



BANCA D'ITALIA  
EUROSISTEMA

# Questioni di Economia e Finanza

(Occasional Papers)

Do firm-bank relationships affect firms' internationalization?

by Riccardo De Bonis, Giovanni Ferri and Zeno Rotondi

November 2014

Number

251





BANCA D'ITALIA  
EUROSISTEMA

# Questioni di Economia e Finanza

(Occasional papers)

Do firm-bank relationships affect firms' internationalization?

by Riccardo De Bonis, Giovanni Ferri and Zeno Rotondi

Number 251 – November 2014

*The series Occasional Papers presents studies and documents on issues pertaining to the institutional tasks of the Bank of Italy and the Eurosystem. The Occasional Papers appear alongside the Working Papers series which are specifically aimed at providing original contributions to economic research.*

*The Occasional Papers include studies conducted within the Bank of Italy, sometimes in cooperation with the Eurosystem or other institutions. The views expressed in the studies are those of the authors and do not involve the responsibility of the institutions to which they belong.*

*The series is available online at [www.bancaditalia.it](http://www.bancaditalia.it).*

ISSN 1972-6627 (print)

ISSN 1972-6643 (online)

*Printed by the Printing and Publishing Division of the Bank of Italy*

# DO FIRM-BANK RELATIONSHIPS AFFECT FIRMS' INTERNATIONALIZATION?

by Riccardo De Bonis\*, Giovanni Ferri\*\* and Zeno Rotondi\*\*\*

## Abstract

The goal of this paper is to investigate the link between the length of a firm-bank relationship and firm's internationalization. The analysis is carried out on matched firm-bank micro-data from a survey of Italian enterprises from 1998 to 2003. We obtain two main results. First, a longer relationship with the main bank fosters firms' foreign direct investment (FDI) while it does not affect the export status of the enterprises not engaging in FDI. Second, the probability of a firm undertaking FDI further increases if its main bank is itself internationalized by holding foreign subsidiaries.

**Classificazione JEL:** D21, F10, F21, F23, G21.

**Keywords:** internationalization, foreign direct investments, export, external finance, firm-bank relationships, bank internationalization mode.

## Contents

1. Introduction.....	6
2. Literature on firms and banks' internationalization.....	7
3. Statistics.....	9
4. Hypotheses, empirical methodology, results and robustness checks .....	11
4.1 The econometric approach.....	11
4.2 Results .....	13
4.3 Robustness checks .....	14
5. Conclusion.....	18
References .....	20
Tables .....	24

---

\* Banca d'Italia, Economics, Statistics and Research Department.

\*\* LUMSA University of Rome.

\*\*\* Unicredit Group. The paper is part of the research project on the Internationalization of Italian firms. A revised version of the paper will be published on International Economics. Stefano Federico provided helpful suggestions to a previous version. We thank Giacomo Cau for helping us to assemble the statistics on the internationalization mode of the main bank. The views of the paper belong exclusively to the authors and do not involve the responsibility of Banca d'Italia, the Eurosystem, and Unicredit Group.



## 1. Introduction

Internationalization is one of the main channels for firms' growth. However, raising the additional external finance required to internationalize is difficult as geographical distance and cross-country institutional differences make a company's assets and business more opaque. Thus, international firms could benefit from a strong relationship with their main bank, especially when that bank is itself internationalized. At the same time, the financing problems and the possible benefits from a strong firm-bank relationship could be larger for firms engaging in foreign direct investment (FDI), which imply greater sunk costs than exports.

Many papers have investigated the dichotomy between exports and FDI (see for example Head & Ries (2003), Helpman et al 2004, Arnold & Hussinger 2005, and Girma et al 2005) putting the emphasis on productive differences across firms but without focusing on credit relationships. On the other hand contributions such as Chaney (2005), Minetti & Zhu (2011), Manova et al (2011), and Manova (2013) underlined the importance of credit constraints for firm exports but without studying FDI.

The novelty of our paper is to investigate how firm-bank relationships affect not only firm exports but also FDI. Specifically, we test whether the length of the firm-bank relationship and the internationalization of the firm's main bank impact exports and/or FDI.

We propose three working hypotheses: i) when a non-financial enterprise enjoys a stronger relationship with its main bank, internationalization is more likely; ii) the beneficial impact of a more intense relationship with the main bank is greater for FDI, while it is smaller for exports, because the latter imply lower sunk costs than the former (Greenway and Kneller 2007); iii) the positive impact of relationship banking is greatest when the main bank is itself internationalized. Our analysis exploits a rich database with matched information on Italian firms and banks from 1998 to 2003.

Our main finding is that the length of the firm-bank relationship enhances FDI but not exports. Moreover, the probability of observing an FDI firm is greater if its main bank is itself internationalized through foreign subsidiaries. These results are robust to the use of various econometric specifications and techniques, including instrumental variables.

The paper is divided into five sections. Section 2 surveys the relevant literature on the

internationalization of enterprises and banks. Section 3 illustrates our database. Section 4 presents the econometric strategy and reports the results of the baseline equations as well as of robustness checks. Section 5 recaps our main results and points to additional questions for future research.

## **2. Literature on firms and banks' internationalization**

Our paper is linked to three lines of research: the existence of sunk costs for FDI and exports; relationship banking; banks' internationalization.

*Sunk costs of FDI and exports.* Any company has to choose whether to keep its entire business domestic or shift part of it abroad. The literature has frequently looked at two different forms of internationalization: foreign direct investments (FDI) and exports<sup>1</sup>. Both forms entail sunk costs (Helpman et al. 2004). These costs take various shapes: research, product compliance, red tape, distribution, advertising, transportation, and installment of a new plant (Greenaway and Kneller 2007). For example, investors undertake the risk that initially favorable conditions – e.g. tax exemptions and other incentives to incoming FDI – might change subsequently, to the point to divest at an unfavorable time, triggering large losses with respect to the initial investment cost, since capital goods are not easily re-deployable in the sense described by Williamson (1979).

Also exports have sunk costs. To become an exporter, a company must devote resources to identify its specific export market and undertaking the adjustment needed to make its products adequate to that market, tailoring them to local tastes and conforming to the target country's regulations (Alessandria & Choi 2007). These sunk costs – which vary depending on the nature of the exported item and of the distance to the exporting market – include, for example, R&D expenses, marketing and translation costs. Those investments are sunk in the sense that they will be lost in case the company discontinues exporting that product in that market. Sunk costs differ and are specific for each product type and national destination market, so that most companies end up exporting just a few products to a limited number of countries (Helpman et al. 2008; Chaney 2005). The literature points to those sunk costs as a key factor helping explain a series of puzzles, such as why the intensity of

<sup>1</sup> De Bonis et al (2008) also consider international off-shoring of production as a third form of company internationalization. However, here we chose to restrict the analysis only to FDI vs. exports for two main reasons. First, the bulk of the literature on company internationalization focuses on this dichotomous distinction. Second, including off-shoring might confound our analysis. Exporting implies that (a part of) the production achieved within the domestic domain of the company is sold abroad and making FDI also implies foreign production under the strict domain of the company. On the contrary it is not clear the extent to which off-shoring firms have effective control on the production performed abroad by the allied entities.



international trade – even though increasing – is still relatively low or why the export growth of countries whose exchange rate depreciates lags until depreciations become large. Using a sample of companies from Columbia, Roberts & Tybout (1997) find that the probability of exporting is 60% larger for companies which had past exporting experience.

We can state a hierarchy among the sunk costs connected to the different forms of productive internationalization. Sunk costs should be larger for FDI because these imply moving the entire production cycle abroad or shifting some nontrivial part of the production process abroad. Probably the sunk costs linked to the choice to start exporting are lower.

*Relationship banking.* Internationalization implies not only sunk costs but also greater asymmetries of information between firms and banks. Here we review papers that look at how the availability of credit impacts on firms' internationalization and that use – like us – individual data on banks and firms<sup>2</sup>.

Looking at the decrease of Japanese FDI in the 1990s in the US, Klein et al. (2002) show that the financial difficulties of the main banks were relevant in reducing the number of FDI initiatives by Japanese firms. Ushijima (2008) confirms the existence of a link between Japanese firm FDI and domestic bank health during the 1990s. The impact of the main bank health is smaller than that of non-main banks' health, suggesting that strict bank-firm links mitigate the effects of bank health deteriorations. While the two previous papers analyzed Japanese FDI, Amiti & Weinstein (2009) found that the health of domestic banks influenced Japanese firm exports during financial crises. But the evidence is not limited to Japan. Paravisini et al (2011) found that in Peru, after the 2008 financial crisis, the credit shortage reduced exports through increasing the cost of working capital for production. In turn, Manova et al. (2011) use micro data from China and find that foreign owned affiliates and joint ventures have better performance than private domestic firms: while limited credit availability hinders domestic firms' trade flows, foreign affiliates are less constrained because they can access additional funding from their parent company.

<sup>2</sup> Other papers have a macroeconomic approach and test whether internationalization is more likely for those firms active in countries enjoying more intense financial development. Most of these studies address the link between financial development and export. The underlying idea is that, against the firm's rising financial needs and in the face of the intensified asymmetry of information for the newly international company, better developed financial setups may help mitigate the problem. In a cross-country comparison over 30 years, Beck (2002) finds that countries with more developed financial systems show a larger share of manufacturing exports over GDP. Extending the analysis to the industrial sector level, Becker & Greenberg (2005) find that the degree of financial development increases exports and that such an impact is stronger for those industries with larger fixed costs. On the basis of a large sample of companies from Argentina, Espanol (2007) reports that the probability for a firm to become an exporter rises when it has better access to finance (measured through the answers the firms gives to a questionnaire). Chan & Manova (2013) show that the choice of countries' trade partners is influenced by financial imperfections that affect the number and identity of exporters' destinations.

Like many of the reviewed papers, our analysis of the impact of credit setup on firm's internationalization underlines the importance of the main bank. Our innovation is to introduce the length of the relationship between the firm and its main bank as the key variable to explain firm's internationalization. Petersen and Rajan (1994) were among the first to underline that ties between firms and their creditors influence the availability and costs of funds. They measured these ties using the length of relationships (in years) between banks and firms. Previous literature has already showed that the length of a firm-bank relationship was a good proxy of the extent to which a firm has access to external finance (Herrera and Minetti 2007; Ferri and Rotondi 2006; Ferri et al. 2007). We hypothesize that the more intense the banking relationship the easier it is for firms to go international without being penalized in their access to external finance because of increased opaqueness. According to our *a priori*, we may expect that the favorable impact of relationship banking should vary along with the intensity of the problems posed by the various forms of company internationalization. Taking into account our previous discussion of sunk costs connected to internationalization, the favorable impact of relationship banking should be smaller for exports and larger for FDI.

*The role of banks' internationalization.* Another goal of this paper is to test the existence of a link between firm internationalization and bank internationalization through branches and subsidiaries. According to Focarelli and Pozzolo (2001), banks buying foreign subsidiaries are usually large and come from developed credit systems. Branches are mainly active in wholesale markets, especially in the interbank segment, while the subsidiaries are more focused on retail markets. Branches tend to be more localized in large financial centres, with London in first place, while the subsidiaries are more present in emerging markets (Focarelli and Pozzolo 2005). In analysing the Chinese case, He and Gray (2001) find that industrial FDI increase strongly in those regions where banks previously invested. Even if this paper does not contain information on the country origin of banking and industrial FDI, it is plausible to think that there is a casual link going from the first to the latter also on a national base. This seems to be confirmed by Poelhekke (2011): using Dutch sector-level statistics he finds that the volume of FDI by home market banks boosts FDI by industrial firms from the same home market. The channel rests on banks' FDI in local branches and subsidiaries<sup>3</sup>. As the following sections will explain, we follow a similar strategy, distinguishing between the foreign presence of banks through branches or subsidiaries in order to understand if this geographical presence fosters

<sup>3</sup> On the links between bank internationalization and firm internationalization see also Buch & Lapp 1998, Buch 2000, Miller & Parkhe 1998, Seth et al (1998), Yamori (1998), von der Ruhr & Ryan (2005).

FDI and/or exports.

Now we turn to the empirical part of the paper.

### 3. Statistics

We collected both firm and bank statistics. The data on companies are taken from the Survey of Manufacturing Firms (SMF) conducted by Unicredit, an Italian bank<sup>4</sup>. Our analysis is based on the surveys carried out in 2002 (with reference to the period 1998-2000) and in 2004 (with reference to the years 2001-03). The SMF considers the universe of firms with more than 500 employees and a stratified sample of firms with less than 500 – but more than 10 – employees. To ensure the statistical representativeness of the smallest firms, the sample is stratified based on firm size (number of employees), sector (four sectors according to the Pavitt classification) and geographical area (North and Center-South). Each survey takes into account more than 4,000 firms; around 50% of the firms are replaced with other firms in every survey (rotating panel). There are various reasons for the replacement of firms in subsequent surveys: some firms may leave the manufacturing sector; others may reduce the number of employees to under the threshold of eleven; still others may have closed their business.

In the survey the entrepreneur is asked whether his firms exports and whether he has undertaken direct investment for producing abroad. This information includes any mergers and acquisitions (M&A) but excludes the case of off-shoring, i.e. where the entrepreneur has relocated a firm's business process abroad but does not hold at least 10 per cent of the equity of the foreign entity (the OECD threshold for FDI).

Our key explanatory variable is the length of the credit relationship between the firm and the main bank. The main bank is identified from the questionnaire of the survey, i.e. it is self-declared by the firm. We also take into account another indicator of the relationship between the bank and the firm: the presence of the main bank abroad. We know whether the main bank has branches or subsidiaries abroad and if it is a joint-stock bank, a popular cooperative bank or a mutual credit cooperative<sup>5</sup>. Our data also include the total number of banks that lend to the firm. The information on banks' foreign

<sup>4</sup> The survey was originally carried out by Mediocredito Centrale, then by Capitalia, and finally, after the merger of UniCredit and Capitalia, by UniCredit.

<sup>5</sup> The popular cooperative banks correspond to the German Volksbanken, the French Banques Populaires and the old English Building Societies. The mutual credit cooperatives correspond to the German Raiffeisen and the English/American Credit Unions.

branches, subsidiaries and legal status is taken from Bank of Italy's statistics.

We took into account some control variables concerning firm's characteristics: size (total assets), years of activity since foundation, membership of a group, and whether it is a corporation. Other financial indicators for firms might influence the length of the credit relationship: return on equity (ROE), leverage, membership of mutual loan guarantee consortia. Other control variables refer to innovative financial instruments when used by firms, such as mezzanine finance, commercial paper, corporate debentures, project finance, private equity and venture capital. We included some variables on the efficiency and product quality of firms, approximated by the ISO9000 certification, and on firms' competitiveness, measured by the presence of international competitors. We considered some variables related to the location of firms in an industrial district that might affect the firm-bank relationship. We also included some variables capturing regional or provincial characteristics: a dummy variable for the South, per capita value added at the provincial level and the Herfindahl index of loans. Time dummies served as controls for the possible effects of the business cycle.

Table 1 shows the definitions and sources of the statistics (see Section 4 for the use of instrumental variables). Table 2 presents the descriptive statistics for the variables used in the estimations, showing substantial variation in all our key indicators. The median firm has been in business for 23 years and reports total assets of around 800,000 euro. Almost 96% of the firms are established as corporations; 15% are located in the less developed South; 48.0% are located in industrial districts. Of the total, 26.1% belong to a group; only 3.0% adhere to credit consortia; 47.3% hold an ISO9000 certification. Regarding our dependent variables, 6,290 firms, or around 71% of the whole sample, have exported and 237 firms, or 2.7% of the whole sample, have made FDI. The firms both exporting and undertaking FDI are 227.

As to our key explanatory variables, the average duration of the credit relationship with the main bank (taking the antilog of the number reported in the table) is 15 years and ranges from 3 (average duration in the 1<sup>st</sup> percentile) to 56 years (average duration in the 99<sup>th</sup> percentile). The average number of banks (again taking the antilog of the number reported in the table) is 5 and ranges from 1 to 20 respectively. The most frequent type of domestic main bank is an independent joint-stock bank (77.2%) followed by a popular cooperative bank (17.5%) and a mutual credit cooperative bank (4.7%). A very small number of firms in the sample have as their main bank a foreign bank. Of the domestic main banks, 47.3% have either a branch or a subsidiary abroad or both (4163 firms in the whole sample), of which 32.8% are independent joint-stock banks and 14.5% are popular cooperative banks and none are mutual credit cooperative banks. The share of main banks with a branch abroad is 41.4%

while the share of those with a subsidiary abroad is 32.5%.

#### 4. Hypotheses, empirical methodology, results and robustness checks

##### 4.1 The econometric approach

In our baseline analysis we assume that the different internationalization activities are undertaken sequentially, with firm's investing abroad only after starting to export. Therefore, we develop an ordered probit analysis with the dependent variable defined as a categorical variable  $y$  taking value 2 if the firm is undertaking FDI and exporting, value 1 if is exporting but is not undertaking FDI and value 0 if it is neither exporting nor undertaking FDI. We consider the length of the relationship between a firm and its main bank as the key explanatory variable. This variable can be interpreted as a proxy for the intensity of the firm-bank relationship (*informational tightness*) and, as stated in the Introduction, our hypothesis is that it has a statistically and economically significant impact on firm's internationalization choices (Hypothesis 1). Second, we expect this impact to be stronger for FDI (Hypothesis 2). Third, we test whether the pro-FDI effect of the length of the firm-bank relationship is greater when the main bank is also internationalized (Hypothesis 3)<sup>6</sup>. To check the robustness of the relationship between the firm's internationalization and the length of its credit relationship, we introduce further regressors, such as firm indicators and variables describing the local economy.

The firm's choice of investing abroad or exporting can be modeled as an ordered probit in the following way:

$$y^* = \alpha_1 x + z_1 \delta_{11} + u, \quad (1)$$

where  $x$  measures the intensity of the firm-bank relationship,  $z_1$  is a vector of control variables and  $y^*$  is a latent or unobserved continuous variable related to the set of explanatory variables. Although  $y^*$  is unobserved,  $y$  is observed and related to  $y^*$  by the following relationships:

<sup>6</sup> As the estimations are based on pooled data with some firms repeated in the two surveys and given the presence of covariates in the model varying at province level (value added, HHI) standard errors are adjusted by regional and firm-level clustering.

$$\begin{aligned}
y = 0 & \quad \text{if} \quad y^* \leq \beta_1 \\
y = 1 & \quad \text{if} \quad \beta_1 \leq y^* \leq \beta_2 \\
y = 2 & \quad \text{if} \quad y^* \geq \beta_2
\end{aligned} \tag{2}$$

where  $\beta_1 < \beta_2$  are the unobserved cut points identifying the boundaries between the different levels of international activities. The parameters  $\alpha_1$  and  $\delta_{11}$  together with the threshold levels on the latent variable that characterize the transition from one observed categorical response to the next according to the cut points  $\beta_1$  and  $\beta_2$  can be obtained by maximum likelihood estimation. To examine the role of the bank's internationalization choices – relating to Hypothesis 3 – we repeat the estimation of the ordered probit model for different sub-samples defined according to the degree of the main bank's internationalization. We expect the effect of the duration of the credit relationship on the firm's internationalization (exports or FDI) to become stronger as the degree of internationalization of its main bank increases (i.e. from branches to subsidiaries).

The ordered probit allows us to test only the hypotheses 1 and 3 but is mute about hypothesis 2. Thus, aiming to disentangle the differential effect of the length of the credit relationship between (i) not exporting and exporting without undertaking FDI from that between (ii) exporting and undertaking FDI we consider also the following two probit models:

$$\begin{aligned}
y^{HI} &= \alpha_1 x + z_1 \delta_{11} + \eta , \\
y^{LI} &= \alpha_1 x + z_1 \delta_{11} + \kappa ,
\end{aligned} \tag{3}$$

where  $y^{HI}$  (highly internationalized) is a dichotomous variable which takes value 1 if the firm is simultaneously exporting and undertaking FDI and 0 if it only exports, while  $y^{LI}$  (less internationalized) is a dichotomous variable which takes value 1 if the firm is exporting but not undertaking FDI and 0 if it is a purely domestic firm (i.e. it produces and sells only domestically).

## 4.2 Results

In Table 3 we report the ordered probit estimation with the dependent variable defined as a categorical variable  $y$  taking value 2 if the firm is undertaking FDI and exporting, value 1 if it is exporting but is not undertaking FDI and value 0 if it is neither exporting nor undertaking FDI. In the first column we report the estimates for the whole sample while in the remaining columns we present the estimates for three sub-samples: the main bank being an independent joint-stock bank, a popular cooperative bank and a mutual credit cooperative bank.

For the whole sample (first column) the relationship length has a positive and significant coefficient (5% significance level). Looking at the other explanatory variables, firm's size, being a corporation, participation to a credit consortium, use of innovative financial instruments, and the indicators on firm efficiency and product quality have a positive impact on internationalization. On the contrary, being a firm located in the South has a negative impact on internationalization reflecting the well-known North-South divide in Italy examined in the literature (see for instance Guiso et al. 2004a; 2004b). Interestingly, columns 2-4 show that only when the main bank is an independent joint-stock bank the impact of the relationship length remains statistically significant (5% significance level)<sup>7</sup>. The rationale for this finding, which is not surprising, is related to the fact that popular cooperative banks and mutual credit cooperative banks mainly focus their business in domestic credit markets.

In Table 4 we report the analysis for the degree of internationalization of the main bank, for the case of an independent joint-stock bank. The length of a firm-bank relationship maintains a positive link with firm's internationalization. When we restrict the estimation sample to the case of the main bank having subsidiaries abroad, the impact of relationship length remains statistically significant (although only at the 10% significance level). On the contrary, if we restrict the estimation sample to the case where the main bank has only branches abroad the impact of the relationship length is no longer significant.

Tables 5 and 6 move to the two probit specifications. Table 5 checks whether the intensity of the firm-bank relationship affects the probability of becoming an exporting firm. Table 5 detects no significant impact. Our results coincide with those of Minetti and Zhu that did not find an association between the length of the firm-bank relationship and export. Also according Buono and Formai

<sup>7</sup> We obtained the same result also using the interaction between the length of the banking relationship and the bank legal form (results are available from the authors upon request).

(2013) in the period 1997-2009 in Italy export flows were not affected by-short-run shocks in the credit supply.

Table 6 tests the impact of the firm-bank relationship on the likelihood that an exporting firm makes also FDI. As Table 6 shows, the firm-bank relationship seems to be an important factor for exporting firms to make FDI in all cases considered (always at the 5% significance level).

Table 7 focuses on the highly internationalized firms – i.e. those both exporting and making FDI – showing the marginal effects computed at the means of the independent variables. Our findings have economic relevance. The impact of relationship length increases as the degree of internationalization of the main bank increases. When the main bank has subsidiaries abroad the marginal effect of relationship length is close to the average predicted probability of the probit model (respectively 1.68% versus 1.98%). Hence the relationship length has economic relevance on firm's internationalization especially when the main bank has subsidiaries abroad.

### ***4.3 Robustness checks***

As a first step, we check for the existence of potential endogeneity problems. In the literature the method of instrumental variables (IV) is applied to address endogeneity among the dependent and independent variables. We account for the possible presence of endogeneity in the relationship between the choice of internationalization and the length of the firm-bank relationship. Banks might simply intensify the relationship with the firm following the realization of exports and/or FDI. The idea is to find some variables that may influence the length of the credit relationship but are not able to affect the choice of firms to internationalize and therefore are not correlated with the residuals of our equations. Our strategy was mainly influenced by two papers.

First, Guiso *et al.* (2004a) examined the effect of regional financial development on economic performance, finding a positive influence. As this positive correlation might depend on a causal nexus between economic performance and financial development, they use a set of economic variables to instrument their indicator of local financial development. These instruments refer to the regional banking structure in 1936, when a key banking regulation was introduced in Italy: branches per inhabitants, share of branches owned by local banks, number of saving banks per inhabitants, number of cooperative banks per inhabitants. This old regional banking structure was not correlated with the historical economic development of Italian regions (as it was determined by “historical accidents”)



and therefore is uncorrelated with the residuals of the main equation where economic performance is the dependent variable. Guiso *et al.* find a good fit when they regress the indicator of regional financial development on the set of instruments.

Second, Herrera and Minetti (2007) take the same approach. Using our same survey, they find that the information of the firm's main bank, approximated by the duration of the credit relationship, promotes technological innovation. But the duration of the credit relationship might not be exogenous with respect to product and process innovation, as in our case the length of the credit relationship might not be exogenous with respect to firm internationalization. Therefore, in order to find some instruments they try to identify shocks to the local supply of banking services. The idea is that these shocks influence "firms' decisions to continue with their main banks and banks' decisions to continue with their customary borrowers and, hence, the duration of credit relationships" (Herrera and Minetti 2007, p. 236). Therefore they regress the duration of the credit relationship on some provincial variables that have affected the local supply of banking services. Two variables are taken from Guiso *et al.* (2004a: saving banks and cooperative banks in 1936); other two variables consider the average number of bank branches created by incumbents and, respectively, by entrants in the provinces in the first years of branch liberalization in Italy (1991-1998). Finally, the authors find a positive relationship between technological innovation and the instrumented length of the credit relationship.

Our key independent variable is the length of the relationship between the firm and its main bank. We choose as instruments three indicators that may affect this relationship.

The first variable is the number of bank branches per 1,000 citizens in the provinces during the 1991-1998 period. The second variable is the number of branches per 1,000 citizens opened by new entrants in each province during the 1991-1998 years. It is reasonable to assume that these two changes in the local supply of loans might influence credit relationships while they are not able to affect the choice of firms to make FDI and/or to export. These two variables describe the structure of banking markets during the 1990s, when the Italian banking sector was deregulated.

The third instrument describes the banking markets in 1936 – when a restrictive regulation was introduced in Italy – and refers to the number of saving banks per 10,000 citizens in each region. Since the 1930s each bank could open branches only in a specific area of competence. These strict limits survived until the end of the 1980s, when – following European directives – banking deregulation took place. The strict regulation influenced banks' choices in their respective areas of competence and therefore credit relationships with firms were also affected.

To exploit the instrumental variable approach, the choice of investing abroad or exporting can

be modeled in the following way:

$$y = \alpha_1 x + z_1 \delta_{11} + u, \quad (4)$$

where  $y$  is a dichotomous variable which takes value 1 if the firm is internationalized (FDI or exports), 0 otherwise. Considering the interpretation of the instrumental variables given by Two Stages Least Squares (TSLS), we first define a vector of instrumental variables  $z_2$  correlated with the endogenous explanatory variable  $x$ , but uncorrelated with the stochastic error  $u$  in regression (4). The effect of these instrumental variables is captured by the vector of parameters  $\delta_{22}$  in the auxiliary regression:

$$x = z_1 \delta_{21} + z_2 \delta_{22} + v, \quad (5)$$

where  $x$  is the endogenous explanatory variable in (4),  $z_1$  is the vector of control variables in (4) and  $v$  is the residual. After estimating regression (5) at the first stage,  $x$  is replaced by its estimated values in regression (4). This last equation is then estimated at the second stage.

As far as the signs of the coefficients of our instrumental variables are concerned, we do not have clear ex-ante hypotheses. The shocks to the supply of local banking services and the intensity of bank regulation may produce ambiguous signs on the duration of credit relationships. To ensure the validity of the chosen instruments we perform diagnostic checks. A good instrument must be correlated with the endogenous variable and orthogonal to the error term. We have tested the assumption of correlation with an F-test of the excluded instruments in the first-stage regression. We have tested the assumption of correlation also with an F-test of the excluded instruments that corresponds to Shea's (1997) "partial  $R^2$ " measure of instrument relevance, which takes intercorrelations among instruments into account. In turn, the assumption of orthogonality to the error term is tested using the Hansen-Sargan overidentification test. In the tables we report the  $p$ -value of the J-statistic. A rejection of the Hansen-Sargan overidentification test can be interpreted as either having invalid instruments and/or incorrect model specification. We also report an F-statistic for an exogeneity test on IV.

A limit of the analysis described is that the IV estimation implicitly assumes a linear probability model for the firm's choice to go international. For this reason, like Ferri et al. (2007), we

have also considered an IV-Probit estimation, following the methodology of Wooldridge (2002). This methodology does not require the assumption of a linear probability model and uses maximum conditional likelihood to estimate a Probit model with an endogenous explanatory variable. A test on the exogeneity of the instrumented variable is also performed, with the test statistic distributed as a chi-squared.

As discussed in Herrera and Minetti (2007), the duration of loan relationships might only partially capture the intensity of the link between banks and firms, due to the presence of multiple credit relationships. Indeed a firm can borrow from other banks, while maintaining a privileged relationship with one specific bank. Accounting for this possibility is particularly important in the case of Italy, due to the widespread practice of multiple credit relationships among SMEs. Thus, as a further robustness check we estimate in the first stage, besides equation 5, the following equation:

$$w = z_1\delta_{31} + z_2\delta_{32} + \psi, \quad (6)$$

where  $w$  is the number of banks. In other words we also instrument the number of banks.

In Table 8 we report the first-stage regressions for the relationship length and the number of banks. In both cases the null hypothesis of excluded instruments is rejected at respectively a 5% and 1% confidence level.

Table 9 shows the results of the Probit, IV and IV-Probit estimations for the determinants of exports. Our main interest is to explain the estimates obtained for the length of the firm-bank link. The impact of the length of the firm-bank relationship is not statistically significant in explaining exports in all estimations. This evidence is consistent with the results of Table 5. The  $J$ -statistic has a p-value of 0.41 and hence the overidentification test does not reject the joint null hypothesis that the chosen instruments are valid. However, the exogeneity test fails to reject the null hypothesis that the instrumented regressor can be treated as an exogenous variable in both the IV-2SLS and the IV-Probit estimations. Table 10 reports the IV-Probit estimations for the role of internationalization of the main bank. We find a significant estimated coefficient for the relationship length (at the 1% significance level) only when the main bank has subsidiaries abroad. Again the exogeneity test fails to reject the null hypothesis that the instrumented regressor can be treated as an exogenous variable.

Table 11 shows the results of the Probit, IV and IV-Probit estimations for the determinants of FDI. The impact of the length of the firm-bank relationship is statistically significant in all estimations. The  $J$ -statistic has a p-value of 0.62 and hence the overidentification test does not reject the joint null

hypothesis that the chosen instruments are valid. The exogeneity test rejects the null hypothesis that the instrumented regressor can be treated as an exogenous variable in both the IV-2SLS and the IV-Probit estimations. Table 12 reports the IV-Probit estimations for the role of internationalization of the main bank. We find a significant estimated coefficient for the relationship length – at the 1% significance level – when the main bank has subsidiaries abroad. The exogeneity test rejects the null hypothesis that the instrumented regressor is an exogenous variable.

Finally, in Table 13 we check for the impact of the presence of multiple credit relationships. As discussed previously, a firm can borrow from other banks, while maintaining a privileged relationship with one specific intermediary. This implies that the length of credit relationships might not exhaustively capture the degree of informational tightness between the firm and its main bank. As Table 13 shows, our previous findings on the impact of the relationship length on exports and FDIs are all confirmed. The number of banks is statistically significant (1% significance level) in the Probit estimations, but becomes not significant when the endogenous variables are instrumented.

Hence we find robust empirical support for the idea that having an internationalized main bank strengthens the importance of informational tightness for becoming an internationalized firm. The most significant impact of the relationship length is when the main bank has subsidiaries abroad. This is not surprising if one considers that banking abroad through branches is almost exclusively a wholesale type of business while having subsidiaries abroad implies gaining access to the foreign retail markets. It almost goes without saying that the latter mode of entry reasonably entails a much more effective ability by lenders to defuse the opacity of internationalized enterprises.

## **5. Conclusion**

Using data on Italian manufacturing enterprises, this paper addressed the factors influencing the choice of a firm to export and/or to realize FDI focusing on the role played by the length of the relationship between the firm and its main bank.

We shed new light on the link between credit constraints and firm internationalization. On one hand, a strand of previous literature addressed why some firms remain purely domestic while others export and/or make FDI explaining this decision on the basis of productive differences across firms, but neglecting the role of finance. On the other hand, another strand underlined the importance of credit constraints for internationalization choices but neglected the difference between exports and FDI. Instead, this paper investigated both exports and FDI decisions identifying the impact of the

firm-bank relationship and controlling for the internationalization mode of the main bank.

We made two germane contributions. First, the duration of the relationship with the main bank does affect the probability that a firm already exporting will also realize FDI. On the contrary, the duration of the relationship with the main bank does not impact the probability that a purely domestic firm becomes an exporter. Second, the duration of the firm-bank relationship seems to be important mostly when the main bank is itself internationalized having subsidiaries abroad. These results were obtained introducing several control variables and showed resilient to various robustness checks addressing the potential endogeneity biases by introducing appropriate instrumental variables and using suitable econometric techniques.

While answering some questions, our results also raise new issues. We will mention just three. First, it would be interesting to ascertain the correctness of our conjecture as to the channels through which lender-borrower asymmetries of information can be reduced. Namely, is it its presence in the same country that helps the internationalized main bank with subsidiaries to assess the creditworthiness of the borrowing firm undertaking FDI there? Or, rather, is it enough for the main bank to have a “generic” expertise on doing business abroad? Second, our findings that exporting seems to generate larger sunk costs when it is coupled with making FDI, with respect to an exporting only status, deserves further investigation. A specific question is whether the exports of firms that also make FDI are homogeneous to those of firms that export without undertaking FDI. In particular, is it possible that exports and FDI are complements rather than substitutes in the prevalence of our sample? Third, it would make sense extending the analysis to the years after the financial crisis and ask whether the “Great Recession” altered the association between the intensity of firm-bank relationship and firm internationalization. For instance Del Prete and Federico (2014) find that after the Lehman Brothers collapse in Italy the credit contraction had a negative effect on exports. We leave these questions to future research.

## References

- ALESSANDRIA G., H. CHOI (2007), *Do Sunk Costs of Exporting Matter for Net Export Dynamics?*, Quarterly Journal of Economics, 122(1), 289-336.
- AMITI M., D. E. WEINSTEIN (2009), Exports and Financial Shocks, NBER Working Paper, n. 15556.
- ARNOLD J., HUSSINGER K. (2005), *Export versus FDI in German Manufacturing: Firm Performance and Participation in International Markets*, ZEW Discussion Paper, No. 05-73.
- BECK T. (2002), *Financial Development and International Trade. Is there a Link?*, Journal of International Economics, 57, 107-131.
- BECKER B., GREENBERG D. (2005), *Financial development and international trade*, Paper series, University of Illinois at Urbana-Champaign, [www.business.uiuc.edu/bobecker/beckergreenberg.pdf](http://www.business.uiuc.edu/bobecker/beckergreenberg.pdf).
- BUONO I., S. FORMAI (2013), *Bank Credit and Firm Export: Is There Really a Link?*, Bank of Italy, mimeo.
- BUCH C.M. (2000), *Why Do Banks Go Abroad - Evidence from German Data*, Financial Markets, Institutions and Instruments, 9(1), 33-67.
- BUCH C.M., LAPP S. (1998), *The Euro - No Big Bang for European Financial Markets*, Konjunkturpolitik, 47, 11.
- CHAN M. L., MANOVA K. (2013), *Financial Development and the Choice of Trade Partners*, NBER Working paper n. 18867.
- CHANEY T. (2005), *Liquidity Constrained Exporters*, University of Chicago, mimeo.
- DE BONIS R., FERRI G., ROTONDI Z. (2008), “*Firms’ internationalization and relationships with banks*”, in: G. BRACCHI and D. MASCIANDARO (eds.), *Banche italiane e governo dei rischi. Imprese, famiglie, regole*, Rome, Bancaria Editrice.
- DEL PRETE S., FEDERICO S. (2014), *Trade and Finance: Is There More Than Just “Trade Finance”? Evidence from Matched Bank-Firm Data*, Bank of Italy, Working Paper 948, January.
- ESPANOL P. (2007), *Exports, sunk costs and financial restrictions in Argentina during the 1990s*, Paris School of Economics working paper, No. 2007 – 01.
- FERRI G., ROTONDI Z. (2006), “*Does finance matter in the respecialization of Italy’s industrial districts?*”, in: G. BRACCHI and D. MASCIANDARO (eds.), *Banca, Mercati e Territori: Le Nuove Geografie*, Rome, Bancaria Editrice.
- FERRI G., MINETTI R., ROTONDI Z. (2007), “*Market finance through relationship banking*”, in: G. BRACCHI and D. MASCIANDARO (eds.), *Banche Italiane: Un’Industria al Bivio*, Rome, Bancaria Editrice.

- FOCARELLI D., POZZOLO A.F. (2001), *The pattern of cross border bank mergers and shareholdings in OECD countries*, Journal of Banking and Finance, 25, 2305-2337.
- FOCARELLI D., POZZOLO A.F. (2005), *Where Do Banks Expand Abroad? An Empirical Analysis*, The Journal of Business, 78, 2435–2464.
- GIRMA S., KNELLER R., PISU M. (2005), *Exports versus FDI, An empirical test*, Review of World Economics, vol. 141(2), 193-218, June.
- GREENAWAY, D. and R. KNELLER (2007), *Firm heterogeneity, exporting and foreign direct investment*, Economic Journal 117: 134-161.
- GUIO L., SAPIENZA P., ZINGALES L. (2004a), *Does local financial development matter?*, Quarterly Journal of Economics, 119, 929-69.
- GUIO L., SAPIENZA P., ZINGALES L. (2004b), *The role of social capital in financial development*, American Economic Review, 94, 526-56.
- HE Q., GRAY H.P. (2001), *Multinational banking and economic development: a case study*, Journal of Asian Economics, 12, 233–43.
- HEAD K., RIES J. (2003), *Heterogeneity and the FDI versus export decision of Japanese Manufacturers*, Journal of the Japanese and International Economics, 17, 448-467.
- HELPMAN E., MELITZ M.J., YEAPLE, S.R. (2004), *Export Versus FDI with Heterogeneous Firms*, American Economic Review 94, 1, March, 300-316.
- HELPMAN E., MELITZ M.J., RUBINSTEIN Y. (2008), *Estimating Trade Flows: Trading Partners and Trading Volumes*, The Quarterly Journal of Economics, CXXIII(2).
- HERRERA A.M., MINETTI R. (2007), *Informed finance and technological change: evidence from credit relationships*, Journal of Financial Economics, 83, 223-269.
- KLEIN M. W., J. PEEK, E. S. ROSENGREN (2002), *Troubled Banks, Impaired Foreign Direct Investment: The Role of Relative Access to Credit*, American Economic Review, 92, 664-682.
- MANOVA K., S.-J. WEI , Z. ZHANG (2011), *Firm Exports and Multinational Activity under Credit Constraints*, NBER working paper n. 16905, March.
- MANOVA K. (2013), *Credit Constraints, Heterogeneous Firms, and International Trade*, The Review of Economic Studies, 80(3), 711-744.
- MILLER S., PARKHE A. (1998), *Patterns in the Expansion of U.S. Banks' Foreign Operations*, Journal of International Business Studies, 29(2), 359-390.
- MINETTI R., S. C. ZHU (2011), *Credit constraints and firm export: Microeconomic evidence from Italy*, Journal of International Economics, 83(2), 109-125.

- PARAVISINI D., V. RAPPOPORT, P. SCHNABL, D. WOLFENZON (2011), “*Dissecting the Effect of Credit Supply on Trade: Evidence from Matched Credit-Export Data*”, NBER Working Paper, No. 16975, April.
- POELHEKKE S. (2011), *Home Bank Intermediation of Foreign Direct Investment*, CESifo Working Paper 3490, May..
- ROBERTS M.J., TYBOUT J.R. (1997), *The decision to export in Colombia: An empirical model of entry with sunk costs*, American Economic Review, 87 (4), 545–564.
- SETH R., NOLLE D.E., MOHANTY S.K. (1998), *Do Banks Follow Their Customers Abroad?*, Financial Markets, Institutions & Instruments, 7 (4), 1–25.
- SHEA J., (1997), *Instrument Relevance in Multivariate Linear Models: A Simple Measure*, Review of Economics and Statistics, 79, 348:52.
- USHIJIMA T: (2008), *Domestic Bank Health and Foreign Direct Investment*, Journal of Japanese and International Economies, 22, 291-309.
- VON DER RUHR M., RYAN M. (2005), *"Following" or "attracting" the customer? Japanese banking FDI in Europe*, Atlantic Economic Journal, 33 (4), 405-422.
- WILLIAMSON O.E. (1979), *Transaction Cost Economics: The Governance of Contractual Relations*, Journal of Law and Economics, XXII, 233-61.
- WOOLDRIDGE J.M. (2002), *Econometric analysis of cross section and panel data*, The MIT Press, Cambridge Mass.
- YAMORI N. (1998), *A Note on the Location Choice of Multinational Banks: The Case of Japanese Financial Institutions*, Journal of Banking and Finance, 22, 109-120.



**Table 1 – Variables: definition and source**

	Definition	Source
<b><i>Dependent variables:</i></b>		
FDI	Dummy that takes the value 1 if the firm has made FDI; 0 otherwise	Capitalia Survey
Export	Dummy that takes the value 1 if the firm has exported products abroad; 0 otherwise	Capitalia Survey
<b><i>Endogenous variables:</i></b>		
Relationship length	Log of the number of years of the relationship between the firm and its main bank	Capitalia Survey
Banks	Log of the number of banks with which the firm entertains credit relationships	Capitalia Survey
<b><i>Instrumental variables:</i></b>		
Branches	Average number of branches per 1,000 citizens in the province during the 1991-1998 period	Herrera-Minetti (2007)
Saving banks in 1936	Number of saving banks per 10,000 citizens in the region in 1936	Guiso <i>et al.</i> , 2004a
New branches entrants	Average number of new branches created by entrants per 1,000 citizens in the province during the 1991-1998 period	Herrera-Minetti (2007)
<b><i>Exogenous variables:</i></b>		
HHI	Average Herfindahl-Hirschman Index on bank loans in the province during the 1991-1998 period	Herrera-Minetti (2007)
Total assets	Log of total assets	AIDA
ROE	Return on equity	AIDA
Leverage	Ratio of financial debt to financial debt plus net capital	AIDA
ROI	Return on investment	AIDA
Innovative financial instruments	Dummy that takes the value 1 if the firm uses innovative financial instruments; 0 otherwise.	Capitalia Survey
Credit consortium	Dummy that takes the value 1 if the firm belongs to a credit consortium; 0 otherwise	Capitalia Survey
Corporation	Dummy that takes the value 1 if the firm is a corporation; 0 otherwise	Capitalia Survey
Group	Dummy that takes the value 1 if the firm belongs to a group; 0 otherwise	Capitalia Survey
Age	Log of the number of years of the firm from its foundation	Capitalia Survey
Value added	Per capita value added in the province in 1991	ISTAT
Located in an industrial district	Dummy that takes the value 1 if the firm is located in an industrial district but not necessarily belongs to the same industry of the district; 0 otherwise	Capitalia Survey
Located in an industrial district of the made-in-Italy	Dummy that takes the value 1 if the firm is located in an industrial district of the made-in-Italy but not necessarily belongs to the same industry of the district; 0 otherwise	Capitalia Survey
International competitors	Dummy that takes the value 1 if the firm has international competitors; 0 otherwise	Capitalia Survey
ISO9000 certified	Dummy that takes the value 1 if the firm is ISO9000 certified; 0 otherwise	Capitalia Survey
South	Dummy that takes the value 1 if the firm is located in a region South of Rome, with Lazio excluded; 0 otherwise	Capitalia Survey

**Table 1 – Variables: definition and source (continued)**

	Definition	Source
<i>Control variables:</i>		
Internationalized bank	Dummy that takes the value 1 if the main bank of the firm has branches and/or subsidiaries abroad; 0 otherwise	Bank of Italy
Bank with branches abroad	Dummy that takes the value 1 if the main bank of the firm has branches abroad; 0 otherwise	Bank of Italy
Bank with subsidiaries abroad	Dummy that takes the value 1 if the main bank of the firm has subsidiaries abroad; 0 otherwise	Bank of Italy
Independent joint-stock bank	Dummy that takes the value 1 if the main bank of the firm is an independent joint-stock bank; 0 otherwise	Bank of Italy
Popular cooperative bank	Dummy that takes the value 1 if the main bank of the firm is a popular cooperative bank; 0 otherwise	Bank of Italy
Credit cooperative bank	Dummy that takes the value 1 if the main bank of the firm is a credit cooperative bank; 0 otherwise	Bank of Italy

**Table 2 – Summary statistics**

	Median	Mean	1st Percentile	99th Percentile	Standard Deviation
FDI	0	0.027	0	1	0.163
Export	1	0.709	0	1	0.454
Relationship length	2.773	2.684	1.099	4.025	0.683
Banks	1.609	1.512	0	2.996	0.613
Saving banks in 1936	0.032	0.029	0	0.102	0.027
New branches entrants	0.002	0.003	0	0.009	0.002
Branches	0.473	0.460	0.202	0.795	0.118
HHI	0.064	0.070	0.036	0.196	0.028
Total assets	6.693	6.792	5.801	8.662	0.615
ROE	4.728	5.204	-54.318	53.517	17.936
Leverage	0.923	0.885	0.467	0.998	0.118
Innovative financial instruments	0	0.043	0	1	0.203
Credit consortium	0	0.030	0	1	0.170
Corporation	1	0.959	0	1	0.198
Group	0	0.261	0	1	0.439
Age	3.135	3.069	1.386	4.585	0.676
Value added	2.663	2.613	1.997	3.000	0.235
Located in an industrial district	0	0.480	0	1	0.500
Located in an industrial district of the made-in-Italy	0	0.307	0	1	0.461
International competitors	0	0.344	0	1	0.475
ISO9000 certified	0	0.473	0	1	0.499
South	0	0.154	0	1	0.361
Internationalized bank	0	0.473	0	1	0.499
Bank with branches abroad	0	0.414	0	1	0.493
Bank with subsidiaries abroad	0	0.325	0	1	0.468
Independent joint-stock bank	1	0.772	0	1	0.419
Popular cooperative bank	0	0.175	0	1	0.380
Credit cooperative bank	0	0.047	0	1	0.211

**Table 3 – Relationship length and firm’s internationalization by main bank type**

	Ordered probit		Ordered probit		Ordered probit		Ordered probit	
	All banks		Independent joint-stock bank		Popular cooperative bank		Credit cooperative bank	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
Relationship length	0.0444**	0.0212	0.0532**	0.0269	-0.0248	0.0497	0.1692	0.1698
HHI	-2.4499	1.5385	-1.9426	1.7357	-4.9858	3.1993	-3.2246	3.1561
Leverage	0.0695	0.1952	0.0379	0.2184	-0.4306**	0.2084	0.4677	0.7175
Total assets	0.6833***	0.0437	0.6679***	0.0419	0.7097***	0.0788	0.9046***	0.1907
ROE	0.0010	0.0010	0.0016	0.0012	0.0004	0.0009	-0.0025	0.0047
Innov. financial Instruments	0.1661**	0.0720	0.1312	0.0801	0.3983**	0.1773	0.1644	0.3802
Credit consortium	0.2728***	0.0942	0.1561	0.1138	0.6073***	0.1617	0.3543	0.3880
Corporation	0.4382***	0.1175	0.4089***	0.1380	0.4023**	0.1762	0.4455	0.4003
Group	-0.0878**	0.0417	-0.0926**	0.0399	0.0380	0.1126	-0.1188	0.1361
Age	0.0236	0.0331	0.0155	0.0350	0.0766	0.0779	-0.2009	0.1350
International competitors	0.7905***	0.0261	0.8343***	0.0466	0.6864***	0.1012	1.1188***	0.2919
ISO 9000 certified	0.0997**	0.0499	0.0957*	0.0510	0.1711	0.1209	-0.2415	0.1529
Value added	-0.1197	0.1574	-0.0968	0.1852	-0.6531**	0.2946	1.5231**	0.6902
South	-0.3079***	0.0884	-0.2967***	0.1059	-0.5818***	0.2189	0.0769	0.4027
Located in an industrial district	0.0660	0.0522	0.1057**	0.0490	0.1364	0.1046	-0.4875**	0.1955
Located in an industrial district of the made-in-Italy	0.0357	0.0621	-0.1219	0.1066	0.3633**	0.1694	0.9297**	0.3604
<i>Observations</i>	6590		4986		1155		321	
<i>Pseudo R<sup>2</sup></i>	0.1855		0.1910		0.2010		0.2818	

*Notes:* Pooled estimations using the last two waves of the Capitalia survey (1998-2000 and 2001-2003). The dependent variable is a categorical variable taking value 2 if the firm is undertaking FDI and exporting, value 1 if is exporting but is not undertaking FDI and value 0 if is neither exporting nor undertaking FDI. The endogenous variable is the log of the number of years of the relationship between the firm and its main bank. For the definition of the independent variables see Table 2. The estimations include constant, industry and time dummies. Pseudo R<sup>2</sup> and robust standard errors adjusted by regional and firm-level clustering are reported. (\*): coefficient significant at 10 percent; (\*\*): coefficient significant at 5 percent; (\*\*\*): coefficient significant at less than 1 percent.

**Table 4 – Relationship length and firm’s internationalization: Internationalization mode of the main bank**

	Ordered probit		Ordered probit		Ordered probit	
	Indep. joint-stock and internationalized bank		Indep. joint-stock bank with branches abroad		Indep. joint-stock bank with subsidiaries abroad	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
Relationship length	0.0869*	0.0465	0.0729	0.0498	0.1015*	0.0573
HHI	-2.1373	1.3436	-2.3528*	1.3321	1.0560	2.4188
Leverage	0.2309	0.3425	0.2000	0.3442	0.1162	0.3580
Total assets	0.6575***	0.0649	0.6988***	0.0781	0.5902***	0.0700
ROE	0.0009	0.0020	0.0008	0.0019	0.0026	0.0033
Innov. financial instruments	0.0017	0.1301	0.0001	0.1360	0.1797	0.1652
Credit consortium	0.0748	0.1824	0.0982	0.1832	0.3398	0.2301
Corporation	0.3682***	0.1167	0.3918***	0.1176	0.2748	0.2619
Group	-0.1422	0.0919	-0.1897**	0.0938	0.0234	0.1419
Age	0.0011	0.0476	0.0145	0.0445	0.0200	0.0526
International competitors	0.8314***	0.0520	0.8236***	0.0575	0.8925***	0.0764
ISO 9000 certified	0.1629**	0.0669	0.1589**	0.0743	0.1721**	0.0770
Value added	-0.1268	0.2420	-0.1585	0.2434	0.1006	0.3788
South	-0.2971**	0.1460	-0.2982**	0.1452	-0.1568	0.1930
Located in an industrial district	0.1198	0.0787	0.1367	0.0907	0.1536	0.1228
Located in an industrial district of the made-in-Italy	-0.3360*	0.1739	-0.3521*	0.1873	-0.4374**	0.1732
<i>Observations</i>	2056		1934		1209	
<i>Pseudo R<sup>2</sup></i>	0.2096		0.2120		0.2269	

*Notes:* Pooled estimations using the last two waves of the Capitalia survey (1998-2000 and 2001-2003). The dependent variable is a categorical variable taking value 2 if the firm is undertaking FDI and exporting, value 1 if is exporting but is not undertaking FDI and value 0 if is neither exporting nor undertaking FDI. The endogenous variable is the log of the number of years of the relationship between the firm and its main bank. For the definition of the independent variables see Table 2. The estimations include constant, industry and time dummies. Pseudo R<sup>2</sup> and robust standard errors adjusted by regional and firm-level clustering are reported. (\*): coefficient significant at 10 percent; (\*\*): coefficient significant at 5 percent; (\*\*\*): coefficient significant at less than 1 percent.

**Table 5 – Relationship length and export status of (non FDI) firms**

	Probit		Probit		Probit		Probit	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
			Indep. joint-stock and internationalized bank		Indep. joint-stock bank with branches abroad		Indep. joint-stock bank with subsidiaries abroad	
Relationship length	0.0263	0.0305	0.0449	0.0493	0.0150	0.0512	0.0714	0.0654
HHI	-2.2299	1.8050	-2.0494	1.6343	-2.1923	1.5964	1.5710	2.8480
Leverage	-0.0260	0.2423	-0.1110	0.3594	-0.0923	0.3521	-0.3646	0.3412
Total assets	0.7427***	0.0554	0.7284***	0.0737	0.7688***	0.0952	0.6671***	0.0880
ROE	0.0006	0.0011	0.0017	0.0022	0.0017	0.0021	0.0039	0.0036
Innov. financial Instruments	0.1241	0.0990	-0.0188	0.1498	-0.0208	0.1601	0.1531	0.2134
Credit consortium	0.2710***	0.0920	0.0881	0.1742	0.1123	0.1669	0.4037**	0.1824
Corporation	0.5988***	0.1182	0.5542***	0.1379	0.5940***	0.1281	0.4706	0.3275
Group	-0.2118***	0.0548	-0.2768**	0.1112	-0.3250***	0.1093	-0.0913	0.1770
Age	0.0324	0.0451	-0.0248	0.0719	0.0047	0.0657	-0.0159	0.0756
International competitors	0.9262***	0.0394	1.0141***	0.0808	1.0078***	0.0904	1.1154***	0.1144
ISO 9000 certified	0.1218**	0.0581	0.1574*	0.0841	0.1514*	0.0888	0.0914	0.1044
Value added	0.0254	0.1768	-0.0323	0.2899	-0.1024	0.2928	0.1241	0.4615
South	-0.2617**	0.1015	-0.3404**	0.1690	-0.3572**	0.1663	-0.1824	0.2405
Located in an industrial district	0.0834	0.0645	0.2075**	0.1009	0.2331***	0.1159	0.2633	0.1661
Located in an industrial district of the made-in-Italy	0.0666	0.1030	-0.2399	0.2572	-0.2619	0.2770	-0.3105	0.2650
<i>Observations</i>	6419		1999		1880		1163	
<i>Pseudo R<sup>2</sup></i>	0.2089		0.2509		0.2546		0.2576	

*Notes:* Pooled estimations using the last two waves of the Capitalia survey (1998-2000 and 2001-2003). The dependent variable is a dichotomous variable taking value 1 if the firm is exporting without undertaking FDI, value 0 if is neither exporting nor undertaking FDI. The endogenous variable is the log of the number of years of the relationship between the firm and its main bank. For the definition of the independent variables see Table 2. The estimations include constant, industry and time dummies. Pseudo R<sup>2</sup> and robust standard errors adjusted by regional and firm-level clustering are reported. (\*): coefficient significant at 10 percent; (\*\*): coefficient significant at 5 percent; (\*\*\*): coefficient significant at less than 1 percent.

**Table 6 – Relationship length and the FDI status of (exporting) firms**

	Probit		Probit		Probit		Probit	
			Indep. joint-stock and internationalized bank		Indep. joint-stock bank with branches abroad		Indep. joint-stock bank with subsidiaries abroad	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
Relationship length	0.1023**	0.0481	0.2892**	0.1467	0.3157**	0.1560	0.3497**	0.1542
HHI	-1.8251	2.1368	-4.0172	3.1677	-4.4849	3.4680	-1.5689	3.4357
Leverage	0.2920	0.5055	1.1122**	0.4465	1.2820**	0.4984	1.6637**	0.7610
Total assets	0.3999***	0.0757	0.5225***	0.1124	0.5461***	0.1174	0.5014***	0.1509
ROE	0.0029**	0.0013	-0.0023	0.0021	-0.0030	0.0022	-0.0018	0.0027
Innov. financial Instruments	0.2262***	0.1043	0.0059	0.2096	0.0057	0.2232	0.2396	0.2694
Credit consortium	0.1773	0.1646	0.2394	0.4930	0.2605	0.4924	0.4115	0.5036
Corporation	-0.5815***	0.2153	-0.6508	0.4295	-0.6344	0.4519	-0.7200	0.6103
Group	0.3951***	0.0983	0.3219***	0.1109	0.2925**	0.1264	0.4608**	0.1876
Age	-0.0076	0.0689	0.0522	0.1436	0.0962	0.1193	-0.0811	0.2166
International competitors	0.2359***	0.0717	0.2529*	0.1360	0.2095**	0.1210	0.3701**	0.1661
ISO 9000 certified	-0.0427	0.1113	0.2214	0.1991	0.1953	0.2063	0.5066*	0.2744
Value added	-0.5298	0.3823	-0.3095	0.5412	-0.4719	0.5655	0.3898	0.6344
South	-0.3253	0.2520	0.1721	0.3046	0.0881	0.3085	0.2034	0.3075
Located in an industrial district	0.0007	0.0532	-0.1866**	0.0890	-0.2882***	0.1038	-0.0990	0.1402
Located in an industrial district of the made-in-Italy	0.0214	0.0769	-0.4251	0.2928	-0.3507	0.2739	-0.4175	0.3253
<i>Observations</i>	4551		1361		1277		759	
<i>Pseudo R<sup>2</sup></i>	0.1239		0.1905		0.1930		0.2164	

*Notes:* Pooled estimations using the last two waves of the Capitalia survey (1998-2000 and 2001-2003). The dependent variable is a dichotomous variable taking value 1 if the firm is undertaking FDI and exporting, value 0 if is exporting but is not undertaking FDI. The endogenous variable is the log of the number of years of the relationship between the firm and its main bank. For the definition of the independent variables see Table 2. The estimations include constant, industry and time dummies. Pseudo R<sup>2</sup> and robust standard errors adjusted by regional and firm-level clustering are reported. (\*): coefficient significant at 10 percent; (\*\*): coefficient significant at 5 percent; (\*\*\*): coefficient significant at less than 1 percent.

**Table 7 – Relationship length and the FDI status of (exporting) firms: Marginal effects**

	Changes in predicted probability							
			Indep. joint-stock and internationalized bank		Indep. joint-stock bank with branches abroad		Indep. joint-stock bank with subsidiaries abroad	
	dy/dx	S.E.	dy/dx	S.E.	dy/dx	S.E.	dy/dx	S.E.
Relationship length	0.0058**	0.0030	0.0130**	0.0060	0.0140**	0.0062	0.0168**	0.0068
HHI	-0.1034	0.1158	-0.1809	0.1158	-0.1995	0.1224	-0.0755	0.1616
Leverage	0.0165	0.0283	0.0501**	0.0251	0.0570**	0.0282	0.0800**	0.0322
Total assets	0.0227***	0.0031	0.0235***	0.0051	0.0243***	0.0053	0.0241***	0.0072
ROE	0.0002**	0.0001	-0.0001	0.0001	-0.0001	0.0001	-0.0001	0.0001
Innov. financial Instruments	0.0157***	0.0092	0.0003	0.0095	0.0003	0.0100	0.0143	0.0186
Credit consortium	0.0118	0.0130	0.0136	0.0359	0.0150	0.0369	0.0293	0.0545
Corporation	-0.0558***	0.0293	-0.0549	0.0544	-0.0522	0.0559	-0.0685	0.0911
Group	0.0270***	0.0096	0.0165***	0.0077	0.0146**	0.0083	0.0266**	0.0162
Age	-0.0004	0.0039	0.0024	0.0066	0.0043	0.0056	-0.0039	0.0099
International competitors	0.0138***	0.0049	0.0116*	0.0055	0.0095*	0.0052	0.0184**	0.0061
ISO 9000 certified	-0.0024	0.0065	0.0096	0.0079	0.0084	0.0083	0.0231*	0.0113
Value added	-0.0300	0.0211	-0.0139	0.0234	-0.0210	0.0233	0.0188	0.0316
South	-0.0146	0.0089	0.0087	0.0176	0.0041	0.0156	0.0111	0.0189
Located in an industrial district	0.0000	0.0030	-0.0082**	0.0048	-0.0123***	0.0047	-0.0047	0.0059
Located in an industrial district of the made-in-Italy	0.0012	0.0046	-0.0132	0.0054	-0.0114	0.0059	-0.0141	0.0074
<i>Observations</i>	4551		1361		1277		759	
<i>Average predicted probability</i>	0.0241		0.0184		0.0181		0.0198	

*Notes:* Probit Pooled estimations using the last two waves of the Capitalia survey (1998-2000 and 2001-2003). The marginal effects are computed at the means of the independent variables. In the case of dummy variables the marginal effects are computed for discrete change from 0 to 1. The dependent variable is a dichotomous variable taking value 1 if the firm is undertaking FDI and exporting, value 0 if is exporting but is not undertaking FDI. The endogenous variable is the log of the number of years of the relationship between the firm and its main bank. For the definition of the independent variables see Table 2. The estimations include constant, industry and time dummies. Average predicted probability and robust standard errors adjusted by regional and firm-level clustering are reported. (\*): estimated coefficient significant at 10 percent; (\*\*): estimated coefficient significant at 5 percent; (\*\*\*): estimated coefficient significant at less than 1 percent.



**Table 8 – Determinants of relationship length and number of banks (first stage regressions)**

	OLS		OLS	
	Relationship length		Banks	
	Coeff.	S.E.	Coeff.	S.E.
<i>Instrumental variables</i>				
New branches entrants	-9.6251	5.7518	-4.1210	6.7067
Saving banks	0.2055	0.3031	1.7724***	0.5092
Branches	-0.3042***	0.0956	0.4461	0.2675
<i>Exogenous variables</i>				
HHI	0.8624	0.5176	-1.6534***	0.3483
Leverage	0.0317	0.0782	0.5427***	0.0892
Total assets	-0.0462	0.0301	0.5441***	0.0201
ROE	0.0002	0.0006	-0.0021***	0.0007
Innov. financial Instruments	-0.0312	0.0225	0.1781***	0.0221
Credit consortium	-0.0294	0.0334	0.1585***	0.0356
Corporation	-0.0143	0.0350	0.1486***	0.0394
Group	-0.1242***	0.0250	-0.0876***	0.0142
Age	0.5138***	0.0094	0.0272	0.0191
International competitors	-0.0252**	0.0112	0.0072	0.0211
ISO 9000 certified	0.0055	0.0133	0.0627***	0.0108
Value added	0.0955	0.0594	-0.2228**	0.0793
South	-0.1048**	0.0459	-0.0605	0.0770
Located in an industrial district	0.0530**	0.0216	0.0300	0.0282
Located in an industrial district of the made-in-Italy	0.0158	0.0376	-0.0639**	0.0229
<i>Observations</i>	6689		7002	
<i>R<sup>2</sup></i>	0.2648		0.2658	
<i>Wald test of excluded instruments, F-statistic</i>	4.79**		7.69***	

*Notes:* Pooled regressions using the last two waves of the Capitalia survey (1998-2000 and 2001-2003). The dependent variables are the log of the number of years of the relationship between the firm and its main bank and the log of the number of banks of the firm. For the definition of the regressors see Table 2. The regression includes constant, industry and time dummies. F-statistic for the Wald test of excluded instruments, R<sup>2</sup> and robust standard errors adjusted by regional and firm-level clustering are reported. (\*): coefficient significant at 10 percent; (\*\*): coefficient significant at 5 percent; (\*\*\*): coefficient significant at less than 1 percent.

**Table 9 – Relationship length and exports: Instrumental variables regressions**

	Probit		IV-2SLS		IV-Probit	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
Relationship length	0.0278	0.0323	0.1189	0.3223	0.4736	1.0057
HHI	-2.3238	1.6357	-0.8783**	0.4321	-2.6930*	1.4008
Leverage	-0.0148	0.2504	0.0049	0.0633	-0.0197	0.2448
Total assets	0.7533***	0.0563	0.1960***	0.0193	0.7510***	0.0890
ROE	0.0007	0.0011	0.0002	0.0003	0.0006	0.0010
Innov. financial Instruments	0.1189	0.0976	0.0336	0.0235	0.1322	0.0913
Credit consortium	0.2617***	0.0838	0.0739***	0.0215	0.2626***	0.0841
Corporation	0.5753***	0.1191	0.1798***	0.0366	0.5600***	0.0900
Group	-0.2126***	0.0529	-0.0513	0.0435	-0.1521	0.1681
Age	0.0353	0.0480	-0.0501	0.1672	-0.1976	0.5264
International competitors	0.9277***	0.0384	0.2318***	0.0084	0.9074***	0.1320
ISO 9000 certified	0.1191**	0.0573	0.0328**	0.0157	0.1125*	0.0588
Value added	-0.0130	0.1616	-0.0149	0.0511	-0.0488	0.1759
South	-0.2791***	0.0954	-0.0684**	0.0291	-0.2414*	0.1281
Located in an industrial district	0.0808	0.0635	0.0209	0.0283	0.0568	0.1024
Located in an industrial district of the made-in-Italy	0.0513	0.0954	0.0155	0.0214	0.0435	0.0900
<i>Observations</i>	6649		6646		6646	
<i>Wald test, <math>\chi^2</math>-statistic</i>	1728.89***		2116.24***		13880.11***	
<i>Exogeneity test, F-statistic</i>			0.1174			
<i>Exogeneity test, <math>\chi^2</math>-statistic</i>					0.18	
<i>Instruments relevance, F-statistic</i>			4.4053**			
<i>Overidentification test, J-statistic</i>			0.4091			

*Notes:* Pooled regressions using the last two waves of the Capitalia survey (1998-2000 and 2001-2003). The dependent variable is a dummy that takes the value 1 if the firm is exporting; 0 otherwise. IV-2SLS and IV-Probit estimations use as instruments a set of variables that describe the banking market as of 1936 (see Guiso *et al.*, 2004a) and a set of variables that describe shocks to the local supply of banking services for the 1991-1998 period (see Herrera and Minetti 2007). For the definition of the regressors see Table 2. The estimations include constant, industry and time dummies. F-test of instruments relevance on IV-2SLS, F-statistic for exogeneity test on IV-2SLS,  $\chi^2$ -statistic for the Wald test of excluded instruments on IV-Probit, Hansen Overidentification test of chosen instruments on IV-2SLS,  $\chi^2$ -statistic for the Wald test of model specification, and robust standard errors adjusted by regional and firm-level clustering are reported. (\*): coefficient significant at 10 percent; (\*\*): coefficient significant at 5 percent; (\*\*\*): coefficient significant at less than 1 percent.

**Table 10 – Relationship length and exports: IV regressions and internationalization mode of the main bank**

	IV-Probit		IV-Probit		IV-Probit	
	Indep. joint-stock and internationalized bank		Indep. joint-stock bank with branches abroad		Indep. joint-stock bank with subsidiaries abroad	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
Relationship length	0.6361	1.2189	0.5635	1.0303	1.6471***	0.1834
HHI	-2.3753	1.5138	-2.5528*	1.4590	0.6975	1.6424
Leverage	0.0255	0.3842	-0.0313	0.3742	-0.0058	0.2320
Total assets	0.7150***	0.1756	0.7839***	0.1562	0.1837	0.3147
ROE	0.0022	0.0019	0.0021	0.0018	0.0023	0.0023
Innov. financial Instruments	-0.0469	0.1231	-0.0595	0.1301	0.0478	0.1742
Credit consortium	0.0546	0.1539	0.0755	0.1349	-0.0422	0.1861
Corporation	0.4458	0.2723	0.4861*	0.2527	-0.1631	0.2693
Group	-0.1622	0.3003	-0.2159	0.2815	0.2941**	0.1395
Age	-0.3024	0.6024	-0.2723	0.5188	-0.7974***	0.1115
International competitors	0.9415***	0.2497	0.9550***	0.1880	0.3313	0.5180
ISO 9000 certified	0.1363	0.0853	0.1264	0.0986	0.0910	0.0880
Value added	-0.1190	0.2823	-0.1190	0.2863	0.1148	0.2500
South	-0.3028	0.1931	-0.2952	0.1974	0.0999	0.1814
Located in an industrial district	0.1521	0.1804	0.1799	0.1951	-0.0194	0.1496
Located in an industrial district of the made-in-Italy	-0.2621	0.2444	-0.2827	0.2692	-0.1150	0.2228
<i>Observations</i>	2081		1957		1220	
<i>Wald test, <math>\chi^2</math>-statistic</i>	11473.56***		10114.29***		722.62***	
<i>Exogeneity test, <math>\chi^2</math>-statistic</i>	0.19		0.24		1.15	

*Notes:* Pooled regressions using the last two waves of the Capitalia survey (1998-2000 and 2001-2003). The dependent variable is a dummy that takes the value 1 if the firm is exporting; 0 otherwise. IV-Probit estimation uses as instruments a set of variables that describe the banking market as of 1936 (see Guiso *et al.*, 2004a) and a set of variables that describe shocks to the local supply of banking services for the 1991-1998 period (see Herrera and Minetti 2007). For the definition of the regressors see Table 2. The estimations include constant, industry and time dummies.  $\chi^2$ -statistic for the Wald test of model specification,  $\chi^2$ -statistic for the Wald test of excluded instruments and robust standard errors adjusted by regional and firm-level clustering are reported. (\*): coefficient significant at 10 percent; (\*\*): coefficient significant at 5 percent; (\*\*\*): coefficient significant at less than 1 percent.

**Table 11 – Relationship length and FDI: Instrumental variables regressions**

	Probit		IV-2SLS		IV-Probit	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
Relationship length	0.1008**	0.0432	0.1604***	0.0591	1.6066***	0.0847
HHI	-1.9235	2.1641	-0.2574**	0.1143	-2.3878***	0.8962
Leverage	0.2288	0.4675	0.0224	0.0242	0.0647	0.1904
Total assets	0.4557***	0.0668	0.0398***	0.0082	0.2695***	0.0806
ROE	0.0029**	0.0012	0.0001	0.0001	0.0013	0.0010
Innov. financial Instruments	0.2211**	0.1021	0.0234**	0.0110	0.1397***	0.0528
Credit consortium	0.2222	0.1538	0.0178	0.0150	0.1607	0.1008
Corporation	-0.4190**	0.2056	-0.0140	0.0138	-0.1565	0.1266
Group	0.3655***	0.0885	0.0465***	0.0129	0.3327***	0.0678
Age	-0.0050	0.0625	-0.0793***	0.0296	-0.8144***	0.0601
International competitors	0.3258***	0.0730	0.0228***	0.0057	0.1716***	0.0538
ISO 9000 certified	-0.0260	0.1073	-0.0020	0.0061	-0.0177	0.0512
Value added	-0.5253	0.3697	-0.0411*	0.0213	-0.3578**	0.1516
South	-0.3780	0.2373	-0.0113	0.0121	-0.0687	0.1262
Located in an industrial district	0.0037	0.0488	-0.0077*	0.0044	-0.0676	0.0435
Located in an industrial district of the made-in-Italy	0.0288	0.0644	-0.0019	0.0079	-0.0164	0.0729
<i>Observations</i>	6407		6630		6404	
<i>Wald test, <math>\chi^2</math>-statistic</i>	251.27***		2126.76***		533.30***	
<i>Exogeneity test, F-statistic</i>			6.6143**			
<i>Exogeneity test, <math>\chi^2</math>-statistic</i>					21.01***	
<i>Instrument relevance, F-statistic</i>			4.8298**			
<i>Overidentification test, J-statistic</i>			0.6226			

*Notes:* Pooled regressions using the last two waves of the Capitalia survey (1998-2000 and 2001-2003). The dependent variable is a dummy that takes the value 1 if the firm is undertaking FDI; 0 otherwise. IV-2SLS and IV-Probit estimations use as instruments a set of variables that describe the banking market as of 1936 (see Guiso *et al.*, 2004a) and a set of variables that describe shocks to the local supply of banking services for the 1991-1998 period (see Herrera and Minetti 2007). For the definition of the regressors see Table 2. The estimations include constant, industry and time dummies. F-test of instruments relevance on IV-2SLS, F-statistic for exogeneity test on IV-2SLS,  $\chi^2$ -statistic for the Wald test of excluded instruments on IV-Probit, Hansen Overidentification test of chosen instruments on IV-2SLS,  $\chi^2$ -statistic for the Wald test of model specification, and robust standard errors adjusted by regional and firm-level clustering are reported. (\*): coefficient significant at 10 percent; (\*\*): coefficient significant at 5 percent; (\*\*\*): coefficient significant at less than 1 percent.

**Table 12 – Relationship length and FDI: Instrumental variables regressions and internationalization mode of the main bank**

	IV-Probit		IV-Probit		IV-Probit	
	Indep. joint-stock and internationalized bank		Indep. joint-stock bank with branches abroad		Indep. joint-stock bank with subsidiaries abroad	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
Relationship length	1.2040	0.8572	1.2679	0.8002	1.7326***	0.0810
HHI	-3.4914	2.3203	-3.9431	2.5006	0.9108	1.5963
Leverage	0.8404	0.5712	0.8971	0.6948	0.3650*	0.2034
Total assets	0.4738**	0.2385	0.4970**	0.2311	0.1346	0.1054
ROE	-0.0007	0.0020	-0.0011	0.0019	0.0010	0.0018
Innov. financial Instruments	-0.0518	0.1473	-0.0643	0.1538	0.0668	0.1715
Credit consortium	0.1354	0.4239	0.1513	0.4207	-0.1044	0.1778
Corporation	-0.4558	0.2900	-0.4603	0.3184	-0.3201*	0.1793
Group	0.3879***	0.0820	0.3709***	0.0870	0.4069***	0.0807
Age	-0.4522	0.4917	-0.4626	0.4964	-0.8685***	0.0702
International competitors	0.3061	0.2045	0.2680	0.1781	0.1576	0.1052
ISO 9000 certified	0.2430	0.2141	0.2059	0.2179	0.2019	0.1245
Value added	-0.2951	0.3881	-0.3747	0.3824	0.2592	0.2089
South	0.0686	0.2320	0.0333	0.2279	0.1998	0.1417
Located in an industrial district	-0.1940***	0.0615	-0.2862***	0.0926	-0.1008	0.1186
Located in an industrial district of the made-in-Italy	-0.3740	0.3375	-0.3018	0.3278	-0.1221	0.2192
<i>Observations</i>	1889		1772		1047	
<i>Wald test, <math>\chi^2</math>-statistic</i>	6731.00***		3563.11***		444.70***	
<i>Exogeneity test, <math>\chi^2</math>-statistic</i>	0.53		0.65		13.88***	

*Notes:* Pooled regressions using the last two waves of the Capitalia survey (1998-2000 and 2001-2003). The dependent variable is a dummy that takes the value 1 if the firm is undertaking FDI; 0 otherwise. IV-Probit estimation uses as instruments a set of variables that describe the banking market as of 1936 (see Guiso *et al.*, 2004a) and a set of variables that describe shocks to the local supply of banking services for the 1991-1998 period (see Herrera and Minetti 2007). For the definition of the regressors see Table 2. The estimations include constant, industry and time dummies.  $\chi^2$ -statistic for the Wald test of model specification,  $\chi^2$ -statistic for the Wald test of excluded instruments and robust standard errors adjusted by regional and firm-level clustering are reported. (\*): coefficient significant at 10 percent; (\*\*): coefficient significant at 5 percent; (\*\*\*): coefficient significant at less than 1 percent.

**Table 13 – Relationship length, exports and FDI: Robustness check for the number of banks**

	Exports				FDI			
	Probit		IV-2SLS		Probit		IV-2SLS	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
Relationship length	0.0260	0.0325	0.1265	0.3128	0.0923**	0.0464	0.1612**	0.0737
Banks	0.1799***	0.0430	0.0155	0.1082	0.1608***	0.0478	0.0055	0.0473
HHI	-2.0839	1.5919	-0.8659**	0.4117	-1.6133	2.0925	-0.2501**	0.1045
Leverage	-0.1095	0.2423	-0.0032	0.0692	0.1257	0.4937	0.0194	0.0370
Total assets	0.6538***	0.0635	0.1877***	0.0617	0.3865***	0.0739	0.0369	0.0238
ROE	0.0011	0.0012	0.0002	0.0004	0.0032**	0.0014	0.0001	0.0001
Innov. financial Instruments	0.0822	0.0981	0.0304	0.0295	0.1990**	0.1006	0.0225**	0.0112
Credit consortium	0.2407***	0.0837	0.0713***	0.0262	0.1933	0.1605	0.0168	0.0138
Corporation	0.5543***	0.1176	0.1790***	0.0391	-0.4300**	0.2032	-0.0147	0.0147
Group	-0.1980***	0.0531	-0.0486	0.0437	0.3660***	0.0870	0.0467**	0.0181
Age	0.0336	0.0455	-0.0542	0.1621	-0.0071	0.0670	-0.0798**	0.0385
International competitors	0.9317***	0.0376	0.2315***	0.0085	0.3292***	0.0728	0.0231***	0.0061
ISO 9000 certified	0.1116**	0.0568	0.0326*	0.0197	-0.0373	0.1062	-0.0023	0.0073
Value added	0.0285	0.1552	-0.0124	0.0511	-0.4702	0.3663	-0.0401*	0.0218
South	-0.2420**	0.0995	-0.0660	0.0424	-0.3300	0.2365	-0.0102	0.0194
Located in an industrial district	0.0803	0.0621	0.0209	0.0289	-0.0100	0.0489	-0.0080	0.0057
Located in an industrial district of the made-in-Italy	0.0504	0.0971	0.0135	0.0195	0.0441	0.0691	-0.0015	0.0091
<i>Observations</i>	6626		6623		6385		6608	
<i>Wald test, <math>\chi^2</math>-statistic</i>	1742.95***		39809.02***		261.95***		2805.94***	
<i>Exogeneity test, F-statistic</i>			0.1191				3.9574**	
<i>Instrument relevance, F-statistic (relationship length)</i>			4.4053**				4.8298**	
<i>Instrument relevance, F-statistic (banks)</i>			7.7119***				7.7155***	
<i>Overidentification test, J-statistic</i>			0.4081				0.6581	

*Notes:* Pooled regressions using the last two waves of the Capitalia survey (1998-2000 and 2001-2003). The dependent variables are a dummy that takes the value 1 if the firm is exporting (0 otherwise) and a dummy that takes the value 1 if the firm is undertaking FDI (0 otherwise). IV-2SLS estimations use as instruments a set of variables that describe the banking market as of 1936 (see Guiso *et al.*, 2004a) and a set of variables that describe shocks to the local supply of banking services for the 1991-1998 period (see Herrera and Minetti 2007). For the definition of the regressors see Table 2. The estimations include constant, industry and time dummies. F-test of instruments relevance on IV-2SLS, F-statistic for exogeneity test on IV-2SLS, Hansen Overidentification test of chosen instruments on IV-2SLS,  $\chi^2$ -statistic for the Wald test of model specification, and robust standard errors adjusted by regional and firm-level clustering are reported. (\*): coefficient significant at 10 percent; (\*\*): coefficient significant at 5 percent; (\*\*\*): coefficient significant at less than 1 percent.