"Sorry, We're Closed"

Bank Branch Closures, Loan Pricing, and Information Asymmetries

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We study local loan conditions when, under external pressure, banks close branches. After the closure of nearby branches of their credit granting banks, firms that locally and hurriedly transfer to other banks receive an equivalent interest rate. However, and in stark contrast, where branch closures do not take place firms that purposely switch banks receive a 63 basis points discount. At the same time, the loan default rate for the (more expensive) transfer loans is on average a full percentage point lower than that for the (cheaper) switching loans. This suggests that firms that establish new relationships after their bank branch closes are "better" than regular switchers in terms of unobservable characteristics. Taken together, these findings provide evidence of losses for firms when banks close branches, even if local markets remain competitive.

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Bank branch closures and their impact on local business are a recurring concern for policy makers and empirical researchers alike. Garmaise and Moskowitz (2005), for example, link mergers between large banks in the US to within-county deteriorating credit conditions, economic development, and crime, while Nguyen (2019) finds that merger-related branch closures cause prolonged declines in small-business lending and employment growth within six to eight miles of the closure. When branches close, credit may be rationed—for example, in so-called banking deserts (Morgan, Pinkovskiy and Yang (2016))—or become more expensive due to a softening in local market competition and/or an intensification in spatial price discrimination (Degryse and Ongena (2005)).[1]

However, if the local market remains competitive and many branches of other banks remain located close-by, what happens to credit conditions for firms connected to the closing bank branch? Do firms simply "walk over to" the nearest branch of another bank, without facing any losses or frictions, as if to buy a standardized commodity from another vendor? Or is it the case that firms incur informational switching costs à la von Thadden (2004) or shoe leather switching costs à la Klemperer (1987) when engaging with the new bank?[2] Put differently, is there a "stand-alone" loss for a firm when its bank branch closes? Is this loss observable and measurable at the individual loan level?

To answer these questions, we study firms affected by the closure of a branch of one of their credit-granting banks. In particular, we study individual loan contracts the firms

[1] Seminal work by Jayaratne and Strahan (1996), Jayaratne and Strahan (1998), and Kroszner and Strahan (1999) led to a very large literature investigating the impact of bank branch deregulation and resultant bank branch dynamics on local finance and economic growth.

[2] Event studies of the impact of bank distress and/or merger announcements on borrowing firms' stock prices also contain evidence of the value of bank relationships and hence the existence of informational switching costs (e.g., Slovin, Sushka and Polonchek (1993), Ongena, Smith and Michalsen (2003), Karceski, Ongena and Smith (2005), Miyajima and Yafeh (2007)). Complementary to event studies are methods that investigate the long-term performance of firms whose banks are affected by distress or default (e.g., Kang and Stulz (2000), Gan (2007), Nakashima and Takahashi (2018); for a review, see Degryse, Kim and Ongena (2009)). All these studies are at the bank, not bank branch, level and none analyze the impact on loan conditions.

obtain at branches of other banks (that have not lent to the firm recently), and compare them to the contracts of firms that stay with their banks or that switch banks in "regular times" (when no bank branches close).

Portugal provides us with an almost ideal laboratory for our study. Portugal is a representative country with a GDP (PPP) per capita that ranks it 42nd out of 185 countries (International Monetary Fund, 2019 estimates). It has a well-developed financial sector where most firms are uniquely reliant on bank funding. Most firms are small and not publicly listed, which means that apart from the information shared through the accounting and credit registries and the information gathered through a relationship, banks have few other external sources of information to base their credit evaluations on.

After 2012, hundreds of branch closures were forced upon banks in the country, but given the high branch density it is unlikely that local competition softened. According to the World Bank, in 2012 Portugal was fifth (out of 230 countries), ranked by the number of commercial bank branches per capita. In 2018 Portugal was fourteenth on the same list. Despite the large number of branch closures during this period, it remained one of the countries with highest branch density in the world. This allows us to focus on disruptions to bank–firm relationships caused by branch closures rather than by changes in local market competition or impaired access to financial services.

Further, Portugal maintains and connects unique datasets that have recently been accessed for fundamental research purposes (e.g., Farinha and Santos (2002), Iyer et al. (2014), Farinha, Spaliara and Tsoukas (2019), Beck, Da-Rocha-Lopes and Silva (2020)). We singularly collate four unique datasets from the Banco de Portugal for the period June 2012 to December 2015. We collect: (1) a list of all branch closures in Portugal, (2) a complete overview of all the corporate credit exposures of Portuguese banks, (3) the interest rates on all new loans, and (4) the balance sheets and income statements for all

Portuguese firms. We arrange all information accurately together by matching on unique bank and firm identifiers.

We first document that firms that were prompted (by the closure of a branch of their incumbent bank) to "transfer" to another bank receive an almost equal interest rate for their first loan from this other bank to *similar* (or even the same) firms contemporaneously receive on *similar* loans from *similar* (or even the same) banks. We establish *similarity* of banks, firms, and loans here through *coarsened exact matching* on various combinations of salient bank, firm, and/or loan characteristics.

So at first sight, one could argue that there are no apparent losses for a firm if one (or more) of its bank branches closes. This argument may, however, be based on an improper counterfactual. Indeed, to obtain a more comprehensive picture one should also compare these transfer loans, originated following branch closures, to switching loans in regular times. Performing such an analysis, we find that when they "switch" banks firms obtain interest rate discounts of around 63 basis points (bps) on average.[3]

Hence, strikingly, transfer loans do not carry with them any discount while switching loans do. In time, however, discounts reappear for subsequent switching loans or when firms wait more than half a year to transfer to another bank. Discounts are also present when firms decide to transfer to a (non-local) branch of the incumbent bank. However,

[3] As in the transfer loan analysis this is contemporaneously compared to *similar* non-switchers. It is by now well documented that firms receive a lower interest rate when they switch from one bank to another. Ioannidou and Ongena (2010), for example, document an average discount of 89 bps when firms switch banks in Bolivia, Barone, Felici and Pagnini (2011) find an average discount of 44 bps in Italy, while Stein (2015) finds an average discount for main bank borrowers of 33 bps in Germany. However, this existing work has not yet fully settled empirically which factors cause such discounts. Other papers explore the impact of relationship duration on loan rates and other loan contract terms. Overall the evidence in this literature is rather mixed (see Kysucky and Norden (2016) for a recent meta-analysis of some of these findings). In contrast to this literature, we study firms and bank branches over a relevant period of time, identify transfers and switches, and study the loan conditions associated with transferring and switching by comparing the loan conditions on transfer and switching loans to the conditions on similar non-switching loans.

despite receiving higher interest rates than do switching loans, loan default rates on transfer loans are on average one percentage point lower for these firms. This evidence suggests that (transferring) firms affected by branch closures are "better" than regular switchers in terms of unobservable characteristics.

Importantly, the branch closures examined were forced upon the banks in a very short time frame, and did not reflect banks' long-term optimal business strategies. This unique setting allows us to shed light on theories that explain the well-documented switching discounts that firms obtain when borrowing from new banks.

Our results are entirely consistent with seminal theories of informational holdup by Sharpe (1990), Rajan (1992), von Thadden (2004), and Hauswald and Marquez (2006), among others, which we summarize in Appendix A: Informational Holdup Theory. As hypothesized by these models, private (repayment) information on firms collected by incumbent banks generates interest rate discounts for switchers. Bank branch closures devalue this locally stocked private information. Without such a private information advantage, switching discounts disappear for firms orphaned by a branch closure and compelled to swiftly transfer to another bank. For firms that subsequently—later in time or across geographical space—switch, discounts reappear.

An alternative explanation for the existence of switching discounts is related to the compensation for shoe leather switching costs à la Klemperer (1987). Firms may get a discount from banks to pay for switching costs (e.g., filling out paperwork, providing detailed information about themselves, and adjusting connection software). Following branch closure, banks would still need to compensate firms for these costs.

We address these potential explanations for the existence of switching costs with two tests. First, we adopt a strict within-firm matching strategy that allows us to compare transfer loans with other loans given to the same firm at the same time. Second, we run

our specification in a subset of regions with high levels of competition. Results remain qualitatively the same. Shoe leather costs are unlikely to drive results because they would be reflected in loan rates other banks offer the firm (the loans we match transfer loans to), and competitive pressure would force banks to give discounts to capture customers even after branch closures.

We then investigate and discard many alternative explanations for our findings. Branch closures may be associated with other phenomena besides the loss of private information. For instance, one can argue that branch closures cause selection at the firm level, given that branch closures are not exogenous. We tackle this question in two ways. First, we only look at branches that a subset of banks had to close because of restructuring agreements with the European Commission. To boost profitability and capital in a short horizon, banks were forced to close some branches even if they found them profitable. Results remain unchanged. Second, we predict the probability of branch closure using total credit amount outstanding, defaulted loans, and branch density in the region where the branch operates, and select only closed branches that were predicted to be the least likely to close. In this case too, we still obtain the same results as before.

Even when we are convinced about the exogeneity of branch closures, particular firms may select themselves into transferring following branch closures, and such firms could have different characteristics to those of regular switchers (firm selection). To address this question, we match transfer loans with other loans given to the *same firm*. We still observe no discount after branch closure, but we observe discounts before closure and for subsequent switching loans after closure. Even with *within firm* matching, one may argue that firms that switch before closure are different from firms that switch after closure. In our main specification, we further restrict the sample to include only firms that switch at

least once after branch closure. We get similar results. Therefore, our results are not likely to be driven by unobserved differences between endogenous closures or firms.

Finally, selection at the bank level could also be driving results. Firms may switch to certain banks in normal times and to other banks following branch closures, as banks may specialize in different types of customers. To address this, in our main specifications we match transfer loans with other loans given by the outside bank—that is, the bank firms transfer to. The results are still valid, showing that our findings cannot be driven by bank-specific differences with regard to how each attracts customers.

We pursue a number of other robustness tests—namely, using alternative matching methods, performing sample splits, and matching according to specific characteristics (e.g., population density, credit worthiness). We also measure the impact of branch closures on other loan conditions. Qualitatively, the results do not change.

Taken together, all our analyses provide support for the seminal theories of information holdup that explain the lack of discounts for transfer loans and the presence of discounts for switching loans. The unique setting in which branches in our study were closed allows for a clear understanding of the mechanisms that explain this specific finding, ruling out alternative explanations that have been proposed.

In addition, our paper also contributes to the understanding of the consequences of bank branch closures on lending conditions. It has been documented that such closures are detrimental to access to loans for small businesses (Nguyen (2019), Morgan, Pinkovskiy and Yang (2016), Duquerroy et al. (2020)). We show that branch closures also affect loan pricing through the loss of information privately held by the branches that close. Further, we observe that firms tend to move to new banks after closure, but do not find that affected areas have statistically different interest rates, levels of monitoring, or loan volumes. We

do, however, observe that banks tend to prioritize informationally transparent firms following branch closures.

The rest of the paper proceeds as follows. Section I describes the data. Section II presents variable definitions, descriptive statistics, and methodology. Section III presents our main findings and Section IV provides an overview of the many robustness checks. Section V briefly discusses the other consequences of bank branch closures. Section VI concludes.

I. Data

Our analysis merges records from four large and unique databases. First, we have access to all the data from the Portuguese public credit registry, the Central de Reponsabilidades de Crédito (CRC), which is managed by the Banco de Portugal (BdP). The BdP requires all banks to report total loan exposures of non-financial companies (henceforth "firms"). Accessing this unique database – one of the most comprehensive in the world (Miller (2003)) – we have monthly corporate loans for all banks operating in Portugal between January 1987 and July 2015. This data allows us to retrieve loan monthly exposures for every firm-bank pair, including information on loan type and status (e.g., short or long term, in default, on or off-balance sheet exposure).

We also employ the Portuguese database of new credit operations, the Informação Individual de Taxas de Juro, which is also managed by the BdP. The BdP requires Portuguese banks to report the interest rate of new loans given to firms. From June 2012 to December 2014, banks with an annual volume of new loans to firms greater than €50 million had to report the interest rates of new loans and this obligation was extended to all

banks in January 2015.[4] For each loan, there is information about the date of origination, interest rate, maturity, interest rate fixation period, and loan amount.[5] For each borrowing firm, we have information about their industry, postal code, and total bank debt.

We complement the detailed information on corporate bank loans with information on the balance sheet and income statements of all the firms in Portugal from the Informação Empresarial Simplificada (IES). This dataset is a joint project of the Ministry of Justice, the Ministry of Finance, Statistics Portugal, and the BdP. All Portuguese firms are required to file information. We use a version of this dataset managed by the BdP, in which the information is treated to improve its statistical quality. We also use credit scores computed by the BdP.

Finally, the paper relies on the list of bank branches maintained by the BdP, i.e., the Registo Especial de Instituições (REI). For each branch, REI provides the opening day, closing day, and postal code. This database can be matched with loan data because banks are identified with the same codes in every dataset. We also geographically map the postal codes of bank branches and firms to calculate the physical distance between them.

Because the available information for banks in the credit register is limited to the previous two months, information asymmetries remain.[6] For example, if a firm pays back an overdue loan, the record resets without any trace of overdue payments on the credit history (Campion (2001)).

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[4] As indicated later we re-run all main specifications reported below using only the period until December 2014 but results are virtually unaffected.

[5] Given all this information and the zero minimum loan size, the combined database is consequently even more comprehensive than many credit registers that have been studied and that have nonzero reporting thresholds, such as the registers from Bolivia (e.g., Ioannidou and Ongena (2010), Berger, Frame and Ioannidou (2011), or Ioannidou, Ongena and Peydró (2015)), Italy (e.g., Ippolito et al. (2016)) or Spain (e.g., Jiménez, Salas and Saurina (2006), Jiménez et al. (2012) or Jiménez et al. (2014)).

[6] Limiting "the amount of data made available for distribution to the financial institutions to the current month" is common in many countries including Portugal (see Miller (2003), Table 1A.7, Column 3). Administrative costs and regulatory objectives may explain the short information-sharing window. A two-month window seems too short to achieve optimal memory loss à la Vercammen (1995).

Apart from the information shared through the registry and the information gathered through a relationship, banks have few other sources of information for their credit evaluations in Portugal. Most firms are micro or small firms and do not have audited financial statements. As a result, the capital markets are accessible only for a few large firms and the banking sector is the principal source of capital for most firms. Since credit derivatives are not widely available for small and medium firms, those seeking to adjust interest payments have to renegotiate or switch.

The analysis focuses on loans to private non-financial firms, in particular, on new loan initiations by all commercial banks between 2012:06 and 2015:05.[7] We exclude overdrafts and current account credits to avoid distortions in the analysis of loan interest rates. Analyzing only new loans allows us to employ up-to-date and comparable firm and contract information at the precise time that firms "switch" or "transfer" to a new bank.

The vast majority of new loans is given to firms that have more than one relationship (86 percent). However, from all firms with some bank credit exposure in the beginning of the sample, only 36 percent have multiple relationships, suggesting that firms with multiple relationships get new loans much more often. The incidence of collateral is 38 percent, between the 24 percent reported by Ioannidou and Ongena (2010) and the 53 percent reported by Berger and Udell (1995).[8]

There were 839 branch closures during the sample period. In the month preceding our analysis window, there were 5,971 branches in Portugal. 82 percent of all branch closures

[7] To keep the set of financial institutions homogeneous in terms of financial structure and regulation, we focus on loans from commercial banks and exclude loans from other formal nonbank institutions (such as private financial funds, credit unions, mutual societies, etc.). Most commercial banks are privately owned. Banks are also prohibited from owning nonfinancial firms (Barth, Caprio and Levine (2006)). The sample period is characterized by an economic recession. The average growth rate of real GDP is -0.8 percent, somewhat lower than the average -0.03 percent growth rate of the previous five years.

[8] Hence the incidence of collateral is fairly low and even (fully) collateralized loans may still carry a positive loss in the event of default – a prerequisite for informational holdup models to be applicable.

are associated with 6 banks, which had 70 percent of all firm-bank relationships (in June 2012). In geographic terms, closures are concentrated in Lisbon and Porto. These two regions represent 25 and 18 percent of all bank relationships (in June 2012), and 27 and 19 percent of all closures, respectively.[9]

The significant net decrease in the number of branches occurred against a backdrop of pressures for cost-cutting measures. However, these pressures were not homogenously felt across all banks. Some of the largest banks in Portugal were recapitalized with funds from the bailout package agreed with the IMF, the ECB and the European Commission in 2011. In exchange for these funds, banks had to submit restructuring plans with the aim of improving profitability and solvency. Given that there was a widely-shared concern about over-branching in Portugal, this included substantial reductions in both the number of branches and staff members as a prime cost-cutting measure.[10] As a consequence these expedited branch closures were likely to be somewhat indiscriminate, i.e., not always based on local branch quality of firms and their profitability, providing for an unencumbered set of quasi-natural experiments.

II. Definitions, Statistics and Methodology

A. Definitions of Transfers and Switches

We take the operational definition of switching from Ioannidou and Ongena (2010). There are two conditions for a new loan to be classified as a switching loan. First, this new loan should be obtained from a bank with which the firm did not have a relationship during the previous twelve months. This bank is called the *outside bank*. Second, the firm must have

[9] As indicated later, removing these two regions from our sample will not affect our main findings.
[10] For further details, please see for example the Press Release on July 24, 2013, by the European Commission on "State aid: Commission finalizes discussions on restructuring plans for Portuguese banks CGD, Banco BPI, BCP."

had at least one relationship in the previous 12 months with at least one other bank. This bank is the *inside bank*. All new loans that do not observe these two conditions are *nonswitching loans*. In effect, we conservatively assume that key inside information can get stale as quickly as within one year.[11]

Transfer loans are a subgroup we split off from the switching loans. In particular, we classify a switching loan as a transfer loan if the nearest branch of any of the inside banks of the firm was closed in any of the considered periods prior to the concession of the new loan by the outside bank (we consider 1 to 6 months after closure, 7 to 12 months after, and more than 12 months after as periods). Two additional conditions have to be observed in transfer loans. First, the physical distance between the firm and the closing branch must be smaller than 5 kilometers (as the crow flies). Second, after the closure the closest branch from this inside bank must be more than 5 kilometers away from the firm.[12] These conditions ensure that there is a strong locational driver for the firms to approach a branch of another bank. Figure 1 illustrates the definitions of nonswitching, switching and transfer loans, while Figure 2 sketches the geographical set-up.[13]

[Figures 1 and 2 around here]

[11] As explained in Appendix A: Informational Holdup Theory, across many models in this literature *inside banks* are banks that have acquired information about the firm, while *outside banks* concurrently lack this information.

[12] As in other countries (e.g., Petersen and Rajan (2002), Degryse and Ongena (2005), Agarwal and Hauswald (2010)) most firms in Portugal engage banks in the vicinity. 78 percent of the firms employ at least one bank that has branches in the same postal zone as the firm while 63 percent firms engage only banks that have a branch there. The median distance between a firm and a bank is 1.9 kilometers. For radii of 10 kilometers estimates are qualitatively similar but based on seemingly more noisy information.

[13] Throughout our analysis we consider only single closures. If there are multiple closures affecting a firm at the same time, we drop them from the sample. This only affects 5 percent of our initial observations. Most multiple closures occur in the largest cities, where our definition of transfers rarely applies, as there are often other branches of the same bank nearby.

The 12 month window was chosen to match the definition of Ioannidou and Ongena (2010).[14] In the same manner, we assume that lending relationships comprise all sorts of used and unused credit, including credit contracts in which the firm shares the responsibility of repayment with other institutions. Our definition of switching does also not differentiate between those firms that "move" between banks and those firms that "add" a bank relationship.[15]

Moreover, we do not retain firms that cease their relationship with the inside bank (i.e., firms that do not have any business dealings with this bank for more than 12 months), because this question is not relevant in the context of the informational holdup models that we are testing empirically.

B. Statistics

Table I provides descriptive statistics for transfer, nonswitching, and switching loans. There are 1,129 loan transfers, representing 0.08 percent of the 1,338,829 nonswitching loans and 5 percent of the 24,292 switching loans. The 24,292 switches in the sample represent 1.8 percent of all new loans in the period.[16]

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[14] Empirical findings suggest that a substantial portion of the bank's inside information is collected during the first year (Cole (1998)). As we show later, our estimates for the switching spread are similar to theirs, so we consider the 12-month as appropriate.

[15] We observe that differentiating between "adders" and "movers" based on whether they have or do not have other outstanding loans at the time of the switch does not necessarily provide a meaningful distinction. Adders could be classified as movers if, at the time of the switch, their inside loans expired and were not renewed until after they got a loan from an outside bank. Similarly, movers could be classified as adders if their inside loans happened to expire a few months after the switch. It is therefore hard to develop a meaningful classification without relying on future (but possibly endogenous) information. That is, firms may decide to reverse their initial decisions, depending on future offers they receive from both the inside and outside banks. We also believe that investigating the conditions under which a firm obtains a loan from another bank (and not from an existing lender that remains operational or closes its branch) is the most pertinent question. It is correct that adding versus moving a relationship may be a meaningful distinction for de novo firms (Farinha and Santos (2002)) or for firms that switch following bank mergers (Degryse, Masschelein and Mitchell (2011)). As we analyze only firms that had an inside bank, *de novo* firms are unlikely to play an important role in our sample. While bank mergers do not affect results in the sample period, our analysis is indeed focused on differentiating between switching and transferring following local branch closures.

[16] From the 94,281 firms that obtained at least one new loan, 16,568 switched at least once, representing 17.6 percent of our sample, or 5.9 percent per year. Results are similar to the previous literature about bank

[Table I around here]

The average interest rate for loan transfers is 5.36 percent, 219 bps less than for nonswitching loans and 73 bps less than for switching loans. The standard deviation is almost half the standard deviation of nonswitching loans and it is also smaller than the standard deviation of other switching loans at standard significance levels. This smaller standard deviation is consistent with pool-pricing. Given the variation across region and time in banking market conditions, and given firm characteristics that are observable to all banks, even pool-pricing will in practice not entail a similar loan rate for all firms.

Other loan characteristics seem to be similar to the ones verified for switching loans, namely the percentage of defaulted loans, collateralization, maturity, loan amount, share of floating rate loans and of multiple relationships, the likelihood that the outside bank is the primary lender and the likelihood of multiple products in the bank relationship.

For switching loans, loan rates are on average 146 bps lower, not accounting for differences in other loan and firm characteristics, than for nonswitching loans. The default rate on the pool of switching firms is 0.7 percent, well below the 3.4 percent verified for nonswitching firms. This can be explained by the fact that banks can observe in the credit register whether the firm has overdue loans. It might also be consistent with evergreening practices, empirically documented by Peek and Rosengren (2005), as inside banks are clearly more likely to grant a loan to a firm in distress than outside banks.

Table II provides descriptive statistics for first and later transfers loans. In other words, we distinguish the first loan obtained with an outside bank after the branch of the inside

switching, which is summarized by Degryse, Kim and Ongena (2009). Farinha and Santos (2002) for example also find that 64 percent of 1,577 Portuguese *de novo* firms in their sample switch between 1980 and 1996, i.e., approximately 3.7 percent of their sample switches in a year. Nevertheless, this calculation underestimates the annual percentage of switches in their sample because not all relationships last from 1980 to 1996.

bank closes from all the new loans obtained with outside banks subsequently. First and later transfer loans do not differ in terms of risk. In all the other dimensions analyzed, there are significant differences. First transfers have higher interest rates and are more likely to be collateralized than later transfers. At the same time, they have longer maturities and involve larger amounts.

[Table II around here]

Transfers are distributed among different industries and regions (see Internet Appendix: Statistics). Therefore, a straight comparison of simple averages is inadequate to draw any conclusions (and we will consequently rely on various matching methods to align transfer and switching loans with nonswitching loans to arrive at all-around comparable spreads).

Figure 3 shows the distribution of firms that transfer or switch banks according to the residual maturity of their loans with the inside bank at the time of switching. When firms have more than one loan with the inside bank, we use as reference the shortest residual maturity.

[Figure 3 around here]

Arguably, firms should more actively consider transferring or switching to a new bank when they have loans to refinance. We observe that for loan transfers 67 percent of firms have loans with residual maturity below 90 days, while for switches only approximately 52 percent of firms have loans with residual maturity below 90 days. In both cases, there is a high concentration of firms that transfer or switch from one bank to the other when they have loans to refinance in the short run. This concentration is significantly higher for firms that are confronted with a branch closure. These firms are thus under pressure to find a new lender to refinance their maturing loans, possibly forcing them to accept the pool price that firms normally contract when they get a new loan.

C. Coarsened Exact Matching Methodology

The ideal setting to compare transfer and switching loans (to nonswitching loans) would be to know the interest rate offered to the firm for a nonswitching loan. However, we do not have this information for many loans, so we use a matching model to derive it (we return to using nonswitching loans granted to the same firm in robustness).[17]

We first examine whether the loan rate that the transfer or switching loan receives from the outside bank is lower than the rate its inside bank offered. Since the inside bank's unsuccessful offer is unobservable, we approximate it using similar loans that the *inside* bank granted in the same month to other comparable firms (Figure 4). Recognizing the possible impact of bank characteristics on the inside and outside offers, in a similar matching exercise we also compare the rates on the transfer and switching loans to the rates of similar loans that the transferee or switcher's *outside* bank granted in the same month to other comparable existing customers (Figure 5).[18]

[Figures 4 and 5 around here]

Table III contains the list of variables we use to establish the matching model. We employ *coarsened exact matching*, because we rely on many categorical variables. In this way the quality of the match is guaranteed (e.g., Stuart (2010)). For comparability purposes we use 30 percent intervals for the continuous variables; these intervals are set *a priori* and *equally* for all continuous variables (hence we do not use distributional information on individual variables to further optimize the quality of the match; results are virtually unaffected by this choice). We employ four different matching strategies and

[17] But also in this application we can view the performed matching as "a tool for making the regression more effective" (Angrist and Pischke (2008)), by balancing the two groups so that we are obtaining an average treatment effect.

[18] While banks differ in some of their characteristics, their business model is quite homogenous. They are all universal banks, with a predominance of retail activities targeted at customers all over the country. Moreover, we are controlling for time invariant bank characteristics by matching with outside bank loans.

revisit the choice of matching variables and matching methodology (i.e., we also employ a propensity score matching) in robustness.

We match loans on the quarter they were given, on firm characteristics (credit rating,[19] region, and industry) and on loan characteristics (existence of collateral, maturity, loan amount, and floating loan rate). We feature the year:*quarter* in which the loan is granted to make sure loans granted under similar macro-economic conditions; *credit rating*, *region*, *industry* and *legal structure* make firms comparable in these vital dimensions; in one matching strategy firm characteristics are supplanted by *firm* identity; and finally, at the loan level *collateral*, *maturity*, *amount* and *floating rate* make loans comparable in their key loan terms.[20] We also match either with other loans from the firm's inside banks or with loans from the firm's outside bank. For inside banks, we also match on the affiliation with an international banking group.

[Table III around here]

The impact of unobserved loan characteristics will be reflected in interest rate heterogeneity within the same matching group. Unobserved borrower heterogeneity works against finding evidence consistent with a lower interest rate granted to switchers. In von Thadden (2004), *unobservably* bad borrowers are more likely to switch.[21] Hence,

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[19] The credit rating is attributed by the Banco de Portugal using an internal credit scoring model. For details see Antunes, Gonçalves and Prego (2016).

[20] Most studies assume that the collateral and maturity decisions are taken either independently or sequentially *after* the loan-granting decision but *before* the determination of the loan rate. Ignoring the joint character of the loan decision may bias the findings (Berger et al. (2005), Brick and Palia (2007), and Ortiz-Molina and Penas (2008)). By matching on collateral and loan maturity, we do not need to assume anything about the decision process. Most studies also ignore loan fees (exceptions are Hao (2003) and Berg, Saunders and Steffen (2016)) and the pricing implications of cross-selling (Liberti (2004)). By matching on time, bank, type of loan, and loan characteristics, we control for loan fees and cross-selling (assuming banks at the same point in time apply the same fees and cross-selling practices to similar loans and borrowers with similar relationship characteristics). Matching is nonparametric and does not incorporate information from outside the overlap region between the treatment and control groups. At this stage it is also worth recalling that these matching strategies make loans *similar* in all these dimensions *at the same time*, equivalent to controlling with a dense set of fully "multiplicative" fixed effects (without the linear functional form constraint).

[21] The descriptive statistics reported in Table I show that *observably* bad borrowers are less likely to switch.

if our matching variables do not adequately capture borrower quality, then bad switchers are more likely to be paired with good (instead of bad) nonswitchers, resulting in smaller estimated cuts (see simulations of the von Thadden (2004) model in Ioannidou and Ongena (2010)).

We match all transfer or switching loans with nonswitching loans that have the same characteristics and calculate the spread between the interest rates of these loans. We regress the spread on a constant and weigh each observation to the inverse of the number of matches for each transfer or switching loan *i*. For instance, if transfer *i* has 6 matches, each match will have a weight of $\frac{1}{6}$ in the regression.

III. Main Results

In the previous section we document that both transfers and switches occur. In this section we analyze interest rates for transfers and switches, and investigate whether loan rates after transferring and switching present distinct patterns. We also assess the differential quality of transfer and switching loans. In the next section, we run many robustness tests and compare other loans conditions, namely the rate of collateralization, maturities and loan amounts.

A. Interest Rate Differential for Transfer versus Switching loans

We now turn to our main investigation. Table IV compares the interest rate of switching or transfer loans with nonswitching loans before and after the closest branch of the inside bank that was servicing the firm was closed. Recall that all loans that borrowers receive after the branch is closed are classified as transfer loans. The table contains the list of matching variables used to compare the interest rate, the number of switching, transfer and nonswitching loans, the total number of observations used in each specification, and

the average interest rate differential between switching or transfer and nonswitching loans. Standard errors are reported in parentheses and are clustered at firm level.[22]

[Table IV around here]

We pursue four matching strategies. In Column I, we compare the interest rate of switching and transfer loans with the interest rate of nonswitching loans made by firms' *inside banks*, conditional on the specified matching variables.

For Regression I we retain 621 switching or transfer loans, which are paired with 4,232 nonswitching loans. The total number of matched pairs is 6,249, which means that on average each nonswitching loan is paired with 1.5 switching or transfer loans. Switching loans before branch closure have interest rates that are on average lower by 90 bps, which is estimated to be significant at the one percent level and most similar in magnitude to the ones reported in the literature.[23] Transfer loans, which are the core of our analysis, do not receive any discount. This is the main finding in our paper, showing that new relationships established in the months following a branch closure do not benefit from the well-documented switching discounts. This evidence suggests that after the branch closure the informational link between the inside bank and its firms is broken. As a consequence, the outside bank that grants the first (transfer) loan to the firm will simply pool-price and lend to the firm at a market interest rate reflecting pooled risks.

One obvious concern is the heterogeneity in interest rate costs faced by banks between 2012 and 2015. In this period financing rates varied among Portuguese banks because of the rising sovereign debt interest rates. Crosignani, Faria-e-Castro and Fonseca (2015) for example find that the lending patterns of foreign, large and small local banks were

[22] If we also cluster at the industry-region level, the main results remain unchanged.
[23] To make our setup directly comparable to extant work, we estimate the spreads for *all* switching loans, i.e., no longer conditioning on a branch closure. We find an estimated coefficient of -122, significant at the 1 percent level. We report this and other estimates in Table IV in Internet Appendix 0.

heterogeneous in the period between 2005 and 2014. In Column II we therefore also match on the bank affiliation to an international banking group (i.e., we match local to local and foreign to foreign banks). Adding this matching variable does not alter the estimates.[24]

In Column III, we report the interest rate differential when comparing with interest rates on loans granted by outside banks (recall Figure 5). Now the comparison is within the *same bank* during the *same quarter*. Therefore the loan rate differences between switching or transfer loans and nonswitching loans cannot be attributed simply to differences in the marginal cost of funding between inside and outside banks (or more generally to any other form of unobserved heterogeneity with respect to the two banks). This is an important advantage over the matching exercise in Column II (or any alternative exercise whereby even more bank characteristics are added to the set of matching variables). So for the rest of the paper we focus the analysis on comparing switching loan interest rates with rates from nonswitching loans of the outside bank to avoid the impact of heterogeneous interest rate policies among different types of banks.

Column III is therefore our benchmark model (which we detail further in Table V, and subsequent tables). We continue to observe a switching discount (now of 63 bps). More importantly, our main result holds: for transfer loans in the first six months after closure there is again no discount.

In Column IV we match on one extra variable, i.e., firm identity. This allows us to compare switching or transfer with nonswitching loans granted to the *same* firm in a given quarter. This allows us to fully control for demand at the firm level. In this case we are not matching a given firm with others that share the same characteristics, but we are

[24] By using this additional matching variable, the number of observations used in the estimation decreases from 6,249 to 3,735. Different matching choices will condition the number of observations in each estimation. This is not dissimilar to the change in the number of observations underpinning identification in a panel setting with varying high-dimensional fixed effects.

looking at several loans offered simultaneously to the same firm by different banks. Of course, this requires that we base our estimates on a much smaller sample of firms, with a bias towards larger firms that are more likely to obtain several loans at the same time. Even so, matching on firm identity does not change our main findings, i.e., the interest rate discount is still present and significant before closure, while one to six months after closure there is no discount.

Of course, this strict matching strategy has an important trade-off in terms of the number of observations, as not many firms obtain several loans in the same period. Even the benchmark matching strategy hinges on a limited set of observations, what is necessary to require that the loans are truly comparable. Nevertheless, to be sure that our results are not biased by being too strict on the matching criteria, in Column V we report one additional matching exercise, now using a much looser strategy. When we match only on date, loan amount and loan maturity, we see that the results for loans granted by the same outside bank remain entirely consistent, being now based on a hundredfold larger number of observations.

In Table V, we zoom in on the results obtained for transfers using the benchmark matching strategy (Column III from Table IV), now including a longer period after branch closures. Column II contains transfer loans 1 to 6 months after the closest branch of the inside bank is closed. As we had reported in Table IV the estimated coefficient equals 15.62, but it is not significant at the 10 percent level. Ignoring matching would lead to a substantially large "hidden bias" in the estimated spreads for transfers than for switchers, as in this case we would find a switching discount of 181 bps after the branch closures. This finding suggests that borrower heterogeneity is high for transfer loans, while before closure outside banks attracted a more similar set of customers.

[Table V around here]

In the period from 7 to 12 months after the branch closure, the coefficient is negative and close to the initial level (-57 bps), implying that as time passes the effect of the branch closure disappears. From the 13th month onwards the effect of the branch closure disappears completely. The transfer discount is 94 bps, statistically significant at the 1 percent level. The reason for this reappearance of the discount in later periods should be that firms start re-engaging banks and hence we are no longer dealing with first transfer loans. These later transfers thus resemble regular switches.

The pattern is similar for the other matching strategies. Even when we use the tighter matching strategies comparing loans granted to the same firm by outside and inside banks after a branch closure (Column IV in Table IV) we obtain consistent results. There are no switching discounts immediately after branch closure. One year afterwards, this effect has vanished.

In the first column of Table V we include all switching loans by firms that switch in areas affected by branch closures. One could argue that firms that switch after closure are different from firms that switch before closure. As robustness, we use only firms that switch at least once in the period after closure. We do not report these results separately because they are the same as in Table V except for the period before closure. Before closure, we obtain 37 observations and an average interest rate difference with matching of -228.62 bps. The coefficient is statistically significant at the 10% level. Hence, results do not seem to be driven by different firms switching after closure.

B. First versus Later Transfers

According to the informational holdup theory, only the first transfer loan after branch closure should not have the interest rate discount observed in switching loans. After the first transfer loan, the firm establishes a relationship with a new bank. As a consequence, in future transfer loans the outside bank of the first transfer in effect becomes a new inside

bank, therefore able to hold up the firm. Hence, the outside bank in subsequent transfer loans has to offer the switching rate that we observed before, otherwise the firm will continue to borrow from the inside bank.

To test this conjecture, we separate first transfers from later transfers. Transfers are classified as "first transfers" if the firm is switching for the first time after the branch of its inside bank has closed and as "later transfers" otherwise. Table VI Panel A shows interest rate differentials for first transfer loans only. The structure is similar to the one used in Table V. Switching loans are matched with nonswitching loans from the outside bank. Matching variables are the ones used in Column III of Table IV. Before the branch closure, we use the same switching loans of Table V for easy reference, yielding the same switching discount of 63 bps.

When we only keep first transfers that occur 1 to 6 months after the closure, the coefficient is positive and results are not significant at the 10 percent significance level, meaning that there is no evidence of a switching discount up to 6 months after the closure of the branch.

[Table VI around here]

Considering only first transfers 7 to 12 months after the closure, the coefficient is now positive, very close to 0, and still non-significant at the 10 percent significance level. In Table V the coefficient was negative and significant, which implies that later transfers were driving this result. As a consequence, the evidence is consistent with the fact that the effect of the branch closure goes beyond 6 months.

More than 12 months after the closure, the coefficient is -97 bps, close to the -94 bps reported in Table V. Results are now significant at the 1 percent level. These results imply that in the long-term the effect of the branch closure fades even for first transfer loans. The evidence is consistent with the gradual fading of pool-pricing of the group of firms

transferring in immediate need of financing, to a reestablishment of a discount granted to individual "switching" firms to be recovered later through informational holdup.

Table VI Panel B contains interest rate differentials for later loan transfers. This table again follows the same structure as in Table V. In the 1 to 6 months after the branch closure, the interest differential is -82 bps, but not statistically significant, suggesting that these loans may not enjoy any switching discount.

In the 7 and 12 months after the branch closure, the interest rate differential for these later transfers is -115 bps and is significant at the 5 percent level. Beyond 12 months after the branch closure, the switching discount is 89 bps, significant at the 1 percent level.

These results contrast with the findings from Table VI Panel A. While for first transfers there is no switching discount in the first year after branch closure, for later transfers we observe a sizeable discount. This result is consistent with the hypothesis that the outside bank receiving the transferring firm informationally captures it such that later transfers involving new outside banks will again result in the switching discount we have seen so far.

C. Transferring Within the Inside Bank

In Table VII we investigate (regular) switching versus transferring within the inside bank, which is the bank that closes the branch. Hence we assess the spread between the interest rate on switching or first transfer loans now granted by other branches from the same inside bank that closes a branch and the interest rate on new nonswitching loans obtained from the switchers' outside bank (by other firms), all of this before and after the closest branch of the inside bank closes.[25]

[25] In this estimation, we also match on the length of relationship. This might be important if we consider that a long lasting bank-firm relationship allows the inside bank to collect more private information on the firm. Nevertheless, the results are not sensitive to this choice.

[Table VII around here]

If other branches of the inside bank are inconveniently located in other areas (which is often the case) and if geographical distance dilutes the quality of the information signal these branches are able to obtain (as in Hauswald and Marquez (2006), Agarwal and Hauswald (2010)), then we would expect the pricing of these within-inside bank transfers to be priced more like *later* transfer (or switching) loans whereby firms once more receive the discount. That is exactly what we find.[26]

D. Default after Transferring

In Table VIII we distinguish between switching and transfer loans one or two years after switching or transferring with respect to their default probability and the loan loss rate given default. In Panel A of the table, the dependent variable equals one if the firm defaults at the firm-bank level. In Panel B the dependent variable equals the share of the outstanding amount in default for all firm-bank pairs. We include more control variables as we move from Columns I to III (that study a one-year horizon), and similarly from Columns IV to VI (for a two year horizon).

[Table VIII around here]

We find that in all instances, but in particular for a two year horizon, the estimated coefficient on transfer loans is negative suggesting that transfer borrowers are less likely to default than switchers. These results are consistent with informational holdup theory, which predicts that switchers are on average worse than nonswitchers, but also that both good and bad firms switch.

[26] We cannot find evidence that there are significant differences in pricing behavior towards good and bad quality firms, which could suggest that distance does not deteriorate the informational signal.

IV. Robustness

A. Local Banking Sector Competition and Unexpected Branch Closures

We note that Portugal is one of the EU countries with the highest bank branch density.[27] The closure of a few branches is unlikely to affect local bank competition and thus our results should be driven by asymmetric information rather than by changes in competition.[28] To exclude the latter possibility entirely, in an Appendix B: Robustness of Empirical Findings we discuss an extensive array of analyses of areas where given the many branches present the hypothetical closure of a branch should have an even more negligible impact on competition. Our findings are unaffected by focusing on such areas.

To be sure that the absence of discounts after loan transfers is not due to the fact that branch closures could have been anticipated, we run our estimates for a subsample of branches that were more unlikely to close. To do that, we first estimate a simple model to compute the likelihood of individual branch closure (as in Morales Acevedo and Ongena (2020)).

In Table IX we report the results of a regression model that estimates the probability of individual branch closures. We run both linear probability model (LPM) and probit specifications.[29] In Figure 6 we show the predictive quality of the model using a ROC curve. When controlling for county, bank and time fixed effects, we find that smaller branches are more likely to close. Further, a higher local branch density is also associated with a higher probability of branch closure.

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[27] According to the International Monetary Fund Financial Access Survey Portugal had 54 commercial bank branches per 100,000 adults in 2014, while France, Germany and Italy had 38, 15, and 60, respectively.

[28] In the Internet Appendix: Data we provide summary statistics on banks and branches at the municipality level.

[29] One may be concerned about the incidental parameters problem in the probit specification. Note however that the number of months covered in the sample is relatively high (43) and that we do not include firm fixed-effects. The dummies we include in the model (e.g., bank dummies) are equal to one for many observations.

[Table IX and Table X and Figure 6 around here]

Our next step is to estimate our main empirical specification on transfers for a subsample of branches that were unlikely to close (Table X). To do that, we use the estimated likelihood of individual branch closure using a probit model. If we split the sample in three quantiles according to this likelihood and use only the group of branches that were least likely to close, we confirm that our results remain unchanged.

B. Comparison and Matching Methodology

So far comparisons between transfer and switching loans are based on singular estimates for each group. In Table XI, we now directly compare the difference between interest rate discounts of transfer and switching loans. We match switching loans with nonswitching loans that share the characteristics of Column III of Table IV and calculate the interest rate difference between each switching loan and their matching nonswitching loans. We regress interest rate differentials on a constant and on a categorical variable that classifies loan transfers according to the number of months since the closure of the branch of the inside bank.

Switching loans that are not loan transfers have an average discount of 63 bps, significantly different from 0 at the most common significance levels. In comparison to other switching loans, loan transfers up to 6 months after the branch closure have average interest rates greater than the switching interest rate by 78 bps. This result is statistically significant at the 1 percent level, which confirms that loan transfers immediately after branch closures have interest rates that are significantly higher than the rates of normal switching loans. For later transfers, we do not observe this effect, as coefficients are not significant at the 10 percent significance level.

[Table XI around here]

To ensure that our results are further robust to different matching strategies, we extensively revisit our matching methodology choices in the Appendix B: Robustness of Empirical Findings. We further investigate and discuss various other sample composition and issues with variable definitions in this Appendix. At this stage we also note that our main results hinge on ensuring that firms matched in treatment and control groups are as similar as possible. This of course depends on the choice of matching variables.

C. Matching and Differentiating Variables

C.1. Within-Firm and Firm Credit Rating

In Tables XII and XIII we return to the limited set of first and later transfer loans for which we also observe concurrent nonswitching loans being granted to the same firm, i.e., the matching scheme in Column IV in Table IV. Matching at the firm-level addresses two concerns. First, we verify if results are not driven by unobserved characteristics of firms that switch after branch closure. Second, we verify if results are driven by shoe-leather costs *à la* Klemperer (1987). If this is the case, we should see discounts after branch closure, since entrants would still have to compete with other incumbent banks, who provide the loans we are matching with.

[Tables XII and XIII around here]

While also matching on firm identity provides a high degree of confidence in having controlled for all relevant heterogeneity, fewer observations remain. For example we observe only 14 first transfer loans in the period 1 to 6 months after the branch closure that can be matched with 28 nonswitching loans. But despite this substantial drop in the number of observations results remain qualitatively most similar.

Recall that in our baseline results, one of the matching variables used is firms' credit rating. This allows us to be sure that potential pricing differences are not attributable to differences in perceived risk. Nevertheless, it is interesting to dig deeper into this issue and examine if transfer and switching outcomes are similar for good and bad quality firms. Appendix B: Robustness of Empirical Findings discusses a set of exercises showing that the main results are not driven by differences in credit ratings.

C.2. Bank-Firm Relationship Characteristics

Another dimension on which it might be important to further extend our analysis is to consider issues on the relationship between borrowers and lenders. The number, uniqueness and length of the relationships between borrowers and lenders influence the way interest rates are set (e.g., Petersen and Rajan (1994) and Berger and Udell (1995)).[30] For instance, firms with a single bank relationship may face more difficulties in finding a new bank and may therefore face different pricing conditions.

To address this concern, in Table XIV Panel A we use a dummy that tags firms with multiple bank relationships in the month before the new loan as an extra matching variable. We once more observe similar results. Hence, interest rate discounts for switches and the impact of branch closures on switching discounts seems not to be driven by matching single relationship and multiple relationship loans.

In Panel B we only consider transfers if they are caused by closure of the branch of the firm's main lender. It is possible that the impact of branch closure is larger when this is the main bank of the firm. Still, the results are similar to the ones obtained in Table IV. The interest rate spread between the switching loan and similar loans is close to 0 and not

[30] Various dimensions of bank-firm relationships are found to be associated with salient features of firm financing and performance (e.g., Brunner and Krahnen (2008), Degryse, Kim and Ongena (2009)).

statistically significant for transfers 1 to 6 months after the branch closure. There are no interest rate discounts when the main lender closes its branch. It remains statistically not different from zero even in the window that goes beyond 12 months. Assuming that the main lender is the most important one for the firm, these results corroborate the conclusion that the change in soft information explains the existence of interest rate discounts for switching firms.

In Panel C we further explore the dynamics of the lock-in effects. We examine the (additional) switching and transfer discounts for firms that have long relationships. We find that the switching discounts are more significant for firms with longer relationships (more than 3 years), thus supporting the existence of lock-in effects. However, in the year after branch closure, the discount vanishes both for shorter and longer relationships, giving further support to the hypothesis that switching discounts are indeed driven by asymmetric information issues.

Finally, we consider a subset of firms that transfer to a bank with whom they never had any previous relationship (Panel D). In our baseline specification, we consider that there is a transfer (or a switch) when a new relationship is established with a bank that did not lend to that firm in the previous 12 months. This implies that we consider that private information about the firm might get stale after 1 year. To be more stringent, we consider only truly new relationships. Once more, the main results are unchanged.

D. Other Loan Conditions

Table XV compares loan conditions of transfer or switching loans with loan conditions of comparable nonswitching loans using the same matching technology as in Column III Table IV. Recall that with this matching exercise, we aim to simulate the offered loan conditions as if the firm had not switched to any new outside bank and compare them with the transfer or switching conditions offered by this bank.

[Table XV around here]

Panel A contains all transfer loans, while Panel B contains first transfers, and Panel C later transfers. Column I reports the results for interest rates, column II for the existence of collateral attached to a loan, column III for loan maturity and column IV for loan amount.

In Panel A none of the loan conditions are statistically different at the 5 percent level. Transfers are less likely to be collateralized by 8 percentage points, but this result is only statistically significant at the 10 percent level.

Results are more evident at Panel B because we are only including first transfers. None of the loan conditions are statistically different at the 10 percent level, indicating that loan transfers and nonswitching loans share on average the same loan conditions.

In Panel C, the interest rate of later transfers is lower on average by 111 bps in comparison with nonswitching loans. Loan amounts of later loan transfers are on average lower by €22,945. According to Degryse, Kim and Ongena (2009), relationship borrowers tend to have better access to finance and therefore obtain larger loans than other borrowers that are initiating their relationship with another bank.[31] However, we only find this effect for later transfers.

There are not statistically significant differences on loan maturity for transfer loans, even though we find that switching loans have a longer maturity on average (0.63 months). These results are consistent with hold up theories, showing that firms that establish new relationships after a branch closure are not able to reap the benefits usually obtained when switching.

[31] In most informational holdup models (and to facilitate theoretical interpretation) all granted loans are of unit size, making these findings that are indeed seemingly inconsistent with such models not entirely straightforward to interpret.

V. The Effects of Branch Closures

We have shown that firms obtain higher interest rates if they establish a new relationship with a bank after a branch of their inside bank closes than they would if this relationship was established in normal conditions. This result allows us to identify the mechanism underlying the well-documented switching discounts in banking, showing that they are anchored to information asymmetries leading to a holdup problem.

The richness of our data and the widespread presence of branch closures allow us to analyze what happens after branches close along several other dimensions that go beyond loan pricing, thus complementing results obtained by De Juan (2003), Cerutti, Dell'Ariccia and Martínez Pería (2007), Coccorese (2012), and recently Allen, Damar and Martinez-Miera (2016), Brown, Guin and Kirschenmann (2016), Martin-Oliver (2016), Xu et al. (2018), and Qi et al. (2020).

In Table XVI we show what happens to firms affected by branch closures in the 12 months after the event occurred. After one year, 17 percent of these firms had obtained loans from a new bank. In the first month after closure, 8 percent of affected firms established relationships with new banks, compared with 3 percent for the whole financial system. Some firms continue to borrow from the same bank, despite the closure (7 percent). However, the vast majority (70 percent) do not obtain any new bank loan in the 12 months after branch closure. One month after closure, 4 percent of all affected firms get loans from their incumbent bank, compared with 6 percent for the whole financial system.

[Table XVI around here]

In Table XVII we look into another dimension of loan pricing. We compare the interest rate of new loans given by inside banks in areas where they close branches against similar

loans they give in other areas. Matched loans do not have significantly different interest rates, which goes against the idea that inside banks abandon areas where they close branches. However, when we do not match interest rates go down considerably one year after the branch closure. These results are consistent with banks` lending to less opaque customers after branch closures.

[Table XVII around here]

To further explore what happens to firms in terms of access to credit in the aftermath of a branch closure, we also look into credit profile consultations in the Credit Register. When a bank is approached by a new potential customer, the bank can, with the customer's consent, consult his situation in the Credit Register. In Column I of Table XVIII we measure the probability that bank *i* downloads at least one credit profile of firms located in zip code *j*. The download probability decreases by 1.84 percentage points for banks that close branches, one to six months after branch closure. There is no significant change in the probability of credit profile downloads for other banks.

[Table XVIII around here]

In Column II of Table XVIII we look at new loan volume given by bank *i* in zip code *j*. There is no significant change in loan volume either for banks that close branches or for other banks, thus suggesting that there are no major additional contractions in credit supply coming from the banks that are closing down branches.

In Table XIX, Column I shows the evolution of the number of firms with credit profile downloads and Column II the change in the volume of new loans. Here we aggregate credit profile downloads and new loans at the zip code level, and not at the zip code-bank level, in order to understand what happens locally. These two variables do not seem to change much after branch closures. In Table XX we report the probability that firms affected by a branch closure to get a new loan after that event, compared to the probability

they recorded before closure. The results confirm that nothing changed in a significant way.

[Tables XIX and XX around here]

Taken together, these results suggest that branch closures in Portugal in the analyzed period did not lead to local credit crunches. Our main results also show that these firms borrow from inside banks at rates that are not statistically different from the average interest rate granted by those banks. These outcomes possibly reflect the fact that despite the large number of closures, branch density in Portugal continues to rank among the highest in the world. This makes us even more confident that the results on loan pricing are driven by asymmetric information issues rather than by changes in local competition.

VI. Conclusion

Using comprehensive data from Portuguese bank branch closures and new loans granted between 2012 and 2015, we study how inside information affects loan conditions. The interest rate on loans that firms obtain following the closure of the branch of their "inside" bank—so, when transferring to a branch of another bank in the same vicinity—is not different from the interest rate on non-switching loans. At the same time, and consistent with previous findings in the literature, we find that switching loans carry interest rates that are on average 63 bps lower than those of non-switching loans. These findings suggest that firms incur a loss by foregoing a discount when their bank branch closes.

Later transfers (so, not the first following the branch closure) again enjoy statistically significant interest rate discounts, as do within-bank transfers to other (potentially far-flung) branches. We also observe that transfers are associated with lower loan defaults if we compare them with regular switches.

The main contribution of our paper is to show that the interest rate discounts that a firm typically obtains when establishing a relationship with a new bank vanish if these new matches are forged in the aftermath of the closure of a branch that was providing the firm's financing. This is consistent with theories of holdup in banking, suggesting that branch closure (at least partially) destroys the information captured by the inside banks. These results still hold even when considering a large variety of factors that may cause such behavior.

We also analyze the local impact of branch closures. Firms borrow more from other banks following a closure, and banks that close branches tend to lend to more informationally transparent firms. However, on aggregate there are no significant differences in terms of interest rates, levels of monitoring, or loan volumes. Despite the large number of branch closures and the immediate consequences for loan pricing for firms that establish new relationships, there are no scarring effects in terms of access to credit. That said, the branch closures in question did not significantly change the local banking landscape, as the figure for branches per capita remained among the highest in the world. This implies that over-branching can be successfully dealt with without compromising small businesses' access to credit.

Appendix A: Informational Holdup Theory

What happens when firms have to change banks and establish new relationships? We start from a literature in which it is conjectured that a bank's ability to privately and recurrently observe proprietary information about its customer during a relationship can be beneficial to the customer, but it can also impose certain costs.[32] A credit relationship can foster flexibility in writing loan contracts (Boot and Thakor (1994) and von Thadden (1995)) and can increase access to capital at a lower cost and/or with less collateral. In addition, banks may smooth interest rates and reschedule capital payments to help their customers overcome financial difficulties (Chemmanur and Fulghieri (1994)). A relationship with a reputable institution may also facilitate current and future funding from both shareholders and alternative outside sources (Diamond (1991)). Finally, the confidentiality of a relationship may facilitate screening and monitoring (Campbell (1979)) and prevent the leakage of proprietary information to product market competitors (Bhattacharya and Chiesa (1995) and Yosha (1995)).

Access to private information about a borrower could also lead to holdup problems, however, and to the extraction of informational rents. In Sharpe (1990), the incumbent bank has the ability to extract rents from its best customers by "holding up" customers from receiving competitive financing elsewhere.[33] The incumbent "inside" bank gains this monopoly power through its informational advantage over the other "outside" banks. If a high quality or "good" borrower tries to switch to a new, uninformed bank, it gets pooled with low quality or "bad" firms and is offered a higher loan rate. And, in the model proposed by von Thadden (2004) following Sharpe (1990) and Rajan (1992), outside banks will optimally randomize loan rates to attract firms that have the same observed characteristics but in the end at best break even in terms of profits. From his model, three hypotheses are empirically verifiable:

(H1) *Firms will switch banks, from one period to the next.*

[32] Our discussion adjusts Ioannidou and Ongena (2010) to our setting. Boot (2000), Ongena and Smith (2000), Berger and Udell (2002), Elyasiani and Goldberg (2004), Degryse and Ongena (2008), Degryse, Kim and Ongena (2009), Degryse, Ioannidou and Ongena (2015), Duqi, Tomaselli and Torluccio (2018), and Degryse, Morales-Acevedo and Ongena (2019), among others, review this literature.

[33] Holdup costs are also present in Rajan (1992), since in his model the bank has the power to withdraw financing when it perceives the firm to be inadequately managed. This degree of control can be costly because it reduces the incentives of the firm manager to exert effort. In Hauswald and Marquez (2003), the informational advantage is differentiated across banks. See also Egli, Ongena and Smith (2006), Black (2011) and Karapetyan and Stacescu (2014).

(H2) *Loans to new applicants will obtain similar interest rates compared to nonswitching loans if the inside bank (or any other bank) is known not to have private information about the specific firm, which is the case with "pooling" in the first period of the model*.

(H3) *Switching loans have lower interest rates than nonswitching loans if the inside bank is known to have collected private information about the firm, which is the case with "poaching" in the second period of the model*.

The second hypothesis describes the pricing that occurs in its first period of the model and this scenario may arise if a branch of the inside bank closes and all its firms have to transfer; outside banks will then pool-price the arriving firms. In essence, the third hypothesis summarizes the differential pricing of switchers and nonswitchers in the second period in von Thadden (2004).[34] It is in the careful comparison of the differential pricing in these two situations that resides the contribution of our paper.

von Thadden (2004) also contains predictions with respect to the quality of switchers. Higher quality firms are less likely to switch because incumbent banks seek to retain them; still von Thadden (2004) expects that a mixture of good and bad firms will switch. The fourth testable hypothesis is therefore:

(H4) *Both low- and high-quality firms switch banks, but low quality firms switch more proportionally than high quality firms.*

In sum, inside banks charge good borrowers loan rates that are higher than warranted by their true quality (were it publicly known). The more severe the informational asymmetries (e.g., the stronger the bank-firm relationship), the higher the informational rents. Banking models that incorporate holdup are founded on two key assumptions:

(A1) Relationships mitigate informational asymmetries between firms and banks.

[34] Recall that the pooling rate in the first period is lower than the fair rate if competing banks expect to extract informational rents in the second period. Simulations of von Thadden (2004) in Ioannidou and Ongena (2010), Internet Appendix II, show that the difference between the average loan rate on all loans granted (in the second period) and the average pooling rate (in the first period) will be one quarter of the difference between accepted and offered loan rates for switchers and one third of the difference between switchers and stayers when matching on firm quality. Put differently, in von Thadden (2004) the discount on transfer loans (in the first period) will be less than one third of the size of the discount on switching loans (in the second period). We confirm and robustify these findings with further simulations for this paper.

(A2) Relationships create informational asymmetries between inside and outside banks that are alleviated by observable firm information.

Information asymmetry is not a necessary condition for switching discounts. Klemperer (1987) discusses that in oligopolistic markets with switching costs banks have incentives to provide introductory offers to capture rents when there are repeated interactions with firms, even when both incumbent and entrant banks have the same information about the firm.

The suboptimal closure of bank branches within a short time frame provides the quasi-ideal setting to understand how these theories and hypotheses shape the commonly observed switching discounts.

Appendix B: Robustness of Empirical Findings

In this Appendix we report on many alterations of the exercises presented in the paper. We report the estimates in an Internet Appendix that comes with a Table of Contents that indicates the Internet Appendix Number, the issue addressed, the analysis done and its operationalization. Overall, the many estimates show robustness and consistency of interpretation in the paper.

A. Changes in Local Competition

To ensure that our estimates are not driven by changes in competition we analyze areas where the hypothetical closure of a branch should have a negligible impact on competition.[35] For that purpose, we calculate the impact of each branch closure in our data set on the local HHI (for a radius of 5 km around the closure and an HHI calculated based on branch presence). In Internet Appendix 1 we re-do Tables V to VII for firms served by branches that witness a minor change in HHI which is below 25 (which is a few points below the median change on a scale of 0 to 10,000; see Internet Appendix 1 Figure 1).[36] These are the areas in which closing a branch should have the smallest impact on competition. Internet Appendix 1 Figure 2 shows the variation in branch density per municipality.

We obtain the same conclusions as before. There is an interest rate discount for loan switches, which varies between 59 and 122 bps, and this discount does not exist for transfers and first transfers 1 to 6 months after the branch closure. These estimates imply that our findings so far are robust across different levels in the intensity of competition.[37]

In the Internet Appendix 2 we use only small banks within highly competitive areas. If discounts still exist in high competition areas for small banks that have arguably no market power, then it is unlikely that discounts are being generated by an increase in competition after branch closure. Our

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[35] While the pool-pricing of transfer loans should in principle be unaffected by the organizational characteristics of the closing branch, the pricing of switching loans can be affected by the organization of the inside bank. Loan officers at decentralized banks for example may be more incentivized to collect and use soft information (Stein (2002)) that may be more private in nature than the hard information employed to price loans in centralized banks. The discount received when switching from a decentralized bank will then be steeper. See also Degryse, Laeven and Ongena (2009). For this and other Internet Appendices we also re-calculate all estimates for switching loans unconditional on branch closure, i.e., the equivalent of Internet Appendix 0 Table IV. Findings are consistent and available upon request (or can be found in earlier versions of the paper on the internet).

[36] The mean HHI is 1,423 and the median is 1,250. According to the guidelines of the U.S. Department of Justice, a market in which the HHI is between 1,500 and 2,500 is considered to be moderately concentrated, and markets in which the HHI is in excess of 2,500 points are considered highly concentrated.

[37] In a further robustness exercise, we consider only transfers in which the HHI of the inside bank does not decrease by more than 25 points. The results remain valid.

results are broadly consistent with what we had before, thus providing further evidence that changes in competition do not play a role in our story.

To be sure that the effect on interest rates is not being driven by changes in local competition, we explicitly control for changes in the HHI (Internet Appendix 3). We compute the change in HHI between month *t-1* and *t* using the number of branches within a 5 km radius. We include a quadratic effect as well, to consider potential non-linearities. The change in HHI has a positive concave effect on the spread between transfer and switching loans only in the 7-12 months window. A decrease in competition increases loan interest rates 7-12 months after the branch closure. However, our main results for transfer firms remain unchanged.

B. Firm Quality

In our baseline results, one of the matching variables used is firms' credit rating. As indicated before this allows us to be sure that potential pricing differences are not attributable to differences in perceived risk. Nevertheless, it is interesting to dig deeper into this issue and examine if switching and transfer outcomes are similar for good and bad quality firms. This is even more relevant if we recall that one of our aims is to test the informational holdup models, which predict that because of adverse selection, a higher proportion of switching firms is worse-off in terms of unobservable risk characteristics than if the firms had been randomly drawn from the population (which resembles more the branch closure situation that generated the transfer loans).

In Internet Appendices 4 and 5 we do a sample split of firms according to their credit rating. In Appendix 4 we use firms that have a probability of default below the median and in Appendix 5 we use firms with a probability of default above the median. We replicate Table V in both appendices and find the same results for the two groups. Apparently it is not the differences in credit ratings that drive our main results. Interestingly, we observe that better quality firms have larger switching discounts.

C. Matching Strategies

To be sure that our results are as robust as possible to different matching strategies, in Internet Appendices 6 to 12 we re-run Table V with different matching variables.

In Appendix 6 we match switching loans on county instead of province and obtain similar interest rate discounts for switching loans. We also do not find statistically significant interest rate discounts for loan transfers 1 to 6 months after the branch closure.

In Appendix 7 we match on branch density (number of branches in the county per 1,000 adults) and find similar results for switching discounts and loan transfer discounts 1 to 6 months after the branch closure. Results from Appendices 6 and 7 address remaining concerns that our baseline results are driven by differences between the regions of the switching loans and the regions of the matching loans.

In Appendix 8 we create a categorical variable that classifies firms as being micro-sized, small, medium-sized or large. We create this classification using the guidelines defined in the EU recommendation 2003/361. We use this variable as an additional matching variable, replicate Table V, and arrive at qualitatively similar conclusions.

To further push our matching strategy in Appendix 9 we report the results of a much stricter approach. Instead of matching transfer firms with nonswitching loans, we match transfer firms with switching firms arriving at the same bank. This means that we are comparing two firms that establish a new relationship with the same bank at the same time, sharing a number of similar characteristics. The only observable difference is that one firm is switching likely because the closest branch of its former bank closed, while the other is switching due to an endogenous choice. The results suggest that there are no discernable differences in the interest rates offered by a bank to these two types of firms, which are switching for different reasons, neither before nor immediately after the branch closure. Transfer loans are indeed somewhat more expensive, as we would expect, 7 to 12 months after the branch closure. However, we should emphasize that these results are based on a very small number of observations (12 matched pairs in the 6 months after closure and 9 matched pairs between 7 and 12 months).

In order to increase the number of observations, we loosen the matching strategy along a few dimensions, namely collateral, legal structure of the firms and fixed vs floating interest rates (Appendix 10). We still have a very reduced number of observations (19 pairs in the 6 months after closure). The results are slightly stronger than in Appendix 9, but they are overall similar.

To be fully transparent on the impacts of our matching strategy, in Appendix 11 we show our results for transfer loans when we exclude one matching variable at a time. The results are remarkably consistent, with only two exceptions: when we do not match by province or by loan amount, we observe also statistically significant discounts on transfer loans in the 6 months following a branch closure. However, there may exist important differences between provinces or firms asking for significantly different loan amounts that make these controls especially relevant.

One final test on the matching strategy is to use a propensity score matching algorithm instead of the coarsened exact matching strategy (Appendix 12). The propensity score matching is a different matching strategy (e.g., Rosenbaum and Rubin (1983)) because it relies on matching similar firms instead of firms that share exactly the same characteristics. The trade-off is that we are able to increase the number of matches (e.g., Stuart (2010)). Despite the methodological and sample differences, the results on transfer loans are entirely consistent.

D. Other Robustness

In Internet Appendices 13 to 22 we go on to further test the robustness of our findings for other dimensions. First, we analyze sub-samples of our dataset and revisit two earlier mentioned issues, pertaining to the sample period and geographical area covered by our study.

In Appendix 13 we replicate Tables IV and V excluding the period starting in December 2014 after which all banks had to report loan rates.

In Appendix 14 we exclude Lisbon and Porto, large cities where many closures occurred yet distances may play a different role than elsewhere due to branch density. In both cases our findings are most similar.

In Appendix 15 we include the month of the branch closure and the month before the branch closure in the post-transfer period, i.e., we assume that in the month before the branch closure firms already act as if the branch of the incumbent bank has been closed. With this assumption, we obtain similar results for transfers.

To be sure that the results are not driven by a few special loans, we consider a subsample where we take only branch closures that lead to more than 10 transfers (Appendix 16). We still obtain an average positive but non-significant interest rate differential 1 to 6 months after closure.

Another potentially relevant issue is that firms are not forced to search for a new relationship immediately after their branch closes. Even though that will likely be the case in most situations, as firms often interact with banks to have access to a variety of services that go beyond bank loans, in some cases a firm may wait until its loan expires before searching for a new bank. This is actually what might explain why switching discounts re-emerge after the branch closure, as these are firms that could afford more time to look for a better deal (and the bank has time to make a more solid assessment). To exclude these situations, in Appendix 17 we show the results for the subset of firms that had to refinance a loan within 90 days after branch closure. Our results still hold.

One of the reasons why the pool-pricing argument is relevant comes from the fact that, as mentioned above, banks might have trouble in processing information on a pool of new borrowers that suddenly arrive at the bank. To check whether the degree of information asymmetry between borrowers and lenders truly matters in this setting, in Appendix 18 we run our estimates only for the most opaque firms (defined as those with fewer than 10 employees, and turnover or assets below €2 million, located in areas with branch density below the median). In this case, the results are quite stronger. These firms never get a discount when they switch, regardless of the time horizon. Banks seem to always pool price loans on firms on which they might have more difficulties in assessing their true quality.

In Appendices 19 and 20 we look at what happens to switchers and transferers over time. Ioannidou and Ongena (2010) show that switching discounts tend to vanish over time, as the firm

gets locked-in the new relationship. That is consistent with the results we obtain in Appendix 19. For transfer loans, in Appendix 20, which start without a discount, the interest rates are never statistically different from those of the control group.

In Appendix 21 we show the results of what we can call a placebo test. We still compare interest rates on transfers and switches. However, while in our baseline definition we consider that there is a transfer only when a new relationship is established after a branch closure when there is no other branch of that bank close by (in a 5 km radius), here we look at cases in which there is a closure but there is still at least another branch of that bank at most 1 km away from the firm. In this case, the switching discount reappears for the month immediately after the closure, i.e., these transfers are actually switches. This shows that our definition of transfer loans is strict enough to provide meaningful tests.

Finally, in Appendix 22 we consider a different control group. Instead of comparing the transfer loans with all other similar loans being granted by the outside bank, we do this comparison for the branches of the outside bank that are not close to the areas where branches closed. This allows us to avoid concerns that the branches of the outside banks faced with more incoming borrowers pass on potential congestion costs to all their customers. The lack of discount after branch closure becomes even clearer.

In further unreported regressions we re-run all exercises only for closures of branches by banks that were recapitalized with bailout funds (as these closures could even be more externally imposed and therefore even less encumbered than other closures). Results are most similar.[38]

[38] In one specific date, one bank reports a large number of loans to the same firm. We believe that this might have been a reporting error. Because it is impossible for us to reject this conjecture, we repeat the analysis without these loans. The results are qualitatively the same. We opted to maintain these loans in the dataset to maintain its integrity.

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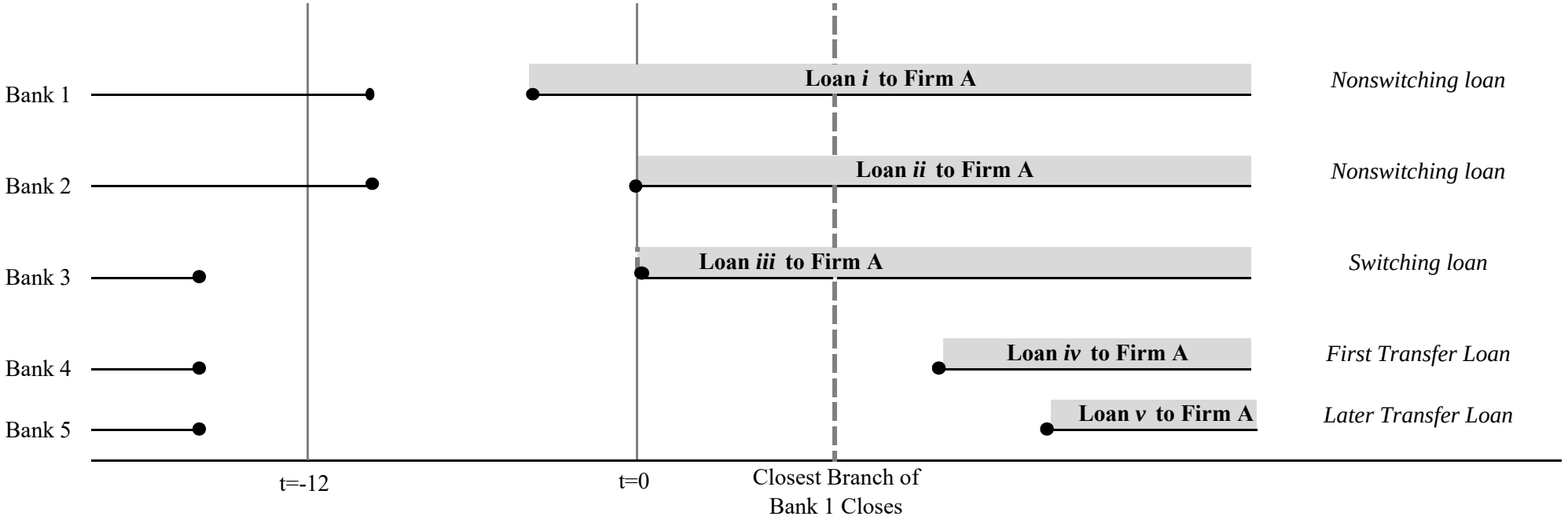


Figure 1. Switching loans, transfers, inside banks and outside banks. The figure above represents the relationships between firm A and five different banks. Before t=0 firm A has a loan outstanding with Banks 1 and 2, the inside banks. At t=0 firm A establishes a relationship with Bank 3. Bank 3 is an outside bank because the firm did not have a relationship with Bank 3 in the previous 12 months. Loans *i* and *ii* are nonswitching loans because these loans are granted by the inside banks. Loan *iii* is a switching loan because it is a new loan granted by an outside bank. Loan *iv* given by Bank 4 is a transfer loan because the loan is a switching loan and it was given after the branch of an inside bank (say Bank 1) was closed. Loan 4 is also a first transfer loan. A subsequent switching loan *v* obtained by Firm A from yet another Bank 5 is called a later transfer loan.

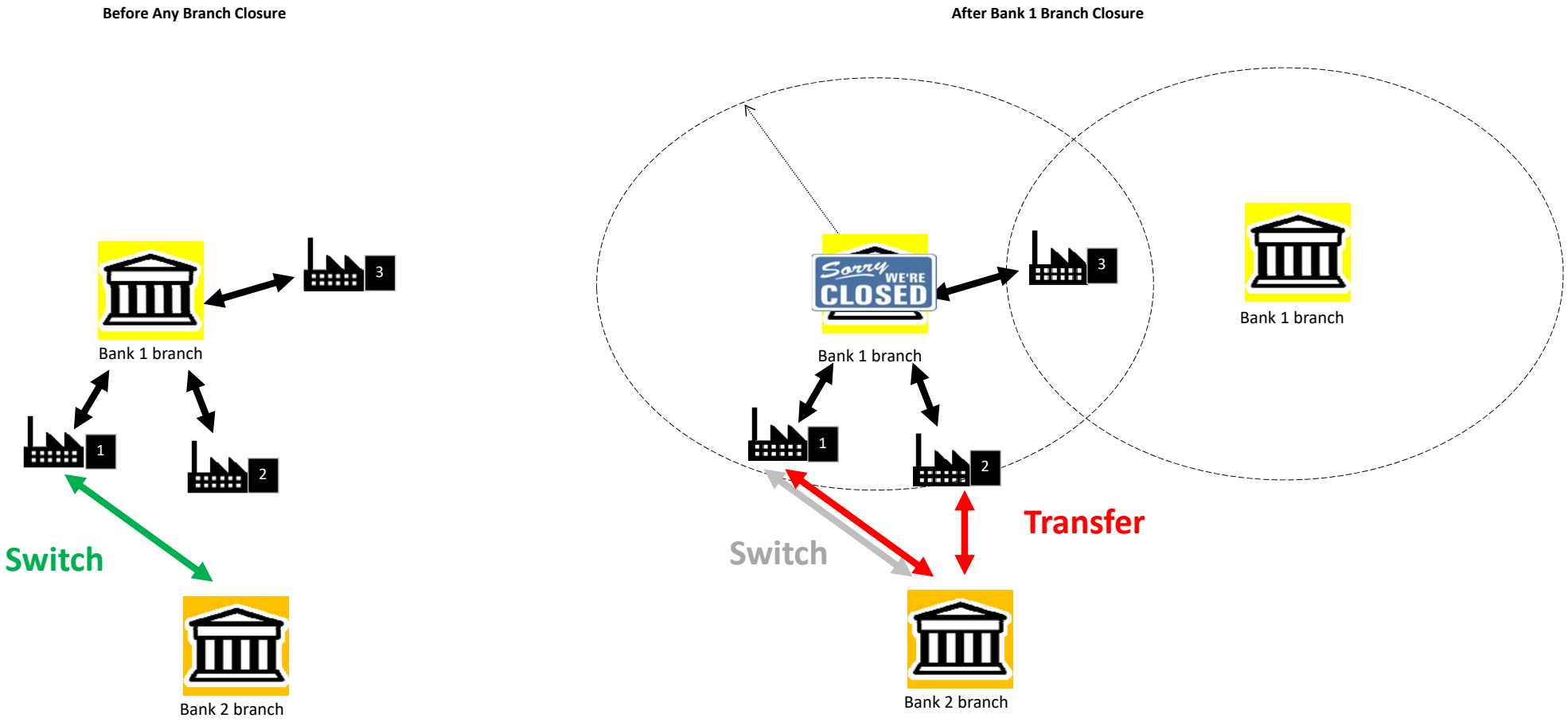


Figure 2. Transfer loans given bank branch and firm location. The figure displays the branch of Bank 1 that is being closed and the location of the other bank branches. Transfer loans are switching loans granted in the period after the bank branch closes by a branch of another bank to firms that are located within 5 kilometers of the closing branch (and that had a relationship with the bank of the closing branch) and that are located more than 5 kilometers from another branch of the bank that closes its branch. Firms 1 and 2 get transfer loans from bank 2 but firm 3 does not, as there is another branch of bank 1 less than 5 kilometers away.

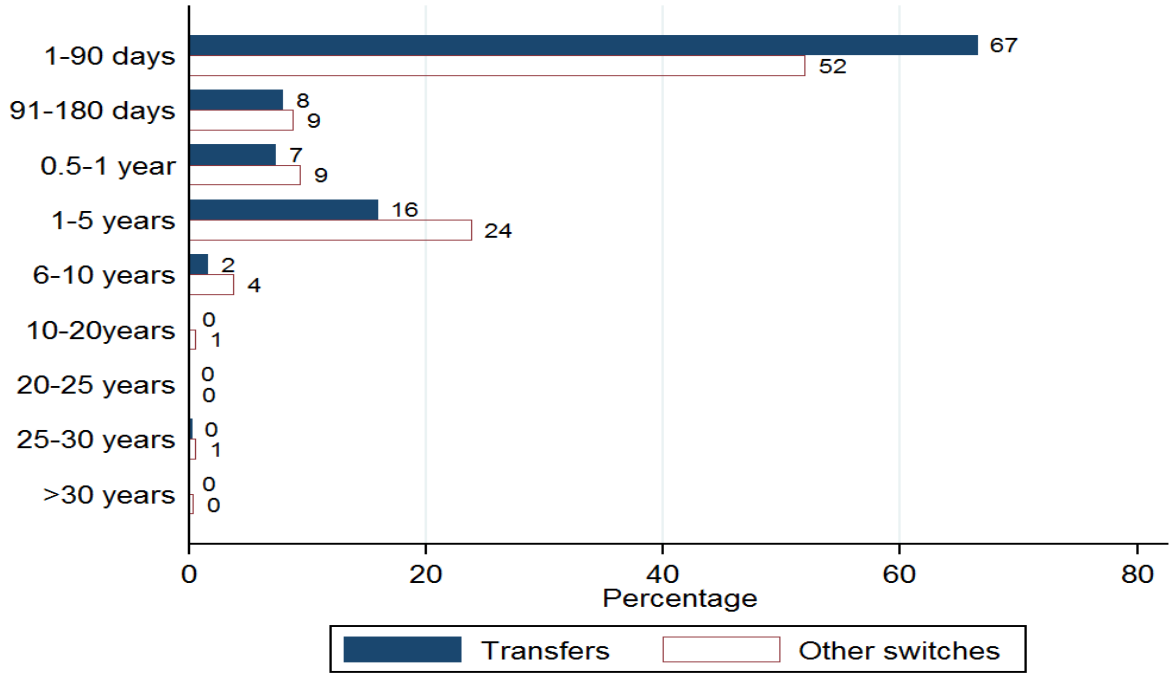


Figure 3. Residual maturity of relationships with the inside bank. The figure displays the distribution of firms that switch banks according to the residual maturity of their inside bank loans. When firms have more than one loan with the inside bank(s) we use the shortest residual maturity.

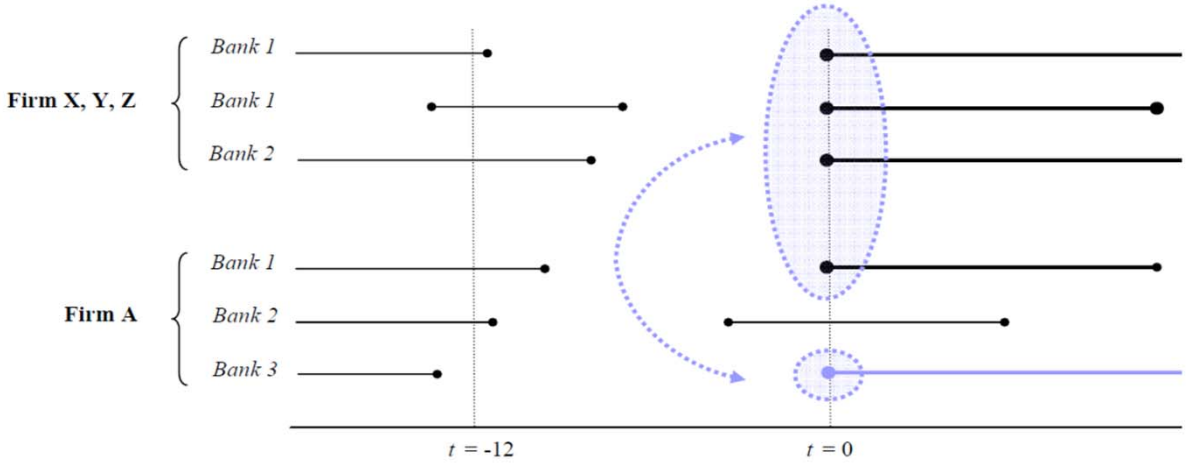


Figure 4. Switching vs. nonswitching loans at the switcher's inside bank. The figure displays the analysis in Table IV (Columns I and II), where we compare the loan rate of the switching loan with comparable non-switching new loans from the switcher's inside banks at the time of the switch, as in Ioannidou and Ongena (2010). The loan granted by Bank 3 to Firm A is the switching loan; all other loans are nonswitching loans.

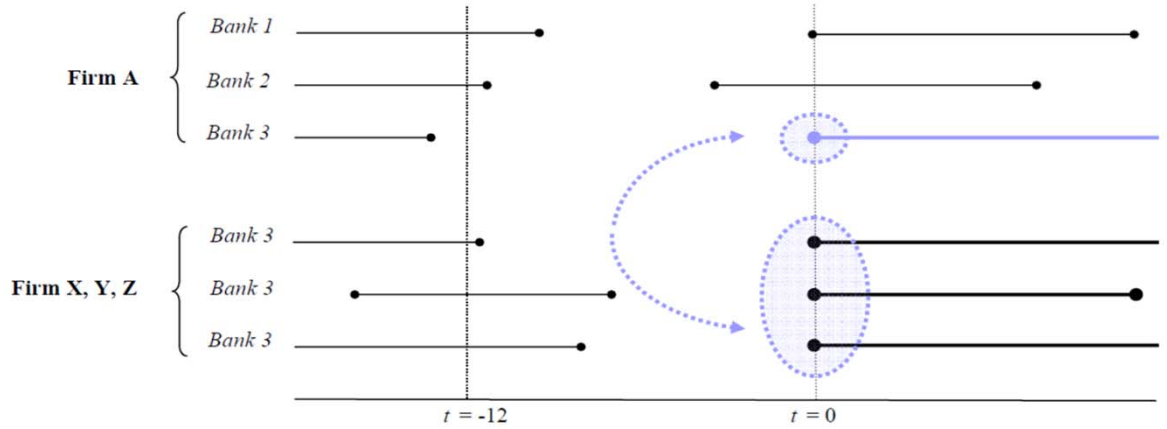


Figure 5. Switching vs. nonswitching loans at the switcher's outside bank. The figure displays the analysis in Table IV (Column III) and subsequent tables, where we compare the rate of the switching loan with the rate of comparable nonswitching loans that the switcher's outside bank originates at the time of the switch, as in Ioannidou and Ongena (2010). The loan granted by Bank 3 to Firm A is the switching loan; all other loans are nonswitching loans.

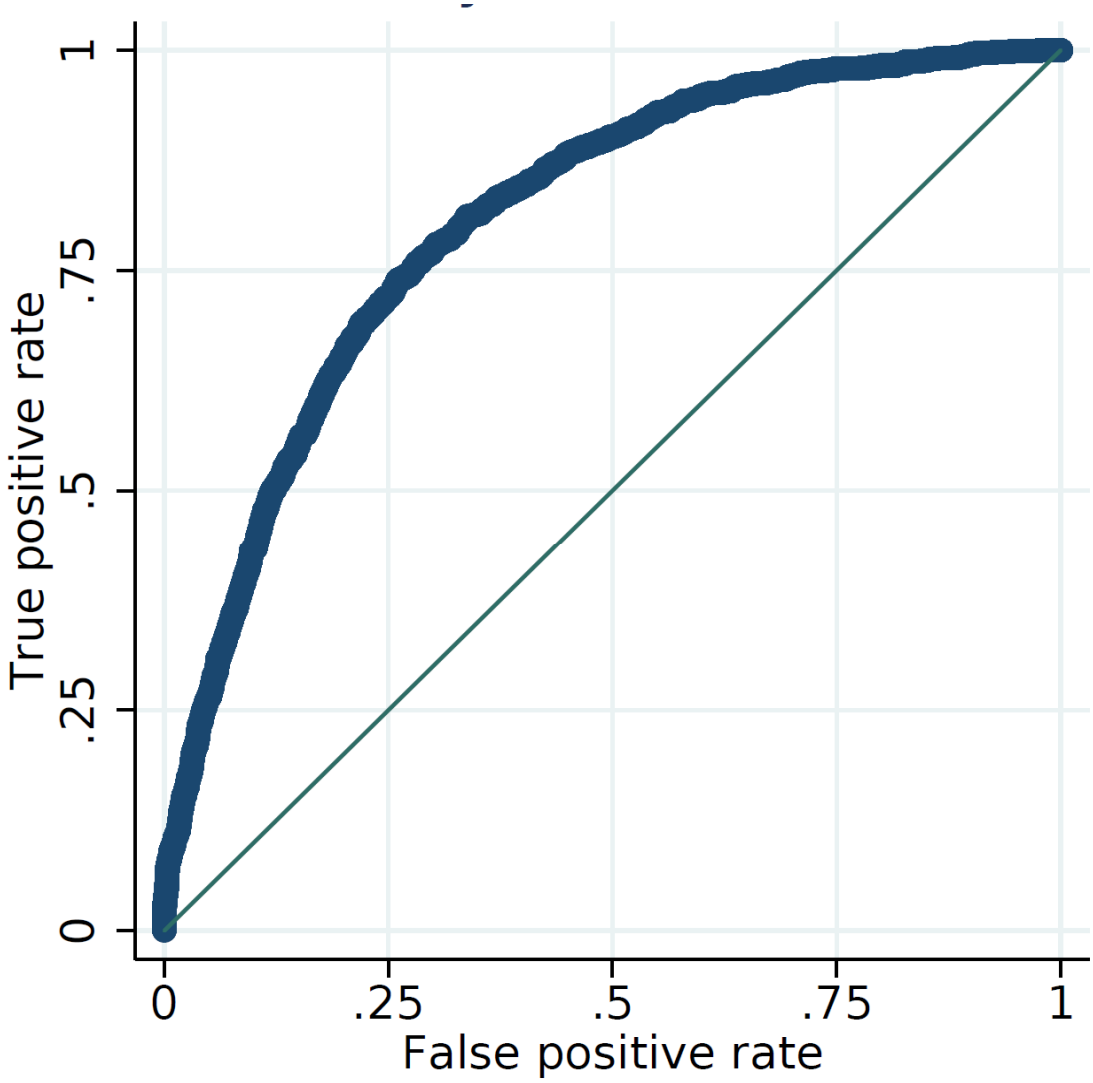


Figure 6. ROC Curve for the Branch Closure Prediction Model The figure above shows the ROC curve for the branch closure prediction probit model (appendix 2). The AUC is 0.8070 and is significantly different from 0 at the 5% significance level. We performed 1,000 replications and clustered at the branch level.

Table I

Selected Characteristics of Transfer, Nonswitching and Switching Loans

We report the mean, standard deviation, and median for selected loan and firm characteristics. The unit of observation in this table is the number (n) of loan initiations for transfer, nonswitching and switching loans. We assess the differences in means of transfer or switching loans versus the nonswitching loans using the Student's t-test. We assess the differences in medians using the Wilcoxon–Mann–Whitney test for continuous variables and the Pearson's Chi-square test for categorical variables. We assess the differences in standard deviations using Levene's test. We indicate whether the differences between the corresponding mean and median values are significant at the 10%, 5%, and 1% levels using ∗, ∗∗, and ∗∗∗, respectively.

	Transfer Loans *(n=1,129)*			Nonswitching loans *(n=1,338,829)*			Switching loans *(n=24,292)*		
	Mean	St. Dev.	Median	Mean	St. Dev.	Median	Mean	St. Dev.	Median
Interest rate (in basis points)	536***	233***	521***	755	368	643	609***	268***	546***
Risk indicator (100=default)	2.86***	7.87***	1.9***	6.73	19.00	2.35	3.39***	9.37***	2.01***
Defaulted firm (in %)	0.53***	7.27***	0***	3.37	18.00	0	0.663***	8.11***	0***
Limited company (in %)	74***	43.9***	100***	67.60	46.80	100	80.3***	39.8***	100***
Public LLC (in %)	23.6***	42.5***	0***	30.70	46.10	0	16.1***	36.7***	0***
Collateralized loan (in %)	59.9***	49***	100***	37.90	48.50	0	66.1***	47.3***	100***
Loan maturity (months)	24.1***	34.5***	6.03***	7.0	16.7	2.9	28.5***	36***	6.13***
Loan amount (in EUR)	107,924*	393,434*	25,000***	57,347	960,996	9,000	102,721***	596,717***	25,000***
Amount of bank debt (in EUR)	1,051,500***	2,281,304***	312,336***	3,266,369	12,000,435	597,851	848,602***	3,563,670***	89,486***
Floating rate loan (in %)	54.7***	49.8***	100***	81.30	39.00	100	50.6***	50***	100***
Multiple relationships (in %)	86.40	34.3	100	86.80	33.90	100	61.8***	48.6***	100***
Primary lender (in %)	22.9***	42.1***	0***	53.90	49.80	100	35.4***	47.8***	0***
Relationship with multiple products (in %)	21.2***	40.9***	0***	84.30	36.40	100	18.5***	38.8***	0***

Table II
Selected Characteristics of First and Later Transfer Loans

We report the mean, standard deviation, and median for selected loan and firm characteristics. The unit of observation in this table is the number (n) of loan initiations. Transfers are divided in first transfers (first switching loans after branch closure) and later transfers. We assess the differences in means using the Student's t-test. We assess the differences in medians using the Wilcoxon–Mann–Whitney test for continuous variables and the Pearson's Chi-square test for categorical variables. We assess the differences in standard deviations using Levene's test. We indicate whether the differences between the corresponding mean and median values are significant at the 10%, 5%, and 1% levels using ∗, ∗∗, and ∗∗∗, respectively.

	First transfer loans *(n=870)*			Later transfer loans *(n=259)*		
	Mean	St. Dev.	Median	Mean	St. Dev.	Median
Interest rate (in basis points)	548***	242**	526***	496	198	496
Risk indicator (100=default)	3.02	8.27	1.95	2.38	6.47	1.73
Defaulted firm (in %)	0.57	7.56	0	0.39	6.21	0
Limited company (in %)	76.90***	42.17***	1***	64.48	47.95	1
Public LLC (in %)	20.69***	40.53***	0***	33.59	47.32	0
Collateralized loan (in %)	65.17***	47.67***	1***	42.08	49.47	0
Loan maturity (months)	27.10***	36.02***	6.13***	14.19	26.80	3.2
Loan amount (in EUR)	125,083***	443,028***	25,000***	50.287	106,475	14,410
Amount of bank debt (in EUR)	935,381***	2,459,220	206,073***	1,441,552	1,478,350	932,026
Floating rate loan (in %)	49.89***	50.03***	0***	71.04	45.44	1
Multiple relationships (in %)	82.99***	37.59***	1***	97.68	15.07	1
Primary lender (in %)	25.52***	43.62***	0***	14.29	35.06	0
Relationship with multiple products (in %)	18.97***	39.23***	0***	28.57	45.26	0

Table III
Matching variables

We report the number of possible values (#) and a range (or list) of values for the matching variables

Category	Matching variables	#	Possible values
Macro	Quarter	13	2012q2 - 2015q2
Bank	Inside bank	2	= 1 if the firm had a lending relationship with the bank in the last 12 months, and = 0 otherwise
Bank	Outside bank	2	= 1 if the firm did not have a lending relationship with the bank in the last 12 months, and = 0 otherwise
Bank	Foreign bank	2	=1 if bank is part of an international banking group, and = 0 otherwise
Bank	Branch density	0 - ...	number of branches per 1,000 adults
Firm	Firm	94,281	=1 per firm identity, and = 0 otherwise
Firm	Credit rating	6	= 1 if 1st (lowest) risk quartile, = 2 if 2nd risk quartile, = 3 if 3rd risk quartile, = 4 if 4th risk quartile, = 5 if defaulting firm, = 6 if firm without credit rating
Firm	Region	20	Aveiro, Beja, Braga, Bragança, Castelo Branco, Coimbra, Faro, Funchal, Guarda, Leiria, Lisboa, Ponta Delgada, Portalegre, Porto, Santarém, Setúbal, Viana do Castelo,Vila Real, Viseu, Évora
Firm	Industry	13	Agriculture, forestry and fishing, mining and quarrying, manufacturing, utilities, construction, wholesale retail and trade, transporting and storage, accomodation and food service activities, information and communication, real estate, finance and insurance, professional/scientific/technical activities, other services.
Firm	Legal structure	3	Sociedade por Quotas, Sociedade Anónima, other legal structure
Firm	Multiple bank relationships	2	=1 if firm has multiple bank relationships
Firm	Locality	308	County where firm is registered
Firm	Size	4	=1 for micro firms =2 for small firms, =3 for medium-sized firms, =4 for large firms
Loan	Collateral	2	=1 if loan is collateralized, and = 0 otherwise.
Loan	Loan maturity	2	= 1 if the matched loans have similar maturity (using a (−30%, +30%) window), and = 0 otherwise
Loan	Loan amount	2	= 1 if the matched loans have similar amount (using a (−30%, +30%) window), and = 0 otherwise
Loan	Floating loan rate	2	= 1 if the interest rate on the loan varies more than 50% of the time, and = 0 otherwise

Table IV

Spreads between Interest Rates on Switching or Transfer Loans and Matched Nonswitching Loans When the Closest Branch of the Inside Bank Closes

We assess the spread between the interest rate on switching or transfer loans and the interest rate on new nonswitching loans obtained from the switchers' inside bank (columns I, II and IV) and outside bank (column III) when the closest branch of the inside bank closes. In columns I to III we consider other nonswitching loans given to other firms. In column IV we consider nonswitching loans given to the same firm. All variables are defined in Table III. We regress the spreads on a constant and report the coefficient on the constant. We weigh each observation by one over the total number of comparable nonswitching loans per switching or transfer loan. We cluster at the switching-firm level and report robust standard errors between parentheses. We report standard errors between parentheses. ∗, ∗∗, and ∗∗∗ indicate significance at the 10%, 5%, and 1% levels, two-tailed.

	Main Matching Strategies				Robustness
	I	II	III	IV	V
Matching Variables			*Benchmark*		*Loose Matching*
Quarter	Yes	Yes	Yes	Yes	Yes
Inside bank	Yes	Yes			
Outside bank			Yes		Yes
Foreign bank		Yes			
Firm				Yes	
Credit rating	Yes	Yes	Yes	Yes	
Region	Yes	Yes	Yes	Yes	
Industry	Yes	Yes	Yes	Yes	
Legal structure	Yes	Yes	Yes	Yes	
Collateral	Yes	Yes	Yes	Yes	
Loan maturity	Yes	Yes	Yes	Yes	Yes
Loan amount	Yes	Yes	Yes	Yes	Yes
Floating loan rate	Yes	Yes	Yes	Yes	
Number of switching or transfer loans	621	439	612	191	1,768
Number of nonswitching loans	4,232	2,469	2,497	312	362,387
Number of observations (matched pairs)	6,249	3,735	3,261	657	515,327
Rate difference					
Before branch closure (Switching)	-90.21***	-90.51***	-62.81***	-212.53***	-52.12***
	(18.48)	(22.60)	(23.66)	(73.70)	(19.13)
1-6 months after closure (Transfer)	-19.26	17.02	15.62	-62.24	-26.47
	(41.24)	(47.33)	(29.55)	(52.18)	(20.39)

Table V

Spreads between Interest Rates on Switching or Transfer Loans and Matched Nonswitching Loans When the Closest Branch of the Inside Bank Closes, After More Than Six Months

We assess the spread between the interest rate on switching or first or later transfer loans and the interest rate on new nonswitching loans obtained from the switchers' outside bank (by other firms) when the closest branch of the inside bank closes. We match on the variables indicated in Column III of Table IV. All variables are defined in Table III. We regress the spreads on a constant and report the coefficient on the constant. We weigh each observation by one over the total number of comparable nonswitching loans per switching or first transfer loan. We cluster at the switching-firm level and report robust standard errors between parentheses. ∗, ∗∗, and ∗∗∗ indicate significance at the 10%, 5%, and 1% levels, two-tailed.

	Switching	*Transfer*		
Period since the branch closure	Before	1-6 months after	7-12 months after	>12 months after
Number of switching / transfer loans	230	68	78	236
Number of nonswitching loans	878	295	338	986
Number of observations (matched pairs)	1,050	305	535	1,371
Interest rate difference with matching	-62.81***	15.62	-57.30*	-94.21***
	(23.66)	(29.55)	(33.85)	(16.84)
Interest rate difference without matching	-79.73***	-180.55***	-209.16***	-263.39***
	(21.07)	(29.88)	(28.61)	(21.78)

Table VI
Spreads between Interest Rates on Switching or First and Later Transfer Loans and Matched Nonswitching Loans Given by the Outside Bank When the Closest Branch of the Inside Bank Closes

We assess the spread between the interest rate on switching or first or later transfer loans and the interest rate on new nonswitching loans obtained from the switchers' outside bank (by other firms) when the closest branch of the inside bank closes. We match on the variables indicated in Column III of Table IV. All variables are defined in Table III. We regress the spreads on a constant and report the coefficient on the constant. We weigh each observation by one over the total number of comparable nonswitching loans per switching or first transfer loan. We cluster at the switching-firm level and report robust standard errors between parentheses. We also report the difference between the mean interest rate on the switching or first transfer loans and the mean interest rate on the nonswitching loans in each column. We report standard errors between parentheses. ∗, ∗∗, and ∗∗∗ indicate significance at the 10%, 5%, and 1% levels, two-tailed.

	Switching	*First Transfer*		
Period since the branch closure	Before	1-6 months after	7-12 months after	>12 months after
Panel A: First Transfer Loans				
Number of switching / first transfer loans	230	62	39	155
Number of nonswitching loans	878	283	185	659
Number of observations (matched pairs)	1,050	289	235	783
Interest rate difference with matching	-62.81***	25.06	0.77	-96.89***
	(23.66)	(31.13)	(25.38)	(22.18)
Interest rate difference without matching	-79.73***	-163.60***	-239.23***	-229.91***
	(21.07)	(30.83)	(31.35)	(26.63)
Panel B: Later Transfer Loans				
Number of switching loans	230	6	39	81
Number of nonswitching loans	878	16	189	336
Number of observations (matched pairs)	1,050	16	300	588
Interest rate difference with matching	-62.81***	-81.96	-115.38**	-89.09***
	(23.66)	(74.82)	(51.13)	(24.20)
Interest rate difference without matching	-79.73***	-355.67**	-179.09***	-327.45***
	(21.07)	(90.54)	(45.13)	(26.11)

Table VII
Spreads between Interest Rates on Switching or First Transfer Loans, Given by Other Branches of the Inside Bank that Close a Branch, and Matched Nonswitching Loans Given by the Outside Bank When the Closest Branch of the Inside Bank Closes

We assess the spread between the interest rate on switching or first transfer loans granted by other branches from the inside bank that closes a branch and the interest rate on new nonswitching loans obtained from the switchers' outside bank (by other firms) when the closest branch of the inside bank closes. We match on the variables from column V of Table IV, on credit rating and on a variable that is equal to 1 if the credit relationship is more than 5 years old. All variables are defined in Table III. We include only firms with risk category equal to 3 or lower. We regress the spreads on a constant and report the coefficient on the constant. We weigh each observation by one over the total number of comparable nonswitching loans per switching or first transfer loan. We cluster at the switching-firm level and report robust standard errors between parentheses. We also report the difference between the mean interest rate on the switching or first transfer loans and the mean interest rate on the nonswitching loans in each column. We report standard errors between parentheses. ∗, ∗∗, and ∗∗∗ indicate significance at the 10%, 5%, and 1% levels, two-tailed.

	Loans before	*First Transfer within the Inside Bank*		
Period since the branch closure	Before	1-6 months after	7-12 months after	>12 months after
Number of switching / first transfer loans	241	24	34	54
Number of nonswitching loans	8,091	893	1707	1396
Number of observations (matched pairs)	10,301	893	1,772	1,413
Interest rate difference with matching	-52.50***	-92.97**	-73.42**	-33.58*
	(19.86)	(41.23)	(31.65)	(19.90)
Interest rate difference without matching	-4.33	-246.03***	-195.81***	-293.56***
	(29.15)	(30.24)	(43.95)	(28.94)

Table VIII
Default Rate for Firms that Switch and Transfer

The table distinguishes between switching and transfer loans with respect to their default probability and loan loss rate. In Panel A the dependent variable equals one if the firm defaults at the firm-bank level one or two year after the switching or transfer event. In Panel B the dependent variable equals the share of the outstanding amount in default for all firm-bank pairs one and two years after the switching or transfer event. All models include a constant. We report robust standard errors between parentheses. ∗, ∗∗, and ∗∗∗ indicate significance at the 10%, 5%, and 1% levels, two-tailed.

	I	II	III	IV	V	VI
Panel A: The Firm Defaults on the Loan 1 or 2 Years After Switch or Transfer						
	After 1 Year			After 2 Years		
Transfer loan	-0.50	-0.36	-0.26	-1.00*	-0.64	-0.45
	(0.45)	(0.46)	(0.46)	(0.61)	(0.62)	(0.62)
Credit rating, Province, Quarter, Economic activity, Legal structure	No	Yes	Yes	No	Yes	Yes
Interest rate	No	No	Yes	No	No	Yes
Observations	24,292	24,288	24,288	24,292	24,288	24,288
R-squared	0.00	0.03	0.03	0.00	0.03	0.04
Panel B: The Loss Rate on the Loan 1 or 2 Years After Switch or Transfer						
	After 1 Year			After 2 Years		
Transfer loan	-0.09	-0.04	-0.01	-1.19***	-1.07***	-0.98***
	(0.28)	(0.28)	(0.28)	(0.33)	(0.34)	(0.34)
Credit rating, Province, Quarter, Economic activity, Legal structure	No	Yes	Yes	No	Yes	Yes
Interest rate	No	No	Yes	No	No	Yes
Observations	24,292	24,288	24,288	24,292	24,288	24,288
R-squared	0.00	0.02	0.02	0.00	0.02	0.03

Table IX
Probability of Branch Closure

We assess the probability that branches close in a given month. We regress a dummy variable that marks whether each branch closes in a given month on the variables defined below. Branch density refers to the number of branches per 1,000 adults. We use separate linear probability and probit specifications. We cluster at the bank level and report robust standard errors between parentheses. ∗, ∗∗, and ∗∗∗ indicate significance at the 10%, 5%, and 1% levels, two-tailed.

Specification	Linear Probability Model	Probit
Amount outstanding (EUR Million)	-0.0005*	-0.0006*
	(0.0002)	(0.0001)
Percentage of defaulted loans (>=1 month)	0.0021	0.0015
	(0.0016)	(0.0026)
Branch density	0.0100***	0.0255***
	(0.0035)	(0.0035)
Observations	369,131	304,641
County dummies	Yes	Yes
Bank-time dummies	Yes	No
Time dummies	No	Yes
Bank dummies	No	Yes

Table X

Spreads between Interest Rates on Switching or Transfer Loans and Matched Nonswitching Loans Given by the Outside Bank When the Closest Branch of the Inside Bank Closes - Unlikely Branch Closures

We assess the spread between the interest rate on switching or transfer loans and the interest rate on new nonswitching loans obtained from the switchers' outside bank (by other firms) when the closest branch of the inside bank closes. We use the estimates of the probability of branch closures to divide transfers in three quantiles and use only transfers from branches that are the least likely to close. We match on the variables indicated in Column III of Table IV. All variables are defined in Table III. We regress the spreads on a constant and report the coefficient on the constant. We weigh each observation by one over the total number of comparable nonswitching loans per switching or transfer loan. We cluster at the switching-firm level and report robust standard errors between parentheses. We also report the difference between the mean interest rate on the switching or transfer loans and the mean interest rate on the nonswitching loans in each column. We report standard errors between parentheses. ∗, ∗∗, and ∗∗∗ indicate significance at the 10%, 5%, and 1% levels, two-tailed.

	Switching	*Transfer*		
Period since the branch closure	Before	1-6 months after	7-12 months after	>12 months after
Number of switching / transfer loans	31	15	12	123
Number of nonswitching loans	211	100	67	613
Number of observations (matched pairs)	255	106	84	796
Interest rate difference with matching	-64.74**	10.54	-137.31**	-65.43***
	(27.71)	(54.96)	(41.96)	(22.81)
Interest rate difference without matching	-166.54***	-165.17**	45.73	-118.97
	(42.18)	(69.93)	(138.45)	(126.84)

Table XI
Spreads between Interest Rates on Switching or Transfer Loans

We assess the spread between the interest rate on switching or transfer loans and the interest rate on new nonswitching loans obtained from the switchers' outside bank (by other firms) when the closest branch of the inside bank closes. We match on the variables indicated in Column III of Table IV. All variables are defined in Table III. We create a categorical variable to classify loan transfers. Categories are: switching loans that occur before the branch closure; loan transfers 1 to 6 months after the closure; loan transfers 7 to 12 months after the closure; loan transfers more than 12 months after the closure. We regress the spreads on a constant and on the categorical variable, and report the coefficient on the constant. We weigh each observation by one over the total number of comparable nonswitching loans per switching or transfer loan. We cluster at the switching-firm level and report robust standard errors between parentheses. We also report the difference between the mean interest rate on the switching or transfer loans and the mean interest rate on the nonswitching loans in each column. We report standard errors between parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, two-tailed.

Type of transfer	All transfers	First transfers	Later transfers
Number of switching / transfer loans	612	486	356
Number of nonswitching loans	2,497	2,005	1,419
Number of observations (matched pairs)	3,261	2,357	1,954
Switching discount	-62.81***	-62.81***	-62.81***
	(23.62)	(23.63)	(23.66)
Transfer 1-6 months after	78.43**	87.87**	-19.15
	(37.68)	(38.91)	(72.48)
Transfer 7-12 months after	5.51	63.58*	-52.57
	(40.92)	(34.19)	(54.79)
Transfer >12 months after	-31.40	-34.08	-26.28
	(28.99)	(32.37)	(33.65)

Table XII
Spreads between Interest Rates on Switching or First Transfer Loans and Matched Nonswitching Loans Given to the Same Firm When the Closest Branch of the Inside Bank Closes

We assess the spread between the interest rate on switching or first transfer loans and the interest rate on new nonswitching loans obtained by the same firm when the closest branch of the inside bank closes. We match on the variables indicated in Column IV of Table IV and exclude nonswitching loans from the outside bank. All variables are defined in Table III. We regress the spreads on a constant and report the coefficient on the constant. We weigh each observation by one over the total number of comparable nonswitching loans per switching or first transfer loan. We cluster at the switching-firm level and report robust standard errors between parentheses. We also report the difference between the mean interest rate on the switching or first transfer loans and the mean interest rate on the nonswitching loans in each column. We report standard errors between parentheses. ∗, ∗∗, and ∗∗∗ indicate significance at the 10%, 5%, and 1% levels, two-tailed.

	Switching	*First Transfer*		
Period since the branch closure	Before	1-6 months after	7-12 months after	>12 months after
Number of switching / first transfer loans	68	14	10	36
Number of nonswitching loans	121	28	21	56
Number of observations (matched pairs)	220	34	67	75
Interest rate difference with matching	-212.53***	-62.24	-161.24**	-146.62***
	(73.70)	(52.18)	(30.89)	(40.32)
Interest rate difference without matching	-263.61***	-131.02**	-243.62***	-275.54***
	(20.28)	(54.97)	(25.57)	(26.51)

Table XIII
Spreads between Interest Rates on Switching or Later Transfer Loans and Matched Nonswitching Loans Given to the Same Firm When the Closest Branch of the Inside Bank Closes

We assess the spread between the interest rate on switching or later transfer loans and the interest rate on new nonswitching loans obtained by the same firm when the closest branch of the inside bank closes. We match on the variables indicated in Column IV of Table IV and exclude nonswitching loans from the outside bank. All variables are defined in Table III. We regress the spreads on a constant and report the coefficient on the constant. We weigh each observation by one over the total number of comparable nonswitching loans per switching or later transfer loan. We cluster at the switching-firm level and report robust standard errors between parentheses. We also report the difference between the mean interest rate on the switching or later transfer loans and the mean interest rate on the nonswitching loans in each column. We report standard errors between parentheses. ∗, ∗∗, and ∗∗∗ indicate significance at the 10%, 5%, and 1% levels, two-tailed.

	Switching	*Later Transfer*		
Period since the branch closure	Before	1-6 months after	7-12 months after	>12 months after
Number of switching loans	68	0	21	42
Number of nonswitching loans	121	0	37	66
Number of observations (matched pairs)	220	0	70	191
Constant	-212.53***	n.a.	-76.67**	-119.40**
	(73.70)	n.a.	(25.46)	(50.29)
Interest rate difference without matching	-226.78***	n.a.	-247.51***	-293.98***
	(26.80)	n.a.	(37.20)	(69.66)

Table XIV

Spreads between Interest Rates on Switching or Transfer Loans and Matched Nonswitching Loans Given by the Outside Bank When the Closest Branch of the Inside Bank Closes: Bank-Firm Relationships

We assess the spread between the interest rate on switching or transfer loans and the interest rate on new nonswitching loans obtained from the switchers' outside bank (by other firms) when the closest branch of the inside bank closes. We match on the variables indicated in Column III of Table IV. All variables are defined in Table III. We regress the spreads on a constant and report the coefficient on the constant. We weigh each observation by one over the total number of comparable nonswitching loans per switching or transfer loan. We cluster at the switching-firm level and report robust standard errors between parentheses. We also report the difference between the mean interest rate on the switching or transfer loans and the mean interest rate on the nonswitching loans in each column. We report standard errors between parentheses. ∗, ∗∗, and ∗∗∗ indicate significance at the 10%, 5%, and 1% levels, two-tailed.

	Switching	*Transfer*		
Period since the branch closure	Before	1-6 months after	7-12 months after	>12 months after
Panel A: Matching also on a Multiple Bank Relationship Dummy				
Number of switching / transfer loans	191	56	73	202
Number of nonswitching loans	708	186	311	858
Number of observations (matched pairs)	860	194	506	1,222
Interest rate difference with matching	-47.85*	1.07	-60.39*	-90.61***
	(26.24)	(34.25)	(35.66)	(17.69)
Interest rate difference without matching	-101.84***	-121.10***	-211.60***	-208.56**
	(24.80)	(39.06)	(51.98)	(81.25)

Table XV
Differences in Loan Conditions on Transfer Loans and Matched Nonswitching Loans Given by the Outside Bank

In Panel A, we assess the difference in each loan condition on transfer loans (i.e., switching loan after the closest branch of the inside bank closes) and the loan condition on new nonswitching loans obtained (by other firms) from the switchers' outside bank. In Panel B we repeat the analysis of Panel A only for the first transfers after the branch closure. In Panel C we do the analysis for the remaining later transfers. We match on the indicated variables (similar to the benchmark model in Column III of Table IV). The variables are defined in Table III. Loans for the panels A, B and C span between the 1st and 12th month after closure. We regress the difference in each loan condition on a constant and report the coefficient on the constant. We cluster at the switching-firm level and report robust standard errors between parentheses. ∗,∗∗, and ∗∗∗ indicate significance at the 10%, 5%, and 1% levels, two-tailed.

	I Rate	II Collateralized loans	III Maturity	IV Loan amount
Quarter, bank, credit rating, region, industry, legal structure, floating loan rate	Yes	Yes	Yes	Yes
Loan rate		Yes	Yes	Yes
Collateral	Yes		Yes	Yes
Loan maturity	Yes	Yes		Yes
Loan amount	Yes	Yes	Yes	
Panel A: Transfer loans				
Number of transfer loans	146	125	158	207
Number of nonswitching loans	633	549	856	1,736
Number of observations (matched pairs)	840	786	1,306	2,903
Difference in loan conditions (at time of the transfer loan)	-23.34 (24.40)	-0.08* (0.05)	-0.46 (1.52)	-12,365.28 (8,804.40)
Panel B: First transfers				
Number of first transfer loans	101	87	113	143
Number of nonswitching loans	468	403	652	1,325
Number of observations (matched pairs)	524	495	837	1,618
Difference in loan conditions (at time of the first trasnfer loan)	15.68 (21.44)	-0.09 (0.06)	-0.96 (2.10)	-7,630.12 (12,179.94)
Panel C: Later transfers				
Number of later transfer loans	45	38	45	64
Number of nonswitching loans	205	206	295	560
Number of observations (matched pairs)	316	291	469	1,285
Difference in loan conditions (at time of the later transfer loan)	-110.92** (45.39)	-0.06 (0.05)	0.79 (1.06)	-22,945.40*** (7,820.51)

Table XVI
Outcomes for Firms that Are Affected by Branch Closure

In this table we look at firms that are affected by the closure of a bank branch. In the first column we calculate the percentage of fims that get a new loan from a bank other than the bank that closes its branch. In the second column we show the percentage of firms that get a loan from the bank that closed its branch. In the third column we show the percentage of firms that get a loan from the bank that closes its branch, as well as from other banks. In the fourth column we show the percentage of firms that do not get a new loan. Rows represent the number of months passed since the branch closure. Values are cumulative.

Number of months since closure	% Loans Other Banks	% Loans Same Bank	% Loans Same Bank and Other Banks	% No New Loans
1	7.75	2.75	1.27	88.23
2	10.33	3.53	2.17	83.97
3	11.56	4.35	2.84	81.26
4	13.08	4.50	3.29	79.13
5	14.20	5.06	3.62	77.13
6	14.93	5.70	4.09	75.27
7	15.45	5.90	4.63	74.03
8	16.05	6.09	5.06	72.80
9	16.33	6.22	5.42	72.02
10	16.72	6.41	5.77	71.10
11	17.06	6.46	6.22	70.26
12	17.17	6.52	6.50	69.81
Financial system (firm-month pairs)	3.23	5.67	0.04	91.06

Table XVII

Spreads between Interest Rates on Loans to Firms Affected by Branch Closures and Firms Not Affected by Branch Closures

We assess the spread between the interest rate on new loans obtained from the transferers' inside bank when the closest branch of the inside bank closes and other loans that the inside bank gives to firms not affected by branch closures. We match on the variables indicated in Column III of Table IV. All variables are defined in Table III. We regress the spreads on a constant and report the coefficient on the constant. We weigh each observation by one over the total number of comparable loans per loan to an affected firm. We cluster at the switching-firm level and report robust standard errors between parentheses. We also report the difference between the mean interest rate on the loans to affected firms and the mean interest rate on loans to other firms in each column. We report standard errors between parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, two-tailed.

Period since the branch closure	Before	1-6 months after	7-12 months after	>12 months after
Number of switching / transfer loans	10,484	5,347	1,919	4,544
Number of nonswitching loans	32,351	10,367	4,831	9,339
Number of observations (matched pairs)	180,303	195,094	18,062	20,304
Interest rate difference with matching	7.00	5.81	-1.41	1.28
	(0.11)	(0.26)	(0.80)	(0.69)
Interest rate difference without matching	105.15***	-5.38	10.94	-83.62***
	(12.64)	(14.83)	(17.20)	(11.56)

Table XVIII
New Loans and Credit Profile Downloads at the Bank-Zipcode Level in Transfer Areas

Columns I and II are linear probability models. In the first column the dependent variable is equal to 1 if bank i does at least one credit profile download of a firm located in zipcode j. In the second column the dependent variable is the total amount of new loans given by bank *i* to firms located in zipcode *j*. The independent variable "Closing bank" is equal to 1 if zipcode *j* is at most 5 kilometers away from a closing branch of bank *i*. We create a categorical variable to classify loan transfers. Categories are: period before the branch closure; 1 to 6 months after the closure; 7 to 12 months after the closure; more than 12 months after the closure. In column 2 we exclude bank-period pairs before December 2014 when smaller banks do not have to report new loans. Only zipcodes with branch closures within 5 kilometers are included. We cluster at the zipcode level and report robust standard errors in parentheses. ∗, ∗∗, and ∗∗∗ indicate significance at the 10%, 5%, and 1% levels, two-tailed.

	Probability of Credit Profile Downloads	New Loans (EUR thousand)
	I	II
Closing bank	-0.20	3.90
	(0.47)	(2.45)
1-6 months after transfer	0.15	0.11
	(0.13)	(4.56)
7-12 months after transfer	0.22	2.02
	(0.15)	(6.30)
>12 months after transfer	0.25	9.09
	(0.17)	(9.65)
Closing bank * 1-6 months after transfer	-1.84**	-5.02
	(0.76)	(6.59)
Closing bank * 7-12 months after transfer	-1.76	2.17
	(0.98)	(17.04)
Closing bank * >12 months after transfer	-0.66	-2.82
	(0.87)	(8.46)
Observations	397,770	165,216
R-squared	0.1515	0.0450
Time FE	Yes	Yes
Location FE	Yes	Yes
Bank FE	Yes	Yes

Table XIX

New Loans and Credit Profile Downloads at the Zipcode Level in Transfer Areas

Columns I and II are linear probability models. In the first column the dependent variable is the number of firms with credit profile downloads in month *i* and zipcode j. In the second column the dependent variable is the total amount of new loans given to firms located in zipcode *j* in month *i*. We create a categorical variable to classify loan transfers. Categories are: period before the branch closure; 1 to 6 months after the closure; 7 to 12 months after the closure; more than 12 months after the closure. In column 2 we exclude banks that do not have to report new loans before December 2014. Only zipcodes with branch closures within 5 kilometers are included. We cluster at the zipcode level and report robust standard errors in parentheses. ∗, ∗∗, and ∗∗∗ indicate significance at the 10%, 5%, and 1% levels, two-tailed.

	Number of Firms with Credit Profile	New Loans (EUR thousand)
	I	II
1-6 months after transfer	0.92	-25.41
	(1.54)	(48.31)
7-12 months after transfer	0.60	-6.68
	(2.05)	(95.42)
>12 months after transfer	3.23	-79.61
	(2.50)	(115.00)
Observations	12,544	12,544
R-squared	0.8930	0.4008
Time FE	Yes	Yes
Location FE	Yes	Yes

Table XX

Probability of Getting a New Loan

This table measures the probability of getting a new loan for firms affected by branch closures. We create a categorical variable to classify loan transfers. Categories are: period before the branch closure; 1 to 6 months after the closure; 7 to 12 months after the closure; more than 12 months after the closure. We cluster at the firm level and report robust standard errors in parentheses. ∗, ∗∗, and ∗∗∗ indicate significance at the 10%, 5%, and 1% levels, two-tailed.

	(1)
Firm Affected by Closure, 1-6 months after closure	0.28
	(0.18)
Firm Affected by Closure, 7-12 months after closure	0.25
	(0.22)
Firm Affected by Closure, >12 months after closure	-0.01
	(0.27)
Observations	8,335,618
R-squared	41.24%
Time FE	Yes
Firm FE	Yes

Internet Appendix

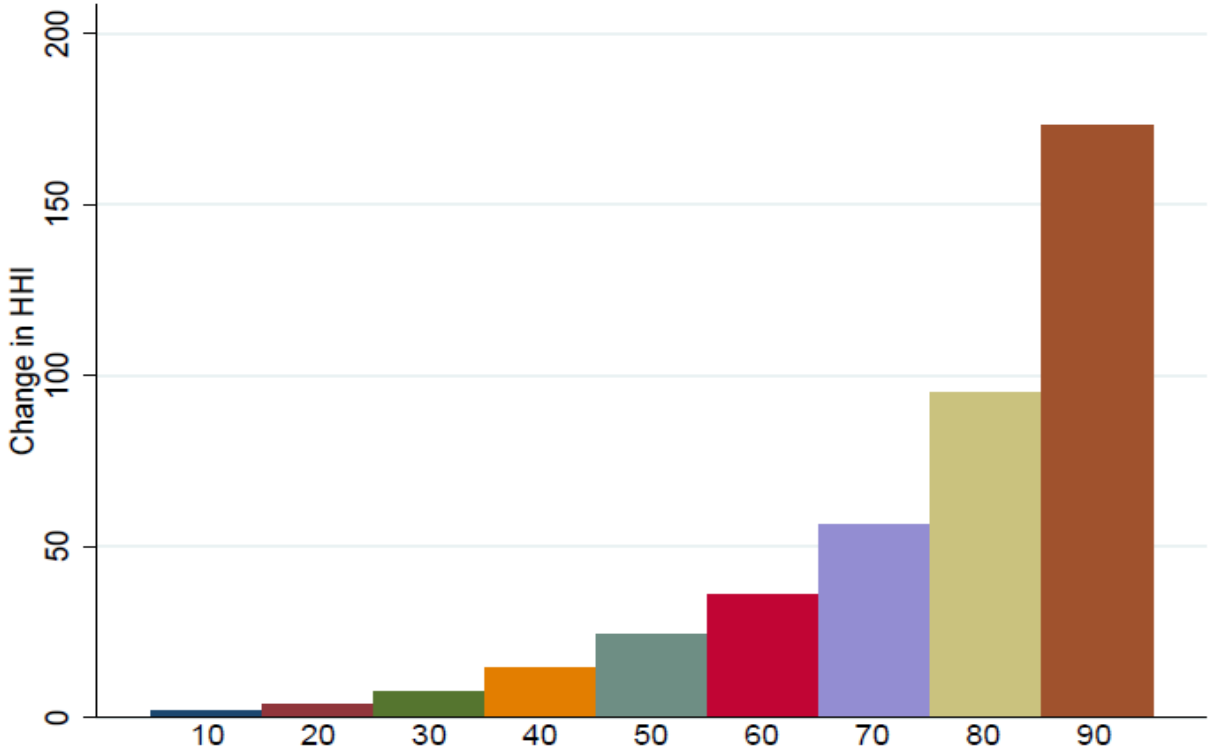
Internet Appendix: Table of Contents

Internet Appendix Number	Issue	Analyze ...	Operationalization	Replicates Tables IV	V	VI	VII	Other Table	Figures
0	All Switching	all switching loans irrepespective of branch closings	all switching we observe to make results comparable to earlier work	Y					
1	Competition	areas where the hypothetical closure of a branch should have a negligible impact on competition	only firms served by branches that witness a minor change in HHI which is below 25		Y	Y	Y		Y
2	Competition	if discounts are being generated by an increase in competition after branch closure	only small banks (excluding banks when ranked nationally that represent 80% of credit market share) within highly competitive areas (HHI below 1,500)		Y				
3	Competition	if the effect on interest rates is not being driven by changes in local competition	control for changes in the HHI		Y				
4	Firm Quality	if differences in firm quality drive our main results	only firms that have a probability of default below the median		Y				
5	Firm Quality	if differences in firm quality drive our main results	only firms with a probability of default above the median		Y				
6	Matching	if matching strategy drives main results	match switching loans on county instead of province		Y				
7	Matching	if matching strategy drives main results	match on branch density (number of branches in the county per 1,000 adults)		Y				
8	Matching	if matching strategy drives main results	use categorical firm size variable as an additional matching variable		Y				
9	Matching	useage of a much stricter matching strategy	match transfer firms with switching firms arriving at the same bank		Y				
10	Matching	useage of a looser matching strategy	loosen the matching strategy along a few dimensions, namely collateral, legal structure of the firms and fixed vs floating interest rates		Y				
11	Matching	the variable by variable relaxation of the matching strategy	exclude one matching variable at a time					Y	
12	Matching	a different matching strategy	use a propensity score matching algorithm		Y				
13	Calendar Time Period	if reporting requirements matter	exclude the period starting in December 2014 after which all banks had to report loan rates		Y				
14	Region	if regional differences in distance play a role	exclude Lisbon and Porto		Y				
15	Branch Closure Time	if closure is anticipated	include the month of the branch closure and the month before the branch closure in the post-transfer period		Y				
16	Branch Closure Specificity	if results are not driven by a few special loans	take only branch closures that lead to more than 10 transfers		Y				
17	Refinancing Needs	if firms` refinancing needs matter for the reuslts	only firms that had to refinance a loan within 90 days after branch closure		Y				
18	Information Asymmetry	if results are not driven by the degree of information asymmetry	only for the most opaque firms (defined as those with fewer than 10 employees, and turnover or assets below €2 million, located in areas with branch density below the median)		Y				
19	Over Time	what happens to switchers over time	study interest ratew at oustide bank afterwards for those that stay		Y				
20	Over Time	what happens to transferers over time	study interest ratew at oustide bank afterwards for those that stay		Y				
21	Placebo	if proximity of another bank branch of the bank that closes the branch matters	look at cases in which there is a closure but there is still at least another branch of that bank at most 1 km away from the firm		Y				
22	Control Group	if outside banks faced with more incoming borrowers pass on potential congestion costs to all their customers	use only other similar loans being granted by branches of the outside bank that are not close to the areas where branches closed		Y				
Statistics	Reports the distribution of switching and transfer loans by industry and by region								
Data	Reports the Number of Banks, Branches, Branch Density, and Number of Firms per Municipality								

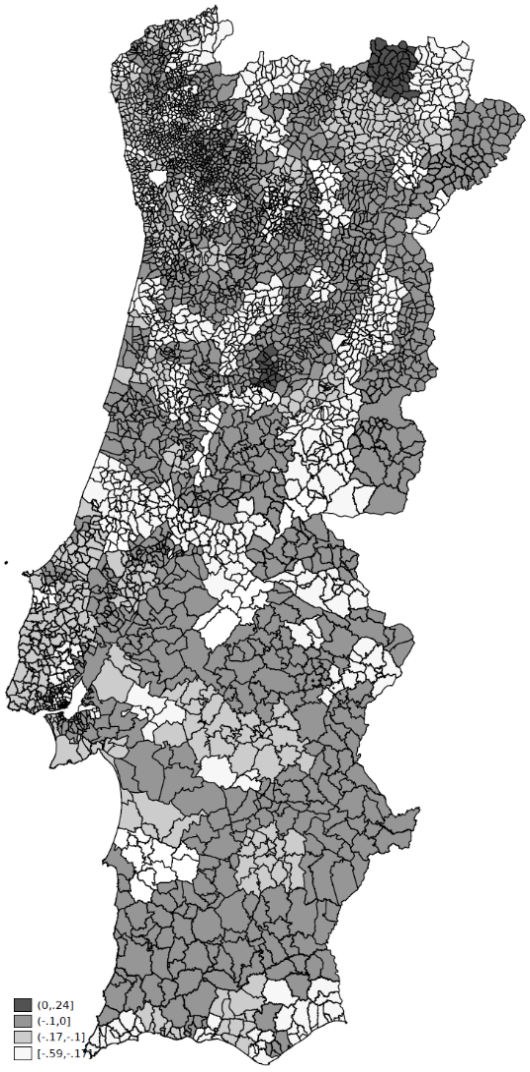
Appendix 0 Table IV
Spreads between Interest Rates on Switching Loans and Matched Nonswitching Loans Given by Inside or Outside Banks Not Conditioning on Branch Closures

We assess the spread between the interest rate on switching loans and the interest rate on new nonswitching loans obtained (by other firms) from the switchers' set of inside banks in Column I and II and from the switchers' set of outside bank in Column III. In Column IV we compare the rate of switching loans with the rate of non-switching loans obtained by the same firm, excluding non-switching loans given by the outside bank. We match on the indicated variables. All variables are defined in Table III. We regress the spreads on a constant and report the coefficient on the constant. We weigh each observation by one over the total number of comparable nonswitching loans per switching loan. We cluster at the switching-firm level and report robust standard errors between parentheses. We also report the difference between the mean interest rate on the switching loans and the mean interest rate on the nonswitching loans in each column. We report standard errors between parentheses. ∗, ∗∗, and ∗∗∗ indicate significance at the 10%, 5%, and 1% levels, two-tailed.

	Benchmark			
Matching Variables	I	II	III	IV
Quarter	Yes	Yes	Yes	Yes
Inside bank	Yes	Yes		
Outside bank			Yes	
Foreign bank		Yes		
Firm				Yes
Credit rating	Yes	Yes	Yes	Yes
Region	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes
Legal structure	Yes	Yes	Yes	Yes
Collateral	Yes	Yes	Yes	Yes
Loan maturity	Yes	Yes	Yes	Yes
Loan amount	Yes	Yes	Yes	Yes
Floating loan rate	Yes	Yes	Yes	Yes
Number of switching loans	6,265	4,231	6,931	1,639
Number of nonswitching loans	31,560	20,531	23,892	3,382
Number of observations (matched pairs)	50,915	28,181	33,274	7,717
Interest rate difference with matching	-122.37***	-88.96***	-58.53***	-91.93***
	(-7.87)	(7.00)	(4.60)	(12.37)
Interest rate difference without matching	-149.07***	-107.83***	-53.28***	-64.67**
	(8.25)	(9.01)	(8.60)	(31.56)



Appendix 1 Figure 1. Impact of closing a branch on market competition. The figure displays the impact of closing a branch on the bank branch Herfindahl-Hirschman Index (HHI). The x-axis shows the percentiles of change in HHI. The y-axis shows the change in HHI for each percentile.



Appendix 1 Figure 2. Variation in branch density per municipality. The figure above shows the variation in branch density between June 2012 and May 2015 per municipality.

Appendix 1 Table IV
Spreads between Interest Rates on Switching or Transfer Loans and Matched Nonswitching Loans Given by the Outside Bank When the Closest Branch of the Inside Bank Closes - Areas Where Branch Closure Has Low Impact on Competition

We assess the spread between the interest rate on switching or transfer loans and the interest rate on new nonswitching loans obtained from the switchers' outside bank (by other firms) when the closest branch of the inside bank closes. We match on the variables indicated in Column III of Table A1 IV. All variables are defined in Table III. We regress the spreads on a constant and report the coefficient on the constant. We weigh each observation by one over the total number of comparable nonswitching loans per switching or transfer loan. We cluster at the switching-firm level and report robust standard errors between parentheses. We also report the difference between the mean interest rate on the switching or transfer loans and the mean interest rate on the nonswitching loans in each column. We report standard errors between parentheses. ∗, ∗∗, and ∗∗∗ indicate significance at the 10%, 5%, and 1% levels, two-tailed.

	Switching	*Transfer*		
Period since the branch closure	Before	1-6 months after	7-12 months after	>12 months after
Number of switching / transfer loans	94	35	39	78
Number of nonswitching loans	322	110	129	244
Number of observations (matched pairs)	396	120	252	423
Interest rate difference with matching	-66.67	12.08	-97.58*	-139.84***
	(47.75)	(39.97)	(49.23)	(24.49)
Interest rate difference without matching	-89.59**	-122.81***	-260.41***	-276.45***
	(35.99)	(42.56)	(35.41)	(32.24)

Appendix 1 Table VI
Spreads between Interest Rates on Switching or First Transfer Loans and Matched Nonswitching Loans Given by the Outside Bank When the Closest Branch of the Inside Bank Closes - Areas Where Branch Closure Has Low Impact on Competition

We assess the spread between the interest rate on switching or first transfer loans and the interest rate on new nonswitching loans obtained from the switchers' outside bank (by other firms) when the closest branch of the inside bank closes. We match on the variables indicated in Column III of Table A1 IV. All variables are defined in Table III. We regress the spreads on a constant and report the coefficient on the constant. We weigh each observation by one over the total number of comparable nonswitching loans per switching or first transfer loan. We cluster at the switching-firm level and report robust standard errors between parentheses. We also report the difference between the mean interest rate on the switching or first transfer loans and the mean interest rate on the nonswitching loans in each column. We report standard errors between parentheses. ∗, ∗∗, and ∗∗∗ indicate significance at the 10%, 5%, and 1% levels, two-tailed.

	Switching	*First Transfer*		
Period since the branch closure	Before	1-6 months after	7-12 months after	>12 months after
Number of switching / first transfer loans	94	31	16	38
Number of nonswitching loans	322	105	51	133
Number of observations (matched pairs)	396	111	101	160
Interest rate difference with matching	-66.67	24.05	-1.78	-128.45***
	(47.75)	(42.96)	(26.01)	(42.36)
Interest rate difference without matching	-89.59**	-112.02**	-308.21***	-218.86***
	(35.99)	(43.58)	(65.82)	(15.20)

Appendix 1 Table VII

Spreads between Interest Rates on Switching or Later Transfer Loans and Matched Nonswitching Loans Given by the Outside Bank When the Closest Branch of the Inside Bank Closes - Areas Where Branch Closure Has Low Impact on Competition

We assess the spread between the interest rate on switching or later transfer loans and the interest rate on new nonswitching loans obtained from the switchers' outside bank (by other firms) when the closest branch of the inside bank closes. We match on the variables indicated in Column III of Table A1 IV. All variables are defined in Table III. We regress the spreads on a constant and report the coefficient on the constant. We weigh each observation by one over the total number of comparable nonswitching loans per switching or later transfer loan. We cluster at the switching-firm level and report robust standard errors between parentheses. We also report the difference between the mean interest rate on the switching or later transfer loans and the mean interest rate on the nonswitching loans in each column. We report standard errors between parentheses. ∗, ∗∗, and ∗∗∗ indicate significance at the 10%, 5%, and 1% levels, two-tailed.

	Switching	*Later Transfer*		
Period since the branch closure	Before	1-6 months after	7-12 months after	>12 months after
Number of switching loans	94	4	23	40
Number of nonswitching loans	322	9	102	102
Number of observations (matched pairs)	396	9	151	263
Interest rate difference with matching	-66.67	-80.67	-164.22**	-150.67***
	(47.75)	(94.10)	(51.33)	(27.34)
Interest rate difference without matching	-89.59**	-252.25*	-227.19***	-345.13***
	(35.99)	(101.93)	(19.72)	(40.10)

Appendix 2 Table V

Spreads between Interest Rates on Switching or Transfer Loans and Matched Nonswitching Loans Given by the Outside Bank When the Closest Branch of the Inside Bank Closes - High Competition Areas, Small Banks

We assess the spread between the interest rate on switching or transfer loans and the interest rate on new nonswitching loans obtained from the switchers' outside bank (by other firms) when the closest branch of the inside bank closes. We exclude outside banks with the highest market share that represent up to 80% of all loans. We match on the variables indicated in Column III of Table IV. All variables are defined in Table III. We regress the spreads on a constant and report the coefficient on the constant. We weigh each observation by one over the total number of comparable nonswitching loans per switching or transfer loan. We cluster at the switching-firm level and report robust standard errors between parentheses. We also report the difference between the mean interest rate on the switching or transfer loans and the mean interest rate on the nonswitching loans in each column. We report standard errors between parentheses. ∗, ∗∗, and ∗∗∗ indicate significance at the 10%, 5%, and 1% levels, two-tailed.

	Switching	*Transfer*		
Period since the branch closure	Before	1-6 months after	7-12 months after	>12 months after
Number of switching / transfer loans	31	14	16	28
Number of nonswitching loans	45	31	22	60
Number of observations (matched pairs)	52	36	39	90
Interest rate difference with matching	-205.39**	69.63	-173.31**	-158.57***
	(92.21)	(70.67)	(64.16)	(38.30)
Interest rate difference without matching	3.76	-38.28	-363.15*	-265.70***
	(61.17)	(126.67)	(131.10)	(48.84)

Appendix 3 Table V
Spreads between Interest Rates on Switching or Transfer Loans and Matched Nonswitching Loans Given by the Outside Bank When the Closest Branch of the Inside Bank Closes - Impact of Changes in HHI on Interest Rates

We assess the spread between the interest rate on switching or transfer loans and the interest rate on new nonswitching loans obtained from the switchers' outside bank (by other firms) when the closest branch of the inside bank closes. We match on the variables indicated in Column III of Table IV. All variables are defined in Table III. We regress the spreads on a constant and report the coefficient on the constant. Δ HHI is the variation in the Herfindahl index between month *t-1* and month *t*. The index is calculated using the number of branches in a 5 kilometer radius. We weigh each observation by one over the total number of comparable nonswitching loans per switching or transfer loan. We cluster at the switching-firm level and report robust standard errors between parentheses. We also report the difference between the mean interest rate on the switching or transfer loans and the mean interest rate on the nonswitching loans in each column. We report standard errors between parentheses. ∗, ∗∗, and ∗∗∗ indicate significance at the 10%, 5%, and 1% levels, two-tailed.

	Switching	*Transfer*		
Period since the branch closure	Before	1-6 months after	7-12 months after	>12 months after
Number of switching / transfer loans	230	68	78	236
Number of nonswitching loans	878	295	338	986
Number of observations (matched pairs)	1,050	305	535	1,371
Constant	-48.90*	30.14	-107.52**	-99.74***
	(29.20)	(36.94)	(42.28)	(19.15)
Δ HHI	-0.14	-0.11	0.90**	0.01
	(0.11)	(0.55)	(0.36)	(0.13)
Δ HHI^2	0.00	-0.00	-0.00***	0.00
	(0.00)	(0.00)	(0.00)	(0.00)

Appendix 4 Table V

Spreads between Interest Rates on Switching or Transfer Loans and Matched Nonswitching Loans Given by the Outside Bank When the Closest Branch of the Inside Bank Closes - Sample Split: Better than Median Rating

We assess the spread between the interest rate on switching or transfer loans and the interest rate on new nonswitching loans obtained from the switchers' outside bank (by other firms) when the closest branch of the inside bank closes. We match on the variables indicated in Column III of Table A8 IV. All variables are defined in Table III. We regress the spreads on a constant and report the coefficient on the constant. We weigh each observation by one over the total number of comparable nonswitching loans per switching or transfer loan. We cluster at the switching-firm level and report robust standard errors between parentheses. We also report the difference between the mean interest rate on the switching or transfer loans and the mean interest rate on the nonswitching loans in each column. We report standard errors between parentheses. ∗, ∗∗, and ∗∗∗ indicate significance at the 10%, 5%, and 1% levels, two-tailed.

	Switching	*Transfer*		
Period since the branch closure	Before	1-6 months after	7-12 months after	>12 months after
Number of switching / transfer loans	135	54	63	201
Number of nonswitching loans	578	224	258	794
Number of observations (matched pairs)	719	232	438	1,123
Interest rate difference with matching	-27.58	22.61	-56.77	-95.08***
	(21.22)	(31.20)	(36.68)	(17.00)
Interest rate difference without matching	-52.72*	-108.22***	-204.06***	-221.67***
	(28.68)	(30.17)	(28.12)	(20.46)

Appendix 5 Table V
Spreads between Interest Rates on Switching or Transfer Loans and Matched Nonswitching Loans Given by the Outside Bank When the Closest Branch of the Inside Bank Closes - Sample Split: Worse than Median Rating

We assess the spread between the interest rate on switching or transfer loans and the interest rate on new nonswitching loans obtained from the switchers' outside bank (by other firms) when the closest branch of the inside bank closes. We match on the variables indicated in Column III of Table IV. All variables are defined in Table III. We regress the spreads on a constant and report the coefficient on the constant. We weigh each observation by one over the total number of comparable nonswitching loans per switching or transfer loan. We cluster at the switching-firm level and report robust standard errors between parentheses. We also report the difference between the mean interest rate on the switching or transfer loans and the mean interest rate on the nonswitching loans in each column. We report standard errors between parentheses. ∗, ∗∗, and ∗∗∗ indicate significance at the 10%, 5%, and 1% levels, two-tailed.

	Switching	*Transfer*		
Period since the branch closure	Before	1-6 months after	7-12 months after	>12 months after
Number of switching / transfer loans	95	14	15	35
Number of nonswitching loans	300	71	80	192
Number of observations (matched pairs)	331	73	97	248
Interest rate difference with matching	-112.86**	-11.35	-59.54	-89.18
	(46.48)	(78.57)	(90.36)	(59.00)
Interest rate difference without matching	-181.45***	-104.17	-92.58	117.42
	(31.54)	(64.15)	(123.81)	(248.10)

Appendix 6 Table V
Spreads between Interest Rates on Switching or Transfer Loans and Matched Nonswitching Loans Given by the Outside Bank When the Closest Branch of the Inside Bank Closes - Matching on County

We assess the spread between the interest rate on switching or transfer loans and the interest rate on new nonswitching loans obtained from the switchers' outside bank (by other firms) when the closest branch of the inside bank closes. We match on the variables indicated in Column III of Table A6 IV. All variables are defined in Table III. We regress the spreads on a constant and report the coefficient on the constant. We weigh each observation by one over the total number of comparable nonswitching loans per switching or transfer loan. We cluster at the switching-firm level and report robust standard errors between parentheses. We also report the difference between the mean interest rate on the switching or transfer loans and the mean interest rate on the nonswitching loans in each column. We report standard errors between parentheses. ∗, ∗∗, and ∗∗∗ indicate significance at the 10%, 5%, and 1% levels, two-tailed.

	Switching	*Transfer*		
Period since the branch closure	Before	1-6 months after	7-12 months after	>12 months after
Number of switching / transfer loans	117	33	55	142
Number of nonswitching loans	308	91	305	361
Number of observations (matched pairs)	386	96	617	576
Interest rate difference with matching	-128.37***	-74.13	-170.93**	-67.70***
	(42.36)	(51.51)	(67.50)	(24.87)
Interest rate difference without matching	-106.63***	-120.33**	-248.35***	-277.08***
	(38.70)	(44.75)	(14.11)	(33.24)

Appendix 7 Table V

Spreads between Interest Rates on Switching or Transfer Loans and Matched Nonswitching Loans Given by the Outside Bank When the Closest Branch of the Inside Bank Closes - Matching on Branch Density

We assess the spread between the interest rate on switching or transfer loans and the interest rate on new nonswitching loans obtained from the switchers' outside bank (by other firms) when the closest branch of the inside bank closes. We match on the variables indicated in Column III of Table A7 IV. All variables are defined in Table III. We regress the spreads on a constant and report the coefficient on the constant. We weigh each observation by one over the total number of comparable nonswitching loans per switching or transfer loan. We cluster at the switching-firm level and report robust standard errors between parentheses. We also report the difference between the mean interest rate on the switching or transfer loans and the mean interest rate on the nonswitching loans in each column. We report standard errors between parentheses. ∗, ∗∗, and ∗∗∗ indicate significance at the 10%, 5%, and 1% levels, two-tailed.

	Switching	*Transfer*		
Period since the branch closure	Before	1-6 months after	7-12 months after	>12 months after
Number of switching / transfer loans	172	45	65	176
Number of nonswitching loans	531	170	217	610
Number of observations (matched pairs)	655	173	333	793
Interest rate difference with matching	-79.11***	-17.99	-65.06***	-84.93***
	(28.07)	(39.24)	(19.12)	(22.38)
Interest rate difference without matching	-124.00***	-110.82***	-207.18***	-175.17
	(26.39)	(36.81)	(75.00)	(107.35)

Appendix 8 Table V
Spreads between Interest Rates on Switching or Transfer Loans and Matched Nonswitching Loans Given by the Outside Bank When the Closest Branch of the Inside Bank Closes - Matching on Firm Size

We assess the spread between the interest rate on switching or transfer loans and the interest rate on new nonswitching loans obtained from the switchers' outside bank (by other firms) when the closest branch of the inside bank closes. We match on the variables indicated in Column III of Table A8 IV. All variables are defined in Table III. We regress the spreads on a constant and report the coefficient on the constant. We weigh each observation by one over the total number of comparable nonswitching loans per switching or transfer loan. We cluster at the switching-firm level and report robust standard errors between parentheses. We also report the difference between the mean interest rate on the switching or transfer loans and the mean interest rate on the nonswitching loans in each column. We report standard errors between parentheses. ∗, ∗∗, and ∗∗∗ indicate significance at the 10%, 5%, and 1% levels, two-tailed.

	Switching	*Transfer*		
Period since the branch closure	Before	1-6 months after	7-12 months after	>12 months after
Number of switching / transfer loans	156	4	26	65
Number of nonswitching loans	425	9	91	177
Number of observations (matched pairs)	474	9	133	305
Interest rate difference with matching	-69.35***	-42.34	-173.09***	-54.57**
	(24.30)	(79.14)	(30.68)	(23.60)
Interest rate difference without matching	-95.05***	-274.67***	-250.38***	-338.37***
	(25.53)	(30.60)	(19.11)	(36.64)

Appendix 9 Table V
Spreads between Interest Rates on Switching or Transfer Loans and Matched Switching Loans Given by the Outside Bank When the Closest Branch of the Inside Bank Closes

We assess the spread between the interest rate on switching or transfer loans and the interest rate on new switching loans obtained from the switchers' outside bank (by other firms) when the closest branch of the inside bank closes. We match on the variables indicated in Column III of Table IV. All variables are defined in Table III. We regress the spreads on a constant and report the coefficient on the constant. We weigh each observation by one over the total number of comparable switching non-transfer loans per switching or transfer loan. We cluster at the switching-firm level and report robust standard errors between parentheses. We also report the difference between the mean interest rate on the switching or transfer loans and the mean interest rate on the nonswitching loans in each column. We report standard errors between parentheses. ∗, ∗∗, and ∗∗∗ indicate significance at the 10%, 5%, and 1% levels, two-tailed.

	Switching	*Transfer*		
Period since the branch closure	Before	1-6 months after	7-12 months after	>12 months after
Number of switching / transfer loans	30	10	8	33
Number of nonswitching loans	36	12	8	38
Number of observations (matched pairs)	37	12	9	41
Interest rate difference with matching	36.38	9.11	114.01*	15.30
	(46.32)	(61.21)	(54.45)	(29.40)
Interest rate difference without matching	97.05***	42.28	-103.03	-60.84*
	(34.29)	(83.02)	(59.90)	(32.64)

Appendix 10 Table V
Spreads between Interest Rates on Switching or Transfer Loans and Matched Switching Loans Given by the Inside Bank When the Closest Branch of the Outside Bank Closes - Looser Matching

We assess the spread between the interest rate on switching or transfer loans and the interest rate on new switching loans obtained from the switchers' outside bank (by other firms) when the closest branch of the inside bank closes. We match on the variables indicated in Column III of Table IV, except that in this specification we do not distinguish collateralized loans, firms according to their legal structure (limited liability companies vs. joint-stock companies), and floating rate loans. All variables are defined in Table III. We regress the spreads on a constant and report the coefficient on the constant. We weigh each observation by one over the total number of comparable switching non-transfer loans per switching or transfer loan. We cluster at the switching-firm level and report robust standard errors between parentheses. We also report the difference between the mean interest rate on the switching or transfer loans and the mean interest rate on the nonswitching loans in each column. We report standard errors between parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, two-tailed.

	Switching	*Transfer*		
Period since the branch closure	Before	1-6 months after	7-12 months after	>12 months after
Number of switching / transfer loans	50	16	12	59
Number of nonswitching loans	61	19	15	67
Number of observations (matched pairs)	63	19	16	79
Interest rate difference with matching	16.37	-16.54	132.87**	-41.83
	(29.59)	(52.51)	(40.71)	(29.70)
Interest rate difference without matching	35.41	-4.75	-64.11	-111.74***
	(24.68)	(60.35)	(53.20)	(27.58)

Appendix 11
Impact of Matching Variables on the Interest Rate Difference Between Transfers and Loans from the Outside Bank

We assess the impact of matching variables on the interest rate differential between transfers and comparable loans from the outside bank. We use the matching procedure from Table V to compare interest rates of loan transfers against comparable loans given by the outside bank to other firms. We remove one variable at a time from the matching algorithm and compute the interest rate differences. The first column indicates the name of the variable we exclude from the matching procedure. We cluster at the switching-firm level and report robust standard errors between parentheses. We also report the difference between the mean interest rate on the switching or transfer loans and the mean interest rate on the nonswitching loans in each column. We report standard errors between parentheses. ∗, ∗∗, and ∗∗∗ indicate significance at the 10%, 5%, and 1% levels, two-tailed.

	Switching	*Transfer*		
Period since the branch closure	Before	1-6 months after	7-12 months after	>12 months after
Initial values (table V)	-62.81***	15.62	-57.30*	-94.21***
	(23.66)	(29.55)	(33.85)	(16.84)
Credit rating	-66.51***	-40.79	-58.90**	-87.43***
	(14.23)	(29.36)	(22.93)	(12.59)
Province	-55.47***	-48.37**	-66.26**	-75.21***
	(12.90)	(23.03)	(29.46)	(11.23)
Activity	-49.26***	-34.05	-57.13***	-96.51***
	(13.90)	(25.77)	(21.19)	(12.93)
Legal structure	-68.22***	-4.89	-109.30***	-74.27***
	(17.43)	(34.65)	(27.73)	(13.25)
Collateral dummy	-56.28***	-11.03	-70.13**	-99.66***
	(17.99)	(28.14)	(27.49)	(14.36)
Floating rate dummy	-56.55***	10.04	-58.84**	-90.02***
	(18.84)	(29.99)	(25.81)	(14.57)
Amount	-76.58***	-87.46***	-68.25***	-103.85***
	(15.79)	(26.46)	(21.17)	(12.25)
Maturity	-63.82***	-29.37	-112.99***	-104.02***
	(16.68)	(27.01)	(28.51)	(12.79)

Appendix 12 Table V
Spreads between Interest Rate Premia on Switching or Transfer Loans and Matched Nonswitching Loans Given by the Outside Bank When the Closest Branch of the Inside Bank Closes - Propensity Score Matching

We assess the spread between the interest rate premia on switching or transfer loans and the interest rate on new nonswitching loans obtained from the switchers' outside bank (by other firms) when the closest branch of the inside bank closes. Interest rate premia is calculated by subtracting the average interest rate for firms from the loan rate at the month of the loan. We match the closest observation in the control group on the variables indicated in Column III of Table IV. All variables are defined in Table III. We regress the spreads on a constant and report the coefficient on the constant. We weigh each observation by one over the total number of comparable nonswitching loans per switching or transfer loan. We cluster at the switching-firm level and report robust standard errors between parentheses. We also report the difference between the mean interest rate on the switching or transfer loans and the mean interest rate on the nonswitching loans in each column. We report standard errors between parentheses. ∗, ∗∗, and ∗∗∗ indicate significance at the 10%, 5%, and 1% levels, two-tailed.

	Switching	*Transfer*		
Period since the branch closure	Before	1-6 months after	7-12 months after	>12 months after
Number of observations (matched pairs)	670	261	202	663
Interest rate difference with matching	-51.80***	-44.72	-92.08***	-93.94***
	(17.20)	(28.57)	(24.64)	(17.12)
Interest rate difference without matching	-119.51***	-101.43***	-177.67***	-193.29***
	(14.00)	(21.29)	(16.58)	(14.15)

Appendix 13 Table V
Spreads between Interest Rates on Switching or Transfer Loans and Matched Nonswitching Loans Given by the Outside Bank When the Closest Branch of the Inside Bank Closes Before December 2014

We assess the spread between the interest rate on switching or transfer loans and the interest rate on new nonswitching loans obtained from the switchers' outside bank (by other firms) when the closest branch of the inside bank closes. We match on the variables indicated in Column III of Table A16 IV. All variables are defined in Table III. We regress the spreads on a constant and report the coefficient on the constant. We weigh each observation by one over the total number of comparable nonswitching loans per switching or transfer loan. We cluster at the switching-firm level and report robust standard errors between parentheses. We also report the difference between the mean interest rate on the switching or transfer loans and the mean interest rate on the nonswitching loans in each column. We report standard errors between parentheses. ∗, ∗∗, and ∗∗∗ indicate significance at the 10%, 5%, and 1% levels, two-tailed.

	Switching	*Transfer*		
Period since the branch closure	Before	1-6 months after	7-12 months after	>12 months after
Number of switching / transfer loans	208	36	47	158
Number of nonswitching loans	800	202	179	673
Number of observations (matched pairs)	964	209	266	960
Interest rate difference with matching	-75.22***	11.79	-56.12	-107.57***
	(23.74)	(46.07)	(56.05)	(21.43)
Interest rate difference without matching	-126.08***	-120.28***	-140.31	-138.17
	(23.88)	(42.83)	(95.43)	(111.40)

Appendix 14 Table V
Spreads between Interest Rates on Switching or Transfer Loans and Matched Nonswitching Loans Given by the Outside Bank When the Closest Branch of the Inside Bank Closes Outside Lisbon and Porto

We assess the spread between the interest rate on switching or transfer loans and the interest rate on new nonswitching loans obtained from the switchers' outside bank (by other firms) when the closest branch of the inside bank closes. We match on the variables indicated in Column III of Table A17 IV. All variables are defined in Table III. We regress the spreads on a constant and report the coefficient on the constant. We weigh each observation by one over the total number of comparable nonswitching loans per switching or transfer loan. We cluster at the switching-firm level and report robust standard errors between parentheses. We also report the difference between the mean interest rate on the switching or transfer loans and the mean interest rate on the nonswitching loans in each column. We report standard errors between parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, two-tailed.

	Switching	*Transfer*		
Period since the branch closure	Before	1-6 months after	7-12 months after	>12 months after
Number of switching / transfer loans	125	43	48	161
Number of nonswitching loans	497	210	213	571
Number of observations (matched pairs)	591	217	304	833
Interest rate difference with matching	-90.80***	10.60	-72.38	-94.30***
	(32.93)	(37.58)	(50.84)	(18.56)
Interest rate difference without matching	-135.60***	-132.92***	-147.44	-299.99***
	(29.33)	(37.57)	(90.32)	(25.70)

Appendix 15 Table V

Spreads between Interest Rates on Switching or Transfer Loans and Matched Nonswitching Loans Given by the Outside Bank When the Closest Branch of the Inside Bank Closes - Month Before Transfer Within Post-Transfer Period

We assess the spread between the interest rate on switching or transfer loans and the interest rate on new nonswitching loans obtained from the switchers' outside bank (by other firms) when the closest branch of the inside bank closes. We match on the variables indicated in Column III of Table IV. All variables are defined in Table III. We regress the spreads on a constant and report the coefficient on the constant. We weigh each observation by one over the total number of comparable nonswitching loans per switching or transfer loan. We cluster at the switching-firm level and report robust standard errors between parentheses. We also report the difference between the mean interest rate on the switching or transfer loans and the mean interest rate on the nonswitching loans in each column. We report standard errors between parentheses. ∗, ∗∗, and ∗∗∗ indicate significance at the 10%, 5%, and 1% levels, two-tailed.

	Switching	*Transfer*		
Period since the branch closure	Before	1-6 months after	7-12 months after	>12 months after
Number of switching / transfer loans	251	67	94	206
Number of nonswitching loans	1,036	305	481	782
Number of observations (matched pairs)	1,215	323	713	1,120
Interest rate difference with matching	-65.06***	17.47	-90.19**	-86.80***
	(22.10)	(29.10)	(34.93)	(15.85)
Interest rate difference without matching	-120.82***	-150.85***	-39.28	-284.54***
	(25.61)	(33.37)	(147.66)	(20.31)

Appendix 16 Table V

Spreads between Interest Rates on Switching or Transfer Loans and Matched Nonswitching Loans Given by the Outside Bank When the Closest Branch of the Inside Bank Closes - Only Branches with More than Ten Transfers

We assess the spread between the interest rate on switching or transfer loans and the interest rate on new nonswitching loans obtained from the switchers' outside bank (by other firms) when the closest branch of the inside bank closes. We match on the variables indicated in Column III of Table IV. All variables are defined in Table III. We regress the spreads on a constant and report the coefficient on the constant. We weigh each observation by one over the total number of comparable nonswitching loans per switching or transfer loan. We cluster at the switching-firm level and report robust standard errors between parentheses. We also report the difference between the mean interest rate on the switching or transfer loans and the mean interest rate on the nonswitching loans in each column. We report standard errors between parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, two-tailed.

	Switching	*Transfer*		
Period since the branch closure	Before	1-6 months after	7-12 months after	>12 months after
Number of switching / transfer loans	142	37	62	145
Number of nonswitching loans	622	211	262	597
Number of observations (matched pairs)	779	218	459	897
Interest rate difference with matching	-44.34	43.45	-66.32	-105.71***
	(34.43)	(41.29)	(39.01)	(20.11)
Interest rate difference without matching	-62.54**	-170.17***	-206.60***	-305.53***
	(30.54)	(43.67)	(32.49)	(21.39)

Appendix 17 Table V
Spreads between Interest Rates on Switching or Transfer Loans and Matched Nonswitching Loans Given by the Outside Bank When the Closest Branch of the Inside Bank Closes - Firms That Have to Refinance Loans in Less Than 90 Days

We assess the spread between the interest rate on switching or transfer loans and the interest rate on new nonswitching loans obtained from the switchers' outside bank (by other firms) when the closest branch of the inside bank closes. We match on the variables indicated in Column III of Table IV. All variables are defined in Table III. We regress the spreads on a constant and report the coefficient on the constant. We weigh each observation by one over the total number of comparable nonswitching loans per switching or transfer loan. We cluster at the switching-firm level and report robust standard errors between parentheses. We also report the difference between the mean interest rate on the switching or transfer loans and the mean interest rate on the nonswitching loans in each column. We report standard errors between parentheses. ∗, ∗∗, and ∗∗∗ indicate significance at the 10%, 5%, and 1% levels, two-tailed.

	Switching	*Transfer*		
Period since the branch closure	Before	1-6 months after	7-12 months after	>12 months after
Number of switching / transfer loans	77	24	52	109
Number of nonswitching loans	329	114	244	522
Number of observations (matched pairs)	389	118	429	730
Interest rate difference with matching	-88.88*	72.29	-94.70**	-114.81***
	(51.84)	(51.44)	(42.34)	(27.86)
Interest rate difference without matching	-123.11***	-158.58**	-189.77***	-221.28***
	(31.03)	(63.32)	(36.78)	(40.28)

Appendix 18 Table V
Spreads between Interest Rates on Switching or Transfer Loans and Matched Nonswitching Loans Given by the Outside Bank When the Closest Branch of the Inside Bank Closes - Opaque Firms

We assess the spread between the interest rate on switching or transfer loans and the interest rate on new nonswitching loans obtained from the switchers' outside bank (by other firms) when the closest branch of the inside bank closes. We match on the variables indicated in Column III of Table IV. Opaque firms are small firms (fewer than 50 employees and turnover and assets below €10 million) in areas with branch density below the median. All variables are defined in Table III. We regress the spreads on a constant and report the coefficient on the constant. We weigh each observation by one over the total number of comparable nonswitching loans per switching or transfer loan. We cluster at the switching-firm level and report robust standard errors between parentheses. We also report the difference between the mean interest rate on the switching or transfer loans and the mean interest rate on the nonswitching loans in each column. We report standard errors between parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, two-tailed.

	Switching	*Transfer*		
Period since the branch closure	Before	1-6 months after	7-12 months after	>12 months after
Number of switching / transfer loans	230	68	78	236
Number of nonswitching loans	878	295	338	986
Number of observations (matched pairs)	1,050	305	535	1,371
Opaque Firm Dummy	64.68	-9.51	54.57	17.90
	(45.96)	(59.41)	(53.19)	(36.99)
Constant	-90.65***	20.24	-71.29*	-99.22***
	(30.49)	(40.02)	(42.09)	(19.92)

Appendix 19 Table V
Spreads between Interest Rates on Switching Loans and Subsequent Loans Obtained by Switching Firms at the Outside Bank and Matched Nonswitching Loans Given by the Outside Bank

We assess the spread between the interest rate on switching loans and subsequent loans given by the outside bank to the switching firm and the interest rate on new nonswitching loans obtained from the switchers' outside bank (by other firms) when the closest branch of the inside bank closes. Subsequent loans are loans given by the outside bank after the firm switches. We match on the variables indicated in Column III of Table IV. All variables are defined in Table III. We regress the spreads on a constant and report the coefficient on the constant. We weigh each observation by one over the total number of comparable nonswitching loans per switching or transfer loan. We cluster at the switching-firm level and report robust standard errors between parentheses. We also report the difference between the mean interest rate on the switching or transfer loans and the mean interest rate on the nonswitching loans in each column. We report standard errors between parentheses. ∗, ∗∗, and ∗∗∗ indicate significance at the 10%, 5%, and 1% levels, two-tailed.

	Switches	*Loans after switching loan*				
		1-3 months after	3-6 months after	7-9 months after	10-12 months after	>12 months after
Number of switching / transfer loans	6,931	4,132	5,403	4,732	4,227	14,124
Number of nonswitching loans	23,892	16,669	20,933	17,619	14,811	37,390
Number of observations (matched pairs)	33,274	30,449	35,557	27,534	23,992	82,833
Interest rate difference with matching	-58.53***	-82.13***	-43.58***	-29.84***	-19.87**	-10.13
	(4.60)	(8.94)	(8.78)	(9.80)	(9.92)	(11.80)
Interest rate difference without matching	-149.83***	-160.17***	-100.58***	-82.28***	-112.51***	-154.13***
	(5.17)	(11.07)	(13.29)	(12.38)	(16.03)	(15.27)

Appendix 20 Table V
Spreads between Interest Rates on Loan Transfers up to Six Months After Closure and Subsequent Loans Obtained by Firms at the Outside Bank and Matched Nonswitching Loans Given by the Outside Bank

We assess the spread between the interest rate on transfer loans and subsequent loans given by the outside bank to the switching firm and the interest rate on new nonswitching loans obtained from the switchers' outside bank (by other firms) when the closest branch of the inside bank closes. Subsequent loans are loans given by the outside bank after the firm transfers to a new bank. We match on the variables indicated in Column III of Table IV. All variables are defined in Table III. We regress the spreads on a constant and report the coefficient on the constant. We weigh each observation by one over the total number of comparable nonswitching loans per switching or transfer loan. We cluster at the switching-firm level and report robust standard errors between parentheses. We also report the difference between the mean interest rate on the switching or transfer loans and the mean interest rate on the nonswitching loans in each column. We report standard errors between parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, two-tailed.

	Transfers	*Loans after switching loan*				
	1-6 months after closure	1-3 months after transfer	4-6 months after transfer	7-9 months after transfer	10-12 months after transfer	>12 months after transfer
Number of switching / transfer loans	68	27	53	48	43	235
Number of nonswitching loans	295	181	360	128	186	864
Number of observations (matched pairs)	305	216	785	167	332	1,350
Interest rate difference with matching	15.62	-43.90	-5.39	-91.90	-7.20	-80.06
	(29.55)	(37.87)	(56.67)	(114.45)	(31.57)	(50.07)
Interest rate difference without matching	-180.55***	-146.14***	-35.06	-110.97	-88.53*	-234.89***
	(29.88)	(45.08)	(48.16)	(76.04)	(47.90)	(59.79)

Appendix 21 Table V
Spreads between Interest Rates on Switching or Transfer Loans and Matched Nonswitching Loans Given by the Outside Bank When the Closest Branch of the Inside Bank Closes - Placebo Testing

We assess the spread between the interest rate on switching or transfer loans and the interest rate on new nonswitching loans obtained from the switchers' outside bank (by other firms) when the closest branch of the inside bank closes. We select areas where there is an alternative branch to the closing branch of the inside bank at most 1 km away from the firm.We match on the variables indicated in Column III of Table IV. All variables are defined in Table III. We regress the spreads on a constant and report the coefficient on the constant. We weigh each observation by one over the total number of comparable nonswitching loans per switching or transfer loan. We cluster at the switching-firm level and report robust standard errors between parentheses. We also report the difference between the mean interest rate on the switching or transfer loans and the mean interest rate on the nonswitching loans in each column. We report standard errors between parentheses. ∗, ∗∗, and ∗∗∗ indicate significance at the 10%, 5%, and 1% levels, two-tailed.

	Switching	*Transfer*		
Period since the branch closure	Before	1-6 months after	7-12 months after	>12 months after
Number of switching / transfer loans	51	23	30	132
Number of nonswitching loans	158	122	78	599
Number of observations (matched pairs)	163	129	83	747
Interest rate difference with matching	-77.44**	-158.94**	-121.68	-100.88***
	(32.86)	(64.19)	(78.04)	(20.17)
Interest rate difference without matching	-97.19***	-178.96**	-194.82***	-190.06***
	(32.24)	(62.91)	(27.46)	(16.04)

Appendix 22 Table V
Spreads between Interest Rates on Switching or Transfer Loans and Matched Nonswitching Loans Given by the Outside Bank When the Closest Branch of the Inside Bank Closes – Excluding All Branches that Are Close to Areas Affected by Closures

We assess the spread between the interest rate on switching or transfer loans and the interest rate on new nonswitching loans obtained from the switchers' outside bank (by other firms) when the closest branch of the inside bank closes. We exclude branches from all banks that are the closest to areas affected by branch closures. For each firm that is affected by branch closures, we identify the closest branch for all banks in the country. We then exclude all branches that are the closest to at least one firm that is affected by branch closures. We match on the variables indicated in Column III of Table IV. All variables are defined in Table III. We regress the spreads on a constant and report the coefficient on the constant. We weigh each observation by one over the total number of comparable nonswitching loans per switching or transfer loan. We cluster at the switching-firm level and report robust standard errors between parentheses. We also report the difference between the mean interest rate on the switching or transfer loans and the mean interest rate on the nonswitching loans in each column. We report standard errors between parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, two-tailed.

	Switching	*Transfer*		
Period since the branch closure	Before	1-6 months after	7-12 months after	>12 months after
Number of switching / transfer loans	200	58	67	203
Number of nonswitching loans	642	218	245	712
Number of observations (matched pairs)	759	220	377	1,019
Interest rate difference with matching	-49.01**	-19.85	-34.99	-94.31***
	(20.77)	(33.33)	(24.35)	(18.86)
Interest rate difference without matching	-91.60***	-188.87***	-240.24***	-278.48***
	(21.70)	(33.24)	(27.80)	(23.95)

Appendix Statistics
Industry and Region of Firms that Transfer

In this appendix we show the distribution of non-switching loans, switching loans and loan transfers by industry and region.

Panel A: By Industry, in percent	Switching loans	Transfer loans	Nonswitching loans
Agriculture, forestry and fishing	5.45	4.61	1.95
Mining and quarrying	0.32	0.27	0.71
Manufacturing	24.31	38.62	34.41
Electricity, gas, steam and air conditioning supply	0.17	0.00	0.11
Water supply; sewerage; waste managment and remediation activities	0.34	0.44	0.31
Construction	7.97	5.05	7.81
Wholesale and retail trade; repair of motor vehicles and motorcycles	34.53	34.28	41.55
Transporting and storage	4.79	5.49	2.78
Accommodation and food service activities	4.28	1.68	1.56
Information and communication	1.48	0.44	0.82
Financial and insurance activities	0.3	0.09	0.11
Real estate activities	2.34	0.8	0.74
Professional, scientific and technical activities	5.47	1.95	2.87
Administrative and support service activities	3.03	3.72	2.29
Education	0.75	0.44	0.29
Human health and social work activities	2.79	1.42	1.07
Arts, entertainment and recreation	0.79	0.27	0.29
Other	0.89	0.44	0.34
Panel B: By Region, in percent	**Switching loans**	**Transfer loans**	**Nonswitching loans**
Aveiro	9.53	17.27	11.42
Beja	1.32	0.27	0.89
Braga	12.08	15.68	17.05
Bragança	0.95	1.15	0.41
Castelo Branco	1.27	1.33	1.24
Coimbra	3.65	3.9	3.44
Faro	3.2	3.45	1.92
Funchal	1.52	0.89	1.04
Guarda	0.98	0.97	0.67
Leiria	5.94	11.87	6.46
Lisboa	18.46	11.87	16.32
Ponta Delgada	0.81	0.18	0.84
Portalegre	0.94	1.06	0.61
Porto	20.98	16.56	21.99
Santarém	5.6	3.28	6.06
Setúbal	4.81	4.43	3.42
Viana do Castelo	1.79	1.51	1.66
Vila Real	1.25	1.06	0.7
Viseu	3.09	2.66	2.33
Évora	1.84	0.62	1.54

Appendix Data

Number of Banks, Branches, Branch Density, and Number of Firms per Municipality

We compute the number of banks, number of branches, branch density (number of branches per 1,000 adults) and number of firms for each municipality (concelho) in Portugal. We exclude municipalities with fewer than 2 banks. Bank and branch openings and closures and variation in branch density refer to the period between June 2012 and May 2015.

	Number of Banks			*Number of Branches*			*Branch density*		*Number of Firms*		
	June 2012	Openings	Closures	June 2012	Openings	Closures	June 2012	Variation	June 2012	Switchers	Transferers
Abrantes	10	0	2	25	0	8	1.21	-0.39	241	42	4
Águeda	10	0	0	28	0	5	1.05	-0.19	624	113	13
Aguiar da Beira	5	0	1	6	0	1	2.26	-0.38	63	15	1
Albergaria-a-Velha	8	0	1	11	1	2	0.78	-0.07	285	64	8
Albufeira	10	0	0	34	0	5	1.40	-0.21	497	68	1
Alcácer do Sal	5	0	0	7	0	0	1.02	0.00	146	24	0
Alcanena	5	0	0	6	0	0	0.82	0.00	254	73	0
Alcobaça	10	0	0	33	0	3	1.07	-0.10	764	169	37
Alcochete	7	0	0	8	0	0	0.80	0.00	155	23	0
Alcoutim	3	0	0	4	0	0	3.27	0.00	17	1	0
Alenquer	10	0	2	20	0	3	0.83	-0.12	383	58	10
Alfandega da Fé	3	0	0	4	0	0	1.57	0.00	31	8	0
Alijo	4	0	0	7	0	1	1.17	-0.17	82	23	2
Aljezur	4	0	0	4	0	0	1.31	0.00	44	6	0
Aljustrel	4	0	0	6	0	0	1.22	0.00	61	12	0
Almada	11	0	1	77	0	13	0.81	-0.14	943	146	4
Almeida	5	0	0	6	0	0	1.77	0.00	42	4	0
Almeirim	10	0	1	11	0	1	0.88	-0.08	246	54	2
Almodôvar	3	0	0	3	0	0	0.81	0.00	45	7	0
Alpiarça	3	0	0	4	0	0	1.00	0.00	74	14	0
Alvaiázere	5	0	0	7	0	0	2.06	0.00	76	16	0
Amadora	13	0	1	66	0	11	0.68	-0.11	980	146	0
Amarante	10	0	0	15	0	0	0.48	0.00	494	97	3
Amares	5	0	0	7	0	0	0.68	0.00	164	26	2
Anadia	9	0	0	15	0	1	0.96	-0.06	285	50	4
Angra do Heroísmo	9	0	0	21	1	2	1.07	-0.05	210	36	0
Ansião	7	0	0	11	0	1	1.66	-0.15	164	22	0
Arcos de Valdevez	9	0	0	11	0	2	0.99	-0.18	127	20	5
Arganil	5	0	0	8	0	1	1.34	-0.17	108	13	3
Arouca	8	0	3	9	1	3	0.74	-0.16	271	51	5
Arraiolos	4	0	0	5	0	0	1.31	0.00	93	18	0
Arruda dos Vinhos	7	0	2	7	0	2	0.95	-0.27	166	36	8
Aveiro	13	0	1	66	0	13	1.46	-0.29	801	122	12
Avis	3	0	0	4	0	0	1.85	0.00	42	10	0
Azambuja	6	0	0	11	0	1	0.90	-0.08	163	32	6
Baião	6	0	1	7	0	1	0.64	-0.09	108	15	2
Barcelos	11	0	1	48	0	8	0.70	-0.12	1265	217	11
Barreiro	10	1	2	29	1	4	0.67	-0.07	332	65	6
Batalha	8	0	1	9	0	2	1.04	-0.23	300	40	10
Beja	11	1	3	23	1	4	1.19	-0.16	420	93	7
Belmonte	6	0	1	7	0	1	1.98	-0.28	72	16	3
Benavente	10	0	1	20	0	2	1.24	-0.12	336	73	5
Bombarral	8	0	1	9	0	1	1.28	-0.14	125	23	8
Borba	6	0	2	6	0	2	1.57	-0.52	73	15	0
Boticas	3	0	0	3	0	0	1.06	0.00	23	3	0
Braga	14	0	1	104	0	16	0.98	-0.15	2013	354	28
Bragança	11	0	2	22	0	5	1.15	-0.26	277	58	6
Cabeceiras de Basto	6	0	2	8	0	2	0.93	-0.23	113	20	3
Cadaval	6	0	1	7	0	1	0.96	-0.14	133	17	3
Caldas da Rainha	10	0	0	27	0	4	0.97	-0.14	466	97	2
Calheta	7	0	0	11	0	0	1.32	0.00	58	6	0
Câmara de Lobos	7	0	0	10	0	0	0.53	0.00	124	18	1
Caminha	9	1	2	13	1	3	1.46	-0.23	138	28	5
Campo Maior	3	0	0	3	0	0	0.68	0.00	67	18	0
Cantanhede	10	0	1	25	1	3	1.30	-0.10	351	73	8
Carrazeda de Ansiães	3	0	0	3	0	0	0.97	0.00	46	5	0
Carregal do Sal	5	0	0	6	0	0	1.22	0.00	66	14	0

Appendix Data

Number of Banks, Branches, Branch Density, and Number of Firms per Municipality

We compute the number of banks, number of branches, branch density (number of branches per 1,000 adults) and number of firms for each municipality (concelho) in Portugal. We exclude municipalities with fewer than 2 banks. Bank and branch openings and closures and variation in branch density refer to the period between June 2012 and May 2015.

	Number of Banks			*Number of Branches*			*Branch density*		*Number of Firms*		
	June 2012	Openings	Closures	June 2012	Openings	Closures	June 2012	Variation	June 2012	Switchers	Transferers
Cartaxo	10	0	1	12	0	1	0.90	-0.07	209	39	8
Cascais	12	0	0	111	1	18	0.96	-0.15	1692	274	2
Castanheira de Pêra	3	0	0	3	0	0	1.92	0.00	23	3	0
Castelo Branco	11	0	0	33	0	7	1.09	-0.23	420	66	5
Castelo de Paiva	4	0	0	4	0	0	0.43	0.00	103	20	0
Castro Daire	7	0	0	9	0	0	1.20	0.00	111	18	0
Castro Marim	5	0	2	5	0	2	1.44	-0.58	47	7	0
Castro Verde	5	0	0	5	0	0	1.32	0.00	48	16	0
Celorico da Beira	5	0	0	5	0	0	1.33	0.00	45	9	0
Celorico de Basto	5	0	0	6	0	0	0.56	0.00	114	24	0
Chamusca	4	0	0	6	0	0	1.13	0.00	107	25	0
Chaves	11	0	0	19	0	1	0.87	-0.05	301	58	1
Cinfães	4	0	0	6	0	0	0.56	0.00	94	15	1
Coimbra	12	0	0	105	0	19	1.28	-0.23	1405	210	8
Condeixa-a-Nova	6	0	0	6	0	0	0.62	0.00	114	19	1
Constância	3	0	0	4	0	0	1.81	0.00	38	11	1
Coruche	6	0	0	7	0	0	0.70	0.00	241	44	0
Covilhã	10	0	1	27	1	4	0.96	-0.11	408	68	8
Crato	3	0	3	4	0	4	2.24	-2.24	24	3	1
Cuba	3	0	0	3	0	0	1.22	0.00	20	2	0
Elvas	10	0	2	16	0	3	1.36	-0.25	207	32	1
Entroncamento	8	0	1	11	0	3	0.98	-0.27	115	23	3
Espinho	11	0	0	21	0	1	1.18	-0.06	217	30	0
Esposende	10	0	1	18	0	2	0.93	-0.10	294	50	3
Estarreja	8	0	0	15	0	3	1.03	-0.21	163	35	0
Estremoz	7	0	0	10	0	0	1.40	0.00	172	30	0
Évora	13	0	1	41	0	5	1.31	-0.16	625	112	4
Fafe	10	0	0	14	0	1	0.50	-0.04	515	89	5
Faro	12	0	1	56	0	8	1.51	-0.22	601	99	3
Felgueiras	10	0	0	27	0	0	0.83	0.00	846	225	1
Ferreira do Alentejo	3	0	0	3	0	0	0.70	0.00	96	28	0
Ferreira do Zêzere	4	0	0	4	0	0	0.96	0.00	90	18	0
Figueira da Foz	10	0	0	30	0	3	0.88	-0.09	481	76	1
Figueira de Castelo Rodrigo	5	0	0	5	0	0	1.69	0.00	48	6	0
Figueiró Dos Vinhos	3	0	0	3	0	0	0.96	0.00	63	9	0
Freixo de Espada a Cinta	3	0	0	3	0	0	1.64	0.00	13	2	0
Fronteira	3	0	3	4	0	4	2.37	-2.37	35	8	3
Funchal	13	0	2	90	1	23	1.40	-0.34	1046	141	1
Fundão	9	0	1	15	0	3	1.01	-0.20	271	35	3
Gavião	3	0	0	3	0	0	1.68	0.00	23	5	0
Golegã	4	0	0	5	0	0	1.78	0.00	61	8	0
Gondomar	11	0	1	52	0	8	0.53	-0.08	941	173	2
Gouveia	5	0	0	7	0	0	1.05	0.00	89	11	0
Grândola	6	0	0	9	0	1	1.14	-0.13	129	22	0
Guarda	11	0	0	26	0	5	1.11	-0.21	324	61	0
Guimarães	11	1	0	75	1	9	0.82	-0.09	2042	437	67
Horta	10	0	1	13	0	2	1.52	-0.23	93	7	0
Idanha-a-Nova	3	0	0	5	0	0	1.24	0.00	81	16	1
Ílhavo	9	0	1	17	0	3	0.77	-0.14	305	47	18
Lagoa	8	0	0	25	0	2	1.95	-0.16	315	49	1
Lagos	11	0	1	20	0	4	1.17	-0.23	307	32	6
Lajes do Pico	4	0	0	6	0	1	2.38	-0.40	14	3	0
Lamego	9	0	1	14	0	3	0.96	-0.21	201	32	3
Leiria	14	1	1	93	1	14	1.31	-0.18	1725	319	13
Lisboa	24	2	3	639	7	110	2.18	-0.35	7652	1161	3
Loulé	11	0	0	55	0	5	1.40	-0.13	873	125	9
Loures	13	0	1	129	0	23	1.12	-0.20	1627	238	14

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	Number of Banks			*Number of Branches*			*Branch density*		*Number of Firms*		
	June 2012	Openings	Closures	June 2012	Openings	Closures	June 2012	Variation	June 2012	Switchers	Transferers
Lourinha	9	0	0	19	0	1	1.24	-0.07	268	58	13
Lousa	7	1	1	8	1	2	0.77	-0.10	171	30	9
Lousada	8	0	1	9	0	1	0.34	-0.04	494	118	36
Mação	4	0	1	5	0	1	1.56	-0.31	70	12	1
Macedo de Cavaleiros	8	0	0	10	0	1	1.26	-0.13	123	20	0
Machico	7	0	0	10	0	2	0.80	-0.16	101	18	0
Madalena	7	0	0	7	0	0	2.12	0.00	66	4	0
Mafra	10	0	0	39	0	7	0.90	-0.16	724	113	24
Maia	12	0	0	64	0	10	0.79	-0.12	1459	289	14
Mangualde	8	0	0	8	0	0	0.77	0.00	187	38	6
Marco de Canaveses	9	0	1	17	0	5	0.57	-0.17	471	94	21
Marinha Grande	10	0	1	20	0	4	0.91	-0.18	525	119	31
Marvão	3	0	0	3	0	0	1.74	0.00	16	2	0
Matosinhos	12	0	0	93	0	18	0.90	-0.17	1529	272	6
Mealhada	8	0	1	13	0	2	1.16	-0.18	187	36	6
Meda	4	0	0	4	0	0	1.64	0.00	30	5	0
Melgaço	7	0	1	7	0	1	1.65	-0.24	42	4	0
Mértola	3	0	0	3	0	0	0.87	0.00	43	9	0
Mesão Frio	3	0	0	3	0	0	1.25	0.00	26	5	0
Mira	6	0	0	7	0	0	1.07	0.00	69	12	0
Miranda do Corvo	4	0	0	4	0	0	0.57	0.00	98	10	0
Miranda do Douro	6	0	0	8	0	0	2.18	0.00	50	6	0
Mirandela	9	0	1	13	0	2	1.05	-0.16	176	32	5
Mogadouro	4	0	0	4	0	0	0.85	0.00	54	10	0
Moimenta da Beira	5	0	0	6	0	0	1.17	0.00	90	15	0
Moita	8	0	0	18	0	0	0.49	0.00	272	50	6
Monção	8	0	1	8	0	1	0.80	-0.10	155	23	4
Monchique	3	0	0	5	0	0	1.65	0.00	28	4	0
Mondim de Basto	4	0	0	4	0	0	1.05	0.00	46	6	0
Monforte	3	0	0	3	0	0	1.92	0.00	39	6	0
Montalegre	8	0	1	10	0	1	1.97	-0.20	57	4	1
Montemor-o-Novo	8	0	1	11	0	1	1.25	-0.11	197	37	3
Montemor-o-Velho	5	0	0	8	0	0	0.56	0.00	201	30	0
Montijo	10	0	0	26	0	7	0.89	-0.24	433	79	1
Mora	3	0	0	4	0	0	1.65	0.00	37	9	0
Mortágua	4	0	0	4	0	0	0.80	0.00	101	19	0
Moura	6	0	0	8	0	0	1.06	0.00	111	18	0
Mourão	3	0	0	3	0	0	2.40	0.00	11	2	0
Murtosa	4	0	0	5	0	1	0.93	-0.19	58	13	0
Nazaré	8	0	0	9	0	0	1.07	0.00	93	22	1
Nelas	6	0	0	8	0	0	1.09	0.00	109	23	1
Nisa	4	0	0	4	0	0	1.18	0.00	44	12	0
Nordeste	4	0	0	4	0	0	1.57	0.00	15	3	0
Óbidos	5	0	0	8	0	0	1.26	0.00	144	33	0
Odemira	5	0	0	15	0	0	1.10	0.00	195	33	0
Odivelas	3	0	0	4	0	0	0.05	0.00	870	130	1
Oeiras	14	0	0	98	2	16	1.02	-0.15	1614	277	5
Oleiros	3	0	0	4	0	0	1.51	0.00	39	2	0
Olhão	9	0	1	19	0	2	0.76	-0.08	275	42	5
Oliveira de Azeméis	10	0	0	27	0	3	0.69	-0.08	843	156	9
Oliveira de Frades	8	0	1	8	1	1	1.49	0.00	154	36	4
Oliveira do Bairro	7	0	1	15	1	4	1.22	-0.24	276	44	10
Oliveira do Hospital	6	1	0	8	1	0	0.74	0.09	210	32	1
Ourém	11	0	0	37	0	5	1.56	-0.21	550	89	9
Ourique	3	0	0	3	0	0	1.13	0.00	30	6	0
Ovar	10	0	0	24	0	2	0.76	-0.06	510	103	5
Paços de Ferreira	10	0	0	26	1	8	0.81	-0.22	597	131	13

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	Number of Banks			*Number of Branches*			*Branch density*		*Number of Firms*		
	June 2012	Openings	Closures	June 2012	Openings	Closures	June 2012	Variation	June 2012	Switchers	Transferers
Palmela	8	0	0	20	0	0	0.57	0.00	527	106	11
Pampilhosa da Serra	4	0	0	4	0	0	2.03	0.00	20	8	0
Paredes	11	0	1	47	0	10	0.94	-0.20	842	161	18
Paredes de Coura	5	0	0	5	0	0	1.06	0.00	36	4	0
Pedrógão Grande	3	0	0	3	0	0	1.65	0.00	48	8	0
Penacova	6	0	0	7	0	0	0.85	0.00	128	23	0
Penafiel	10	0	0	30	0	4	0.74	-0.10	606	93	1
Penalva do Castelo	3	0	0	3	0	0	0.77	0.00	29	4	0
Penamacor	3	0	0	4	0	0	1.71	0.00	24	5	0
Penedono	3	0	0	3	0	0	2.06	0.00	11	1	0
Peniche	9	1	1	15	1	3	1.00	-0.13	228	39	4
Peso da Régua	9	0	1	11	0	2	1.17	-0.21	133	25	4
Pinhel	4	0	1	6	0	1	1.30	-0.22	58	11	3
Pombal	10	0	0	40	0	1	1.41	-0.04	597	97	10
Ponta Delgada	9	1	0	58	2	12	1.50	-0.26	483	69	2
Ponta do Sol	4	0	0	5	0	0	1.12	0.00	37	4	0
Ponte da Barca	6	0	0	6	0	0	0.97	0.00	75	14	0
Ponte de Lima	10	0	1	18	0	2	0.78	-0.09	336	51	7
Ponte de Sôr	7	0	0	9	0	0	1.01	0.00	121	17	0
Portalegre	10	0	2	13	0	4	0.96	-0.30	183	33	4
Portel	3	0	0	4	0	0	1.24	0.00	40	6	0
Portimão	11	0	0	33	0	5	1.06	-0.16	495	71	2
Porto	20	0	1	280	5	47	2.17	-0.33	3024	535	4
Porto de Mos	9	0	0	16	0	0	1.14	0.00	317	59	3
Porto Santo	4	0	0	4	0	0	1.22	0.00	26	1	0
Povoa de Lanhoso	9	0	1	11	0	2	0.82	-0.15	217	32	3
Povoa de Varzim	11	0	1	31	0	2	0.80	-0.05	591	92	6
Povoação	4	0	0	5	0	0	1.48	0.00	26	1	0
Proença-a-Nova	6	0	0	6	0	0	1.51	0.00	86	8	0
Redondo	5	0	0	5	0	0	1.39	0.00	69	9	0
Reguengos de Monsaraz	5	0	0	7	0	0	1.26	0.00	115	18	0
Resende	5	0	0	5	0	0	0.86	0.00	46	14	0
Ribeira Brava	6	0	0	7	0	1	0.98	-0.14	60	12	0
Ribeira de Pena	4	0	0	5	0	1	1.52	-0.30	32	2	0
Ribeira Grande	7	0	0	13	1	0	0.78	0.06	137	12	0
Rio Maior	10	0	1	12	0	1	1.05	-0.09	222	56	6
Sabugal	6	0	0	6	0	0	1.11	0.00	62	9	0
Salvaterra de Magos	6	0	1	9	0	1	0.76	-0.08	240	61	5
Santa Comba Dão	4	0	1	4	0	1	0.67	-0.17	115	27	3
Santa Cruz	6	0	0	14	0	2	0.54	-0.08	168	30	4
Santa Cruz da Graciosa	4	0	0	5	0	1	2.15	-0.43	10	0	0
Santa Maria da Feira	11	0	1	60	0	9	0.74	-0.11	1509	313	20
Santana	3	0	0	3	0	0	0.74	0.00	19	2	0
Santarém	11	0	1	37	0	5	1.12	-0.15	678	137	0
Santiago do Cacem	8	0	1	18	0	2	1.07	-0.12	266	48	3
Santo Tirso	10	0	0	40	0	3	0.97	-0.07	727	138	26
São Brás de Alportel	8	0	0	8	0	0	1.39	0.00	82	14	0
São João da Madeira	9	0	0	31	0	4	2.48	-0.32	399	89	10
São João da Pesqueira	4	0	1	5	0	1	1.23	-0.25	83	6	0
São Pedro do Sul	5	0	0	6	0	0	0.71	0.00	126	11	0
São Roque do Pico	4	0	0	4	0	0	2.18	0.00	26	2	0
São Vicente	3	0	0	4	0	0	1.35	0.00	22	2	0
Sardoal	3	0	0	4	0	1	2.01	-0.50	29	5	0
Sátão	5	0	0	6	0	0	0.95	0.00	70	8	0
Seia	9	0	1	12	0	1	0.92	-0.08	205	43	9
Seixal	11	0	0	52	0	8	0.57	-0.09	919	155	4
Sernancelhe	3	0	0	4	0	0	1.42	0.00	46	12	0

Appendix Data

Number of Banks, Branches, Branch Density, and Number of Firms per Municipality

We compute the number of banks, number of branches, branch density (number of branches per 1,000 adults) and number of firms for each municipality (concelho) in Portugal. We exclude municipalities with fewer than 2 banks. Bank and branch openings and closures and variation in branch density refer to the period between June 2012 and May 2015.

	Number of Banks			*Number of Branches*			*Branch density*		*Number of Firms*		
	June 2012	Openings	Closures	June 2012	Openings	Closures	June 2012	Variation	June 2012	Switchers	Transferers
Serpa	5	0	0	8	0	0	1.00	0.00	116	21	0
Sertã	8	0	0	10	0	0	1.27	0.00	140	30	0
Sesimbra	9	0	2	19	0	4	0.68	-0.14	323	49	6
Setúbal	12	0	0	54	0	9	0.80	-0.13	823	130	6
Sever do Vouga	6	0	0	6	0	0	0.92	0.00	159	27	0
Silves	9	0	0	23	0	1	1.14	-0.05	274	34	1
Sines	8	1	1	8	1	1	0.99	0.00	173	36	7
Sintra	12	0	0	138	1	23	0.64	-0.10	2684	480	45
Sobral de Monte Agraço	7	0	1	8	0	2	1.42	-0.35	102	17	3
Soure	5	0	0	7	0	0	0.70	0.00	100	12	0
Sousel	4	0	0	6	0	0	2.51	0.00	74	15	0
Sta. Marta de Penaguião	4	0	1	6	0	1	1.53	-0.25	47	11	1
Tábua	5	0	0	6	0	0	0.98	0.00	96	24	0
Tabuaço	3	0	0	4	0	0	1.20	0.00	47	6	0
Tarouca	5	0	0	5	0	0	1.16	0.00	53	10	0
Tavira	9	1	0	18	1	5	1.28	-0.29	235	47	0
Terras de Bouro	3	0	0	4	0	0	1.08	0.00	29	6	0
Tomar	10	0	1	19	0	4	0.91	-0.19	275	56	2
Tondela	10	0	1	14	0	3	0.96	-0.20	213	30	3
Torre de Moncorvo	4	0	0	4	0	0	0.97	0.00	63	8	0
Torres Novas	10	0	0	18	0	1	0.93	-0.05	333	55	0
Torres Vedras	11	0	0	50	0	6	1.15	-0.14	765	153	17
Trancoso	7	0	0	8	0	0	1.67	0.00	80	6	0
Trofa	4	0	4	4	0	4	0.18	-0.18	481	95	12
Vagos	8	0	0	14	0	0	1.14	0.00	193	32	0
Vale de Cambra	9	0	0	12	0	1	0.95	-0.08	241	45	12
Valença	11	0	1	12	0	1	1.58	-0.13	146	28	1
Valongo	10	0	0	40	0	7	0.72	-0.13	659	134	3
Valpaços	9	0	1	13	0	1	1.58	-0.12	98	15	2
Velas	5	0	0	5	0	0	1.69	0.00	48	2	0
Vendas Novas	9	0	2	9	0	2	1.47	-0.33	120	29	8
Viana do Alentejo	5	0	1	6	0	1	2.09	-0.35	51	11	1
Viana do Castelo	11	0	0	43	0	5	0.87	-0.10	680	121	8
Vidigueira	4	0	0	4	0	0	1.35	0.00	36	10	0
Vieira do Minho	5	0	0	5	0	0	0.75	0.00	54	11	0
Vila de Rei	4	0	0	4	0	0	2.76	0.00	31	7	0
Vila do Bispo	4	0	1	5	0	1	1.75	-0.35	54	7	2
Vila do Conde	10	0	0	33	0	5	0.72	-0.11	702	116	17
Vila do Porto	3	0	0	4	0	1	1.29	-0.32	37	2	0
Vila Flor	3	0	0	4	0	0	1.17	0.00	52	10	0
Vila Franca de Campo	7	0	1	7	0	1	0.97	-0.14	38	2	1
Vila Franca de Xira	10	0	0	59	0	6	0.73	-0.07	906	152	7
Vila Nova de Cerveira	5	0	0	6	0	0	1.22	0.00	72	10	0
Vila Nova de Famalicão	11	0	1	55	0	9	0.71	-0.12	1412	294	48
Vila Nova de Foz Côa	3	0	0	5	0	0	1.40	0.00	50	5	0
Vila Nova de Gaia	12	0	0	116	1	23	0.66	-0.12	2134	376	29
Vila Nova de Paiva	3	0	0	3	0	0	1.20	0.00	39	10	0
Vila Nova de Poiares	3	0	0	3	0	0	0.76	0.00	94	19	0
Vila Pouca de Aguiar	7	0	0	8	0	0	1.17	0.00	99	15	0
Vila Praia da Vitoria	9	0	0	15	0	3	1.07	-0.21	66	9	0
Vila Real	11	0	0	31	0	3	1.06	-0.10	386	49	0
Vila Real de Santo António	9	0	1	18	0	4	1.73	-0.39	159	29	4
Vila Verde	9	0	2	20	0	5	0.78	-0.20	399	68	8
Vila Viçosa	4	0	0	6	0	0	1.34	0.00	116	21	1
Vimioso	4	0	0	5	0	0	2.39	0.00	22	2	0
Vinhais	4	1	0	5	1	0	1.18	0.24	40	5	0
Viseu	13	0	1	65	0	15	1.19	-0.27	969	153	9

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Number of Banks, Branches, Branch Density, and Number of Firms per Municipality

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	Number of Banks			*Number of Branches*			*Branch density*		*Number of Firms*		
	June 2012	Openings	Closures	June 2012	Openings	Closures	June 2012	Variation	June 2012	Switchers	Transferers
Vouzela	3	0	0	4	0	0	0.76	0.00	81	16	1