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The Value of Social Networks in Bank Lending

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Abstract

We link a directory of the members of a social club in Italy to information from the credit register to study the effect of social networks on bank lending. We find that a bank whose officers are part of the same social network as officers of a firm, has two and a half times the probability of extending a line of credit to the firm than a random bank. As a new bank enters the club chances increase that a new relation with a firm in the club is set up; as the bank exits the club existing relations are discontinued. The effect of club membership is stronger for firms that are more likely to suffer from imperfections in credit markets, either because too small or because illiquid. Effects of membership are additive and the total amount of credit a firm gets is larger the higher the number of banks with representatives in the same club. This analysis indicates that social interactions facilitate market relations. Yet, the establishment of social relationships is itself subject to frictions, which may have repercussions on the functioning of the market for credit.

JEL Classification:

Keywords: Bank-firm relations, social networks, enforcement, information.

Introduction

There is a growing literature in banking that emphasizes the importance of bank-firm relationships for the availability of credit (e.g., Sharpe (1990), Rajan (1992), Petersen and Rajan (1994)). This importance arises in the presence of significant costs of gathering information and enforcing agreements. While this literature shows the benefits and costs of establishing tight relationships, it does not inquire how they emerge.

Understanding the origins of relationships is important along at least three dimensions. First, the ease in establishing a relationship affects the contestability of the credit market. Once a bank-firm relationship is formed, the bank acquires some monopoly power vis-à-vis its client. Thus, the degree of competition in the credit market must be measured taking into account the ease of establishing new relationships and dropping the old ones. How easy this is can only be understood if we have an appreciation for how relationships are born. Second, since the easiness of forming relationships may not be equal across individuals/firms, understanding how they are born can shed some light on the cross-sectional differences in the access to credit. Both these aspects have obvious effects on the functioning of monetary policy. Finally, these relationships represent an important source of value for banks. But who “owns” a relationship? Does it “belong” to the bank or to the credit officer that sat it up? Can she take it away with her in case she leaves the bank? Understanding how relationships are established and maintained is critical to help designing the internal organization of banks.

In this paper we investigate one channel through which bank-firm relationships may arise: social networks. Social networks are networks of personal relationships and contacts that arise outside the marketplace. Important social networks are religious groups, charity associations, alumni networks, and more generally social clubs of various sorts, where people engaged in different professional activities meet in order to achieve what is mainly a non-economic purpose. For example, charity associations meet for the purpose of gathering funds

to help people in need. In the process, however, members establish a social relationship that may affect their economic behavior, providing them with information about job prospects and exchange opportunities. Similarly, alumni reunions are not only an opportunity to rejoin with old friends and support *the alma mater*, but also a way to exchange information that might lead to mutually beneficial economic transactions. One example of how social relations translate into economic ones is the informal lending arrangement based within ethnic minorities like the Korean community in the U.S. and the North African groups in France (Rauch and Trindade. 2002). This example is extreme in so much as the social network generates not only the bank-firm relationship but also the “bank” itself.

Obviously, social networks are important only in a non-Walrasian market, where trade is not anonymous and information does not flow freely. Repeated social interactions may help alleviate enforcement problems through the threat of social sanctions like ostracism. At the same time, the social network provides an opportunity to gather information at low cost. While these frictions may appear in several markets, they are typical of the market for credit. Thus, we focus on the effects that social networks may have in alleviating enforcement and information problems in extending loans, facilitating the emergence of a firm-bank-relationship.

To this purpose we link a directory of an association - which for brevity we shall refer to as clubs - with a dataset of bank-firm relationships in 1991. These clubs are local chapters of a nationwide organization, where members meet on a regular basis.¹ Club members are individuals with different professions that interact to pursue the social targets of the organization. We obtain information on which firm’s representatives and banks representatives belong to the same social club. We also have data on which banks lend in the area where a firm is located and which, among those, lend to the firms represented in our clubs. We can thus test whether belonging to the same social network increases the likelihood of establishing

a credit relation and whether, conditional on having a relationship, it affects the size of the loan granted. We can also investigate how the presence of this social interaction affects the overall structure of bank-firm ties (number of relationships and concentration of credit). Finally, we can assess for whom and under what conditions social interactions are most valuable.

We find that a bank represented in a club has two and a half times the probability of extending a line of credit to a firm member of the same club than a random bank (12.5% versus 5%). It also has six times the likelihood of being the main bank (i.e., the bank with the largest share of loans to the firm). Club membership increases the likelihood of being the main lender even when we restrict the sample to banks that have a line of credit with the firm. The loans made by member banks to member firms are also 20% larger than the other loans the same firms receive by non-member banks. Furthermore, the total amount of credit a firm gets is larger the higher the number of banks with representatives in the same club. Thus, social interaction with some bankers does not necessarily crowd out relations with other banks, but seems to increase the overall borrowing capacity of a firm.

An obvious criticism to these results is that club membership might be a proxy for unobserved firm quality. To address this problem, we restrict our analysis to firms that have a representative in the club. We also address potential firm and bank heterogeneity by using both bank and firm fixed-effects. Finally, we make sure that results are robust to different definitions of the sample.

To address a potential reverse causality explanation of these results (the bank-firm relation may pre-exist the membership in the club and firms and banks that are already linked by a relation may be likely to join a club) we look at banks that entered the club between 1990 and 1995 and the effect of this entry on the change in the amount of loans and the emergence of a relation. We find effects that are very similar to those obtained in the cross section.

¹ The name of the organization is omitted for confidentiality reasons.

Similar results obtain when we look at exit of banks on existing relations and the amount of loans. Loans extended to club member firms decline when a member bank exits the club and it is more likely that a relation is discontinued as the bank abandons the club.

Our analysis of the cross-sectional determinants of the impact of social interaction on credit relationships indicates that smaller firms and cash-short firms benefit the most. The impact of club membership on the probability of establishing a relationship is 50% as large for firms with size below median than for above median size firms. Similarly, the increase in loan's size associated to a joint club membership is 11 times as large for small firms as for large firms. Also the impact of club membership on the probability of having a relationship is 1.3 times as large for firms below median of the distribution of liquidity (cash holdings over sales) than for firms above median while the amount of loans extended is 3.4 times as large.

Finally, we investigate how the nature of a bank (national, regional, or local) and the hierarchical level of the bank representative in the club affect the impact of club membership on bank-firm relationships. The impact of social interactions on the likelihood of having a bank relationship and of being a main lender is somewhat stronger for local banks and for banks with a higher hierarchical level of bank representatives.

Overall, our analysis indicates that social interactions facilitate market relations. Interestingly, this effect is stronger where market imperfections are likely to hurt more. Thus, social interactions seem to play an important role in alleviating market frictions. Yet, the establishment of social relationships is itself subject to frictions, which may have repercussions on the functioning of the market for credit. Thus, our analysis raises the following questions that need to be addressed in future research.

First, social interactions with representatives of a firm appear to put a bank at a comparative advantage. If, as it seems likely, establishing these relationships takes time, then they might constitute a non-price barrier to entry, especially for foreign banks. This might

explain why banks always enter new markets through acquisitions of existing banks, rather than through organic growth.

Second, many social clubs have restrictions to membership based on personal exogenous characteristics, such as ethnicity, religion, or gender. Thus, our results indicate that discrimination in social groups may translate into a relative economic disadvantage for the group discriminated against.

Finally, our results may have implications for the internal organization of banks. They show that these relationships are initiated because of bank employees' personal contacts.² But the bank benefits from it. Thus, promoting the social interaction of its employees with the local community is in the bank's best interest. Thus, high turnover rates of local loan officers, as practiced by many Italian banks, may not be desirable. This raises the question of how to organize the bank internally so that a relationship, which started on the basis of an employee's personal contacts, is transferred to the bank and survives the departure of the employee who originated it. Our finding that when a bank representative leaves a club and is replaced by another one has no effect on the existing relations while the latter are lost when the bank discontinues its membership with the club suggests that banks internal organizations is able to cope well with this problem.

The rest of the paper is organized as follows. Section I summarizes the theoretical literature on credit market imperfections and the role of credit relationships in alleviating them. From this literature we draw testable implications on the possible effects of social interactions on the transactions in the credit market. Section II describes the data used and presents some summary statistics. These data are then used in Section III to estimate the effect of club membership on the probability of setting up a credit relationship, on the probability this is the main relationship, and on the size of loans. Section IV probes deeper into the determinants of the effects of club membership, and how it relates to features of the bank

organization. Section V shows results from entry and exist of banks and bakers in a club while Section VI investigates how the presence of this social interaction affects the overall structure of bank-firm ties (number of relationships and concentration of credit). Section VII concludes and suggests directions for future research.

I. Theoretical Framework

In a Walrasian market trade takes place anonymously and information is freely available to all market participants. A large literature has challenged the view that this paradigm applies to credit markets. Two problems are perceived has major frictions in this market: i) the difficulty of writing and enforcing contracts; ii) the asymmetry of information between borrowers and lenders. These problems generally lead to an upward-sloped supply of credit for individual firms.

The anonymous nature of trade in a Walrasian market implies a perfect separation between market transactions and social interactions. In the presence of market frictions, this perfect separation no longer holds. Social interactions may provide a low cost opportunity to gather information, both directly and indirectly, about potential borrowers. Just observing the life style of its potential borrowers when they are in their social environment may reveal to a banker useful information about their credit-worthiness. The normal conversation on the golf court or at the bar can also provide valuable information at no cost. Thus, a banker who belongs to the same social club of an entrepreneur has a comparative advantage in assessing his credit worthiness. This should lead this banker to be more likely to lend to the entrepreneur who belongs to the same club and, conditional on lending, more willing to lend more. Membership to the same club should also strengthen the exchange relation between a banker

² Membership in our social clubs is personal and does not come as a privilege of a person's job.

and a firm. This implies that a bank that is member of the same club is more likely to be elected as the main lender.

If the social interaction is repeated, as it is the case in a club, it may also provide an alternative (and more effective) source of enforcement of legal contracts and a mechanism to enforce informal implicit contracts. Both effects presuppose the existence of some form of social sanction in the club. For instance, the failure to repay a loan may cost an entrepreneur the ostracism of all the members of the club, which adds to the costs of defaulting. Similarly, a borrower who defaults on an implicit agreement may be considered undeserving of the friendship of the other members of the club. The first order implications of this enforcement role of clubs are identical to the implications of the information sharing role. Thus, at a first pass we will not try to distinguish between these two interpretations. In what follows we will frame all the tests and interpret the results in terms of information, but they could be equivalently discussed in terms of enforcement.

A further way to test the hypothesis that social interaction helps circumvent market frictions is to check whether they have a larger impact when these frictions are most severe. Informational problems are generally thought to be more severe among smaller firms and firms with little cash reserves. Thus, we expect club membership to have a bigger effect on the likelihood of having a bank relationship and on the size of the loan among smaller firms and among firms with little cash.

II. The Data

We use four main sources of data. First, we obtain information on club membership from the 1991 national directory of an Italian social organization, whose name is omitted for confidentiality reasons. This nationwide organization is structured in local chapters, which we call clubs, where members meet on a regular basis. Club members are individuals with

different professions that interact to pursue the social targets of the organization. Although the organization is nationwide, to reduce the cost of data inputting we restrict our analysis to clubs located in the North-Center part of the country.³ This sample selection has two advantages. First, the selected area is where 74% of manufacturing firms are located. Second, it excludes the regions where Government subsidies are more widespread. This eliminates the noise represented by subsidized forms of credit. This criterion leaves us with 283 clubs located in 56 provinces.⁴

The directory provides information about the occupation of its members as well as the bank/firm they work for. This allows us to determine which firms/banks have representatives in each club. Club size varies greatly (some clubs have up to 200 members, while others have less than 40), and so does the professional qualification of its members. By and large, this reflects the socio-economic conditions of the area where a club is located. On average, there are 12 representatives of firms and 3.5 representatives of banks in each club (the medians are respectively 11 and 3). But 20% of the clubs have no bank representative, while 62% have representatives of at least two banks. Thus, there is ample variation in the number of banks represented. Most of the bank representatives (49%) are local branch managers, while 34% are higher level officers, and 17% simple loan officers. We exclude from the sample bank employees who do not have direct relation with the credit process (such as directors of the computer or legal departments) or employees below the level of credit officer, under the assumption that they cannot significantly affect the concession of credit. If more than one representative of a bank is present in the same club we choose the highest-ranked one.

We perform a similar analysis for firms, which for our purposes we define as incorporated companies (*società per azioni* and *società a responsabilità limitata*). We define a firm as having a representative in the club if the firm's owner, or its CEO, or the president of

³ This includes the following regions: Valle d'Aosta, Piemonte, Liguria, Lombardia, Veneto, Trentino Alto Adige, Friuli Venezia Giulia, Emilia Romagna, Toscana, Marche, Umbria.

the Board, or the general director, or the Chief Treasurer are member of the club. We exclude lower level employees because they are likely to provide less information about the firm credit-worthiness and because they are definitely not responsible for the firm's repayment decisions and as such they are not subject to the threat of social sanction. Of course, these criteria tend to oversample smaller firms. Overall, we obtain a total of 3,457 firms, located in 283 clubs. To avoid the criticism that club membership may be a proxy for unobservable firm quality, we restrict all our analysis to firms with representatives in the club. Thus, all our results should be read as conditional to club membership by a firm's representative.

Balance sheet information is obtained from the 1991 Company Accounts Data Service (CADS). This is a company accounts data service that has been collected since 1982 by a consortium of banks interested in pooling information on their clients. The whole sample includes some 30,000 Italian non-financial firms; the sample, however, is not randomly drawn, since a firm enters only by borrowing from one of the banks in the consortium. Balance sheets are reclassified in order to reduce the dependence of the data on the accounting conventions used by each firm to record income figures and asset values.

For this sample of companies we could obtain data on loan quantities from the Credit Register (CR). This is a public credit register administered by the Bank of Italy, that pools information on the amounts of loans extended by Italian banks. Banks must report to the Credit Register the amounts granted and effectively utilized for all loans in excess of a minimum threshold which, at the relevant time for this paper, was 80 million lire (about \$ 46,000). This information is reported separately for 6 different types of loans (financial and commercial paper, foreign credit operations, credit lines, collateralized loans, medium and long term loans and personal guarantees).

⁴ The country is divided into 95 provinces that by and large correspond to U.S. counties.

Our fourth source of data is a database, collected by the Bank of Italy, that contains a set of bank characteristics, such as the number of branches, year of foundation, location of headquarters, number of employees.

By matching these four data sources we end up with 1,334 firms. While the attrition rate is very high it should not be either surprising or worrisome. It is not surprising because we start from a sample taken from the whole population of firms, which is probably biased toward smaller firms. While the coverage of CADS is large, it is far from being universal. It is not worrisome because we will mainly utilize the within firm variation in bank-firm relationships, thus any sample selection based on firm's characteristics is controlled for.

Table 1 provides a summary description of the main features of the clubs, the member banks and the member firms.

From this dataset of 1,334 firms we build two samples. First, we construct the set of potential credit relationship by assigning to each firm the set of banks that have at least one loan outstanding to firms located in the same province. We choose the province as relevant local market because i) all banks are organized on a provincial basis; ii) until 1990 the Bank of Italy used the province as the relevant geographical dimension to regulate branching. This sample (henceforth the “large” sample), which contains 281,775 potential bank-firm relations. Notice that for each province the data can be seen as a balanced panel of bank-firm relationships. The overall sample is a pooling of provincial panels of bank-firm relationships, which might differ in the number of bank-firm relationships. This sample allows us to study the probability that a firm has a relationship with a certain bank using the entire population at risk. Second, we construct a sample restricted to only active bank-firm relationships (the “small” sample). This sample, which has the same structure as the one above but for the fact each provincial panel is unbalanced, comprises 16,618 bank-firm relationships. What preserves the panel nature of this sample is the fact that most firms have multiple bank-firm relationships (on average 8).

Finally, using the small sample we identify the banks that enter a club between 1990 and 1995 by searching the club directory also for the latter year as well as the banks that exit a club between these two years. The time variation in bank club membership allows to study the effect of entry and exit on the birth and death of lending relations as well as the effect on the amount of loans extended.

Table 2 contains the summary statistics of the main variables used in our analysis for all these samples.

III. Club membership and the existence of a credit relation

A. The main specification

The first question we try to address is whether social interaction increases the likelihood of a credit relationship. We start by estimating a simple linear probability model of having a credit relationship as a function of club membership and some control variables. For this purpose we rely on the large sample of potential relationships and define the dependent variable as an indicator function that takes the value of one if a bank grants any amount of credit to a firm, and zero otherwise. The variables we want to control for are reasons, other than club membership, why the likelihood of being a lender might differ across banks. One obvious such variable is the relative importance of a bank in the local credit market. For this reason, we compute a bank market-share of total lending in the province and insert it as a control variable. The other control variable is an indicator of the province where a bank headquarters is located. One reason for this is that a bank is likely to be more prominent and better introduced in the province where most of its main officers are. Another is that the cost of information collection and transmission could be lower for firms in the area near the headquarters.

Table 3.A, column 1, presents the estimates without any fixed effects. Club membership has a positive and highly statistically significant impact on the chances of a relationship (t-

statistic of 5.3). Compared to the unconditional probability of having a credit relationship with one of the banks in the firm's local market (5.1%), club membership raises the likelihood by two and a half times (to 12.5%). The bank share of the local credit market has also a positive and statistically significant impact (as expected), while location of the bank's headquarters has no significant impact. These three variables alone can explain 27% of the cross-sectional variability.

This specification does not control for possible firm heterogeneity. We account for this in column 2 of Table 3.A, inserting firm fixed effects. While firm fixed effects are jointly statistically significant, the parameter estimates are essentially identical to the previous ones. Similarly, in column 3 of Table 2.A, we control for bank heterogeneity by re-estimating the linear probability model adding also bank-fixed effect to the firm fixed-effect. Once again the estimates are unchanged. If anything, the effect of club membership is slightly increased (from 0.073 to 0.081).

One can argue that our control for bank heterogeneity is insufficient in so much as it assumes that, after controlling for bank's share in the local credit market and for the location of its headquarters, banks have the same probability of starting a credit relationship in any province. This might be false if local bank managers have a different ability to entertain credit relationships. If more able bank managers are more likely to belong to the social club, then the effect we estimated might only be capturing unobserved managers' ability. If this unobserved ability is a characteristic of the bank manager at the province level, then we can control for it by inserting in the basic specification bank-province fixed effects. We can do this because we have multiple firms in each province. The last column of Table 3.A shows the results controlling for both firm fixed-effects and for bank-province fixed-effects. Of course, the bank share in the province and the bank headquarters dummy are dropped as regressors as they are now absorbed by the bank-province fixed-effect. The effect of club membership drops a bit (the point estimate is now 0.061) but continues to be estimated very precisely; economically,

sharing club membership with a bank raises the chances of establishing a lending relationship by 6.1 percentage points, more than doubling the unconditional probability.

Table 3.B repeats the same analysis for the probability of being the main lender. A main lender is defined as the bank that extends the largest share of total loans.⁵ Compared to the unconditional probability (0.6%), club membership raises the likelihood by 5.8 times (to 3.4%) with a t-statistic of 4.5. The bank share of the local credit market has also a positive and statistically significant impact and so does the location of the bank's headquarters. These three variables alone can explain 6% of the cross-sectional variability. The same results obtain when we control for firm fixed effects alone and jointly for firm and bank fixed effects (columns 2 and 3), as well as when we also insert bank-province fixed effect (column 4). In the latter case the effect is slightly smaller but highly statistically significant.

In the previous regressions the dependent variable was binary. But for active bank-firm relationships we have the actual amount of total loans granted. Thus, in Table 3C, column 1, we use as a left hand side variable the actual amount of loans granted (scaled by total sales). Since for some firms the figure on sales is missing the number of observations is somewhat smaller than in the previous estimates (270,306 instead of 281,775). Results show that club membership raises the loan granted as a fraction of sales by more than three times; obviously, this reflects both the effect of membership on the raise of a relation as well as that on the amount of loans conditional on this relationship; the latter alone would raise loans extended by 20%. This effect is highly statistically significant. These results are robust to accounting for the censoring; the estimation of a Tobit model delivers in fact very similar results (not reported).

In columns 2 and 3 we re-estimate the model with firm and bank and firm fixed effects. The estimated coefficients are statistically and economically similar. Results are also unchanged when the bank fixed effect is replaced with province specific fixed effect (column 4).

The above results suggest a clear correlation: a bank that is member of the same social club as a firm is more likely to entertain a credit relationship with it. Yet, we are interested in establishing a causal link between the two. In order to do so, we follow three avenues. First, we try to refute the most natural reasons for why this effect might be ascribed to spurious correlation. Second, we rely on banks entry and exit in the club hopefully triggered by some exogenous reason and study how these affects non-preexisting and pre-existing relations. Third, theory suggests that the effect should differ across groups of firms. Thus, we test for these differences.

B. Robustness

Table 4 explores the possible reasons for spurious correlation. One reason why the observed effect might be spurious is that bank membership to a local club might indicate that a bank has a branch in the surroundings of the club and thus is located close to firms belonging to the same club. While by construction each bank considered lends somewhere in the province, it is not assured that it is present throughout. This problem is more relevant in the countryside where many banks are not likely to have a branch and might find it disadvantageous to extend a loan from another location in the province.⁶ To assess whether this is indeed the main source of the estimated effect, we re-estimate the model restricting the sample only to firms located in the province capital, where most banks are likely to have a branch. We do this in column 2 of Table 4.A using the specification that contains both firms and bank-province fixed effects; compared to the full sample estimates reported for reference in the first column, estimated effect is somewhat smaller but positive, highly statistically significant and economically important as it implies that club membership doubles the effect on the chances of setting up a relation.

⁵ If more than one bank extends the same largest amount, we classify all these banks as main bank.

Another way to attack the same problem is to eliminate from the sample banks that we know do not have many branches. These are rural banks, which are restricted by regulation to lend just in the town they are headquartered in. Thus, in column 3 of Table 4.A we eliminate from the sample all the rural banks. The estimated effect is very close to that in the whole sample.

Finally, we combine the two criteria and we re-estimate the basic specification with firm and bank-province-effects excluding rural banks and restricting the sample to firms located in a provincial capital. Also in this case the impact of club membership on the existence of a credit relationship is positive and statistically significant and has the same magnitude found before.

Table 4.B and 4.C perform the same robustness analysis for the determinants of the likelihood of being the main lender and for the ratio of loans to sales. Though limiting the analysis to firms located in the province capital halves the effect of club membership, even this results confirm that our results are not driven by spurious reasons, .

C. The impact of social interaction on different groups of firms

The other way to gain confidence that the results are due to the role that social interaction plays in alleviating market imperfections is to see whether the intensity of the relation changes when the market imperfections become more severe.

In order to address these issues we split the sample below and above median according to the size of firms (measured by total sales). Smaller firms are deemed to find it more difficult to access the credit market. One reason for this is that smaller firms tend to be younger firms, with less of a track record. Another is that larger firms are less subject to the “transformation risk” (see Myers and Rajan, 1998). We then estimate the basic specification with bank-province fixed effects for firms in below and above median size respectively. As Table 5.A

⁶ The average size of a province in our sample is 2,900 squared kilometers. Thus, towns within a province are close to the province capital.

columns 1 and 2 show, the impact of membership in the same club on the probability of a bank-firm relationship is 45% as large for small firms as for large ones.

Similarly, we split the sample on the basis of an index of a firm's liquidity position. As Kaplan and Zingales (1997) show, firms with low liquidity are more likely to report that are facing problems in raising external funds. Thus, these firms are most exposed to the imperfections present in the credit market. Accordingly, they are the most likely to take advantage of the opportunities provided by social interaction. The index we use is the share of liquid assets as a fraction of sales. As before we distinguish between above and below median firms and estimate the model with bank-province fixed effects for with a liquidity level below and above the sample median value. As columns 3 and 4 in Table 5A show, the effect of membership in the same club on the probability of a bank-firm relationship is about 33% as large for cash-short firms as for cash-rich firms (7.1 percentage points more versus 5.4 points).

Panels 5.B and 5.C perform the same analysis for the likelihood of being the main lender and the ratio of loans to sales. If anything, splitting the sample according to size and liquidity, reinforces the previous conclusions. In either case, the effect of club membership on becoming the main lender is three times as large for smaller firms and cash-short firms that it is for larger or cash rich forms respectively. Finally, the analysis of the effect of club membership on the loan-to-sales ratio exhibits a more pronounced difference between the two groups especially when we split the sample either according to size.

The evidence that the impact of club membership on various dimensions of the credit-relationship varies with the degree of imperfection in the credit market lends support to the view that social interaction alleviates credit-market imperfections.

D. The impact of social interaction on active relationships

A final way to assess the non-spurious nature of our results is to analyze the effects of club membership conditional on the existence of a bank-firm relationship. Most of the alternative

interpretations based on a spurious correlation, like geographical proximity, predict that club membership reduces the cost of starting a relationship, they do not necessarily imply that, conditional on having a credit relationship, joint club membership would strengthen it. By contrast, both the information and enforcement stories imply that being members of the same club not only reduce the cost of *starting* a relation, but also that it reduces the cost of *extending* loans conditional on having a relationship. For instance, the better information acquired at the club enhances a banker's ability to price the loan properly and thus increases his willingness to lend more.

We tackle this problem using our small sample limited to active lending relations. Table 6 reports our estimates obtained by OLS with firm and bank-province fixed effects.

Club membership has a positive and statistically significant effect of being the main lender, increasing the probability by 3% a 30% increase with respect to the unconditional probability of 9%. Club membership has also a positive and statistically significant effect on the quantity of credit extended (loans over sales). It increases by 18% the amount of credit-to sales relative to other banks lending to the firm.

In columns (4) and (5) we split the sample according to size and in columns (6) and (7) according to firm liquidity. Also in the sample of existing relations club membership benefits more beneficial among smaller businesses and among firms in need of cash, strengthened the results in Table 5 o the larger sample of potential relations.

IV. Club entry and exit and the effect on of lending relations

A skeptical might still object that belonging to the club may be the reflection of a previous joint decision of the bank and the firm. Thus, the effect of club membership on the existence of a relation, being the main bank and the amount of lending may be just the reflection of the *previous existence* of a relation, rather than the reverse as we argue. To address this reverse

causality problem we focus on time variation in the bank club membership and identify which banks join the club between 1990 and 1995, and then look at the effect of this change on the change in the emergence of a relation between the firms that were in the club in 1990 and the new entrants as well as on the amount of loans extended to these firms. There are two possible changes that can take place: first a bank that was not previously present can become member of a given club; second the bank representative can change, for instance because a local bank director is replaced by a new one, though the bank is present in both years. Since we can identify both the bank and its representatives in the club we can look at both changes.

There is still another potential objection that one needs to address and that entry alone cannot address. One can argue that an entrant bank/banker may enter because it/he is co-opted by the incumbent firms in the club in anticipation of (or in exchange for) an extension of loans: formally this is equivalent to an unobserved latent relation that will set up as the bank joins the club. To address this issue we look at variation in exit and thus focus on those banks/bankers that are present in 1990 in a club but leave it between 1990 and 1995, again distinguishing between the exit of a bank from that of its representative while the bank remains in the club.

Table 2, Panel D shows summary statistics on entry and exit; the share of bank entry in a club between 1991 and 1995 is 3.5% and that of exit is 3.8% while the share of bankers that change club (either because they enter or leave one) is 9.7%.

Table 7A shows the effects of a change in club membership on the change in a relationship. The left hand side is the first difference in the indicator for the existence of a lending relationship between a firm and a bank in the pool of relations that are active in either one of the two years 1995 and 1990 or in both. This variable can either be equal to -1, 0 or 1 depending on whether a relation that exists in 1990 is no longer active in 1995, is still active in 1995 or is active in 1995 but not in 1990. The first column regresses this indicator on the first difference in the indicator of joint club membership of a firm and a given bank. This indicator is equal to 0 if a firm and a bank that have an active relation both belong to the club in both

years; to 1 if the relation is active only in 1995 as the bank enters the club and to -1 if is active only in 1990 as the bank exits the club. The estimates show that a change in joint club membership has a positive and highly statistical effect on the change in the existence of a lending relationship. Economically, a change in joint club membership due to bank entry and exit increases the chances that a lending relation is set up by 9.1 percentage points; this effect is very similar in size to that obtained in Table 3 using only cross sectional variation, where we estimate that joint club membership raises the chances of forming a lending relation by 7.4 percentage points. This specification restricts the effect of bank entry and exit to be the same (in absolute value); in columns 2, 3 and 4 we report estimates where entry and exit are entered separately, thus allowing for different impact, first one by one (column 2 and 3) and then both together (column 4); as expected entry has a positive effect (facilitates the rise of a relation) while exit has a negative effect (facilitates the end of an existing relation). Both effects are statistically significant and their size very similar. In fact, we cannot reject the hypothesis that the coefficient of entry equal that of exit in absolute value.

The last column looks at the change in the bank representative; we find that changing banker while the bank is unchanged has no effect on the rise and fall of lending relations. This evidence suggests that the information that is accumulated by membership in a club is transferred from the bank representative to the bank, and can thus be used over again when the bank changes its representative in the club. It suggests that the owner of a relation is the bank institution rather than the person that represents it.

Table 7.B looks at the effects of bank entry and exist into the club on the change in the main bank. We find that while entry has no effect on the probability of the bank becoming a main bank, exit does and its effect is negative and large. One interpretation of this asymmetric result is that it takes a long time to become the main lender, much more than it takes to set up a relation. Since we measure entry over a five-year span this could be too short to detect the effect of club membership on becoming a main bank. This is consistent with evidence from a

1995 Bank of Italy survey on a sample of manufacturing firms that shows that a bank becomes the main lender after a median of 10 years it has established a lending relation. On the other end, loosing the primacy of being the main lender may be much faster and exit from the club can strongly affect this process. As for the change in a relationship, changing banker but not bank in a club has no effect on the bank being the main lender.

Finally, Table 8 shows the effects of entry and exit on the amount of loans extended; a new bank that enters the club has a positive effect on the change in the amount of loans while exit has a negative effect, but of equal size to that of entry.

Overall, the panel data estimates strongly suggest that the effect of club membership on the establishment of lending relations is unlikely to be spurious but reflects the benefits in terms of information acquisition and enforcement power that social interactions can provide.

V. Social interaction and the nature of a bank organization

Having established that club membership have an impact on the credit relationship, we are now interested in exploring how the nature of a bank organization may affect this impact. To this purpose, in Table 9.A we analyze the effect of club membership as a function of the geographical organization of a bank. We use geographical dispersion as a proxy for the length of social interaction. Since we have only a cross section, we are unable to determine how long the social interaction has been going on. However, we know (Ferri, 1997) that national, and to a less extent regional, banks choose to turnover their local branch manager on a regular basis (every two to three years). Thus, managers of these banks who are members of a local club are more likely to have joined the club recently. Since the benefit of social interaction is likely to increase over time (both because more information is revealed and because enforcement becomes easier), we expect that club membership matters more for local banks.

We divide the universe of Italian banks in three categories, as a function of their geographical diversification. The most diversified within the Italian territory are national banks defined as banks with branch in more than five provinces. Regional banks are those present in at least two provinces but no more than five. Finally, local banks are those operating in only one province.

In Table 9.A we interact these indicator variables with club membership and estimate the basic specification for the probability of having a credit relationship (column 1), the probability of being the main lender (Column 2), and the quantity of credit (Column 3) with firm and bank-province fixed-effects. As column (1) shows, club membership has a positive and statistically significant effect on the probability of having a relation in all three groups of banks. But this effect is between three and four times bigger for local and regional banks than for national banks. This difference is statistically significant at conventional levels. In column (2) we estimate the model for the probability of being the main lender and obtain a similar pattern of results: among local banks the effect is twice as large than among national banks. Results are somewhat less clear cut for the amount of loans (see column (3)) though the smallest impact is again for the national banks.

The second dimension we explore is the hierarchical position of the bank employee who belongs to the social club. The idea is that if the employee who interacts socially with the entrepreneur has a higher status in the organization he is more likely to have the authority to act upon the information gathered at the club, which is by nature soft information, not easily transmittable to superiors in a credible way. For this purpose we divide bank employees into two groups. Branch manager and loan officers are classified as low-level employees, while all employees hierarchically superior to them are classified as high level.

In Table 9.B we interact these indicator variables with club membership and estimate the basic specification for the probability of having a credit relationship, the probability of being the main lender, and the quantity of credit with both firm fixed and effects and bank-province

fixed-effects. As column (1) shows, club membership has a positive and statistically significant effect on the probability of having a relation both when the club member is a high level employee and when he is a low level one. But this effect is one-and-a-half times as large for the high-level officers as for the low level ones.

Columns (2) and (3) show a similar pattern in the relative ranking of coefficient both for the probability of being a main bank and for the quantity of loans granted. Finally, these results are obtained also when we focus on the sample of active relation and thus on the extension of credit conditional on the existence of a relation, as the estimates in columns (2) and (3) of Table 6.A and 6.B show.

VI. The effect of social interaction on the structure of bank-firm ties

Thus far, we have only focused on the effect of club membership on a single bank-firm relationship. It is interesting, however, to assess the impact of club membership on the overall structure of bank-firm relationships. A firm having a preferential channel of information with one bank, thanks to the joint club membership, does not necessarily have better access to the credit market overall. In fact, the existence of a preferential relationship may crowd out the possibility of establishing other relationships. Since all banks in Italy tend to provide only a fraction of the overall credit, the crowding-out effect may more than compensate for the positive direct effect we have documented thus far.

To account for this possibility, we collapse our small sample by firm and relate the total credit granted to a firm, its number of bank-relationships, and the concentration of loans to the number of banks represented in the same club. Recall that our sample consists only of firms present in the clubs, so that the number of banks present in the club is unlikely to capture quality differences across firms. To further control for this we insert in the OLS regression two

firm's characteristics: firm size (as measured by the logarithm of sales) and the firm's score, which is an indicator of firm's quality. Recall also that there is a fair amount of variability in the number of banks present in local clubs. This allows us to use in the estimates both the difference between clubs with no banks and clubs with at least one bank, and the variability in the number of banks across clubs with at least one.

This is what we do in Table 10. The first three columns regress the total credit granted on the number of banks present in the club and firm and local market characteristics. As local market characteristics we use the concentration of bank loans and the number of active banks in the province. As column 1 shows, club membership raises total credit granted by the banking system by 6.8 percentage points of sales. This effect is statistically significant at conventional levels. It is interesting now to compare this effect with the effect club membership has on individual lending relationships. As Table 3 shows, club membership raises the amount of loans granted by a bank by 1.5 percentage points of sales. In the absence of crowding out, the total effect of club membership depends on whether the effect is additive (i.e., whether meeting two banks in the club provide twice as much more credit as meeting only one). If we assume so, the total effect should be the product of 1.5% time the average number of banks present in clubs with at least one bank, which is 4. This leads to an estimate of 6%, if anything smaller than the overall effect found in Table 10.

A way to test the additivity assumption is to break the impact of club membership according to the number of banks present. This is done in column 3. The results indicate that moving from one to two banks in the club does not increase the overall credit, but moving to more than two has an effect as large as moving from zero to one. Thus, while the evidence is insufficient we cannot rule out that the effect is additive.

Finally, in the remaining columns of Table 10 we estimate the impact of club membership on the number of bank relations and the concentration of credit. Interestingly, bank club membership always increases the number of relations (on average by one bank per bank in

the club) and this effect is statistically significant at conventional levels. Similarly, bank club membership reduces the concentration of credit granted to the firm (as measured by the Herfindhal index).

VII. Conclusions

In this paper we document the relevance of social interaction in the market for credit. We find that a bank, whose officers are part of the same social network as officers of a firm, has two and a half times the probability of extending a line of credit to the firm than a random bank. It also has seven times the likelihood of being the main bank. The loans made by member banks to member firms are also 20% larger than the other loans the same firms receive by non-member banks. Furthermore, the total amount of credit a firm gets is larger the higher the number of banks with representatives in the same club.

Overall, our analysis indicates that social interactions facilitate market relations. Interestingly, this effect is stronger where market imperfections are likely to hurt more. Thus, social interactions seem to play an important role in alleviating market frictions. Yet, the establishment of social relationships is itself subject to frictions, which may have repercussions on the functioning of the market for credit.

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Table 1: Descriptive statistics: clubs, firms and banks

The table shows descriptive statistics for the sample of clubs, the sample of banks represented in a sample and the sample of firms represented in a club. Panel A shows general characteristics of the clubs. Panel B1, reports general characteristics of the firms belonging to a club. Identified firms are all firms that belong to one club; firms matched with CB are the set of identified firms that we can match with the firms that appear in the CB dataset at least in one year; firms in final sample are firms that we can match with the those are in the CB dataset in 1990 (1,868 firms) and that we can then match with the credit register dataset (1,312 firms). High hierarchical level is defined as either being the firm owner, the largest shareholder, the firm's CEO, its president or a board member; medium hierarchical level includes managers and top officials; low hierarchical level the finance director and other high firm official). Panel B2 shows summary features of the selected sample of firms that belong to a club and that we have been able to match with the CADS sample and the sample of firms in the CADS dataset. Sales are million euros, 1990 prices. Panel C1 shows general characteristics of the banks represented in a club. High hierarchical level: bank's CEO or equivalent; medium hierarchical level: Director or area head; low hierarchical level: loan officer or equivalent. Panel C2 shows summary statistics for the banks represented in a club and for the population of banks in 1990. Intermediated funds are million euros, 1990 prices.

A. clubs: general features					
Number of clubs searched	N. of clubs with at least one firm	N. of clubs with multiple firms	N. of clubs with no banks	N. of clubs with at least one bank	N. of clubs with multiple banks
283	283	234	29	245	220

B1 firms: general features							
N. of identified firms	N. of firms matched with CB	N. of firms in final sample	Average number of firms per club in matched sample	Average number of firms per club in final sample	Hierarchical level of firms representative in a club		
					High	Medium	Low
3,437	2,437	1,312	12.14	8.30	76.43	9.28	14.29

B2 firms: summary characteristics for firms in final and total sample				
Variable	Firms represented in a club (Final sample of matched firms)		Whole CADS sample	
	Mean	Median	Mean	Median
Sales	65.6189	11.7070	14.985	3.8783
Number of employees	617.76	120	130.32	25
Capital stock /output	0.4580	0.1575	0.80942	0.1298
Investment /capital	.2782	0.2122	0.2991	.2158
Interest payments / sales	.0472	0.0337	0.0590	.0385
Output per worker	403.67	238.48	557.88	262.88

C1 banks: general features

N. of banks represented in at least one club	Total N. of banks	Average number of banks per club	Hierarchical level of bank representative in a club		
			High	Medium	Low
191	831	3.35	36.38	51.50	12.32

C2 banks: summary characteristics for banks in clubs and in population *statT1_pc2.log*

Variable	Banks represented in a club		Banks in the population	
	Mean	Median	Mean	Median
Intermediated funds	5,198.109	1,039.091	1,089.771	65.556
Number of employees	2120.99	523	425.95	31
Number of bank branches	90.350	33	19.78	3
Number of branches in the same province as the headquarters	39.83	23	10.28	3
Number of provinces where bank is present	12	3	3.34	1
Profit/intermediated funds	0.011	0.011	0.0102	0.0098
Bad loans/ intermediated funds	0.023	0.017	0.018	0.011
Intermediated funds/employees	5.17	3.92	5.13	4.05

Table 2: Summary statistics: samples used in estimation

The table shows summary statistics for the various samples used in estimation. Panel A shows data for the sample of actual and potential relation. All banks operating (i.e. granting at least one loan in a province) are considered as potential relations for firms headquartered in that province. Panel B shows data for the set of actual relations, i.e. involving all banks that grant some positive loan to a firm. Panel C refers to the sample of matched firms. Panel D shows summary statistics on banks entry in and exit from a club between 1990 and 1995. Club membership is a dummy equal to 1 if a bank and a given bank belong to the same club. Club membership & Hierarchical level of bank representative are two dummies where the club membership is interacted with the hierarchical level of the bank representative, where the latter is either high or medium/low; Club membership & Type of bank belonging to a club is similarly defined. Main bank is a dummy equal to 1 for the bank that lends the largest amount of loans to the firm (zero otherwise). Bank share of loans in a province is the fraction of loans that a banks lends in a province to all the firms that are in that province in the CB dataset. Bank headquarters in a province is a dummy equal to 1 if the bank headquarter is in the province (zero otherwise). Entry of a bank in a club is a dummy equal to 1 if a bank not present in a club in 1990 enters it between 1991 and 1995 (zero otherwise); Exit of a bank from a club is a dummy equal to 1 if a bank that is present in a club in 1990 leaves if between 1991 and 1995 (zero otherwise).

Panel A: Expanded sample of actual and potential relations (N. observations 281,775)

Variable	Mean	Median	Sd	1th percentile	99th percentile
Club membership	0.0096	0	0.0977	0	0
Club membership & Hierarchical level of bank representative	0.0039	0	0.0628	0	0
- High	0.0057	0	0.0751	0	0
- Medium/Low					
Club membership & Type of bank belonging to a club	0.0003	0	0.0183	0	0
- Local	0.0017	0	0.0411	0	0
- Regional	0.0067	0	0.0817	0	0
- National					
Fraction of relations	0.0514	0	0.2207	0	1
Fraction of main banks	0.0062	0	0.0787	0	0
Loans from lending bank/sales	0.0021	0	0.0152	0	0.0578
Loans from lending bank/sales (among lending banks)	0.0392	0.0253	0.0537	0.0005	0.233
Bank share of loans in the province	0.0053	0.0005	0.0151	1.38e-06	0.0745
Bank headquarters are in the province	0.0662	0	0.2486	0	1

Panel B: Sample of actual relations (N. observations 16,618) vars1_41stat

Variable	Mean	Median	Sd	1th percentile	99th percentile
Club membership	0.0906	0	0.2870	0	1
Club membership & Hierarchical level of bank representative					
- High	0.0387	0	0.1929	0	1
- Low	0.0519	0	0.2218	0	1
Club membership & Type of bank belonging to a club					
- Local	0.0020	0	0.0445	0	1
- Regional	0.0114	0	0.1063	0	1
- National	0.0651	0	0.2467	0	1
Fraction of relations	1	1	0	1	1
Fraction of main banks	0.0805	0	0.272	0	1
Loans from lending bank/sales	0.0418	0.0257	0.0606	0.0003	0.284
Bank share of loans in province	0.0323	0.0241	0.0304	0.0001	0.1340
Bank headquarters	0.1917	0	0.3936	0	1
Log(sales)	10.8451	10.7319	1.6187	7.5699	14.7975
Firm score	0.6451	0.5200	2.3603	-6.98	5.98
Interest rate on credit lines	14.2257	13.4841	5.0774	11.0006	23.7490

Panel C: Collapsed sample of matched firms (N. observations 1,312)

Variable	Mean	Median	Sd	1th percentile	99th percentile
Club membership	0.0258	0	0.1419	0	1
Number of banks in the club	1.1754	1	1.1428	0	5
At least 1 bank in the club	0.6694	1	0.4706	0	1
Up to 2 banks in the club	0.3253	0	0.4687	0	1
Up to three or more banks in the club	0.1237	0	0.3293	0	1
Number of bank relations	12.4160	10	9.5382	1	46
Concentration of bank loans	0.2058	0.1492	0.1731	0.0394	1
Total loans granted /sales	0.0494	0.0335	0.0725	0.0022	0.2613
Log(sales)	10.15550	9.9924	1.5414	6.6554	14.1845
Firm score	0.7204	0.5500	2.5519	-7.63	6.51
Number of banks in local credit market	138.1217	100	115.1281	27	482
Concentration of local credit market (Herphindal index)	0.0558	0.0536	0.0251	0.0285	0.1477
Interest rate on credit lines (%)	14.2259	13.4841	5.0774	11.0006	23.749

*Panel D: Bank movers (Sample of actual bank relations: N. of observation 16,389)**panelreg.log*

	Mean	Median	Sd	1th percentile	99th percentile
First difference in indicator of existence of a bank firm relation (% of newly created relations: 7.82; % of discontinued relations: 15.28)	-0.1492	0	0.6632	-1	1
First difference in indicator of main bank (% of newly created main banks: 2.40; % of abandoned main banks: 2.40)	-0.0006	0	0.3089	-1	1
First difference in granted loans/sales	0.0372	0.0182	0.2373	0	0.2340
First difference of indicator of joint club membership	-0.0014	0	0.2738	-1	1
Entry of a bank in a club	0.0354	0	0.1883	0	1
Exit of a bank from a club	0.0382	0	0.1917	0	1
Change in the banker representing a bank in a club	0.0970	0	0.2859	0	1

vers1_1.log

Table 3: The effect of club membership on rise of a relation and the quantity of loans granted

This table reports the effect of club membership on the existence of a credit relationship, the effect on the probability of becoming the bank main bank and on the quantity of loans granted. Estimates are obtained using the sample of actual and potential bank-firm relations. All banks operating (i.e. granting at least one loan in a province) are considered as potential relation for firms headquartered in that province. In panel A the left-hand side variable is a dummy equal to 1 if a potential lender actually grants a loan to the firm (zero otherwise). In panel B the left-hand side variable is a dummy equal to 1 if a bank is the main lender of the firm (i.e. holds the largest share of loans granted to the firm), zero otherwise. In Panel C it is the quantity of loans granted by each bank in the province as a share of a firm's sales. In Panel C the number of observation is smaller than in Panel A and B for two reasons: a) for some firms the value of sales is missing (2,137 observations lost); b) values of total loans granted as a share of sales unduly high (in excess of 2) have been dropped (9,332 observations lost). Club membership is a dummy equal to 1 whenever a potential lender of a given firm is in the same social club as the firm (zero otherwise); the share of loans in the province is the amount of loans granted by each bank present in the province divided by total loans granted to the firms in the province by all the banks in the province; bank headquarters is a dummy equal to 1 if the bank headquarters are located in the province of the firm (zero otherwise). The number of potential relations is given by the number of firms in the sample in a given province multiplied by the number of banks in that province and adding up across provinces. The number of active relations is equal to the bank-firm pairs for which the amount of credit granted is positive. Standard errors are reported in parenthesis; in column (1) and (2) are adjusted for clustering at the bank level; in column (3) for clustering at the firm level. *** significant at less than 1%; ** significant at less than 5%; * significant at 5%

A: Probability of existence of a credit relation (linear probability model)

Variable	(1)	(2)	(3)	(4)
Club membership	0.0741*** (0.0130)	0.0732*** (0.0130)	0.0809*** (0.0124)	0.0605*** (0.0042)
Bank share of loans in the province	7.4264*** (0.335)	7.3574*** (0.3596)	5.7989*** (0.307)	-
Bank headquarters	-0.0006 (0.0070)	0.0019 (0.0700)	0.0222*** (0.0059)	-
Constant	0.0110 *** (0.0018)	0.01112*** (0.0017)	-0.954 (73.582)	0.7690*** (0.0451)
Firm fixed effects	NO	YES	YES	YES
Bank fixed effects	NO	NO	YES	-
Bank-province fixed effects				YES
R2	0.272	0.312	0.336	0.401
Number of observations (potential relations)	281,775	281,775	281,775	282,004
Number of active relations	14,291	14,291	14,291	14,291
Share of active relations	0.051	0.051	0.051	0.0510

B: Probability of being the main lender (linear probability model)

Variable	(1)	(2)	(3)	(4)
Club membership	0.0335*** (0.0077)	0.0330*** (0.0077)	0.0306*** (0.0074)	0.0275*** (0.0016)
Bank share of loans in the province	1.1030*** (0.0739)	1.1368*** (0.0741)	1.3959*** (0.0804)	-
Bank headquarters	0.0078 *** (0.0015)	0.0059*** (0.0016)	0.0045** (0.0017)	-
Constant	-0.0004 (0.0003)	-0.00049 (0.0003)	0.1517 (0.7544)	0.0275*** (0.0016)
Firm fixed effects	NO	YES	YES	YES
Bank fixed effects	NO	NO	YES	-
Bank-province fixed effects				YES
R2	0.056	0.286	0.2913	0.334
Number of observations (potential relations)	281,775	281,775	281,775	282,004
Number of active relations	14,291	14,291	14,291	14,291
Share of main lenders	0.006	0.006	0.006	0.006

(vers1_1.log)

B: *Quantity of loans extended as a share of firm sales*

	(1)	(2)	(3)	(4)
Club membership	0.0073*** (0.001)	0.0070*** (0.0011)	0.0070*** (0.0014)	0.0069*** (0.0003)
Bank share of loans in the province	0.4010*** (0.009)	0.4110*** (0.014)	0.4104*** (0.0115)	-
Bank headquarters	0.0009*** (0.0003)	0.001*** (0.000)	0.0012*** (0.0004)	-
Constant	-0.00016*** (0.00004)	-0.0002** (0.0001)	-0.0007 (1.0681)	0.0518*** (0.0031)
Firm fixed effects	NO	YES	YES	YES
Bank fixed effects	NO	NO	YES	-
Bank-province fixed effects	-	-	-	YES
R-squared	0.18	0.18	0.194	0.248
Observations	270,306	270,306	270,306	270,306
Sample mean of granted loan on sales	0.0021	0.0021	0.0021	0.0021

Table 4. Effects of club membership. Robustness of the results

This table analyzes the robustness of the effects measured in Tables 3 and 4, when bank-province fixed effects are inserted. In panel A the left-hand side variable is a dummy equal to 1 if a potential lender actually grants a loan to the firm (zero otherwise). Potential lenders are all the banks that lend to at least one firm in the firm's local market; the latter is identified with the firm's province. In panel B the left-hand side variable is a dummy equal to 1 if a bank is the main lender of the firm (i.e. holds the maximum share of the loans granted to the firm), zero otherwise. In panel C the left hand side variable is the amount of loans granted by each bank scaled by firm sales in 1990. Club membership is a dummy equal to 1 whenever a potential lender of a given firm is in the same social club as the firm (zero otherwise); the share of loans in the province is the amount of loans granted by each bank present in the province divided by total loans granted to the firms in the province by all the banks in the province; bank headquarters is a dummy equal to 1 if the bank headquarters are located in the province of the firm (zero otherwise). The number of potential relations is given by the number of firms in the sample in a given province multiplied by the number of banks in that province and adding up across provinces. Standard errors, reported in parenthesis, are adjusted for clustering at the bank level. *** Significant at less than 1%; ** significant at less than 5%; * significant at 5%

A. *Effect of club membership on the probability of the existence of a relationship* (linear probability model)

Variable	(1) Total sample	(2) Only firms in the province capital	(3) Excluding rural banks	(4) Only firms in the province capital and excluding rural banks
Club membership	0.0605*** (0.0042)	0.0396*** (0.0060)	0.0582*** (0.0111)	0.0399*** (0.0063)
Constant	0.7690*** (0.0451)	0.1167 (787.634)	0.6681*** (0.0478)	0.1043 (0.9900)
Firm fixed effects	YES	YES	YES	YES
Bank-province fixed effects	YES	YES	YES	YES
R2	0.401	0.394	0.401	0.392
Share of relationships	0.0510	0.0484	0.0597	0.0527
N.of observations	282, 004	154,027	240,843	142, 915

B. *Effect of club membership on the probability of being the main lender* (linear probability model)

Variable	(1) Total sample	(2) Only firms in the province capital	(3) Excluding rural banks	(4) Only firms in the province capital and excluding rural banks
Club membership	0.0275*** (0.0016)	0.0122*** (0.0022)	0.0272*** (0.0017)	0.0112*** (0.0078)
Constant	0.0275*** (0.0016)	-0.0026 (250.065)	0.0500 (0.0167)	0.0177 (0.7009)
Firm fixed effects	YES	YES	YES	YES
Bank-province fixed effects	YES	YES	YES	YES
R2	0.334	0.473	0.307	0.431
F test for fixed effects (degrees of freedom)	6.159	4.962	5.813	5.184
Share of main lenders	0.006	0.0071	0.0070	0.0073
N.of observations	282, 004	154,027	240,843	142,915

C. *Effect of club membership on the quantity of loans granted* (linear regressions)

Variable	Total sample	Only firms in the province capital	Excluding rural banks	Only firms in the province capital and excluding rural banks
Club membership	0.0069*** (0.0003)	0.0033*** (0.0003)	0.0069*** (0.0004)	0.0033*** (0.0005)
Constant	0.0518*** (0.0031)	0.0022 (46.607)	0.0019 (39.7926)	-0.0001 (114.159)
Firm fixed effects	YES	YES	YES	YES
Bank-province fixed effects	YES	YES	YES	YES
R2	0.248	0.291	0.270	0.261
Sample mean of granted loan on sales	0.0021	0.0019	0.0024	0.0021
N.of observations	270,532	146,573	231,055	136,305

Table 5. The value of club membership for different groups of firms

This table analyzes the differential effect of club membership on credit across different groups. We distinguish on the basis of size and liquidity. In panel A the left-hand side variable is a dummy equal to 1 if a potential lender actually grants a loan to the firm (zero otherwise). Potential lenders are all the banks that lend to at least one firm in the firm's local market; the latter is identified with the firm's province. In panel B the left-hand side variable is a dummy equal to 1 if a bank is the main lender of the firm (i.e. holds the maximum share of the loans granted to the firm), zero otherwise. In panel C the left hand side variable is the amount of loans granted by each bank scaled by firm sales in 1990. Club membership is a dummy equal to 1 whenever a potential lender of a given firm is in the same social club as the firm (zero otherwise); the share of loans in the province is the amount of loans granted by each bank present in the province divided by total loans granted to the firms in the province by all the banks in the province; bank headquarters is a dummy equal to 1 if the bank headquarters are located in the province of the firm (zero otherwise). Small firms and large firms are those below and above median sales respectively; similarly, cash-short and cash-rich firms are those below and above the sample median of an index of liquidity, defined as liquid assets/sales. Standard errors are reported in parenthesis. *** significant at less than 1%; ** significant at less than 5%; * significant at 5%

A. Effect of club membership on the probability of existence of a relationship (linear probability model)

Variable	Size		Liquidity	
	(1) Small firms	(2) Large firms	(3) Cash-short firms	(4) Cash-rich firms
Club membership	0.0706*** (0.0053)	0.0486*** (0.0065)	0.0711*** (0.0028)	0.0537*** (0.0062)
Constant	0.3590*** (0.0241)	0.7323*** (0.0517)	0.0094 (443.02)	0.0719 (503.63)
Firm fixed effects	YES	YES	YES	YES
Bank-province fixed effects	YES	YES	YES	YES
R2	0.416	0.447	0.428	0.422
F test for fixed effects	6.63	8.50	13.01	12.74
Share of relationships	0.0391	0.0635	0.0528	0.0500
N.of observations	140,648	140,648	137,137	137,408

B. Effect of club membership on the probability of being the main lender (linear probability model)

Variable	Size		Liquidity	
	(1) Small firms	(2) Large firms	(3) Cash-short firms	(4) Cash-rich firms
Club membership	0.0408*** (0.0023)	0.0117** (0.0021)	0.0444*** (0.0023)	0.0131*** (0.0023)
Constant	0.1242*** (0.0108)	0.0677*** (0.0170)	0.0024 (169.81)	0.0082 (186.249)
Firm fixed effects	YES	YES	YES	YES
Bank-province fixed effects	YES	YES	YES	YES
R2	0.193	0.493	0.177	0.480
F test for fixed effects	3.086	0.984	4.160	3.949
Share of main lenders	0.0055	0.0070	0.0051	0.0073
N.of observations	140,648	140,648	137,137	137,408

C. Effect of club membership on the quantity of loans granted (linear regressions)

Variable	Size		Liquidity	
	Small firms	Large firms	Cash-short firms	Cash-rich firms
Club membership	0.0124*** (0.0006)	0.0022*** (0.0003)	0.0090*** (0.0004)	0.0047 *** (0.0005)
Constant	0.0035 (21.431)	0.0598*** (0.0020)	0.0307 (31.360)	0.0428*** (0.0037)
Firm fixed effects	YES	YES	YES	YES
Bank-province fixed effects	YES	YES	YES	YES
R2	0.288	0.317	0.285	0.272
F test for fixed effects	3.82	8.451	7.019	6.711
Sample mean of granted loan/sales	0.0026	0.0016	0.0021	0.0021
N.of observations	131,146	138,762	135,758	133,095

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Table 6: The effect of social interactions on access to credit conditional on having a lending relationship. (Sample of actual bank-firm relations)

Estimates in the table are obtained in the sample of actual bank-firm relations. It includes all pairs of active bank-firm relations, i.e. pairs where the quantity of credit granted by a bank to a given firm is positive. The left-hand side variable in Panel A regressions is a dummy equal to 1 if the bank is the main lender of the firm – i.e. holds the highest share of the total credit granted to the firm - (zero otherwise). In Panel B it is the credit granted by each active bank scaled by firm sales. Club membership is a dummy equal to 1 whenever an actual lender to a given firm is in the same social club as the firm (zero otherwise); all regression include bank-province fixed effects and firm fixed effects. High hierarchy of bank representative is a dummy equal to 1 if the bank representative is the bank's CEO or equivalent; medium/low hierarchical level: Director or area head, loan officer or equivalent. Local banks are those that are present in only one province; regional banks those that operate in no more than 5 provinces and national banks those that make loans in more than 5 provinces. Overall, there are 95 provinces in the country. Small firms and large firms are those below and above median sales respectively; similarly, cash-short and cash-rich firms are those below and above the sample median of an index of liquidity, defined as liquid assets/sales. Standard errors are reported in parenthesis. *** significant at less than 1%; ** significant at less than 5%; * significant at 5%

<i>A. Probability of being the main lender</i>							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Total sample	Total sample	Total sample	Small firms	Large firms	Cash-short firms	Cash-rich firms
Club membership	0.030** (0.013)			0.0386** (0.0186)	0.0200 (0.0189)	0.0451*** (0.0151)	0.0122 (0.0151)
Club membership *High hierarchy		0.037 (0.021)					
Club membership *Medim/low hierarchy		0.026 (0.015)					
Club membership * local bank			0.228 (0.146)				
Club membership*regional bank			0.004 (0.039)				
Club membership*national bank			0.024 (0.015)				
Firm fixed effects	YES	YES	YES	YES	YES	YES	YES
Bank-province fixed effects	YES	YES	YES	YES	YES	YES	YES
Observations	16,637	16,637	16,637	8,293	8,318	8,316	8,314
R-squared	0.28	0.28	0.28	0.353	0.354	0.364	0.360

B. *Quantity of credit extended (as a share of firm sales)*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Total sample	Total sample	Total sample	Small firms	Large firms	Cash-short firms	Cash-rich firms
Club membership	0.005** (0.002)			0.0081** (0.003)	0.0014 (0.003)	0.0074*** (0.0027)	0.0025 (0.0023)
Club membership *High hierarchy		0.007** (0.003)					
Club membership *Low hierarchy		0.004* (0.002)					
Club membership * local bank			0.035 (0.036)				
Club membership*regional bank			0.000 (0.006)				
Club membership*national bank			0.005** (0.002)				
Firm fixed effects	YES	YES	YES	YES	YES	YES	YES
Bank-province fixed effects	YES	YES	YES	YES	YES	YES	YES
Observations	15,907	15,907	15,907	7,765	8,116	8,067	7,852
R-squared	0.59	0.59	0.59	0.64	0.51	0.660	0.620

Table 7. Effect of bank entry in and exit from a club on the existence of a credit relation

This table analyzes the effect of bank entry in and exit from a club on the existence of a credit relation. In panel A the left hand side variable is the first difference in the indicator for the existence of a lending relationship between a firms and a bank between in the pool of relations that are active in either one of the two years 1995 and 1990 or in both. In panel B it is the change in the dummy that indicates whether a bank is the main lender (the bank lending the largest amount) in a given year. “Change in joint club membership” is the first difference in the dummy variables that indicates whether a bank and a firm belong in the same club; it takes value 1 if a new joint club membership is formed, 0 if there is no joint membership or no change in an existing joint membership, and -1 if a joint membership dissolves. The variables “Entry of a bank in a club” is a dummy equal to 1 if a new joint club membership is formed after a bank joins a club, 0 otherwise. “Exit of a bank from a club” is a dummy equal to 1 if an existing joint club membership dissolves after a bank exits the club, 0 otherwise. The difference between the latest two variables is equal to “Change in joint club membership”. “Change in the banker representing a bank in a club” is a dummy equal to 1 if the banker that represents the bank in a joint membership changes identity between 1990 and 1995 while the bank is unchanged. Standard errors are reported in parenthesis. ** significant at 1% or less; * significant at 5% or less.

A. Effect of bank entry in/exit from the club on the creation of a relation

	(1)	(2)	(3)	(4)	(5)
Change in joint club membership	0.091*** (0.019)				
Entry of a bank in a club		0.096*** (0.028)		0.096*** (0.028)	
Exit of a bank from a club			-0.089*** (0.027)	-0.085*** (0.027)	
Change in the banker representing a bank in a club					0.017 (0.018)
Observations	16,389	16,389	16,389	16,389	16,389

B. Effect of bank entry in/exit from the club on the probability of becoming the main bank

	(1)	(2)	(3)	(4)	(5)
Change in joint club membership	0.014 (0.009)				
Entry of a bank in a club		0.001 (0.013)		-0.000 (0.013)	
Exit of a bank from a club			-0.028** (0.013)	-0.028** (0.013)	
Change in the banker representing a bank in a club					-0.001 (0.008)
Observations	16,389	16,389	16,389	16,389	16,389

*panelreg.log***Table 8. Effect of bank entry in and exit from a club on the amounts of loans**

This table analyzes the effect of bank entry in and exit from a club on the existence of a credit relation. The left hand side variable is the first difference in the amount of loans, scaled by firm's sales, between 1995 and 1990 extended by a bank with an active relation in either one of the two years or in both. "Change in joint club membership" is the first difference in the dummy variables that indicates whether a bank and a firm belong in the same club; it takes value 1 if a new joint club membership is formed, 0 if there is no joint membership or no change in an existing joint membership, and -1 if a joint membership dissolves. The variables "Entry of a bank in a club" is a dummy equal to 1 if a new joint club membership is formed after a bank joins a club, 0 otherwise. "Exit of a bank from a club" is a dummy equal to 1 if an existing joint club membership dissolves after a bank exits the club, 0 otherwise. The difference between the latest two variables is equal to "Change in joint club membership". "Change in the banker representing a bank in a club" is a dummy equal to 1 if the banker that represents the bank in a joint membership changes identity between 1990 and 1995 while the bank is unchanged. Standard errors are reported in parenthesis. ** significant at 1% or less; * significant at 5% or less.

	(1)	(2)	(3)	(4)	(5)
Change in joint club membership	0.028*** (0.009)				
Entry of a bank in a club		0.028** (0.013)		0.028** (0.013)	
Exit of a bank from a club			-0.029* (0.013)	-0.028** (0.013)	
Change in the banker representing a bank in a club					-0.003 (0.008)
Observations	13,230	13,230	13,230	13,230	13,230

Table 9: Hierarchical level and geographical dispersion of club membership and its effect on credit relations (Sample of actual and potential bank-firm relations)

This table analyzes the differential effect of club membership as a function of the hierarchical position in the bank of the person member of the club (Panel A) and of the geographical dispersion of the bank present in the club (Panel B). Estimates in the table are obtained in the sample of actual and potential bank-firm relation; a potential relation is one that takes place between a firm and one of the banks lending in the same province where the firms is located. In the first column of each panel the left-hand side variable is a dummy equal to 1 if a potential lender actually grants a loan to the firm (zero otherwise). In the second column the left-hand side variable is a dummy equal to 1 if a bank is the main lender (i.e. holds grants the maximum share of the total loans granted to the firm), zero otherwise. In the last column it is the amount of total credit granted by each potential lender of the firm scaled by firm's total sales. Club membership is a dummy equal to 1 whenever a potential lender of a given firm is in the same social club as the firm (zero otherwise). High hierarchy of bank representative is a dummy equal to 1 if the bank representative is the bank's CEO or equivalent; medium/low hierarchical level: Director or area head, loan officer or equivalent. Local banks are those that are present in only one province; regional banks those that operate in no more than 5 provinces and national bank those that make loans in ore than 5 provinces. Overall, there are 95 provinces. The number of observations in the regressions for the quantity of credit differs from that for the linear probability estimates for two reasons: a) for some firms the value of sales is missing (2,137 observations lost); b) values of total loans granted as a share of sales unduly high (in excess of 2) have been dropped (9,332 observations lost). Standard errors are reported in parenthesis. *** significant at less than 1%; ** significant at less than 5%; * significant at 5%

A. Geographical dispersion of club membership

	(1)	(2)	(3)
	Existence of a relationship	Being the main lender	Quantity of loans granted
Club membership * local bank	0.166 (0.022)**	0.062 (0.008)**	0.007 (0.002)**
Club membership*regional bank	0.132 (0.010)**	0.034 (0.004)**	0.014 (0.001)**
Club membership*national bank	0.040 (0.005)**	0.027 (0.002)**	0.005 (0.000)**
Firm fixed effects	YES	YES	YES
Bank-province fixed effects	YES	YES	YES
R-squared	0.40	0.33	0.25
N. of Observations	282,004	282,004	270,532

B. Hierarchical level of club membership

	(1)	(2)	(3)
Variable	Existence of a relationship	Being the main lender	Quantity of loans granted
Club membership *High hierarchy	0.0760*** (0.0064)	0.0342*** (0.00270)	0.0090*** (0.0005)
Club membership *Medium/low hierarchy	0.04760 *** (0.0055)	0.0252*** (0.0023)	0.0054*** (0.0004)
Constant	0.0509 *** (0.0003)	0.0060 (0.0001)	0.0020 (0.00003)
Firm fixed effects	YES	YES	YES
Bank-province fixed effects	YES	YES	YES
R2	0.354	0.105	0.232
N. of observations	282,004	282,004	270,532

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Table 10: Club membership, total credit extended, and the structure of bank-firm relations

This table analyzes the total effect of club membership on the amount of credit received by a firm. The sample consists of all the firms in our sample. In the first three columns the left-hand side variable is the total amount of credit (scaled by sales) granted by all the banks lending to the firm. The number of bank relations is the total number of banks lending to the firm while the concentration of firm loans is the Herfindhal index of concentration of the credit granted to the firm by multiple banks. Club membership is a dummy equal to 1 whenever at least one bank is in the same social club as the firm (zero otherwise). The concentration of the local credit market is measured by the Herfindhal index of concentration of loans granted by the banks in the province while the number of banks in the local credit market is the number of banks lending in the province. The number of observations coincides with the number of firms in our sample. Standard errors are reported in parenthesis. *** significant at less than 1%; ** significant at less than 5%; * significant at 5%

	Total credit granted (as a share of sales)			Number of bank relations			Concentration of bank loans		
Club membership	0.0679*** (0.0192)			1.2830*** (0.4865)			-0.047*** (0.0104)		
Number of banks in the firm's club		0.0319*** (0.0080)			1.0336*** (0.2022)			-0.024*** (0.0033)	
At least 1 bank in the club			0.0614*** (0.0220)			0.3248 (0.5058)			-0.0263** (0.0121)
Up to 2 banks in the club			-0.0109 (0.0248)			1.0255* (0.5374)			-0.035*** (0.0107)
Up to 3 or more banks in the club log (sales)			0.0657* (0.0318)			2.5970*** (0.7110)			-0.0232** (0.0096)
	-0.0424*** (0.0065)	-0.0456*** (0.0066)	-0.0439*** (0.0066)	3.9160*** (0.2487)	3.8113*** (0.2531)	3.8023*** (0.2521)	-0.0421** (0.0037)	-0.040*** (0.0038)	-0.040*** (0.0038)
Firm score	-0.0482*** (0.0038)	-0.0480*** (0.0038)	-0.0478*** (0.0038)	-0.576*** (0.0780)	-0.5639*** (0.0763)	-0.5575*** (0.0770)	0.0078*** (0.0025)	0.0076*** (0.0024)	0.0076*** (0.0024)
Concentration of local credit market	-0.4674 (0.2644)	-0.4534 (0.2632)	-0.4460 (0.2661)	-8.0860 (6.5134)	-8.3726 (6.3646)	-7.7740 (6.3819)	0.2018 (0.1571)	0.1950 (0.1553)	0.2083 (0.1558)
N. of banks in the local credit market	2.54e-07 (0.00007)	-1.0e-5 (7.0e-5)	5.31e-06 (.00007)	-0.0003 (0.0016)	0.0004 (0.0016)	-0.0002 (0.0016)	-7.46e-07 (.00004)	3.70e-06 (.00004)	2.96e-07 (.00004)
Constant	0.9862*** (0.0688)	1.0179*** (0.0679)	0.9994 (0.0700)	-27.41*** (2.3222)	-26.83*** (2.3783)	-26.3298 (2.3373)	0.6466*** (0.0398)	0.6247*** (0.0395)	0.6272*** (0.0401)
R2	0.197	0.199	0.200	0.403	0.414	0.416	0.162	0.171	0.173
Number of observations	1,312	1,312	1,312	1,312	1,312	1,312	1,312	1,312	1,312