The determinants of firm-bank relationships in Italy: bank ownership type, diversification and multiple banking relationships

David Aristei *(corresponding author)*
Department of Economics, University of Perugia, Via, Pascoli, 20, 06123 Perugia (Italy);
email: david.aristei@unipg.it; Phone: +39 075 585 5233, Fax: +39 075 585 5299.

Manuela Gallo
Department of Economics, University of Perugia, Via, Pascoli, 20, 06123 Perugia (Italy);
email: manuela.gallo@unipg.it; Phone: +39 075 585 5255, Fax: +39 075 585 5299.

Abstract

This paper investigates the main features of the relationships between banks and nonfinancial firms in Italy. Based on detailed firm-level data, we analyse the role of firm-level characteristics, decision-making factors and local credit market indicators in shaping various aspects of corporate banking choices.
Empirical results show that young and small firms have a higher probability of relationships with local banks, confirming the advantage of local credit institutions in dealing with informationally opaque firms. Large and internationally active firms tend to establish relationships with national and foreign banks, as they are able to provide more complex banking services that are crucial to access foreign markets. Moreover, firms that are more dependent on external financing are more likely to use multiple and differentiated banking relationships, as a way to diversify external financing sources and alleviate credit constraints.

Keywords: Firm–bank relationships; Multiple banking; Bank ownership type; Corporate financing; Foreign banks.

JEL Classification: G21; G32; D22; L14; F23

1. Introduction

In Italy banks have always represented the main channel of funding for firms, as demonstrated by the share of bank loans on total financial debt of the Italian firms, which is equal to about 70% according to data from Bank of Italy (2012) and is significantly higher than that of other industrialised countries. The structure of the Italian banking system, consisting of a large number of local intermediaries and characterised by low asset concentration (De Bonis et al. 2012), as well as the characteristics of the industrial system, mainly composed of small and medium-sized enterprises, have contributed to the strong firms' dependency on bank credit, to the delay in the development of equity financing and to the limited use of financial markets for the fund raising process.

Especially in bank-based systems, the analysis of the factors shaping the relationships of banks with nonfinancial firms assumes a crucial importance and is receiving increasing attention among scholars, policy makers and practitioners. Theoretical and empirical research has highlighted that such interactions play a key role in mitigating financial market imperfections. Moreover, the structure and strength of firm-bank relationships significantly affect not only the external financing conditions and performance of firms, especially of small businesses, but also banks' profitability (Bharath et al. 2007; Berger et al. 2014). In this respect, Italy represents an interesting testing ground to analyse firm-bank relationships, as it is one of the countries with the highest presence of banks in financing business and with the highest percentage of firms with more than one bank relationship (Hernandez-Canovas and Koeter-Kant 2010). Despite having multiple banking relationships is costly for the firm, as it implies significant transaction costs, it is quite prevalent in Italy, where even small enterprises rarely rely on a single bank and tend to maintain a large number of relationships with different types of credit institutions (Detragiache et al. 2000).

Based on this evidence, we address the question of why Italian firms use more than one bank and diversify relationships across bank ownership types. In particular, we investigate the main features of firm-bank relationships in Italy and test different hypotheses on the determinants of

firms' choices of bank type, diversification across relationship types, multiple banking and number of relationships. Using data from the Italian component of the "European Firms in a Global Economy" (EFIGE) survey, we firstly analyse the importance of bank ownership on firm-bank relationships, by assessing which types of firms establish relationships with specific types of banks (namely, local, national and foreign banks). As in Berger et al. (2014) and Ongena and Şendeniz-Yüncü (2011), we investigate firm-bank matching and test for the existence of any correspondence between firm characteristics and bank ownership types. We further analyse the factors affecting firm's decision to maintain multiple relationships diversified between at least two different bank types. This analysis allows us to obtain insights on whether multiple banking and diversification of bank types are mainly related to firm's attempt to mitigate hold-up problems and avoid financial constraints or to fulfil diversified banking and financial service needs that cannot be provided by a single type of bank. Moreover, we assess whether the structure of the Italian banking system contribute to determine corporate banking choices. In this respect, larger nationwide-active domestic banks and foreign banks operating in Italy are expected to support corporate financing and growth, especially when firms need complex and specialised financial instruments to support their foreign trade and innovation activities (Bronzini and D'Ignazio 2012). On the other hand, we expect that small local banks play a crucial role for small business lending due to their ability to serve informationally opaque small firms, capitalising on information gathering through repeated interactions with entrepreneurs (Infante and Rossi 2013).

Our study further contributes to identify the main determinants of the number of banking relationships. By exploiting the information richness of our dataset, we are able to test the empirical validity of the main hypotheses formulated in the literature on the role exerted by firm's information opacity, ownership characteristics and external financial dependence and by the stability and competitiveness of local banking systems.

The remainder of the paper is organised as follows. Section 2 reviews the literature on the main aspects of firm-bank relationships. Section 3 provides an overview of the Italian banking sector. Section 4 presents data and provides a descriptive analysis of corporate banking choices in Italy, while Section 5 defines the empirical methodology. In Section 6 we present the main empirical results, and Section 7 concludes.

2. Literature review

In our analysis we distinguish between three defining aspects of firm-bank relationships: the choice of the type of banks with which the firm maintains relationships, the diversification among different types of banks and the number of banking relationships. We motivate our investigation by firstly discussing the theoretical and empirical contributions related to each of these aspects, mainly focusing on studies adopting a firm's perspective to the analysis of firm-bank relationships.

2.1 The analysis of firm-bank relationships: information asymmetries and risk aversion

Firm-bank relationship presupposes the provision of lending, or of other financial services, by an intermediary, which in turn needs to gather information about its borrowers and to assess the profitability and the riskiness of the investment (Boot 2000). This definition includes two important aspects of firm-bank relationship: informational asymmetries, which are central to the literature on financial intermediation (see Diamond (1984) and Bhattacharya and Thakor (1993) for a review) and risk aversion. The relationship banking approach is direct at resolving problems of asymmetric information through the closeness between bank and firm, which facilitates intermediaries in collecting and monitoring information (Elsas 2005). In a context of costly information gathering and processing, a single bank relationship may represent the optimal choice for firm financing (Sharpe 1990; Rajan 1992). However, a sole bank would have a monopolistic management of private information about its borrowers, who may be exposed to "hold-up" costs (Ongena and Smith 2000). So, multiple banking may be the result of firms' attempt to reduce rents extraction problems implied

by a single-bank relationship (Von Thadden 1992; Elsas et al. 2004), to protect themselves against premature withdrawal of banking services and to avoid the loss of their unique source of bank financing in case of default or distress of their relationship bank (Hubert and Schäfer 2002). Thakor (1996) also finds that firms ask for financing from multiple banks with the aim of reducing the probability of being denied credit. On the other hand, from the bank's perspective, multiple bank lending may be the result of a risk averse attitude of banks and is more likely when monitoring costs and difficulties faced by banks in assessing their customers are higher (Carletti et al. 2007). In the case of large firms, multiple banking may be also explained by the desire of banks to diversify firm-specific credit risk (Detragiache et al. 2000). From another perspective, a single bank is often unable to satisfy all firm's financial needs, especially when firms are large and geographically dispersed, operate in international markets and require assistance in relation to specialised investment products. Non-exclusive banking relationships involving large, multimarket and non-local intermediaries may thus represent a solution to the increasingly complex financial needs of large corporations (Berger et al. 2001; Berger et al. 2008).

Degryse and Ongena (2002) also point out that firm-bank relationships may in turn affect the structure of banking markets. They suggest that, in countries where firms maintain many bank relationships, the entrance of foreign banks may occur through direct investment; conversely, in countries where firms maintain few and strong relationships, foreign banks may only enter successfully through mergers and acquisitions.

2.2 Corporate choice of bank ownership types: size, scope and nationality

Small firms are more informationally opaque in banking relationships and mainly provide "soft" information that may be difficult to quantify and to transmit. On the contrary, large firms are more transparent and mainly provide "hard" quantitative information, which is more objective and easier to manage and process. Most of the early literature has provided support to the conventional paradigm, according to which small banks are better able to establish strong relationships with

small firms, while large banks prefer to serve large firms (Berger and Udell 2002; Stein 2002). Recent studies challenge this paradigm, claiming that large banks are able to serve opaque firms, against fixed asset collateral (Berger and Udell 2006) or using credit scoring technologies (Berger et al. 2005a; Frame et al. 2004). More recently, Berger et al. (2014) provide evidence confirming that the conventional paradigm have lost part of its value over time, as technological progress and deregulation have made it easier for large banks to serve small firms.

The matching between firms and banks according to their size has been also found to differ across countries. Berger et al. (2005b), Cole et al. (2004) and Strahan (2008) find that large firms in the US borrow from large banks mainly relying on hard information. Berger et al. (2008), based on a sample of Indian firms, point out that relatively transparent firms are more likely to establish relationships with foreign banks and tend to have more banking relationships than other firms. Conversely, Ongena and Şendeniz-Yüncü (2011) have shown that small firms in Turkey are more likely to deal with large, domestic, private banks than with their small counterparts.

With regards to the geographic location of banks, some studies have shown that lending distance has increased over time: the number of firms (including smaller ones) having credit relationships with foreign banks or non-local banks has significantly grown (Petersen and Rajan 2002; Brevoort and Hannan 2006). However, Brevoort and Wolken (2009) have shown that geographic proximity is still an important factor in the US banking system and that financial services provided to small businesses tend to be supplied mainly by local intermediaries. Moreover, Berger et al. (2008) suggest that relationships with foreign credit institutions are weaker, because foreign banks have fragile ties with the host country, independently from their financial condition. Related literature also points out that foreign banks in both developed and emerging economies tend to cut off lending more frequently and apply higher loan fees and rates than domestic banks, especially during crisis periods (Beck et al. 2011; Popov and Udell 2012; Claessens and Van Horen 2014). As discussed in Berger et al. (2005b) and Ongena and Şendeniz-Yüncü (2011), foreign banks may also lack the organizational competencies to successfully engage

small and young firms, characterised by higher information opacity. In this respect, Giannetti and Ongena (2012) show that foreign banks tend to establish relationships mainly with large and foreign-owned firms in developing countries. Mian (2006) also points out that foreign banks' in Pakistan tend to avoid lending to informationally opaque firms as the distance between headquarters and local branches (i.e., functional distance) increases. Alessandrini et al. (2009) find that in Italy functional distance is positively associated with the probability of firms being rationed, whereas operational proximity does not significantly affect credit availability. Coherently, Presbitero et al. (2014) find that the credit crunch during the financial crisis has been more severe for Italian firms operating in credit markets populated by nationwide-active and distantly managed banks rather than by local banks.

2.3 Multiple Banking, number of relationships and bank type diversification

Most of the literature examining the optimal number of banking relationships begin by focusing on the reasons behind the choice of having single or multiple relationships (see Neuberger and Räthke (2009) for a review). According to these studies, multiple banking entails significant transaction costs for the firm and may involve adverse selection problems: banks reduce the amount of loans granted, which are split among more intermediaries, and also invest fewer resources in information processing and screening borrowers compared to those they would have invested for a single long-term relationship (Tirri 2007). This behaviour may disadvantage best investment projects and increase the overall risk into the financial market, maintaining average costs of credit high. However, firms may choose to bear the costs of multiple banking when one bank is not able to fully respond to their financial needs. Larger firms, demanding a large set of financial services, tend to maintain a higher number of banking relationships (Ongena and Smith 2000; Neuberger and Räthke 2009). Detragiache et al. (2000) argue that firms use multiple banking to diversify the risk that their bank is affected by exogenous liquidity shocks and, based on a sample of Italian small and medium enterprises, find that the optimal number of banking relationships is affected by the stability of the banking sector, with a higher incidence of multiple banking relationships in more fragile

environments. Von Rheinbaben and Ruckes (2004) show that highly rated firms tend to deal with many banks and disclose little private information, resorting to transaction-based relationships based on "hard" information. Conversely, firms with low credit rating have to disclose confidential (i.e., "soft") information to reduce creditors' uncertainty on their quality and have relationships with fewer banks to limit information leakages. Carletti et al. (2007) also document a greater use of multiple bank lending when investment projects are large relative to bank size, when firms are less profitable, and when monitoring costs are high due to poor financial integration, strict regulation and judicial inefficiency. Moreover, Harhoff and Korting (1998) and Neuberger et al. (2008) and find that the number of relationships increases with firm's age and size, supporting the "one-to-few" hypothesis, according to which more informationally opaque firms tend to borrow from only one bank and, when multiple banking occurs, it involves a relatively limited number of banks.

In a cross-country study, Ongena and Smith (2000) show that single banking is relatively uncommon for large corporations in most countries; moreover, they find that firms maintain more banking relationships in countries with inefficient judicial systems and poor enforcement of creditor rights. While single or "one-to-few" bank relationships are preponderant among SMEs in US, UK and Germany (Guiso and Minetti 2010; Harhoff and Korting 1998), they are rather unusual in Italy and in other southern European countries (Tirri 2007). Foglia et al. (1998), D'Auria et al. (1999), Detragiache et al. (2000), Guiso (2003) and Bonaccorsi di Patti (2004) extensively document that Italian small and medium-sized firms rely on multiple banking and engage in a large number of banking relationships.

As pointed out by Berger et al. (2014), the incentives for multiple banking can be extended to diversification across relationship types: firms may be more likely to diversify bank types to protect against the costs of a single relationship and to fulfil all the financial service needs necessary for their domestic and international activities. Elsas et al. (2004) propose a theoretical model according to which firm's optimal debt structure is a multiple and asymmetric bank financing, characterised by one main relationship lender plus a multitude of small bank lenders. Berger et al. (2008) show that firms

having relationships with foreign banks tend to diversify relationships across bank ownership types more than others. At the same time, they also demonstrate that firms with relationships with state-owned banks are relatively unlikely to maintain multiple banking relationships and to diversify across ownership types, and tend to interact with a smaller number of intermediaries.

3. The Italian banking system and its role in firms' financing

Several distinctive features of both banking and industrial systems contribute to make the Italian case an ideal testing ground to analyse the determinants of firm-bank relationships. The structure of the Italian banking system is made up of four main types of credit institutions: few large banking groups active also abroad, an intermediate segment consisting of relatively smaller national banks, a large number of small intermediaries specialised in financing local economies, and foreign-controlled bank branches and subsidiaries. This structure derives from a complex reform process that started in early 1990s and was aimed at modernising the banking system and at facilitating its full integration into the European market by removing barriers to branch expansion and to foreign bank entry. Table 1 provides comparative banking statistics for Italy and other EFIGE countries in 2008. As it can be noticed, the Italian banking system is composed by a large number credit institutions, second only to Germany among EU countries (ECB 2013), but it is small in terms of total assets compared to France, Germany and the UK. Thus Italian banks tend to be relatively small in terms of assets and number of employees; moreover, the system is characterised by a low degree of concentration in terms of both Herfindahl index for credit institutions and share of total assets of the five largest banks. With respect to the composition of the system, medium-sized banks represent a considerable share (23.4%) of aggregate assets, differently from France and the UK. Foreign-controlled subsidiaries and branches represent a non-negligible share of the Italian banking system and amount to the 8.6% of total assets, coherently with Germany and Spain.

[Insert Table 1 here]

This widespread banking system reflects the traditional firms' ownership structure and the related financing choices. The Italian industrial system is characterised by the prevalence of small and medium-sized firms, typically family-owned, which strongly depend on bank loans to finance their investments projects and rarely turn to equity finance (Bartoli et al. 2014). Italian entrepreneurs are also traditionally very reluctant to take equity partners, fearing undesired external influence and possible loss of control (Martin et al. 2002). In this respect, the weight of bond issues on total debt for non-financial firms in 2008 is less than 7%, approximately half of that observed in France and the UK (Bank of Italy 2012). Furthermore, the less developed environment for entrepreneurial innovation and the bank-centred capital market system in Italy have also led to a shortage of specialised suppliers, like venture capitalists, and to a limited use of financial markets for the fund raising process (Fini et al. 2009; Berger and Shaeck 2011). All these structural characteristics have significantly contributed to shape the specific features of firm-bank relationships in Italy, as it will be discussed in Section 4.2.

4. Data

4.1 Data sources

We exploit unique firm-level data from the "European Firms in a Global Economy" (EFIGE) dataset, which consists of representative samples of manufacturing firms (with more than ten employees) across seven European countries (Austria, France, Germany, Hungary, Italy, Spain and the United Kingdom). To the aims of this study, the EFIGE database provides detailed cross-sectional data on firms' financial structure and banking relationships, as well as on ownership and management, workforce, investment, technological innovation and R&D, international activities, market structure and competition. The survey has been carried out in early 2010 and the questionnaire is mostly focused on 2008, although some questions refer to firms' behaviour in the last year (2009) or in the last three years (2007-2009). In our empirical analysis we focus on the subsample of 3021 Italian firms and, after

excluding observations with missing financial statement data, our estimation sample reduces to 2928 firms.[1] The sample mainly consists of small and medium-sized enterprises (SMEs) (i.e., those with less than 250 employees and with total assets lower than 43 million euros) and small enterprises (i.e., those with less than 50 employees and with total assets lower than 10 million euros), which represent 93.5 and 75.3 percent of the estimation sample, respectively.[2]

4.2 Firm-bank relationships: variable definition and descriptive analysis

Information on firm's relationships with financial institutions is derived from Section F of the EFIGE questionnaire. Based on question F8 ("*What type of bank/credit institution does the firm use?*"), we identify firms having at least one relationship with a domestic local (*Local Bank*), domestic national (*National Bank*), and/or foreign (*Foreign Bank*) bank to support their domestic and international activities.[3] This question also allows us to define three binary indicators for firms that diversify their relationships across banks of different ownership types. The first is a general indicator equal to 1 for firms that use at least two different bank types (*Any diversification*). The other two indicators allow distinguishing firms that diversify relationships only among domestic banks (*Local-National*) from those using domestic banks (local and/or national) together with foreign intermediaries (*Domestic-Foreign*). This latter indicator allows to separately analyse the determinants of bank ownership type diversification for firms that use foreign-owned banks to

[1] See Altomonte and Aquilante (2012) for more detailed information on the EFIGE dataset, with a specific emphasis on sample definition, survey strategies and statistical representativeness of the collected data. Altomonte et al. (2012) also provide a discussion on the characteristics of the restricted sample (i.e., the one containing firms for which balance sheet data are available) and find no major differences with respect to the unrestricted sample, confirming its representativeness of the entire universe of Italian manufacturing firms with more than 10 employees.

[2] The use of EFIGE survey data provides detailed information on a very rich set of firm characteristics and behaviours and allows us to analyse several key features of corporate banking choices and assess the importance of firms' decision-making process in determining firm-bank relationships. It is worth remarking that the use of loan-level data, obtained from national credit registers or from commercial sources (e.g. the Thomson Reuters DealScan LPC database), would have allowed to analyse the dynamics of firm-bank relationships, instead of the static snapshot provided by cross-sectional surveys. However, it would have significantly reduced the availability of detailed information on firm-level characteristics and distorted the representativeness of the sample, leading to a severe underrepresentation of small and medium-sized firms (Ferreira and Matos 2012).

[3] Despite the classification adopted in the EFIGE survey is not directly based on the dimension of banks, for Italy it still allows to distinguish small domestic credit institutions (i.e., mutual banks and small cooperative banks), characterised by strong territorial ties with local economies and located in closer proximity to firms, from large nationwide-active multimarket banks (i.e., commercial banks established as joint stock companies).

integrate services and financing provided by domestic credit institutions, especially as a way to support and facilitate their international trade activities (Ricci and Trionfetti 2012). Responses to question F9 ("*Number of banks used in total*") are used to define both a binary indicator of multiple banking relationships (*Multiple relationships*) and a separate count variable for the actual number of banking relationships (*Banks Number*).[4]

Table 2 shows various combinations of firm's banking relationships by bank ownership type for five European countries. The use of at least one domestic (local or national) bank is the most widespread choice in all the countries. In Italy, observed corporate choices of bank ownership types reflect the composition of the banking sector, which is characterised by a strong presence of local intermediaries. Relationships with domestic banks, and especially the joint use of local and national credit institutions (48.76%), are the most common choices. The use of foreign intermediaries has recently gained importance, reaching a percentage (8.58%) in line with the European average, as a result of the evolution process of the Italian banking and financial system. Only France and the UK show a higher share of firms having relationships with foreign banks. Differently from Italy, Germany is characterised by a limited role of domestic national banks compared to local banks: more than 56% of the firms in the sample have relationships exclusively with local banks.[5] Foreign banks play only a small role in Germany: the percentage of firms having relationships with foreign intermediaries is the lowest among the countries considered (6.38%).

[Insert Table 2 here]

Table 3 shows that Italy and Spain are characterised by the highest frequencies of multiple relationships. Respectively 93.19 and 94.11% of the firms in these countries have relationships with

[4] It is worth remarking that questions on firm's financial structure and relationships with banks included in Section F of the questionnaire alternately refer to 2008, 2009 or to the whole 2008-2009 period. Since the reference period of questions F8 and F9 is not explicitly specified, we thus consider them as broadly referred to the 2008-2009 period.
[5] As highlighted by Hüfner (2010), local intermediaries in Germany are mainly regional commercial banks, with a strong local presence and often engaged in special activities like housing finance, and are generally larger than Italian local banks.

more than one bank, compared to 79.18 and 79.65% of German and French firms and to only 28.68% of UK firms. Focusing on diversification of bank types conditional on multiple banking, French firms have the highest propensity to diversify among bank types (71.99%) and, similarly to firms in the UK, use diversified relationships with foreign intermediaries to a greater extent than firms in the other countries analysed. Italian and Spanish firms diversify banking relationships primarily between national and local banks (61.09% and 40.09%, respectively), while the percentages of firms choosing the domestic-foreign combination are the lowest among the countries considered (8.85% and 8.57%, respectively). Significant cross-country heterogeneities can be pointed out also in the number of banking relationships: firms in Italy and Spain use an average of four relationships and are characterised by the largest variation in the number of banks, differently from the UK where firms hold on average only one relationship.[6]

[Insert Table 3 here]

4.3 Explanatory variables and main hypotheses

The empirical literature has extensively investigated the impact of firm-level characteristics and market factors on various aspects of firm–bank relationships (see Degryse et al. (2009) for a review). All the empirical models considered in our analysis control for firm size (proxied by firm's total assets) and age, both expressed in logarithmic terms to reduce their high positive skewness. Firm size is expected to affect the number and type of banking relationships for different reasons. Detragiache et al. (2000) suggest that large firms may have to rely on multiple banking to satisfy their larger borrowing requirements and to allow banks to diversify firm-specific credit risk. Moreover, firm “complexity" increases with firm size and larger firms need to rely on several banks to satisfy

[6] In an Online Supplementary Appendix we provide a descriptive analysis of banking choices of SMEs and small firms. As it can be noticed from Table S1, more than 92 percent of small firms in Italy rely on multiple banking (60.7% of which diversify among bank types), maintain more than three relationships on average and exhibit a rather large variation in the number of banks, coherently with the findings of previous studies on Italian data (Detragiache et al. 2000; Guiso 2003). The Online Appendix is available at: http://www.stat.unipg.it/daristei/REJF_online_appendix.pdf.

their banking needs (e.g. to support their commercial relations or productive activities in different geographic areas). The evidence on the effect of firm age is rather mixed. On the one hand, older firms, being better known, may enjoy more stable credit facilities and banking relationships and, consequently, may be less dependent on multiple banking (Detragiache et al. 2000). On the other hand, to the extent that they are less informationally opaque, they may maintain a higher number of relationships (Neuberger and Räthke 2009).

We also account for differences in firms' governance practices and control for firm's first shareholder nationality (*Foreign-owned*), ownership concentration (proxied by the share of firm's equity owned by the largest shareholder) and (foreign or national) group membership (*Group*). Two additional variables further describe the type of management and respectively indicate whether a significant share of firm's managers is related to the controlling family (*Family managed*), an aspect that characterises many Italian companies, and whether managers have decision-making autonomy in some business areas (*Decentralised management*). These variables are expected to affect firm-bank relationships in different manners: firms with a less concentrated ownership and managed in a decentralised manner are expected to have more frequent banking relationships with foreign banks and maintain a greater number of banking relationships (Berger et al. 2008). Conversely, firms belonging to groups, being able to have access to intra-group financial resources or to a intra-group liquidity management, are less dependent on bank financing and are thus expected to be associated with more reliance on single banking and with a smaller number of relationships (Detragiache et al. 2000). Moreover, foreign-owned firms tend to engage home country banks, as these are better able to provide the services that they need (Berger et al. 2003; Giannetti and Ongena 2012), and establish relationships with fewer intermediaries than domestic firms (Ongena et al. 2011).

Another set of explanatory variables describes foreign trade participation, investment in research and development and innovation activities. The first variable is expected to affect positively the relationship with large domestic and foreign banks, as well as the likelihood of multiple banking (Berger et al. 2014). Previous studies (see Neuberger et al. 2008) have often

associated R&D investment and innovation activities with multiple banking; however, Yosha (1995) suggests that innovative firms with valuable proprietary information may prefer single banking as information leakages to competitors are more likely with multiple lenders.

To assess the role of firm's performance and financial position on banking relationships, we consider several financial statement indicators: *Return on assets* (ROA), as a gauge of firm profitability; *Debt ratio*, equal to the ratio of total liabilities on total assets; *Liquidity ratio*, which allows to assess firm's ability to use its most liquid assets to cover short-term liabilities; and *Short-term debt*, equal to the share of current liabilities (typically with a one-year maturity) on total liabilities as a measure of debt composition.[7] Conditional on other firm characteristics, we thus expect that more profitable firms, having a greater credit capacity, maintain a lower number of banking relationships and are more likely to have relationships with foreign banks than firms perceived as riskier (Degryse and Ongena 2001; Berger et al. 2014). Similarly, highly indebted and less liquid enterprises are expected to use a larger number of relationships (Miarka and Tröge 2005). With regard to firm's indebtedness, we also focus on bank financing by introducing a dummy for firm's dependence on short and/or medium long-term bank debt (*Bank Financing*).

We further control for local credit market characteristics to account for differences in economic and financial development among Italian regions. In particular, we use information provided by the Bank of Italy on the presence of banks (differentiated by dimension and ownership type) in each region (*Large Bank Branches*, *Local Bank Branches* and *Foreign Bank Branches*), the amount of loans granted (*Total Lending*), the level of competition and concentration in the regional banking system (*Branch Density* and *HHI*) and the quality of credit granted, measured by the ratio between the number of new loans that are overdue and the stock of existing loans (*Decay Rate*). Following Detragiache et al. (2008), we also control for the efficiency of the judicial system at the regional level. We proxy legal enforcement and efficiency by means of the backlog of civil trials pending,

[7] To reduce potential endogeneity issues, all financial statement indicators are included in the models as average values over the two years (2006-2007) preceding the reference period of questions related to firm's financial structure and relationships with banks..

normalised by the number of incoming cases, assuming as in Fabbri and Padula (2004) that the costs faced by lenders to enforce loan contracts increase as the congestion of the judicial system rises. We expect that the use of multiple banking relationships and the likelihood of bank type diversification increase in more competitive and less concentrated banking systems, as well as when the quality of credit granted and legal enforcement decrease. In the first case diversification could be aimed at keeping down the cost of credit, while in the second case it could be the result of banks' attempt to spread the risks associated with credit exposures.

Finally, based on question F12 of the survey ("*Which factors are key in the choice of a main bank*"), we consider firm decision factors related to competitiveness of funding and services offered (*Price*), location of the bank (*Location*), bank's availability of international networks (*International Networks*) and whether or not the bank has flexible procedures (*Flexible Procedures*). As shown by Ongena et al. (2011), seeking competitive and more affordable banking services may facilitate multiple relationships and encourage competition between intermediaries; conversely, firms' attention to location factors and bank proximity may represent a brake on the lookout for new banking relationships. At the same time, we expect these elements to be important in shaping relationship types and in particular firms' choice of domestic banks.

Table A1 in the Appendix provides complete variable definitions and sample statistics.[8]

5. Empirical methods

5.1 The choice of bank ownership type

We firstly focus on corporate choice of bank ownership type. Differently from Berger et al. (2008), who analyse the determinants of banking relationship types by means of univariate probit models, we consider a multivariate binary choice model. This allows to properly model non-exclusivity of bank type choices (i.e., the choice of a particular bank type does not preclude to establish

[8] Empirical models also include sectoral fixed effects to control for industry-level heterogeneities in banking choices.

relationships with alternative types) and to account for correlations between unobservables affecting each bank ownership type choice.[9] Formally, we consider a trivariate probit model:

$$\begin{aligned} &y^*_{im} = x'_{im}\beta_m + \varepsilon_{im}, \\ &y_{im} = 1 \text{ if } y^*_{im} > 0 \text{ and 0 otherwise} \end{aligned} \qquad (1)$$

with $m = 1, ..., 3$ and where y_{im} represents outcomes of firm's bank type choices, x_{im} are $k \times 1$ vectors of explanatory variables, β_m are conformable parameters vectors and the error terms ε_{im} are distributed as standard multivariate normal with covariances $\rho_{jk} = \rho_{kj}$ (for $j,k = 1, ..., 3$ and $j \neq k$). For each firm we observe whether it has any relationship with a local (LB_i), national (NB_i) and/or foreign (FB_i) bank: each bank type combination can be represented by a 3-tuple of values of the three-element vector (LB_i, NB_i, FB_i) and has a probability given by:

$$P(LB_i, NB_i, FB_i) = P(y_{i1}, y_{i2}, y_{i3} \mid x'_{i1}, x'_{i2}, x'_{i3}) = \Phi_3(k_{i1}x'_{i1}\beta_1, k_{i2}x'_{i2}\beta_2, k_{i3}x'_{i3}\beta_3; R) \qquad (2)$$

where $\Phi_3(\cdot)$ is the trivariate cumulative standard normal distribution, $k_{im} = 2y_{im} - 1,$ are sign variables (equal to 1 or –1 depending on whether the dependent variable is equal to 1 or 0), and the covariance matrix R has off-diagonal elements $R_{jk} = R_{kj} = k_{ij}k_{ik}\rho_{jk}$ (for $j,k = 1, ..., 3$ and $j \neq k$). Joint probabilities in (2) are the basis of the log-likelihood function of the trivariate probit $L = \sum_{i=1}^{N} \log \Phi_3(k_{i1}x'_{i1}\beta_1, k_{i2}x'_{i2}\beta_2, k_{i3}x'_{i3}\beta_3; R)$, which can be evaluated using maximum simulated likelihood methods (Cappellari and Jenkins 2003).

We hypothesise that firms base their bank type choices on their own characteristics and on local banking market factors, which push them towards a certain "matching" bank type. Due to the dominant role of SMEs within the Italian industrial system and the widespread presence of small local financial intermediaries, we expect that bank proximity significantly affects corporate banking choices and that the matching between firms and banks, according to their size, is much stronger in Italy than in other countries (Ongena and Şendeniz-Yüncü 2011). With respect to credit market

[9] The use of multinomial models, as in Ongena and Şendeniz-Yüncü (2011), is also not appropriate since they require a set of mutually exclusive and exhaustive alternatives.

factors, we not only control for the overall lending activity and level of competition of the banking sector at the regional level, but also for its composition. As in Berger et al. (2008), we thus include the number of branches of large nationwide-active banks, local banks and foreign banks in each region. Finally, the baseline specification is extended to assess the role of the decision factors discussed in Section 4.3.

5.2 Bank type diversification and number of banking relationships

We further investigate the determinants of bank ownership type diversification. In particular, we consider binary choice models for firm propensity to maintain relationships with any two different ownership types (*Any diversification*), with different domestic banks only (*Local-National*) and with foreign intermediaries together with any domestic bank (*Domestic-Foreign*). As diversification of bank type is observed only conditionally on having multiple banking relationships, a problem of non-random sample selection may arise. We thus consider a bivariate probit model with sample selection to test for the presence of selectivity bias on firms' bank diversification choices; formally:

$$\begin{cases} \textit{Multiple Relationship}_i = S_i = \mathbf{1}(z_i'\alpha + u_i > 0) \\ \textit{Diversification}_i = y_i = \mathbf{1}(x_i'\beta + \varepsilon_i > 0) \end{cases} \tag{3}$$

where the first equation is the selection equation and the outcome variable y_i is observed only when $S_i = 1$. The errors u_i and ε_i are assumed to follow a standard bivariate normal distribution with correlation ρ. Within this framework, selectivity operates through error correlation: if $\rho \neq 0$ a univariate probit for y_i leads to inconsistent estimates. Conversely, when $\rho = 0$ model (3) can be consistently estimated by means of a probit for the probability of multiple banking and a separate probit for the probability of bank type diversification, estimated on the sub-sample of firms with multiple relationships.

The empirical specification of model (3) includes the same firm-level variables used in the analysis of bank type choice, with additional controls for firm's liquidity condition and debt

composition, while regional characteristics mainly focus on the dimension, concentration and competitiveness of the local banking industry. As pointed out by Berger et al. (2008), a more concentrated system may reduce the incentive for multiple banking to avoid hold-up problems; at the same time, diversification of bank types may increase when the local system is less concentrated and when the degree of competition is higher, as more banking choice options are available to the firm. In this respect, the structure of the banking market is expected to significantly contribute to the high fragmentation of firm-bank relationships in Italy (D'Auria et al. 1999). At the same time, given the evidence that the multiple banking phenomenon is widespread even among small firms, we may also expect that several factors related to firm's ownership structure and management would have a reduced impact on the likelihood of multiple banking and on the number of relationships, compared to previous evidence for other countries (Berger et al 2008; Ongena et al. 2011).

To improve idenfiability of model (3), we use a self-assessed indicator for the use of quantitative information by intermediaries to assess firm's creditworthiness (*Hard Information*) as an identifying instrument and include it only in the multiple relationships equation.[10] Coherently with Von Rheinbaben and Ruckes (2004), the choice of this exclusion restriction rests upon the assumption that firms mainly providing hard information tend to have more banking relationships than firms disclosing a substantial amount of private soft information, which instead are more likely to engage few intermediaries to restrict dissemination of confidential information. However, conditional on multiple banking, the use of transactional lending technologies can be assumed to not significantly affect firm's propensity to diversify across bank types.

We complete our assessment of corporate banking choices by analysing the determinants of the number of relationships. Following Neuberger et al. (2008) and Gómez-González and Reyes (2011), we consider a negative binomial (NB) regression model, which extends the Poisson model by allowing for overdispersion (i.e., for the variance to be greater than the mean) in the dependent

[10] This indicator is based on the question "*Which type of information does the bank normally use/ask to assess your firm's credit worthiness?*", which allows seven alternatives with the possibility of multiple answers. Specifically, it equals one when firm chooses one of the following modalities: "*Balance sheet information*", "*Business plan and firms' targets*", "*Historical records of payments and debt service*".

variable. The NB model can be derived by a mixture distribution approach, assuming that the count random variable y, conditional on x_i and μ_i^*, follows a Poisson distribution:

$$f(y_i \mid x_i, \mu^*) = \frac{\exp(-\mu_i^*) \cdot \mu_i^{*y_i}}{y_i!}, \quad y_i = 0, 1, 2, ... \tag{4}$$

where $\mu_i^* = E(y_i \mid x_i) = \exp(x_i'\beta + v_i) = \mu_i \cdot \exp(v_i) = \mu_i \cdot h_i$ and h_i is assumed to follow a Gamma distribution with $E[h_i] = 1/\alpha$ and $Var[h_i] = \alpha$, so that $\mu_i^* \sim Gamma(1/\alpha, \alpha\mu_i)$ and thus:

$$Var(y_i \mid x_i) = \mu_i(1 + \alpha\mu_i) \tag{5}$$

where α is the overdispersion parameter. The appropriateness of the NB specification can be checked by means of a modified LR test for the significance α.

Baseline and extended models for the number of relationships include the same firm controls, local market characteristics and decision factors considered in the analysis of the likelihood of multiple banking and bank type diversification. To assess whether any differences in the determinants of the number of banks can be pointed out for firms with multiple relationships, we also consider a truncated NB model with truncation point at 1 (see Cameron and Trivedi 2013).

6. Results

6.1 Firms' choice of bank ownership type

Table 4 reports estimated marginal effects from the trivariate probit model of bank ownership type, for the baseline model (columns 1, 2 and 3) and for the specification including firms' decision-making factors (columns 4, 5 and 6).

Before commenting marginal effects, we analyse the patterns of pair-wise correlations between the error terms (ρ_{jk}), reported at the bottom of the Table. The unobserved factors that affect firm's choice of local banks are negatively correlated with those affecting the use of domestic national banks, revealing the existence of significant differences in firms' preferences for these two bank types.

Conversely, unobservables affecting the choice of a foreign bank are positively correlated with those affecting local banks choice, while no significant correlation can be pointed out with respect to the choice of domestic national banks. Testing the joint significance of the correlation coefficients clearly leads to reject the null hypothesis of independent error terms, supporting the necessity of accounting for the interdependence of bank type choices. Ignoring such correlation structure, and modelling firms' decisions by means of independent univariate probits as in Berger et al. (2008), would lead to biased and inefficient results.

[Insert Table 4 here]

Estimated marginal effects show that firm's age significantly affects the type of banking relationships: older enterprises tend to use larger national or foreign banks, while younger firms are more likely to have relationships with local intermediaries. Similarly to Berger et al. (2008), a one percent increase in firm size raises the probability of having relationships with domestic national banks and foreign banks by 5.6 and 2 percentage points, respectively. This evidence could indicate that larger companies, characterised by greater organisational complexity, tend to establish relationships with larger banks that can effectively satisfy their increasingly complex financial needs, in line with the findings of Ongena and Şendeniz-Yüncü (2011) and Ricci and Trionfetti (2012). At the same time, it can be also interpreted in light of the fact that large non-local and international banks are more likely to shun small business relationships or withdraw critical services to opaque firms than local intermediaries.

The estimated effects of variables related to firms' governance are consistent with the expectations. Coherently with the findings of Detragiache et al. (2000), Berger et al. (2008) and Giannetti and Ongena (2012), foreign-owned firms, as well as companies adopting a decentralised management structure and in which the influence of the controlling family is less important, have a 7.6, 2.6 and 1.4 percentage points higher likelihood of maintaining a relationship with a foreign

intermediary, respectively. Moreover, the probability of choosing a local bank significantly reduces as ownership concentration increases.

Foreign trade participation raises the probability of establishing relationships with national and foreign banks by 5 and 4.7%, respectively. This is consistent with the evidence in Ongena and Şendeniz-Yüncü (2011) that these intermediaries are able to offer additional banking services (like advisory or in loco support) that are crucial for firms' international activities. Investing in R&D and having introduced any innovation are linked to the choice of dealing with larger national banks, while they do not affect the likelihood of maintaining relationships with local banks. Innovative firms also have a 1.5% higher probability of engaging foreign banks. This evidence highlights the increasingly relevant role played by larger non-local and foreign intermediaries in supporting investment activities of innovative firms, as already documented in Ayyagari et al. (2012), due to their ability in satisfying the complex financial needs of high-tech firms by providing additional innovative services, such as those related to venture capital and private equity (Arnone et al. 2015).

The use of any bank debt significantly increases the likelihood of choosing local and national banks, indicating that firms more dependent on bank financing mainly turn to domestic intermediaries. In particular, the marginal effect of this variable on the probability of using small local intermediaries is equal to 12.9% and is almost double than that on the choice of national banks (6.4%): this highlights the key role played by local banks in providing financial support to small and medium-sized firms in Italy. This variable does not affect the choice of foreign banks, suggesting that the use of non-domestic intermediaries is not guided by firms' financing needs, but it is rather related to the need of additional financial services and support for domestic and international activities.

The analysis of financial statement indicators shows that firm' profitability, despite exerting a positive and significant effect on the choice of all bank ownership types, has the highest impact on the probability of maintaining relationships with national banks (14.6%). Confirming the previously

discussed evidence, firms with a high debt-to-assets ratio tend to focus on relationships with domestic intermediaries and in particular with local banks, which are more likely to support the local economy and less likely to withdraw credit than other bank types (Berger et al. 2014).

Focusing on market factors, we notice that the choice of foreign banks is not affected by the structure and competitiveness of local banking systems. Conversely, regional branch density exerts a negative and significant (at the 1 percent level) effect on transactions with national banks, while the effect on relationships with local banks is positive and significant. As the degree of spatial competition of the local banking market increases firms are more likely to maintain relationships with small local banks, while they have a lower probability of using national banks. The composition of the local banking system has the expected impact on firm's choice of domestic banks: as the number of large bank branches in the region increases, firms are more likely to have relationships with national banks and less likely to use local banks, and vice versa for the number of local bank branches.

As in Ongena et al. (2011), we extend the empirical specification to assess the role of firms' decision factors on the choice of bank type. Results confirm the findings of the baseline model and show that decision-making factors are significant in defining the choice of domestic banks, but have no effect on the choice of foreign banks. Notably, companies attributing importance to bank location and to the implementation of flexible procedures are 7.5 and 4.8 percentage points more likely to establish relationships with local intermediaries. Banks with a local dimension, thanks to their strong roots in local economic systems, are in fact able to mitigate firms' difficulties in accessing credit and are often the only mean for obtaining a bank loan for small businesses. On the contrary, the more importance is attributed to bank's international networks, the lower is the probability of having relationships with local banks. This factor increases the probability of engaging a national bank by 7.3%, confirming that firms choosing national banks mainly ask for a partner able to support their business abroad and provide complex financial services.

Finally, in order to assess whether the main determinants of bank type choices differ according to the dimension of the firm, we re-estimate bank ownership type models focusing on the subsamples of SMEs and small firms. Results, reported in the Online Supplementary Appendix (Table S2), are largely consistent with the empirical evidence obtained for the entire sample. Furthermore, this confirms that, despite large firms are slightly over-represented in the EFIGE database (Altomonte and Aquilante 2012), their presence does not significantly alter the main findings of our analysis.[11]

6.2 Multiple banking and the diversification of bank ownership type

Table 5 shows results of the analysis of multiple banking and bank type diversification, for both baseline and extended models (columns (a) and (b), respectively).

We firstly test for sample selection bias, related to the fact that bank type diversification is observed only conditional on having multiple relationships. Results (reported at the bottom of the Table) clearly indicate that it is not possible to reject the null hypothesis of error independence for all the specifications. As discussed in Section 5.2, bank-type diversification models can be thus consistently estimated be means of a two-part approach, using two separate probit equations.

[Insert Table 5 here]

Coherently with the literature (see Neuberger and Räthke 2009), firm size and age have positive and significant effects on multiple relationships. Differently from Berger et al (2008), as firm age increases the probability of diversifying between domestic and foreign banks significantly rises, while the probability of diversifying between local and national banks decreases. Moreover, companies belonging to groups are 1.8% and 4.8% less likely to use multiple relationships and to diversify among

[11] Due to the small number of observations (191 firms, less than 6.5% of the whole estimation sample) we are unable to carry out separate estimations of the multivariate bank type choice model on the subsample of large firms.

domestic intermediaries, respectively. Being able to access intra-group financing, these firms are less dependent on bank financing and on multiple banking.

With respect to corporate ownership, foreign-owned firms operating in Italy are characterised by a lower probability of multiple relationships compared to domestic firms. This evidence can be related to the fact that non-domestic firms may have weak ties with the local banking market and their banking choices may be the results of decisions made by their foreign owner. At the same time, the probability of diversification between domestic and foreign banks is 7.8 percentage points higher for foreign-owned. This can be related to the fact that foreign affiliates of multinational corporations may benefit from maintaining multiple relationships with both host nation banks and home country intermediaries, with the aim to obtain different types of banking services (Berger et al. 2003; Berger et al. 2008). Similarly, the use of multiple relationships involving at least a foreign bank is more likely when firms have a decentralised management, whereas family-managed firms have a significantly lower probability to use this type of diversification.

Diversification between domestic and foreign banks is 1.3 and 8.9% more likely when firms have carried out any innovation and are active abroad, respectively. A possible explanation to this result is that Italian firms tend to establish relationships with foreign banks mainly to obtain specific and complex financial services, aimed at supporting their innovation and foreign trade activities (Berger et al. 2008).

Highly indebted and less liquid firms are more likely to maintain multiple relationships, supporting the hypothesis that the use of multiple banking in Italy is mainly motivated by firm's financial fragility. Moreover, the probability of diversification between any ownership type increases by 14.4% as firm's debt ratio rises. This result is mainly driven by the positive impact on diversification between domestic intermediaries, whereas no significant effect on diversification with foreign banks can be pointed out. Coherently, companies that have a strong dependence on bank financing are more likely to have multiple relationships and diversify the types of banks, as shown

by the positive and significant effects of *Bank Financing*. This evidence can be explained, on the one hand, by firms' will to reduce credit rationing risk and, on the other hand, by banks' attempt to diversify and split firm-specific credit risk (Detragiache et al. 2000).

Focusing on the identification variable (*Hard Information*), we find that firms whose creditworthiness is usually assessed by banks using quantitative information are characterised by a 2.9 percentage points higher probability of multiple banking.[12] This is in line with the findings of Hernandez-Canovas and Koeter-Kant (2010) and supports the prediction of Von Rheinbaben and Ruckes (2004) on the existence of a positive association between the provision of hard information and the probability of multiple banking.

Estimation results also show that the probability of multiple relationships with domestic banks reduces as overall regional credit supply increases, while the probability of diversifying between domestic and foreign banks remains unchanged. This result can be explained by considering that firms operating in regions where credit can be obtained more readily have lower financial constraints and are thus less likely to diversify their external financing sources and to maintain multiple and diversified relationships. Branch density has a positive and significant effect on both multiple relationships and diversification between any type of banks, suggesting that firms are less likely to use exclusive banking relationships in local credit markets characterised by a high degree of spatial competition among intermediaries. Concentration of the banking system, proxied by the Herfindahl-Hirschman index of bank loans, does not exert a statistically significant effect on the likelihood of multiple banking. Conversely, conditional on multiple relationships, it negatively affects the propensity to diversify among any bank ownership type, as in Berger et al. (2008). Firms' use of multiple banking is higher in less developed regions and increases as the overall quality of credit at the regional level (proxied by loan decay rate) reduces. Legal enforcement does not significantly affect multiple banking, while the

[12] In order to assess the validity of our identification strategy, we re-estimate all the probit models with sample selection without imposing the exclusion restriction and test whether the "hard information" indicator exerts a significant effect also on bank type diversification. Results of these additional estimations (available from the authors) support the assumption that firm's propensity to diversify among bank types, conditional on multiple banking, is not significantly affected by the use of transactional lending technologies by banks.

probability of diversification between domestic and foreign banks is lower in regions with poorer judicial efficiency.

Finally, results from extended models allow us to provide original insights on the role of firm decision factors on the use of multiple and diversified relationships, complementing the findings of Ongena et al. (2011). Firms considering the price of bank services as a key determinant of their banking choices tend to use multiple intermediaries and diversify among bank types in the attempt of obtaining more favourable conditions. Bank's availability of international networks increases by 2.4% the probability of multiple relationships, but reduces by 6.4% the likelihood of diversification among domestic intermediaries. Conversely, firms emphasising bank location are less likely to have multiple relationships, as they prefer to reduce search costs and establish relationships with conveniently located banks; however, conditional on multiple banking they are 5.5 percentage points more likely to diversify among domestic intermediaries. Finally, despite firm's preference for flexible procedures does not impact on multiple banking, it significantly increase the probability of diversification, especially among domestic banks.

6.3 The number of banking relationships

We complete our analysis by investigating the determinants of the number of banking relationships. Marginal effects estimated from negative binomial regressions are presented in Table 6. Before commenting estimated effects, it is worth remarking that LR tests unambiguously lead to reject the hypothesis of equidispersion in the count dependent variable, supporting the negative binomial model against the Poisson model used in previous studies (see Berger et al. 2008).

Firm's age and size exert positive and significant (at the 1 percent level) effects on the number of banking relationships in all the specifications considered. This evidence confirms the findings of most previous studies (Detragiache et al. 2000; Cosci and Meliciani 2002; Neuberger and Rathke 2009) and supports the hypothesis that small and younger firms, being characterised by higher

information opacity, tend to establish relationships with fewer banks.[13] The positive effect of firm's size can be also interpreted in light of the fact that larger firms have a higher demand for financial services, which can be obtained at more convenient terms resorting to several intermediaries.

None of the ownership and management structure controls, with the exception of foreign ownership, significantly affects the number of relationships. Foreign-owned firms are characterised by a significantly lower number of banks (with a marginal effect equal to –0.7274), confirming the heterogeneity in banking choices between domestic and non-domestic firms, which reflects different preferences and corporate governance practices between the two groups.

[Insert Table 6 here]

Differently from Neuberger and Räthke (2009), but in line with the findings of Harhoff and Korting (1998) and Cosci and Meliciani (2002), firm's R&D and innovation activities increase the number of banks. This suggests that the increased external financing needs, which characterise highly innovative firms, lead to an increase in the number of intermediaries used to obtain funding and avoid credit rationing. This positive effect dominates the negative effect due to information disclosure issues, which instead may lead firms with valuable proprietary information to prefer fewer creditors to prevent information leakages.

As in Detragiache et al. (2000), firm's profitability has a positive and significant (at the 1 percent level) effect. Coherently with most of the empirical literature (e.g. Miarka and Tröge 2005; Ongena et al. 2011; Gómez-González and Reyes 2011), firms with a high debt ratio and those

[13] It should be remarked that, to account for non-linearity in the effect of firm age, a squared term is also included in the model for the number of relationships. Its estimated coefficient is negative and significant in all the specifications, so that the number of banking relationships increases as age rises, but at a decreasing rate. This can be interpreted as the result of two countervailing forces: on the one hand, firms increase the number of banks over their life-cycle as they become less opaque; on the other, they may reduce the number of relationships because of their lower financing needs due to increased availability of internal resources accumulated through the years. The marginal effect of age reported in Table 6 has been computed accounting for non-linearity associated with this quadratic term. We tested for the presence of non-linearity in the effect of age also in the analysis of firms' bank type and diversification choices. Quadratic terms are never statistically significant and we therefore decide to not include them in baseline and extended specifications; results are available from the authors.

experiencing liquidity problems have relationships with a large number of intermediaries. Similarly, resorting to bank debt as a source of external financing significantly increases the number of banks (Ongena et al. 2011). This evidence supports the hypothesis that the number of banking relationships in Italy is mainly driven by firm's external financial dependence and by the necessity to overcome actual or expected restrictions in credit availability. Moreover, firms that are usually asked to provide quantitative information when applying for credit maintain a significantly higher number of relationships, coherently with the evidence obtained in the analysis of multiple banking.

The number of banking relationships is significantly affected by the structure of the local banking market. In particular, the number of intermediaries increases as regional branch density and overall lending activity rise. As discussed in Berger et al (2008), a possible explanation to this result is that, in more competitive and developed systems, firms have more intermediaries to choose from and, at the same time, bank size tends to be smaller and firms may need multiple relationships to satisfy their financing needs. Firms located in regions with lower levels of GDP per capita maintain relationships with a larger set of intermediaries, whereas the quality of credit and the efficiency of the judicial system at the regional level do not affect the number of banking relationships.

Decision factors play a significant role also on the number of relationships. Firms emphasising the importance of bank location and availability of international networks are characterised by a lower number of relationships, with estimated marginal effects quantitatively similar to those found by Ongena et al. (2011).[14] Conversely, firm's preference for banks using flexible procedures increases the number of banking relationships. This result confirms that firms, especially those with higher

[14] Tables S3 and S4 in the Online Supplementary Appendix present estimates of both multiple banking/bank type diversification and number of relationships models for the subsamples of SMEs and small firms. As for the analysis of bank ownership type choice, results obtained from these subsample analyses largely confirm the evidence obtained for the entire sample. The only difference worth remarking is that for SMEs and small firms bank's availability of international networks does not affect the number of relationships. We have been also able to estimate the model of banking relationship number on the subsample of large firms. Results (presented in Table S4) suggest that several firm-level characteristics, in particular those related to firm age, profitability, liquidity and external financial dependence, have the same sign and significance obtained for the entire sample. Differently to SMEs and small firms, ownership and management controls (like ownership concentration, foreign ownership, decentralised management and foreign trade participation) have the expected signs and significantly affect the number of relationships maintained by large corporations. Conversely, for large firms, variables related to the local banking market structure and firm decision factors do not play any significant effect on the choice of the number of banks.

information opacity, tend to use a larger number of banks as a way to diversify external financing sources and alleviate potential credit constraints.

Finally, estimates obtained on the subsample of firms having multiple relationships largely confirm results from the whole sample. This provides further support to the absence of selectivity issues related to multiple banking, already documented in the analysis of bank type diversification.

7. Concluding Remarks

In this paper we have investigated the main features of the relationships between banks and nonfinancial firms in Italy. Exploiting the detailed firm-level information provided by the EFIGE survey, we have been able to thoroughly analyse the main drivers of corporate choices on bank ownership type and its diversification, multiple banking and the optimal number of relationships.

Our results point out the presence of a certain degree of matching between firm characteristics and bank ownership types, in line with the findings of Ongena and Şendeniz-Yüncü (2011) and Berger et al. (2014). Specifically, large national banks and foreign banks are more likely to have relationships to larger and older firms, characterised by higher information transparency. Younger and relatively smaller firms display instead a higher probability of having relationships with small local banks, confirming the advantage of local intermediaries in forming relationships with informationally opaque small businesses. Firms that are more dependent on bank financing mainly turn to domestic intermediaries, whereas those carrying out foreign trade activities prefer to establish relationships with national and foreign banks, as they are able to provide additional banking services and support for their international activities.

Results on multiple banking and diversification of bank types show the presence of significant heterogeneities in the choice of domestic and foreign-owned firms and support the relevance of firm's financial vulnerability in determining the use of multiple and diversified relationships. Firms characterised by a strong dependence on external financing, having liquidity problems and lacking

access to intra-group financial resources, not only have a higher probability to maintain multiple relationships, but also tend to diversify among domestic intermediaries. Our disaggregated analysis of bank type diversification further confirms that firms' use of foreign banks is mainly aimed at providing support for their economic and commercial activities abroad.

Analysing the number of banks, we find support to the hypothesis that younger and smaller, being characterised by higher information opacity, establish relationships with fewer intermediaries than large corporations. Moreover, foreign-owned enterprises maintain a lower number of banking relationships than domestic firms, supporting the hypothesis that differences in preferences and corporate governance practices between the two groups determine significant heterogeneities in banking choices. Firms with a high debt ratio and experiencing liquidity problems tend to use a large number of intermediaries. This confirms the hypothesis that the number of banking relationships in Italy is mainly determined by firms' financial fragility and by the necessity to overcome actual or expected restrictions in credit availability.

Our study offers two additional contributions to the analysis of firm-bank-relationships in Italy. Firstly, all corporate banking decisions, with the exception of the choice of foreign banks, are significantly affected by the structure and competitiveness of regional banking systems. In particular, the density and composition of bank branches within the region exert significant effects on the choice of bank ownership type, with the propensity of using small local institutions increasing as both branch density and the number of local bank branches increase. Coherently with Detragiache et al. (2000) and Berger et al. (2008), we also obtain evidence supporting the hypotheses that both the likelihood of multiple relationships and of bank type diversification and the number of banks increase in more competitive banking systems, as well as when the quality of credit decreases.

A last important contribution relates to the role of firm decision factors. Our findings not only confirm the relevance of decision-making factors on the propensity of multiple banking and on the number of relationships, already documented in Ongena et al. (2011), but provide new insights on

their importance in shaping bank ownership type and diversification choices. In particular, firms that emphasise bank location and flexible procedures are more likely to maintain relationships with local banks, confirming the role of these intermediaries in mitigating the difficulties of small and informationally opaque businesses in accessing bank credit. The price factor significantly increases the propensity to diversify among domestic intermediaries, suggesting that firms try to obtain more favourable conditions by using non-exclusive and diversified banking relationships.

Our study thus provides a comprehensive view on the main characteristics of firm-bank relationships in Italy and points out the strong interdependence between bank ownership type and corporate banking choices, emphasising the role of the structure and composition of the banking sector. In this respect, our empirical findings also offer useful indications for future research aimed at addressing the increasing policy concerns related to the impact of prudential supervision and regulation, bank mergers and acquisitions, and foreign entry on the functioning and stability of financial systems, especially in those countries where banks represents the main source of funding for the entire economy.

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Tables

Table1 – Banking structural indicators

	Italy	France	Germany	Spain	UK
Number of credit institutions	799	422	1838	355	381
Branches per bank	42.8	93.5	21.5	129.8	32.2
Employees per branch	9.9	10.8	17.3	6.0	40.0
Total assets (EUR billions)	2757.71	7150.41	10009.81	3637.35	8558.96
of which:					
Large domestic credit institutions	1863.61	6666.75	6281.48	2006.99	6950.85
	(67.6)	*(93.2)*	*(62.8)*	*(55.2)*	*(81.2)*
Medium-sized domestic credit institutions	645.77	203.83	2092.61	1238.43	376.31
	(23.4)	*(2.9)*	*(20.9)*	*(34.0)*	*(4.4)*
Small domestic credit institutions	12.17	3.78	630.61	41.87	65.27
	(0.4)	*(0.1)*	*(6.3)*	*(1.2)*	*(0.8)*
Foreign-controlled subsidiaries and branches	236.16	276.06	1005.11	350.06	1166.54
	(8.6)	*(3.9)*	*(10.0)*	*(9.6)*	*(13.6)*
Average bank size (EUR millions)	3451.5	16944.1	5446.0	10246.1	22464.5
Herfindahl index for credit institutions	307	681	191	497	370
Share of total assets of five largest institutions	31.2	51.2	22.7	42.4	35.2

Notes: data refer to 2008. In parentheses we report percentages over national values.
Sources: own elaboration based on European Central Bank (ECB) Consolidated Banking Data and Structural Indicators for the EU Banking Sector 2013.

Table 2 – Combinations of firms' bank ownership type choices

Combination	Bank type: Local	National	Foreign	Percentage of firms choosing the combination: Italy	France	Germany	Spain	UK
At Least One Local	Yes	Yes/No	Yes/No	69.01	86.12	81.41	54.43	17.45
At Least One National	Yes/No	Yes	Yes/No	85.65	73.96	40.29	79.00	88.05
At Least One Foreign	Yes/No	Yes/No	Yes	8.58	16.03	6.38	7.83	12.54
Only Local	Yes	No	No	13.73	21.66	56.43	19.32	7.3
Only National	No	Yes	No	28.9	9.99	15.32	42.01	72.21
Only Foreign	No	No	Yes	0.14	1.17	0.64	0.61	3.99
Local-National	Yes	Yes	No	48.76	40.99	14.26	29.74	7.96
Local-Foreign	Yes	No	Yes	0.45	1.99	1.53	0.56	0.67
National-Foreign	No	Yes	Yes	1.92	1.58	1.57	1.97	6.36
All types	Yes	Yes	Yes	6.11	22.63	10.25	5.78	1.53

Notes: bank type combinations frequencies are computed using sample weights.

Table 3 – Multiple relationships, bank type diversification and the number of banks

Country	Multiple relationships (in %)	Diversification of bank types (conditional on multiple relationships, in %): Any diversification	Local-National	Domestic-Foreign	Number of banks: Mean	Median	Std. Dev.
Italy	93.19	61.09	52.24	8.85	4.0	3	2.5
France	79.65	71.99	43.54	28.45	2.5	2	1.6
Germany	79.18	34.05	17.79	16.26	2.5	2	1.9
Spain	94.11	40.09	31.53	8.57	4.3	4	2.7
UK	28.68	35.14	10.89	24.26	1.4	1	1.0

Notes: participation frequencies and statistics on the number of banks are computed using sample weights.

Table 4 – The determinants of bank relationship types: marginal effects

Variables	a) Baseline			b) Including decision factors		
	(1) Local	(2) National	(3) Foreign	(4) Local	(5) National	(6) Foreign
Log Age	-0.0414***	0.0129**	0.0124***	-0.0402***	0.0135**	0.0125***
	(0.0123)	(0.0065)	(0.0046)	(0.0129)	(0.0066)	(0.0046)
Log Total Assets	0.0131**	0.0556***	0.0204***	0.0169***	0.0509***	0.0198***
	(0.0059)	(0.0080)	(0.0047)	(0.0057)	(0.0081)	(0.0048)
Foreign-owned	-0.1668***	-0.0640***	0.0758***	-0.1594***	-0.0675***	0.0761***
	(0.0233)	(0.0139)	(0.0102)	(0.0254)	(0.0144)	(0.0108)
Group	-0.0392**	0.0151	0.0137	-0.0354*	0.0168	0.0137
	(0.0186)	(0.0209)	(0.0106)	(0.0192)	(0.0218)	(0.0111)
Ownership Concentration	-0.0606**	0.0374*	0.0009	-0.0544**	0.0400**	0.0018
	(0.0299)	(0.0192)	(0.0205)	(0.0289)	(0.0202)	(0.0206)
Family Managed	-0.0029	-0.0060	-0.0142**	-0.0010	-0.0061	-0.0142**
	(0.0149)	(0.0128)	(0.0066)	(0.0155)	(0.0124)	(0.0066)
Decentralised Management	-0.0405**	0.0193	0.0261**	-0.0438**	0.0233	0.0262**
	(0.0180)	(0.0216)	(0.0130)	(0.0179)	(0.0206)	(0.0130)
Active Abroad	-0.0496**	0.0473***	0.0898***	-0.0450*	0.0450***	0.0891***
	(0.0241)	(0.0173)	(0.0169)	(0.0258)	(0.0168)	(0.0169)
Innovation	-0.0129	0.0256*	0.0148**	-0.0170	0.0213*	0.0139**
	(0.0269)	(0.0153)	(0.0058)	(0.0251)	(0.0129)	(0.0062)
R&D Investment	-0.0160	0.0216*	-0.0047	-0.0106	0.0184*	-0.0053
	(0.0172)	(0.0130)	(0.0111)	(0.0171)	(0.0109)	(0.0116)
Bank Financing	0.1188***	0.0642***	0.0098	0.0939***	0.0481**	0.0053
	(0.0154)	(0.0148)	(0.0070)	(0.0185)	(0.0209)	(0.0082)
ROA	0.1284*	0.1457*	0.0711*	0.1321*	0.1383*	0.0714*
	(0.0725)	(0.0830)	(0.0390)	(0.0747)	(0.0822)	(0.0391)
Debt Ratio	0.1102*	0.0657*	0.0120	0.1029*	0.0554	0.0095
	(0.0608)	(0.0350)	(0.0192)	(0.0596)	(0.0342)	(0.0197)
Total Lending	0.0081**	0.0034	-0.0001	0.0078**	0.0038	-0.0001
	(0.0034)	(0.0032)	(0.0010)	(0.0035)	(0.0031)	(0.0010)
Branch Density	0.4096**	-0.4349***	-0.0303	0.4129**	-0.4464***	-0.0293
	(0.1703)	(0.1392)	(0.0603)	(0.1714)	(0.1329)	(0.0607)
Large Bank Branches	-0.0001***	0.0001***	-0.0000	-0.0001***	0.0001**	-0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Local Bank Branches	0.0001**	-0.0000*	0.0000	0.0001**	-0.0000	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Foreign Bank Branches	-0.0022	-0.0023*	0.0002	-0.0023	-0.0024*	0.0002
	(0.0018)	(0.0013)	(0.0005)	(0.0018)	(0.0012)	(0.0005)
Price				0.0135	0.0318	0.0131*
				(0.0161)	(0.0213)	(0.0073)
Location				0.0753***	-0.0348**	0.0004
				(0.0230)	(0.0151)	(0.0078)
International Networks				-0.0683***	0.0734***	0.0094
				(0.0246)	(0.0245)	(0.0106)
Flexible Procedures				0.0482**	0.0161	-0.0083
				(0.0194)	(0.0146)	(0.0128)
Significance of industry effects	24.00 [0.008]	57.30 [0.000]	178.45 [0.000]	25.14 [0.005]	69.48 [0.000]	190.72 [0.000]
ρ_{12}		-0.7701***			-0.7701***	
		(0.0350)			(0.0327)	
ρ_{13}		0.1643***			0.1636***	
		(0.0324)			(0.0331)	
ρ_{23}		-0.0137			-0.0110	
		(0.0516)			(0.0509)	
LR test of indep. equations		187.12 [0.000]			184.59 [0.000]	
N. of observations		2928			2928	
Log Likelihood		-3301.02			-3278.36	

Notes: All estimates are obtained using sample weights and include (unreported) sectoral controls. Robust standard errors, clustered at the regional level, are reported in parentheses below the estimates. p-values of the LR tests of independent equations and of the Wald tests of joint significance of industry effects are reported in square brackets. ***, ** and * denote significance at 1, 5 and 10 percent levels, respectively.

Table 5 – The determinants of multiple relationships and bank type diversification: marginal effects

Variables	Multiple relationships		Diversification of bank types (conditional on multiple banking relationships): Any diversification		Local-National		Domestic-Foreign	
	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)
Log Age	0.0082**	0.0081**	-0.0222**	-0.0210*	-0.0349***	-0.0340***	0.0119**	0.0121**
	(0.0040)	(0.0038)	(0.0108)	(0.0114)	(0.0124)	(0.0130)	(0.0052)	(0.0052)
Log Total Assets	0.0276***	0.0247***	0.0585***	0.0607***	0.0208*	0.0237**	0.0212***	0.0207***
	(0.0037)	(0.0037)	(0.0099)	(0.0097)	(0.0110)	(0.0108)	(0.0050)	(0.0052)
Foreign-owned	-0.0368***	-0.0341***	-0.0321	-0.0259	-0.2380***	-0.2321***	0.0777***	0.0778***
	(0.0092)	(0.0083)	(0.0397)	(0.0412)	(0.0635)	(0.0651)	(0.0124)	(0.0127)
Group	-0.0179*	-0.0165*	-0.0161	-0.0122	-0.0484*	-0.0443*	0.0138*	0.0137
	(0.0103)	(0.0095)	(0.0294)	(0.0289)	(0.0267)	(0.0264)	(0.0081)	(0.0085)
Ownership Concentration	0.0116	0.0113	-0.0191	-0.0130	-0.0192	-0.0134	-0.0042	-0.0036
	(0.0114)	(0.0100)	(0.0304)	(0.0300)	(0.0353)	(0.0355)	(0.0200)	(0.0201)
Family Managed	0.0013	0.0010	-0.0155	-0.0142	-0.0037	-0.0031	-0.0134*	-0.0133*
	(0.0055)	(0.0050)	(0.0172)	(0.0178)	(0.0174)	(0.0182)	(0.0078)	(0.0076)
Decentralised Management	0.0034	0.0033	-0.0117	-0.0138	-0.0568***	-0.0598***	0.0284**	0.0284**
	(0.0124)	(0.0112)	(0.0235)	(0.0228)	(0.0215)	(0.0211)	(0.0129)	(0.0129)
Active Abroad	0.0003	-0.0003	0.0253	0.0290	-0.0274	-0.0228	0.0890***	0.0887***
	(0.0048)	(0.0046)	(0.0216)	(0.0234)	(0.0186)	(0.0202)	(0.0142)	(0.0143)
Innovation	0.0265***	0.0234***	-0.0232*	-0.0296**	-0.0374***	-0.0421***	0.0130***	0.0120**
	(0.0075)	(0.0065)	(0.0129)	(0.0127)	(0.0121)	(0.0122)	(0.0050)	(0.0051)
R&D Investment	-0.0085	-0.0084	0.0269	0.0308*	0.0338	0.0383*	-0.0053	-0.0058
	(0.0072)	(0.0060)	(0.0172)	(0.0173)	(0.0212)	(0.0215)	(0.0120)	(0.0124)
Bank Financing	0.0308***	0.0257***	0.1507***	0.1205***	0.1388***	0.1127***	0.0067	0.0026
	(0.0102)	(0.0092)	(0.0187)	(0.0216)	(0.0200)	(0.0247)	(0.0073)	(0.0090)
ROA	0.0021	-0.0003	0.3876***	0.3910***	0.2858**	0.2888**	0.0767**	0.0762*
	(0.0333)	(0.0298)	(0.0941)	(0.0938)	(0.1240)	(0.1235)	(0.0389)	(0.0390)
Debt Ratio	0.0309*	0.0286*	0.1443**	0.1470**	0.1317*	0.1357*	-0.0035	-0.0034
	(0.0176)	(0.0159)	(0.0665)	(0.0673)	(0.0764)	(0.0750)	(0.0443)	(0.0441)
Short-term Debt	0.0030	0.0043	-0.0388	-0.0272	0.0404	0.0507	-0.0578***	-0.0572***
	(0.0198)	(0.0177)	(0.0671)	(0.0700)	(0.0645)	(0.0683)	(0.0207)	(0.0201)
Liquidity Ratio	-0.0043**	-0.0039*	-0.0153	-0.0110	-0.0114	-0.0079	-0.0062	-0.0052
	(0.0021)	(0.0020)	(0.0138)	(0.0144)	(0.0114)	(0.0117)	(0.0134)	(0.0130)
Total Lending	0.0001	0.0001	-0.0020**	-0.0021***	-0.0021**	-0.0022**	0.0001	0.0001
	(0.0001)	(0.0001)	(0.0008)	(0.0008)	(0.0009)	(0.0010)	(0.0003)	(0.0003)
HHI	0.0080	0.0075	-0.1489**	-0.1482**	-0.0822	-0.0807	-0.0307	-0.0311
	(0.0242)	(0.0223)	(0.0689)	(0.0690)	(0.1068)	(0.1094)	(0.0198)	(0.0202)
GDP	-0.0056***	-0.0050***	-0.0125***	-0.0133***	-0.0034	-0.0043	-0.0109***	-0.0110***
	(0.0010)	(0.0009)	(0.0043)	(0.0043)	(0.0055)	(0.0056)	(0.0023)	(0.0024)
Branch Density	0.2352***	0.2119***	0.4433**	0.4477**	0.3518	0.3486	0.0639	0.0717
	(0.0342)	(0.0323)	(0.2162)	(0.2134)	(0.2373)	(0.2385)	(0.0681)	(0.0681)
Decay Rate	0.1033**	0.0923**	-0.2572	-0.2727	-0.2017	-0.2260	-0.1264	-0.1194
	(0.0420)	(0.0366)	(0.2577)	(0.2469)	(0.2237)	(0.2178)	(0.1035)	(0.1022)
Legal Enforcement	-0.0081	-0.0068	0.0224	0.0203	0.0441	0.0420	-0.0193**	-0.0192**
	(0.0076)	(0.0068)	(0.0345)	(0.0337)	(0.0393)	(0.0392)	(0.0088)	(0.0089)
Hard Information	0.0293***	0.0174**						
	(0.0091)	(0.0068)						
Price		0.0164*		0.0315		0.0204		0.0112
		(0.0085)		(0.0204)		(0.0204)		(0.0081)
Location		-0.0141***		0.0537***		0.0544***		-0.0001
		(0.0052)		(0.0186)		(0.0203)		(0.0093)
International Networks		0.0236**		-0.0335		-0.0627***		0.0104
		(0.0116)		(0.0284)		(0.0158)		(0.0105)
Flexible Procedures		0.0147		0.0484**		0.0573**		-0.0065
		(0.0118)		(0.0224)		(0.0246)		(0.0119)
Significance of industry effects	40.53 [0.000]	41.80 [0.000]	19.85 [0.031]	19.39 [0.036]	38.86 [0.000]	62.50 [0.000]	144.36 [0.000]	154.42 [0.000]
Wald test of indep. equations			1.29 [0.257]	0.10 [0.754]	1.27 [0.260]	1.06 [0.303]	0.09 [0.764]	0.69 [0.405]
N. of observations	2928	2928	2743	2743	2743	2743	2743	2743
Log Likelihood	-565.13	-564.39	-1740.49	-1732.04	-1814.86	-1806.40	-685.98	-684.89

Notes: All estimates are obtained using sample weights and include (unreported) sectoral controls. Robust standard errors, clustered at the regional level, are reported in parentheses below the estimates. p-values of the LR tests of independence and of the Wald tests of joint significance of industry effects are reported in square brackets. ***, ** and * denote significance at 1, 5 and 10 percent levels, respectively.

Table 6 – The determinants of the number of bank relationships: marginal effects

Variables	1) Number of banking relationships		2) Number of banking relationships (conditional on multiple banking relationships):	
	(a)	(b)	(a)	(b)
Log Age	0.1529***	0.1611***	0.1717***	0.1805**
	(0.0561)	(0.0620)	(0.0647)	(0.0744)
Log Total Assets	0.8803***	0.8727***	0.9855***	0.9785***
	(0.0316)	(0.0369)	(0.0504)	(0.0570)
Foreign-owned	-0.7274***	-0.7149***	-0.6953***	-0.6778***
	(0.1782)	(0.1710)	(0.1918)	(0.1877)
Group	0.0588	0.0616	0.0876	0.0944
	(0.1432)	(0.1327)	(0.1525)	(0.1390)
Ownership Concentration	-0.1079	-0.1105	-0.1622	-0.1722
	(0.1427)	(0.1424)	(0.1455)	(0.1435)
Family Managed	0.0129	0.0130	-0.0114	-0.0097
	(0.0783)	(0.0770)	(0.1142)	(0.1128)
Decentralised Management	-0.0104	-0.0098	-0.0285	-0.0018
	(0.1479)	(0.1505)	(0.1710)	(0.1732)
Active Abroad	0.0030	0.0008	0.0063	0.0065
	(0.1052)	(0.1042)	(0.1414)	(0.1401)
Innovation	0.1397*	0.1326*	0.0907	0.0838
	(0.0781)	(0.0770)	(0.0850)	(0.0864)
R&D Investment	0.2231**	0.2264**	0.3409**	0.3476**
	(0.1117)	(0.1113)	(0.1461)	(0.1463)
Bank Financing	0.5767***	0.5579***	0.6181***	0.6023***
	(0.0706)	(0.0683)	(0.0963)	(0.0913)
ROA	0.9396**	0.9304**	1.2456**	1.2507**
	(0.3810)	(0.3706)	(0.5654)	(0.5382)
Debt Ratio	1.8423***	1.8203***	2.1922***	2.1655***
	(0.2696)	(0.2799)	(0.3881)	(0.4055)
Short-term Debt	0.5212**	0.5161**	0.7650***	0.7515***
	(0.2288)	(0.2179)	(0.2868)	(0.2716)
Liquidity	-0.1649***	-0.1682***	-0.3248**	-0.3317**
	(0.0532)	(0.0511)	(0.1336)	(0.1307)
Total Lending	0.0104***	0.0105***	0.0119***	0.0120***
	(0.0027)	(0.0027)	(0.0040)	(0.0041)
HHI	0.0747	0.1015	0.0686	0.1081
	(0.3447)	(0.3542)	(0.3956)	(0.4080)
GDP	-0.0819***	-0.0804***	-0.0814***	-0.0799***
	(0.0187)	(0.0189)	(0.0286)	(0.0290)
Branch Density	2.7703***	2.7335***	2.4157***	2.3657***
	(0.5795)	(0.5797)	(0.7297)	(0.7432)
Decay Rate	0.7899	0.7885	0.4011	0.3853
	(0.7120)	(0.7436)	(0.9061)	(0.9425)
Legal Enforcement	0.0481	0.0618	0.1138	0.1289
	(0.1320)	(0.1365)	(0.1593)	(0.1654)
Hard Information	0.4904***	0.5051***	0.4931***	0.5205***
	(0.1114)	(0.1511)	(0.1149)	(0.1564)
Price		0.0231		-0.0125
		(0.0579)		(0.0814)
Location		-0.2662**		-0.2824**
		(0.1062)		(0.1276)
International Networks		-0.1599*		-0.2191**
		(0.0954)		(0.1064)
Flexible Procedures		0.2244***		0.2631***
		(0.0732)		(0.0783)
Significance of industry effects	94.71 [0.000]	60.23 [0.000]	75.91 [0.000]	49.86 [0.000]
LR test for overdispersion	15.13 [0.000]	13.62 [0.000]	19.76 [0.000]	17.52 [0.000]
N. of observations	2928	2928	2743	2743
Log Likelihood	-5732.80	-5724.81	-4887.46	-4879.82

Notes: All estimates are obtained using sample weights and include (unreported) sectoral controls. Robust standard errors, clustered at the regional level, are reported in parentheses below the estimates. p-values of the LR test of overdispersion and of the Wald tests of joint significance of industry effects are reported in square brackets. ***, ** and * denote significance at 1, 5 and 10 percent levels, respectively.

Appendix

Table A1 – Variable Definitions and Sample Statistics

Variable name	Definition	Sample statistics (N = 2928) Mean	Std. Dev.
Panel A) Dependent Variables			
Local Bank	Equal to 1 if the firm has at least one banking relationship with a local bank; 0 otherwise	0.690	0.463
National Bank	Equal to 1 if the firm has at least one banking relationship with a national bank; 0 otherwise	0.856	0.351
Foreign Bank	Equal to 1 if the firm has at least one banking relationship with a foreign bank; 0 otherwise	0.086	0.280
Multiple Relationships	Equal to 1 if the firm has banking relationships with more than one bank; 0 otherwise	0.932	0.252
Any Diversification	Equal to 1 if the firm has banking relationships with at least two different types of banks; 0 otherwise	0.572	0.495
Local-National	Equal to 1 if the firm has banking relationships with both local and national banks; 0 otherwise	0.488	0.500
Domestic-Foreign	Equal to 1 if the firm has banking relationships with both domestic (local and/or national) and foreign banks; 0 otherwise	0.085	0.279
Banks Number	Number of banks with which the firm has a relationship	4.010	2.526
Panel B) Independent Variables			
Firm age and size			
Age	Years since firm's establishment	29.50	20.674
Total Assets	Firm's total assets (average values over 2006-2007, in millions of Euro)	16.801	103.664
Ownership and management			
Foreign-owned	Equal to 1 if firm's first shareholder is foreign; 0 otherwise	0.039	0.194
Group	Equal to 1 if the firm belongs to a (national or foreign) group; 0 otherwise	0.143	0.350
Ownership Concentration	Share of firm's equity owned by the largest shareholder	57.385	26.672
Family Managed	Equal to 1 if firm's share of managers related to the controlling family is higher than the national average; 0 otherwise	0.405	0.491
Decentralised Management	Equal to 1 if firm's managers can take autonomous decisions in some business areas; 0 otherwise	0.145	0.352
Internationalisation and innovation choices			
Active Abroad	Equal to 1 if the firm carries out any foreign trade activity (export, import, foreign direct investments or contracts and arms length agreements); 0 otherwise	0.782	0.413
Innovation	Equal to 1 if the firm has carried out any product and/or process innovation during the last three years (2007-2009); 0 otherwise	0.675	0.469
R&D Investment	Equal to 1 if the firm has invested in R&D during the last three years (2007-2009); 0 otherwise	0.528	0.499
Profitability and liquidity indicators			
ROA	Ratio between firm's operating profits and total assets (average values over 2006-2007)	0.062	0.078
Debt Ratio	Ratio between firm's total liabilities and total assets (average values over 2006-2007)	0.765	0.202
Short-term Debt	Ratio between firm's current liabilities and total liabilities (average values over 2006-2007)	0.746	0.151
Liquidity Ratio	Ratio between firm's current assets (minus inventory) and current liabilities (average values over 2006-2007)	1.128	0.912
Use of bank debt			
Bank Financing	Equal to 1 if the firm has any short or medium-long term bank debt in 2008-2009; 0 otherwise	0.581	0.493
Hard Information	Equal to 1 if firm's creditworthiness is usually assessed by banks using quantitative information (i.e., balance sheet data, business plans and/or historical records of payments); 0 otherwise	0.588	0.492
Decision factors			
Price	Key factors in the choice of firm's main bank: the bank offers competitive services and funding	0.428	0.495
Location	Key factors in the choice of firm's main bank: the bank is conveniently located	0.229	0.420
International Networks	Key factors in the choice of firm's main bank: the bank has an extensive international network	0.090	0.286
Flexible Procedures	Key factors in the choice of firm's main bank: the bank has flexible procedures	0.259	0.438
Regional and local credit market characteristics:			
GDP	Regional per capita GDP (in thousands of Euros) in year 2007 (Source: ISTAT)	20.108	3.919
Total Lending	Ratio between bank total lending and total population in each region (in thousands of Euros) in year 2007 (Source: Bank of Italy)	32.070	16.010
HHI	Regional Herfindahl-Hirschman concentration index of bank loans in year 2007 (Source: Bank of Italy)	9.8393	0.1969
Branch Density	Ratio between the number of bank branches and total population in each region in year 2007 (Source: Bank of Italy)	0.660	0.144
Decay Rate	Ratio between the number of new loans that are overdue compared to the stock of existing loans in each region in year 2007 (Source: Bank of Italy)	0.385	0.109
Legal Enforcement	Backlog of civil trials pending, normalised by the number of incoming civil trials (source: Italian Ministry of Justice)	2.329	0.566
Large Bank Branches	Number of branches of large banks (i.e., those with total assets higher than 26 billions of Euros) in each region in year 2007 (Source: Bank of Italy)	1430.140	972.646
Local Bank Branches	Number of branches of local banks in each region in year 2007 (Source: Bank of Italy)	797.297	539.626
Foreign Bank Branches	Number of branches of foreign banks in each region in year 2007 (Source: Bank of Italy)	27.390	38.317

Notes: descriptive statistics are computed using sample weights.