

**THE JOINT SIZE AND OWNERSHIP
SPECIALIZATION IN BANKS' LENDING**

2006

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**Documentos de Trabajo
N.º 0606**

BANCO DE ESPAÑA



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(*) This paper is the sole responsibility of its authors and the views presented here do not necessarily reflect those of the Banco de España. We very much appreciate the thorough comments provided by A. Almazán, J. Pindado, F. Rodríguez, S. Titman, R. Townsend, an anonymous referee and J. Segura, the Editor, to a previous version of this paper as well as those from participants at the XIV International Tor Vergata Conference on Banking and Finance, and Foro de Finanzas-2005. Any errors that remain are, however, entirely the authors' own.

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ISSN: 0213-2710 (print)

ISSN: 1579-8666 (on line)

Depósito legal: M.16596-2006

Imprenta del Banco de España

Abstract

In this paper we study the specialization of Spanish banks along two intertwined dimensions: size and ownership form. We find some interesting results at odds with the existing empirical literature. As commercial banks increase their size, they lend more to large borrowers but that is not the case for the largest banks. For savings banks, the larger the size the more likely is the lending to small borrowers. Moreover, we find evidence that larger commercial banks are more willing to lend to low credit quality borrowers than medium size banks, while the opposite is true among savings banks. Banks' specialization in lending to business firms seems to go across the reputation considerations, risk shifting behavior and lending technologies most often considered in the literature.

JEL classification: D23, G21.

Keywords: bank specialization, transactional lending, relational lending, ownership form.

1 Introduction

The banking industry involves banks of different size and ownership. One way to reconcile the persistent diversity in organizational forms with the presumption that size and ownership matter as organizational choices, is to recognize that banking services are not an homogeneous commodity and diversity in organizational forms reflects opportunities for market segmentation and specialization.

This paper studies diversity and specialization in the market of bank credit to Spanish non-financial firms in the period 1996 to 2003. The case study is particularly relevant because in Spain, besides diversity in sizes of banks, there is also a significant diversity of ownership forms (i.e. commercial for profit banks, not-for-profit savings banks and credit cooperatives), with no clear market dominance of one form over the others. Second, during the period 1996 to 2003, Spain, in the process of joining the Euro zone, has evolved from tight to loose monetary policy. The result has been an intense merger activity involving banks of all sizes and, in particular, mergers among the largest commercial banks. However, ownership diversity has increased over time since savings banks and credit cooperatives today represent half of the market share of Spanish retail banking, compared with one third ten years ago. The Spanish case offers a unique opportunity to study size and ownership specialization of banks in a period when competitive conditions pressed towards efficient decisions and when not-for-profit savings banks outperform for profit commercial banks in competitive credit markets.

Bank specialization in business loans is studied along the combined dimensions of ownership form and size of the bank. Altogether, seven possible choices are identified, four size classes in commercial banks, two in savings banks and one in cooperatives. The credit market is described in terms of likelihood of observing one alternative of the seven available in a particular loan decision, as a function of characteristics of borrowers and loans and a set of control variables. We test if commercial banks, savings banks and credit cooperatives of similar size lend differently to particular segments of borrowers, and whether within each ownership form, size matters as a specialization variable, and if it matters in the same way for all ownership forms.

The main hypothesis around the size specialization of banks, tested in the paper, is that larger banks will tend to specialize in larger borrowers and, for any size, in borrowers with easy to observe credit quality; the so called “informational simpler borrowers” in Carey et al. (1998). This hypothesis is justified in the grounds that larger banks have higher agency costs in delegated decision making that relies in soft information and therefore are forced to specialize in borrowers whose credit quality can be assessed using hard data (transactional lending), Stein (2002)¹.

Banks' specialization as a function of ownership form considers mainly risk taking behavior of banks in each ownership form. The main hypothesis is that, within a size class,

1. Further discussion of differences between transactional and relational lending in Sharpe (1990), Rajan (1992), Boot and Thakor (2000), Berger and Udell (2002), Brickley et al. (2003), Berger (2004). In addition, the relationship between bank size and credit to small versus large firms has been extensively investigated [Berger et al. (1995), Berger and Udell (1996), Strahan and Weston (1996), Cole et al. (2004)], including the effects of M&A [Berger et al. (1998), Strahan and Weston (1998), Sapienza (2002)], and the impact of internal organization and complexity of banks [Berger and Udell (2002), Berger et al. (2002), Brickley et al. (2003)], on the availability and terms of credit to small firms.

non-shareholder ownership forms, and, in particular, workers/managers' controlled organizations, such as savings banks and credit cooperatives, as well as managers' controlled commercial banks, will be more conservative than shareholders owned commercial banks in loan granting decisions, Jensen and Meckling (1976)². Secondly, as in Carey et al. (1998), we also test if reputation affects the lending specialization of savings banks compared with commercial banks. Not-for-profit organizations such as savings banks are expected to be more trustworthy than commercial banks, Hansmann (1996). To preserve a reputation of reasonableness in loan renegotiations (i.e. to make credible the promise of refrain from extracting maximum rents in these renegotiations) savings banks are less likely than commercial banks to force defaulting borrowers into liquidation and, therefore, more likely to continue granting loans to defaulted borrowers (ex post high risk).

We use a unique database, the Credit Register (CIR) of Banco de España, which contains information on the whole population of loans above 6,000 euros granted by any credit institution operating in Spain. We focus on new loans to non-financial firms granted in the period 1996 to 2003³. Only Berger and Udell (1996), Carey et al. (1998), and Cole et al. (2004) use individual loan data in previous empirical work⁴. We focus on new loans granted during the period, instead of analyzing the whole stock of loans. This has important advantages to study size specialization by banks and firms since the flow of new loans captures the changes more rapidly than the total stock of bank loans. For each loan granted we know the amount of the loan and the size of the borrower, so we can isolate the effects of both variables in the specialization decision.

We find that both size and ownership form are relevant dimensions to explain bank specialization. As commercial banks increase their size, they focus more on loans to larger borrowers (transactional lending) but that is not the case for the largest banks. Among savings banks, the larger their size, the more likely they lend to borrowers of smaller size (relational lending). Overall, controlling for size, savings banks and credit cooperatives specialize more in small borrowers than commercial banks. Therefore, the ownership form of the bank affects in a different way the specialization decisions among the information-problematic borrowers dimension (size of the borrower). Second, we find that medium size savings banks and credit cooperatives are more likely to lend to borrowers of observed ex ante low credit quality than commercial banks of the same size. The likelihood of granting a loan by saving banks and cooperatives, compared with commercial banks of equal size, is higher in loans with collateral than in loans with no collateral. These results are consistent with higher reputation concerns among savings banks and cooperatives than among commercial banks. However, no evidence is found supporting the hypothesis that ownership form conditions lending specialization through different incentives for risk shifting behavior.

The analysis of specialization along ownership forms departs from Carey et al. (1998) because we compare three forms of ownership which belong to the general class of what

2. Risk shifting behavior, to increase shareholder value by undertaking risky projects that lower the economic value of debt under limited liability of the firm is more likely in highly leveraged firms such as banks. Existing research has paid attention to how the ownership form, banks versus finance companies, Carey et al. (1998), stock or mutual thrifts, Esty (1997a, b), and the share ownership dispersion of banks, [Saunders et al. (1990), Gorton and Rosen (1995)], can segment credit markets in response to different incentives for risk shifting behavior.

3. A detailed analysis of the content of the CIR is in Jiménez and Saurina (2004) and Jiménez et al. (2006).

4. We are unable to observe loan applications that have been rejected by banks so we cannot separate the application and the approval or rejection decisions of loans. Cole et al. (2004) find similar results when the approval-rejection decision is explained jointly with the application decision and when it is explained separately, which suggests that are banks those who choose the borrower they want to do business with.

they call “generic intermediaries”. In addition, we study potential differences in the size of the bank/size of the borrower specialization decision within each ownership form. Moreover, our sample includes loans to borrowers of all sizes and we compare borrower specialization decisions controlling for characteristics of loans and banks. It also departs from Esty (1997a and b) because we consider other dimensions of specialization apart from risk taking behavior (i.e. reputation factors), and we include a unique ownership form, savings banks (“cajas de ahorros”), with a loose definition of property rights but very effective in gaining market share to commercial banks in recent years⁵.

Within the literature that tests for the size of the bank/size of the borrower specialization (transactional versus relational lending) hypothesis (footnote 1), the paper is the first to investigate, with new and challenging results, differences in the pattern of size specialization across ownership forms. If the ownership form affects control losses and coordination and motivation failures in the internal workings of banks, then the nature of the relationship between size of the bank and choice of lending technology within each ownership form will inform us about differences in management costs across organization forms. Moreover, the test of the hypothesis is made, for the first time, controlling for differences in size of the loan, which is important because large banks can grant loans of any size while small banks have limitations to grant large loans due to regulatory constraints to risk concentration. The evidence found supports that size and ownership specialization in banks’ lending are interdependent and, for this reason, should be investigated jointly, as we do in this paper.

The rest of the paper is organized as follows. Section 2 contains some stylized facts about new loans to Spanish non-financial firms and a summary of ownership characteristics of banks in Spain. Section 3 summarizes the literature and states the main hypotheses to be tested. Section 4 explains the variables and methodology used while section 5 presents the results of the empirical tests. Finally, section 6 concludes.

5. The distinction between commercial and savings bank is parallel to the distinction between banks and thrifts in the US, although the ownership of Spanish savings banks is quite unique as we show later.

2 Institutional framework and credit market data

Among Spanish banks we have three forms of ownership, commercial banks, savings banks and credit cooperatives. Commercial banks are companies owned by shareholders. Savings banks can be assimilated to not-for-profit commercial organizations [Hansmann (1996)]; commercial because they are subject to the same regulatory and competitive conditions than the rest of ownership forms; not-for-profit because the profits they make have as destination either retained earnings or a “social dividend” (pay for social or cultural programs in benefit of the community). Credit cooperatives can be assimilated to mutual thrifts.

In commercial banks, residual decision rights belong to the shareholders that may in turn delegate them to the management team. In savings banks the decision rights are allocated to a General Assembly of representatives elected by public authorities (up to 50%), by depositors, by workers and by the founding entity (which can be a civic, religious or government-related organization). The General Assembly elects the Board of Directors that in turn elects the management team. In credit cooperatives residual decision rights belong to the creditors. They are banks that were first created to lend to producer cooperatives in the agriculture sector and, at the same time, to provide bank services in rural areas. The farming cooperatives were the formal owners of the bank under limited liability, but with severe restrictions on the banking operations they were allowed to perform. In many cases, the farming cooperatives and the individual partners also held deposits in the bank. Therefore, the closest organization that credit cooperatives resemble is a mutual company of borrowers. Today credit cooperatives can perform the same operations as savings and commercial banks.

Banks also differ in size. For the purpose of this study we group banks in four size classes: Small, banks with € 1,000 million in total loans or less; Medium, banks with between € 1,000 and 25,000 million of loans; Large, with loans above € 25,000 million, and Very large, banks that also have loans above € 25,000 million⁶. The distinction between the last two groups of banks is based on the fact that very large banks are those that in addition have been involved recently in mega-mergers. That is, four of the largest commercial banks in Spain in 1999 and 2000 entered into two merger processes that ended in two very large banks, well ahead in terms of total assets, costumers, etc. of the following third and subsequent banks. Therefore, it is interesting to separate large and very large banks attending to merger developments. Moreover, both mega-merged banks are the only ones that have significant amounts of assets in foreign markets (Europe and Latin America), so that, they can be considered as internationally active banks⁷. Henceforth, we will refer to them as very large banks, although we could also label them mega-merged banks and/or internationally active banks.

6. In choosing size breakdowns we depart from the existing (US) literature in two aspects. First of all, given that we are analyzing loan specialization, we use the loan portfolio of the bank as the reference for the size breakdown. Two banks with the same size of their loan portfolios may differ substantially in total assets if interbank positions are large and of opposed signs. Secondly, we adapt the cut off points to the Spanish market where we do not have unibranch banks and, thus, banks are not extremely small as implied by the breakdowns used in the US literature [Berger et al. (2001 and 2002), among others]. On the contrary, we have some very large banks both in absolute and relative terms so that the limit of 10 billion of assets often used to separate small from large banks would not capture the size distribution of Spanish banks.

7. The Basel Committee on Banking Supervision intends to apply new capital requirements (the so-called Basel II) mainly for those internationally active banks.

Loan data refers to the flow of new loans granted by any Spanish bank to non-financial firms every year from 1996 to 2003 registered in the CIR. For each loan, information is available about the size and ownership form of the lender; the size, credit quality, industry and region of the borrower; and about characteristics of the loan such as size, maturity and collateral. The interest rate charged to the loan is not reported.

2.1 Volume and general characteristics of loans

In 1996 new bank loans of one year maturity or more to non-financial firms amounted € 36,239 million, approximately 7.8% of the Spanish GDP. Seven years later, in 2003, that amount was almost four times larger, € 127,935 million, 17.2% of the GDP. In the same period, the number of new loans raised from 186,147 to 400,789, as well as the average size of the loan (from € 195 thousand to € 319 thousand). By industry, Construction and Real Estate concentrates more than one third of the amount of new loans yearly granted although less than one fourth of the number of loans. New loans to Retail industries (i.e. commerce, restaurants, ...), concentrate almost one third of the number of loans but only represent one fifth in amount. In the eight-year period 44.2% of the loans granted are short term (maturity up to three years), 22.2% are medium term (maturity between 3 and 5 years); and 33.6% are long term (maturity above 5 years). However, long term loans concentrate higher volume of total lending since the size of loans increases with maturity. Finally, 42% of the amount of new loans has been secured with collateral slightly more than one fourth of the loans.

The distribution of credit across loan size groups (Table 1, Panel A) shows a steady relative decline in terms of amount for the two smallest size classes (below € 100,000). Both concentrate almost 70% of the total number of loans but only 7.8% of the volume of credit. In 2003 the proportion of loans with size above € 2 million, the largest size class, is 2.5% but 56.4% of the volume of credit. Borrowers of small and middle size (less than € 1 million of total credit at 2003 prices) concentrate 87% of the loans but only 20.3% of the volume of new credit (Table 1, Panel B). Very large borrowers (those with a balance of over € 20 million) concentrate 0.7% of the loans and 41.2% of the amount of credit. In the period 1996 to 2003 the Spanish banking sector has experienced a consolidation process, so that in 1996 there were 277 active banks and in 2003, 212 (Table 1, Panel C). The consolidation process has affected mostly to small banks and to the largest ones. The number of large banks increases over time from just 3 banks in 1996 to 12 banks in 2003. This increase is the result of organic growth of medium size banks. From 1996 to 2000 large banks increase their market share (from 17.3% to 30.7%) mainly at the expense of medium and small size banks (from 58.1 to 48.1%). The expansion of large banks continues after 2000, but now more at the expense of very large banks, those that merge, whose market share in the volume of loans decreases from 21.2% in 2000 to 14.7% in 2003.

2.2 Market share across size classes of borrowers

Table 2 shows the time evolution of market share of banks in each size class across groups of borrowers of different size. In 1996, the amount of new credit to small and medium size borrowers was originated in almost two thirds in small and medium banks. On the other hand, the largest borrowers received more than 50% of the flow of new credit from small and medium banks and 20% and 26.2% from large and very large banks, respectively. Thus, small and medium size banks were relatively more important in financing small and medium size borrowers. However, in 2003 the situation has changed significantly. Small and medium size banks together supply less than 40% of the new credit to small and medium size borrowers. Moreover, large and very large banks provide around 60% of the new credit obtained by large and very large borrowers. Therefore, in 2003, within banks of a given size

class, the share of credit is similar across borrowers of different sizes (splitting banks into two broad groups). Conclusions do not change when size of the borrower is proxied by size of the loan.

The relation between size of the banks and size of the borrowers they lend to can be viewed also from the distribution of credit to borrowers of different size for banks within a size class (Table 3). The group of very large banks shows the lowest percentage of their credit concentrated in borrowers of small and medium size and the proportion is lower after 2000. On the other hand, small and medium size banks tend to concentrate a higher proportion of their credit in smaller borrowers. However, after year 2000, small banks increase the proportion of credit concentrated in very large borrowers, while very large banks decrease it. Therefore, there is a change towards a more homogeneous distribution of loans among borrowers of different size, in each size class of banks. So, larger banks tend to lend relatively more to larger companies, as in the US empirical literature [Berger et al. (1995), Berger and Udell (1996), Peek and Rosengren (1996) and Strahan and Weston (1996)], but the specialization effect is not so pronounced.

2.3 Market share across ownership form

In 1996 commercial banks have 66% of market share in new loans to non-financial firms; savings banks 31.5% and cooperatives 2.5% (Table 4). In 2003 commercial banks continue with the largest market share but the differences have been reduced: 51%, 44.9%, and 4.1%, respectively. The loss in market share of commercial banks is not so pronounced in terms of number of loans. Therefore, savings banks and cooperatives gain proportionally more market share in larger loans (and borrowers).

Commercial banks have the largest market share in any borrower class size in almost all the period (Table 4). In 1996 small and medium size borrowers receive, on average, over 53% of the amount of the new credit they get from commercial banks, 41% from savings banks and 6% from cooperatives. Very large borrowers get 74.1% of their credit from commercial banks, 25.2% from savings banks and 0.7% from cooperatives. Seven years later the proportions of credit to small and medium size borrowers by types of banks are only 4 percentage points (pp) lower in commercial banks, distributed between savings banks and cooperatives. But for very large borrowers, the proportions are 53.5%, 45%, and 1.5%, respectively, that is, around 20 pp market share shift between commercial and savings banks. Commercial banks lost market share among borrowers of large or very large size at the expense of savings banks at a higher speed until year 2000. Since then, cooperatives gain market share in loans to large and very large borrowers. Therefore, savings banks and, to a lesser extend, cooperatives, have overcome any possible competitive disadvantage versus commercial banks among large and very large borrowers they might have had.

Table 5 shows the distribution of credit across borrower sizes for each form of bank ownership. Savings banks and cooperatives have a larger proportion of their new credit to firms concentrated in small and medium size borrowers than commercial banks. That pattern is maintained over time. However, the differences are progressively reduced and in year 2003 commercial banks concentrate 43.3% of the volume of new loans in very large borrowers, while savings banks concentrate 41.3%. Savings banks and cooperatives increase over time the proportion of total new loans they grant to large and very large borrowers. Commercial banks maintain almost stable the proportion of total credit they grant to small and medium size borrowers, while reduce their credit to very large borrowers and increase the proportion to large ones.

The preliminary evidence shown suggests that size and ownership form of the bank can affect bank specialization. Moreover, the pattern of specialization can be different from that one observed in other studies from the US. The organization of American bank credit markets is different, more fragmented in a large number of small banks and with more homogeneous general intermediaries, in the language of Carey et al. (1998). In Spain banking markets are more concentrated and the consolidation process has affected both small and very large banks. Liberalization of branch opening for savings banks in 1988, as the final step of a broad liberalization process, coincides with a period of increasing ownership differentiation in Spanish credit markets, with saving banks and credit cooperatives, general intermediaries, increasing market share at the expense of commercial banks. The very large of these commercial banks get involved in national mergers and international acquisitions, mainly of banks in Latin America. This happens at the same time that they loose market share in Spanish credit markets. The rest of the paper will go into a deeper multivariate analysis of the bank specialization, after an overview of the main theoretical hypothesis on its determinants.

3 Literature review and general hypotheses

Previous research relates the size of the bank/size of the borrower specialization decision with the comparative advantage of banks of different size in using one of the two main lending technologies, transactional or relational. Ownership form of the bank, on the other hand, has been considered a relevant variable in explaining the risk exposure of banks as a consequence, partly, of risk taking behavior in lending decisions. Much less is known about the comparative advantage of ownership in the use of one lending technology or the other.

The banking literature has identified two basic lending technologies for banks, transactional lending, or arms-length contracts, and relational lending, implicit and long term contracts. Berger and Udell (2002) present a detailed review of the two⁸. Large banks tend to be recognized as having clear disadvantages when it comes to be involved in relational lending [Stein (2002)]. Qualitative and contextual information used in a loan transaction flows costly and with high control loss along hierarchical levels. Agency problems between branch managers (or loan officers) involved in the loan granting decision and profit oriented shareholders, can be very severe and difficult to solve through managerial incentive contracts [Brickley et al. (2003)]. Large banks have to rely on hard, quantitative, data when dealing with borrowers, easy to verify by distant general managers who control branch officers and report to boards and shareholders. On the other hand, organizations with few hierarchical levels and short distance between residual claimants and decision-makers, such as small banks, can lower the loss of control in the hierarchy and for these banks concentrated ownership is expected to go together with broader decision making authority to local managers. If scale economies in transactional lending are modest, small banks can also be competitive in this technology, but if scale economies are important small banks will have to limit their activity to relational lending. Moreover, regulations that limit the credit that a bank can concentrate in a single borrower curtail small banks to lend to large borrowers because the size of the loan is expected to increase with the size of the borrower.

In general, large firms are less opaque and informational simpler than small firms, in part because they tend to be older and have more accumulated trading experience. Small firms of high financial quality and low credit risk are likely to receive competitive loan offers from large banks with low operating costs⁹. Small borrowers of observable low credit quality may also have the opportunity to get involved in transactional lending with large banks, as long as the former are able to pledge easy to monitor collateral to secure the loan. Large and small but transparent firms are the borrowers more likely to be attracted by banks with transactional lending technologies.

Small firms without verifiable financial information, operating in local markets, physically and informational distant from the headquarters of a bank, become a segment of the credit market that can be left out of transactional lending. Small banks with low agency costs and low organizational diseconomies, but with potentially higher operating costs, have

8. See also Sharpe (1990), Rajan (1992) and Boot and Thakor (2000).

9. Hannan (1991), Berger and Udell (1996) and Berger et al. (2003) provide supporting evidence that large banks lend to small business at lower interest rates than small banks do. Berger and Udell (1996) for the US, Harhoff and Körting (1998) for Germany, and Jiménez et al. (2006) for Spain, also find that the use of collateral is less likely among large banks than among small banks. This can be interpreted as evidence that large banks use cheaper transactional lending technologies to deal with relatively high quality small firms. We do not have information on interest rates of loans to test for this evidence.

the opportunity to serve this segment of the market, investing in firm and product-market specific information and devoting resources to monitor the value of collateral. This soft information is generated mostly through contact over time between bank loan officers and the firm, so relational lending is implemented through long and, often, exclusive relationships between the borrower and the lender.

The conclusion is that large banks will have lower market share than small banks in credit to small and medium size enterprises, SMEs, and larger market share than small banks in loans to large firms. If the size of the two markets, credit to opaque SMEs and credit to large firms and to transparent good quality small firms, are similar, large banks will have a lower proportion of loans to SMEs over total loans than small banks. The US empirical evidence supports this prediction [Berger et al. (1995), Berger and Udell (1996), Strahan and Weston (1996), Cole et al. (2004), Berger et al. (2002), and Brickley et al. (2003)]. The bank size specialization hypothesis is then summarized as follows.

H.1. The comparative advantage of large (small) banks in transactional (relational) lending will make more likely that large (small) banks lend to large (small) and informational simpler (opaque) borrowers.

3.1 Ownership form of the bank and risk taking

The payoffs of leveraged equity are equivalent to a call option on the assets of the firm [Black and Scholes (1973)]. The value of the option increases with volatility in the value of the firm, so decisions that increase volatility and leave unchanged the expected value of the total assets imply a transfer of wealth from debt holders, mainly depositors in the case of banks, to residual claimants [Jensen and Meckling (1976)]. Banks are highly leveraged, thus, their incentives to risk taking behavior can be higher than in other less leveraged firms. But incentives can differ across bank ownership types if each form implies different alignment between interests of those who hold control rights and interests of residual claimants. Saunders et al. (1990) find that shareholder-controlled banks are riskier than manager-controlled banks because, in the former, residual claimants also hold decision rights. From the same reason, stock thrifts and stock insurance companies are expected to be riskier than mutual thrifts and mutual insurance companies [Esty (1997a and b), Lamm-Tennant and Starks (1993), Lee et al. (1997)].

Among Spanish banks, commercial banks are the ones with closer alignment between holders of control rights and residual claimants. Within commercial banks the alignment can be higher or lower depending upon the ownership structure of the commercial bank. Thus, banks under managers' control will have lower incentives to perform risk shifting practices than shareholder-controlled banks, since the former have control rights but no residual claims¹⁰.

Savings banks' managers and workers have control rights far beyond their ownership rights, mainly because representatives of depositors, of founding institutions and of public authorities, the groups in charge of monitoring managerial decisions nominating board's members, have neither the information nor the individual incentives (free riding behavior) to monitor managerial decisions and performance of the bank. To understand the risk taking behavior of the savings banks it is important to understand the incentives

¹⁰ This is particularly true when the risk of bankruptcy is low. However, when the banking industry is in an "unhealthy" situation, Gorton and Rosen (1995) find that banks with entrenched managers make relatively riskier loans than shareholder-controlled banks.

of workers and managers. Most of their current income comes in the form of salary, pension and other job-related benefits. These are fixed claims that align the interests of workers and managers with those of the depositors or other debt holders, so the incentives to get involved in risk shifting can be expected to be very low. Another moderating factor of risk taking behavior by savings banks is the fact that they cannot issue equity to compensate losses and comply with the minimum regulatory capital.

Individual borrowers of credit cooperatives can have incentives to free ride in taking risky loans, since the losses are shared by the rest of members of the mutual company. However, knowing this, the other partners have incentives to closely monitor risky loans and avoid unsound risk taking. Since very often borrowers are also depositors of the bank, any potential gain from risk shifting behavior has to be weighted against the loss in the value of deposits. Credit cooperatives lack experience in open market competition, because regulation restricted their credit to some market segments (i.e. relatively small farming cooperatives operating in rural areas). For this reason, credit cooperatives are likely to be highly specialized in loans to relatively small borrowers. Credit cooperatives should be more conservative than commercial banks. The managerial teams have high discretion in making decisions but they are not residual claimants, and their human capital is highly specific.

In comparing the specialization of banks versus finance companies Carey et al. (1998) raise the issue of reputation concerns when lending to borrowers of different ex ante observable credit risk. Since ex post loan renegotiation between banks and firms is very frequent even among good quality borrowers, in lending to ex ante risky borrowers banks will weight the benefits with the damage in the reputation of being fair in the ex post negotiation, that could cause to be frequently involved in borrowers' liquidations. If reputation factors differ across banks depending on their ownership form then some specialization is expected so that those forms that value reputation the most will tend to specialize in lower risk borrowers than those that value it less.

Savings banks and credit cooperatives are expected to have higher reputation concerns than commercial banks. Hansmann (1996) argues that not-for-profit banks can be explained as a way to restore trust in banking markets, so not-for-profit savings banks rely on trust as one of their comparative advantages. Second, boards of savings banks are filled with representatives of local and regional communities, especially those banks that concentrate most of their activity in a local or regional market, together with workers' representatives. Credit cooperatives are also mainly local banks. Therefore, savings banks and cooperatives face higher social pressure to take into account community interests in their credit decisions than commercial banks.

The public image of savings banks and credit cooperatives would be damaged, as well as their reputation of being gentle in loan renegotiations, if they frequently force borrowers into liquidation. Public authorities often claim that savings banks have, as one of their missions, to contribute to the economic development of the region where they have banking activity.

Being aware of the reputation and social pressure concerns to stop lending to ex post observable low credit quality borrower, savings banks and credit cooperatives will try to limit their risk exposure ex ante, specializing in lower risk borrowers and/or will try to lower the incentives to moral hazard behavior of those borrowers that get a loan by asking more collateral. Therefore reputation and social pressure concerns increase the likelihood that loans

with collateral will more often be granted by saving banks and credit cooperatives than by commercial banks.

H.2. Savings banks and credit cooperatives are less likely to lend to borrowers of ex ante low credit quality and more likely to lend to borrowers of observed low credit quality, for example those that have loans in default, than commercial banks. Savings banks and credit cooperatives are more likely to grant a collateralized loan than commercial banks.

3.2 Size and ownership form

A totally unexplored issue in the literature is the competitive advantage of using transactional or relational lending technologies by banks of equal size but different ownership forms. Spanish banking regulation put commercial, savings, and cooperative banks in a level playing field in 1989. Until then, savings banks had been banned to expand beyond certain geographic and industry boundaries and for a long time their credit policies were dictated by public authorities. After full liberalization, savings banks and cooperatives compete openly with commercial banks in all business segments. The final result, that it was difficult to predict years ago, has been a steady increase in market share in a profitable and solvent way.

It can be expected that not-for-profit savings banks with loose property rights consequence of their unique ownership, will have lower operating efficiency than for-profit shareholders controlled banks, since managers and workers of these organizations do not face the supervision of profit motivated shareholders, as managers and workers of commercial banks do. But, at the same time, both forms of ownership are subject to strong product market competition and, after their geographical expansion savings banks compete among themselves in practically all local markets. Inefficient banks are forced out of the market, including savings banks for whom mergers with other savings banks is observed to be a more effective governance mechanism than in the case of commercial banks¹¹.

Savings banks are close to workers' cooperatives in the sense that, together with managers, workers have almost absolute control over the assets of the bank. The bank provides life time employment, relatively high salaries and benefits, including retirement benefits and pensions, and high involvement in the management of the bank. Whatever the objectives of the organization might be (sound growth, higher wages and benefits per worker or higher profits to pay higher social dividend), one can believe that workers of savings banks are more motivated to pursue these objectives than workers of commercial banks (who work under more hierarchical structures, lower efficiency wages and higher risk of restructuring) are to maximize shareholders' profits.

Ownership form of the bank can imply differences in their respective organizational diseconomies, costs of delegated monitoring, and therefore, from H1, the likelihood of specialization in transactional or relational lending could be different across ownership forms of a given size. Looser property rights and potential conflicts between interested parties (workers and managers, public authorities, depositors, founding entities) in savings banks put them in comparative disadvantage relative to commercial banks in the use of relational lending technologies because they can derive into high control loss. On the other hand, if competition limits discretion of savings banks to deviate from profit maximization, and

¹¹. Crespi et al. (2004) find that savings banks that merge have worse performance before the merger than those that do not merge. The propensity to merge for low performing savings banks is higher than for low performing commercial banks. On the other hand, the propensity of management and directors to leave the low performing banks is higher among commercial banks than among savings banks.

efficiency wages, specific human capital and worker participation lower their agency costs compared with those in commercial banks, then relational lending will be more likely in savings banks than in commercial banks.

Given the conflicting arguments, we formulate the hypothesis to be tested as if there is no difference in the size specialization hypothesis, H1, across ownership forms:

H.3. The size of the bank/size of the borrower specialization is the same across ownership forms.

4 Variables and methodology

To test the hypotheses listed above we randomly select a stratified representative sample of loans out of the population of new loans to business firms. The stratification criteria are based on some variables used for the multivariate analysis, such as year, region, bank size classes and form of ownership, collateral, maturity, industry, etc. The final selected sample is around 10% of the total population (number and amount) of new loans to non-financial firms.

The dependent variable, *Type of lender*, is the choice of size and ownership of the lender for each loan granted to non-financial firms by Spanish banks every year from 1996 to 2003. Banks are grouped in size classes and ownership forms as reported in section 2. A closer look at the data reveals that in the group of small banks practically all of them are commercial banks. All the cooperatives concentrate in the medium size class, while savings banks are distributed in the size classes medium and large. Commercial banks are in all size classes and are the only ones included among very large banks. *Type of lender* is, thus, divided into seven classes. Class 1 includes small commercial banks, Class 2 medium commercial banks, Class 3 large commercial banks, Class 4 very large commercial banks, Class 5 medium savings banks, Class 6 large savings banks, and Class 7 medium cooperatives.

Size of the borrower and *Size of the loan* approximate the information complexity of the borrower. *Size of the borrower* is measured by the total bank debt of the borrower when the loan is granted¹². Larger borrowers are better suited to be served by banks that specialize in transactional lending (i.e. large banks). *Size of the loan* is equal to the disposable value of the loan when it is granted.

Collateral takes the value of 1 if the loan is granted with collateral and 0 otherwise. Empirical evidence associates the use of collateral with borrowers of lower credit quality [Berger and Udell (1990), Jiménez et al. (2005)]. If banks with transactional lending technologies specialize in transparent and high quality borrowers, then we expect to find fewer banks with transactional lending technologies, large banks, in loans with collateral. Longer maturity implies more informational complex loans and, in general, higher risk for the lender. *Long Term*, that takes the value of 1 if the loan has maturity of five years or more and 0 otherwise. Controlling for the variable *Collateral*, we assume that *Long Term* loans are more informational complex and riskier than the rest of loans.

Under their request, the CIR informs banks about the current default status of their potential new borrowers. Borrowers of observed low credit quality at the time they receive a loan include those that have at least a loan in default at the time they receive a new one. The dummy variable *Default_{t-1}* (ex ante default) takes the value of 1 for those borrowers that get a loan being in default of previous ones, and 0 otherwise. We interpret that banks more willing to lend to borrowers with loans in default are also the banks more concerned with reputation or social pressure considerations.

Default_{t+1} (ex post default) is a dummy that takes the value of 1 for borrowers that default a year after they get the loan, not having defaulted the year before, and 0 otherwise.

¹². When the current loan is the first one, size of the borrower is set to 1 to avoid problems with the log transformation we use in the regression.

We assume that banks estimate a probability of ex post default for each borrower that gets a loan. To be among the banks that are more likely to lend to borrowers that default a year after will be interpreted as evidence that the bank is more willing to lend to borrowers of ex ante estimated higher risk using standard risk evaluation methods (for example, scoring from accounting ratios).

Several control variables account for other factors that can condition the specialization decision. The choice of the lender can be affected by the inclination of the borrower to stay loyal to a bank or to work with several banks at the same time. The control variable used in the empirical analysis is the *Share of Main Bank*, the proportion of total loans of the borrower granted by the largest lender, at the time the new loan is granted.

The specialization decision can also be affected by the interest rate of the loan. We do not observe the interest rate of the individual loan but we have data on interest rates charged by each bank in new loans to non-financial firms every year of the period. The variable *Interest rate* is equal to the average interest rate of all new business loans granted by a bank in a given year. The variable will take the same value for all loans granted by a bank in a given year, so it will control for bank specific factors common to all loans in the year. Differences in interest rates across banks can reflect different credit policies and when we compare risk taking behavior across banks the interest rate variable will control for differences in price behind the risk taking in a particular loan decision. Since the average interest rate charged by a particular bank can vary over time the variable controls for differences in policies across banks in a particular year but it allows for possible changes in policy over time.

Other controls are dummy variables for industry, region and time. Non-financial firms are classified in seven different industries¹³ which differ in credit risk because business opportunities are different depending on competition, growth and level of technological innovation. They will also differ in the value and easy to monitor of internal collateral. For instance, Mining and Manufacturing is expected to be riskier and with more informational complex assets than Utilities, but precise differences are difficult to establish for all industries. Local market conditions are measured by 17 dummy variables, *Region*. *Year* controls for changes in external conditions over time.

Table 6, Panel A (ownership forms) and Panel B (size classes) present descriptive statistics of the variables of the model. Commercial and savings banks have similar average sizes, around € 10,000 million, while average size of cooperatives is ten times lower. The average size of borrowers from commercial and savings banks is similar and three times larger than those that borrow from cooperatives. However, median size of borrowers in savings banks and cooperatives are close. Panel A also shows that savings banks and cooperatives have higher proportions of long term (44% and 41%, respectively) and collateralized loans (35% and 27%) than commercial banks (18% and 27%). Risk taking behavior is similar across ownership forms in both *ex ante* and *ex post* credit quality measures. This last result contrast with [(Esty (1997a and b)] for thrifts or with Lamm-Tenant and Starks (1993) for stock and mutual insurance companies, who find that banks and insurance companies with stock ownership take more risk in their investments than banks and insurance companies under mutual ownership. Borrowers that get loans from commercial banks borrow, on average, 72.3% from their main bank, while borrowers from savings banks borrow 79% and cooperatives 80.8%. Although borrowing is highly concentrated, the

¹³ Agriculture and fishing; mining and manufacturing; utilities; construction and real estate; trade, leisure, transport and communications; computer services, R&D and other business services; and other industries.

concentration is lower among commercial banks than for the rest of ownership forms, in particular, in median values. Interest rates are lower for savings banks and higher for cooperatives.

Table 6, Panel B presents similar descriptive statistics than those of Panel A, but now banks are classified according to size. Moving from lower to higher size classes we observe that the average size of borrowers and loans increase in parallel. A larger size of banks also tends to imply a higher proportion of loans with collateral and a higher proportion of long term loans, except for the very large banks (Size 4). However, among size classes 2, 3 and 4 the means of the former two variables are close, so only significant differences are detected relative to small banks. The proportions of loans granted to borrowers that default in $t-1$ or $t+1$ are similar across size classes while the share of total loans granted to borrowers by their respective main bank decreases, in average, with the size of the bank. On the other hand, smaller banks tend to charge significantly higher interest rates than the rest of banks. In fact, average and median interest rates decline monotonically as the size of the bank increases.

4.1 Methodology

To test the hypotheses of bank specialization, we estimate a multinomial logit model,

Type of Lender = F(Size of the borrower, Size of the loan, Collateral, Long term,

Default_{t-1}, Default_{t+1}, Share of main bank, Interest rate, Industry, Region, Year) (1)

Model (1) will give the likelihood of a choice of a particular type of lender, relative to the choice of a type of lender that is chosen as reference group. If the omitted group is small commercial banks (Class 1), then a positive and significant coefficient for the explanatory variable in Class 3 (large commercial banks) means that the likelihood that the loan is granted by a large commercial bank increases as the explanatory variable also increases.

5 Results

The results of the multinomial logit estimations are presented in Table 7. Model 1, presents the estimation of (1) only with control variables (*Share of the main bank, Interest, Time, Industry and Region*) as explanatory factors of the choice of lender. Model 2, presents the estimation with control variables and variables that refer only to characteristics of the borrower. Model 3 shows the estimation with all explanatory variables except *Interest rate*; Model 3 will provide evidence of the importance of banks' specific effects in the specialization decision. Finally, Model 4 shows the multinomial logit estimation of the full model while the last column of the table shows the relative likelihood of choosing each form of size-ownership for a given change in the values of the explanatory variables from Model 4¹⁴.

The hypothesis of no specialization at all considers that differences in the likelihood of choosing one class of lender or the other can be explained by time invariant effects, such as economic conditions of the borrowers' market, captured by *Industry* and *Region*, by relational lending practices, *Share of the Main Bank*, by bank credit policies, *Interest rate*, and by time varying shocks common to all market participants, captured by *Time*. This is equivalent to testing the null hypothesis that the coefficients of the explanatory variables, other than the control variables, are equal to zero. The likelihood ratio of estimating model (1) with this restriction on the coefficients is LR = 691.54, with p-value 0.000. Thus, the null hypothesis of no specialization is rejected.

Second, we test the hypothesis that specialization responds only to the ownership form of the bank dimension, and that it responds only to the size dimension. The first one implies a null hypothesis that the parameters corresponding to Class 1 to 4 are equal, and also those of Class 5 and 6. With these restrictions, the choice model is reduced to three alternatives: commercial banks, savings banks and cooperatives. On the other hand, the null hypothesis that there is no bank specialization along the size dimension implies that the parameters of Class 2 equal those of Class 5 and 7, and that parameters of Class 3 equal those of Class 6. After these restrictions the choice set is reduced to four size alternatives. The respective statistics from these restrictions are $\chi^2(148) = 90,806.75$, p-value = 0.000, only size specialization, and $\chi^2(111) = 62,398.72$, p-value = 0.000, only ownership form specialization. Therefore, the two restrictions are rejected at high levels of statistical significance and the conclusion is that banks specialize in an interrelated way along the two dimensions of size and ownership form. This implies that the analysis of lender choice should be carried out jointly along size and ownership dimensions, otherwise the analysis might be incomplete or even biased.

To add only borrower-related variables among the explanatory variables (Model 2), in addition to the control variables, marginally increases the R² of the multivariate analysis. R² is higher when loan related variables are added to the list of explanatory variables (Model 4). Bank specific effects contribute in a significant way to the explanatory power of the model: when *Interest rate* is excluded (Model 3) the R² is almost half the value it is in Model 4.

14. By differentiating the probabilities for each class, we find that the marginal effect of each explanatory variable on the probability is $\frac{\partial P_j}{\partial x_j} = P_j \left[\beta_j - \sum_k P_k \beta_k \right]$. To compare different marginal effects, we present them divided by the initial P_j. For more details, see Green (1993), chapter 12.

Model 2 estimates are quite similar to Model 4. The only difference worth mention is that in Model 2 the coefficient of the variable *Size of the borrower* in class 4 is higher than in the rest of classes but in Model 4 the coefficient is lower than the coefficient of the variable in classes 2 and 3. That is, in Model 2 the result that large banks specialize in large borrowers is not rejected among commercial banks, but in Model 4 the result breaks down when we reach the class of very large banks. To control for loan characteristics, in particular size, can change the conclusions about the size of borrower specialization by banks.

When we control for bank specific effects with the *Interest rate* variable (Model 4), the absolute value of the estimated coefficients of the multinomial model are lower than otherwise (Model 3). This is true specially for the coefficients of *Size of the loan*. Moreover, in Model 4 some of the coefficients are no longer statistically significant. Interest rates in loans to non-financial firms are jointly determined with other loan characteristics such as size, collateral and maturity, thus, these attributes are not independent of the interest rate of the loan. If *Interest rate* is excluded, the loan related variables capture some of the effects of the price in the specialization decision and the estimated parameters of the loan attributes are biased. For example, if size of the loan is negatively correlated with the interest rate of the loan¹⁵, then the evidence of strong specialization in small loans by small commercial banks that we observe in Model 3 is due to the fact that small commercial banks are also the banks that charge higher interest rate in average. After *Interest rate* is included, we observe the true effect of *Size of the loan* in the specialization decision, and among commercial banks only the very large (class 4) appear to specialize in large loans. The exposition below will focus on the results of Model 4, together with the column of relative marginal effects.

5.1 Size-transactional lending specialization

Medium size, large and very large commercial banks are more likely to lend to larger borrowers than small banks since the coefficient of *Size of the borrower* is positive and statistically significant in classes 2, 3, and 4 (small commercial banks is the omitted class). The coefficient of this variable is higher in class 3 than in class 2 (the null hypothesis of equal coefficients is rejected at the 1% level¹⁶), which would be consistent with the prediction that as banks increase in size, they are more likely to specialize in larger borrowers for which transactional lending is a more effective technology (H.1). However, in class 4 (very large banks) the coefficient of *Size of the borrower* is slightly lower than that in class 2 (the null hypothesis of equal coefficients is not rejected).

The relative marginal effects (column 5 in Table 7) tell us that a 10 % increase in the size of the borrowing firm, with respect to its sample mean, increases the likelihood that the loan will be granted by banks in class 2 by 9.64%, also with respect to the mean sample probability of granting a loan by banks in class 2. The same sensitivity analysis for class 3, large commercial banks, gives an increase in the likelihood of 23%. Among very large banks, the likelihood increases only 1%. Therefore, the relationship between *size of the borrower* and *size of the bank* is supported as long as we consider the effect of increases in the former in the likelihood that a loan is granted by a small, medium and large commercial bank, but breaks down when we move from large to very large commercial banks. However, very large

¹⁵. Lower quality borrowers with relatively higher credit risk are more frequent among small and short term loans than among large and long term loans. Higher risk will go together with higher interest rate. So, banks that charge higher interest rates are more likely to grant relatively smaller loans than banks with lower interest rates. Controlling for differences in interest rates we isolate the size of the loan specialization effect from the quality of the borrower effect.

¹⁶. We have performed pair-wise tests of statistical differences between estimated coefficients across size and ownership classes. The resulting statistics are not reported to save space but, unless indicated otherwise, all differences between estimated coefficients mentioned in this section are statistically different, at least at the 5%.

banks are those more likely to grant larger loans: a 10% increase in the size of the loan increases the likelihood that the loan will be granted by very large banks by 76%, compared with a reduction of 24.6% in the likelihood that it will be granted by a large commercial bank.

Not controlling for characteristics of the loan, column 2, the conclusion would have been that, among commercial banks, larger borrowers get loans from larger banks. When account is taken that larger borrowers will also get larger loans, the conclusion is that very large banks are the banks more likely to grant the larger loans but not so much those more likely to lend to larger borrowers. The comparative advantage of very large banks seems to be in large loans, probably because they are the class of banks for whom the regulatory risk concentration constraint is less binding.

Among commercial banks, if the loan has collateral the likelihood that it will be granted by a medium or large bank is lower than if the loan is granted by a small bank or a very large bank. The coefficients of *Collateral* are negative in classes 2 and 3 and higher in absolute terms for large banks than for medium banks. The relative marginal effects reinforce this conclusion. The likelihood that a loan granted by a medium or large bank among collateralized loans is 23.8% and 57.8% lower compared with that in non collateralized loans, respectively. If the use of collateral is evidence of informational complex borrowers, then the results are partially consistent with the prediction that larger banks specialize in informational simple borrowers because these are the borrowers more suitable for transactional lending. The exception appears to be very large banks which, according to the empirical results, specialize relatively more on opaque borrowers who pledge collateral to obtain a loan.

The evidence of a positive effect of the variables *Size of the borrower/Size of the loan* in the likelihood that a loan will be granted by a larger commercial bank, and the evidence that up to large commercial banks the likelihood that a loan is granted by a larger size bank is lower for collateralized loans give broad support to hypothesis H1: larger banks tend to specialize more than smaller ones in transactional lending. In the group of very large banks this is only true when *Size of the loan* substitutes *Size of the borrower*.

In classes 5 and 6, medium and large savings banks respectively, the coefficient of *Size of the borrower* is also positive, meaning that larger borrowers are more likely to get loans from medium and large saving banks than from small commercial banks. But now the estimated coefficient for this variable is significantly smaller for large savings banks. Moreover, large savings banks specialize relatively more in smaller loans than medium size ones. Therefore, among savings banks the hypothesis that *Size of the borrower/Size of the Loan* is positively associated with size of the bank, is not supported by the data. The variable *Collateral* has a positive coefficient in the classes 5 and 6 but both coefficients are not statistically different from zero.

The test of the size specialization hypothesis gives opposite results in savings banks than in commercial banks. The difference in the coefficient of *Size of the borrower* between large and medium commercial banks is 0.013 (0.11 - 0.097), while the same difference in savings banks is -0.008 (0.072-0.080). In terms of relative marginal effects, an increase of 10% in the size of the borrower, with respect to the sample mean, decreases twice the relative likelihood that the loan will be granted by a large savings bank, compared with the decrease in the likelihood of being granted by a small savings bank (-15.5% versus -7.4%). The same change of size of borrower in commercial banks implies a 23%

increase in the likelihood that the loan will be granted by a large bank and only an increase of 9.6% in the likelihood of being granted by a small bank.

In commercial banks the evidence is broadly in favor of the hypothesis that large banks specialize in transactional lending and small ones in relational lending while large savings banks tend to specialize more in relational lending than medium size ones. The test of the size of the borrower/size of the bank specialization hypothesis gives different results depending on ownership form. Therefore, hypothesis H3 does not hold. The evidence that an increase in the size of the bank raises the likelihood of lending to small borrowers among savings banks and decreases it among commercial banks suggests that organizational diseconomies for relational lending are less severe among savings banks, besides their loose property rights.

5.2 Ownership form specialization

Large and very large commercial banks are more likely to lend to riskier borrowers than small banks. The likelihood of granting a loan to borrowers that default after they receive the loan, $Default_{t+1} = 1$, compared with the likelihood in the group of borrowers with no defaults, is 19.2% lower in the group of medium size commercial banks and 6.7% (7.4%) higher in the group of large (very large) commercial banks. Since large and very large commercial banks are more likely to be management controlled than small and medium size ones, this evidence is not consistent with the risk shifting hypothesis. The same conclusion is reached, in the sense of lower likelihood of lending to borrowers of ex post estimated high risk, when we compare the relative marginal effect of $Default_{t+1}$ for medium size commercial banks with the relative marginal effect in saving banks of that size. In other words, the likelihood of lending to ex post riskier borrowers is lower among those banks which can be expected to be under close shareholders' control, the opposite to what it would be expected from risk shifting behavior.

Savings banks of medium size have higher estimated coefficient and higher relative marginal effect for $Default_{t-1}$ than other size and ownership classes. In the group of borrowers that have a loan in default when they get a new one, the difference in the likelihood that a loan is granted by a medium size savings bank with respect to the likelihood of being granted by a medium size commercial bank is 54.5% [22.6-(-31.9)] higher than in the group of borrowers with no loans in default. A similar case occurs with cooperatives, although the marginal impact is much lower. Large savings banks show very similar coefficients for $Default_{t-1}$ although neither of them is significant.

Within the same size class, use of collateral in loans implies an increase in the likelihood that the loan will be granted by a savings bank and a decrease in the likelihood that it will be made by a commercial bank. The differences are highly significant as the relative marginal effect indicates for commercial banks. Within the same size class, cooperatives grant relatively more collateralized loans than commercial banks, while they are similar to savings banks¹⁷.

The variable *Long term* shows higher coefficients for cooperatives and savings banks than in commercial banks. Thus savings banks and cooperatives specialize relatively more than commercial banks in long term loans. Maybe the higher trustworthiness of the former

¹⁷. Note that even if the collateral variable is not significant for savings banks and cooperatives, the comparison with commercial banks is totally meaningful.

give them a comparative advantage to be involved in long term contracts that likely will involve renegotiations along the life of the loan.

The evidence regarding ex ante credit risk, collateral and maturity is consistent with reputation effects in lending specialization given that the main differences in the likelihood to lend to borrowers of lower ex ante credit quality occur in the group of medium size savings banks as well as in the group of credit cooperatives. Both types of banks are the ones that have closer ties with local communities and, therefore, might be subject to higher social pressure and potential political interference¹⁸. In addition, the statistical and economic differences in the likelihood of lending between savings and commercial banks of equal size when $Default_{t+1} = 0$ and when $Default_{t+1} = 1$, are much lower than with the variable of ex ante observed default. Consistently with the reputational argument, both types of banks use more collateral than medium commercial banks, as an effective way to restrain moral hazard or, as a last resort for minimizing the potential damage from the borrower. All in all, there seems to be some support for H.2.

Savings banks and, specially, credit cooperatives specialize in small borrowers relatively more than commercial banks of equal size do. This conclusion comes from the comparison of estimated coefficients of classes 2, 5 and 7 (medium size banks of each ownership form), and of classes 3 and 6 (large commercial banks and large savings banks). In cooperatives (medium savings banks), an increase in the size of the borrower of 10% from the sample mean implies a 47% (7.4%) lower likelihood of granting a loan. In medium size commercial banks the relative marginal effect of the size of the borrower is 9.6%. While large commercial banks increase the likelihood of granting a loan in 23%, large savings banks decrease their likelihood in 15.5%, under similar change in size of the borrower.

The empirical results are completed with Table 8 that shows the multinomial logit estimation collapsing the size classes and limiting the choices to the ownership form of the bank. The results are intended to provide a summary evidence of the ownership specialization among Spanish banks. The model includes the *Size of the bank*, measured in terms of total loans (in logs) in the balance sheet of the bank in year t. The group excluded as reference group is commercial banks, so we compare specialization of savings banks, class 2, and cooperatives, class 3, relative to that of commercial banks.

The likelihood that the loan is granted by a savings bank or by a credit cooperative decreases as the size of the borrower and/or the size of the loan increases (both variables are negative and statistically significant). If the loan is granted by a large bank, the likelihood of that being done by a savings bank or by a credit cooperative is lower, specially in cooperatives, than the likelihood of being granted by a commercial bank. This is consistent with the fact that among very large banks there are only commercial banks. The variables that test for possible reputation concerns, $Default_{t-1}$ and *Collateral* have the expected sign, that is, savings banks would be more concerned with reputation effects than commercial banks. The positive and significant coefficient for *Share of the main bank* indicates that relational lending is more determinant of the lender choice among savings banks and cooperatives than among commercial banks. Finally, the negative coefficient of *Interest rate* indicates that the share of loans granted by savings banks and cooperatives is higher among banks of lower average interest rates.

18. For very large banks the positive and significant coefficient for $default_{t-1}$ might be the result of their relatively higher especialization in more opaque firms, already mentioned.

6 Conclusions

This paper presents a comprehensive analysis of the specialization of Spanish banks in lending to non-financial firms. We explain individual loan granting decisions of lenders grouped in classes according to size and ownership of banks during the period 1996-2003, as a function of the characteristics of the borrowers (size, credit risk, industry, region and strength of the borrower-lender relation), and loans (size, collateral and maturity), and controlling for average interest rates of bank loans.

We find evidence in favor of transactional lending specialization of large commercial banks compared with smaller ones. For this form of ownership, the likelihood of choosing a larger bank increases with the size of the borrower up to the class of very large banks. The transactional lending specialization of large banks is confirmed by the lower likelihood that these banks grant loans with collateral, presumably used in loans to more opaque borrowers. However, very large commercial banks depart from this pattern since they show a specialization model that does not fit well with existing theories and would deserve closer attention. The only clear result is that they specialize in larger loans more than the rest of banks.

Among savings banks, large ones are more likely to lend to small borrowers and equally likely to lend with collateral than medium size ones. Within a given size class, savings banks and cooperatives are more likely to specialize in relational lending than commercial banks. These results are consistent with the reality of lower organizational diseconomies in savings banks than in commercial banks. Apparently, the potential negative effect on organizational efficiency of loose property rights in not-for-profit stakeholders oriented savings banks, is more than compensated by efficiency pressures coming from product market competition and lower agency costs from managers/workers effective control of the organizational resources. The apparent efficiency of large savings banks in lending to smaller borrowers can be a possible explanation of why in Spain the size of the bank/size of the borrower specialization is not so pronounced in aggregated terms, as it is found in the US.

There is no clear evidence of risk shifting behavior in Spanish general intermediaries, in the sense that lending to borrowers of lower credit quality does not show a pattern consistent with the prediction that shareholder controlled banks will be more likely to make riskier loans to capture rents from depositors (and from the rest of the banks under deposits guarantees). Regulation and supervision of banks seems to be effective in preventing this behavior. Medium size savings banks and credit cooperatives lend in relatively higher proportion to borrowers of observed low credit quality at the time of granting the loan and show higher likelihood of collateralized lending than commercial banks of equal size. We interpret this evidence as the result of reputation and social pressure considerations that affect mainly to those banks with closer ties with their local communities.

The relative specialization in relational lending of savings banks and cooperatives, which hold almost half of the market share in new loans to non-financial firms, assures the availability of credit to small and medium size, more opaque, firms, even if consolidation of large commercial banks implies a shift towards more specialization in transactional lending. The current situation of credit availability for firms that depend on relational lending can

continue after Basel II comes into effect, when large banks might find stronger incentives to deepen their transactional lending specialization.

In Spanish credit markets, ownership diversity has significantly increased in recent years, during a period low real interest rates, low profit margins and intense competition. This paper explains that increase by the fact that savings banks, contrary to what it could be expected given their loose property rights, have equal or lower organizational diseconomies than commercial banks. This, together with higher trustworthiness and close ties with local communities gives them a comparative advantage in long term loans, those that increase the most during the period of study.

One important conclusion from this study is that the link between ownership form and performance can be more complex than it is usually considered. Spanish savings banks offer an interesting example of a non conventional institutional form that can take advantage of the scale economies of size in production without suffering with the same intensity as commercial banks do the organizational diseconomies of size.

Our paper also shows that specialization in lending to non-financial firms goes beyond the differences in lending policies between general intermediaries and special intermediaries due to reputation concerns observed by Carey et al. (1998) and beyond the size of the bank effect in the choice between transactional or relational lending technologies observed by Berger and Udell (2002). Within general intermediaries we also observe that diversity of organizational forms, such as savings banks, credit cooperatives and commercial banks, go together with specialization that crosses the dimensions of reputation and size. For example, within saving banks, the large ones specialize more than the medium size ones in lending to small borrowers, while they seem to be not so strongly affected by reputation considerations as medium size saving banks seem to be.

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Table 1. Breakdown of the population of new loans to non-financial firms granted by Spanish banks by loan size, borrower size and bank size. 1996-2003. All size brackets correspond to 2003 values. For previous years, inflation rates are taken into account.

Panel A. Loans

	No. of loans (%)					Amount of credit (%)				
	1	Loan size			Total	1	Loan size			Total
		2	3	4			2	3	4	
1996	40.3	33.1	25.0	1.6	186,147	2.4	7.2	36.2	54.2	36,238,512
1997	34.7	35.3	28.2	1.7	206,087	2.0	7.3	38.4	52.2	42,638,235
1998	33.9	34.7	29.5	1.9	220,500	1.8	6.6	38.1	53.5	50,053,783
1999	33.7	36.9	27.6	1.8	299,116	1.8	7.4	38.4	52.4	66,631,646
2000	32.8	36.1	29.0	2.1	315,798	1.6	6.4	37.6	54.4	78,852,473
2001	33.3	35.3	28.9	2.5	321,482	1.5	5.7	34.4	58.4	95,012,263
2002	33.4	34.1	29.9	2.6	323,043	1.4	5.4	35.2	58.0	101,212,480
2003	31.5	34.9	31.1	2.5	400,789	1.4	5.7	36.5	56.4	127,934,614
Mean	33.7	35.1	29.0	2.2	2,272,962	1.6	6.2	36.6	55.6	598,574,006

Breakdown for loans: 1: less than € 25 thousand; 2: more than € 25 thousand and less than € 100 thousand; 3: more than € 100 thousand and less than € 2 million; 4: more than € 2 million.

Panel B. Borrowers

	Borrower size					Borrower size				
	1	2	3	4	Total	1	2	3	4	Total
1996	46.1	42.8	10.6	0.6	139,768	4.0	18.4	31.6	46.0	36,238,512
1997	42.9	45.6	11.0	0.5	153,669	3.8	19.9	33.9	42.4	42,638,235
1998	41.3	46.5	11.7	0.6	163,874	3.3	18.9	35.1	42.7	50,053,783
1999	42.2	45.7	11.5	0.6	206,883	3.4	19.0	36.5	41.1	66,631,646
2000	40.6	46.7	12.1	0.6	218,602	2.9	18.0	37.3	41.8	78,852,473
2001	41.1	45.7	12.5	0.7	225,881	2.6	16.1	36.6	44.6	95,012,263
2002	39.6	46.7	13.0	0.7	227,727	2.5	16.6	38.7	42.2	101,212,480
2003	39.4	47.2	12.7	0.7	273,355	2.6	17.7	38.5	41.2	127,934,614
Mean	41.3	46.1	12.0	0.6	1,609,759	2.9	17.7	36.8	42.5	598,574,006

Breakdown for borrowers: 1- less than € 100 thousand; 2- more than € 100 thousand and less than € 1 million; 3- more than € 1 million and less than € 20 million; 4- more than € 20 million

Panel C. Banks

	No. of banks					Amount of credit (%)				
	1	Entity size			Total	1	Entity size			Total
		2	3	4			2	3	4	
1996	170	98	3	6	277	7.7	50.4	17.3	24.6	36,238,512
1997	163	100	4	7	274	6.3	49.9	20.0	23.8	42,638,235
1998	144	105	5	6	260	4.6	47.7	25.1	22.7	50,053,783
1999	123	114	8	4	249	3.0	44.8	32.4	19.8	66,631,646
2000	114	111	8	2	235	2.5	45.6	30.7	21.2	78,852,473
2001	107	111	10	2	230	1.7	43.5	35.8	19.0	95,012,263
2002	100	110	11	2	223	2.1	42.9	38.4	16.6	101,212,480
2003	95	103	12	2	212	1.8	38.4	45.2	14.7	127,934,614
						3.0	43.9	34.1	19.0	598,574,006

Breakdown for banks: 1- less than € 1,000 million; 2- more than € 1,000 million and less than € 25,000 million; 3- more than € 25,000 million; 4- banks involved in mega-mergers above € 25,000 million

Table 2. Market share by size of institution and size of borrowers. Population of new loans to non-financial firms granted by Spanish banks. 1996-2003. All size brackets correspond to 2003 values. For previous years, inflation rates are taken into account.

No. of loans (%)						Amount of credit (%)					
Borrower size						Borrower size					
	1	2	3	4	Total	1	2	3	4	Total	
1											
1996	8.5	7.3	5.8	10.2	7.6	8.1	6.7	5.5	9.5	7.7	
1997	8.4	6.7	5.0	9.3	7.0	7.7	6.0	4.5	7.8	6.3	
1998	7.7	6.4	4.3	5.8	6.4	7.0	5.6	3.6	4.8	4.6	
1999	4.7	3.8	2.5	3.6	3.9	4.4	3.8	2.5	2.9	3.0	
2000	4.0	3.5	2.5	2.8	3.5	3.9	3.7	2.6	1.8	2.5	
2001	3.3	2.8	1.7	2.1	2.7	3.1	2.8	1.4	1.5	1.7	
2002	2.8	2.4	1.7	2.1	2.4	2.5	2.3	1.6	2.4	2.1	
2003	1.8	1.8	1.3	2.2	1.7	1.8	2.1	1.4	2.0	1.8	
2											
1996	59.7	58.7	56.2	52.4	58.5	58.8	58.3	53.8	44.3	50.4	
1997	52.1	51.0	50.8	53.9	51.4	52.4	51.7	52.6	46.6	49.9	
1998	51.2	50.7	50.0	52.5	50.8	52.1	52.3	52.2	41.6	47.7	
1999	46.1	43.8	44.2	53.6	44.9	47.0	45.5	46.6	42.6	44.8	
2000	42.5	40.9	40.1	52.0	41.5	43.3	42.5	45.4	47.2	45.6	
2001	40.3	40.5	40.3	48.7	40.6	41.2	41.7	43.1	44.6	43.5	
2002	45.0	44.1	43.0	47.9	44.2	44.5	43.4	43.8	41.8	42.9	
2003	37.6	36.5	36.0	43.3	36.9	36.8	37.2	40.4	37.0	38.4	
3											
1996	16.6	15.2	14.6	17.6	15.7	17.6	15.2	14.5	20.0	17.3	
1997	23.3	22.7	20.2	17.7	22.4	23.8	22.7	18.3	19.8	20.0	
1998	25.6	23.7	21.6	22.1	23.9	25.2	22.9	19.2	30.8	25.1	
1999	36.1	36.2	33.3	25.5	35.4	34.7	33.4	29.6	34.3	32.4	
2000	39.1	37.8	35.4	29.2	37.5	37.3	34.6	30.9	28.5	30.7	
2001	44.3	41.8	39.7	35.7	42.0	42.6	38.9	35.1	34.8	35.8	
2002	44.2	43.3	42.3	39.4	43.3	44.2	41.3	37.9	37.4	38.4	
2003	51.0	49.7	48.1	44.0	49.6	50.6	46.3	41.7	47.5	45.2	
4											
1996	15.2	18.8	23.4	19.7	18.2	15.6	19.8	26.2	26.2	24.6	
1997	16.2	19.7	24.0	19.1	19.2	16.1	19.6	24.6	25.8	23.8	
1998	15.5	19.3	24.0	19.6	18.9	15.7	19.3	25.0	22.8	22.7	
1999	13.1	16.1	20.0	17.2	15.9	13.9	17.3	21.2	20.2	19.8	
2000	14.4	17.8	21.9	16.0	17.5	15.5	19.2	21.1	22.5	21.2	
2001	12.1	15.0	18.3	13.5	14.6	13.2	16.6	20.4	19.1	19.0	
2002	8.0	10.2	13.0	10.5	10.0	8.8	12.9	16.7	18.3	16.6	
2003	9.6	12.0	14.7	10.5	11.8	10.9	14.4	16.5	13.4	14.7	

Breakdown for borrowers: 1- less than € 100 thousand; 2- more than € 100 thousand and less than € 1,000 thousand; 3- more than € 1,000 thousand and less than € 20 million; 4- more than € 20 million

Breakdown for banks: 1- less than € 1,000 million; 2- more than € 1,000 million and less than € 25,000 million; 3- more than € 25,000 million;

4- banks involved in mega-mergers above € 25,000 million

Table 3. Size breakdown for every size of institution by borrowers size. Population of new loans to non-financial firms granted by Spanish banks. 1996-2003. All size brackets correspond to 2003 values. For previous years, inflation rates are taken into account.

	No. of loans (%)					Amount of credit (%)				
	Borrower size					Borrower size				
	1	2	3	4	Total	1	2	3	4	Total
1										
1996	42.6	42.2	12.2	3.0	14,080	4.2	16.1	22.5	57.2	2,785,077
1997	41.5	43.8	11.9	2.8	14,489	4.6	18.9	24.1	52.4	2,692,691
1998	39.7	46.4	11.9	2.0	14,217	5.0	22.9	27.2	44.8	2,294,776
1999	39.9	46.2	12.0	2.0	11,530	5.0	23.9	30.7	40.4	1,987,364
2000	36.1	48.2	13.8	1.8	10,994	4.5	26.7	39.1	29.7	1,976,529
2001	38.4	47.7	12.0	1.9	8,751	4.7	26.3	30.1	38.9	1,617,868
2002	36.2	48.0	13.6	2.1	7,717	3.1	18.4	29.0	49.5	2,097,793
2003	32.3	49.8	14.6	3.3	6,753	2.5	20.6	30.1	46.7	2,269,997
2										
1996	38.9	44.0	15.1	2.0	108,985	4.6	21.3	33.7	40.4	18,276,713
1997	35.3	45.9	16.5	2.2	105,893	4.0	20.6	35.8	39.6	21,257,864
1998	33.6	46.7	17.4	2.3	111,928	3.6	20.7	38.5	37.3	23,872,840
1999	33.9	45.6	18.0	2.5	134,197	3.5	19.3	38.1	39.1	29,829,514
2000	32.2	46.7	18.4	2.8	130,998	2.7	16.8	37.1	43.4	35,933,683
2001	31.9	46.0	19.1	3.0	130,494	2.5	15.4	36.3	45.8	41,302,088
2002	31.6	46.9	18.9	2.6	142,940	2.6	16.8	39.5	41.1	43,456,621
2003	30.8	47.4	18.9	2.9	147,895	2.5	17.2	40.5	39.8	49,070,625
3										
1996	40.3	42.5	14.7	2.5	29,235	4.0	16.2	26.4	53.3	6,265,622
1997	36.4	46.9	15.1	1.7	46,147	4.5	22.6	31.0	42.0	8,543,880
1998	35.7	46.3	15.9	2.1	52,782	3.3	17.3	27.0	52.5	12,540,564
1999	33.6	47.8	17.1	1.5	105,936	3.6	19.6	33.4	43.4	21,610,957
2000	32.7	47.7	17.9	1.8	118,504	3.5	20.2	37.5	38.8	24,238,845
2001	33.9	45.8	18.2	2.1	135,161	3.1	17.5	36.0	43.4	33,992,957
2002	31.7	47.2	19.0	2.2	139,940	2.9	17.9	38.2	41.1	38,902,882
2003	31.1	47.9	18.8	2.2	198,943	2.9	18.2	35.5	43.4	57,767,479
4										
1996	32.0	45.3	20.3	2.5	33,847	2.5	14.8	33.7	49.0	8,911,100
1997	29.4	47.5	21.0	2.1	39,558	2.6	16.4	35.1	45.9	10,143,800
1998	27.4	47.8	22.5	2.3	41,573	2.3	16.0	38.7	43.0	11,345,603
1999	27.2	47.5	23.0	2.3	47,453	2.4	16.6	39.1	42.0	13,203,811
2000	25.9	48.3	23.8	2.1	55,302	2.1	16.3	37.1	44.5	16,703,416
2001	26.6	47.1	24.0	2.3	47,076	1.8	14.1	39.3	44.9	18,099,350
2002	24.6	47.7	25.2	2.5	32,446	1.3	13.0	39.1	46.6	16,755,184
2003	24.7	48.9	24.2	2.2	47,198	1.9	17.3	43.2	37.6	18,826,513

Breakdown for borrowers: 1- less than € 100 thousand; 2- more than € 100 thousand and less than € 1,000 thousand; 3- more than € 1,000 thousand and less than € 20 million; 4- more than € 20 million

Breakdown for banks: 1- less than € 1,000 million; 2- more than € 1,000 million and less than € 25,000 million; 3- more than € 25,000 million; 4- banks involved in mega-mergers above € 25,000 million

Table 4. Evolution of loans by type of lender. Population of new loans to non-financial firms granted by Spanish banks. 1996-2003. All size brackets correspond to 2003 values. For previous years, inflation rates are taken into account.

	No. of loans (%)					Amount of credit (%)				
	Borrower size				Mean	Borrower size				Total
	1	2	3	4		1	2	3	4	
Comm. banks										
1996	53.5	58.0	66.9	70.1	58.0	50.8	54.0	63.1	74.1	66.0
1997	49.1	54.5	64.1	68.2	54.5	46.6	50.2	57.9	69.1	60.7
1998	47.5	53.3	62.2	62.3	53.1	45.4	49.6	56.3	59.7	56.1
1999	57.3	62.5	67.8	65.2	61.8	54.2	56.1	57.1	57.2	56.9
2000	50.3	56.9	61.8	56.4	55.8	48.1	51.6	51.0	56.8	53.4
2001	43.9	50.0	56.1	53.6	49.3	43.5	47.0	49.2	55.6	51.6
2002	44.9	50.1	55.5	51.1	49.6	42.3	45.2	46.0	53.0	48.7
2003	50.3	54.4	58.5	53.0	53.9	47.6	48.9	49.5	53.5	51.0
Savings banks										
1996	40.6	36.9	30.4	27.9	37.1	42.9	40.3	34.2	25.2	31.5
1997	43.9	39.9	32.5	30.3	39.8	46.2	43.8	39.0	30.3	36.5
1998	45.0	40.4	34.0	35.4	40.7	46.9	43.9	40.3	39.7	40.9
1999	36.3	32.0	28.8	32.1	32.8	39.0	37.8	39.6	42.0	40.2
2000	43.4	37.4	34.3	40.7	38.8	45.1	41.9	44.8	42.3	43.2
2001	48.7	43.1	39.0	43.4	44.2	48.8	45.8	46.0	43.3	44.8
2002	45.9	41.8	38.9	45.1	42.6	48.4	46.6	48.4	45.7	46.9
2003	42.4	38.7	36.3	42.4	39.5	45.0	43.5	45.4	45.0	44.9
Cooperatives										
1996	5.8	5.1	2.8	2.0	4.9	6.3	5.7	2.7	0.7	2.5
1997	7.0	5.7	3.4	1.5	5.6	7.2	6.0	3.1	0.6	2.8
1998	7.5	6.4	3.8	2.3	6.2	7.8	6.5	3.3	0.6	2.9
1999	6.4	5.5	3.3	2.6	5.3	6.9	6.1	3.3	0.7	2.9
2000	6.3	5.7	3.9	2.9	5.5	6.8	6.5	4.2	0.9	3.3
2001	7.4	6.8	4.9	3.0	6.5	7.8	7.2	4.8	1.0	3.6
2002	9.2	8.1	5.6	3.8	7.9	9.3	8.3	5.6	1.4	4.3
2003	7.3	6.9	5.2	4.6	6.6	7.4	7.5	5.1	1.5	4.1

Breakdown for borrowers: 1- less than € 100 thousand; 2- more than € 100 thousand and less than € 1,000 thousand; 3- more than

€ 1,000 thousand and less than € 20 million; 4- more than € 20 million

Table 5. Size breakdown for every type of institution by borrowers and loans size. Population of new loans to non-financial firms granted by Spanish banks. 1996-2003. All size brackets correspond to 2003 values. For previous years, inflation rates are taken into account.

	No. of loans (%)					Amount of credit (%)				
	Borrower size				Total	Borrower size				Total
	1	2	3	4		1	2	3	4	
Comm. banks										
1996	35.2	43.8	18.2	2.7	107,888	3.1	15.1	30.2	51.7	23,924,029
1997	31.4	46.3	19.7	2.6	112,353	2.9	16.4	32.3	48.3	25,871,197
1998	29.8	46.9	20.7	2.6	117,136	2.7	16.7	35.2	45.4	28,099,883
1999	30.5	47.2	20.0	2.2	184,902	3.2	18.7	36.7	41.4	37,895,320
2000	28.3	48.3	21.0	2.3	176,112	2.6	17.4	35.6	44.5	42,139,303
2001	28.6	46.8	21.9	2.7	158,511	2.2	14.7	35.0	48.2	49,006,451
2002	28.1	47.6	21.8	2.5	160,163	2.2	15.4	36.6	45.9	49,309,987
2003	28.2	48.3	21.1	2.4	216,086	2.4	17.0	37.3	43.3	65,272,383
Savings banks										
1996	41.8	43.6	12.9	1.7	69,056	5.4	23.6	34.2	36.8	11,420,695
1997	38.4	46.3	13.7	1.6	82,100	4.8	23.9	36.2	35.1	15,580,698
1998	36.9	46.4	14.8	1.9	89,707	3.8	20.2	34.6	41.4	20,493,834
1999	36.4	45.5	16.0	2.0	98,216	3.3	17.8	36.0	42.9	26,810,921
2000	35.2	45.7	16.8	2.4	122,461	3.0	17.4	38.7	40.9	34,088,459
2001	35.5	45.1	17.0	2.5	141,956	2.8	16.4	37.6	43.1	42,606,726
2002	33.4	46.3	17.8	2.5	137,486	2.6	16.5	39.9	41.1	47,503,079
2003	32.5	47.0	17.9	2.7	158,123	2.6	17.2	38.9	41.3	57,410,366
Cooperatives										
1996	45.0	45.2	8.9	0.9	9,203	10.2	42.6	34.8	12.4	893,788
1997	43.1	46.4	10.0	0.6	11,634	9.8	43.1	37.8	9.2	1,186,340
1998	40.3	48.2	10.7	0.8	13,657	8.8	42.1	40.2	9.0	1,460,066
1999	39.6	47.9	11.4	1.0	15,998	8.0	40.2	41.3	10.5	1,925,405
2000	36.0	49.4	13.4	1.2	17,225	5.9	35.1	47.1	11.9	2,624,711
2001	36.2	48.3	14.4	1.2	21,015	5.7	32.2	49.2	12.9	3,399,086
2002	36.2	48.7	13.9	1.2	25,394	5.3	31.5	49.8	13.3	4,399,414
2003	33.3	49.9	15.1	1.7	26,580	4.6	32.5	47.9	15.0	5,251,865

Breakdown for borrowers: 1- less than € 100 thousand; 2- more than € 100 thousand and less than € 1,000 thousand; 3- more than € 1,000 thousand and less than € 20 million; 4- more than € 20 million

Table 6. Descriptive statistics of the variables used in the regression analysis. 1996-2003. Stratified sample of the whole population of new loans to non-financial firms granted by Spanish banks. The stratified sample is around 10% of the total population.

Panel A. Type of bank

	Commercial banks	Savings banks	Cooperatives	Total
Average size of the banks (1)	9,333,828	10,800,000	971,206	6,712,732
Median size of the banks (1)	2,040,839	5,188,326	390,308	1,439,381
Average size of borrowers (2)	2,774	2,437	853	2,517
Median size of borrowers (2)	204	153	132	174
Average size of loans (1)	217	268	161	236
Median size of loans (1)	36	43	37	40
% of total loans of the bank that have collateral	18%	35%	27%	26%
% of total loans which are long term	27%	44%	41%	36%
% of total loans with default t-1	0.9%	1.1%	1.1%	1.0%
% of total loans with default t+1	1.9%	1.7%	1.6%	1.8%
% of loans to Construction and Real State	27%	36%	23%	30%
Average Share of main bank (3)	72.26%	79.04%	80.84%	75.74%
Median Share of main bank (3)	74.14%	89.47%	92.40%	81.48%
Average Interest rates	6.22%	5.96%	6.60%	6.13%
Median Interest rates	6.13%	5.47%	6.23%	5.73%

1) Thousands of euros

2) Weighted average by number of operations. Thousands of euros

3) Weighted average by number of operations.

Panel B. Size of bank

	Size 1	Size 2	Size 3	Size 4
Average size of banks (1)	350,861	5,125,076	48,500,000	75,900,000
Median size of banks (1)	292,095	3,461,488	38,300,000	49,600,000
Average size of borrowers (2)	1113	2,121	2,813	3,021
Median size of borrowers (2)	108	156	177	251
Average size of loans (1)	102	216	235	321
Median size of loans (1)	24	38	36	54
% of total loans of the bank that have collateral	18%	26%	26%	28%
% of total loans which are long term	24%	35%	38%	32%
% of total loans with default t-1(6)	1.1%	1.1%	0.9%	1.1%
% of total loans with default t+1(6)	2.0%	1.9%	1.7%	2.0%
% of loans to Construction and Real State	24%	32%	30%	30%
Average Share of main bank (3)	77.38%	77.81%	74.59%	72.97%
Median Share of main bank (3)	83.33%	86.33%	78.84%	75.46%
Average Interest rates	11.49%	6.71%	5.65%	4.93%
Median Interest rates	8.53%	6.24%	5.47%	5.16%

1) Thousands of euros, for the period 1996-2003

2) Weighted average by the number of operations. Thousands of euros, for the period 1996-2003

3) Weighted average by the number of operations

Breakdown for banks: 1- less than 1,000 m€; 2- more than 1,000 m€ and less than 25,000 m€; 3- more than 25,000 m€; 4- banks involved in mega-mergers above € 25,000 million

Table 7. Multinomial logit model of lender choice

$$P(Class_i) = f(\text{Size of borrower; Size of the loan; Collateral; Long term; Ex - ante default; Ex - post default; Share of main bank; Interest Rates; Time; Region; Industry})$$

The dependent variable takes values 1 to 7 depending on the type of bank granting the loan: value 1 for small commercial banks; 2 for medium size commercial banks; 3 for large commercial banks; 4 for very large commercial banks; 5 for small and medium size savings banks; 6 for large savings banks; and 7 for cooperatives. Size of the borrower is the log of the total amount of credit a given firm has at the beginning of the period the loan is granted. Size of the loan is the log of the loan size. Collateral is a dummy variable worth 1 if the loan has any kind of collateral and 0 otherwise. Long term is a dummy variable worth 1 if the maturity of the loan is longer than 5 years and 0 otherwise. Ex ante default (Ex post default) is a dummy variable worth 1 if the borrower has defaulted more than 5% of its total amount of credit the year before (after) the loan is granted, and 0 otherwise. Share of main bank is the higher percentage a bank represents in the total amount of credit for a borrower. Interest rate is the average annual interest rate that the bank charges to new loans to non-financial firms. Time, region and industry are different groups of dummies for every period (7 dummies), region (16 dummies) and industry (6 dummies) considered.

	Model 1	Model 2	Model 3	Model 4	Relative Marginal effects Model 4
2 Size of borrower		0.106 ***	0.133 ***	0.097 ***	0.964
Size of loan			0.237 ***	0.027	-0.037
Collateral			-0.276 ***	-0.372 ***	-23.760
Long term			1.285 ***	0.959 ***	-19.775
Ex-ante default		0.333	0.372	0.273	-31.895
Ex-post default		0.074	0.233	0.094	-19.176
3 Size of borrower		0.115 ***	0.144 ***	0.110 ***	2.302
Size of loan			0.217 ***	0.003	-2.460
Collateral			-0.682 ***	-0.712 ***	-57.767
Long term			1.446 ***	1.090 ***	-6.656
Ex-ante default		0.598 *	0.648 **	0.539	-5.376
Ex-post default		0.347 **	0.489 ***	0.354 *	6.738
4 Size of borrower		0.119 ***	0.121 ***	0.088 ***	0.099
Size of loan			0.391 ***	0.104 ***	7.660
Collateral			0.294 ***	0.147	28.169
Long term			1.068 ***	0.690 ***	-46.648
Ex-ante default		0.738 **	0.617 **	0.655 *	6.257
Ex-post default		0.319 *	0.340 **	0.360 *	7.372
5 Size of borrower		0.105 ***	0.116 ***	0.080 ***	-0.738
Size of loan			0.329 ***	0.105 ***	7.744
Collateral			0.264 **	0.143	27.720
Long term			1.445 ***	1.138 ***	-1.808
Ex-ante default		0.959 ***	0.887 ***	0.819 **	22.615
Ex-post default		0.290	0.432 ***	0.332 *	4.535
6 Size of borrower		0.060 ***	0.100 ***	0.072 ***	-1.548
Size of loan			0.188 ***	-0.069 **	-9.594
Collateral			0.430 ***	0.186	32.057
Long term			1.786 ***	1.511 ***	35.460
Ex-ante default		0.786 **	0.585 **	0.594	0.176
Ex-post default		0.292	0.330 **	0.300	1.353
7 Size of borrower		0.053 ***	0.079 ***	0.040 **	-4.728
Size of loan			0.242 ***	0.041	1.338
Collateral			0.095	0.071	20.570
Long term			1.674 ***	1.358 ***	20.156
Ex-ante default		0.784 **	0.698 **	0.622 *	3.002
Ex-post default		0.227	0.411 ***	0.252	-3.399
Control variables					
Time	yes	yes	yes	yes	
Region	yes	yes	yes	yes	
Industry	yes	yes	yes	yes	
Interest rates	yes	yes	no	yes	
Share of main bank	yes	yes	yes	yes	
Log likelihood	-334,813.12	-334,467.35	-389,929.91	-330,008.47	
R squared	0.2371	0.2379	0.1212	0.2481	
N	249,669	249,669	251,934	249,669	

The symbol ***/**/* indicates the coefficient is significantly different from zero at the 1%/5%/10% level.

Relative marginal effects are defined as $\Delta p/p$, where p is the probability of every class.

Table 8. Multinomial logit model of lender choice limited to ownership form of the bank

$$P(\text{Class}_i) = f(\text{Size of borrower}; \text{Size of the loan}; \text{Collateral}; \text{Long term}; \text{Ex - ante default}; \text{Ex - post default}; \text{Share of main bank}; \text{Interest Rates}; \text{Time}; \text{Region}; \text{Industry})$$

The dependent variable takes values 1 to 3 depending on the type of bank granting the loan: value 1 for commercial banks; 2 savings banks; and 3 for cooperatives. Size of the borrower is the log of the total amount of credit a given firm has at the beginning of the period the loan is granted. Size of the loan is the log of the loan size. Collateral is a dummy variable worth 1 if the loan has any kind of collateral and 0 otherwise. Long term is a dummy variable worth 1 if the maturity of the loan is longer than 5 years and 0 otherwise. Ex ante default (Ex post default) is a dummy variable worth 1 if the borrower has defaulted more than 5% of its total amount of credit the year before (after) the loan is granted, and 0 otherwise. Share of main bank is the higher percentage a bank represents in the total amount of credit for a borrower. Interest rate is the average annual interest rate that the bank charges to new loans to non-financial firms. Time, region and industry are different groups of dummies for every period (7 dummies), region (16 dummies) and industry (6 dummies) considered.

		Model 1	
2		Size of borrower	-0.024 ***
		Size of loan	-0.033 ***
		Size of bank	-0.253 ***
		Collateral	0.5469 ***
		Long term	0.378 ***
		Ex-ante default	0.187 ***
		Ex-post default	0.0367
		Interest rate	-0.2426 ***
		Share of main bank	0.0064 ***
3		Size of borrower	-0.0508 ***
		Size of loan	-0.0281 ***
		Size of bank	-1.6864 ***
		Collateral	0.31889 ***
		Long term	0.7654 ***
		Ex-ante default	0.0019
		Ex-post default	0.1794 **
		Interest rate	-0.1596 ***
		Share of main bank	0.0076 ***
Control variables	Time		yes
	Region		yes
	Industry		yes
	Log likelihood		-175,702.00
	R squared		0.188
	N		249,669

The symbol ***/**/* indicates the coefficient is significantly different from zero at the 1%/5%/10% level. Relative marginal effects are defined as $\Delta p/p$, where p is the probability of every class.

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