Bank Lending and Relationship Banking: Evidence From Chilean Firms*

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December 9, 2002

Preliminary Version – Comments are Welcome

Abstract

In this paper we empirically study bank-client relationships using a sample of manufacturing Chilean firms. We examine whether concentration and the duration of bank-firm relationships affect the terms of bank financing, evaluating both the volume of bank lending and bank loan costs. Our results indicate that lower concentration, measured by the number of banks a firm borrows from, is associated with lower costs of loans and with a large and positive non-linear effect on borrowing. The length of borrower-lender relationships, measured by the age of the oldest loan, has a positive effect on the amount borrowed and a negative effect on interest rates paid. When we measure concentration by the number of existing banks (at a geographical level), we find some effects, although of less economic importance.

JEL Codes: E51, G21, G32.

Key Words: Bank Concentration; Bank Competition; Bank-Client Relationships; Bank Lending.

*Prepared for the Sixth Annual Conference of the Central Bank of Chile "Banking Industry and Monetary Policy Transmission." We thank Álvaro García for his superb research assistance and helpful suggestions, and Francisco Nahmías for his help in building the data set. We also thank the SBIF for sharing their data and their infrastructure with us. Financial support from FONDECYT (#1010409) is gratefully acknowledged. All remaining errors are our responsibility. This paper represents the views of the authors and does not necessarily reflect the opinion of either the Superintendency of Banks and Financial Institutions or the Central Bank of Chile.

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1 Introduction

Financial markets are probably the most complex and important type of marketplace within modern economies. Besides contracting upon future and uncertain events, imperfections arise as a result of asymmetric information and incentive problems. These markets, at the same time, have an utmost importance for both the business cycle and growth. Indeed, financial crises explain a large portion of the largest cycles, monetary policy transmission critically depends on financial arrangements, and the efficiency of fund intermediation toward profitable investment projects is a key determinant of growth. Yet a fraction of what actually happens in financial markets is largely unknown, particularly in developing countries.

In this paper we use a unique data set to empirically investigate specific but crucial aspects of financial markets. In particular, we study commercial bank-client relationships of manufacturing firms in Chile in a twofold dimension. First, we examine whether concentration of the banking industry influences the conditions at which a given firm obtains loans. We focus on both actual concentration faced by firms —i.e. the number of banks a firm has relationships with— and market competitiveness measured by the number of existing banks at the local (geographical) level. And second, we study whether the duration of bank-client relationships affects access to bank financing. We do so by evaluating both the volume of bank lending (as a percentage of the firm's capital) and the interest rates that individual firms are charged in a large sample of Chilean firms during the 1990-1998 period.

Most of the empirical literature on financial market imperfections has focused on the consequences on investment of internal funds availability (in the line of Fazzari, Hubbard, and Petersen, 1988) to conclude that borrower-lender information asymmetries are a key determinant of external funding access. Indeed, a number of articles have studied the effects of lender-borrower relationships on firm performance, e.g. on the value of the firm and investment decisions. Relationships and the extent of the asymmetric information problem have been measured in many ways. For instance, in studying the sensitivity of investment to cash flow according to the degree of attachment to banks, Hoshi, Kashyap and Stein (1991) associate membership to a large industrial group as a proxy for weaker asymmetric information. With this same purpose, Schaller (1993) uses the degree of ownership concentration as a measure of information problems, Whited (1992) uses a dummy to capture whether a firm has a bond rating, and Fohlin (1998) uses the number of firm's board members that sit at a bank's board of directors. Both Medina and Valdés (1998) and Gallego and Loayza (2000) examine this same issue for Chile, using alternative measures of information asymmetries.

This paper takes one step back, and studies the empirical plausibility and importance of the asymmetric information problem on bank lending. It also investigates the implications of competition and concentration for bank lending at the microeconomic level.

According to theory, the consequences of concentration and relationship length on access to bank lending are not clear. These outcomes, in turn, have distinct implications for both market performance and policy. The empirical assessment of these effects is therefore especially valuable. Moreover, given the particular characteristics of an emerging economy like Chile, this assessment should ideally be done using country-specific data.

The issues we examine in this paper are important in their own right for the functioning of the financial market, particularly regarding credit access of small and medium size firms. They are also relevant for understanding monetary policy. For instance, monopoly power arising from either information asymmetries or straight lack of competition may also modify an otherwise standard transmission mechanism of monetary policy. Bank lending could also amplify or dampen the effects of monetary policy through endogenous changes in the external finance premium (the *credit channel* of monetary policy).[1]

Our results indicate that lower concentration, measured by the number of banks a firm is related to, has a negative and economically relevant impact on the cost of bank loans (i.e., is associated with lower interest rates). As to the volume of bank lending, higher concentration appears to have a negative and highly non-linear effect. Concentration, measured at the local geographic level (specifically, the number of banks in a *comuna*), has some effects, although of less economic importance. Controlling for firms' age, the length of borrower-lender relationships (measured by the age of the oldest relationship with the banking system) has a significant and positive effect on loans, and a significant and negative effect on interest rates paid.

The rest of the paper is organized as follows. Section 2 quickly revisits some theory and previous empirical work. Section 3 describes the construction and main characteristics of the data set. Section 4 presents the main findings, evaluating the effects of bank concentration and lender-borrower relationship length on borrowing volume and lending rates. Finally, section 5 presents the main conclusions and discusses a few policy implications.

[1] See, e.g., Bernanke and Gertler (1995) and Kashyap and Stein (1994).

2 Theory and Previous Empirical Evidence

From a theoretical point of view, both bank concentration and the length of lender-borrower relationships have ambiguous consequences on bank loan access. As for concentration, Diamond (1984) develops a model in which bank financing is less expensive than borrowing from public lenders, since intermediaries can save on monitoring and agency costs. Ramakrishnan and Thakor (1984) and Allen (1990) give banks a special screening role. In either model, under increasing economies of scale, concentration may further reduce costs or enhance efficiency. Marquez (2002) shows that increased competition among banks may lead to *information dispersion,* increasing the costs of borrowing. A market with few large banks, he concludes, can have lower interest rates than a market with many small banks. In the same venue, if too many banks serve one particular client, incentives to properly monitor may weaken due to the commons problem, and in turn, increase costs.

At the same time, however, while bank control can reduce costs and increase efficiency, market power by banks may of course result in monopoly pricing if competition and/or contestability are weak. Furthermore, a single bank may build up an ex post information monopoly that adversely affects lending (Sharpe, 1990 and Rajan, 1992). This hold-up problem can make it costly for a firm to switch lenders as it may signal that the bank with the information monopoly is not willing to lend to the firm. In this case, the bank can extract rents from the firm and possibly distort its investment decisions. Concentration, therefore, may produce a borrower capture. This problem is likely to be more relevant if banks observe other banks' lending, because the stigma arising from denying or cutting financing is stronger.

One can also postulate that competition may affect the value of relationship lending, modifying the amount banks are willing to invest in a relationship. Petersen and Rajan (1995) show that greater inter-bank competition reduces bank lending rents and decreases the importance of relationship lending. Boot and Thakor (2000) extend Petersen and Rajan's model to allow for competition from the rest of the capital market (e.g. mutual funds, and investment banks). They find that increased inter-bank competition may increase relationship lending, but then each loan has lower value added for borrowers. Furthermore, they find that higher competition from the capital market reduces total bank lending as well as relationship lending, although each relationship loan has higher value added for borrowers.

As for lender-borrower relationships, it is straightforward to argue that a lengthier relationship produces a more durable connection that alleviates information asymme-

tries, thereby reducing financial costs.[2] Long relationships, however, can potentially be costly for a borrower, if the stigma from cutting financing is higher the longer —and thus the more informed— is the relationship.

There are a number of empirical studies on the effects of concentration and relationships. Regarding concentration, and using detailed information on the debt structure of American publicly traded corporations, Houston and James (1996) find that firms that borrow from a single bank, as opposed to firms that borrow from multiple banks, depend less on bank loans to finance their operations when growth opportunities are important. This evidence is consistent with the notion that information monopolies allow banks to extract rents from borrowers. They also find that banks specialize in lending to smaller and less risky firms (relative to the typical firm in their sample).

Cetorelli (2001) reviews both the theory and the evidence of the effects of competition on the banking industry, and concludes that the common wisdom that restraining competition always reduces welfare is not necessarily correct. For instance, using a panel of 36 industrial sectors for a group of 41 countries, Cetorelli and Gambera (2001) find that bank concentration does impose a deadweight loss in the credit market as a whole, resulting in a reduction of credit supply. However, the effect is heterogeneous across industrial sectors: industries that depended heavily on banks for investment and growth benefit from concentration, presumably because they develop closer relationships. Using the share of banks' small business loans to total assets, Berger, Goldberg and White (2001) study the effects of banking entry and of bank M&A's on the supply of small business credit by other banks. They find that there are modest aggregate external effects of both M&A's and new entries, and that these effects depend on bank size. Using a panel of country experiences, Levine (2000) finds that bank concentration is not strongly associated with negative outcomes in terms of financial development, industrial competition, or banking fragility.

On the subject of bank-client relationships and concentration, Petersen and Rajan (1994) study the effects of lender-small-business relationships on interest rates and loan availability (the latter proxied by the percentage of firm's trade credits paid late). They find a positive association between the number of banks that lend to a firm and the interest rate charged for the latest loan, but no significant connection between this rate and the length of the firm-lender relationship. They also find a negative effect of the length of the longest relationship and the firm's age on loan availability, although this latter variable is positively related to the number of banks from which the firm borrows. Berger and Udell (1995) analyze the role of lender-borrower relationships on the loan rate spreads (over the lending bank's premium rate) paid by small firms. They find

[2]Of course, a lengthier relationship is not the same as firm age, which in turn is probably negatively correlated with information asymmetries.

a negative correlation between the length of the firm's relationship and these spreads. Blackwell and Winters (1997) find a positive correlation between the bank's monitoring effort and the loan's interest rate, and that banks monitor less often firms with which they have closer ties. Cole (1998) studies the effect of pre-existing relationships between firms and lenders on loan availability and find a positive association. He does not find any role for relationship's length.

Chakravarty and Scott (1999) empirically study the effects of relationships in the market for consumer loans using a data set that allows them to identify credit constrained individuals. They find that the following characteristics significantly lower the likelihood of being liquidity constrained: (i) the length of the relationship between a household and a potential lender; (ii) the number of activities a customer has with his/her bank (proxied by the number of accounts); and (iii) the number of financial institutions that a household has relationships with. Furthermore, they find that the rates charged on collateralized loans are less sensitive to these relationship variables than the rates on uncollateralized loans.

All these papers use data from the US economy from which lessons are not directly applicable to an emerging market economy like Chile. In comparison to the US, both firms and the financial market structure are considerably different. Among other things, bankruptcy procedures are not alike, firm size differ substantially, the number of banks is much smaller in Chile, and the Chilean market is highly collateralized.

3 Data

The data in this study come from two sources. The first data set gathers information on all credit transactions between commercial banks and firms. The information is collected by the Superintendencia de Bancos e Instituciones Financieras (SBIF), the commercial bank regulatory and supervision government agency.[3] The data set contains information on the amount borrowed by each firm from each commercial bank, the fraction of outstanding and overdue loans, (*cartera vencida*, including also data on credits paid late, *mora*), and the credit rating of the loan assigned by each lending bank. In Chile, all firms and individuals are assigned a unique identification or taxpayer code when they are born or legally incorporated, known as *Rol Único Tributario* or RUT. This code is recorded in the data set, and allows us to follow firms over time.[4]

[3]The Central Bank also has regulatory responsibilities.

[4]To protect the firms' identity, RUTs were deleted from our sample by SBIF and Central Bank statisticians. However, firms were randomly assigned a new identification code that allows us to follow them over time.

This data set has been matched with the second source we use, the *Encuesta Nacional Industrial Anual* or ENIA, a survey of manufacturing firms conducted annually by the statistics government agency (*Instituto Nacional de Estadísticas*, INE). The ENIA covers all manufacturing plants that employ at least ten individuals. Thus, it includes all newly created and continuing plants with ten or more employees, and it excludes plants that ceased activities or reduced their hiring below the survey's threshold. The ENIA covers about 50% of total manufacturing employment.[5] It collects detailed information on plant characteristics, such as manufacturing subsector (at the 4 digit ISIC level), ownership status, sales, employment, location, investment, and interest payments including inflation adjustments and bank commissions paid.[6] Although not reported in the publicly available data set, the survey records the firms' RUT, so the two data sets can be matched.[7]

Matching firms across surveys induces a series of measurement problems. The most important, the SBIF data gathers information on all the firm's activities, whereas the ENIA only records manufacturing related activities. Thus, if a firm produces manufacturing and non-manufacturing goods and services under the same RUT, the SBIF data will represent a broader set of activities than the ENIA. This means that we may overestimate the debt. In constructing a proxy of interest rates, we use total interest payments from ENIA and the outstanding debt from SBIF. Since this interest includes payments accrued to both banking and non-banking debt we may overestimate the true interest rate paid. At the same time, however, because of the possible overestimation of debt, the true interest rate may not be overestimated. Finally, the ENIA records information at the plant level, and not at the firm level. Still, we were able to add up information on plants belonging to the same firm as long as they produce under the same RUT.

We excluded firms with either no debt or no interest payments. Our data set contains thus 21,000 observations on 4,959 firms over the 1990-1998 period. Nominal figures were deflated using the value added and gross production deflators constructed by ECLAC at the three digit ISIC level (see Yagui, 1993). These adjustments take into account that stock variables are recorded at year end prices, whereas the prices of flow variables represent within year averages.

Table 1 reports basic statistics on sales, employment, capital stock, and profits, by industrial sector.[8] The average firm hires just over 110 employees, sells almost 3.5 billion

[5]Industrial employment represents roughly 16% of total Chilean employment.

[6]Inflation adjustments on financial contract interest rates are due to the widespread use of indexation clauses in Chile.

[7]The surveys were matched by Central Bank and SBIF statisticians who assigned the new identification code to firms.

[8]Capital is reported (at book value) only since 1996. We constructed the series using the information

pesos, holds a capital stock of 1.2 billion pesos, and earns profits of 1.1 billion pesos (or roughly 8.5, 3.0, and 2.7 million dollars, respectively, evaluated at the average 1996 exchange rate). The largest firms belong to the 314 (tobacco), 353 (petroleum refining), 372 (non ferrous metals), 371 (steel products), and 341 (pulp and paper) sectors. The smallest firms belong to the 390 (other manufacturing products), 385 (scientific and professional equipment), 382 (construction machinery), 332 (wooden furniture), and 323 (leather products) sectors.

Table 2 describes the borrowing patterns of the sample firms. The first three columns report total debt (in thousands of 1996 Chilean pesos) for all firms, and according to firm size. Firm size categories are based on employment quintiles, so the second entry represents the level of debt of the smallest 20% of firms. The average firm owes over 88 million pesos (over 100 million pesos at the median). The average ratio of debt to capital stock is 2.14, and the median is 0.48. Although the amount borrowed increases with firm size, the ratio of debt to capital stock does not: the smallest and the largest firms have the highest average ratios. One possible explanation to this pattern is that smaller firms have a higher demand for funds, and that those small firms that do obtain loans get large amounts relative to their capital stocks. At the other end of the distribution, larger firms are offered more loans, and borrow more from banks despite their better ability to raise funds from different sources. An alternative explanation is that our matching procedure induces mismeasurement of the debt-capital ratios, and that these errors are larger for smaller firms. It is worth noting, however, that the median ratio of debt to capital is almost constant across size categories. This median should be more robust to our measurement problems.

The table also reports our measures of closeness of a firm to its creditors. The seventh and eighth columns report the number of banks that lend to each firm in the sample.[9] On average, sample firms have a lending relationship with about 2.9 banks. At the median, firms borrow from 2 banks. The number of related banks strongly increases with firm size. The smallest 20% of firms have, on average, slightly less than two lenders (exactly 2 at the median), whereas the largest 20% of firms borrow on average from over 4.5 banks (4 at the median).

A second measure of closeness to a bank is the concentration of borrowing. The firm-specific Herfindahl index we report was calculated using the shares of total firm

on investment and the capital accumulation equation $K_t = (1-\delta)K_{t-1}+I_{t-1}$. We used the depreciation rates in Liu (1991) and the investment deflators in Bergoeing et al. (2002). This procedure forces us to drop a large number of observations in regression models that include the capital stock, since capital cannot be estimated for firms that were in the sample only in years prior to 1996. Capital stock includes machinery, vehicles, buildings, furniture and other forms of capital, but excludes land.

[9]In 1990 there were 41 banks in business in Chile. In 1999 there were 29 banks. The number of banks declined steadily over the sample period through mergers and acquisitions.

debt borrowed from each of the banks that actually lend to the firm. This measure also shows that bank lending is highly concentrated, and that concentration decreases as the firm size increases.

Our final measure of firm-bank closeness is the duration of the relationship. Unfortunately, we do not directly observe the number of years the firm has been servicing each bank loan, so we had to construct it as the number of years the firm has been borrowing from the banking system starting in 1989. Clearly, this variable is a censored measure of the actual length of the relationship if a firm was already borrowing in 1989. However, if the firm was either created or got its first loan later on in our sample period, then the relationship length is properly measured. On average, firms have been servicing loans for at least 5.5 years (or 5 years at the median). There is no clear relationship between the age of the oldest loan and the size of the firm. However, it is possible that the true relationship is an increasing one, if smaller firms tend to be younger and if censoring of the duration variable has a larger effect on big firms.

Table 3 reports the patterns of interest payments. The first set of columns describes the behavior of total interest payments, whereas the second set shows interest payments as a fraction of the average between t and $t-1$ debt. This variable is intended to measure the actual cost of borrowing in our sample. As expected, on average, firms spend more funds on interest payments as they grow. But the rates paid are higher on average for larger firms. However, the average loan rates paid in the sample are extremely high (almost 23,000%). Given the number of extreme observations in the sample and its large standard deviation, our analysis will focus on median rates, which are less sensitive to outliers. The median rate in the sample is about 24%. Although the relationship between size and age is not monotonic, the cost of borrowing is lower for larger firms: the smallest firms pay rates that are 4 percentage points higher than the rate paid by the largest firms.

Both the distribution of debt-capital ratios and interest rates are highly skewed. Figures 1 and 2, and table 4 present these distributions.[10] Not only the means and medians are quite different, but also both distributions contain extremely high and low values. Possibly, a number of these extreme observations are due to our matching procedure. Since the median, unlike the mean, is less affected by these extreme observations, the regression analysis below is based on Least Absolute Deviations (LAD) methods and not on OLS.[11]

[10] For illustration purposes only, both distributions were truncated at the top in Figures 1 and 2.

[11] See Amemiya (1986) for a derivation of the estimator and a proof of its consistency.

4 Relationships, Concentration and Firm Borrowing

As mentioned in Section 2, the closeness of firm-bank relationships have theoretically an ambiguous effect on the availability of funds. First, lengthy relationships allow banks to learn more about the firm, its projects and managers, alleviating information asymmetries. However, if (positive) information on a firm cannot be easily conveyed to the rest of the banking system, then lengthy relationships may lead to information monopolies: if a firm requests a loan from a non-connected bank, it may signal that the related bank is not willing to lend. This hold up problem is more relevant for firms with closer ties. Key for interpreting our findings below is the fact that commercial banks in Chile have access to information on the total amount borrowed by each firm (with respect to the banking system), and whether firms have loans overdue. They know the total amount that is overdue, the lending institutions involved, although not the exact distribution among creditors. The SBIF provides this information to each bank on a monthly basis.

Concentration measures also have an ambiguous effect on the lending volume. On the one hand, bank concentration may be cost efficient. On the other, concentration can lead to monopoly pricing and to information monopolies. In this and in the next section, we empirically estimate the effects of relationship banking on the availability of funds and on the cost of borrowing.

4.1 Borrowing Patterns of Firms

Our benchmark econometric model includes three sets of variables. The first includes variables that capture the effects of firm-bank relationships on lending: the age of the oldest loan, the firm specific Herfindahl index, and the number of lending banks. The second set intends to control for firm characteristics, such as size —measured by the natural log of sales and the number of employees— and profitability —measured by the ratio of current profits over sales. Finally, we add time dummies to control for aggregate shocks that affect all firms, sectoral dummies at the 3-digit ISIC level, and regional dummies to account for differences across locations (Chile is divided into 13 regions).

The length of the relationship and the age of the firm are correlated. Older firms have been producing longer. If firm's age is a proxy for firm's quality, then older firms are more likely to be able to borrow. Furthermore, a selection bias due to exit can lead to a positive effect of age on the amount borrowed. In order to distinguish the age effect from the relationship duration effect we add controls for the age of the firm.

We do not observe directly the date in which the firm was created. However, RUTs are assigned by the Internal Revenue Service chronologically; i.e., a younger firm has a larger RUT number than an older firm. These identification numbers are assigned within ownership categories. For instance, individuals have RUTs between 1 and 48 million, limited liability corporations have RUTs between 77 and 80 million, and publicly traded companies have RUTs between 90 and 97 million. Since we are not allowed to directly observe the RUTs, Central Bank statisticians created a variable we call *rank RUT*. This variable is an ordering from larger to smaller RUT (so the lowest number is assigned to the youngest firm) within ownership categories. There are 11 categories in our data set; however, over 90% of the sample is represented by individuals, limited-liability corporations and publicly traded companies.

The first column of table 5 presents our benchmark specification. The length of the relationship with the banking sector has a positive and significant effect on debt to capital ratios, i.e., firms that have been borrowing for a long period are able to fund a larger fraction of their capital stock through the banking system. For each extra relationship year, firms in the sample borrow 0.017 extra points of capital. This magnitude is large, as it represents about 3.6% of the median debt-capital ratio in the sample. Because the regression already controls for the age of the firm, this effect should effectively capture the role of ties between firms and banks. However, the effect might be overestimated, as our duration measure is right-censored.

Concentration, as measured by the firm-specific Herfindahl index, has a large and negative effect on the amount borrowed. The number of banks from which firms borrow has a positive and large effect on loans. The lower panel of the table shows the estimates of the effect of increasing the number of banks from which a firm borrows from one to two (assuming equal bank shares), and from two to three. Moving from one to two relationships allows firms to increase their debt to capital ratios by 34.7 percentage points, and from two to three banks by 19.5 percentage points. Figure 3 plots the estimated effect of increasing the number of relationships as well as ± 2 standard errors, again assuming that debt is split equally among banks. The magnitude is always large and significant. Moreover, as the number of ties increases, the effect of the Herfindahl index tends to disappear, and the total effect tends to the coefficient on the number of related banks.[12]

An alternative interpretation of this result is that the amount borrowed and the number of lending banks are mechanically related: more debt should naturally be supplied by more banks. However, this does not need to be the case. In order to borrow more, firms may choose not to relate to more banks, as there are fixed costs of establishing

[12]Assuming equal bank shares, the Herfindahl is equal to $\frac{1}{n}$, where n is the number of relationships. Thus the limit of this index as $n \to \infty$ is equal to 0.

ties. And even if this is the case, the linear term should capture this effect, and the large effect measured by the Herfindahl index would still be relevant. Alternatively, one could argue that there are legal limits on how much a bank can lend to a single firm. These limits, however, are most likely non-binding for most of our firms. Finally, it is worth mentioning that if loans are collateralized, firms need to have divisible guarantees in order to borrow from different banks.

As to the control variables, both firm size variables show that larger firms have lower debt to capital ratios. At first, this result appears to be counterintuitive. However, larger firms have better access to other forms of financing. Probably, as they grow larger, firms become increasingly dependent on arm's length financing, and not on the banking system.[13] The estimation results indicate that if a firm hires 100 more employees (about half the standard deviation of employment in the sample), then the debt-capital ratio falls by 3.3 percentage points. Moreover, a 1% increase in the value of sales reduces the ratio by 0.7 percentage points. The effect of profits is also counterintuitive: as firms become more profitable, they finance a larger fraction of their capital stock through bank loans. However, it is worth emphasizing that these regressions are reduced form regressions, so profitable firms have perhaps better access to funds, even though they are in less need of them. If a bank is able to spot this profitability, it will probably be more interested in lending. According to our regression results, if sales as a fraction of profits grow one percentage point, the debt capital ratio grows by 0.1 percentage points.

Finally, our age controls show that older firms finance a smaller share of their capital stock with debt. The effect is significant for individuals and limited liability corporations, but not for publicly traded companies. Within our sample period, 214 new individually owned plants, 948 new limited liability companies, and 484 new publicly traded companies appear in our data set. [14] Therefore, and according to the regression estimates, the newest individually owned firm has a debt-capital ratio that is 1.5 percentage points higher than the last firm of this ownership type created in 1990, whereas the newest limited liability firm's ratio is 3.8 percentage points higher. Although the effect on publicly owned companies is not significant, the point estimate indicates that the newest firm of this type in the sample has a ratio of almost 0.5 percentage points larger.

Columns 2 to 10 present the results on alternative specifications. Column 2 removes the length of the relationship variable, possibly an imperfect proxy for the actual length of firms' ties with the banking system. Although this variable was highly significant in the benchmark regression, excluding it does not affect importantly the other regression

[13] In fact, this is precisely what Houston and James (1996) find.

[14] These new firms do not necessarily represent start ups. Some of these firms may have hired more than 10 employees, and/or may have borrowed from the banking system for the first time.

results. Particularly, the effect of an extra relationship is not affected by removing this variable. The third column uses a broader measure of the number of ties. In the SBIF data set, a number of firms report indirect debts with banks, as they guarantee (endorse) other firms' loans. The number of related banks, then measures the number of banks from which firms borrow directly or indirectly. This new variable and the old one are highly correlated ($\rho = 0.9741$). The coefficient on the number of related banks is somewhat smaller but, because the introduction of this variable increases the effect of the Herfindahl, the overall effect of increasing the number of relationships stays almost constant.

Columns 4 to 6 analyze the robustness of our concentration measures. Column 4 replaces the current Herfindahl for its first lag to test for a spurious effect. The effect of the lagged Herfindahl is about half of the effect of the current one, but is still significant at 1%. Thus, the effect of having two ties instead of a single one is much smaller, falling from 0.38 to 0.26. However, because the relative importance of the Herfindahl falls as the number of relationships increases, the combined effect is not affected if firms have a large number of relationships. Column 5 excludes the number of banks variable, whereas column 6 excludes the Herfindahl. In the first case, the effect of the concentration index doubles its magnitude, and in the second, the coefficient on the number of relationships increases about 5 percentage points. It is worth noting that the overall effect of an extra relationship is not affected as the number of relationships gets larger (see the lower panel), so the combined effect of our concentration variables turns out to be very robust.

The seventh column in the table includes the debt weighted average risk rating assigned by the lending banks. Each bank rating measures the fraction of the loan the bank expects not to recover, and is intended to measure credit quality. The result is somewhat puzzling: firms that are expected to pay in full get less loans than firms with larger fractions of expected delinquent loans. However, causality may run the other way around. Given collateral, more debt is associated with more risk. Furthermore, given that banks do not have to rate every single loan, it could happen that banks choose to rate relatively more often loans that are safer.

A lengthier relationship relieves the information asymmetries between banks and firms. However, firms are able to get more loans as long as the information revealed is good. The next regression includes a dummy variable equal to one if the firm had in the past (during our sample period) overdue loans.[15] We find that negative information

[15]According the Chilean norm, a loan is classified as past due when either installment of principal or interest is overdue for 90 days or more. Banks can start legal collection procedures when installment of principal or interest is overdue. Nevertheless, banks can begin the collection process before 90 days if there is a presumption of a significant deterioration in debtor's quality.

on past loans has a negative impact on the availability of current funds. If a firm was delinquent in the past, it can today finance 3.4 percentage points less of its capital stock with banking debt. It is worth noting that the combined effect of our concentration measures, as well as the effect of the length of the relationship, are robust to the inclusion of this firm quality variable.

We then include collateral as a control variable. As Stiglitz and Weiss (1982) showed in their seminal paper, the availability of collateral reduces the extent of the asymmetric information problems, as firms can guarantee their loans at least partially. We use lagged capital stock as a percentage of sales as a measure of collateral, and find that firms with a larger capital stock have lower debt-capital ratios.[16] Notice that when collateral is included as a control, the coefficient on sales becomes not significantly different from zero. Perhaps our collateral measure is capturing a size effect, and not an availability of guarantees effect.

Our final specification expands the list of concentration variables. The new variable is the number of existing banks locally (in the *comuna*), and intends to control for greater inter-bank competition.[17] The effect is positive and significant, indicating that for each new bank in the locality, firms can finance almost 0.3 percentage points of its capital stock through banking debt. This magnitude is not irrelevant, but is considerably less important than the effect of an additional bank-firm relationship (whose effect is 30 to 100 times larger). An alternative interpretation of this result is that banks' location is endogenous: banks may decide to set up offices in places where there are firms of better quality and in higher need of funds. Interestingly, in this case the effect of bank competition is overestimated.

In sum, in this section we have found that our measures of the closeness of firm-bank relationships have a large impact on the availability of funds. Relationships do matter, and have a beneficial effect on firms. This result is consistent with the hypothesis that not all information is public and easily verifiable, and that close ties between firms and lenders do alleviate informational asymmetries. Furthermore, our results indicate that borrowing concentration does make firms worse off. Economically, the greatest effect occurs when the number of ties is relatively small. In the next subsection we extend the analysis, and study the effect of concentration and relationships on the cost of borrowing.

[16] We used lagged and not contemporaneous capital stock to avoid inducing a spurious correlation with the left hand side variable.

[17] There are more than 300 *comunas* in Chile.

4.2 The cost of borrowing

We now turn to the determinants of the cost of borrowing and, in particular, to the effect of relationships and concentration on loan rates. Table 6 presents the estimation results for the interest rates paid on loans.

The benchmark specification shows that firms that have held lengthy relationships with banks obtain cheaper loans. As above, we are able to distinguish the effect of age from the effect of the duration of the relationship, as we control for the (relative) age of the firms through our RUT ranking variables. The magnitude of the effect is quite large: each extra relationship year decreases loan rates by 65 basis points. Again, this effect may be overestimated, since we observe a censored measure of this variable for older firms.

The loan rate appears to be insensitive to the Herfindahl index, whereas the number of related banks has a negative and significant effect on lending rates. In particular, each extra bank reduces the interest rate by almost 50 bp. Figure 4 plots the combined effect of an extra relationship for different number of initial ties. Since the Herfindahl is not significant, the effect is statistically equal to 0 if a firm moves from a single lender to two. However, as the number of banks increases and the role of the Herfindahl diminishes, the effect becomes negative and significant.

As in the debt-capital ratio regressions, we control for firm characteristics. Although sales have a non significant effect, larger firms —measured by its employment level— are charged lower rates. The estimated effect of 100 extra employees is of the order of 50 basis points less. Firms' profitability also has a negative and significant effect on the loan rates: for every 1% increase in the profits-sales ratio, loan rates fall 60-70 basis points.

The sign of the age effect depends crucially on the ownership status of the firm. Firms owned by one individual (that is, firms that have the same RUT as the owner) are charged higher rates as the owner gets older, whereas limited liability companies and publicly traded corporations are charged cheaper rates over time. The estimated coefficients show that the newest firm in each of these categories are charged rates that are 131 bp. higher, 105 bp. lower, and 137 bp. lower, respectively, than the last firm created in 1990 within each ownership category.

Our regression results are robust to different specifications. The second column removes the length of the relationship variable, with almost no effect on any of the benchmark's coefficients. If we use the number of banks that directly or indirectly lend

to the firm (column 3), the linear effect of one extra bank is reduced to less than a half (p-value of 6.2%). However, the Herfindahl becomes positive, and the combined effect is no longer statistically equal to 0. As a matter of fact, the effect of having two rather than one single relationship reduces the rate by 70 bp, an effect that is significant at a 5%. Replacing the current Herfindahl by its lagged one (column 4), has no effects relative to the benchmark specification.

Columns 5 and 6 exclude the number of relationships and the Herfindahl, respectively. In the first case, the Herfindahl becomes positive and highly significant. An extra lender reduces the borrowing cost by 120 bp. if the firm has a single relationship, and by 40 bp. if the firm has two relationships. Both of these effects are highly significant. However, as the firm increases the number of bank ties, the effect tends to completely disappear. If the Herfindahl is excluded, the number of relationships coefficient indicates that for every new bank the firm borrows from, the rate falls by 45 bp, no matter how many relationships the firm starts with.

Column 7 examines the effect of the average credit assigned to the loans. As discussed earlier, this could be an imperfect measure. The regression results indicate that the credit rating has no significant effect on the loan rates. In column 8 we add the dummy for whether the firm has had at least one loan overdue 90 days or more in the past. The coefficient is positive and has a p-value of almost 7%. The effect is also large in magnitude: firms with a bad credit history get loans with rates that are 120 bp. higher.

To control for collateral availability, we add the ratio of t and $t-1$ average capital to total sales. We find a positive and significant effect, which is not what one would expect, although the result is economically quite small. The coefficient shows that for every extra 1% of sales in collateral (in capital), the firm pays rates that are almost 2 bp. higher. Most important, our previous results do not change.

Finally, we add the number of banks that exist locally to control for inter-bank competition. As before, we find a puzzling result, but with second order economic implications. As more banks enter the market, firms are charged higher rates. This result is consistent with the hypothesis that the location of banks is endogenous, and that banks choose to settle in places where they can charge higher loan rates. The effect, however, is quite small: only 2 bp. for each extra bank.

Summing up, we have again found that lengthy relationships are beneficial for firms in terms of reduced loan rates, even after controlling for age effects. Furthermore, lending concentration hurts firms, as banks build monopolies and extract rents through high interest rates. Unlike the case of debt volume, the effect of concentration on borrowing costs appears to be linear.

5 Conclusions and Policy Implications

We have examined the effects of concentration and the length of bank-lender relationships on both, interest rates paid by firms and the volume of bank lending using a sample of Chilean manufacturing firms. After controlling for size, economic sector, (relative) firm age, location, profitability and, in some specifications, collateral size and a dummy for having had overdue loans in the past, the most important results are the following:

Lower concentration, measured by the number of banks a firm is related to, has a negative impact on the cost of bank loans (interest rates are lower), despite the fact that our measures of interest rates are imprecise and probably overestimate the true interest rate paid. The effect of concentration is economically meaningful: one extra lender is associated with almost 50 bp. of lower interests. This compares with the median of 24% in our sample. We cannot accurately disentangle the relevance of non-linear effects on interest rates paid, namely differences between the outcome of having 1 or 2 lenders, and the outcome of having n or $n+1$ lenders.

Non-linear effects of concentration, on the contrary, appear to be very important for the volume of bank lending. The results show that the debt to capital ratio rises significantly as concentration falls, and that this effect is considerably larger when the number of bank-firm relationships is small. For instance, controlling for the linear effect of the number of banks a firm is related to, increasing the number of relationships from 1 to 2 rises the median debt to capital ratio from 0.48 to 0.83, whereas increasing the number of relationships from 2 to 3 rises the median debt to capital ratio from 0.48 to 0.68.

Inter-bank competition, measured at the local level (numbers of banks in a *comuna*), has a statistically significant and positive effect on the volume of bank lending. However, the economic importance of this result is small in comparison to the effect of concentration (measured by the number of actual relationships). The results also show that competition has a statistically positive and marginally significant effect on interest rates paid, although from an economic point of view the effect is largely irrelevant. In general, the results about competition do not have a clear-cut interpretation, in part because for bank's location decision is endogenous. It is possible to argue that there are probably fewer banks in poor zones where there are also more riskier projects.

The length of borrower-lender relationships (measured by the age of the oldest relationship with the banking system) has a significant and positive effect on loans, and a significant and negative effect on interest rates paid. One extra year of relationship increases the debt to capital ratio by 1.5 to 2.0%, and decreases the interest rate by 60

bp. As expected, the age of the firm reduces the interest rate paid by firms. However, we find the opposite result for firms that are individually owned.

These results motivate a few policy implications. First, the results show that, on average, a lengthier relationship is convenient for firms. Thus, policy makers should not worry if firms persistently choose to do business with the same banks. Second, the evidence does not support the idea (it does not support the contrary either) that competition, at least at the local level, is a first order issue. The implication is that having more and more banks may not yield a substantial boost in the availability of credit and a reduction in borrowing costs. And third and most important, the evidence is consistent with the idea that enhancing the number of relationships that a particular firm has can both increase the volume of credit and reduce interest rates.

There are important practical consequences from the latter implication. To begin with, tax policy should avoid lock-in effects that make it difficult for firms to "shop around." More significantly, policy should foster multiple relationships. And chief among the difficulties a typical firm faces for having multiple relationships is the indivisibility of collateral or guarantees. It has long been recognized in Chile that moving guarantees across banks is a difficult task. In fact, some people have proposed to centralize the administration of guarantees in order to facilitate bank shifts. The evidence of this paper shows that this might not be enough. True competition needs firms to relate contemporaneously to more than one bank, and for that purpose firms need divisible collateral. The proposed central agency could provide that service.

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Table 1. Sample Characteristics

	Number of		Employment			Sales (million 1996 pesos)			Capital (million 1996 pesos)			Profits (million 1996 pesos)		
	Firms	Observations	Mean	Median	St. Dev.	Mean	Median	St. Dev.	Mean	Median	St. Dev.	Mean	Median	St. Dev.
All firms	4959	21000	113	49	213	3488	482	22600	1238	0	12900	1120	90	9634
Manufacturing subsector (3 digit ISIC)														
311	1028	3849	137	48	270	3713	441	30900	1206	0	7036	1049	75	10600
312	96	373	131	59	184	8186	677	45600	1195	0	3609	2508	116	18500
313	82	364	240	157	329	7054	1213	19500	4353	727	11900	2610	184	9957
314	2	5	430	666	339	971	567	1073	17400	28100	15900	-2348	-3647	2534
321	452	1901	98	44	199	2183	494	7050	555	0	2154	689	103	3205
322	422	1565	101	47	256	2557	418	11200	259	0	2372	948	93	6780
323	65	272	86	50	111	3371	573	11600	445	9	1599	1013	136	4386
324	168	669	132	55	234	1360	311	3808	324	0	1257	283	52	1731
331	423	1595	97	50	150	3259	518	12900	423	0	3119	1121	95	5839
332	176	618	83	39	150	1435	358	5112	258	0	1271	358	63	2210
341	90	362	200	87	326	6324	1049	18400	14200	0	78200	2185	152	9521
342	226	1003	87	34	204	3839	404	21300	977	0	6107	1777	85	15700
351	77	282	118	53	160	4919	740	10700	2703	0	9925	1370	139	4358
352	241	1035	137	86	184	6401	730	33800	1352	81	4588	2195	111	13200
353	5	10	337	328	313	148200	15958	228000	158000	88200	208000	34552	2031	70400
354	23	98	88	56	97	3599	416	10300	448	5	1204	1451	68	5998
355	73	323	98	42	148	1975	480	6674	703	0	3669	404	106	3024
356	347	1380	87	50	105	2196	543	7117	666	0	3024	620	117	2574
361	22	89	161	113	194	1849	617	3193	422	0	1426	623	41	1961
362	24	98	149	87	201	4641	549	10700	5858	310	19900	1739	109	5220
369	139	578	110	53	138	3549	456	10900	2522	0	12100	1220	90	5822
371	38	112	221	119	496	2498	325	8317	2971	267	5810	-39	-70	4033
372	38	143	244	77	392	18385	835	80400	4082	0	10700	8878	223	55000
381	556	2073	89	50	108	2370	476	19700	717	0	2906	634	91	5234
382	275	945	80	41	160	2572	432	12600	509	0	3183	727	93	4673
383	75	307	101	54	113	3669	672	13400	941	0	3600	1320	144	6490
384	153	568	139	44	330	3118	393	17300	438	0	1631	671	60	4602
385	25	108	62	46	51	3384	514	9306	263	57	638	1081	158	3822
390	74	275	52	36	50	5192	425	48900	138	0	347	1975	109	17500

Source: ENIA.

Table 2. Bank Borrowing

	Debt (millions of 1996 pesos)			Debt/Capital			Mean number of banks		Herfindhal		Age of Debt	
	Mean	Median	St.Dev	Mean	Median	St.Dev	Mean	Median	Mean	Median	Mean	Median
All firms	880221	100850	3616700	2,14	0,48	21,78	2,86	2	0,69	0,67	5,54	5
By number of employees												
10-23	94900	23706	1049898	2,79	0,35	17,68	1,96	2	0,80	0,94	5,60	6
24-38	148470	50907	867507	2,39	0,41	15,48	2,23	2	0,74	0,77	5,47	5
39-66	274826	98328	792769	1,52	0,51	4,76	2,56	2	0,70	0,67	5,45	5
67-139	635061	245679	3255018	1,68	0,58	8,03	3,08	3	0,65	0,59	5,49	5
140-6394	3264604	972723	6731604	1,95	0,50	35,11	4,51	4	0,55	0,50	5,67	6

Sources: Based on SBIF data and ENIA.

Table 3. The Cost of Borrowing

	Interest Payments (thousands of 1996 pesos)			Interest Payments/Debt		
	Mean	Median	St.Dev	Mean	Median	St.Dev
All firms	196287	24981	952188	229,6	0,24	16254,1
By number of employees						
10-23	16631	5021	72488	11,6	0,25	413,1
24-38	30549	11886	90228	6,7	0,25	222,8
39-66	68844	25399	229451	146,7	0,26	6466,2
67-139	139628	55749	335750	294,1	0,24	15551,1
140-6394	729635	227712	1999376	696,3	0,21	32305,4

Sources: Based on SBIF data and ENIA.

Table 4. Distribution of Interest Rates and Debt-Capital Ratios

Percentile	Interest Rate	Debt/Capital
1	0,00170	0,00001
5	0,01762	0,00401
10	0,04685	0,02301
25	0,12682	0,13888
50	0,24236	0,48015
75	0,41199	1,27862
90	0,73484	3,04420
95	1,36375	5,27741
99	18,5288	22,0392
Mean	229,64	2,144
St. Deviation	16254,12	21,782
Minimum	0,00000	0,00000
Maximum	2036395	1954,50
Observations	21000	13132

Sources: SBIF data set and ENIA.

Table 5. The Determinants of Firm Borrowing

(Dependent variable: Debt to Capital ratio)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Age of oldest loan	0,01737		0,01344	0,01437	0,01871	0,01921	0,01562	0,01766	0,01437	0,01509
	[4.31]**		[3.77]**	[2.02]*	[4.82]**	[5.97]**	[2.85]**	[4.91]**	[2.07]*	[4.50]**
Herfindahl	-0,45493	-0,45646	-0,58209		-1,11876		-0,42466	-0,44798	-0,38304	-0,40851
	[19.35]**	[19.48]**	[29.40]**		[74.47]**		[14.98]**	[21.32]**	[10.76]**	[16.59]**
Herfindahl $_{t-1}$				-0,21697						
				[6.58]**						
Number of banks	0,11927	0,12069		0,15377		0,17474	0,11673	0,12020	0,13206	0,10668
	[40.42]**	[40.81]**		[37.33]**		[111.38]**	[33.68]**	[45.56]**	[29.27]**	[34.15]**
Number of related banks			0,09290							
			[39.30]**							
Number of banks in locality										0,00286
										[5.25]**
Collateral									-0,00190	
									[9.63]**	
Loan overdue 90 days or more								-0,03424		
								[2.41]*		
Risk rating							0,00748			
							[9.42]**			
Rank RUT - individuals	-0,00007	-0,00007	-0,00006	-0,00005	-0,00005	-0,00007	-0,00021	-0,00008	-0,00006	-0,00002
	[3.55]**	[3.68]**	[3.21]**	[1.72]	[2.84]**	[4.15]**	[8.00]**	[4.36]**	[1.92]	[1.08]
Rank RUT - limited liability	-0,00004	-0,00004	-0,00005	-0,00004	-0,00003	-0,00005	-0,00006	-0,00004	-0,00004	-0,00004
	[12.42]**	[12.51]**	[14.76]**	[8.04]**	[10.04]**	[16.16]**	[12.69]**	[14.05]**	[8.03]**	[11.16]**
Rank RUT - publicly traded	-0,00001	-0,00001	-0,00002	0,00000	0,00001	-0,00004	-0,00001	-0,00002	0,00000	-0,00001
	[0.77]	[0.34]	[0.97]	[0.02]	[0.70]	[2.49]*	[0.52]	[1.14]	[0.17]	[0.81]
Ln(sales)	-0,00711	-0,00582	-0,00873	-0,00430	-0,00347	-0,00632	-0,00580	-0,00708	-0,00524	-0,01526
	[2.62]**	[2.14]*	[3.63]**	[1.01]	[1.33]	[2.90]**	[1.73]	[2.92]**	[1.24]	[5.28]**
Employment	-0,00033	-0,00033	-0,00028	-0,00048	-0,00013	-0,00038	-0,00032	-0,00033	-0,00043	-0,00029
	[21.93]**	[21.97]**	[20.29]**	[16.75]**	[8.98]**	[31.96]**	[18.30]**	[24.68]**	[15.28]**	[20.80]**
Profits/sales	0,00110	0,00095	0,00140	0,00129	0,00059	0,00132	0,00106	0,00119	-0,00292	0,00166
	[4.06]**	[3.48]**	[5.85]**	[3.07]**	[2.29]*	[6.07]**	[3.33]**	[4.92]**	[5.76]**	[6.69]**
Constant	1,04348	0,47575	1,19982	-0,09022	1,70227	0,61926	0,24393	1,03127	0,16487	0,28502
	[10.65]**	[4.85]**	[13.91]**	[0.56]	[18.31]**	[8.12]**	[1.77]	[11.80]**	[1.03]	[2.51]*
Number of obs.	13132	13132	13132	10499	13132	13132	11529	13132	10499	6830
Pseudo R^2	0,05140	0,05120	0,05030	0,05040	0,04550	0,04960	0,04980	0,05140	0,05220	0,04730
Effect of one extra relationship										
From 1 to 2 banks	0,34674	0,34892	0,38395	0,26225	0,55938	0,17474	0,32906	0,34419	0,32358	0,31094
(st. error)	0,00974	0,00966	0,00836	0,01407	0,00751	0,00157	0,01183	0,00870	0,01477	0,0102
From 2 to 3 banks	0,19509	0,19677	0,18992	0,18993	0,18646	0,17474	0,18751	0,19487	0,19590	0,17477
(st. error)	0,00260	0,00254	0,00229	0,00411	0,00250	0,00157	0,00317	0,00232	0,00398	0,00268

Table 6. The Determinants of the Cost of Borrowing

(Dependent variable: Interest rate paid)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Age of oldest loan	-0,65120 [4.06]**		-0,67428 [4.48]**	-0,66449 [4.32]**	-0,68132 [4.13]**	-0,63229 [3.96]**	-0,45098 [2.72]**	-0,68083 [4.36]**	-0,65156 [4.08]**	-0,62457 [3.06]**
Herfindahl	-0,26526 [0.27]	-0,19630 [0.20]	0,98957 [1.14]		2,38154 [3.59]**		-1,67092 [1.73]	-0,31259 [0.33]	-0,34817 [0.36]	-1,02072 [0.70]
Herfindahl $_{t-1}$				-1,11269 [1.33]						
Number of banks	-0,47064 [3.50]**	-0,51826 [3.81]**		-0,54811 [4.80]**		-0,44901 [5.06]**	-0,44509 [3.41]**	-0,47026 [3.60]**	-0,48595 [3.63]**	-0,46490 [2.27]*
Number of related banks			-0,21147 [1.86]							
Number of banks in locality										0,06086 [1.87]
Collateral									0,01962 [2.36]*	
Loan overdue 90 days or more								1,20173 [1.82]		
Risk rating							0,00369 [0.13]			
Rank RUT - individuals	0,00611 [9.75]**	0,00630 [9.94]**	0,00618 [10.55]**	0,00609 [10.17]**	0,00612 [9.47]**	0,00611 [9.79]**	0,00585 [9.18]**	0,00605 [9.92]**	0,00608 [9.75]**	0,00698 [7.77]**
Rank RUT - limited liability	-0,00111 [7.84]**	-0,00105 [7.30]**	-0,00109 [8.20]**	-0,00107 [7.89]**	-0,00110 [7.57]**	-0,00110 [7.78]**	-0,00110 [7.73]**	-0,00111 [8.04]**	-0,00110 [7.81]**	-0,00099 [4.78]**
Rank RUT - publicly traded	-0,00283 [5.06]**	-0,00300 [5.34]**	-0,00284 [5.44]**	-0,00271 [5.08]**	-0,00288 [5.01]**	-0,00280 [5.02]**	-0,00309 [5.54]**	-0,00282 [5.19]**	-0,00285 [5.12]**	-0,00241 [3.15]**
Ln(sales)	-0,12969 [1.07]	-0,15337 [1.24]	-0,15937 [1.41]	-0,13986 [1.21]	-0,16986 [1.36]	-0,12874 [1.07]	-0,23165 [1.90]	-0,13588 [1.15]	-0,14076 [1.17]	-0,51250 [2.66]**
Employees	-0,00507 [4.79]**	-0,00514 [4.79]**	-0,00607 [6.15]**	-0,00491 [4.89]**	-0,00654 [6.36]**	-0,00508 [4.88]**	-0,00487 [4.75]**	-0,00513 [4.99]**	-0,00509 [4.84]**	-0,00512 [3.13]**
Profits/sales	-0,06993 [3.51]**	-0,06663 [3.23]**	-0,06654 [3.50]**	-0,06865 [3.61]**	-0,06504 [3.10]**	-0,06998 [3.54]**	-0,06557 [3.33]**	-0,07021 [3.63]**	-0,03127 [1.29]	-0,06128 [1.77]
Constant	29,69715 [7.31]**	19,89011 [5.08]**	32,27111 [9.84]**	30,55267 [7.89]**	31,22088 [8.75]**	29,33550 [7.50]**	39,59559 [11.07]**	30,12535 [7.62]**	30,17541 [7.46]**	44,96742 [8.50]**
Number of obs.	21000	21000	21000	21000	21000	21000	19232	21000	20999	13831
Pseudo R^2	0,00000	0,00000	0,00000	0,00000	0,00000	0,00000	0,00000	0,00000	0,00000	0,00000
Effect of one extra relationship										
From 1 to 2 banks	-0,33801	-0,42011	-0,70625	0,00824	-1,19077	-0,44901	0,39036	-0,31396	-0,31186	0,04546
(st. error)	0,39600	0,40109	0,35982	0,35255	0,33205	0,08874	0,39596	0,38520	0,39388	0,58880
From 2 to 3 banks	-0,42643	-0,48554	-0,37630	-0,36266	-0,39692	-0,44901	-0,16610	-0,41816	-0,42792	-0,29478
(st. error)	0,10829	0,10878	0,10084	0,10610	0,11068	0,08874	0,10848	0,10524	0,10773	0,16130

Figure 1. Density of Borrowing Cost

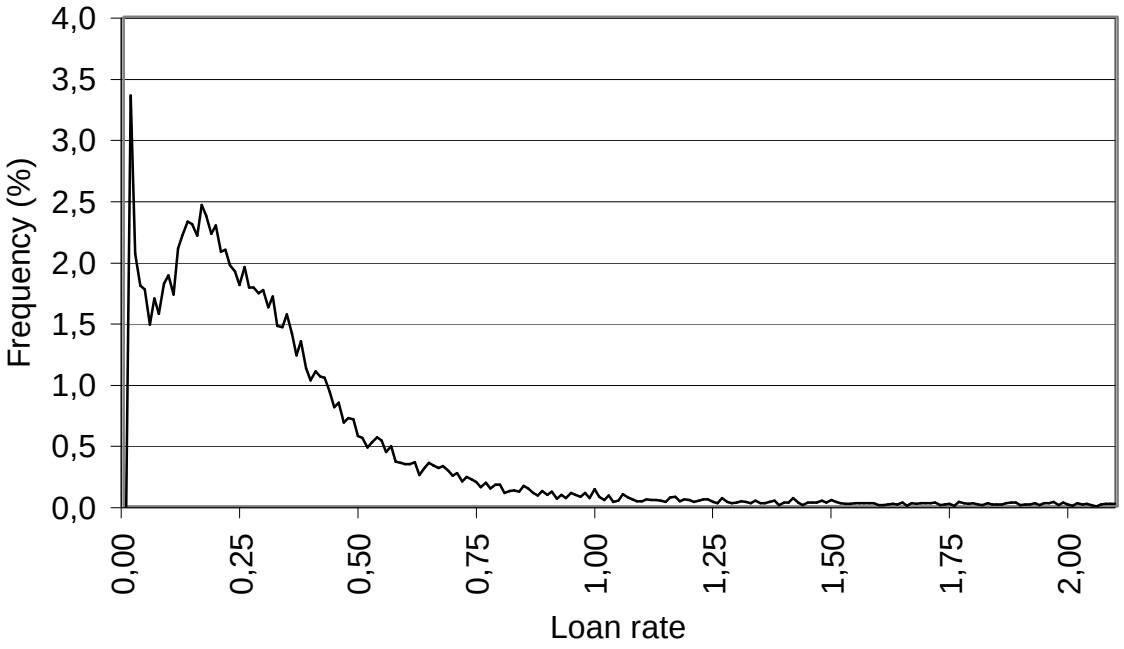

Figure 2. Density of Debt-Capital Ratios

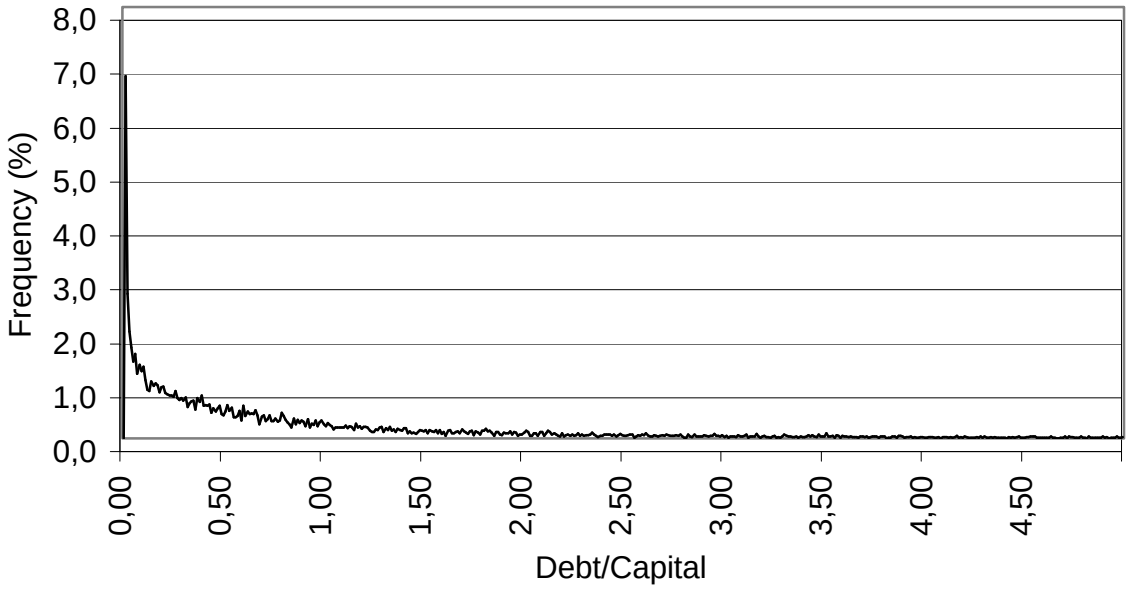

Figure 3. The Effect on Borrowing of Increasing the Number of Relationships

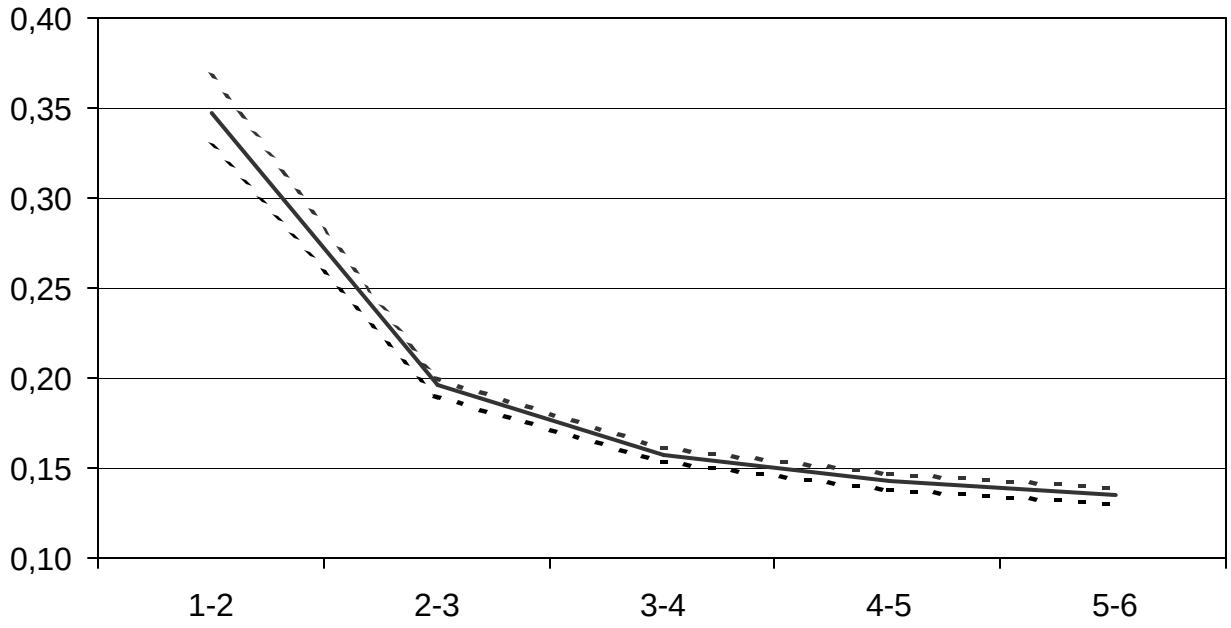

Figure 4. The Effect on Loan Rates of Increasing the Number of Relationships