Competition in the Mexican Banking Industry

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Abstract

We investigate competition in the Mexican banking industry using a novel transaction-level data set which includes all corporate loans of every commercial bank in Mexico from 2002 to 2012. To motivate our empirical strategy, we build a quantitative model where banks compete for customers *a la* Cournot. A novelty of the model is that, as suggested by the data, banks segment their customers by geographic location, by size, and by their current bank affiliation. We find (i) firms pay lower interest rates in municipalities with more bank competition, and that this effect is stronger for smaller firms, (ii) the interest rate of older firms is more sensitive to bank competition than younger firms, and (iii) larger banks actually charge higher interest rates, consistent with our model of matching frictions and imperfect competition.

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1 Introduction

In most municipalities in Mexico, firms have local access to a small number of different banks. In 2012, there were only 36 banks in Mexico, and 90% of municipalities had branches from fewer than 5 of these. We theoretically and empirically analyze the main factors affecting competition in the Mexican banking sector. A 2007 study by the United Nations on banking competition in Mexico concludes that, "In the market of financial products (...) there is no competition". Similarly, the head of the Federal Commission of Competition (FCC) declared in 2009 that, "Mexico needs stronger sanctions against banks engaging in collusive practices. Current ones (monetary and penal) are low compared to international standards." [1]

Firms in Mexico nearly always obtains loans from nearby banks, and this guides our analysis. To be precise, 92% of all loans are between a firm and a bank that has a branch in the same municipality. In addition, competition is limited: 99% of municipalities (representing 75% of loans) have 10 or fewer banks. The number of banks in a municipality – one simple measure of bank competition – is positively correlated with the concentration of loans per bank and the probability of switching banks, and it is negatively correlated with the interest rate firms pay.

To motivate our empirical analysis, we lay out a quantitative model where a finite number of banks compete on quantity, as in **?**, **?**, and **?**. A novel contribution to the existing theoretical literature is the addition of municipality characteristics and firm sizes, motivated by the detail available in our data. Firms face a fixed cost to matching with a new bank, though some firms already have an existing bank relationship. Banks have heterogeneous productivity in their cost of processing loans to firms.

We then use a comprehensive panel containing the universe of corporate loans in Mexico from 2002 to 2012. We observe loan-level information on the interest rate, maturity, loan type, and collateral, as well as a number of characteristics of the borrowing firm such as its location and number of employees. These data are matched with demographic data at the municipality level, allowing us to exploit substantial geographic variation in our empirical analysis. This geographic variation also forms the basis of the calibration of the quantitative model and the motivation for several counterfactual exercises.

We find that firms pay higher interest rates in municipalities with the lowest level of bank competition, and that this effect is weaker for large firms. This is consistent with our model of Cournot

[1] In 2011, a law was passed designed to promote competition by empowering the FCC to penalize collusive practices.

competition in which larger firms can more easily afford to pay the fixed cost to switch banks. Perhaps more surprisingly, we find that banks with a larger market share charge a significantly higher interest rate than banks with little market share. Our model rationalizes this as the result of larger banks being more productive by processing customers more easily.

With a model capable of explaining the salient qualitative comparative statics of competition, we turn to a numerical exercise where the model parameters are calibrated to match several aspects of geographic, bank, and firm heterogeneity. This allows us to pin down the relative contribution of each cost to the variation in lending volumes and interest rates across Mexico. We then conduct a counterfactual in which these costs are reduced to the level of the most efficient municipalities to determine how much this lack of competition drives the low aggregate lending observed in Mexico.

This paper contributes to a large literature, both theoretical and empirical, on the effect of competition in banking.[2] We show substantial evidence of local banking in Mexico, a result consistent with the evidence for Belgium in **?** and the United States in **?**. The general relationship between lower competition and higher interest rates echos that of **?** in the case of Italian bank mergers.

The paper proceeds as follows: In section 2, we describe the data used and present a series of stylized facts on the nature of competition in the Mexican banking sector. In section 3, we lay out a model of bank competition. We test several qualitative predictions of the model in section 4, and we quantitatively analyze the model in section 5. Section 6 concludes.

2 Data

We use a large and novel data set on the characteristics of corporate loans in Mexico obtained from the Mexican Banking and Securities Commission (CNBV).[3] This data comes from regulatory reports (known as R04-C) sent monthly by every commercial bank to the CNBV. Reports contain detailed characteristics of the universe of new and continuing loans made by every regulated bank in Mexico between March 2002 and December 2012. This information was merged with monthly bank balance sheet reports, also from the CNBV, and a set of geographic and economic performance measures from INEGI (Mexican Institute of Statistics and Geography). In Table 1, we present the total number of loans, firms, and banks for each year of our sample.

As mentioned in the introduction, the literature has established that banking tends to be local. We show this to be the case for Mexico, and using this geographic segmentation, we analyze bank com-

[2] Any reasonably comprehensive list would be too numerous. See **?** for an overview.

[3] We use the same dataset in our companion paper (**?**) which analyzes firm default and competition.

petition within each of Mexico's 2,457 municipalities. This assumption seems plausible since these municipalities are relatively large, and 92 percent of bank-borrower relations are within-municipality. Figure 1, shows the geography of municipalities across Mexico. To understand whether the intensity of banking competition is related with the demographic characteristics of a municipality in Table 2 we group them according to the number of banks operating within their borders. We find that there is a positive relation between the economic development and size of a municipality with the number banks it has. For example, in 69% of the municipalities, representing 24 percent of the Mexican population, there is at most one bank operating. These municipalities tend to be economically small and have on average one-third of the per-capita income of municipalities with more than ten banks. Furthermore, there is a positive relation between the banking intensity and the economic development of a municipality. In municipalities with fewer than five banks, there are on average 0.25 branches per 10,000 inhabitants. Conversely, in municipalities with more than ten banks this value is ten times larger (2.47). Finally, and not surprisingly, even though municipalities with fewer than five banks represent half of the Mexican population, they only account for 20 percent of the volume of loans.

In Table 3 we show that borrowers tend to bank locally. In the municipalities with a single bank, 55 percent of the loans are done with that bank, while in municipalities with two to four banks 85 percent of the loans are within municipality. We show that the majority of banks tend to have a single bank relationship. This is true not only of small firms with fewer than 20 employees, but also of large firms with more than 250 employees. As an alternative measure, we calculate the share of borrowing firms that are highly committed to a bank (i.e. have more than 90 percent of their outstanding loans with a single bank). This share is 95 percent, suggesting the existance of small returns and/or large costs in diversifying borrowing sources. Finally, in the last two lines of the table we exhibit the frequency with which firms with a single lending bank tend to change loan provider when obtaining a new credit. To understand how this frequency changes with firm size we split the sample into small and large firms. Firms with fewer than 20 employees switch banks with 17% of new loans, while larger firms switch banks a frequency of 23%[4]. Furthermore, while this rate is not related with the number of banks for large firms, it is positively related for their smaller counterparts. In municipalities with at most one bank, the frequency of bank switching is 14 percent, while in municipalities with more than ten banks it is 19 percent. This suggests that bank competition affects switching frequencies.

In Table 4, we address the relation between the number of banks in a municipality with the cost of

[4]Banking switching is defined as a firm obtaining credit from a bank with which it has not had a relationship in the preceding three years.

credit. The number of banks competing in a market is negatively correlated with both the probability that firms borrow from banks outside the municipality and with the level of lending spreads. This is true for the whole sample and within subsamples of comparable loans. These facts are consistent with the hypothesis of geographical segmention which allows banks to price-discriminate based on the degree of competition they face locally.[5,6]

Finally, in Table 5 we analyze the relation between the market share of a bank and its investment in a municipality. As measures of investment in a municipality we use the number of personnel, the number of branches opened as well as the number of ATMs. To test this relation we run:

$$shr_{j,m,t} = \beta \log(x_{j,m,t}) + muni \times year,$$

where $shr_{j,m,t}$ is bank j market share in municipality m in year t. $log(x_{j,m,t})$ is a measure of the intensity of the investment of a bank in a municipality. $log(x_{j,m,t})$ is one of: the log number of bank employees, the log number of branches or the log number of ATMs. Finally $muni \times year$ are municipality-year fixed effects. We cluster the standard errors at the municipality level. The coefficient β is highly significant and economically relevant for the three measures of banking intensity. This suggests that in order for a bank to grow its market share within a municipality, it must increase its investment.

3 Model

In this section, we present a model of the banking industry with banks and entrepreneurs where banks compete on quantity. The economy is divided into a series of locations (*municipalities*) differing on population b_M and wealth α_M. Entrepreneurs can only access financing from banks in their municipality.[7]

Entrepreneurs - Each entrepreneur runs one firm is exogenously assigned to a municipality. Entrepreneur y lives one period, has access to a riskless project of size λ_y returning $Z\lambda_y$ and an entrepreneur-specific outside option with value $\omega_y \in [0, \overline{\omega}]$ if he decides not to run the project.[8]

[5]The lending spreads are around 15 percent in municipalities with fewer than 2 banks and and around 11 percent in municipalities with more than 10 banks. These relations hold when controlling for a series of relevant variables as will be seen in Table 6.

[6]Another possibility is that this result is driven by higher marginal banking costs in municipalities with less bank competition.

[7]While not all municipalities have banks and some firms obtain credit from banks outside their municipality, this represents a small fraction of both the number and value of loans in Mexico.

[8]As will be seen later, this entrepreneur-specific outside option creates a demand function. The distribution of the

Entrepreneurs are born with no wealth, and to run the project they must receive a loan from a bank. At the beginning of the period, firms are either exogenously assigned to a bank or are unbanked.[9] If they are assigned to a bank, they can either continue with their bank C or switch to a new bank S, while unbanked entrepreneurs U that decide to run a project must choose a bank.

Firms face both fixed and variable costs of obtaining credit. The variable costs are in the form of an interest rate $r_{i,j}^{y}$ that depends both on the project size λ_y, as well as on the bank assigned.[10] The fixed costs m are independent of firm size and depend on whether the firm obtains credit from a bank.[11]

Therefore the profit of a firm with size y that is banking with j and will bank with i is

$$\begin{aligned} \pi_{i,j}^{y,d} &= \lambda_y \left(Z - r_{i,j}^{y} \right) - m_k \\ m_k &= \begin{cases} m_b & if \quad j = j \\ m_s & if \quad j = i \\ m_u & if \quad j = u \end{cases} \end{aligned} \tag{1}$$

From this profit function, we have that in equilibrium $r_{i,i}^{y}$ and $r_{i,j}^{y}$ are such that:

$$r_{i,j}^{y} = r_{i,i}^{y} + \frac{m_s - m_b}{\lambda_y}, \forall i \neq j, \tag{2}$$

Finally, firm y runs the project if the value of running it exceeds their outside option $\pi_{i,j}^{y} \geq \omega_y$.

Banks - Bank i is infinitely lived and has a productivity ψ_i in processing loans. Each period, and given b^M and α^M, as well as other banks productivity, bank i decides whether to pay a fixed cost f to compete in municipality M. The variable costs of a bank include the cost of capital per unit of funds borrowed r_d, as well as a bank-specific variable cost $c_i \equiv \frac{1}{\psi_i}$ to process its *current* customers in municipality M. This variable cost has both a global component applicable to all municipalities c_i as well as local (municipality-specific) component $\varepsilon_{i,M}$ such that $c_i^M = f\left(c_i, \varepsilon_{i,M}\right)$.[12] Additionally, the cost of bank i of processing both *switching* and *unbanked* customers in municipality M is $\theta_s c_i^M$ and $\theta_u c_i^M$ respectively, as there may be different processing costs associated with new customers.

borrower's outside option is an uniform distribution as in **?**.

[9] In an extension (to be completed), we endogenize the the stock of customers banks can accumulate across periods.

[10] $r_{i,j}^{y}$ denotes the interest rate that a firm with a project size y assigned to bank i and switching to bank j must pay. Similarly, $r_{i,i}^{y}$ is the interest rate paid by a firm who remains with bank i.

[11] This cost m can be seen as the matching/switching costs that firms have when establishing a relation with a new bank (m_u for unbanked firms, m_s for switching firms, and m_b for continuing firms).

[12] This municipality-specific component is introduced to replicate the fact that in Mexico there is no clear order of bank entry in the different municipalities.

After paying the fixed cost, bank i is assigned a mass b_i^M of customers. This mass of customers is dependent on the municipality size b^M and wealth α^M, as well as by the productivity of the bank relative to that of other entrants, such that

$$b_i^M = g\left(b, c_i^M, \left\{c_{-i}^M\right\}\right),$$

implying that the mass of unbanked customers is

$$b_u^M = b^M - \sum^{N_M} b_i^M.$$

The profit of bank i depends on the quantity supplied to customers of size y that are either current customers or new customers. So the objective of a bank in each municipality and in each period is

$$\begin{aligned} & \underset{e_i^M}{Max}\ \left\{\pi_i^M - f, 0\right\}, \\ \pi_i^M \quad = \quad & \underset{\left\{l_{.,i}^y\right\}}{Max} \sum^{N_m+1} \sum^{N_\lambda} l_{.,i}^y \left(\lambda_y \left(r_{.,i}^y - r_d\right) - \theta_k c_{i,t}\right). \end{aligned} \tag{3}$$

where e_i^M is an entry indicator and $\left\{l_{.,i}^y\right\}$ the set of contracts offered by bank j to each segment.

Timing - At time $t = 0$ a number N of banks draw a municipality-specific productivity for all municipalities. Thereafter, at the beginning of each period and for each municipality, firms are assigned to entrant banks, and banks decide how many loans to extend to each segment of customers.

3.1 Equilibrium

The setup of the model implies that the problem of banked $\{C, S\}$ and unbanked $\{U\}$ firms can be separated.

Unbanked Firms

Using the fact that the outside option of firms is drawn from an uniform distribution the demand of credit is

$$l_u^{y,d} = b_u^y \frac{\lambda_y \left(R - r_u^y\right) - m_u}{\overline{\omega}}$$

implying that the clearing condition for unbanked customers is

$$\begin{aligned} \sum^{N_M} l_{u,i}^{y,s} &= l_u^{y,d} \\ r_u^y &= Z - \frac{\frac{\overline{\omega}}{b_u}\sum^{N} l_{u,i}^{y,s} + m_u}{\lambda}. \end{aligned} \tag{4}$$

The supply of credit to unbanked customers from bank i is

$$l_{u,i} = \frac{\frac{b_u^y}{\overline{\omega}}\left(\lambda_y\left(Z - r_d\right) - m_u - \theta_u c_{i,t}\right) - \sum^{N-1} l_{u,-i}^{y,s}}{2}, \tag{5}$$

$$\frac{b_u^y}{\overline{\omega}\left(N_u + 1\right)}\left(\lambda_y\left(Z - r_d\right) - m_u + \theta_u\left(\sum_{i\in\Omega_u, i\neq j} c_j - N_u c_i\right)\right), \tag{6}$$

where Ω_u denotes the set of $N_u$banks which positively lend in the unbanked market. whereas the interest rate is

$$r_u^y = \frac{Z + N_u r_d + \frac{\theta_u \sum_{i\in\Omega_u} c_i - m}{\lambda_y}}{N_u + 1}. \tag{7}$$

implying that interest rate for unbanked firms within the same municipality and firm size is equal across banks.

To obtain the number of banks operating we must calculate the number of banks with positive profits. From 3 and 7 we have that bank i operates in the unbanked market in size segment λ if

$$\begin{aligned} c_i &< \frac{\lambda\left(Z - r_d\right) - m_u}{\theta_u N_u} + \widetilde{c}_{-i}, \\ \widetilde{c}_{-i} &\equiv \frac{\sum_{j\in\Omega_u, j\neq i} c_{-j}}{N_u}. \end{aligned} \tag{8}$$

From this expression we have that if bank i is participating, then a bank j such that $c_j < c_i$ is also operating. Furthermore, we find that bank participation is negatively related with the screening cost θ_u with the matching cost m_u and positively related with the average cost of its competition $\widetilde{c}_{-i}$.

Banked Firms

From 1 we have that the clearing condition for customers of bank i is:

$$\begin{aligned} l_{i,i}^{y,s} + \sum^{N-1} l_{-i,i}^{y,s} &= l_i^{y,d} \\ r_{i,i}^y &= Z - \frac{\overline{\omega}}{b_i^y \lambda_y}\sum^{N} l_{i,\cdot}^y - \frac{m_b}{\lambda_y} \end{aligned} \tag{9}$$

therefore, and using 3, the optimal supply of credit by bank i to its current customers is:

$$l_{i,i} = \frac{\frac{b_i^y}{\overline{\omega}}\left(\lambda_y\left(Z-r_d\right)-m_b-c_i\right)-\sum^{N-1} l_{i,j}^{y,s}}{2} \tag{10}$$

$$= \frac{b_j^y}{\overline{\omega}\left(N_j+1\right)}\left(\lambda_y\left(Z-r_d\right)-N_j\left(m_b+c_j\right)+\left(N_i-1\right)m_s+\theta_s\sum_{j\in\Omega_i, j\neq i} c_j\right) \tag{11}$$

where Ω_i represents the set of banks with positive lending to bank i's customers and N_i is the number of banks.

For current customers of bank i the amount supplied by bank j is:

$$l_{i,j} = \frac{\frac{b_i^y}{\overline{\omega}}\left(\lambda_y\left(Z-r_d\right)-m_s-\theta_s c_j\right)-\sum^{N-2} l_{i,-j}^{y,s}-l_{i,i}}{2}, \tag{12}$$

$$= \frac{b_i^y}{\overline{\omega}\left(N_i+1\right)}\left(\lambda_y\left(Z-r_d\right)-2m_s-N_i\theta_s c_j+\theta_s\sum_{k\in\Omega_j, k\neq i, k\neq j} c_k+\left(m_b+c_i\right)\right) \tag{13}$$

Finally the interest rate is:

$$r_{i,i}^y = Z-\frac{\overline{\omega}}{b_j^y\lambda_y}\sum^{N} l_{i,\cdot}^y-\frac{m_b}{\lambda_y}$$

$$= \frac{Z+N_i r_d+\frac{\left(N_i-1\right)m_s+c_i+\theta_s\sum_{i\in\Omega_j, i\neq j} c_j-N_i m_b}{\lambda_y}}{N_i+1} \tag{14}$$

Bank Participation - From 3, we know that bank j only operates in a given segment if

$$r_{\cdot,j}^y > \frac{\theta_k c_{j,t}}{\lambda_y}+r_d$$

4 Empirical results

In this section, we test the predictions of our model using our comprehensive data on Mexican corporate loans. While the model allows for substantial heterogeneity in both firms and banks, we include a series of additional controls to control for heterogeneity not directly addressed by the model. This includes, for example, systematic differences in risk across sectors in which firms operate.

4.1 Interest Rates, Bank Competition and Firm Size

Proposition **??** suggests that bank competition should reduce interest rates, with a greater effect on the interest rate of small firms. To test this with our data, we estimate:

$$r_l = \alpha_0 + \beta' comp + \gamma' X_l + lt + se + bk \times yr + mn \times yr, \tag{15}$$

where $comp$ is a collection of bins splitting municipalities into four groups of bank competition, defined in one of three ways. The first is a standard Herfindahl index of market shares by banks[13], the second is the number of banks operating in the municipality, and the third is the number of banks firms in that municipality access.[14] As additional controls we include a series of firm- and loan-specific characteristics X_l: whether the firm has an existing loan from any bank, the length of the longest bank relationship, the type of firm,[15] the collateral the firm put down (as a percentage of the loan amount), the number of bank relationships the firm has, and the maturity of the loan. Finally, all regressions have clustered standard errors at the municipality level.

Table 6 reports the results across all firms. Firms generally pay lower interest rates in municipalities with greater bank competition. This effect ranges from about negative 17 basis points to negative 48 basis points depending on the measure of bank competition. Firms with a previous bank relationship pay about 17 basis points less than unbanked firms, and firms with longer bank relationships (not necessarily with the bank providing the loan for each observation) pay up to about 0.5 percentage point less. For every 10 percent of collateral firms put down, they pay about 10 basis points less for the loan, and for each bank the firm has a relationship, their interest rate is reduced by about 24 basis points. For each year of the loan the interest rate rises roughly one percentage point, and large firms pay more than 2 percentage points less than small firms.

Table 7 reports the results split by small and large firms. For most measures of bank competition, firms pay lower interest rates in municipalities with greater competition, consistent with the model. In addition, this effect appears to be stronger and more robust for small firms: they pay on average 24-48 basis points lower in municipalities with the greatest competition relative to those with the least. The result is less monotonic for large firms.

? provide a related prediction: reduced bank competition allows banks to offer low interest rates

[13]Market share is defined here as the fraction of firms a bank serves relative to all firms served by all banks.

[14]Municipality access is the observed number of banks, regardless of location, from which firms in a municipality obtain credit.

[15]This is an indicator that equals zero if the business is "persona fisica", essentially a self-employed person like a doctor or lawyer.

for young, risky firms with the anticipation of being able to make greater returns as the firms become established. Splitting the sample by young and old firms and banked and unbanked firms, Table 8 provides modest support for this hypothesis. The interest rate that old firms pay is more sensitive to bank competition than young firms. One might also consider unbanked firms to be a better measure of the riskiness modeled by **?**, so the last two columns in the table split the sample by banked and unbanked. Here, there is no clear difference in the sensitivity of the interest rate firms pay to the level of bank competition in the municipality.

4.2 Interest Rates and Bank Market Share

Next, we test Proposition **??** which posits that larger and more productive banks should charge higher interest rates. We estimate the following:

$$r_l = \alpha_0 + \beta^{'} shr + \gamma^{'} X_l + lt + se + bk \times yr + mn \times yr, \tag{16}$$

where shr is an indicator variable of the market share of a bank in a municipality. The additional controls X_l are: collateral, the length of the bank-firm relationship, maturity, and number of banks with which the firm has a loan. lt, bk, se and $mn \times yr$ are loan type,[16] lending bank, sector, and municipality-year fixed effects, respectively.

Table 9 reports the results. The average firm pays a higher interest rate to banks with greater market share, shown in column (1). Banks with a market share above 50 percent charge an interest rate 45 basis points above banks below 10 percent market share. This effect is stronger for small firms (column 2) than large firms (column 3). In our baseline model, this effect should hold for firms which have an existing relationship with any bank, shown in column (5). Column (6), however, shows that the effect remains for unbanked firms.[17] While not directly modeled, collateral and maturity have the expected signs and strong significance: For each 10 percent of the loan value put down as collateral, the interest rate decreases by 9 basis points, and for each year of maturity, the interest rate is 1.1 percent higher.

[16] The two major loan types are revolving and non-revolving. Other types of loans include syndicated loans and loans to a group of firms.

[17] One simple extension (in progress) is consistent with this: if matching costs m are bank-specific and increase with bank costs c_i, larger more productive banks can charge higher interest rates to the unbanked.

4.3 Bank Switching and Bank Competition

In this section we test Proposition **??** that posits that in municipalities with more bank competition firms tend to have more bank switching. Furthermore, we check whether the impact of bank competition on the switching frequency is more important for smaller firms. We estimate the following regression

$$swt_{i,t} = \alpha_0 + \beta^{'} comp + \gamma' X_m + se + bk \times yr$$

where $swt_{i,t}$ is an indicator variable of whether firm i in period t obtained a loan from a new bank given that it was requesting a new loan. As before $comp$ is a collection of bins splitting municipalities into four groups of bank competition measured by the Herfindahl index. The controls X_m are municipality specific (municipality income, population and area). Finally, se and $bk \times yr$ are sector, and bank-year fixed effects, respectively. We cluster standard errors at the municipality level. The coefficients are reported in Table 10.

5 Quantitative Exercise

5.1 Calibration

We calibrate the model parameters to match key statistics of municipalities and of the Mexican banking industry. To mimic the different localities in Mexico, we create four groups of municipalities that vary in population and per-capita income. From the census data, we find a monotonic relation between the income per capita and the average population in a municipality. The municipalities in the first, second and third quartiles have on average 1.9, 8.7 and 32.2 percent, respectively, of the population in the richest quartile of municipalities, which implies calibrating the population b_i in the four representative municipalities such that $\left(\frac{b_1}{b_4} = 0.019, \frac{b_2}{b_4} = 0.087, \frac{b_3}{b_4} = 0.322\right)$.

To understand how the financial frictions affect firms with different sizes, we create two groups of firms differing by the number of employees. Using the 2008 census, we consider firms to be small if they have fewer than 15 employees and large firms are those with between 15 and 250 employees.[18] Large firms in the census data are on average 13.5 times larger than small firms $\left(\frac{\overline{\lambda}}{\underline{\lambda}} = 13.5\right)$.

To capture the fact that the more populated municipalities tend to be richer, we allow for the share of large firms to vary across municipalities. From the census data we know that the relative per-capita income of the average municipality in the first, second and third quartiles relative to the

[18] We do not consider the firms with more than 250 employees as these firms tend to rely on other types of financing.

fourth quartile are 42, 55 and 80 percent respectively. Taking into account that 2.7 percent of firms in total are large, we have that the share of large firms α_i in the first through the fourth quartile is $\{0.016, 0.021, 0.031, 0.039\}$. The upper value of the outside option, $\bar{\omega}$ is a normalization which we set to 1.[19]

We calibrate the other model parameters to match key statistics of the Mexican banking industry. The deposit rate r_d is set to the average interbank rate from 2002 to 2012, 0.06. The entry cost f is set such that the average number of banks which choose to operate in the richest quartile is 10.9. For each simulation we draw 30 productivities corresponding to the number of total banks in Mexico. These productivities are drawn from a lognormal distribution with mean μ and standard deviation σ.

To be completed.

5.2 Simulation Results

To be added.

5.3 Counterfactuals

To be added.

6 Conclusion

This paper uses a novel and comprehensive dataset on corporate loans in Mexico to examine the causes and consequences of limited competition in the banking system. We observe substantial detail at the loan level, including the interest rate, collateral, maturity, loan type, and information about the firm including its exact location and the number of employees. We demonstrate that banking is local, with few firms going outside of their municipality for a loan, and that relatively few banks operate in any given municipality.

To discipline our estimation strategy and conduct quantitative counterfactual exercises, we develop a Cournot model of bank competition capable of addressing several frictions to bank lending. These include matching costs for the bank as well as monitoring costs for both existing and new customers. The model's main predictions include (i) the interest rate of firms which stay with their bank

[19]Changing this value affects the total quantity of lending, but it does not affect any of the targets we use to pin down other parameters.

is higher than the interest rate of switchers, (ii) firms pay lower interest rates in firms with greater competition, and this effect is stronger for smaller firms, (iii) firms switch banks more frequently in municipalities with greater competition, and (iv) more productive (larger) banks charge higher interest rates than less productive banks.

We confirm these predictions hold in our data. More specifically, we find (i) firms pay as much as 0.5 percentage point more in municipalities with the lowest level of bank competition relative to the highest level, with a weaker effect for large firms, (ii) the interest rate old firms pay is more sensitive to the degree of bank competition, a finding broadly consistent with **?**, (iii) banks with a market share above 50 percent charge an interest rate nearly 0.5 percentage point more than banks with a market share below 10 percent.

Finally, we calibrate our model to match the broad distribution of municipality size and income. The model has endogenous bank entry into each municipality, allowing us to quantify the importance of each type of friction in reducing competition. We conduct a series of counterfactuals where we reduce the level of frictions to bring all municipalities up to the competition level of the most competitive.

These exercises are one step towards a larger agenda of understanding why lending ratios are so low in Mexico. This has been a longstanding concern of Mexican policymakers, who as recently as May 2013 instituted significant reforms geared towards improving financial access. As data including this time period becomes available, we hope to understand the efficacy of these and other reforms and assess where obstacles remain in Mexican banking.

7 Appendix

7.1 Proofs

Proposition **??**. From (9) we have $r^y_{j,j} = Z - \frac{\overline{\omega}}{b^y_j \lambda_y} \sum^N l^y_{j,\cdot}$. Therefore, to prove that interest rate decreases with N we must show that $\frac{\Delta \sum^N l^y_{j,\cdot}}{\Delta N} > 0$. Assume there are $N > 0$ banks in a municipality offering $\sum^N l^y_{j,\cdot} = L^{old}$. Assume that a new bank i enters the municipality offering l given by (13). Using (10) and (12) we have $L^{new} = L^{old} + \frac{l}{N+1}$ implying $\frac{\Delta \sum^N l^y_{j,\cdot}}{\Delta N} > 0$.

To show that the interest rate is decreasing in firm size, assume two segments $\lambda_1 < \lambda_2$. From (8) and (**??**) we have $N_1 \leq N_2$. If $N_1 = N_2$ then the result is immediate and $r^{\lambda=1}_{j,j} < r^{\lambda=2}_{j,j}$. If $N_1 < N_2$ then given above, we know that $r^{\lambda=2,N_1}_{j,j} > r^{\lambda=2,N_2}_{j,j}$ and since $r^{\lambda=1,N}_{j,j} > r^{\lambda=2,N}_{j,j}$ we have $r^{\lambda=1,N_1}_{j,j} > r^{\lambda=2,N_2}_{j,j}$.

8 Figures and Tables

Figure 1: Municipalities in Mexico

Source: www.mapasparacolorear.com

Table 1: Summary Statistics

Year	#Credits	#Firms	#Banks	Interbank rate
2002	119,769	53,358	29	8.1
2003	141,666	54,662	26	6.8
2004	154,180	64,292	26	7.2
2005	182,834	77,538	24	9.6
2006	293,047	97,559	24	7.5
2007	446,410	136,709	28	7.7
2008	447,504	147,995	30	8.3
2009	573,005	255,916	32	5.9
2010	612,715	269,901	33	4.9
2011	674,250	297,624	35	4.8
2012	674,328	293,238	36	4.8

Note: #C*redits* indicates the number of loans per period. #*Banks* indicates the number of commercial banks operating, while the *interbank rate* is the average during the year of the 28 day interbank rate.

Table 2: Banking and Municipality Characteristics

	#Banks per municipality				
	0	1	2-4	5-10	>10
Share of municipalities	0.48	0.21	0.20	0.10	0.01
Share of total population	0.13	0.11	0.23	0.44	0.10
Average population	24,527	45,157	100,572	385,941	849,948
Percapita income (US$)	3,063	3,533	4,347	6,139	9,687
Area (km^2)	909	1,437	1,445	2,304	195
#branches/10,000 inhabitants	0	0.23	0.34	0.52	2.47
Share of loans	0.05	0.03	0.12	0.55	0.25

Note: This table shows a series of statistics on the characteristics of a municipality with a given number of banks in 2010. *#branches/10,000 inhabitants* is a per capita measure of bank intensity number of bank branches in a municipality.

Table 3: Bank Statistics and Number of Banks in a Municipality

	#Banks per municipality				
	0	1	2-4	5-10	>10
Share of loans from bank outside municipality	1	0.48	0.14	0.02	0
Share of firms borrowing outside municipality	1	0.45	0.15	0.03	0
Market share of largest bank	-	0.72	0.42	0.32	0.24
# of banks per firm *<20 employees*	1.07	1.08	1.08	1.10	1.10
# of banks per firm *>20 employees*	1.35	1.34	1.43	1.40	1.37
Share of banks with high commitment	0.95	0.95	0.94	0.93	0.92
Pr(New bank|New credit & one bank) *<20 employees*	0.13	0.14	0.15	0.17	0.19
Pr(New bank|New credit & one bank) *>20 employees*	0.23	0.24	0.23	0.23	0.22

Note: This table shows a series of statistics of loan contracts split by the number of banks in a municipality. *# of banks per firm* indicates the average number of banks from which a firm has outstanding loans. We calculate these statistics for small (<20 employees) and large (>250 employees) firms. *% loans from bank outside municipality* indicates the share of credits that are offered by banks without a branch in the municipality. *% loans from bank outside municipality* indicates the share of firms whose main lending bank has no branches within their municipality. *Pr(New bank |New credit and one bank)* is the probability of a borrower asks a credit from a different bank given that it is already banked with one institution, conditional on obtaining a new loan. *Share of banks with high commitment* is the fraction of banks that have more than 90 percent of their bank loans with one bank.

Table 4: Lending Spreads and Number of Banks per Municipality

	#Banks per municipality				
Interest Rate	0	1	2-4	5-10	>10
Total Loans	0.147	0.158	0.146	0.122	0.109
<20 employees	0.167	0.179	0.165	0.146	0.125
>250 employees	0.053	0.050	0.051	0.045	0.045
No Recent Credit History	0.149	0.182	0.136	0.116	0.104
Switching Banks	0.122	0.115	0.113	0.102	0.098
<20 employees	0.140	0.126	0.125	0.118	0.112

Note: This table shows statistics on loan contracts split by the number of banks in a municipality. The spreads are the difference between the interest rate and the interbank loan rate. *No Recent Credit History* are those firms who have not had a outstanding credit in the past two years. *Switching Banks* are the credits of a firm with recent credit history that are obtained with a bank with which a firm did not have a credit relation in the past three years. Finally, *Pr(New Bank|New Credit)* is the probability that a firm obtains a new credit from a new bank, conditional on obtaining a new loan.

Table 5: Bank Presence in a Municipality and Market Share

Personnel	#Branches	#ATMs
0.106***	0.025***	0.026***
[0.009]	[0.003]	[0.004]

Note: Dependent variable is the market share of a bank in a municipality. The dependent variable is one of three measures of the intensity of the bank investment in the municipality (personnel employed, number of branches opened, or number of ATMs). The benchmark regression is $shr_{j,m,t} = log(x_{j,m,t}) + muni \times year$, where $shr_{j,m,t}$ is bank j market share in municipality m in year t. $log(x_{j,m,t})$ is a measure of the intensity of the investment of a bank in a municipality. $log(x_{j,m,t})$ is either the log number of bank employees, the log number of branches or the log number of ATMs. Finally $muni \times year$ municipality-year fixed effects. We cluster the standard errors at the municipality level.

Table 6: Interest Rates and Competition, Average

	Herf	#Bks Muni	#Bks Firms Acc
Sml-Med - Bk. Comp.	-0.063***	0.124**	-0.155***
	[0.000]	[0.056]	[0.043]
Med - Bk. Comp.	-0.184***	-0.045	-0.336***
	[0.000]	[0.063]	[0.058]
Large - Bk. Comp.	-0.257***	-0.172*	-0.482***
	[0.000]	[0.091]	[0.083]
Banked	-0.184	-0.173***	-0.173***
	[0.000]	[0.035]	[0.035]
Lngt Bk. Relation 1-3	-0.208	-0.197***	-0.195***
	[0.000]	[0.025]	[0.025]
Lngt Bk. Relation >3	-0.607	-0.572***	-0.570***
	[0.000]	[0.054]	[0.054]
Firm	-2.200	-2.242***	-2.230***
	[0.000]	[0.062]	[0.060]
Collateral	-0.868	-0.973***	-0.973***
	[0.000]	[0.095]	[0.096]
# Bank Relations	-0.239	-0.243***	-0.237***
	[0.000]	[0.032]	[0.031]
Maturity	0.933	1.145***	1.146***
	[0.000]	[0.098]	[0.098]
Med-Sml	0.200	0.178***	0.176***
	[0.000]	[0.043]	[0.042]
Medium	-1.429	-1.399***	-1.396***
	[0.000]	[0.087]	[0.088]
Large	-2.219	-2.189***	-2.182***
	[0.000]	[0.118]	[0.119]
Observations	1,277,951	1,370,242	1,370,242
Adj. R-squared	0.834	0.831	0.832

Note: Dependent variable is the loan interest rate. Each column presents the coefficients of different measures of bank competition. The first column measures bank competition using the Herfindahl index in a municipality using the bank market share in terms of number of customers. The second column, measures bank competition according to the number of banks with branches in the municipality, while the third and final column measures bank competition according to the number of banks firms in a municipality access. We split the municipalities into four groups with increasing measure of bank competition *Small, Small-Medium, Medium*, and *Large*. The remaining controls are: *Banked*, which is an indicator of whether the borrower has previous credit history. *Lngt Bk. Relation*, is an indicator of whether the banking relation is under one year, between one and three years or over three years. *Firm*, is an indicator of whether the firm is incorporated. *Collateral*, measures the share of the loan that is collateralized. *#Bank Relations* measures the number of banks from which the firm has outstanding loans. *Maturity* is the length, in years, of the loan. *Small, Medium-Small, Medium* and *Large* are indicators of the size of the borrowers. All regressions include sector, type of loan (e.g. revolving), and bank-year fixed effects, as well as municipality characteristics such as area, income per capita and population. Standard errors are clustered by municipality. *** indicates significant at 1 percent.

Table 7: Interest Rates and Competition Split by Firm Size

	Small firms			Large firms		
	Herf	#Bks Muni	#Bks Firm Ac	Herf	#Bks Muni	#Bks Firm Ac
	(i)	(ii)	(iii)	(i)	(ii)	(iii)
Sml-Med - Bk. Comp.	-0.084	0.107**	-0.123***	-0.293**	-0.198**	-0.661***
	[0.057]	[0.051]	[0.046]	[0.133]	[0.097]	[0.076]
Med - Bk. Comp.	-0.173***	-0.076	-0.303***	-0.260**	0.310***	-0.194**
	[0.060]	[0.061]	[0.068]	[0.119]	[0.080]	[0.075]
Large - Bk. Comp.	-0.306***	-0.237**	-0.475***	-0.053	0.148	-0.566***
	[0.097]	[0.104]	[0.109]	[0.123]	[0.098]	[0.083]
Banked	-0.207***	-0.200***	-0.202***	-0.048	0.004	-0.006
	[0.044]	[0.046]	[0.046]	[0.048]	[0.048]	[0.048]
Lngt Bk. Relation 1-3	-0.081*	-0.072*	-0.071*	0.081**	0.095**	0.090**
	[0.045]	[0.042]	[0.042]	[0.038]	[0.038]	[0.038]
Lngt Bk. Relation >3	-0.426***	-0.381***	-0.380***	-0.217***	-0.213***	-0.205***
	[0.090]	[0.083]	[0.083]	[0.051]	[0.050]	[0.050]
Firm	-2.254***	-2.285***	-2.273***	-2.753***	-3.000***	-2.999***
	[0.052]	[0.057]	[0.055]	[0.065]	[0.063]	[0.063]
Collateral	-1.212***	-1.330***	-1.327***	-0.240***	-0.358***	-0.356***
	[0.131]	[0.144]	[0.144]	[0.039]	[0.038]	[0.038]
# Bank Relations	-0.254***	-0.245***	-0.240***	0.050*	-0.026	0.002
	[0.028]	[0.033]	[0.032]	[0.026]	[0.025]	[0.025]
Maturity	0.812***	1.005***	1.007***	0.891***	1.218***	1.200***
	[0.127]	[0.141]	[0.140]	[0.037]	[0.036]	[0.036]
Observations	776,608	829,666	829,666	39,630	42,251	42,251
Adj. R-squared	0.839	0.838	0.838	0.683	0.679	0.679

Note: Dependent variable is the loan interest rate. We split the regressions into two groups: Small firms (<50 employees) and large firms (>100 employees). Within each size category we regress interest rates on three different types of bank competition. Column (i) measures bank competition using the Herfindahl index in a municipality using the bank market share in terms of number of customers. Column (ii) measures bank competition according to the number of banks with branches in the municipality, whereas column (iii) measures bank competition according to the number of banks firms in a municipality access. We split the municipalities into four groups with increasing measure of bank competition *Small*, *Small-Medium*, *Medium*, and *Large*. The remaining controls are: *Banked*, which is an indicator of whether the borrower has previous credit history. *Lngt Bk. Relation* is an indicator of whether the banking relation is under one year, between one and three years or over three years. *Firm* is an indicator of whether the firm is incorporated. *Collateral* measures the share of the loan that is collateralized. *#Bank Relations* measures the number of banks from which the firm has outstanding loans. *Maturity* is the length, in years, of the loan. All regressions include sector, type of loan (e.g. revolving), and bank-year fixed effects, as well as municipality characteristics such as area, income per capita and population. Standard errors are clustered by Municipality. *** indicates significant at 1 percent.

Table 8: Interest Rates and Competition Split by Firm Age, Banked Status

	Small	Large	Banked	Unbanked
	(i)	(ii)	(iii)	(iv)
Sml-Med - Bk. Comp.	-0.002	-0.107***	-0.106***	-0.095***
	[0.047]	[0.018]	[0.020]	[0.031]
Med - Bk. Comp.	-0.105***	-0.293***	-0.320***	-0.211***
	[0.040]	[0.016]	[0.018]	[0.027]
Large - Bk. Comp.	-0.222***	-0.420***	-0.452***	-0.372***
	[0.042]	[0.017]	[0.019]	[0.030]
Banked	-0.122***	-0.640***		
	[0.023]	[0.011]		
Lngt Bk. Relation 1-3	-0.153***	-0.018*	-0.129***	
	[0.022]	[0.010]	[0.009]	
Lngt Bk. Relation >3	-1.351***	-0.512***	-0.604***	
	[0.041]	[0.011]	[0.011]	
Collateral	-0.595***	-0.804***	-0.797***	-0.421***
	[0.017]	[0.009]	[0.009]	[0.018]
Med-Sml	0.162***	-0.315***	-0.351***	0.140***
	[0.016]	[0.007]	[0.007]	[0.017]
Medium	-1.560***	-2.129***	-1.952***	-2.954***
	[0.023]	[0.010]	[0.010]	[0.024]
Large	-2.714***	-2.823***	-2.717***	-3.908***
	[0.040]	[0.017]	[0.017]	[0.046]
#Bank Relations	-0.169***	-0.466***	-0.440***	-0.426***
	[0.014]	[0.006]	[0.005]	[0.020]
Maturity	0.057***	0.828***	0.679***	0.218***
	[0.015]	[0.008]	[0.008]	[0.016]
Observations	271,532	1,324,161	1,256,990	338,703
Adjusted R-squared	0.718	0.812	0.815	0.746

Note: Dependent variable is the loan interest rate. Each column presents the coefficients of different samples of firms. Column (i) includes small firms with fewer than 50 employees. Column (ii) includes firms with more than 150 employees. Finally columns (iii) and (iv) include firms with and without credit history. For each regression we split the municipalities into four groups with increasing measure of bank competition *Small, Small-Medium, Medium*, and *Large* according to the Herfindahl competition measure. The remaining controls are: *Banked*, which is an indicator of whether the borrower has previous credit history. *Lngt Bk. Relation* is an indicator of whether the banking relationship is under one year, between one and three years or over three years. *Firm* is an indicator of whether the firm is incorporated. *Collateral* measures the share of the loan that is collateralized. *#Bank Relations* measures the number of banks from which the firm has outstanding loans. *Maturity* is the length, in years, of the loan. *Small, Medium-Small, Medium* and *Large* are indicators of the size of the borrowers. All regressions include sector, type of loan (e.g. revolving), and bank-year fixed effects, as well as municipality characteristics such as area, income per capita and population. Standard errors are clustered by municipality. *** indicates significant at 1 percent.

Table 9: Interest Rate per Bank Market Share

	All	Sml	Lrg	Bkd	Unbkd
	(i)	(ii)	(iii)	(iv)	(v)
Mkt Shr 0.1-0.2	-0.092***	-0.188***	0.029**	-0.084***	-0.114***
	[0.008]	[0.011]	[0.013]	[0.009]	[0.018]
Mkt Shr 0.2-0.3	0.074***	0.032*	0.177***	0.107***	-0.019
	[0.011]	[0.016]	[0.018]	[0.013]	[0.022]
Mkt Shr 0.3-0.5	0.233***	0.122***	0.176***	0.229***	0.230***
	[0.013]	[0.018]	[0.021]	[0.015]	[0.024]
Mkt Shr 0.5-1.0	0.449***	0.501***	0.355***	0.522***	0.251***
	[0.016]	[0.022]	[0.028]	[0.019]	[0.033]
Banked	-0.159***	-0.177***	-0.193***		
	[0.010]	[0.013]	[0.014]		
Collateral	-0.947***	-1.302***	-0.543***	-0.960***	-0.581***
	[0.009]	[0.013]	[0.012]	[0.010]	[0.018]
Maturity	1.131***	1.000***	1.217***	1.321***	0.382***
	[0.007]	[0.010]	[0.011]	[0.008]	[0.016]
#Bank Relations	-0.221***	-0.225***	-0.094***	-0.192***	-0.100***
	[0.006]	[0.008]	[0.008]	[0.006]	[0.020]
Observations	1,370,422	829,772	540,650	1,019,904	350,518
Adjusted R-squared	0.837	0.845	0.777	0.858	0.773

Note: Dependent variable is the loan interest rate. Each column presents the coefficients of different samples of firms. Column (i) includes all firms. Column (ii) small firms with fewer than 50 employees. Column (iii) includes firms with more than 150 employees. Finally columns (iv) and (v) include firms with and without credit history. The coefficients of interest are the indicators *Mkt Sht* which indicate whether the market share of a bank is a determined interval. The remaining controls are: *Banked*, which is an indicator of whether the borrower has previous credit history. *Lngt Bk. Relation* is an indicator of whether the banking relation is under one year, between one and three years or over three years. *Firm* is an indicator of whether the firm is incorporated. *Collateral* measures the share of the loan that is collateralized. *#Bank Relations* measures the number of banks from which the firm has outstanding loans. *Maturity* is the length, in years, of the loan.*Small, Medium-Small, Medium* and *Large* are indicators of the size of the borrowers. All regressions include sector, type of loan (e.g. revolving), bank-year and municipality-year fixed effects, as well as municipality characteristics such as area, income per capita and population. Standard errors are clustered by municipality. *** indicates significant at 1 percent.

Table 10: Bank Competition and Switching of Lenders

	Small	Large
Sml-Med - Bk. Comp.	0.026**	-0.001
	[0.010]	[0.009]
Med - Bk. Comp.	0.033***	0.007
	[0.010]	[0.008]
Large - Bk. Comp.	0.032***	0.007
	[0.012]	[0.009]
Observations	114,648	172,198
Adjusted R-squared	0.180	0.149

Note: Dependent variable $swt_{i,t}$ is an indicator of whether firm i switched banks in period t given that obtained a new loan. Each column presents the coefficients of different samples of firms. Column *Small* includes firms with fewer than 50 employees. Column *Large* includes firms with more than 50 employees. For each regression we split the municipalities into four groups with increasing measure of bank competition *Small, Small-Medium, Medium*, and *Large* according to the Herfindahl competition measure. All regressions include sector, and bank-year fixed effects, as well as municipality characteristics such as area, income per capita and population. Standard errors are clustered by municipality. *** indicates significant at 1 percent.

Table 11: Interest Rate - Banked Premium

	Small Firms		Large Firms	
	(1)	(2)	(3)	(4)
	Few Banks	Many Banks	Few Banks	Many Banks
Banked	0.125***	0.181***	-0.399***	-0.294***
	[0.031]	[0.021]	[0.128]	[0.072]
Observations	171,592	353,839	14,567	41,441
Adjusted R-squared	0.891	0.861	0.876	0.814

Note:

Table 12: Model - Calibrated Parameters

Description	**Parameter**	**Value**	**Target**
Cost of funds	r_d	0.06	Interbank rate
Size of large firm	$\overline{\lambda}$	1	Normalization
Relative size of large firms	$\overline{\lambda}/\underline{\lambda}$	13.5	Census
Pop. size relative to large muni (%)	b_1	1.9	Census
	b_2	8.7	
	b_3	32.2	
Relative number of large firms (%)	α_1	1.6	Census
	α_2	2.1	
	α_3	3.1	
	α_4	3.9	
Outside option	$\bar{\omega}$	1	

Note: For the relative firm size we did not take into account firms with more than 250 employees.

Table 13: Model - Estimated Parameters

Description	**Parameter**	**Value**	**Target**
Entry cost	f		Number of banks
Matching cost, banked	m_b		
Matching cost, unbanked	m_u		Market share of largest bank, unbanked firms
Matching cost, switchers	m_s		Probability of switching banks
Lognormal distribution mean	μ		Average interest rate, large firms
Lognormal distribution std. dev.	σ		Market share of largest bank
Relative oper. cost switcher	θ_s		Bkd premium of largest bank, large firms
Relative oper. cost unbanked	θ_u		Average interest rate, small unbanked firms
Project return	Z		Average interest rate, small firms

Table 14: Model Parameters

Moment	*Small Municipalities*		*Large Municipalities*	
	Model	**Data**	**Model**	**Data**
Pop. relative to large municipalities (%)		1.9		100
Number of banks		1.7		10.9
Share of large firms in municipality (%)		1.6		3.9
Share of borrowers switching banks (%)		22.1		29.8
Share of entrant borrowers (%)		12.2		13.7
Share of unbanked firms (%)		91.1		78.1
Mkt shr of largest bank (%):				
- Small firms		74.8		55.5
- Large firms		73.1		41.6
- Unbanked		77.0		49.7
Average interest rate (%):				
- Small firms		19.1		16.0
- Small-unbanked firms		20.2		18.4
- Large firms		9.5		10.4
Bkd premium of largest bank (%):20.2				
- Small firms		1.6		0.7
- Large firms		1.1		0.5

Note: *Large(Small) municipalities*, are municipalities in the top (bottom) quartile regarding population in 2010. *Population relative to large municipality* is the average population in the municipalities in a given population quartile relative to the population in municipalities in the top quartile. *Number of banks* is the average number of banks with active branches within the municipality. *Shr of large firms in a municipality* is the fraction of firms with more than 250 employees.*Shr of borrowers switching banks* is the fraction of incumbent borrowers who switch banks given that they apply for a new credit. The *Share of entrant borrowers* is the fraction of borrowing firms that enter the credit market for the first time. The *Share of unbanked firms* is the fraction of firms without bank loans. The *market share of the largest bank* is measured in terms of the number of loans. The *banked premium of the largest bank* is the differential, in percentage points, of the interest rate charged by the largest bank in a municipality.

Additional Tables

Table 15: Facts on Collateral and Maturity of Loans

Collateral (Share of loan)	
All firms	0.28
Small firms	0.23
Medium-small firms	0.31
Medium firms	0.37
Large firms	0.28
Shr loans with no collateral	0.64
Shr loans fully collateralized	0.17
Maturity (Years)	
All firms	1.80
Small firms	1.93
Medium-small firms	1.81
Medium firms	1.63
Large firms	1.51

Note: The top half of the table presents characteristics on the fraction of the loan that is collateralized. The bottom half presents the average maturity of loans measure in years. *Small* firms have fewer than 20 employees. *Medium-small* have between 20 and 50 employees, *Medium* firms have between 50 and 250 employees while *Large* firms have more than 250 employees.