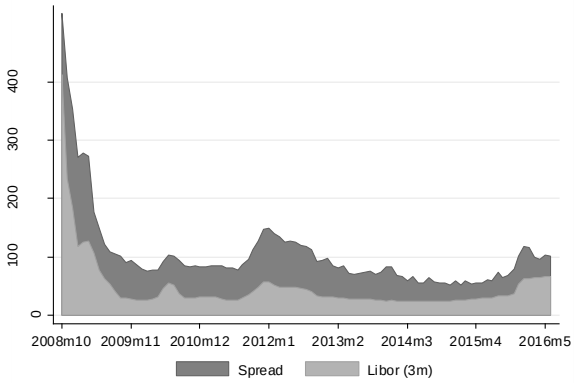
Figure 5 describes the rates at which Chilean banks where borrowing in the sample period. Panel A breaks this cost into its main components: the base rate and the spread. For fixed rates, we construct the spread using 1- and 3-month Libor rates, for loans that are shorter and longer than 3 months, respectively. As can be seen, both spreads and base rates spike at the beginning of the sample, and rise again in late 2011 at the time banks in the Eurozone were under growing financial pressure. This relation with risk is evident in Panel B – which plots the average spread per month together with a measure of volatility in equity markets (the VIX) and of stress in short term USD funding markets – the Libor OIS spread. Panel C graphs

the spreads for all the transactions in the sample – and shows that there is substantial dispersion in loan spreads within a given period. The paper uses this dispersion to identify the effects of individual banks. The grey areas indicate that the Chilean CDS was above the sample mean, a simple approximation to periods of greater global financial stress. In these periods, lending spreads went up for loans from all regions (panel D), albeit with larger increases in spreads on loans from US banks during 2008 and 2009 and larger increases in spreads from Eurozone banks in 2011.

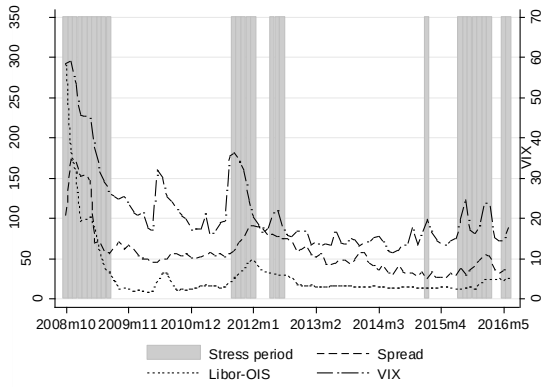
In the rest of the paper we focus on the spread over the base rate as our main measure of funding conditions for Chilean banks. This measure is akin to using spreads over treasury rates for measuring financial stress in sovereign bond markets. This spread can vary because of funding difficulties for the lending banks, such that their own funding costs are above the benchmark interbank rate; because of liquidity concerns that lead lending banks to charge a premium even to low risk clients; and because of risk perceptions regarding the Chilean banks.

Figure 5

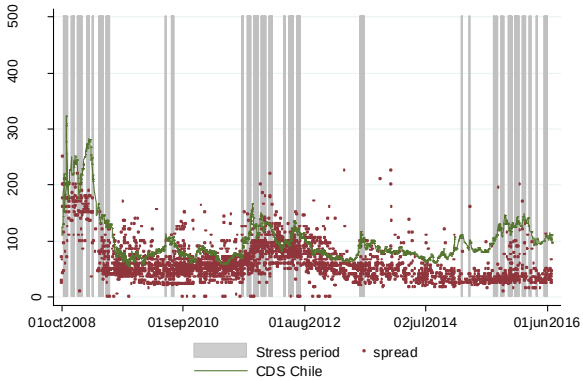
5.a Monthly average of cross-border Chilean banks interest rate
(basis points)



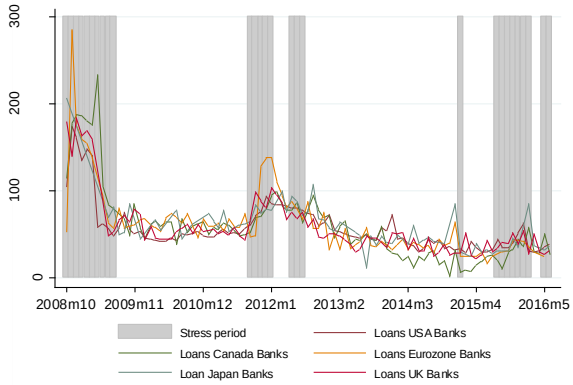
5.b Volatility measures and spread
(basis points, monthly average)



5.c Chilean sovereign CDS and credit spreads in dataset
(basis points, all operations)



5.d Cross-border Chilean banks' spreads, by zone
(basis points, monthly average)



Source: Authors´ calculations based on Central Bank of Chile and Bloomberg data.
Note: The figure shows the evolution of rates on foreign loans to Chilean banks over the period 2008 to 2016. Spread is the margin above Libor explicit in floating rate loans or implicit in fixed rate loans. Shaded periods are those where the Chilean sovereign CDS is above the sample mean.

3. The determinants of cross-border bank spreads

3.1 Benchmark estimation

The benchmark estimation relates the spread for each individual loan contracted by bank *i* borrowing from bank *j* in period *t*, to several variables that can be grouped as being specific to the borrower-lender pair, or the borrower, or the lender, or time. Thus, our empirical specification is as follows:

$$\boldsymbol{Spread_{ijt} = \beta_0 + X'_{ijt}\beta_1 + T'_{ij}\beta_2 + Z'_{it}\beta_3 + W'_{jt}\beta_4 + U'_t\beta_5 + \varepsilon_{ijt}}$$

Amongst the characteristics of the individual loan of a specific borrower and lender which can affect its spread, previous research by Calani and Díaz (2012), highlights that the borrowing spread is increasing with the term and amount of the loan and is higher for loans that do not back a foreign exchange operation and for fixed rate loans. The term of the loan captures both the rise in credit risk over longer terms and a liquidity premium. In turn, foreign trade loans are less risky as they are backed by receivables. Finally, in fixed rate loans the Chilean bank is paying a premium to insure itself against base rate volatility. We also capture specific pairwise relationships between borrower and lender in this simple benchmark specification with a dummy variable that measures whether the borrower is a subsidiary of the lending foreign bank. These variables make up the list of loan variables in set $\boldsymbol{X_{ijt}}$. We measure the term in months, and use a dummy for trade loans, which is considered in variable $\boldsymbol{T_{ij}}$.

For funding conditions of the lending bank *j* in period *t* we include two variables into the set $\boldsymbol{W_{jt}}$: the CDS premium on five year debt for the bank and the overall financial risk in the home market of the lending bank (proxied by the home country CDS on 5-year sovereign debt), both measured in basis points. Also, global financial conditions that affect all lending banks are captured by the natural logarithm of the Chicago Board Options Exchange Volatility Index (VIX) and the Libor-OIS spread for 30 days, in basis points (see Appendix 1 for a detailed description of all variables). The latter are part of set $\boldsymbol{U_t}$.

The set of borrowing bank characteristics $\boldsymbol{Z_{it}}$ includes the Chilean sovereign CDS premia in basis points, to capture the aggregate perception of risk in the Chilean economy, and a dummy to capture whether the Chilean bank *i* is a subsidiary of the lending bank. We do not include

measures of funding costs of Chilean banks in local markets as they are likely to be endogenous to the cross-border funding cost. We also discarded using Chilean bank ratings as there was scarce variation in the sample period.

In addition to the variables described above all specifications include fixed effects for borrowing banks and lending banks so as to capture time invariant characteristics of both categories.

The benchmark results are reported in table 2. As expected, the estimated coefficient on the trade related credit dummy is negative, while that of the fixed rate dummy is positive. As in previous studies, the estimated coefficient for maturity indicates that longer loans command a premium. In addition, reported coefficients show that related party transactions have a lower spread in the full sample. As expected, perceptions of risk in the Chilean economy (to the extent that they are captured by the CDS on Chilean sovereign bonds) also have an impact on the spreads that Chilean banks face on cross-border loans.

The estimated coefficients in table 2 for the VIX and Libor OIS indicate that the spread on loans to Chilean banks rises even after controlling for rising Chilean sovereign spreads (columns 3, 4 and 5). Rising global risk measures have a significant impact on the terms on which Chilean banks can access cross-border funding.

The estimated coefficients on the lending bank's CDS and the sovereign CDS of the country in which it is headquartered are also positive, so that rising funding costs for lending banks also have a positive impact on the spread of foreign credit to Chilean banks even after controlling for global risk and liquidity variables.

We also include a dummy that takes on the value 1 if the bank issued a bond in international capital markets during the month previous to the loan transaction. The dummy has a negative and significant coefficient. There are two possible explanations for this negative effect. One is a supply effect, as a bond issuance is a positive signal of borrowing bank creditworthiness. The other is a demand effect, as having issued a bond, the borrowing can be more selective and only take on loans that have low spreads.

As in Cowan and García (2013) we next split the sample into two periods – a normal period and a period of global financial stress, using the CDS criteria described above.[9] These results are reported in table 3. The estimated coefficient on the trade dummy is significantly greater in periods of stress – suggesting that counterparty risk became more relevant in these periods so that risk mitigants (such as trade deliverables) became more valuable. The estimated coefficient on the related lending dummy is also larger (in absolute terms) in stress periods. This suggests that –at least in terms of spreads– global banks favored their subsidiaries in periods of stress. This is consistent with previous results that find that distance and other measures of financial frictions became more important during the global financial crisis.

Finally, given that we are not adding time-varying bank specific variables other than the CDS, mainly because they are not available at the high frequency we use, we perform the following robustness check. First, we consider dummies for pairs of creditor and borrower instead of a set of separate dummies for creditor and borrower. Then, we perform the benchmark estimation without CDS, VIX and Libor-OIS and adding two sets of dummies that measure the interaction of a trend with a creditor dummy and a trend with a debtor dummy. In general, the results do not change. All these exercises are reported in Appendix 2.

[9]/ We use as episodes of stress time periods when the Chilean sovereign CDS is at high levels, because we are interested in assessing the effect of lending conditions to domestic banks insofar as the overall environment where they perform their business (e.g. the Chilean economy) is undergoing financial tensions.

TABLE 2: Benchmark estimation with fixed effects for debtor and creditor banks

	(1)	(2)	(3)	(4)	(5)
			Full sample		
Ln (Term)	13.91***	14.21***	14.13***	13.89***	14.23***
I (foreign trade)	-12.03***	-12.04***	-14.03***	-12.01***	-13.96***
I (fixed rate)	9.36***	9.94***	5.35***	9.37***	5.69***
I (related)	-11.47***	-11.60***	-13.42***	-11.51***	-13.46***
CDS Chile	0.34***	0.29***	0.08***	0.34***	0.07***
CDS home country	0.24***	0.22***	0.23***	0.23***	0.22***
CDS lender bank	0.07***	0.07***	0.07***	0.07***	0.06***
Ln (VIX)		9.98***			4.01**
Libor-OIS			0.51***		0.49***
I (bond)				-12.12***	-10.09***
Constant	-7.94**	-32.42***	7.53**	-6.55*	-1.56
Borrower bank FE	✓	✓	✓	✓	✓
Creditor bank FE	✓	✓	✓	✓	✓
R^2	0.48	0.49	0.54	0.49	0.55
R^2_a	0.48	0.48	0.53	0.48	0.54
N	3,047	3,047	3,047	3,047	3,047

* p<.1, ** p<0.05, *** p<.01

Note: OLS estimation of the determinants of spreads in the full sample of borrowing transactions. For robustness check we perform several exercises, controlling for pairs of debtor and creditor and the results are similar, the dummy variable for a related counterparty was omitted because of collinearity (see Appendix 2, tables A1 and A2). All interest rates, including the dependent variable, are measured in basis points.

Source: Authors' calculations.

TABLE 3: Benchmark estimation with split samples

	(1)		(4)	
	Stress	No Stress	Stress	No Stress
Ln (Term)	15.34***	14.00***	15.68***	13.92***
I (foreign trade)	-17.34***	-11.78***	-17.10***	-11.81***
I (fixed rate)	1.89	9.75***	3.43	9.57***
I (related)	-27.93***	-4.88*	-27.18***	-5.09*
CDS Chile	0.49***	0.10**	0.48***	0.12***
CDS home country	0.26***	0.10***	0.26***	0.09***
CDS lender bank	0.13***	0.12***	0.11***	0.12***
I (bond)			-18.33***	-9.97***
Constant	-50.00***	16.86***	-47.41***	17.23***
Borrower Bank FE	✓	✓	✓	✓
Creditor Bank FE	✓	✓	✓	✓
R^2	0.59	0.37	0.59	0.38
R^2_a	0.57	0.36	0.57	0.37
N	762	2,285	762	2,285

* p<.1, ** p<0.05, *** p<.01

Note: OLS estimation of the determinants of spreads of borrowing transactions. Stress sample corresponds to periods in which Chile CDS is above the sample mean, as described in the text. All spreads, including the dependent variable, are measured in basis points.

Source: Authors' calculations.

3.2 Banking relationships

The Chilean banking system has changed its sources of external funding after the crisis, turning to higher levels of bond funding and to new lending counterparties, often in new countries. The advantages from the perspective of liquidity risk management are clear. As the previous section shows, idiosyncratic shocks to the funding of counterparties affect the spreads they charge on their loans – even after controlling for global and country shocks. This being the case, banks will benefit from a diverse group of lenders. In this section, we assess whether this process of diversification and changes of providers of credit could also have implied higher borrowing spreads for Chilean banks.

We first explore the role played by relationships in reducing the cost of credit. Previous research on cross-border lending has found that past experience with cross-border lending makes it more likely for banks to lend abroad, and that they lend more abroad. By engaging repeatedly in successful commercial relationships, banks may establish a mutually beneficial distribution of the implicit rents in the transaction. This, for instance, could happen through the revelation of information regarding creditworthiness, willingness to pay and willingness to lend or because of the possibility of establishing cross selling of other financial products that serve as complementary sources of profit to the lender.

To evaluate this mechanism we construct a set of dummy variables that measures the history of operations within borrower-lender pairs. For each debtor bank and creditor counterparty we look for operations in different periods. The average bank-creditor pair has 20 transactions that span over 12 months (excluding those pairs with only one transaction). Then, we construct a set of dummy variables, labeled I ($k\,months$; k=48, 36, 24, 12, 6). As an example, the variable I (48 $months$) takes on the value 1 the if a borrower-lender pair had a transaction in one or more of the 48 previous months; I (36 $months$) takes the value 1 if a borrower-lender pair transaction occurred between each bank-creditor pair in the last 36 months. Thus, each observation of the credit spread between a specific bank and a specific creditor will have associated one of those dummy variables, which will reflect how long the commercial relationship has been going on.

Table 4 reports the results. It is possible to notice five different variables showing a negative coefficient in four of those five variables. While a relationship is built between the two banks,

the spread diminishes. The magnitude is significant both statistically and economically. We also show how the results are similar if we add a dummy variable that takes the value 1 in stress periods (table 4.1). This makes sense, as preexisting relationships are likely to be important in the spread that one creditor bank would charge the debtor. The variables included in the benchmark estimation maintain the results reported above.

As we did before, we also perform tests of robustness according to the procedure described in 3.1, adding pairs of debtor-time dummies and creditor-time dummies, and the results are similar to those reported in benchmark estimates (tables A3, A4 and A5 in Appendix 2).

TABLE 4: Building relationships

	(1)	(2)	(3)	(4)	(5)
Ln (Term)	10.60***	13.73***	13.88***	14.67***	14.54***
I (foreign trade)	-14.13***	-16.57***	-16.91***	-15.62***	-16.35***
I (fixed rate)	-3.01	0.24	2.89*	6.90***	7.05***
I (related)	-8.24***	-12.25***	-7.55***	-4.52*	-2.94
CDS Chile	-0.00	0.14***	0.23***	0.22***	0.22***
CDS home country	0.13**	0.22***	0.27***	0.21***	0.14***
CDS lender bank	-0.04	0.02	0.03***	0.03***	0.03***
I (48 months)	-5.65**				
I (36 months)		17.43***			
I (24 months)			-5.43**		
I (12 months)				-9.61***	
I (6 months)					-4.35
Constant	38.29***	-12.09**	-3.71	2.92	0.43
Borrower bank dummies	✓	✓	✓	✓	✓
Creditor bank dummies	✓	✓	✓	✓	✓
Year dummies	✓	✓	✓	✓	✓
R^2	0.58	0.68	0.66	0.60	0.60
R^2_a	0.56	0.67	0.65	0.60	0.60
N	1,035	1,640	2,336	2,765	2,686

* p<.1, ** p<0.05, *** p<.01

Note: OLS estimation of the determinants of spreads of borrowing transactions. For robustness check we control for pairs of debtor-year and creditor-year and the results are similar (see Appendix 2, table A3). All spreads, including dependent variable are measured in basis points.

Source: Authors' calculations.

TABLE 4.1: Building relationships – Financial stress dummy

	(1)	(2)	(3)	(4)	(5)
Ln (Term)	10.62***	13.82***	13.88***	14.68***	14.55***
I (foreign trade)	-14.09***	-16.47***	-16.91***	-15.60***	-16.34***
I (fixed rate)	-2.99	0.12	2.80*	6.86***	7.04***
I (related)	-8.04***	-11.97***	-7.39***	-4.46*	-2.91
CDS Chile	-0.03	0.05	0.17***	0.18***	0.20***
CDS home country	0.12**	0.21***	0.26***	0.21***	0.14***
CDS lender bank	-0.04	0.01	0.03***	0.03***	0.03**
I (stress)	2.01	5.33***	4.21***	2.23*	1.72
I (48 months)	-5.83**				
I (36 months)		18.38***			
I (24 months)			-5.31**		
I (12 months)				-9.65***	
I (6 months)					-5.65
Constant	40.50***	-6.05	1.41	5.86	3.58
Borrower Bank dummies	✓	✓	✓	✓	✓
Creditor Bank dummies	✓	✓	✓	✓	✓
Year dummies	✓	✓	✓	✓	✓
R^2	0.58	0.68	0.66	0.60	0.60
R^2_a	0.56	0.68	0.65	0.60	0.60
N	1,035	1,640	2,336	2,765	2,686

* p<.1, ** p<0.05, *** p<.01

Note: OLS estimation of the determinants of spreads of borrowing transactions. Stress sample corresponds to periods in which Chile CDS is above the sample mean, as described in the text. All specifications include lender and borrower banks' fixed effects and year dummies. All spreads, including dependent variable, are measured in basis points.

Source: Authors' calculations.

We test a second set of estimations, including a different variable that measures the correlative numbers (or months) of operations that a lender bank had with a specific borrower bank in the past. These results (see table 5) show that, as the number of months or correlative credits increases, the spread diminishes, the coefficient becomes negative and significant, and do not change if we add the dummy variable for stress periods, although the latter is not significant.

TABLE 5: Building relationships – correlative credits

	(1)	(2)	(3)	(4)
Ln (Term)	15.11***	15.11***	15.10***	15.11***
I (foreign trade)	-13.77***	-13.80***	-13.78***	-13.82***
I (fixed rate)	7.45***	7.34***	7.46***	7.35***
I (related)	-12.63***	-12.71***	-12.64***	-12.72***
CDS Chile	0.31***	0.31***	0.32***	0.32***
CDS home country	0.18***	0.18***	0.18***	0.18***
CDS lender bank	0.00	0.00	0.00	0.00
I (stress)			-0.85	-0.83
Number of past transactions	-0.02*		-0.02*	
Months of past transactions		-0.10*		-0.10*
Constant	69.56***	69.14***	68.16***	67.78***
Borrower bank dummies	✓	✓	✓	✓
Creditor bank dummies	✓	✓	✓	✓
Year dummies	✓	✓	✓	✓
R^2	0.62	0.62	0.62	0.62
R^2_a	0.61	0.61	0.61	0.61
N	3,047	3,047	3,047	3,047

* p<.1, ** p<0.05, *** p<.01

Note: OLS estimation of the determinants of spreads of borrowing transactions. For robustness check we control for pairs of debtor-year and creditor-year and the results are similar (see Appendix 2, Table A4). All spreads, including dependent variable, are measured in basis points.

Source: Authors' calculations.

Finally, following Bharath et al. (2007), we construct different measures of participation in the total amount borrowed in a specified time horizon. The results are shown in table 6, and in this case the variables are significant with the intuitively correct sign after 24 months of relationship, decreasing the spread charged to a Chilean bank if the relationship exists and if the participation in the total amount borrowed also increases, this result is similar if we include the dummy variable for financial stress (table 6.1).

The variable will be determined as follows:

$$\boldsymbol{Part.k\ months}\ (\boldsymbol{A}) = \frac{\boldsymbol{Amount\ of\ loans\ to\ Chilean\ bank\ i\ by\ lender\ j\ in\ last\ k\ months}}{\boldsymbol{Total\ amount\ of\ loans\ by\ borrower\ i\ in\ last\ k\ months}}$$

TABLE 6: Building relationships – amount participation

	(1)	(2)	(3)	(4)	(5)
Ln (Term)	10.51***	13.59***	13.98***	14.64***	15.25***
I (foreign trade)	-13.19***	-14.74***	-15.18***	-14.47***	-13.89***
I (fixed rate)	-3.37*	0.78	4.94***	4.99***	8.51***
I (related)	-7.15**	-11.53***	-8.72***	-7.81***	-6.10***
CDS Chile	-0.00	0.12***	0.25***	0.24***	0.21***
CDS lender bank	-0.04	0.03**	0.03***	0.02**	0.03***
CDS home country	0.18***	0.23***	0.19***	0.16***	0.14***
Part. 48 months	-24.66***				
Part. 36 months		-20.44***			
Part. 24 months			-12.50**		
Part. 12 months				-6.00	
Part. 6 months					-1.42
Constant	35.28***	7.39	-7.46*	-7.12*	-5.96
Borrower bank dummies	✓	✓	✓	✓	✓
Creditor bank dummies	✓	✓	✓	✓	✓
Year dummies	✓	✓	✓	✓	✓
R^2	0.57	0.68	0.65	0.62	0.58
R^2_a	0.56	0.68	0.64	0.61	0.57
N	1,014	1,623	2,332	2,844	2,978

* p<.1, ** p<0.05, *** p<.01

Note: OLS estimation of the determinants of spreads of borrowing transactions. For robustness check we perform several exercises, controlling for pairs of debtor-year and creditor-year and the results are similar (see Appendix 2, table A5). All spreads, including dependent variable, are measured in basis points.

Source: Authors' calculations.

TABLE 6.1: Building relationships – amount participation (with stress dummy)

	(1)	(2)	(3)	(4)	(5)
Ln (Term)	10.53***	13.69***	13.97***	14.65***	15.26***
I (foreign trade)	-13.17***	-14.66***	-15.21***	-14.47***	-13.88***
I (fixed rate)	-3.30*	0.65	4.86***	4.93***	8.47***
I (related)	-6.88**	-11.18***	-8.43***	-7.73***	-6.05***
CDS Chile	-0.04	0.02	0.16***	0.19***	0.17***
CDS lender bank	-0.04	0.02**	0.03***	0.02**	0.03**
CDS home country	0.18***	0.23***	0.18***	0.16***	0.14***
I (stress)	2.66	6.04***	5.23***	2.94**	2.94**
Part. 48 months	-25.44***				
Part. 36 months		-21.25***			
Part. 24 months			-14.06***		
Part. 12 months				-5.96	
Part. 6 months					-1.33
Constant	38.08***	15.54***	-0.90	-3.34	-2.26
Borrower bank dummies	✓	✓	✓	✓	✓
Creditor bank dummies	✓	✓	✓	✓	✓
Year dummies	✓	✓	✓	✓	✓
R^2	0.57	0.69	0.65	0.62	0.58
R^2_a	0.56	0.68	0.64	0.61	0.57
N	1,014	1,623	2,332	2,844	2,978

* p<.1, ** p<0.05, *** p<.01

Note: OLS estimation of the determinants of spreads of borrowing transactions. All spreads, including dependent variable, are measured in basis points.

Source: Authors' calculations.

3.3 Distance and funding costs

The lower spreads associated with higher concentration may be due to time invariant characteristics of bank pairs (i, j). Diversifying loan sources would then involve including additional lending banks that are more expensive sources of funding because of these characteristics.

In particular, funding conditions may be related to the geographical distance between banks, which increases the cost of determining the risk of counterparties or drives trading relationships. A mentioned above, several previous studies have found a significant impact of distance on the direction of cross-border lending and bank subsidiary decisions.

The pattern of cross-border bank lending described in Section I is consistent with this hypothesis—with cross-border loans prior to the crisis dominated by banks from the United States –the closest major financial sector to Chile and one of its main trading partners.

To explore this hypothesis we add geographical distance to the regression, measured in kilometers from the capital of Chile (Santiago) to the capital of the country where the lender bank's headquarters are located. As table 7 shows, the coefficient on distance is positive and significant in all specifications. It is also noticeable that differentiating by stress and no-stress periods (as in table 8) the distance plays an important role reducing spreads, and seems to be more important in periods of financial distress.

TABLE 7: Distance and borrowing spreads

	(1)	(2)	(3)	(4)	(5)
Ln (term)	13.86***	14.16***	13.68***	13.83***	13.81***
I (foreign trade)	-11.51***	-11.49***	-13.15***	-11.52***	-13.05***
I (fixed rate)	7.78***	8.44***	4.93**	7.94***	5.53***
I (related)	-26.64***	-26.39***	-27.91***	-27.07***	-28.07***
CDS Chile	0.36***	0.30***	0.18***	0.36***	0.16***
CDS Country	0.23***	0.21***	0.22***	0.21***	0.19***
CDS Lender Bank	0.07***	0.06***	0.07***	0.06***	0.06***
Ln (distance)	6.64***	7.86***	5.00**	6.19**	5.29**
Ln (VIX)		11.59***			5.30***
Libor-OIS			0.33***		0.31***
I (bond)				-13.45***	-11.06***
Borrower bank dummies	✓	✓	✓	✓	✓
R^2	0.43	0.44	0.47	0.44	0.47
R^2_a	0.43	0.44	0.46	0.44	0.47
N	3,047	3,047	3,047	3,047	3,047

* p<.1, ** p<0.05, *** p<.01

Note: OLS estimation of the determinants of spreads of borrowing transactions. All spreads, including dependent variable, are measured in basis points.

Source: Authors' calculations.

TABLE 8: Distance and borrowing spreads – Stress period and no stress periods

	Stress	No Stress	Stress	No Stress	Stress	No Stress	Stress	No Stress	Stress	No Stress
Ln (Term)	13.76***	13.84***	13.76***	14.33***	13.27***	13.94***	14.42***	13.72***	13.43***	14.31***
I (foreign trade)	-20.39***	-9.81***	-20.38***	-9.41***	-23.04***	-11.22***	-19.84***	-9.88***	-21.48***	-10.95***
I (fixed rate)	1.30	7.93***	1.30	9.64***	-6.27	8.01***	2.83	7.91***	-4.62	9.59***
CDS Chile	0.52***	0.10**	0.52***	0.08*	0.34***	-0.22***	0.50***	0.12***	0.39***	-0.25***
CDS home country	0.30***	0.13***	0.30***	0.09***	0.29***	0.13***	0.28***	0.11***	0.30***	0.08***
CDS lender bank	0.09***	0.10***	0.09***	0.09***	0.09***	0.07***	0.08***	0.10***	0.08***	0.06***
I (related)	-49.28***	-17.06***	-49.28***	-16.57***	-56.08***	-15.28***	-48.45***	-17.73***	-55.90***	-15.21***
Ln (distance)	16.29**	3.54	16.28**	5.03**	12.92*	2.66	15.26**	3.27	8.98	3.83*
Ln (VIX)			-0.09	17.37***					-13.50***	16.19***
Libor-OIS					0.25***	0.99***			0.27***	1.02***
I (bond)							-19.96***	-10.72***	-17.76***	-7.14***
Constant	-196.89***	-15.25	-196.51***	-76.54***	-149.87**	6.64	-185.79***	-12.19	-78.73	-47.74**
Borrower bank dummies	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
R^2	0.53	0.33	0.53	0.36	0.56	0.38	0.54	0.34	0.57	0.41
R^2_a	0.52	0.32	0.52	0.35	0.55	0.37	0.52	0.33	0.56	0.41
N	762	2,285	762	2,285	762	2,285	762	2,285	762	2,285

* p<.1, ** p<0.05, *** p<.01

Note: OLS estimation of the determinants of spreads of borrowing transactions. Stress sample corresponds to periods in which Chile CDS is above the sample mean, as described in the text. All spreads, including dependent variable, are measured in basis points.

Source: Author's calculations.

4. Conclusions

The global financial crisis affected the cross-border funding landscape for Chilean banks. As traditional counterparties suffered significant degrees of stress, over time Chilean banks have shifted the sources of funding to new counterparties, and relied increasingly on non-bank funding. This paper examines the cost of cross-border funding for Chilean banks throughout this process.

Our results confirm previous work on the role of global banks in the transmission of the global financial crisis. In particular, we find that traditional variables of global financial risk – such as market volatility and USD liquidity risk– affected the cross-border lending spreads for Chilean banks. In addition, we find that the funding costs of global banks themselves affect the lending spread in their loans to Chilean banks. The sensitivity of funding conditions from global banks to this broad set of shocks may explain why Chilean banks have reduced their dependence on cross-border loans and increased the issuance of bonds after the financial crisis.

Our results also suggest that information asymmetries have a significant effect on loan spreads – in particular in times of financial stress. Spreads are lower for loans obtained from parent banks and for banks that have recently issued bonds, and hence disclosed additional information to lenders, be it in the prospectus, ratings or market signals.

Given that the individual funding situation of lender banks is relevant for their lending spreads – the question is why don't Chilean banks move to highly diversified borrowing patterns? To answer this question we draw on strands of the literature on the patterns of cross-border banking that highlight the impact of building relationships over time, and the cost of shifting to more distant sources of funding. Our results are suggestive that diversifying sources of funding is costly, but that over time as new relationships develop the spread decreases significantly.

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Appendix 1 - Variables

0. ***Spread*** $_{ijt}$. Dependent variable. Premium over a referential interest rate for loan *l*, to bank *i*, from bank *j* in period *t*. In those cases that it is a variable rate loan it is the spread in the loan contract; in those cases that the transaction is a fixed rate loan, the spread is calculated by subtracting $Libor_t$ at 3 or 1 month depending on the term of the credit. Measured in basis points. Source: Central Bank of Chile.
1. ***Ln(term)***$_{ijt}$**.** Natural logarithm of contractual term of the foreign loan in months. Source: Central Bank of Chile.
2. ***I(foreign trade)***$_{ijt}$***:*** Dummy variable for loans used to fund trade. Source: Central Bank of Chile.
3. ***I(fixed rate)***$_{ijt}$: Dummy variable reflecting whether the loan carries a fixed rate. Source: Central Bank of Chile.
4. ***I(related)***$_{ijt}$: Dummy variable indicating whether an operation is performed between a bank established in Chile and its parent bank. Source: Central Bank of Chile.
5. ***I(bond)***$_{it}$***:*** Dummy variable which indicates if the debtor bank issued a bond in the month prior to the loan. Source: Central Bank of Chile.
6. ***CDS Chile***$_t$ Credit Default Swaps on Chilean sovereign debt. 5 years. Source: Bloomberg.
7. ***I(Stress)***$_t$: Dummy variable that takes the value 1 when Chile sovereign CDS exceeded the average in the sample period. Authors' calculations based on Bloomberg data.
8. ***CDS home country***$_{jt.}$ Credit Default Swaps on sovereign debt of home country of bank *j*. 5 years. Source: Bloomberg.
9. ***CDS lender bank***$_{jt.}$ Credit Default Swaps on debt of lending bank *j*. 5 years. Source: Bloomberg.
10. ***Ln(VIX)***$_t$. Natural logarithm of Chicago Board Options Exchange Market Volatility Index. Source: Bloomberg.
11. ***Libor-OIS***$_t$. Difference between three-month Libor and overnight indexed swap. Source: Bloomberg.
12. ***Ln(Distance)***$_{ij}$: Natural logarithm of the geographical distance between Santiago (capital of Chile) and the capital of the home country of the lender bank. Source: Authors' calculations.
13. ***Months of past transactions:*** variable that accounts for the correlative numbers of months that a lender bank had with a specific borrower bank in the past. Source: Authors' calculations.

14. ***Number of past transactions:*** variable that account for the correlative numbers of operations that a lender bank has with a specific borrower bank in the past. Source: Authors' calculations.

15. ***Part. k months:*** corresponds to the participation of lender *j* in total credits granted to a debtor *i* in 48, 24, 12 or 6 past months. Source: Authors's calculations.

Appendix 2: Robustness check

TABLE A1: Benchmark estimation with fixed effects for debtor and creditor banks pairs

	(1)	(2)	(3)	(4)	(5)
Ln (Term)	13.06***	13.26***	13.38***	12.91***	13.33***
I (foreign trade)	-14.29***	-14.36***	-16.63***	-14.70***	-16.94***
I (fixed rate)	9.91***	10.56***	5.32***	9.99***	5.75***
CDS Chile	0.34***	0.29***	0.02	0.34***	0.01
CDS lender bank	0.08***	0.07***	0.08***	0.07***	0.07***
CDS home country	0.20***	0.19***	0.19***	0.19***	0.18***
Ln (VIX)		10.27***			4.24***
Libor-OIS			0.62***		0.60***
I (bond)				-13.26***	-10.70***
Constant	37.21*	13.77	65.44***	39.29*	-35.82*
Creditor-debtor pair dummies	✓	✓	✓	✓	✓
R2	0.53	0.54	0.61	0.54	0.61
R2_a	0.51	0.52	0.59	0.52	0.59
N	3,047	3,047	3,047	3,047	3,047

* p<.1, ** p<0.05, *** p<.01

TABLE A2: Benchmark estimation with fixed effects for debtor and creditor banks pairs

	(1)	(2)	(3)	(4)
Ln (Term)	8.49***	12.65***	13.67***	12.67***
I (foreign trade)	-15.00***	-14.55***	-17.18***	-17.35***
I (fixed rate)	4.06*	3.15*	2.72	6.98***
CDS home country			0.19***	
CDS lender bank			0.07***	
CDS Chile				0.38***
I (bond)				-3.03**
Constant	36.67*	143.76***	62.10**	48.29
Creditor-debtor pair dummies	✓	✓	✓	✓
Creditor-year dummies		✓	✓	
Debtor-year dummies		✓		✓
R2	0.34	0.69	0.68	0.73
R2_a	0.30	0.65	0.65	0.70
N	5,093	5,093	3,047	5,092

* p<.1, ** p<0.05, *** p<.01

TABLE A3 - Building relationships with dummies creditor-year and debtor-year

	(1)	(2)	(3)	(4)	(5)
Ln (Term)	11.51***	14.09***	13.42***	13.94***	14.07***
I (foreign trade)	-16.01***	-16.02***	-16.87***	-16.92***	-17.58***
I (fixed rate)	-3.64*	0.98	2.12	7.76***	7.80***
I (related)	-5.95**	-6.42**	-2.93	1.27	3.22
CDS Chile	-0.01	0.04	0.16***	0.14***	0.13***
CDS home country	0.30***	0.30***	0.33***	0.28***	0.26***
CDS lender bank	-0.03	0.07***	0.06***	0.07***	0.07***
du48_n	-3.56				
du36_n		14.33***			
du24_n			-5.09**		
du12_n				-7.72***	
du6_n					-4.35
Creditor-year dummies	✓	✓	✓	✓	✓
Debtor-year dummies	✓	✓	✓	✓	✓
R^2	0.68	0.76	0.73	0.68	0.68
R^2_a	0.64	0.74	0.71	0.66	0.66
N	1,035	1,640	2,336	2,765	2,686

* p<.1, ** p<0.05, *** p<.01

TABLE A4 - Building relationships - Correlative credits with dummies creditor-year and debtor-year

	(1)	(2)	(3)	(4)
Ln (Term)	14.55***	14.54***	14.55***	14.54***
I (foreign trade)	-15.08***	-15.06***	-15.10***	-15.07***
I (fixed rate)	8.45***	8.37***	8.44***	8.37***
I (related)	-1.49	-1.65	-1.54	-1.69
CDS Chile	0.22***	0.23***	0.24***	0.24***
CDS home country	0.29***	0.28***	0.29***	0.28***
CDS lender bank	0.02*	0.02*	0.03**	0.03**
I (stress)			-1.15	-1.05
Number of past transactions	-0.03**		-0.03**	
Months of past transactions		-0.22***		-0.22***
Constant	12.93	14.60	13.33	14.94
Creditor-year dummies	✓	✓	✓	✓
Debtor-year dummies	✓	✓	✓	✓
R^2	0.70	0.70	0.70	0.70
R^2_a	0.68	0.68	0.68	0.68
N	3,047	3,047	3,047	3,047

* p<.1, ** p<0.05, *** p<.01

TABLE A5 - Building relationships - Amount participation with dummies creditor-year and debtor-year

	(1)	(2)	(3)	(4)	(5)
Ln (Term)	10.58***	13.66***	13.46***	13.84***	14.67***
I (foreign trade)	-16.69***	-15.00***	-16.41***	-16.05***	-15.71***
I (fixed rate)	-4.60**	1.68	4.93***	5.13***	9.72***
I (related)	-5.04*	-6.33**	-2.91	-1.84	0.01
CDS Chile	0.01	0.04	0.18***	0.14***	0.14***
CDS lender bank	-0.03	0.07***	0.06***	0.07***	0.06***
CDS home country	0.33***	0.30***	0.29***	0.27***	0.24***
Part. 48 months	-23.73***				
Part. 36 months		-20.01***			
Part. 24 months			-15.05***		
Part. 12 months				-5.58	
Part. 6 months					2.88
Constant	72.10***	30.75	15.16	24.76	23.38
Creditor-year dummies	✓	✓	✓	✓	✓
Debtor-year dummies	✓	✓	✓	✓	✓
R^2	0.69	0.76	0.72	0.70	0.65
R^2_a	0.65	0.74	0.70	0.68	0.63
N	1,014	1,623	2,332	2,844	2,978

* p<.1, ** p<0.05, *** p<.01

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