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Miguel Acosta-Henao
Sangeeta Pratap
Manuel Taboada

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Agustinas 1180, Santiago, Chile
Teléfono: (56-2) 3882475; Fax: (56-2) 38822311

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Four facts about relationship lending: The case of Chile 2012-2019*

Miguel Acosta-Henao†
Central Bank of Chile

Sangeeta Pratap‡
CUNY Hunter College &
CUNY Graduate Center

Manuel Taboada§
Central Bank of Chile

Abstract

Using confidential credit-registry data on the universe of loans, we characterize the monthly behavior of relationship lending in Chile between 2012 and 2019. We focus on two dimensions of relationships between firms and banks: their duration, and their concentration. We uncover four stylized facts about relationship lending: their be-havior through time, cyclical properties, properties of credit contracts, and how they affect monetary policy transmission. Our results show that relationship lending plays an important role in the process of credit allocation.

Resumen

Usando datos confidenciales de registro de créditos sobre el universo de préstamos, caracterizamos el comportamiento mensual de *relationship lending* en Chile entre 2012 y 2019. Nos enfocamos en dos dimensiones de las relaciones entre empresas y bancos: su duración, y su concentración. Documentamos cuatro hechos estilizados sobre *relationship lending*: su comportamiento en el tiempo, propiedades cíclicas, propiedades de los términos contractuales de los créditos, y como afecta la transmisión de política monetaria. Nuestros resultados muestran que *relationship lending* juega un papel importante en el proceso de asignación de crédito.

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1 Introduction

The characteristics of credit extended within relationships are often distinct from those in arms-length transactions. Repeated interactions between borrowers and lenders facilitate the acquisition of borrower specific information, which could potentially alter informational or other market frictions, and influence the nature of loan contracts.

In this paper we uncover four facts about relationship lending. Relationship lending is defined as the provision of credit by financial intermediaries (typically banks) that acquire specific private and proprietary information about their borrowers over time (Boot, 2000). We use a unique monthly credit-registry dataset from Chile that encompasses the universe of financial credits between 2012 and 2019, and focus on firm level borrowing from banks.

We build two types of time varying relationship measures at the loan level. The first set are referred to as "distance" measures which, as the name suggests, indicate the proximity of the borrower to the lender in terms of the duration of their relationship, and the frequency and timing of their interaction. Larger values of the distance measures signify a closer relationship and capture the potential acquisition of borrower-specific information by lenders. The second group are "concentration" measures, namely indicators of the relative importance of a particular bank relative to others, for a firm. These indicators capture the hold-up problem (Petersen and Rajan, 1995) that allows banks to extract monopoly rents from borrowers.

The four facts we uncover are as follows: First, the duration of relationships has increased over time, while concentration has fallen. In other words, lending is increasingly taking place within longer/more frequent relationships on average. Concentration has declined over this same period, i.e. firms are borrowing from banks which are not historically their exclusive or predominant sources of credit. Second, more lending takes place in closer relationships during expansions, i.e. the duration of relationships is pro-cyclical. Concentration does not exhibit clear cyclical properties. Third, at the firm level, closer relationships are associated with larger and cheaper loans. They also insulate borrowers from macroeconomic

fluctuations, so loan amounts in closer relationships are smaller in expansions and larger in contractions. Concentrated relationships, on the other hand are associated with smaller loan amounts and higher interest rates. Fluctuations in business cycles are weakly amplified in concentrated relationships. Fourth, the state of the relationship matters for monetary policy transmission. Monetary policy shocks (both expansionary and contractionary) are passed through to a smaller extent in closer relationships, but to a larger extent in more concentrated relationships.

Taken together, our findings indicate that relationship lending is an important determinant of credit conditions and the transmission of monetary policy. On one hand stronger relationships are associated with better terms of credit and insulation against business cycle fluctuations and monetary policy shocks. However, these benefits of relationships are vitiated by concentration, i.e. banks that are exclusive or important providers of credit can reduce credit access or increase its cost to firms.

Our work contributes to the literature in at least three dimensions. First, while a large literature on relationship lending exists, we are the first to construct relationship measures that distinguish between measures of proximity and measures of concentration and study their effects in a unified framework. As our results suggest, these two aspects of relationships have distinct effects and it is important to distinguish between them. Second, we are the first to empirically study the effects of relationships on lending over the business cycle and to confirm the role of relationships in monetary policy transmission, as predicted by Hachem (2011). Finally, while most of the literature has focused on either small firms (Petersen and Rajan, 1994; Beatriz et al., 2018), or publicly traded firms (Santos and Winton, 2008; Botsch and Vanasco, 2019), we are the first to look at the universe of loans and establish that these properties of relationship lending are important for bank lending to all types of firms.

Our results come with some caveats. Both concentration and distance measures are endogenous to firm and bank quality, and so we make no causal claims to their effects on the terms of credit obtained by firms. However, we control for a range of firm characteristics, and

bank fixed effects, and our results are valuable in that they are a comprehensive description of relationship lending, and provide a set of stylized facts which models of firm borrowing and investment must take into account.

The rest of the paper is organized as follows: Section 2 provides a short description of the related literature and how our work fits into it. Section 3 describes the dataset and the construction of our relationship measures. Section 4 documents the stylized facts. Section 5 concludes.

2 Related literature

A large body of literature has studied the effects of relationship lending.[1] Cross sectional studies suggest that stronger relationships–usually in the sense of distance–are associated with a greater availability of funds (Petersen and Rajan, 1994; Cole, 1998; Elsas and Krahnen, 1998; Machauer and Weber, 2000) and lower interest rates (Berger and Udell, 1995; Degryse and Van Cayseele, 2000).

Banerjee et al. (2021) show that Italian firms with longer relationships got credit on more favorable terms after the collapse of Lehman brothers. These firms also invested more and utilized more labor, suggesting that the prevalence of relationships could be beneficial for economic recoveries.

Some panel studies document the evolution of the terms of relationships over time. Botsch and Vanasco (2019) document the improvement in lending terms for higher quality firms over time and López-Espinosa et al. (2017) use data from one bank to show that interest rates spreads fall after about 24 months into a relationship.

Most studies typically use the duration of the relationship as the measure of relationship strength.[2] Since we can follow firms and banks over time, we also compute the total number

[1] See Degryse et al. (2009) and Kysucky and Norden (2016) for a summary.

[2] An exception is Degryse and Ongena (2005) who use geographical proximity as a measure of closeness between firms and banks. Many studies do not differentiate between measures of closeness and concentration, (see for example Bharath et al. (2011)) although these attributes can have different effects.

of loans the firms have taken from the bank over the history of their relationships, and distinguish between firms which have borrowed infrequently and those that have borrowed frequently from the same bank in a particular interval of time. Within firms with the same number of interactions with banks over a period of time, we can also distinguish between recent interactions and those in the more distant past, all of which allows us to construct a more accurate picture of the relationship.

The evidence on the effects of concentration, or the relative importance of a lender for a borrower, suggests the potential for such lenders to extract higher rents from firms. Santos and Winton (2008) show that firms with bond market access get loans at more favorable rates from banks. Beatriz et al. (2018) find that interest rates in relationship loans are lower for firms with multi-bank relationships. For Chile, using a subset of the same data we use, Garcia et al. (2003) show that concentration (measured as the number of banks a firm has a relationship with) has a negative impact on the volume of lending. Firms with multi-bank relationships exhibit higher debt-to-capital ratios whereas relationship length (as measured by the time spent in the banking system) does not have a robust effect.

The macroeconomic consequences of relationship lending are also of interest. Aliaga-Díaz and Olivero (2010) show that the borrower hold-up effect contributes to an increase in price-cost margins during recessions, generating a financial accelerator. On the other hand, Bolton et al. (2016) show that relationship banks charge higher spreads in normal times, but offer continuation lending at more favorable terms in a crisis (the collapse of Lehman Brothers). Hachem (2011) builds a model where relationships smooth out (and potentially vitiate) the effects of monetary policy. Cahn et al. (2017) show that firms with single-bank relationships in France receive more credit during crises, and Bosshardt (2020) shows that the tightening of credit standards leads to more concentrated relationships and a transfer of surplus from firms to banks.

As the next section shows, our data allow us to distinguish clearly between measures of relationship closeness and measures of concentration, and trace out their effects separately

over the business cycle and in the presence of monetary policy shocks. These results paint a comprehensive picture of the effects of relationship lending and generate a robust set of stylized facts which should guide future work in this area.

3 Data description

3.1 Dataset

We use a unique credit-registry dataset from Chile which contains the universe of credit transactions between firms and financial intermediaries (mostly banks between April 2012 and October 2019). Although more recent data exist, we choose to end our sample in October 2019 to omit the contraction caused by an internal political shock during November 2019, the subsequent COVID-19 crisis, and accompanying unconventional monetary policy which may distort our analysis.

The data contain information on the loan amount, type of loan, interest rate, and maturity. They also record the firm size and industry. We drop financial-sector and public-administration borrowers, restricting our analysis to non-financial firms.[3] The final sample covers about 6.6 million monthly-aggregated loans from near 2 million firms which represent on average over 60% of GDP per year.

Table 1 shows the main characteristics of the loans in our data. The average loan amount is 117 million Chilean pesos (CLP) while the median is 5.9 million CLP (in 2018 prices).[4] The mean and median real interest rate in our sample are 13 and 11 percent respectively. Loans have average and median maturities of about 5 years and 3 years, respectively. The average firm takes 3.3 (monthly) loans from 1.5 lenders, while the median number of loans and lenders per firm are 2 and 1, respectively.

Table 2 and Table 4 disaggregate loans by firm size, using the size categorization provided

[3] In the Appendix we provide more details on the construction of our final dataset.
[4] By March 2022, a US dollar is worth approximately 800 Chilean pesos.

by the Chilean tax office. Microenterprises are classified as those with yearly sales of up to 70,000 USD, and small firms with sales between 70,000 and 1 million USD. Medium sized firms are defined as those with yearly sales between 1 and 4 million USD. Firms with sales over 4 million USD are large firms. Micro enterprises are the most frequent borrowers, accounting for 84 percent of all loans, but only 23 percent of the total loan amount. Large firms, which account for 6 percent of the monthly observations account for 66 percent of all borrowing.[5]

The heterogeneity in borrowing behavior by firms also manifests in other dimensions. Table 4 shows the characteristics of credit by firm size. Smaller firms borrow smaller amounts at higher interest rates than large firms. Maturity is decreasing in size, and larger firms have more loans on average and more relationships with different banks.

Finally we decompose lending by 2-digit industry. Table 3 shows the share of total lending, of monthly-aggregated observations, and of total observations, for each sector. In terms of loan amounts, the largest borrowers are firms engaged in financial activities (excluding intermediation), retail, restaurants and hotels, and manufacturing and construction. These four sectors account for more than three-quarters of all lending. However, the largest number of loans comes from personal services (almost 40 percent) followed by business services and retail, restaurants and hotels.

3.2 Relationship measures

We now turn to the construction of relationship measures. As mentioned earlier, we focus on two distinct dimensions of the relationship between firms and banks: the first that measures the closeness between the two, and the second that measures the relative importance of the bank as a provider of credit to the firm. Each of these measures is time varying and constructed at the loan level.

[5]Multiple loans from one bank to a firm in a single month are aggregated and the interest rate and maturity are computed as loan-weighted averages.

3.2.1 Distance Measures

Consider the relationship between firm i and bank j at time t. We define three measures of distance between the firm and the bank.

$$d1_t^{i,j} = \frac{t - t_1^{i,j} + 1}{T_t}$$

Here $t_1^{i,j}$ is the time of the first loan taken by firm i from bank j and T_t refers to the time time elapsed since the beginning of the sample period. $d1_t^{i,j}$ is therefore simply the longevity of a relationship, normalized to deal with left censoring, a measure commonly used in the literature to measure the strength of relationships (see for example Berger and Udell 1995, Petersen and Rajan 1994 and Beatriz et al. 2018 among others).

Denoting the number of loans between firm i and bank j up to time t by $n_t^{i,j}$, we define a second distance measure as

$$d2_t^{i,j} = n_t^{i,j} d1_t^{i,j},$$

where the duration is interacted with the number of meetings. This measure differentiates between firms with the same length of relationship with a particular bank, by specifying a stronger relationship between those firms and banks that have more loan contracts than others.

Our final measure also takes into account the timing of loan contracts, with more recent loans signifying a closer relationship. Accordingly we define

$$d3_t^{i,j} = \sum_{k=1}^{n_t^{i,j}} \frac{\iota_k^{i,j}}{t - t_k^{i,j} + 1}$$

where $\iota_k^{i,j}$ takes the value of one when firm i and bank j meet at period k, and is zero otherwise. For firms with the same values of $d1_t^{i,j}$ and $d2_t^{i,j}$ this measure reflects the fact that more recent loans provide more up-to-date information about firms.

3.2.2 Concentration Measures

To capture the importance of a particular lender relative to others, we define three measures of concentration, based on the distance measures we describe above. Accordingly, for $M = 1, 2, 3$ we define

$$cM_t^{i,j} = \frac{dM_t^{i,j}}{\sum_j dM_t^{i,j}}$$

Each concentration measure therefore quantifies the importance of the distance measure between firm i and bank j, relative to the distance between firm i and all the banks from which it borrows. In the case of single-bank firms the concentration measures are always 1.

Table 5 shows the descriptive statistics for the distance and concentration measures. A larger value of the distance measures indicates a closer relationship between the bank and the firm, whereas a higher value of a concentration measure implies that the bank is an important source of credit to the firm. The median concentration measure is 1, suggesting that the median firm borrows from at most one bank, although the mean of the measures is less than 1.

4 Empirical facts

We document four stylized facts about relationship lending along the two dimensions: distance (or duration/closeness) and concentration of relationships. The first fact relates to the aggregate behavior of relationships through time, the second fact documents the cyclicality of aggregate duration and concentration, the third fact estimates how relationship lending affects credit conditions, and the fourth fact estimates how relationship lending affects the transmission of monetary policy.

4.1 Fact 1: Aggregate behavior of relationships

We aggregate our distance and concentration measures to document their behavior over the sample. First, for a given firm i, we aggregate across banks, j, as: $M_t^i = \max_{j \in J_t^i}(m_t^{i,j})$, where m denotes a relationship measure (either of duration or concentration). For each firm at time t, M_t^i is the maximum value of the corresponding relationship measure. Then, for each period t, we aggregate across firms by taking the mean, such that $M_t = \mathbb{E}_{i \in I_t} M_t^i$, where I_t is the subset of firms with loans at time t. Thus, for each of our six measures of relationships, we calculate a corresponding M_t representing the time varying aggregate measure for our sample.

Figure 1 and Figure 2 summarize the first empirical finding: *Aggregate duration has increased over time, while aggregate concentration has fallen.* This holds regardless of the distance (concentration) measure we consider, although the growth in $D3$, the distance measure that accounts for both the frequency and age of relationships shows slower growth.

Figure 3 also shows that the volume of lending in new relationships (where each distance measure equals $1/T_t$) has halved, from close to 20 percent at the beginning of the sample to around 10 percent by the end of the sample period. Similarly, the volume of lending in concentrated relationships has also declined by a similar magnitude.

These findings indicate that relationships between firms and banks in Chile have gotten stronger and less concentrated over our sample period. As the subsequent sections will make clear, this implies more favorable terms on loan contracts, the macroeconomic consequences of which are potentially a matter of interest.

4.2 Fact 2: Cyclical behavior of lending relationships

How do the relationship measures vary with the business cycle? Using the aggregates we computed above, we study their correlation with the IMACEC, an indicator of monthly GDP

in Chile.[6]

Table 6 shows estimated cross correlations between the year to year monthly growth rates of the IMACEC and each distance and concentration measure, indicating the second empirical fact: *Relationship duration is procyclical, while concentration is weakly counter cyclical.* In other words, the average firm that borrows during an expansion, does so within the context of closer relationships. This correlation holds regardless of the distance measure being considered and is statistically significant. On the other hand, while the correlation between concentration and the IMACEC is negative, the magnitude is small and it is not statistically significant.

While these facts are interesting at the aggregate level, it is hard to understand their implications without understanding the properties of loans taken in stronger or more concentrated relationships. For this we need to analyze loans at the micro level, to which we now turn.

4.3 Fact 3: Lending relationships and credit conditions.

How do concentration and distance influence the terms of loan contracts? We focus on the two aspects of contracts on which we have information: the loan amounts and the interest rates. Controlling for a variety of loan, bank and firm variables, we study how relationships influence the quantity and price of credit.

The baseline specification we estimate is the following:

$$Y_t^{i,j} = \alpha_i + \eta_i + \gamma_j + \lambda_t + \beta_1 log(dA_t^{i,j}) + \beta_2 log(cA_t^{i,j}) + \Gamma_1 D_{fac}^{i,j} + \Gamma_2 D_{repo}^{i,j} + \Gamma_3 D_{first}^{i,j} + \epsilon_t^{i,j} \quad (1)$$

where $A = 1, 2, 3$ refers to the different measures of concentration and distance we computed above. The dependent variable $Y_t^{i,j}$ refers to either the loan amount or the real interest rate.

[6]The IMACEC is estimated by the Central Bank using multiple supply indicators from all sectors of the economy, weighted by the share of that sector in aggregate economic activity.

We control for sector, size, bank and time fixed effects.[7] The Γ coefficients are attached to dummies for factoring credits, repurchases and a dummy for the first loan.

The second set of specifications also studies the effect of relationships along the business cycle and augments the specification of Equation 1 with interactions of the relationship variables with the indicator of monthly activity, the IMACEC.

The results of these exercises yield the third empirical fact: *Closer relationships are associated with larger loan amounts and lower interest rates. They also insulate borrowing from economic fluctuations, both positive and negative. In contrast, concentrated relationships reduce loan amounts and increase interest rates, and weakly exacerbate fluctuations.*

4.3.1 Distance, concentration, and credit conditions

Table 7 shows the results of our baseline specification Each specification contains a set of sector, size, bank and time effects. Robust standard errors are clustered around size-sector groups.

The first three columns show the results for (log) loan amounts and the next three for interest rates. The effects of relationship measures are significant and substantial.[8] Stronger relationships are associated with higher loan amounts. One additional month of a relationship can increase the loan amount by as much as 48 percent. For firms with similar relationship lengths, an additional meeting in the past can increase the present loan amount by 2.5 percent. A unit increase in $d3_t^{i,j}$ has similar effects.[9] Stronger relationships also allow firms to procure loans at lower interest rates, with effects ranging from 4 basis points to 0.17 basis points.

Concentration, on the other hand has an opposite effect. A unit increase in concentration can reduce loan amounts by 30 to 50 percent, depending on the measure. It can also increase

[7] We cannot use firm fixed effects because that eliminates a large number of arms length, or single firm-bank observations.

[8] Recall that for a semi-log specification, the proportional change in the dependent variable resulting from a unit change in the independent variable is $e^{\beta} - 1$, for each regression coefficient β.

[9] Given the non linearity of $d3$ with respect to time, the coefficient does not have a straightforward explanation in terms of longevity.

interest rates by as much as 1.6 basis points.

We see therefore that the state of relationships has important effects on loan contracts. Stronger relationships are associated with larger loans, and lower interest rates. Concentration has the reverse effect. The effects on interest rates, while precisely estimated, are smaller in magnitude, indicating that loan amounts are the main margin along which relationships play an important role.

It is also worth mentioning that apart from sector and firm size, we do not control for any firm characteristics. While we expect firm size to capture issues of the availability of collateral, it is entirely possible that some of these results are being driven in part by firm specific factors. Enlarging our sample to include information about firms is therefore an important issue.

4.3.2 Relationships and credit conditions along the business cycle

Table 8 shows the effects of relationships along the business cycle. In each specification, y denotes the level of monthly GDP, which we interact with each measure. As in the previous specifications, the distance measures are positively related to loan amounts. However, as columns (2) and (3) indicate, stronger relationships get larger loans in contractions when credit availability is presumably restricted. Columns (5) and (6) show that these loans are also likely to be cheaper. However the magnitude of these effects is small. For example, a unit increase in $d2_t^{i,j}$ only increases loan magnitudes in contractions by about 0.1 percent, and reduces interest rates by less than a basis point. Magnitudes using $d3_t^{i,j}$ are similar.

The effects of concentration do not seem to vary much over the business cycle. As the first three columns of Table 8 show, the interaction terms are small and not significant for two of the three measures, indicating that loans in concentrated relationships are marginally higher in expansions, when firms may have other borrowing options. The effects on interest rates are positive yet not significantly different from zero in columns 5 and 6, while it is significant and positive in column 4.

4.4 Fact 4: Lending relationships and monetary policy shocks.

We now explore how relationships affect monetary policy transmission, by interacting the distance and concentration measures with monetary policy shocks. We follow Aruoba et al. (2021) and use a monetary surprise measure S_t, constructed as the difference between the monetary policy rate (MPR) and its expectation. The latter measure comes from the Bloomberg Expectations' survey.[10] This measure of expectation is accurate in terms of the information set that agents have at the moment of responding the survey since it is conducted right before the Central Bank's Monetary Policy Meeting. A positive value of S_t indicates a contractionary shock, such that the MPR is larger than expected. The other variables are the same as in the previous specifications.

Table 9 shows the result of this exercise. Borrowers in close relationships (as measured by $d2$ and $d3$) get preferential treatment in contractions, i.e. larger loans at lower interest rates. The reverse is true in expansions. In other words, monetary policy pass through is lower in close relationships, as lenders offer better terms in tight credit environments to retain profitable relationships Hachem (2011).[11]

Table 9 also shows that the pass through of monetary policy in concentrated relationships is not as clear. On one hand the effects on loan amounts are not significantly different from zero (for $c2$ and $c3$). On the other, the interest-rate pass through is higher in monetary contractions, suggesting that the hold-up problem is more severe at times of tight monetary policy.

We can therefore summarize the fourth stylized fact as: *Monetary policy transmission is smoothed in close relationships while concentrated relationships face an amplification of monetary policy shocks.*

[10] We thank the authors of Aruoba et al. (2021) for kindly sharing the monetary surprises data in Chile with us.

[11] While for $d1$ the result over loan amounts is overturned, and over interest rate is nil, it could be that the average effect could be dominated by that of long relationships that occurred a long time ago and have considerably depreciated through time.

5 Conclusion

In this paper we use a novel credit registry dataset to uncover four stylized facts of relationship lending in Chile. We show that the state of relationships matters for credit conditions along two dimensions: distance (or duration/closeness), and concentration. We find that close relationships can confer benefits on borrowers in terms of both loan amounts and interest rates. Moreover, close relationships can insulate borrowers from macroeconomic fluctuations as well as monetary policy shocks.

On the other hand, concentration, or the relative importance of one lender relative to others can create a hold-up problem for firms. Concentrated relationships are associated with lower loan amounts and higher interest rates. There is also evidence that concentrated relationships can amplify monetary policy shocks.

Our findings, however, should be interpreted cautiously, since we make no causal claims. An important limitation is that our dataset does not contain information about real variables at the firm level other than firm size and industry. Merging our dataset with firm-level data would allow to study how relationship lending, credit allocation, and firm productivity are intertwined. To our knowledge, this last avenue is still unexplored and is a natural step to deepen our understanding of the relevance of relationship lending in the economy

Finally, given the importance of relationships for firms, it would be important to evaluate the macroeconomic consequences of relationship lending, including the effects on monetary policy transmission, and understand the effects of policies such as credit guarantees in creating and fostering such relationships.

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Tables and Figures

Tables

Table 1: Descriptive statistics - Market loans

	Mean	Median	Std Dev
Loan Amount	117.03	5.90	4334.71
Real Rate	0.13	0.11	0.11
Maturity (months)	57.15	33.53	81.51
# of loans/firm	3.32	2.00	6.13
# of lenders/firm	1.50	1.00	0.82
No. of Obs	6,583,486		

Note: Loan amounts are in millions of Chilean pesos deflated by the CPI (2018=100), and real interest rates are computed by accounting for the past 12 months of inflation. The time-period covered is from April 2012 to October 2019. Loans to the financial intermediation and public administration sector are excluded from the sample.

Table 2: Lending by firm size

	Fraction of	
	Lending	Monthly obs.
Micro	22.7%	83.2%
Small	4.2%	7.6%
Medium	6.9%	3.8%
Large	66.2%	5.5%
No. of Obs		6,583,486

Note: Monthly observations count multiple loans of the same firm, bank and month as one. Maximum yearly sales are 70,000 USD for microenterprises, 1 million USD for small firms and 4 million USD for medium-sized firms.

Table 3: Share of lending by economic sector

	Lending	Monthly obs.
Business services	5.5%	19.9%
Other financial activities	40.6%	1.2%
Real Estate services	2.2%	0.8%
Agriculture and fishing	2.7%	4.1%
Retail, restaurants and hotels	15.5%	17.4%
Construction	9.8%	4.2%
Manufacturing	11.4%	4.7%
Mining	2.6%	2.6%
Personal services	5.0%	38.9%
Electricity, gas, water and waste	1.2%	0.2%
Transport and communication	3.6%	6.1%

Note: Monthly observations count multiple loans of the same firm, bank and month as one. This sample excludes 35.7% of all loans and 5.4% of loan amounts with missing size and sector information.

Table 4: Lending characteristics by firm size

	Micro	Small	Medium	Large	Total
Real rate	0.14	0.1	0.04	0.00	0.13
Amount	31.94	64.45	213.23	1416.68	117.03
Maturity	65.79	23.68	10.22	4.82	57.15
# loans/firm	2.94	5.35	15.31	44.28	3.32
# banks/firms	1.48	1.62	2.22	3.65	1.5
No. of Obs	5,474,306	498,428	250,726	360,026	6,583,486

Note: Maximum yearly sales are 70,000 USD for microenterprises, 1 million USD for small firms and 4 million USD for medium-sized firms. Loan amounts are in millions of 2018 CLP and loan maturity is measured in months.

Table 5: Distance and concentration - Summary statistics

	mean	median	sd
d1	0.36	0.24	0.35
d2	2.57	0.58	6.38
d3	3.58	1.76	6.31
c1	0.66	1.00	0.40
c2	0.69	1.00	0.39
c3	0.76	1.00	0.29
Observations	6,583,486		

Table 6: Cross correlations of year-on-year monthly growth rates: Distance measures, concentration measures and economic activity

	D1	D2	D3	IMACEC
D1	1			
D2	0.658***	1		
D3	0.419***	0.830***	1	
IMACEC	0.256**	0.210*	0.310***	1
	C1	C2	C3	IMACEC
C1	1			
C2	0.997***	1		
C3	0.955***	0.958***	1	
IMACEC	-0.0629	-0.0359	-0.139	1

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: The cross correlations are calculated with the year-on-year monthly growth rates of each distance and concentration (D and C) measure and, the same growth rate of the monthly economic activity indicator, IMACEC.

Table 7: Distance, concentration, and credit conditions for market loans

	Loan Amounts			Dependent variable: Interest Rates		
	(1)	(2)	(3)	(4)	(5)	(6)
c1	-0.444***			0.0139***		
	(-20.93)			(6.96)		
d1	0.395***			-0.0359***		
	(6.22)			(-9.28)		
c2		-0.384***			0.00838***	
		(-16.26)			(4.28)	
d2		0.0247***			-0.00170***	
		(3.70)			(-3.98)	
c3			-0.679***			0.0163***
			(-17.76)			(5.23)
d3			0.0258***			-0.00174***
			(3.50)			(-4.39)
N	6,583,486	6,583,486	6,583,486	6,583,486	6,583,486	6,583,486
R^2	0.409	0.408	0.411	0.337	0.332	0.333

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: Each specification includes a set of size (4), sector (11), bank (21), credit-type (factoring, and repo credit),first-loan, and time dummies. Loan amounts are deflated by the ratio of price level in 2018 and the respective date. Standard errors are clustered on 44 groups defined by the combination of size and sector.

Table 8: Distance, concentration, and credit conditions and the business cycle

	Loan Amounts			Dependent variable: Interest Rates		
	(1)	(2)	(3)	(4)	(5)	(6)
c1	-0.600**			-0.0266		
	(-2.48)			(-1.03)		
d1	0.280			-0.0425		
	(0.60)			(-1.09)		
y*c1	0.00147			0.000380*		
	(0.62)			(1.68)		
y*d1	0.00108			0.0000618		
	(0.28)			(0.17)		
c2		-0.671***			-0.0123	
		(-3.29)			(-0.61)	
d2		0.152***			-0.0103***	
		(3.25)			(-4.92)	
y_c2		0.00268			0.000195	
		(1.31)			(1.12)	
y*d2		-0.00116***			0.0000793***	
		(-3.14)			(4.91)	
c3			-1.371***			-0.00429
			(-3.90)			(-0.11)
d3			0.157***			-0.0106***
			(3.11)			(-4.91)
y*c3			0.00649*			0.000193
			(1.89)			(0.55)
y*d3			-0.00120***			0.0000807***
			(-3.01)			(4.84)
N	6,583,486	6,583,486	6,583,486	6,583,486	6,583,486	6,583,486
R^2	0.409	0.408	0.412	0.337	0.333	0.333

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: The measure of economic activity "y" is the monthly index of economic activity (IMACEC). Each specification includes a set of size (4), sector (11), bank (21), credit-type (factoring, and repo credit), first-loan, and time dummies. Loan amounts are deflated by the ratio of price level in 2018 and the respective date. Standard errors are clustered on 44 groups defined by the combination of size and sector.

Table 9: Distance, credit conditions and monetary policy surprises.

	Loan Amounts			Dependent variable: Interest Rates		
	(1)	(2)	(3)	(4)	(5)	(6)
c1	-0.441***			0.0131***		
	(-22.39)			(6.10)		
d1	0.391***			-0.0362***		
	(5.62)			(-8.97)		
S*c1	15.70*			1.145*		
	(1.88)			(1.93)		
S*d1	-24.69***			-0.202		
	(-3.03)			(-0.70)		
c2		-0.384***			0.00783***	
		(-18.03)			(3.76)	
d2		0.0271***			-0.00185***	
		(3.73)			(-4.07)	
S*c2		10.44			1.247**	
		(1.47)			(2.04)	
S*d2		1.540***			-0.160***	
		(3.40)			(-7.70)	
c3			-0.681***			0.0153***
			(-19.70)			(4.40)
d3			0.0286***			-0.00190***
			(3.53)			(-4.47)
S*c3			12.64			1.655**
			(1.18)			(2.03)
S*d3			1.896***			-0.154***
			(3.46)			(-7.78)
N	5,983,072	5,983,072	5983072	5,983,072	5,983,072	5,983,072
R^2	0.411	0.410	0.414	0.342	0.337	0.337

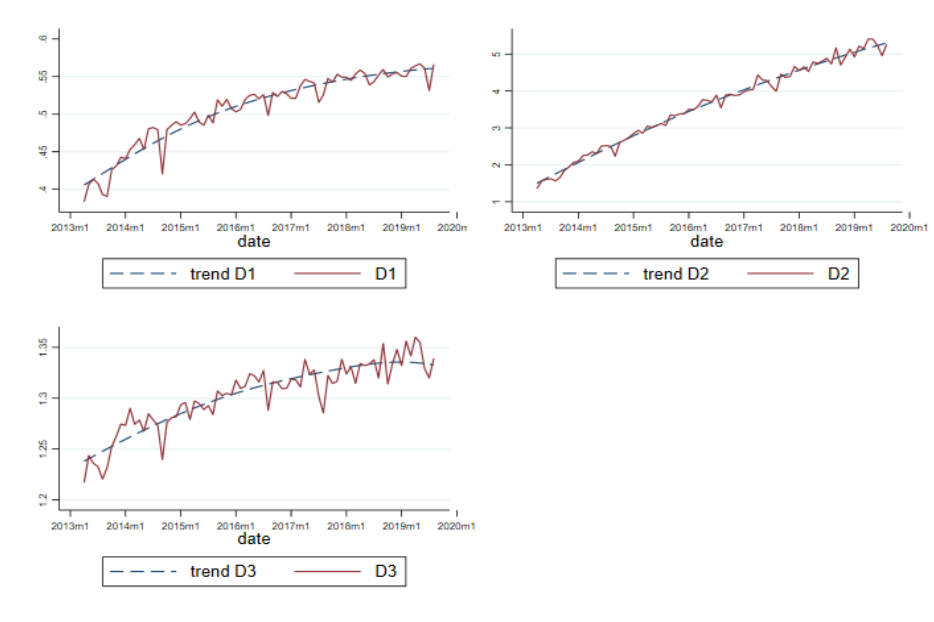
t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: The measure of monetary surprises S corresponds to the difference between the actual policy rate and the expectation from the Bloomberg financial survey. A positive surprise indicates that the monetary policy rate was higher than expected. Each specification also contains a set of size (4), sector, bank (21), credit type (one for factoring, other for repo) and time dummies. Loan amounts are deflated by the ratio of price level in 2018 and the respective date. Standard errors are clustered on 44 groups defined by the combination of size and sector.

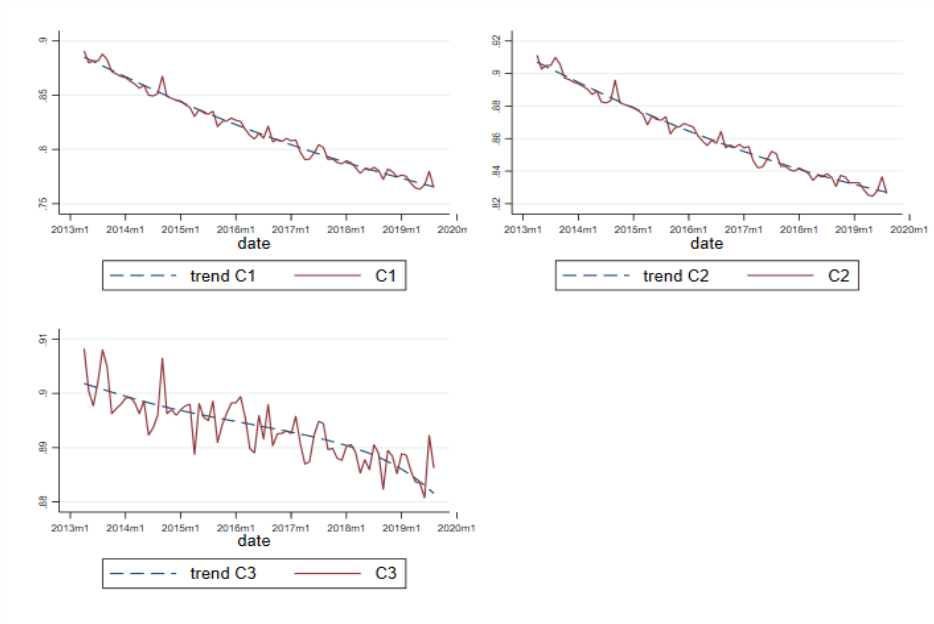
Figures

Figure 1: Aggregated series and trend of distance measures



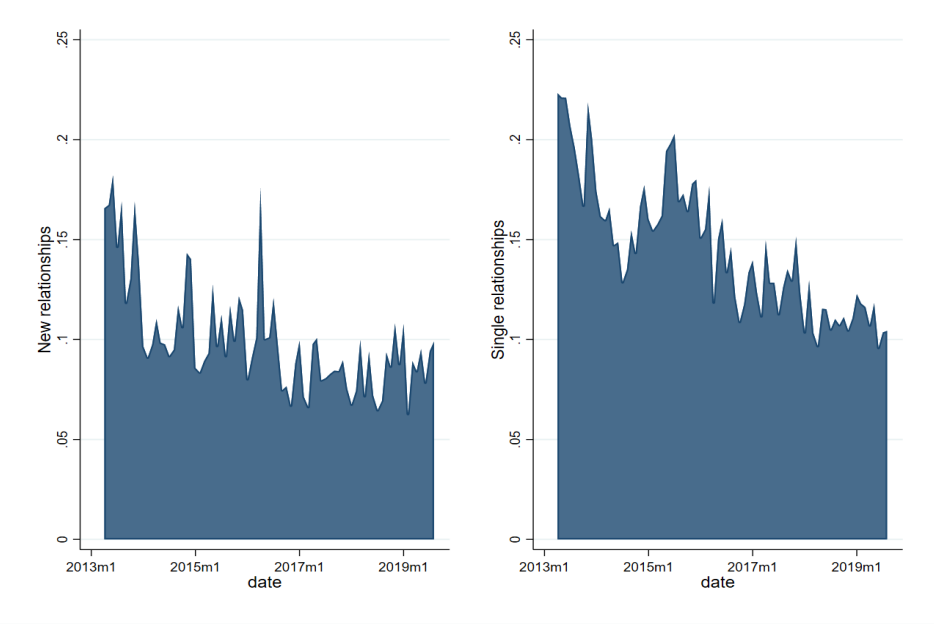
Note: Aggregate distance measures are computed as the time average (across firms) of the maximum (across banks) of each firm's distance measure. The effect of 9 exogenous events ($< 10\%$ of sample) is controlled with a set of dichotomous variables before computing the trend (solid line) using the HP filter with parameter $\lambda = 14400$ after dropping the first year of data.

Figure 2: Aggregated series and trend of concentration measures



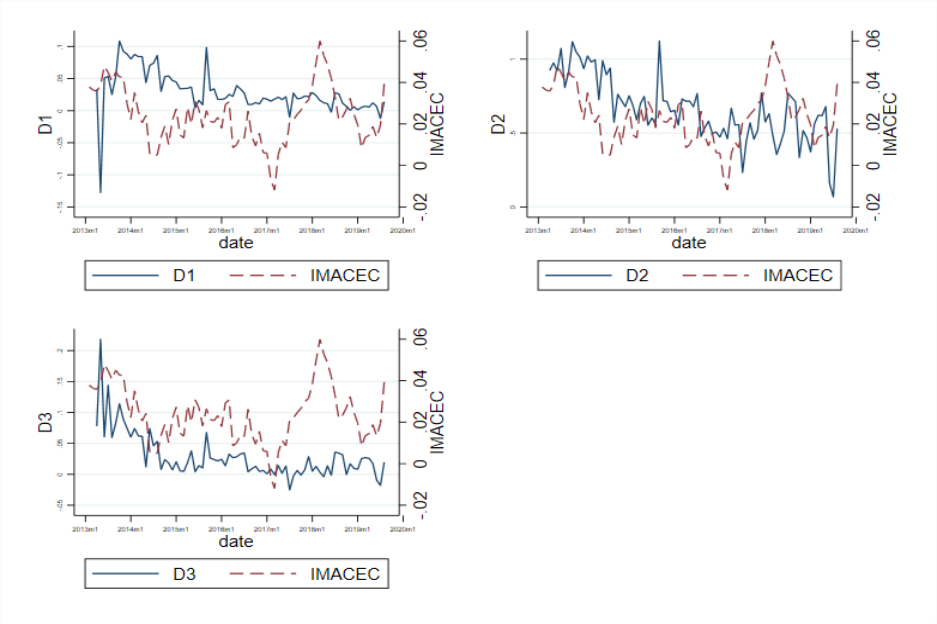
Note: Aggregate concentration measures are computed as the time average (across firms) of the maximum (across banks) of each firm's concentration measure. The effect of 9 exogenous events ($< 10\%$ of sample) is controlled with a set of dichotomous variables before computing the trend (solid line) using the HP filter with parameter $\lambda = 14400$ after dropping the first year of data.

Figure 3: Volume of lending in new and single-bank relationships



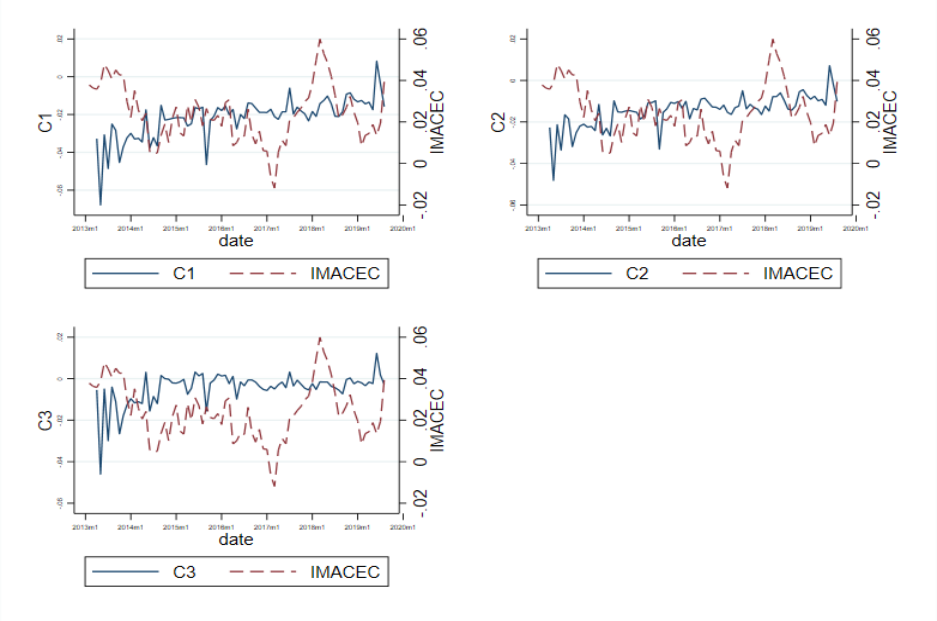
Note: The shaded areas in the figures represent the fraction of lending in new relationships (left panel) and single-bank relationships (right panel).

Figure 4: Year-on-year monthly growth rates: Distance measures vs IMACEC



Note: Each panel shows the year-on-year monthly growth rate of the corresponding distance measure overlapped with the one of the monthly GDP index, IMACEC. The first year of data is mechanically lost when calculating first differences.

Figure 5: Year-on-year monthly growth rates: Concentration measures vs IMACEC



Note: Each panel shows the year-on-year monthly growth rate of the corresponding concentration measure overlapped with the one of the monthly GDP index, IMACEC. The first three years of data are excluded. The first year of data is mechanically lost when calculating first differences.

Appendix

A.1. Data selection

Our dataset is constructed from a database provided by the Chilean Financial Markets Commission to the Central Bank of Chile, namely the D32 form. The original data is daily and at the firm-bank or individual-bank level (with a unique anonymized id).

Loan amounts are deflated by the ratio of the (average) General CPI of 2018 and the CPI of the corresponding month.

We drop households and firms without economic sector or size reported to the Chilean tax office (35.7% of all loans, 47.7% of monthly observations and 5.4% of lending). Financial intermediation firms are also dropped (0.5% of observations and 38% of lending). Furthermore, we only keep loans larger than 10,000 CLP (about 15 USD) and with yearly interest rates smaller than 70%, deleting less than 4,000 monthly observations (0.002% of the sample).

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