

# Bank Internationalization and Firm Exports: Evidence from Matched Firm-Bank Data \*

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## Abstract

In this paper we investigate whether new exporter firms have a higher probability to start exporting in the countries where their financing banks have already settled their subsidiaries. The underlying mechanism we hypothesize is based on the transmission of knowledge on foreign market from the banks to the firms, able to cut down informational barriers to international trade. We found a significant positive relationship between the firm probability to begin exporting in one market, and the presence in the same market of a subsidiary of the firm financing bank. Coherently with the mechanism hypothesized, we find a stronger effect for closer firm-bank relationships, and when banks have settled their subsidiaries abroad over longer time period.

JEL classification: F10, G21

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# 1 Introduction

Over recent years the literature examining whether credit constraints affect firms' internationalization has rapidly expanded.<sup>1</sup> The economic argument of these studies is grounded on the new international trade theories with heterogeneous enterprises. Since, to engage in offshore activities implies large sunk costs, only better, more productive firms are able to penetrate into foreign markets through exports (Melitz, 2003; Bernard, Eaton, Jensen and Kortum, 2003). In such a framework, credit constraints hamper internationalization, because they prevent enterprises from raising funds for financing fixed exporting costs.<sup>2</sup>

Unlike financial constraints and internationalization, whether and how the characteristics of bank-firm relationships affect firm propensity to export is an issue scantily studied.<sup>3</sup> Our paper contributes to this stream of research. We investigate whether new exporter firms have a higher probability to start exporting in the countries where their financing banks have already settled their subsidiaries. The underlying mechanism we hypothesize is based on the transmission of knowledge from the banks to the firms, able to cut down informational barriers to international trade. Banks with subsidiaries abroad collect over time a wide stock of information on the foreign countries that can be easily transmitted to their customers through the usual informal bank-firm contacts. Such valuable flow of knowledge allows firms to reduce fixed start-up costs associated to the entry into a new foreign market. This intangible asset turns out to be particularly helpful for small and medium enterprises that are less equipped to start international business. In addition, it is more precious if the relevant entry costs are specific to each destination country, as theoretically postulated by Chaney (2008) and Eaton, Kortum and Kramarz (2011), and empirically shown by Moxnes (2010).

There is anecdotal and survey-based evidence that shows both the relevance of informational barriers to firm internationalization and the role played by the banks in helping

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<sup>1</sup>See e.g.: Greenaway, Guariglia and Kneller (2007); Berman and Hericourt (2010); Bellone, Musso, Nesta and Schiavo (2010) and Minetti and Zhu (2011).

<sup>2</sup>For the theoretical contributions see: Chaney (2005) and Manova (2010).

<sup>3</sup>Taking advantage of a unique firm survey, Bartoli, Ferri, Maccarone and Rotondi (2011) examine if banks help firms to export through non-standard banking services, while Ricci and Trionfetti (2012) verify whether the firm probability to export is affected by the intensity of the relationships with foreign banks.

enterprises to internationalize. For example, informational barriers on foreign countries are deemed the main obstacle to internationalization by a representative sample of Italian firms interviewed by the Bank of Italy (Bank of Italy, 2011). On the other hand, we know that largest banks offer a wide set of non-financial services to support small- and medium-size firm internationalization - that range from helping enterprises to find profitable off-shore markets and suitable foreign clients, to consulting facilities on foreign legal system or institutional framework. We also know that such non-financial services represent a remarkable support to international activity of enterprises (Bartoli et al., 2011).

The present paper provides an in-depth analysis of such issues. We take advantage of detailed matched firm-bank data that provide information on firm exports as well as on firm-bank relationships. In particular, we know the destination country of firm exports and if a firm has ever exported before. Moreover, we are able to link firm information with the characteristics of their financing banks. Namely, we know if and where banks financing firms have subsidiaries abroad. As a result, we can regress firm probability of exporting for the first time in one country on the presence of their financing banks in the same country, together with a large set of controls at the firm and country levels.

We found a significant positive relationship between the firm probability to start exporting in one market and the presence, in the same market, of a subsidiary of the financing bank, which is robust to several sensitivity tests. Coherently with the mechanism hypothesized, we find a stronger effect for closer firm-bank relationships, and when banks have settled their subsidiaries abroad over longer time periods.

The link between the destination country of exports and the country where the financing banks have subsidiaries might also be due to reasons different from the transmission of information from banks to firms. For instance, firms that are planning to export in certain markets could choose a bank which is internationalized in the same countries to enable access abroad to the usual banking services. Moreover, the causality nexus might be the other way round. That is, it could be the banks that follow the firms by establishing foreign subsidiaries where their clients export (Seth, Nolle and Mohanty, 1998). Our empirical model, together with some auxiliary exercises, suggests that the link is not driven by the

firms that choose the bank established in the export country, nor by the banks that follow their clients abroad.

The paper provides empirical evidence on a causal relationship, until now unexplored, which has an intuitive economic implication. To be a client of an internationalized bank can be helpful to start new international business. This result turns out to be relevant not only for the firm strategic purposes, but also to understand the forces able to strengthen firm international competitiveness, and the indirect effects of the bank-firm relationships.

The remainder of the paper is organized as follows. In the next section we discuss the theoretical background and the research papers more related to our analysis. In Section 3 we describe the dataset used. In Section 4 we present the empirical model and the baseline results. In Sections 5 and 6 we test for the validity of the informational channel argument and we carry out some robustness exercises. In Section 7 are collected the main concluding remarks.

## 2 Background and related literature

On the theoretical grounds, our paper is based on the recent international trade theories with heterogeneous enterprises, stemming from Melitz (2003), Bernard et al. (2003) and Melitz and Ottaviano (2008).<sup>4</sup> Such theories argue that firms willing to engage in international activities face considerable fixed entry costs. For example, to become an exporter, firms must gather information on the foreign market, adapt their products to foreign tastes, create a distributional system and start new business relationships. Since all these activities imply sunk costs, only more productive, usually larger firms are capable to overcome such outlays to export. In the most recent contributions the entry fixed costs are considered specific of each export market, as postulated by Chaney (2008) and Eaton et al. (2011). Empirically, Moxnes (2010) shows that country-specific entry costs are much larger than global (non-country specific) sunk export costs.

Our hypothesis is that banks that have established subsidiaries abroad gather over the years a large set of information on the foreign countries where they are settled. Such intan-

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<sup>4</sup>For two exhaustive reviews, see Helpman (2006) and Greenaway and Kneller (2007).

gible assets can be easily transferred to their customers, helping enterprises to overcome entry barriers into the new foreign markets represented by sunk costs. This soft information turns out to be extremely valuable for smaller enterprises, which are less equipped to begin international business, and if the fixed costs are specific to each destination countries. A natural corollary of the illustrated mechanism is that the information flow from the bank to the firms will be wider, the stronger is the bank-firm relationship, and the longer is the period of internationalization of the bank. That is, more intense information transfer will occur inside long-lasting bank-firm relationships, or if the internationalized bank is the main credit supplier of the firms, and if the banks have settled their subsidiaries abroad for long time spans.

The capability of financial intermediaries to pull down the fixed costs of internationalization has been recently explored by a flourishing literature on exports and financial constraints. This literature is based on similar theoretical arguments. Given the presence of sunk costs, export activity can start only if firms can raise finance resources to cover the associated fixed outlays. In contrast, firms that are financially constrained are unable to reach foreign markets. Theoretical contributions include Chaney (2005), Muuls (2008) and Manova (2010). Empirical papers encompass, among others, Greenaway et al. (2007), Bridges and Guariglia (2008), Berman and Héricourt (2010), Egger and Kesina (2010), Bellone et al. (2010), Manole and Spatareanu (2010) and Minetti and Zhu (2011). In these studies, the econometric strategy has been to regress the probability to export, study the extensive margin of trade or the export volume, and examine the intensive margin of trade, on opportune measures of firms' financial constraints. Credit rationing at the firm level is approximated using either financial balance sheet variables or specific information directly gathered through firm surveys. In order to deal with the endogeneity issue, these papers usually utilize instrumental variable methods. The econometric investigations provided mixed evidence on the role of financial constraints on firm trade performance. As regards Italy, Minetti and Zhu (2011) found that credit rationing reduces the probability to export as well as the level of foreign sales.

The link between banking services and firm internationalization has been further ex-

plored from a different perspective by Bartoli et al. (2011). Taking advantage of information collected with a survey on a sample of Italian firms, the authors analyze to what extent the banking system supported firm exports by providing services that are different from the usual banking ones. They show that, for the majority of firms, banks have played an important role in helping firms' foreign activities, especially supplying services like: counter-parties signaling, legal and financial advisory, onsite support during fairs, advice on offshore investment opportunities, and training services for commercial and administrative personnel. The paper also shows that exporters signaling banks as the main institution that provided support for their exports displayed better performance on the foreign markets (e.g., in terms of the number of reached export markets). This evidence supports our hypothesis that banks can transmit useful information to their customers, helping them to actively contribute to international trade. In a similar spirit, Frazzoni, Mancusi, Rotondi, Sombrero and Pezzulli (2011) find that the strength of the relationship's lending, measured by the ratio of the firm's debt with its main bank and firm's assets, enhances firm decision to export and the intensity of exporting. De Bonis, Ferri and Rotondi (2009), addressing a parallel question, show that firms that have stronger relationship with internationalized banks (in this case measured by the duration of the bank-firm relationship) have higher probability to undertake foreign direct investments. Ricci and Trionfetti (2012) go further, and find that the firm probability to export is positively affected by the share of working capital financed by foreign-owned banks. The authors assume that the linkages with foreign networks help the firm to overcome the informational barriers and thus to reduce entry export costs.

Our paper is also related to an earlier stream of literature that has investigated if the country financial development affects its trade performance. See e.g.: Beck (2002), Becker and Greeberg (2005), Hur (2006) and Samba and Yan (2009). Unlike our study, however, these contributions follow a macro-economic approach. Beck (2002), for example, develops a theoretical model with asymmetric information where the financial development affects the growth of the sector with increasing returns to scale. As a result, countries with a better-developed financial system will show a higher export share and a positive trade

balance in manufacturing. The model is tested across 65 countries over 30 years, providing empirical support to Beck's theory.

Although in recent years the literature on the role played by firm financing on firm export performance has rapidly expanded, to the best of our knowledge no paper has examined the link between firms that start exporting into a foreign country and the presence in the same country of their financing banks. This paper fills such gap.

### 3 Data

Our empirical exercise benefits from a unique dataset, built taking from three different sources.

Firstly, we draw information about firm export activities from the European firms in a global economy (EFIGE) survey, carried out in 2009 (*EFIGE Project, 2008-2012*). In particular, we focus on about 2800 Italian firms surveyed by the EFIGE project. In the survey, firms are asked whether they exported any product before 2008. According to this question, we can distinguish three groups of firms: a) those who exported always or regularly before 2008; b) those who exported sometimes before 2008; c) those who never exported before 2008. In the survey, firms are also asked whether they had engaged in export activities in 2008, and those firms that exported in 2008 were asked to list their top three destination countries. Our baseline econometric exercise is based on sample (c). We also draw from the survey some relevant information such as number of employees, sales, sector and headquarters' location. The EFIGE data base is particularly suitable for the present paper, not only for the useful information provided, but also because it focuses mainly on small and medium enterprises (Altomonte and Ottaviano, 2012). Indeed, it is for them more attractive to examine the factors helping internationalization.

Secondly, we draw information about banks' cross-border presence from the Bank of Italy's Census, which provides information about bank branches and representative offices in foreign countries from 1994.<sup>5</sup>

Finally, we join data on firm export activities and those on bank internationalization

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<sup>5</sup>Siotec, a census of banks managed by the Bank of Italy.

by using information on bank-firm relationships drawn from the Central Credit Register (CCR), sourced by the Bank of Italy. The CCR provides bank-firm level information on a large set of financial variables. We are interested, in particular, in the amount of credit granted. We collect annual year-end data, from 1998 to 2010. In this way we are able to map, for every firm in our sample, the set of financing banks. The CCR provides data about the universe of Italian firm-banks relationships where the amount of borrowed funds is above a threshold of 75,000 euro.<sup>6</sup>

Our entire sample consists of 2773 manufacturing firms. 1538 exported regularly before 2008 (sample a), the year of the survey. 466 exported sometimes (sample b), while 769 never exported before 2008 (sample c). 52 firms belonging to the last group started exporting in 2008.

The last set of firms, which we will refer to as the “non-exporters” before 2008, is smaller in size than the group of firms that exported “sometimes” before 2008 and that of “regular” exporters (see Table 1). In addition, as expected, firms that regularly exported before 2008 are larger: they have about 85 employees on average, almost three times those of firms that exported sometimes or never before 2008; 33 and 30 employees, respectively.

Table 2 shows the distribution of “non-exporter” firms (before 2008) according to their headquarters: about 80 per cent of them are located in Central and Northern Italy. The predominant sub-sector of economic activity is fabrication of metal products (more than one quarter of the sample), followed by food products and non-metallic minerals products (about 10 per cent for both; see Table 3). Notice that the distribution of new exporters is relatively similar to that of the whole sample of “non-exporter”.

Table 4 shows the distribution of the foreign branches of the Italian banks financing the firms of our overall sample. Overall, 22 countries are represented. Foreign branches are mostly located in the United Kingdom, United States, Luxembourg and France. While more than 700 banks operate in Italy, only a few of them have branches abroad. In particular, over the period 2006-07 only 16 banks had a branch abroad. The distribution

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<sup>6</sup>According to the Italian banking regulation, for each borrower financial intermediaries supervised by the Bank of Italy have to report to the CCR, on a monthly basis, the amount of each loan, either granted or disbursed by banks, for all loans exceeding 75,000 euro (the threshold was lowered to 30,000 euro in 2008).



of branches over foreign countries is very concentrated. The first 5 banks count together for more than three quarters of the foreign branches. The most internationalized bank is Unicredit, with branches in 18 countries (see Table A.1 in the Appendix).

## 4 Empirical model and results

In order to investigate the links between foreign banking activity and firm export decisions we rely on a firm-country-level dataset. The structure of the data is as follows. On the one hand, we have a sample of 769 firms non exporting before 2008 (in the previous section the sample labeled by *c*). For any firm that starts exporting in 2008, we know the top 3 destination countries. On the other hand, the dataset EFIGE lists 116 potential destination countries (list of destination countries for the sample of 2773 Italian manufacturing exporting firms surveyed in EFIGE; see Table A.2). This leads us to a dataset of about 90,000 firm-country pairs observations.

It turns out that 52, out of 769 firms (of non-exporting firms before 2008), start exporting in 2008. On average, they export to 1.5 countries; only two firms export to more than 3 countries.<sup>7</sup> Hence, the fact that EFIGE dataset only lists the top 3 export countries for each firm implies just a negligible loss of information in our dataset. The new exports are directed to 33 countries (see Table A.3). France and Germany cover the largest share (15.2 and 12.7 percent, respectively). The probability to export is relatively uniformly distributed across the remaining countries.

To assess the role of bank-firm relationships on firm internationalization, we estimate the following probit model, where the unit of analysis is the pair of firms *i*-country *c*:

$$export_{ic} = \alpha + \beta subs_{ic} + X_i \gamma + \delta dist_{ic} + K_c \theta + \epsilon_{ic} \quad (1)$$

$export_{ic}$  is our dependent variable, which takes the value one if in 2008 firm *i* starts exporting to country *c*, and zero otherwise. Our variable of interest is the dummy  $subs_{ic}$ , taking value one if any of the banks financing firm *i* before 2008 had a subsidiary branch

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<sup>7</sup>Respectively, 4 and 7.

in country  $c$ . Since the extent of bank internationalization varies over time, we measure the dummy  $subs_{ic}$  considering several two-year windows, starting from period 2006-07 and retrograding until period 2003-04. For instance, the dummy  $subs_{ic,2006-07}$  takes value one if at least one of the banks financing firm  $i$  over the period 2006-07 had a subsidiary branch in country  $c$  in the same period. On the other hand, the dummy  $subs_{ic,2006-07}$  takes value zero either if the bank  $i$  has a branch in country  $c$  in the period 2006-07, but firm  $i$  did not borrow money from it over that period, or if the bank does not have branches in country  $c$  over that period regardless whether firm  $i$  has been borrowing money from it or not during that period.

The empirical model includes a set of variables at the firm level ( $X_i$ ) to control for the firm probability to export, and at the country level ( $K_c$ ) to control for the firm probability to sell in each potential market.

The  $X_i$  vector includes the following firm-level controls: the headquarter's location (namely, four Italian territorial areas: North West, North East, Center and South), productivity, sector dummies (2-digit NACE), firm-size class dummies (3 classes), and a dummy for firms belonging to a business group.<sup>8</sup>

$K_c$  is a vector of country-level variables. In this setting, the introduction of country dummies would result in a drop of about 70 per cent of our observations, because new exporter firms only target a subset of 33 countries out of 116 potential destinations. For this reason we decide to omit country dummies, and to use instead as regressors a set of country-level variables potentially affecting the probability of exporting to country  $c$ : the log of country imports in the years 2006-07 ( $logimp0607$ ), and country import growth rate between 2005 and 2007 ( $deltaimp$ ). The two variables take into account that larger importing countries, and rapidly expanding markets, will presumably attract more exports from Italian firms.<sup>9</sup> In addition, we include two separate dummies for Germany and France, which together account for about 30 per cent of the new exports in our sample, and a dummy for the other European countries. Finally, in the same spirit of the gravity models of trade, we add  $dist_{ic}$ , the distance (km, in logs) between the region where firm  $i$  is

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<sup>8</sup>Productivity is proxied by sales over employees.

<sup>9</sup>Data on country imports are at the constant prices and sourced by the World Bank.

headquartered and country  $c$ 's capital city, together with a dummy variable for Italian neighboring countries (*boundary*).

Given the data structure (each firm appears 116 times in the sample) and the fact that most control variables vary only across firms (productivity, business group, location, NACE-2 dummies and size dummies), we cluster the standard errors at firm level in all our regressions.

In Table 5 we report the results of the estimates including just sector and firm size dummies. The coefficients of interest are ever positive and statistically significant. The results for the complete model (1) are displayed in Table 6. The Table shows that also controlling for the widest set of variables at both firm and country levels, the estimated coefficients indicate that firms have a higher probability to start exporting in those countries where their banks have already established a branch. The regression coefficient we are interested in is slightly larger if we consider bank-firm relationships in the years 2006-07, while it decreases as we consider earlier two-year periods. They are all statistically significant at the 10 per cent level. When we look at the marginal effects, we find that the magnitude of such impact is rather large. In particular, if a firm has been borrowing from a bank with a foreign branch in a certain country, its probability to start exporting to that country is 44 percent higher than the mean probability that any firm in the sample begins exporting there.<sup>10</sup>

As expected, the total volume of country imports positively affects the probability to start exporting in that country, whereas there is no significant effect of the country's imports growth rate. Distance between firms and countries also plays a role, confirming previous evidence that the destination country of exports is strongly affected by the geographical proximity.<sup>11</sup>

To have found a significant relationship between bank internationalization and firm export decision is not yet enough to support the hypothesis that the soft information

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<sup>10</sup>The mean probability is equal to 0.11 percent, while the marginal effect associated with the dummy variable  $subs_{ic,2006-07}$  is equal to 0.048 percent.

<sup>11</sup>These results are substantially confirmed if we consider the foreign countries where banks have also their affiliations (i.e. juridically independent institutions owned by the a bank headquartered in another country) and not only subsidiaries. Results are not shown but available under request.

about foreign markets, provided by the banks to the firms, enhances their probability to export. In particular, there are two main identification issues we need to tackle. Firstly, we need to disentangle the hypothesis at hand, i.e. the firm follows the bank, from the opposite case, i.e. the bank follows the firm, or the bank and the firm jointly plan to access foreign markets (Seth et al., 1998). Secondly, we need to control for another possible mechanism, where willing-to-export firms choose banks according to their presence abroad. For example, to have access offshore to the standard banking services.

Concerning the first issue, since our sample consists of firms that never exported before 2008 and being the banks already settled off-shore in 2008, we can rule out those cases where the bank follows the firm. Moreover, our sample of non-exporters before 2008 largely consists of small firms, characterized by, on average, 30 employees, against 85 for the firms that export regularly. Firms that start exporting in 2008 are also small (30 employees on average). Hence, there seems to be no ground in our sample for the hypothesis of joint firm-bank planning of the internationalization decision.

The second identification issue is trickier. Firms willing to start exporting in one market could indeed choose earlier a bank that can provide offshore financial or payment services in the same market. A way to assess whether our baseline result is driven by firms cherry-picking banks is to look at the duration of the relationship with the bank. In particular, if the effect truly goes from the bank to the firm, it is reasonable to expect a larger effect of the hypothesized information channel for the bank-firm relationships which started earlier, since there has been a longer period over which the information can be transmitted from the former to the latter. On the other hand, if willing-to-export firms select banks according to their presence abroad, we should find a stronger effect for the banks whose relationship with the firm started in the few years preceding the export decision of the latter. The empirical evidence on the effect of the duration of firm-bank relationship will be shown in the next Section. Results suggest that the role of cherry-picking firms is limited.

## 5 Testing for the validity of the informational channel hypothesis

We argued that the main mechanism driving our results is the flow of information on the foreign country from the bank to the firm. In this section, we provide further supporting evidence for this hypothesis.

In order to help firms to internationalize by reducing export sunk-costs, information on foreign countries must be gathered by the banks and transferred to domestic firms. The strength of this informational channel will depend on the intensity of bank-firm relationships. We envisage that the stronger and longer is the relationship between firm and bank, the stronger will be the flow of information between them. As a result, we expect a larger effect on exports for stronger and long-lasting bank-firm relationships.

A wide literature shows that the strength of the bank-firm relationship plays a central role for financial and economic conditions of the firms. Some papers focused on duration of relationship lending and cost of credit. In this framework, longer relationship lending may decrease the cost of loans, because it lowers asymmetric information about borrower's quality (Berger and Udell, 1995; Blackwell and Winters, 1997).<sup>12</sup> In the same stream of research, other authors examined whether the duration of relationship lending improves credit availability (Petersen and Rajan, 1994; Angelini, Di Salvo and Ferri, 1998) or promotes innovation (Herrera and Minetti, 2007).

Along a similar framework we carry out some exercises to support the informational channel argument. We argue that stronger relationship lending should promote the transmission of information. Therefore, we expect that if our findings are driven by information channeled from the banks to the firms, longer and stronger bank-firm relationships should produce larger effects of the presence abroad of bank subsidiaries on the firm probability to export (to the same countries). In order to test for such hypothesis, we divide the sample into weaker and stronger relationship lending and re-estimate the baseline model. We

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<sup>12</sup>Notice that the results of the empirical literature on the link between duration of relationship lending and cost of credit are not univocal. See e.g.: Petersen and Rajan (1995) and Degryse and Van Cayseele (2000)

consider two alternative proxies for the strength of credit relationship. A first proxy is the duration of bank-firm relationship. Hence, we break-down the sample into longer (*Top*) and shorter (*Bottom*) duration of firm-bank relationship according to whether they fall above or below the median value (6 years). In particular, in the *Top* (*Bottom*) model the variable of interest  $subs_{ic}$  is built taking into account bank-firm relationships whose duration falls above (below) the median. As before,  $subs_{ic,2006-07}$  takes value one if at least one of the banks financing firm  $i$  over the period 2006-07, and whose relationship with the firm in 2007 falls above (below) 6 years, had a subsidiary branch in country  $c$  in the same period (and zero otherwise).

The second proxy for the strength of credit relationship is a measure of the role played by bank  $j$  for firm  $i$ . Following Degryse, Masschelein and Mitchell (2011), the importance of the bank has been approximated by the ratio of credit disbursed (in the period preceding the export decision) by bank  $j$  to firm  $i$  over total bank credit to firm  $i$ . As performed with duration, we separate bank-firm relationships whose intensity is above the sample median from those falling below, and estimate again our model.<sup>13</sup>

The results obtained by dividing the sample according to the duration of relationship lending are shown in the first two columns of Table 7. Those achieved by breaking down the sample according to the relevance of the disbursed loans are reported in the last two columns. Regardless of the variable used to split the sample we obtain similar results. We find a larger, and statistically significant, coefficient of our variable of interest for longer, or closer (in terms of credit disbursed), bank-firm relationships. Whereas, the coefficient is smaller and non-statistically significant for weaker relationships.

Since new exporter firms are typically smaller firms, and hence riskier than larger ones, it is possible that the strength of bank-firm relationships may affect firm export via the usual credit channel, instead of the informational channel supposed here. In other words, firms might benefit from a long-standing or stronger relationship with a bank to get a

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<sup>13</sup>Similarly to the previous case, in the *Top* (*Bottom*) model the variable of interest  $subs_{ic}$  is built taking into account bank-firm relationships whose credit concentration falls above (below) the median (10 per cent). As before,  $subs_{ic,2006-07}$  takes value one if at least one of the banks financing firm  $i$  over the period 2006-07, and whose credit concentration before 2007 falls above (below) the median, had a subsidiary branch in country  $c$  in the same period.

better access to credit for export activity. While we think this mechanism in principle can be important, we claim that it does not drive our results for two reasons. Firstly, while the credit constraint channel might well impact on the firm decision to export in general, it should not drive the selection of the target country as well, which is the focus of our exercise. Secondly, our result holds also if we control for firm riskiness, i.e. including a proxy for the firm ability to access credit market. More specifically, the results do not substantially change if we add among firm controls a dummy variable that takes value one for riskier firm, i.e. those that show z-score values from 7 to 9<sup>14</sup> (see Table A.5).

To support the informational channel hypothesis we have carried out an additional exercise based on the duration of the offshore presence of the banks. Those that had subsidiaries abroad for a longer period will presumably have collected more useful information on the foreign countries that can be transmitted to the firms. Therefore, we expect a larger effect on firm export if the banks have settled their subsidiaries earlier. To test for such hypothesis we redefine the variable of interest *subs<sub>ic</sub>* according to whether the subsidiaries have been settled before or after the year 2000 and by re-estimating the baseline model.<sup>15</sup> The results are reported in Table 8. We find a significant effect when banks have settled their subsidiaries before 2000, whereas the effect is non-significant for post 2000 settlements.<sup>16</sup> Finally, since large banks have a greater foreign market penetration, they rely on a wider stock of information with respect to smaller banks, enhancing the relevance of the information transmission mechanism. We check this hypothesis by estimating separately our model according to bank size: the coefficient of interest turns out to be statistically significant for large banks only (Table A.4).

We have shown that a larger effect on firm export propensity is found in the case of stronger bank-firm relationships, or earlier presence abroad of the financing banks. Both

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<sup>14</sup>The z-score, provided by Cerved group, is a synthetic measure of the risk of firm default. Such rating is obtained using the linear discriminant analysis methodology applied to a side set of balance sheet data (see Altman, Marco and Varetto (1994) for details of the method). The credit score classifies firms in healthy (values 1-4), vulnerable (5-6) and unsound (7-9).

<sup>15</sup>The choice of the year has been discretionary, but small changes of the year have no remarkable effect on the results.

<sup>16</sup>It would have been of interest to put the two exercises together, i.e. to interact the duration of the presence abroad of the banks and the strength of bank-firm relationship. However, the limited number of new exporters in our dataset hampers performing of exercises based on further sample splits.

the results are consistent with the hypothesis that the informational channel plays an important role in explaining the positive relationship between firm probability to begin exporting in one market, and presence of its financing bank in the same country.

## 6 Robustness

In this section we carry out a set of sensitiveness exercises to test for the robustness of our benchmark model. Up to now our sample consisted of 769 firms that never exported before 2008. In this way we were able to precisely model the entry into a foreign market (for the first time) as a function of bank internationalization. On the other hand, working with such a sharp sample leaves us with very few firms that start exporting in 2008 (52 firms against 717 firms that remain non-exporters). Since we observe firm-country pairs, and firm export on average to 1.5 countries, our dependent variable takes value one in about 0.1 per cent of the cases. In this rare-events setting, probit models might underestimate the true parameters (King and Zen, 2001). In order to address this potential bias we follow two different approaches.

Firstly, we resample our dataset by selecting only a subsample of the firms among those which never exported before 2008 and that remain domestic in 2008. In this way, we obtain a more balanced sample, with our bank-firm dependent variable switching now in about 1 per cent of the cases. Now the number of non-exporting firms is 100. In order to deal with the selection bias arising from outcome-based sampling we randomly select the subsample of never-exporters and estimate our baseline model. We perform this exercise from 100 to 1000 times in order to generate distributions of our estimates. The results, reported in Table A.6, show indeed larger average coefficients, supporting the claim of underestimation associated to the model fitted on the full sample. However, the bias does not seem to be too severe.

Secondly, we increase the sample size by adding to the baseline sample (of the 769 firms that never exported before 2008) the sample of about 500 firms that claimed to have exported “sometimes” before 2008 (the sample we labeled  $b$  in section 3). Hence, we end up with a sample of 1235 firms. Among them, about one third export in 2008. Results,



reported in Table A.7, support our previous findings. Expectedly, our estimates are also more precise. However, since we introduced firms that already exported in the past, the interpretation of the coefficient of interest is tricky, as we cannot rule out those cases where the bank follows the firm. As a further check, in order to limit such bias we replicate our estimates on the extended sample after excluding the largest firms (average sales above 10 million euro). Those firms are indeed more likely to be followed abroad by the banks. Estimated coefficients, in Table A.8, are still strongly statistically significant.

Finally, in order to validate our results we check that they are not obtained from considering just any random export destination country for the (few) firms that start exporting and run a couple of falsification tests. In the first one we randomly assign to the new exporter firms a target country and fit our model on the simulated network. The random allocation is constructed as follows. For each firm we keep track of the number of its exporting countries. Next, we allocate to the firm the same number of countries, randomly drawn from a uniform distribution over the entire set of countries found in our dataset. Firm's bank relationships remain unchanged. We perform the random allocation up to 1000 times in order to generate a distribution of the coefficient of interest. The mean estimate of the coefficient is always around zero, with a standard error of about 0.19 (see Table A.9). Moreover, the majority of point estimates are not statistically significant. We obtain a similar result if we randomly sample the target countries from the subset of the top 50 markets in terms of Italian firms' exports.

In the second falsification test we perform an alternative network scrambling. As we have seen, the variable of interest, the dummy  $subsic$ , takes value one if any of the firm  $i$ 's lending banks has a branch in country  $c$ . In this setting, if Italian banks mainly choose their foreign target countries following the same criteria as the exporting firms (for instance: geographical proximity, amount of foreign investments, immigrants, trade agreements, etc.), the results that we have found would reflect a spurious relationship. In order to check for that, we artificially replace the set of financing banks for each new exporter firm and then estimate again our model. Since we are drawing banks from the same (Italian) banking system, if our main result stems from a spurious country-level relationship we should still

find a significant relationship between bank internationalization and firm export decisions. On the other hand, if the impact truly depends on some specific bank-firm linkages, we should find none. For the sake of simplicity we replace the set of banks for each new exporter firm with the set of banks of a very similar (non-exporter) firm and estimate our model once. The matched firm is found by nearest-neighbor matching, according to sector and size. For each pair of firms we make sure that enterprises belong to different regions, in order to minimize the probability that both firms are clients of exactly the same set of banks. Results, reported in Table A.10, show that the coefficient of interest is never statistically significant and is much smaller in size with respect to the baseline estimates. As a further robustness exercise, we also estimate our model over the set of firms which started exporting after 2004. Results, available on request, confirm our previous findings.

## 7 Conclusions

In this paper we have analyzed if firms which are customers of internationalized banks have a higher probability to start exporting in the countries where their banks have a subsidiary. We find a significant positive relationship between the foreign market of new-exporter firm, and the presence in the same market of its financing banks. We argue that firms benefit from the information on the foreign country collected by their banks which is easily transmittable to their customers. This flow of knowledge helps firms to overcome informational barrier to international trade, reducing the sunk cost to start exporting.

A test for the informational channel hypothesis is a complex task primarily because of the unavailability of explicit information. We have provided empirical evidence of a larger effect for closer firm-bank relationships, and for earlier presence abroad of the internationalized banks. These results are consistent with the assumption that the information channeled from banks to firms is relevant in shaping firms' export activity. At the same time, we acknowledge that for a more comprehensive assessment of the link between banks' internationalization and firms' exports further investigations will be needed.

Our contribution sheds light on a causal link, up to now unexplored by the theoretical and empirical literature, that offers a straightforward economic implication. Firms can take

remarkable advantage from being customers of internationalized banks. The result turns out to be relevant for firms' strategic purposes, but also to better understand the forces able to strengthen firm international competitiveness.

This paper contributes to a fruitful, but so far scantily explored line of research. Theoretical and empirical investigations able to enlighten further the role played by the bank-firm relationships on firm internationalization, together with the underlying driving mechanisms, are thus welcome.

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## Tables

Table 1: Firm size distribution by export status before 2008

Export before 2008?	Always/Regularly			Sometimes		
Class size (1)	Freq.	Percent	Mean empl. (2)	Freq.	Percent	Mean empl.
1 (smaller)	227	14.76	18.3	153	32.83	18.6
2 (medium)	839	54.55	30.5	255	54.72	29.7
3 (larger)	472	30.69	214.4	58	12.45	81.6
Total	1,538	100	85.2	466	100	32.5

  

Export before 2008?	Never			New-exporters in 2008		
Class size (1)	Freq.	Percent	Mean empl. (2)	Freq.	Percent	Mean empl.
1 (smaller)	340	44.21	20.1	18	34.62	19.3
2 (medium)	360	46.81	30.4	28	53.85	25.3
3 (larger)	69	8.97	72.4	6	11.54	83.5
Total	769	100	29.6	52	100	29.9

Class 1: annual turnover below 2 million euro; class 2: annual turnover between 2 and 10 million euro; class 3: annual turnover above 10 million euro. - (2) Average number of employees.

Table 2: Firms that never exported before 2008, by headquarter's region

Region	Never exporters	Percent	<i>New exporters</i>	
			<i>Percent</i>	
Piemonte	67	8.7	6	11.5
Lombardia	149	19.4	9	17.3
Liguria	12	1.6	1	1.9
<b>North West</b>	<b>228</b>	<b>29.6</b>	<b>16</b>	<b>30.8</b>
Veneto	81	10.5	10	19.2
Trentino	7	0.9	0	0.0
Friuli	16	2.1	1	1.9
Emilia	110	14.3	7	13.5
<b>North East</b>	<b>214</b>	<b>27.8</b>	<b>18</b>	<b>34.6</b>
Toscana	65	8.5	3	5.8
Umbria	14	1.8	0	0.0
Marche	47	6.1	3	5.8
Lazio	30	3.9	2	3.8
<b>Centre</b>	<b>156</b>	<b>20.3</b>	<b>8</b>	<b>15.4</b>
<b>Centre &amp; North</b>	<b>598</b>	<b>77.8</b>	<b>42</b>	<b>80.8</b>
Abruzzo	31	4	1	1.9
Basilicata	7	0.9	0	0.0
Calabria	13	1.7	1	1.9
Campania	42	5.5	2	3.8
Molise	6	0.8	0	0.0
Puglia	38	4.9	4	7.7
Sardegna	9	1.2	0	0.0
Sicilia	25	3.3	2	3.8
<b>South &amp; Islands</b>	<b>171</b>	<b>22.2</b>	<b>10</b>	<b>19.2</b>
<b>Italy</b>	<b>769</b>	<b>100.0</b>	<b>52</b>	<b>100.0</b>

Table 3: Firms that never exported before 2008, by economic activity sector

Sector (Nace 2 digits)	Never exporters		New exporters	
	Count	Percent	Count	Percent
Manufacture of basic metals	15	2.0	1	1.9
Manufacture of beverages	9	1.2	2	3.8
Manufacture of chemicals and chemical products	9	1.2	0	0.0
Manufacture of coke and refined petroleum	3	0.4	0	0.0
Manufacture of computer, electronic and optical products	30	3.9	2	3.8
Manufacture of electrical equipment	33	4.3	3	5.8
Manufacture of fabricated metal product	210	27.3	14	26.9
Manufacture of food products	76	9.9	6	11.5
Manufacture of furniture	22	2.9	2	3.8
Manufacture of leather and related products	10	1.3	0	0.0
Manufacture of machinery and equipment	42	5.5	4	7.7
Manufacture of motor vehicles, trailers	10	1.3	2	3.8
Manufacture of other non-metallic minerals	76	9.9	1	1.9
Manufacture of other transport equipment	8	1.0	0	0.0
Manufacture of paper and paper products	18	2.3	3	5.8
Manufacture of rubber and plastic products	29	3.8	2	3.8
Manufacture of textiles	32	4.2	1	1.9
Manufacture of wearing apparel	38	4.9	3	5.8
Manufacture of wood and of products of wood and cork, except furniture	34	4.4	3	5.8
Other manufacturing	15	2.0	0	0.0
Printing and reproduction of recorded media	39	5.1	2	3.8
Repair and installation of machinery and equipment	11	1.4	1	1.9
<b>Total</b>	<b>769</b>	<b>100.0</b>	<b>52</b>	<b>100.0</b>



Table 4: Foreign branches distribution of Italian banks financing our firm sample

Country	Freq.	Percent
austria	3	1.9
belgium	4	2.6
china	6	3.8
egypt	1	0.6
france	15	9.6
united kingdom	28	17.8
greece	3	1.9
netherlands	2	1.3
romania	2	1.3
spain	10	6.4
united states	16	10.2
turkey	2	1.3
japan	6	3.8
luxembourg	15	9.6
germany	12	7.6
lebanon	1	0.6
hong kong	10	6.4
singapore	8	5.1
bahamas	2	1.3
cayman islands	8	5.1
abu dhabi	2	1.3
dubai	1	0.6
<b>Total</b>	<b>157</b>	<b>100.0</b>

Table 5: Probability to export and bank internationalization (sector-size dummies only)

VARIABLES	(baseline)	(1)	(2)	(3)
subs0607	0.617*** (0.101)			
subs0506		0.591*** (0.0934)		
subs0405			0.546*** (0.0941)	
subs0304				0.529*** (0.0989)
2dgt NACE dummies	yes	yes	yes	yes
firm size dummies	yes	yes	yes	yes
Constant	-3.203*** (0.151)	-3.186*** (0.152)	-3.187*** (0.151)	-3.187*** (0.152)
Observations	66608	66608	66608	66608
Pseudo R <sup>2</sup>	0.0618	0.0528	0.0484	0.0471

Standard errors clustered at the firm level in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table 6: Probability to export and bank internationalization (full specification)

VARIABLES	(baseline)	(1)	(2)	(3)
subs0607	0.240*			
	(0.134)			
subs0506		0.232**		
		(0.106)		
subs0405			0.202*	
			(0.107)	
subs0304				0.191*
				(0.106)
logimp0607	0.0157**	0.0166***	0.0169***	0.0172***
	(0.00613)	(0.00604)	(0.00604)	(0.00602)
deltaimp	-0.0066	-0.00784	-0.00779	-0.00775
	(0.016)	(0.0161)	(0.0161)	(0.016)
prod	1.29E-08	1.35E-08	1.56E-08	1.57E-08
	(5.32E-08)	(5.28E-08)	(5.21E-08)	(5.2E-08)
group	0.103	0.102	0.0999	0.0998
	(0.147)	(0.147)	(0.147)	(0.147)
North West	-0.014	-0.0137	-0.011	-0.0125
	(0.144)	(0.144)	(0.144)	(0.143)
Nort East	0.0418	0.05	0.0483	0.0467
	(0.129)	(0.129)	(0.129)	(0.129)
Centre	-0.256	-0.261	-0.259	-0.258
	(0.166)	(0.166)	(0.166)	(0.166)
logdist	-0.290***	-0.290***	-0.291***	-0.291***
	(0.0512)	(0.0509)	(0.0507)	(0.0508)
GER	0.413**	0.475***	0.481***	0.483***
	(0.167)	(0.152)	(0.151)	(0.152)
FRA	0.785***	0.770***	0.790***	0.799***
	(0.217)	(0.211)	(0.211)	(0.206)
boundary	-0.3	-0.292	-0.298	-0.302
	(0.195)	(0.194)	(0.195)	(0.195)
othEU	-0.089	-0.0906	-0.0951	-0.0992
	(0.111)	(0.112)	(0.112)	(0.112)
2dgt NACE dummies	yes	yes	yes	yes
firm size dummies	yes	yes	yes	yes
Constant	-1.547***	-1.567***	-1.566***	-1.574***
	(0.522)	(0.516)	(0.514)	(0.513)
Observations	66608	66608	66608	66608
Pseudo R <sup>2</sup>	0.1488	0.1483	0.1475	0.1473

Standard errors clustered at the firm level in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table 7: Relationship lending intensity and bank internationalization

VARIABLES	Relationship length		Credit concentration	
	<i>top (1)</i>	<i>bottom (2)</i>	<i>top (3)</i>	<i>bottom (4)</i>
subs0607	0.277** (0.129)	0.130 (0.165)	0.310** (0.127)	0.220 (0.185)
logimp0607	0.0161** (0.00638)	0.0186*** (0.00587)	0.0156*** (0.00597)	0.0183*** (0.00614)
deltaimp	-0.00615 (0.0159)	-0.00864 (0.0157)	-0.00667 (0.0161)	-0.00805 (0.0156)
prod	1.79e-08 (5.10e-08)	1.02e-08 (5.36e-08)	1.02e-08 (5.42e-08)	1.50e-08 (5.13e-08)
group	0.110 (0.145)	0.0928 (0.148)	0.109 (0.148)	0.0940 (0.147)
North West	-0.0159 (0.146)	-0.00329 (0.144)	-0.0139 (0.144)	-0.00133 (0.145)
North East	0.0452 (0.129)	0.0434 (0.128)	0.0461 (0.130)	0.0446 (0.129)
Centre	-0.264 (0.166)	-0.257 (0.166)	-0.260 (0.166)	-0.255 (0.165)
logdist	-0.291*** (0.0508)	-0.293*** (0.0503)	-0.289*** (0.0512)	-0.293*** (0.0499)
GER	0.442*** (0.157)	0.451*** (0.166)	0.405** (0.163)	0.472*** (0.156)
FRA	0.857*** (0.202)	0.820*** (0.217)	0.772*** (0.210)	0.849*** (0.205)
boundary	-0.309 (0.195)	-0.325* (0.196)	-0.287 (0.192)	-0.329* (0.197)
othEU	-0.0952 (0.110)	-0.114 (0.111)	-0.0830 (0.111)	-0.114 (0.111)
2dgt NACE dummies	yes	yes	yes	yes
firm size dummies	yes	yes	yes	yes
Constant	-1.550*** (0.522)	-1.582*** (0.509)	-1.566*** (0.521)	-1.576*** (0.512)
Observations	66608	66608	66608	66608
Pseudo R <sup>2</sup>	0.1494	0.1459	0.1507	0.1471

Standard errors clustered at the firm level in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

(1) subs0607 computed only by taking into account banks whose firm-relationship length (using granted loans) was equal or above the median value computed before the year 2008 (6 years). For example, subs0607 takes value one if at least one of the banks financing firm  $i$  in 2006-07 for at least 6 years had a subsidiary branch in country  $c$  in the same period. Bank firm relationships whose length in 2007 is below 6 years are not taken into account. (2) As point (1) but it takes into account banks whose length of relationship with the firm falls below the median only. (3) subs0607 was computed only by taking into account banks whose average ratio of credit disbursed towards the firm over the years preceding the export decision was above the median (10%). (4) As point (3) but it takes into account banks below the median only.

Table 8: Banks sample split by year of settlement abroad

VARIABLES	before 2000	after 2000
subs0607	0.215* (0.122)	0.236 (0.197)
logimp0607	0.0163*** (0.00618)	0.0192*** (0.00603)
deltaimp	-0.00694 (0.0159)	-0.00862 (0.0155)
prod	1.35e-08 (5.26e-08)	1.08e-08 (5.36e-08)
group	0.104 (0.147)	0.0930 (0.148)
North West	-0.0116 (0.145)	-0.00491 (0.144)
North East	0.0484 (0.130)	0.0379 (0.129)
Centre	-0.257 (0.166)	-0.258 (0.166)
logdist	-0.291*** (0.0510)	-0.294*** (0.0501)
GER	0.463*** (0.155)	0.386** (0.184)
FRA	0.796*** (0.215)	0.860*** (0.203)
boundary	-0.310 (0.196)	-0.334* (0.197)
othEU	-0.0963 (0.111)	-0.121 (0.111)
2dgt NACE dummies	yes	yes
firm size dummies	yes	yes
Constant	-1.547*** (0.520)	-1.587*** (0.507)
Observations	66608	66608
Pseudo R <sup>2</sup>	0.1476	0.1472

Standard errors clustered at the firm level in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

## Appendix

Table A.1: Banks financing our firm sample (1) with branches abroad in the period 2006-07

bank name	countries	percent
Banca Nazionale del Lavoro	4	7.41
Monte dei Paschi di Siena	5	9.26
Unicredit	18	33.33
Intesa Sanpaolo	13	24.07
UBI banca	1	1.85
Chebanca!	1	1.85
Banca di Trento e Bolzano	1	1.85
Banca IMI	2	3.7
Banca Italo Romena	1	1.85
Banca Sella	1	1.85
Banco di Brescia	1	1.85
Banco Popolare	1	1.85
Banca Antonveneta	1	1.85
Banca Carige	1	1.85
Banca Regionale Europea	1	1.85
Mediobanca	2	3.7

(1) Never exporters before 2008.

Table A.2: Country list in our sample

afghanistan	chile	germany	korea dpr	norway	south africa
albania	china	ghana	korea rep. (south)	oman	spain
algeria	colombia	greece	kuwait	pakistan	suriname
angola	congo	grenada	latvia	panama	sweden
argentina	costa rica	guatemala	lebanon	peru	switzerland
australia	cote d'ivoire	guayana	libya	philippines	syria
austria	croatia	honduras	liechtenstein	poland	taiwan
azerbaijan	cuba	hungary	lithuania	portugal	thailand
bahamas	cyprus	iceland	luxembourg	qatar	tunisia
bahrain	czech republic	india	macedonia	romania	turkey
bangladesh	denmark	indonesia	malaysia	russia	ukraine
belarus	dominican rep.	iran	malta	rwanda	united arab emirates
belgium	egypt	iraq	mexico	san marino	united kingdom
belize	el salvador	ireland	moldova	saudi arabia	usa
bosnia herzegovina	estonia	israel	monaco	senegal	venezuela
brazil	ethiopia	italy	montenegro	serbia	vietnam
bulgaria	finland	japan	morocco	seychelles	yemen rep
burkina faso	france	jordan	netherlands	singapore	
cameroon	gabon	kazakhstan	new zealand	slovakia	
canada	georgia	kenya	nigeria	slovenia	

Table A.3: Export-target countries for the new exporter firms

Country	Freq.	Percent
Algeria	1	1.3
Austria	1	1.3
Bulgaria	2	2.5
China	1	1.3
Croatia	1	1.3
Czech Republic	2	2.5
Egypt	1	1.3
France	12	15.2
Germany	10	12.7
Greece	5	6.3
Guayana	1	1.3
Hungary	2	2.5
Jordan	1	1.3
Libya	1	1.3
Liechtenstein	1	1.3
Lithuania	1	1.3
Luxembourg	1	1.3
Morocco	1	1.3
Netherlands	4	5.1
Poland	1	1.3
Portugal	2	2.5
Qatar	1	1.3
Romania	3	3.8
Russia	2	2.5
San Marino	1	1.3
Serbia	1	1.3
Seychelles	1	1.3
Slovenia	3	3.8
Spain	4	5.1
Tunisia	1	1.3
Turkey	1	1.3
USA	3	3.8
United Kingdom	5	6.3
<b>Total</b>	<b>78</b>	<b>100</b>



Table A.4: Banks sample split by bank size

VARIABLES	5 largest groups	others
subs0607	0.246* (0.141)	0.199 (0.162)
logimp0607	0.0160*** (0.00617)	0.0186*** (0.00604)
deltaimp	-0.00529 (0.0159)	-0.00932 (0.0157)
prod	1.26e-08 (5.32e-08)	1.28e-08 (5.24e-08)
group	0.102 (0.147)	0.0964 (0.147)
North West	-0.0206 (0.143)	0.00460 (0.146)
North East	0.0352 (0.129)	0.0527 (0.130)
Centre	-0.257 (0.165)	-0.259 (0.166)
logdist	-0.290*** (0.0511)	-0.294*** (0.0501)
GER	0.407** (0.168)	0.486*** (0.153)
FRA	0.798*** (0.215)	0.837*** (0.203)
boundary	-0.308 (0.196)	-0.322 (0.196)
othEU	-0.0940 (0.112)	-0.113 (0.111)
2dgt NACE dummies	yes	yes
firm size dummies	yes	yes
Constant	-1.545*** (0.519)	-1.587*** (0.511)
Observations	66608	66608

Standard errors clustered at the firm level in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table A.5: Relationship lending intensity and bank internationalization controlling for firm riskiness

VARIABLES	relationship lenght		credit concentration	
	<i>top(1)</i>	<i>bottom(2)</i>	<i>top(3)</i>	<i>bottom(4)</i>
subs0607	0.285** (0.140)	0.0607 (0.167)	0.287** (0.129)	0.182 (0.215)
highrisk	0.0518 (0.101)	0.0505 (0.101)	0.0415 (0.101)	0.0506 (0.101)
logimp0607	0.0153** (0.00651)	0.0183*** (0.00595)	0.0152** (0.00604)	0.0178*** (0.00624)
deltaimp	-0.00561 (0.0158)	-0.00835 (0.0155)	-0.00642 (0.0160)	-0.00782 (0.0154)
prod	2.16e-08 (5.20e-08)	1.36e-08 (5.47e-08)	1.34e-08 (5.54e-08)	1.72e-08 (5.25e-08)
group	0.165 (0.140)	0.147 (0.144)	0.163 (0.143)	0.149 (0.143)
North West	-0.0404 (0.151)	-0.0257 (0.149)	-0.0352 (0.148)	-0.0262 (0.149)
North East	0.0345 (0.131)	0.0344 (0.130)	0.0380 (0.131)	0.0334 (0.130)
Centre	-0.244 (0.166)	-0.238 (0.166)	-0.240 (0.166)	-0.237 (0.166)
logdist	-0.284*** (0.0513)	-0.289*** (0.0511)	-0.283*** (0.0518)	-0.288*** (0.0503)
GER	0.384** (0.172)	0.418** (0.178)	0.353** (0.177)	0.422** (0.171)
FRA	0.792*** (0.207)	0.779*** (0.224)	0.711*** (0.217)	0.787*** (0.210)
boundary	-0.281 (0.195)	-0.308 (0.199)	-0.265 (0.193)	-0.305 (0.198)
othEU	-0.0735 (0.111)	-0.100 (0.113)	-0.0659 (0.112)	-0.0955 (0.112)
2dgt NACE dummies	yes	yes	yes	yes
firm size dummies	yes	yes	yes	yes
Constant	-1.661*** (0.527)	-1.690*** (0.512)	-1.670*** (0.523)	-1.687*** (0.515)
Observations	64492	64492	64492	64492

Standard errors clustered at the firm level in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

(1) subs0607 computed only by taking into account banks whose firm-relationship length (using granted loans) was equal or above the median value computed before the year 2008 (6 years). For example, subs0607 takes value one if at least one of the banks financing firm  $i$  in 2006-07 for at least 6 years had a subsidiary branch in country  $c$  in the same period. Bank firm relationships whose length in 2007 is below 6 years are not taken into account. (2) As point (1) but it takes into account banks whose length of relationship with the firm falls below the median only. (3) subs0607 was computed only by taking into account banks whose average ratio of credit disbursed towards the firm over the years preceding the export decision was above the median (10%). (4) As point (3) but it takes into account banks below the median only.

Table A.6: Probability to export and bank internationalization after randomly subsampling non-exporters - distribution of the estimated coefficient (b) and standard error (s.e.)

ITERATIONS	100	200	500	1000
		b[sub0607]		
mean	0.277	0.277	0.279	0.279
s.e	(0.038)	(0.040)	(0.037)	(0.038)
		s.e.[sub0607]		
mean	0.152	0.152	0.152	0.152
s.e	(0.004)	(0.004)	(0.004)	(0.004)
New exporters	52	52	52	52
Non-exporters	100	100	100	100

Table A.7: Probability to export and bank internationalization, extended sample

VARIABLES	(1)	(2)	(3)	(4)
subs0607	0.251*** (0.0476)			
subs0506		0.236*** (0.0486)		
subs0405			0.167*** (0.0492)	
subs0304				0.129*** (0.0495)
logimp0607	0.0331*** (0.00253)	0.0340*** (0.00244)	0.0349*** (0.00245)	0.0355*** (0.00243)
deltaimp	-0.00741 (0.00716)	-0.00876 (0.00715)	-0.00903 (0.00708)	-0.00923 (0.00704)
prod	1.98E-08 (3.81E-08)	1.78E-08 (3.75E-08)	1.84E-08 (3.69E-08)	1.91E-08 (3.71E-08)
group	-0.156** (0.0722)	-0.159** (0.0725)	-0.160** (0.0724)	-0.162** (0.0724)
North West	0.119* (0.0656)	0.117* (0.0657)	0.120* (0.0655)	0.120* (0.0655)
Nort East	0.0846 (0.0655)	0.0891 (0.0656)	0.0842 (0.0654)	0.0807 (0.0654)
Centre	-0.0199 (0.0731)	-0.0239 (0.0733)	-0.0218 (0.0732)	-0.0225 (0.0731)
logdist	-0.279*** (0.0213)	-0.281*** (0.0212)	-0.284*** (0.021)	-0.285*** (0.021)
GER	0.488*** (0.0613)	0.555*** (0.0595)	0.561*** (0.0594)	0.562*** (0.0595)
FRA	0.690*** (0.0674)	0.680*** (0.0678)	0.715*** (0.0676)	0.735*** (0.0673)
boundary	-0.0329 (0.0672)	-0.0303 (0.0676)	-0.0479 (0.0679)	-0.0594 (0.068)
othEU	-0.0912* (0.0488)	-0.0950* (0.0488)	-0.107** (0.0487)	-0.116** (0.0487)
2dgt NACE dummies	yes	yes	yes	yes
firm size dummies	yes	yes	yes	yes
Constant	-1.845*** (0.214)	-1.858*** (0.213)	-1.851*** (0.211)	-1.852*** (0.21)
Observations	115644	115644	115644	115644

Standard errors clustered at the firm level in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table A.8: Probability to export and bank internationalization, extended sample - small and medium firms

VARIABLES	(1)	(2)	(3)	(4)
subs0607	0.193*** (0.0538)			
subs0506		0.190*** (0.0547)		
subs0405			0.140** (0.0553)	
subs0304				0.109* (0.0559)
logimp0607	0.0331*** (0.00269)	0.0336*** (0.00262)	0.0342*** (0.00263)	0.0347*** (0.00261)
deltaimp	-0.00797 (0.00795)	-0.00884 (0.00793)	-0.00905 (0.00788)	-0.00924 (0.00785)
prod	3.72e-07* (2.19E-07)	3.71e-07* (2.19E-07)	3.69e-07* (2.19E-07)	3.66e-07* (2.19E-07)
group	-0.175* (0.0941)	-0.176* (0.0944)	-0.178* (0.0944)	-0.178* (0.0943)
North West	0.0969 (0.0682)	0.0956 (0.0683)	0.098 (0.0682)	0.098 (0.0682)
Nort East	0.0294 (0.0691)	0.0322 (0.0693)	0.029 (0.0692)	0.0263 (0.0691)
Centre	-0.0879 (0.0785)	-0.0912 (0.0788)	-0.0901 (0.0787)	-0.0907 (0.0786)
logdist	-0.274*** (0.023)	-0.274*** (0.023)	-0.277*** (0.0228)	-0.278*** (0.0228)
GER	0.488*** (0.0684)	0.542*** (0.066)	0.547*** (0.0659)	0.548*** (0.066)
FRA	0.687*** (0.074)	0.679*** (0.0743)	0.704*** (0.0736)	0.721*** (0.0732)
boundary	-0.0168 (0.0731)	-0.014 (0.0734)	-0.0258 (0.0736)	-0.0344 (0.0739)
othEU	-0.0926* (0.0533)	-0.0944* (0.0532)	-0.103* (0.0531)	-0.110** (0.0532)
2-digit NACE dummies	yes	yes	yes	yes
firm size dummies	yes	yes	yes	yes
Constant	-1.905*** (0.234)	-1.914*** (0.233)	-1.906*** (0.232)	-1.905*** (0.231)
Observations	102856	102856	102856	102856

Standard errors clustered at the firm level in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table A.9: Probability to export and bank internationalization after randomly assigning target countries to the new exporters - distribution of the estimated coefficient

ITERATIONS	100	200	1000	100
		b[subs0607]		
mean	0.002	-0.001	-0.004	-0.018
s.e	(0.183)	(0.183)	(0.188)	(0.141)
Countries	117 (all)	117 (all)	117 (all)	50 (top)

Table A.10: Probability to export and bank internationalization, falsification test (1-to-1 matching)

VARIABLES	(1)	(2)	(3)	(4)
subs0607	0.163 (0.14)			
subs0506		0.0754 (0.139)		
subs0405			0.0827 (0.135)	
subs0304				0.0391 (0.132)
logimp0607	0.0189*** (0.00551)	0.0206*** (0.00548)	0.0204*** (0.0055)	0.0211*** (0.00548)
deltaimp	-0.00682 (0.0173)	-0.00776 (0.0171)	-0.00766 (0.0171)	-0.00787 (0.017)
prod	-7.27e-07* (4.17E-07)	-7.18e-07* (4.14E-07)	-7.19e-07* (4.14E-07)	-7.14e-07* (4.11E-07)
group	0.0224 (0.162)	0.021 (0.162)	0.0206 (0.161)	0.0206 (0.161)
North West	0.0273 (0.171)	0.0235 (0.171)	0.0231 (0.171)	0.0247 (0.171)
Nort East	-0.0385 (0.188)	-0.0385 (0.188)	-0.0393 (0.188)	-0.0391 (0.187)
Centre	-0.0423 (0.173)	-0.0479 (0.173)	-0.0477 (0.173)	-0.0469 (0.173)
logdist	-0.261*** (0.0519)	-0.262*** (0.051)	-0.262*** (0.0511)	-0.263*** (0.0505)
GER	0.450*** (0.168)	0.498*** (0.162)	0.500*** (0.161)	0.500*** (0.162)
FRA	0.997*** (0.234)	1.023*** (0.244)	1.021*** (0.242)	1.039*** (0.237)
boundary	-0.430* (0.248)	-0.444* (0.25)	-0.441* (0.251)	-0.452* (0.251)
othEU	-0.0893 (0.126)	-0.101 (0.122)	-0.0993 (0.122)	-0.107 (0.123)
2-digit NACE dummies	yes	yes	yes	yes
firm size dummies	yes	yes	yes	yes
Constant	-1.855*** (0.455)	-1.882*** (0.449)	-1.881*** (0.449)	-1.886*** (0.446)
Observations	62928	62928	62928	62928

Standard errors clustered at the firm level in parentheses. \*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1.