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A Credit Crunch Behind the Great Trade Collapse?

Micro Evidence From Europe

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Abstract

Using a very detailed sample of small and medium European firms, we study how differences in main banks' lending technology affected the foreign activities in the aftermath of the financial crisis. We find that the probability of a reduction in foreign activities was lower for firms matching with relational banks. The positive impact of relationship lending is especially strong for younger and smaller firms and for firms in industries more reliant on external finance. In addition, we uncover that relationship lending is beneficial for firms that are in the early stage of internationalization.

JEL Codes: G21, D82, F10

Keywords: Bank-Firm Relationships, Lending Technologies, Trade.

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1. Introduction

Along with the Great Financial Crisis of 2008-2009 came the Great Trade Collapse. Indeed, following the bankruptcy of Lehman Brothers, in the nine months from November 2008 international trade wrinkled by a record 22 percent suggesting a trade contraction even more intense than the epochal drop at the beginning of 1930. Since the peak of the financial crisis preceded that abrupt contraction in trade, it became natural to think of financial constraints as the main culprit behind the trade collapse. However, there is no consensus on whether financial constraints actually played a key role in thwarting international trade (see, e.g., Baldwin, 2009 and references therein). Various authors identify the major cause of the trade collapse of 2009 in either the generalized fall in demand (Behrens et al., 2013; Bricongne et al., 2012, Claessens et al., 2012; Jing, 2012; Nguyen and Qian, 2014) or the complex dynamics due to global value chains linkages (Altomonte et al., 2012; Bems et al., 2011 and 2013).

Nevertheless, there are good reasons to study the part played by exacerbated financial constraints. Credit availability is, in fact, crucial for firms' foreign activities. The literature identifies availability of finance as a key factor behind a company's international business. First, credit rationing may influence a firm's decision to sell abroad and its volume of foreign sales (Manova, 2013; Minetti and Zhu, 2011). This may also depend on the fact that the beginning of an export process entails high fixed costs, some of which are sunk (Das et al., 2007). Second, its international business is bound to affect a firm's credit risk. In fact, profits generated from export activities can be more volatile than those from domestic sales due to fiercer competition in foreign markets (Vannoorenberghe, 2012).

The aim of this paper is to investigate whether the extent of trade impairment in 2009 – the time of most intense loan supply restriction – was affected by the lending technologies employed by the main bank of that firm. We do that referring to the large EFIGE database, covering seven countries: five of them belonging to the Eurozone (Austria, France, Germany, Italy and Spain) and two outside the Eurozone (Hungary and the UK). The dataset provides unusually detailed information

on firms' trade activity based directly on firms' responses to survey questions. For example, we have information on firms' export participation decisions, foreign sales, and patterns of entry in foreign markets. In particular, the survey includes detailed questions on the trade collapse during year 2009, in terms of exports, imports and production abroad. Moreover, firms answer several precise questions on their access to bank credit, including whether a firm is rationed by banks and the criteria its main bank follows in granting loans. Following what reported by the interviewed firm, we distinguish whether its main bank adopts a transactional lending technology or a relational lending technology. We find that relationship lending reduces the probability that a firm reduces its foreign activities in 2009. For instance, our estimates imply that if its main bank uses relationship lending, a firm is 6.4 percent less likely to experience a reduction in the value of export activities compared to 2008. We also uncover evidence that relationship lending lowers the probability of a firm's exit from foreign markets while transactional lending increases the likelihood of a reduction of turnover in its production abroad. These findings support the view that, during the financial crisis, the probability of a reduction in a firm's international activities is lower when the firm couples with a relational main bank. Furthermore, our results concur with works suggesting that relationship lending may promote firms' investment (Alessandrini et al., 2010; Herrera and Minetti, 2007; Bartoli et al., 2014).

Next, we study the mechanisms through which lending technologies affect foreign activities. We find that relationship lending is particularly relevant for more opaque (i.e. younger and smaller) firms and for firms in industries more reliant on external finance. In addition, we uncover that relationship lending is beneficial for firms that are in the early stage of internationalization (e.g., exporting only to a single and/or less distant market). These results are robust to using different estimation methods, as well as IV techniques (2SLS and 2SCML).

In the remainder of the paper, Section 2 draws on the relevant literature providing a reference framework for our study. Section 3 specifies our testable hypotheses. In Section 4, we describe our data and methodology. Sections 5 and 6 report and comment our main results. Section 7 addresses

possible endogeneity issues with an instrumental variable approach. Finally, in Section 8 we synthesize the key findings of the paper and try to draw the main policy implications.

2. Literature review

This paper addresses the role of credit imperfections on firms' export. There is a growing literature on the role of liquidity constraints on firms' international activities. Theoretical works emphasize that exporting is particularly vulnerable to credit imperfections (see, e.g., Manova, 2013; Chaney, 2005). These papers, considering firm heterogeneity, study the role of financial frictions on different trade margins. The results suggest that financial constraints have large real effects on international flows and are crucial for understanding trade patterns. In fact, to become an exporter, a firm should devote time and money to identify export markets and undertake the adjustment needed to make its products adequate to that market (such as, tailor its products to foreign tastes or conform them to the target country's regulations).¹ Moreover, because most entry costs have to be paid up front, potential exporters must have enough liquidity at hand.

From an empirical viewpoint, our work is linked to the micro-level studies that investigate the nexus between indirect measures of credit constraints and firms' international activities. The results of this literature are mixed. On one hand, Greenaway et al. (2007) find no evidence that firms with better financial health are more likely to start exporting, while they obtain evidence that the participation in export markets improves firms' financial health. On the other hand, some studies reveal a positive nexus. For example, on a sample from developing and emerging economies, Berman and Héricourt (2010) find that better financial health increases the probability of a firm's entry into the export market (extensive margin) but does not affect its volume of foreign sales (intensive margin). Minetti and Zhu (2011) using survey data from Italy, display that credit rationing significantly reduces the probability of exporting both at the extensive and intensive

¹ These sunk costs include, for example, acquiring information on foreign markets, setting up distribution networks and customizing products to fit local tastes (see, e.g., Baldwin and Krugman 1989; Dixit 1989).

margin. On rich customs data from China, Manova et al. (2015) provide firm-level evidence that credit constraints restrict international trade and affect the pattern of multinational activity.

Our paper aims to shed new light on the link between the financial crisis and the trade collapse. About the effect of financial constraints on export during the financial crisis, Chor and Manova (2012) document a negative impact using aggregate/sectoral data on monthly US imports. On their part, using firm-level data from six emerging market economies in Asia, Coulibaly et al. (2011) try to disentangle the effect of falling demand from that of financial constraints on sales. Their findings point to the presence of credit frictions among the factors that contributed to the disproportionately large decline in international trade during the crisis. In turn, Abiad et al. (2014) bring support to the view that financial constraints mattered in the 2009 trade collapse by examining the historical pattern of 179 episodes of financial crises over. Indeed, they find that financial crises are associated with sharp and persistent declines in imports of the crisis country. Somewhat concurrent results are obtained by Berman et al. (2012) who address the historical pattern of time-to-ship exports following financial crises.

This paper is also related to the empirical literature on the role of lending technologies on firms' access to credit and investments decisions (Sette and Gobbi, 2015; Herrera and Minetti, 2007; Alessandrini et al., 2010; Degryse et al., 2009b). The literature suggests that banks lend to firms by means of a variety of technologies. Berger and Udell (2006) define a lending technology as a unique combination of primary information source, screening and underwriting policies/procedures, loan contract structure, and monitoring strategies/mechanisms. Among the various lending technologies, most papers focus on two classes: transaction-based lending technologies and relationship lending technologies (Berger and Udell, 2006, Bartoli et al., 2013). The two are normally distinguished by the information that banks use in granting and monitoring the loan. Transactional lending technologies rely primarily on hard information (quantitative information, such as that derived from balance sheets and/or collateral guarantees), while relationship lending technologies hinge on soft information (qualitative information obtained via personal interaction).

Specifically, our paper contributes to the studies that link lending technologies to firms' export. Several papers have analyzed the impact of indirect measures of relationship lending on firms' international activities. Minetti and Zhu (2011) find that the duration of the credit relationship with the main bank does not affect the probability of exporting. De Bonis et al. (2015) suggest that the length of the firm–bank relationship enhances the probability of foreign direct investments but not that of exports. On the contrary, Bartoli et al. (2014), focusing on small Italian firms, show that a closer relationship with the main bank increases the probability that firms enter foreign markets, but not the level of foreign sales. In this paper, we test the impact of relationship lending on trade using a direct measure based on firms' responses to survey questions. Finally, this paper is the first one to study the role of bank lending technologies on firms' international activities.

3. Theoretical predictions

We entertain our main hypotheses following the results showed above that suggest a negative effect of credit rationing on international activities. Thus, we assume that relationship and transactional lending affect the probability of trade collapse through firms' credit availability.

Hypothesis 1. *Ceteris paribus*, the probability of a drop in a firm's international trade is lower when the firm couples with a relational main bank.

This hypothesis draws on the literature underscoring the potential benefits of relationship lending on a firm's access to bank credit (Boot, 2000; Degryse et al., 2009a). Moreover, this positive effect is expected to be even larger during a financial crisis. For example, Ferri et al. (2001) study this issue on credit bureau micro-information for small and medium-sized enterprises (SMEs) covering the pervasive Korean financial crisis of 1997-1998. For firms with stronger pre-crisis relationship banking, they find that outstanding loans and credit lines plunged less and the probability was lower that a previously non-delinquent firm built (increased its) loans in arrears when liquidity constraints

became sharpest. Sette and Gobbi (2015) investigate the impact of relationship lending on the transmission of the Lehman default shock to the supply of credit in Italy. They find that the growth of credit is higher and its cost lower the shorter the distance between the bank and the firm, the longer the relationship, and the higher the share of credit held by the bank. Beck et al. (2015) show that relationship lending alleviates credit constraints during a cyclical downturn but not during a boom period. The positive impact of relationship lending in a downturn is strongest for smaller and more opaque firms and in regions where the downturn is more severe. These findings suggest our second main hypothesis:

Hypothesis 2. The positive effect of relationship lending is larger for firms that depend more on external finance and/or are more opaque.

Finally, trying to understand the role of transactional lending technologies, we investigate two main points. First, considering that the problems due to asymmetric information are magnified during a deep recession (De Haas and Van Horen, 2013; Kremp and Sevestre, 2013), we can imagine that more opaque firms matching with a transactional lending main bank have a larger probability to end up damaged in their foreign activities in 2009 (***Hypothesis 3a***). Second, following Ferri and Murro (2015), we suggest that when transactional lending technologies is carried out by smaller-sized banks the probability of trade collapse increases (***Hypothesis 3b***).²

4. Data and methodology

4.1 Empirical methodology and data description

² Ferri and Murro (2015) find that an imperfect matching between firm and bank could increase the probability of credit rationing. In fact, if the business technology employed by the bank turns out to be inappropriate to the needs of the borrower, then that imperfect match might amplify the asymmetries of information.

We analyze the role of lending technologies on firms' cross-border activities during the first wave of the GFC. To test our hypotheses we consider an empirical model of the probability that firms reduced their cross-border activities during the 2009. We model cross-border activities as:

$$y_i = a_1 x_i + z_i d_{11} + u_i$$

where y_i is our measure of export behavior during the crisis, or other cross-border operations, such as production abroad or participation in Global Value Chains; x_i is a vector of the lending technologies used by the main bank; z_i is a vector of control variables, and u_i is the residual.

Our main data source is the EU-EFIGE dataset, a database collected within the EFIGE project (European Firms in a Global Economy: internal policies for external competitiveness) supported by the Directorate General Research of the European Commission through its 7th Framework Programme and coordinated by the Bruegel Institute. This database combines measures of firms' international activities (e.g., exports, imports, FDI) with quantitative and qualitative information on R&D, innovation, labor organization, financing and organizational activities. The data consists of a representative sample (at the country level for the manufacturing industry) of almost 15,000 surveyed firms (above 10 employees) in seven European economies (Austria, France, Germany, Hungary, Italy, Spain, United Kingdom). The data was collected in 2010, covering the years from 2007 to 2009. The survey included also special questions on firms' behavior during the crisis.³

The data collection was carried out by a professional Contractor, with the aim of gathering both qualitative and quantitative firm-level information. The questionnaire covers six different broad areas of the surveyed firms: a) ownership structure; b) workforce characteristics (skills, type of contracts, domestic vs. migrant workers, training); c) investment, technological innovation, R&D (and related financing); d) exports and internationalization processes; e) market structure and competition; f) financial structure and firm-bank relationships. Moreover, to ensure standard

³ As the survey has been run in early 2010, information is mostly collected as a cross-section for the last available budget (year 2008), although some questions cover the period 2007-09 and/or the behavior of firms during the crisis.

statistical representativeness, the dataset was built to fulfill two main criteria. First, the availability of an adequately large target sample of firms, set at around 3,000 firms for large countries (France, Germany, Italy, Spain and the UK), and some 500 firms for smaller countries (Austria and Hungary). Second, the sample was stratified to ensure ex-ante and ex-post representativeness of the collected data for each country, especially focusing on its composition by sector, regions and size class.⁴

Table 1 presents some descriptive statistics. At the mean, the surveyed firms have been in business for 34 years; beyond 60 percent of them have fewer than 50 employees (below 4 percent have more than 500 employees); 22 percent of them are part of a group. The majority of firms are located in Germany, France, Italy and Spain (80 percent of the total), while 14 percent are located in the UK, 3.3 percent in Hungary and 3.0 percent in Austria; alternatively, 82.7 percent of the firms belong to the Eurozone. Moving on to their financial set up, the average length of the relationship with the main bank is 16 years, on average firms have three banks and the share of loans obtained from the main bank is 59 percent of the total bank loans received. On average 4 percent of the firms in the sample are rationed. Table 1 shows also the summary statistics of the two lending technology indices (see below Sub-Section 4.3). The lending factors related to transactional technologies are more frequently emphasized: The mean of the index of transactional lending is 0.526, while that for the relational index is 0.389. Thus, transactional lending is the most widespread lending technology.

4.2 Cross-border variables

Our aim is to verify empirically the role of the lending technologies in supporting firms' cross-border activities during the first wave of the GFC. The EFIGE survey provides information on the impact of the Crisis on cross-border activities. For the baseline estimations, we focus on one question: *"During 2009, did you experience a reduction or an increase in terms of value of your export activities in comparison with 2008?"*. Nearly 73 percent of the responding firms declare a

⁴ For more information about the survey, see Altomonte and Aliquante (2012).

reduction in exports in 2009, while 26.4 percent of the firms experience an increase (Table 1). Using this information, we construct three variables. The first is `Drop_export_2009`, a dummy variable equal to one if the firm experiences a reduction in its exports value in 2009. The second variable is a dummy (`Exit_export`) identifying the virtual exit from exports of marginal exporters. This dummy is equal to one if the firm in 2008 exported less than 9 percent of its total sales (25th percentile of the sample) and experienced a reduction of its exports larger than 50 percent in 2009.⁵ Moreover, we construct a dummy (`Increase_export_2009`) that is equal to one if the firm experiences an increase in the value of its exports in 2009.

Finally, we exploit additional survey information to study whether lending technologies affect also a firm's participation in Global Value Chains (GVCs) and its production abroad. Firms reported whether they specialized in some segments of the production process, buying from abroad raw material or intermediate products from other firms, and selling their goods in foreign markets. Using this information we construct a dummy variable (`GVC_drop`) that is equal to one if a firm participating in a GVC experiences a reduction in its exports or imports in 2009. Instead, to investigate whether lending technologies affect a firm's foreign production, we use answers to the question: "*During 2009 has your firm experienced a reduction in the total turnover coming from production activities abroad?*". 48 percent of the 1,238 firms answering this question experienced a reduction in total turnover coming from their production activities abroad.

4.3 Lending technology indices

We consider two indicators of lending technology similar to those in Bartoli et al. (2013).⁶ We capture the characteristics of the different lending technologies through the answers to the question

⁵ As a robustness checks, we use also other thresholds to construct this variable. The results, available upon request, are qualitatively similar.

⁶ These indices, based on previous literature (see, e.g., Uchida et al., 2006, Murro, 2010), are imperfect proxies for the use of different lending technologies, since they are based on a firm's perception of the lending factors used by its main bank in granting its loans, and thus may be capturing the banks' screening process imprecisely. However, constructing these indices using firms' own perspectives has some advantages. Previous researches on SME finance suffer from the problem that the lending technologies are usually not identified (Kano et al., 2011). Our data allows us to perceive the

“Which type of information does the bank normally use/ask to assess your firm’s credit worthiness?” (F.16 in the EFIGE survey). In answering, firms had to choose among seven factors (with the possibility of multiple answers, see the Appendix). Most of these factors relate to one of the lending technologies. We then link the factors more closely associated with each technology in the Berger and Udell (2006) classification scheme and focus on the two macro classes of lending technologies from this classification: transactional lending and relationship lending.⁷

The transactional technology is identified by two of the seven criteria (collateral and balance sheet information) providing quantitative information to the bank. From these two factors we created the transactional lending index, as the average of the two dummy variables which take a value of one if the firm chose them as relevant lending attributes for its main bank. By using an average for the transactional index, we make it directly comparable to the relationship index since both are means of 0-1 dummies and thus lie in the [0,1] range. Under relationship lending, the bank relies primarily on private information gathered through contact over time with the firm, its owner and the local community to address the opacity problem. We construct the relationship lending index using the factors most related to private information accumulation by banks via close relationships. The index is an average of two dummies equal to one if the firm chose as relevant information: interviews with the management on firms’ policy and prospects, and business plan and firms’ targets.^{8 9}

4.4 Control variables

Finally, we discuss the other variables included in the regressions. To account for the fact that more productive and larger firms might less likely suffer trade impairment – e.g., they are less likely to be

actual features of the bank at the time the firm is asked. Thus, we can more precisely distinguish between lending technologies.

⁷ Berger and Udell (2006) consider six different *transaction-based lending* technologies: (i) financial statement lending, (ii) small business credit scoring, (iii) asset-based lending, (iv) factoring, (v) fixed-asset lending, and (vi) leasing, together with *relationship lending*.

⁸ Although business plan and firms’ targets are quantitative measures, the fact that they are forward looking requires deciphering and makes them part of soft (not hard) information for the bank (Godbillon-Camus and Godlewski, 2005).

⁹ As a robustness check, following Ferri et al. (2017) we construct an alternative measure for each lending technologies, including also “historical records of payments and debt service” for transactional lending, and “brand recognition” for relationship lending. The results using these new measures, available upon request, are qualitatively similar.

rationed – we include labor productivity (measured as value added per worker) and firm size (measured as log of total employees). We also include the firm’s age, a dummy variable indicating whether the firm belongs to a group, its degree of financial leverage (given by the ratio of total loans to the sum of the total loans and the firm’s assets), and its capital intensity (fixed assets per worker). To control for the firm’s ownership structure, we include a dummy variable equal to one if it is a family business. We include sector dummies according to the two-digit NACE classification. Finally, we control for the country in which the firm is located. In particular, we include a country fixed effect and GDP per capita in the country in 2009.

5. Results

5.1 Baseline estimates

In this section we investigate the impact of the lending technology of a firm’s main bank on the firm’s activities abroad in 2009. Following the literature on SME financing and internationalization (Bartoli et al., 2014), we expect that, *ceteris paribus*, a firm with a relational main bank has a larger probability to continue its cross-border activities through the GFC. In fact, as the deep recession magnifies information asymmetries, fiercer credit rationing might force more opaque firms to exit foreign markets (or at least reduce their activities). Table 2 reports Probit results for the two main measures of cross-border activities described above (section 3.2). *Drop_export_2009* is the dependent variable in columns 1-3. Instead, columns 4-6 display the results when *Exit_export* is the dependent variable. The first set of results shows that relationship lending has a negative and significant impact at the 1 percent level on the probability that the firm experiences a reduction in the value of its exports with respect to 2008. This is in line with the theoretical predictions (Hypothesis 1 of Section 3) that the probability of credit rationing is smaller when the main bank employs the relationship lending technology. We also find that transactional lending has an insignificant positive effect on export activities’ reduction. As for the control variables, firms in countries with higher GDP are less likely to reduce their export activities. Instead, older firms are

more likely to reduce their export at the beginning of the crisis. Column 1 illustrates that bigger firms are significantly more likely to experiment a reduction in their export in 2009.

Our estimate could be biased due to firms' self-selection into the export market: we can only observe a drop in the export in 2009 for exporters, while not for non-exporters. To deal with this selection problem, following Minetti et al. (2015), we use a Heckman-type sample selection model by adding an inverse Mills ratio (Wooldridge, 2002, p. 567). The inverse Mills ratio is computed from an OLS model of export participation decision on the controls included in column 1 and a dummy variable indicating whether the firm distributed its products through specialized intermediaries based in the home country (i.e., the excluded instrument).¹⁰ As reported in column 2, the estimated marginal effect of relationship lending on the probability of a reduction in exports during the crisis is -0.064, which is very similar to the estimate reported in column 1. On the other hand, the inverse Mills ratio is not statistically significant, which suggests that the null hypothesis of no sample selection bias cannot be rejected.

In column 3, as a robustness check, we insert additional control variables, the log of total sales and the percentage of graduate workers. We find that the percentage of graduate workers reduces the probability of a drop in export. Moreover, the results in column 3 show that also being a family firm and belonging to a group appear to reduce the likelihood of a drop in export.

The regression results in columns 4-6 considering our proxy for the (virtual) exit from exports are in line with theoretical predictions. This suggests that the persistence of firms' internationalization is favored by the existence of strong bank-firm relationships. Our estimates also suggest that older and larger-sized firms are less likely to stop their export activities.

4.2 Other foreign activities

¹⁰ Firms using specialized intermediaries based in the home country for distributing products are significantly more likely to export: the estimated coefficient is 0.410 with a standard error of 0.041. But, we find no difference in the probability of drop in exports in 2009 between the firms that used this marketing channel and those that did not. Thus, the specialized intermediaries dummy is excluded from the regression of `Drop_export_2009`, which helps identify the effect of lending technologies on the probability of a drop in export in 2009.

In Table 3, we study the effect of lending technologies on other firms' foreign activities.¹¹ Columns 1-2 display the findings when we consider the probability of an increase of the value of a firm's exports in 2009. Consistently with the results in Table 2, relationship lending has a positive impact on the probability of increasing exports. Next, we consider that firms' production is increasingly structured along Global Value Chains (GVCs) (Minetti et al., 2016). A GVC identifies the total range of activities (design, production, distribution, and marketing) that different firms carry out to bring a good from its initial conception to the final use by consumers (Antràs and Chor, 2013). From an empirical viewpoint, there is still little evidence on the determinants of firms' decision to participate in GVCs. In columns 3-4, we find that the drop in GVC activities during the crisis is unrelated to the lending technology employed by the firm's main bank. This suggests that financial setups may differ substantially at GVC vs non-GVC firms.

Finally, in columns 5-6 we study the impact of lending technologies on a firm's turnover from production in foreign countries. De Bonis et al. (2015), on a sample of Italian manufacturing firms over 1998-2003, find a significant role of the length of the firm-bank relationship on FDI. In our analysis, we find a negative (albeit insignificant) impact of relationship lending on the probability of a drop in the turnover from production abroad. However, we display a positive and significant role of transactional lending. This result is in line with our hypotheses (Hypothesis 3a) that suggests a negative impact of transactional lending technologies on foreign activities.

6. Disentangling the mechanisms

The rich information on firm and bank features and on local conditions in our dataset are suitable to isolate the channels through which lending technologies affect the probability of trade impairment.

6.1 Firms' characteristics

¹¹ Also here we consider the problem of self-selection. Thus, in columns 2, 4 and 6, we include a Mills ratio. The Mills ratio in column 2 is the same of Table 2. Instead, the Mills ratios in columns 4 and 6 are estimated from a probit model on GVC participation (column 4) and production abroad (column 6), using the same variable of Table 2 as excluded instrument.

Academics believe that less transparent firms – especially younger and smaller firms, due to their usually higher opaqueness – lack appropriate financing and need to receive special support, such as government programs that increase lending.¹² In Tables 4, we report the results on subsamples based on age, size, ownership structure and external financial dependence of the firm.

In columns 1-2, we split the sample based on firm age, which the literature has used as a proxy for transparency.¹³ Younger firms may suffer stronger information asymmetries in credit markets and face tighter constraints if they are rationed (Minetti and Zhu, 2011). Indeed, the results show that relationship lending has a pronounced negative effect on the probability of drop in export for younger firms, but not for older ones. Thus, the benefits of relationship lending decrease in a firm's age, confirming that such benefits stem from tackling information opaqueness.

In columns 3-4, we split the sample based on firm size. Since larger firms typically have more financial resources, rationing may be less severe for them during a financial crisis too. Furthermore, such firms possess better knowledge and networks, can develop a larger international sales force, and can spread the fixed costs of exports on larger output volumes than smaller firms. Thus, we expect larger benefits from relationship lending for small firms than for big ones (Minetti and Zhu, 2011). The results show that relationship lending has a negative effect on export drop for smaller firms – i.e., those with less than 29 employees (the sample median) – but not for larger firms. Thus, the estimated benefit of relationship lending on SMEs' exports could stem from strong bank-firm relationships reducing credit rationing in a recession especially for smaller firms (Beck et al., 2015). In columns 5-6, we split the sample based on whether the firm is a family business. The literature suggests that family business are normally more opaque (Bianco et al., 2013). For example, Anderson et al. (2012) suggest the family could have the incentive to disguise information on the firm's activities in order to keep tight control over the firm, making it harder to obtain external funds. We find a beneficial effect of relationship lending only for family firms. This result is in line

¹² See, for example, Berger and Udell (1998) and De la Torre et al. (2010) for a discussion of how opaqueness can affect bank lending.

¹³ We split the sample using the sample median that is equal to 27 years.

with the literature on the role of relational capital embodied in the family ownership (see, e.g., Cuculelli et al., 2016).

Finally, in columns 7-8, we split the sample based on sectorial financial dependence. The literature reveals that liquidity constraints depress firms' export especially in industries with high external financial dependence. Our measure of external financial dependence is based on a question of the survey asking firms "In the industry your firm works, how dependent are companies on external financing?". Using this question, we construct a dummy variable equal to one if the firm answers that the industry is highly dependent on external financing. The findings display that the marginal effect for relationship lending is significant only for firms in industries with high external financial dependence.

Overall, the results reported in Table 4 confirm the hypothesis that the beneficial effect of the relationship lending technology on the export activities is particularly relevant for opaque firms and firms in industries that are more financially dependent (Hypothesis 2).

6.2 External characteristics

Theory suggests that large banks hold a comparative advantage in transactional lending, while small/local banks have an edge in relationship lending (Stein, 2002). Moreover, an imperfect firm-type/bank-type match could result in more severe financial constraints for borrowing firms (Ferri and Murro, 2015). In columns 1-2 of Table 5, we split the sample by main bank type: Domestic local vs other type of bank. Consistently with theoretical predictions, the benefit of relationship lending is significant only for firms with a local main bank. Moreover, transactional lending turns out to be significant (and positive) when the main bank is a local bank, in line with the "mismatch" hypothesis (Ferri and Murro, 2015), suggesting that when smaller banks adopt transactional lending technologies the probability of (rationing and then) trade collapse increases (Hypothesis 3b).

In columns 3-4, we split the sample considering the type of competition faced by the firm: Namely, whether the firm declares that its main competitor is at home or abroad. We find that relationship

lending reduces the probability of export drop only for firms with a domestic main competitor. This result suggests that relationship lending benefits only the firms for which exporting is not a condition for survival or the firms that are at the beginning of the internationalization process. In the next section, we further investigate the role of export markets type for the impact of lending technologies on the probability of a reduction in exports during the financial crisis.

6.3 The role of export markets

The number of foreign markets that a firm serves could affect the impact of lending technologies on the probability of a decrease in exports during the crisis. We expect that the impact of lending technologies on export participation is weaker for firms that export to multiple foreign markets than for those serving a single foreign market. In fact, multiple markets exporters may diversify demand risk. It is true that, in principle, serving multiple foreign markets may involve extra entry costs. However, we consider that overall the cost of entering additional foreign markets should be lower than the fixed costs at the beginning of export process.¹⁴ Also, since it usually takes time for a firm to expand into a new market, firms that serve multiple markets are more likely to be established exporters, to be producers of high quality goods, and to be technically efficient. Hence, these firms might be less affected by the financial crisis than the firms serving a single foreign market.

We first examine the impact of lending technologies for firms that in 2008 exported to a single market (column 1 of Table 6). Limited by the data, we define markets in terms of broad geographical areas. In our sample, 28 percent of exporters sell to a single foreign market and nearly 83 percent of them choose the EU market. The positive effect of relationship lending is confirmed. Column 2 reports the results for firms that in 2008 exported to more than one market. We find that, for these firms, the role of lending technologies is insignificant. Thus, in line with our expectation, relationship lending bears stronger benefits for single-market exporters vs multi-market exporters.

¹⁴ Some of the fixed entry costs can be spread across markets: the knowledge firms have gained in their first export market may be applied to other export markets. Furthermore, firms may not need to further adjust their production line and internal organization when entering additional markets. Overall, this may reduce the fixed costs for entry into additional export markets (Minetti and Zhu, 2011).

As reported above, the majority of single market exporters are confined to the EU market. Columns 3 and 4 report the results for firms that in 2008 exported only to the EU market (column 3) and for those that exported also outside the EU (column 4). In line with our expectations, relationship lending benefits only firms that exported in more familiar markets. However, the effect of lending technologies is not uniform across the various destinations. The results in columns 5-8 of Table 6 reveal that relationship lending is not significant for firms exporting to South America and Africa. By contrast, we find that relationship lending increases the probability of drop in export for firms exporting to North America and China/India. These findings need a more detailed investigation that we propose to future research.

7. Endogeneity of lending technologies

Our regressions might be affected by reverse causality. Cross-border activities may affect the choice of lending technologies used by the main bank or the firm's selection of its main bank. For example, smaller exporters could prefer to interact with a local bank to reduce the probability of credit rationing. Moreover, the bank could decide to invest in soft information with an exporting firm to decrease the asymmetry of information inherent in the export process (information on foreign markets is not only hard to obtain for firms but also difficult to verify for creditors). Finally, although in our regressions we control for various aspects that may shape firms' export activities, unobserved factors might concurrently affect lending technologies and the probability of a drop in export. The sign of this bias is unclear a priori. To deal with the possible endogeneity, this section uses an instrumental variable approach.

7.1 IV regressions

We use as instrumental variables: the average of relationship and transactional lending technologies indexes for firms in the same country, industry and with a similar size, and an index of self-confidence of the firm.

In line with Ferri and Murro (2015), we define an index of self-confidence of the firm as the average of the dummies constructed on the characteristics 1, 2, 4 and 5 from the question F.12 in the EFIGE survey (see Appendix for details). These characteristics measure the importance that a firm places on the ex-ante transactional features of its main bank. A high value of this index identifies firms that value efficient and convenient banking services, as they perceive themselves to be transparent. High self-confidence could affect the choice of the main bank and the lending technologies. This index exhibits a relatively high (and significant) correlation with the lending technology indexes and is almost uncorrelated with the drop in export in 2009. To construct the other two IVs, we follow the strategy proposed in Caprio et al. (2007), and used in Laeven and Levine (2009). In particular, we use the average level of lending technologies proxies for the firms in the same country, industry (following Pavitt's taxonomy; Pavitt, 1984) and in the same decile of size.¹⁵

Columns 1 and 4 of Table 7 report the probit estimates of the baseline specifications (column 2 and 5 of Table 2) for “Drop export” and “Exit export”. In columns 2 and 5, we show the 2SLS estimates of the linear probability model. Since this model does not account for the fact that our export variables are binary, we take, in columns 3 and 6, an alternative approach and estimate a two-stage conditional maximum likelihood model (2SCML). The results confirm that, also when we account for the possible endogeneity of lending technologies, relationship lending has a negative and statistically significant impact on the probability of a drop in export activities. Moreover, tackling endogeneity, we find that transactional lending technology has a positive and significant effect on the probability of stopping export activities.

8. Conclusions

¹⁵ This strategy is similar to the “ILS” (Industry-Location-Size) strategy in Degryse et al. (2016) developed in another context. They use ILS fixed effects (instead of firm fixed effects) to include firms with a single banking relationship to capture bank-loan supply shocks.

The research question we tackled in this paper is whether the type of lending technology used by a firm's main bank affected the extent to which that firm's international trade was damaged in the 2009 situation of credit crunch. In a large sample of enterprises, we proved that the use of relational lending technologies generally reduced the extent of trade collapse. Specifically, we reached four main results. First, relationship lending lessened the probability of firms either suffering a drop in export or "virtually" exiting exports in 2009. Second, the above impacts of the lending technology on exports materialize only for more opaque firms. In particular, we found that relationship lending lowers the probability of trade collapse especially at younger and/or smaller-sized firms, and for firms in industries with higher dependence on external finance. Third, typically less transparent firms, such as family firms, more likely benefit from relationship lending than non-family firms, and that this benefit is especially pronounced when the firms interact with a local main bank. Fourth, in terms of exports status, relationship lending decreases the probability of an export drop for firms that operate in a single market (normally a EU market), while there is no evidence of such benefit for firms operating in multiple markets (or for firms that export also to non-EU markets). All these results are robust to using a variety of estimation approaches, and also survive when we account for possible endogeneity of main bank selection by using an instrumental variable approach.

Our evidence contributes to the debate on whether the Great Trade Collapse of 2009 was related to the concurrent credit crunch. It seems that firms engaging with relational lending main banks suffered less trade impairment. A key finding is that a non-trivial share of SMEs and young firms may have been spared to give up exporting – thus avoiding to suffer the curse of the sunk costs of exports – thanks to their main bank adopting relational lending technologies. Along with the adage of Beck et al. (2015), maybe at that time "arm's length was too far".

Our findings have a bearing not only towards a better understanding of the economic dynamics in 2009 but offer potential suggestions in view of the prolonged banking instability in Europe, which seems related to macroeconomic risk. Specifically, in the face of external shocks the ability of

banks to know better their borrowers' true risk class – owing to production of soft information and use of it via relationship lending – can attenuate the extent to which the shock is transmitted to the real economy. This is particularly the case for the possible damage to international trade – the most dynamic outlet for European firms' sales – which may be viewed as a deadweight loss. In a sense, by helping prevent that loss, relational banks create positive spillover effects and may limit the accumulation of macroeconomic risk. But, the mechanistic method of the risk weighted asset approach (e.g., Basle 2 and 3) seems unable to account for the benefits created by relational banks. Therefore, regulation should probably encompass also banking business models in evaluating the true risk behind banks (Ayadi et al., 2012; Masera, 2011).

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Table 1. Summary statistics

Variables	Number of Observations	Mean	Standard Deviation	Min	Max
<i>Dependent Variables</i>					
Drop export 2009*	5,521	0.730	0.444	0	1
Exit export 2009*	4,039	0.077	0.266	0	1
Increase export 2009*	5,529	0.264	0.441	0	1
GVC drop*	2,526	0.661	0.473	0	1
Drop production abroad*	1,238	0.484	0.499	0	1
<i>Lending technologies and bank variables</i>					
Transactional lending*	9,134	0.526	0.411	0	1
Relationship lending*	9,128	0.389	0.433	0	1
Relationship length	6,758	16.104	14.029	1	99
Number of banks	14,655	3.089	2.531	1	60
Share of the main bank	6,874	58.922	33.138	0	100
<i>Control variables</i>					
Age	14,726	34.532	30.629	0	368
Number of employees	8,819	129.863	4,130.988	1	386,170
Size (Log Number of employees)	8,819	3.480	1.107	0	12.864
Labor productivity	9,645	52.19	45.17	-420.94	1928.5
Capital intensity	10,885	41.11	84.12	0	3616.3
Group *	14,760	0.221	0.415	0	1
Family *	14,301	0.766	0.423	0	1
Leverage	11,665	0.374	0.117	0	0.999
GDP (2009)	14,760	38597.73	6921.52	13741	45562
Italy *	14,760	0.205	0.403	0	1
Austria *	14,760	0.030	0.171	0	1
France *	14,760	0.201	0.401	0	1
Germany *	14,760	0.199	0.399	0	1
Hungary *	14,760	0.033	0.179	0	1
Spain *	14,760	0.192	0.394	0	1
UK *	14,760	0.140	0.347	0	1

Note: * denotes a (0, 1) dummy variable.

Table 2: Baseline estimations

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	Probit Drop export 2009	Probit Drop export 2009	Probit Drop export 2009	Probit Exit export 2009	Probit Exit export 2009	Probit Exit export 2009
Transactional lending	0.040 (0.033)	0.039 (0.032)	0.031 (0.037)	0.009 (0.017)	0.008 (0.018)	0.016 (0.021)
Relationship lending	-0.063*** (0.022)	-0.064*** (0.022)	-0.053*** (0.016)	-0.028*** (0.007)	-0.029*** (0.007)	-0.034*** (0.008)
Age	0.001** (0.000)	0.001*** (0.000)	0.001** (0.000)	-0.001*** (0.000)	-0.001** (0.000)	-0.000* (0.000)
Size	0.015* (0.008)	0.021 (0.013)	0.021 (0.026)	-0.039*** (0.005)	-0.036*** (0.006)	-0.029** (0.014)
Labor Productivity	-0.021 (0.015)	-0.018 (0.017)	-0.026 (0.019)	-0.017 (0.013)	-0.016 (0.012)	-0.002 (0.020)
Capital Intensity	-0.004 (0.015)	-0.004 (0.014)	0.006 (0.015)	0.007 (0.010)	0.008 (0.011)	0.012 (0.015)
Family	-0.049 (0.032)	-0.053 (0.033)	-0.066** (0.029)	0.003 (0.010)	0.002 (0.010)	-0.000 (0.013)
Leverage	-0.102 (0.137)	-0.110 (0.133)	-0.133 (0.200)	0.072 (0.139)	0.066 (0.135)	0.102 (0.199)
Group	-0.032 (0.029)	-0.030 (0.027)	-0.045** (0.022)	-0.010 (0.016)	-0.009 (0.016)	-0.005 (0.029)
GDP (2009)	-0.002*** (0.001)	-0.002** (0.001)	-0.002 (0.003)	-0.004*** (0.001)	-0.004*** (0.001)	-0.005*** (0.001)
Sales (ln)			-0.010 (0.024)			-0.013 (0.009)
Graduate workers			-0.210* (0.120)			-0.176 (0.117)
Mills ratio		0.159 (0.145)	-0.035 (0.179)		0.062 (0.039)	0.119 (0.091)
Country dummies	Y	Y	Y	Y	Y	Y
Sector dummies	Y	Y	Y	Y	Y	Y
Observations	2,291	2,291	1,649	1,697	1,697	1,254
Pseudo R-squared	0.0562	0.0565	0.0578	0.120	0.120	0.111

Note: The table reports regressions marginal effects. The dependent variable and the estimation method are reported at the top of each column. All of the regressions include country and industries fixed effects. In parentheses are robust standard errors which are clustered by country. The table also reports the Pseudo R^2 (*): coefficient significant at 10% confidence level; (**): coefficient significant at 5% confidence level; (***): coefficient significant at less than 1% confidence level.

Table 3: Other foreign activities

VARIABLES	(1) Probit Increase export 2009	(2) Probit Increase export 2009	(3) Probit Drop GVC activities	(4) Probit Drop GVC activities	(5) Probit Drop production abroad	(6) Probit Drop production abroad
Transactional lending	-0.032 (0.027)	-0.023 (0.026)	0.039 (0.061)	0.039 (0.061)	0.136** (0.054)	0.138** (0.054)
Relationship lending	0.062*** (0.021)	0.059*** (0.017)	0.042 (0.045)	0.043 (0.045)	-0.014 (0.046)	-0.016 (0.045)
Age	-0.001** (0.000)	-0.001** (0.000)	0.001 (0.001)	0.001** (0.001)	0.000 (0.001)	-0.000 (0.001)
Size	-0.014* (0.008)	-0.040* (0.021)	0.016 (0.015)	0.071 (0.059)	-0.006 (0.026)	-0.189 (0.128)
Labor Productivity	0.022 (0.015)	0.011 (0.019)	-0.088*** (0.030)	-0.063 (0.049)	-0.206*** (0.046)	-0.283*** (0.087)
Capital Intensity	0.005 (0.016)	0.003 (0.014)	0.041*** (0.015)	0.041*** (0.014)	0.097* (0.051)	0.196*** (0.070)
Family	0.044 (0.029)	0.060 (0.042)	-0.065 (0.059)	-0.094* (0.055)	-0.016 (0.058)	-0.054 (0.059)
Leverage	0.125 (0.130)	0.117 (0.121)	-0.083 (0.154)	-0.217 (0.202)	0.183 (0.223)	0.069 (0.209)
Group	0.025 (0.023)	0.009 (0.017)	-0.027 (0.022)	0.018 (0.063)	0.144*** (0.046)	-0.024 (0.075)
GDP (2009)	0.002*** (0.001)	0.001 (0.001)	0.002 (0.002)	0.002 (0.002)	0.003 (0.003)	-0.003 (0.002)
Mills ratio		-0.197 (0.155)		0.271 (0.336)		-0.799 (0.490)
Country dummies	Y	Y	Y	Y	Y	Y
Sector dummies	Y	Y	Y	Y	Y	Y
Observations	2,292	2,204	1,021	1,021	513	513
Pseudo R-squared	0.0557	0.0525	0.0675	0.0681	0.102	0.103

Note: The table reports regressions marginal effects. The dependent variable and the estimation method are reported at the top of each column. All of the regressions include country and industries fixed effects. In parentheses are robust standard errors which are clustered by country. The table also reports the Pseudo R^2 (*): coefficient significant at 10% confidence level; (**): coefficient significant at 5% confidence level; (***): coefficient significant at less than 1% confidence level.

Table 4: Firm characteristics

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Probit	Probit	Probit	Probit	Probit	Probit	Probit	Probit
	Age < 27	Age ≥ 27	Employees < 29	Employees ≥ 29	Family firms	No Family firms	Dependence external fund = 1	Dependence external fund = 0
VARIABLES	Drop export 2009	Drop export 2009	Drop export 2009	Drop export 2009	Drop export 2009	Drop export 2009	Drop export 2009	Drop export 2009
Transactional lending	0.018 (0.032)	0.040 (0.055)	0.002 (0.042)	0.047 (0.041)	0.042 (0.043)	-0.006 (0.031)	0.041 (0.036)	0.011 (0.047)
Relationship lending	-0.114*** (0.029)	-0.015 (0.022)	-0.086*** (0.027)	-0.051 (0.036)	-0.068*** (0.023)	-0.043 (0.044)	-0.070** (0.030)	-0.052 (0.037)
Age	0.002 (0.002)	0.000 (0.000)	0.004** (0.002)	0.001 (0.001)	0.002*** (0.000)	-0.000 (0.001)	0.001** (0.000)	0.000 (0.001)
Size	0.008 (0.037)	0.025 (0.017)	0.207 (0.146)	0.037 (0.026)	0.085*** (0.024)	0.007 (0.026)	0.031 (0.025)	-0.022 (0.027)
Labor Productivity	-0.028 (0.030)	-0.027 (0.020)	0.107 (0.068)	-0.048 (0.032)	0.006 (0.030)	-0.042 (0.037)	-0.014 (0.026)	-0.076* (0.044)
Capital Intensity	0.007 (0.015)	-0.019 (0.020)	0.004 (0.013)	0.009 (0.027)	-0.027*** (0.009)	0.030 (0.026)	-0.006 (0.017)	0.003 (0.016)
Family	-0.061 (0.039)	-0.047 (0.047)	-0.126 (0.083)	-0.079 (0.053)			-0.065 (0.047)	-0.005 (0.044)
Leverage	-0.167 (0.189)	0.004 (0.132)	-0.281** (0.141)	-0.128 (0.102)	-0.154 (0.119)	-0.132 (0.174)	-0.014 (0.057)	-0.393 (0.362)
Group	-0.066 (0.047)	0.005 (0.015)	0.094* (0.049)	-0.039* (0.021)	-0.012 (0.044)	-0.021 (0.017)	-0.039 (0.031)	0.006 (0.036)
GDP (2009)	-0.006*** (0.001)	0.004** (0.002)	-0.046** (0.020)	0.000 (0.002)	0.004*** (0.001)	-0.008*** (0.002)	-0.002 (0.001)	0.009*** (0.002)
Mills ratio	-0.007 (0.162)	0.036 (0.115)	1.423** (0.654)	0.074 (0.203)	0.612*** (0.119)	-0.232 (0.258)	0.066 (0.120)	-0.193 (0.135)
Country dummies	Y	Y	Y	Y	Y	Y	Y	Y
Sector dummies	Y	Y	Y	Y	Y	Y	Y	Y
Observations	1,024	1,175	894	1,303	1,516	682	1,642	561
Pseudo R-squared	0.0458	0.0709	0.0547	0.0680	0.0618	0.0704	0.0609	0.0648

Note: The table reports regressions marginal effects. The dependent variable and the estimation method are reported at the top of each column. All of the regressions include country and industries fixed effects. In parentheses are robust standard errors which are clustered by country. The table also reports the Pseudo R^2 (*): coefficient significant at 10% confidence level; (**): coefficient significant at 5% confidence level; (***): coefficient significant at less than 1% confidence level.

Table 5: External characteristics

VARIABLES	(1)	(2)	(3)	(4)
	Probit Domestic local bank Drop export 2009	Probit No Domestic local bank Drop export 2009	Probit Main competitor domestic Drop export 2009	Probit Main competitor abroad Drop export 2009
Transactional lending	0.058*** (0.014)	-0.025 (0.080)	0.034 (0.035)	0.039 (0.054)
Relationship lending	-0.075*** (0.021)	-0.035 (0.067)	-0.067** (0.031)	-0.016 (0.041)
Age	0.002*** (0.001)	0.000 (0.001)	0.002*** (0.000)	-0.001 (0.001)
Size	0.082*** (0.024)	-0.004 (0.028)	0.071** (0.028)	-0.047* (0.027)
Labor Productivity	0.037 (0.035)	-0.092* (0.047)	0.010 (0.021)	-0.080 (0.056)
Capital Intensity	-0.006 (0.011)	0.004 (0.026)	0.010* (0.006)	-0.077* (0.041)
Family	-0.073* (0.043)	-0.059 (0.057)	-0.093** (0.047)	0.005 (0.050)
Leverage	-0.148 (0.151)	-0.036 (0.168)	-0.082 (0.137)	-0.151 (0.255)
Group	0.011 (0.027)	-0.060 (0.038)	-0.013 (0.038)	-0.045 (0.048)
GDP (2009)	0.007*** (0.001)	-0.003** (0.001)	0.003*** (0.001)	0.001 (0.008)
Mills ratio	0.465*** (0.173)	-0.114 (0.261)	0.470*** (0.141)	-0.722*** (0.180)
Country dummies	Y	Y	Y	Y
Sector dummies	Y	Y	Y	Y
Observations	1,389	810	1,788	392
Pseudo R-squared	0.0551	0.0670	0.0554	0.0795

Note: The table reports regressions marginal effects. The dependent variable and the estimation method are reported at the top of each column. All of the regressions include country and industries fixed effects. In parentheses are robust standard errors which are clustered by country. The table also reports the Pseudo R^2 (*): coefficient significant at 10% confidence level; (**): coefficient significant at 5% confidence level; (***): coefficient significant at less than 1% confidence level.

Table 6: Area of exporting

VARIABLES	(1) Probit One market	(2) Probit Multiple markets	(3) Probit Only EU	(4) Probit Non-EU markets	(5) Probit USA	(6) Probit China and India	(7) Probit Africa	(8) Probit South America
Transactional lending	0.060*** (0.017)	-0.031 (0.034)	0.046** (0.021)	-0.019 (0.018)	-0.024 (0.018)	-0.074*** (0.022)	-0.027 (0.034)	-0.020 (0.026)
Relationship lending	-0.070*** (0.008)	0.013 (0.021)	-0.050*** (0.006)	-0.004 (0.015)	0.055** (0.022)	0.008* (0.005)	0.030 (0.028)	0.022 (0.014)
Age	0.000 (0.000)	0.001* (0.000)	0.000 (0.000)	0.001** (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.001** (0.000)	0.001*** (0.000)
Size	0.006 (0.027)	0.016 (0.033)	0.003 (0.026)	0.028 (0.040)	0.040*** (0.014)	0.047** (0.020)	0.037* (0.019)	0.065*** (0.016)
Labor Productivity	0.040 (0.028)	-0.092** (0.044)	0.038 (0.025)	-0.085* (0.050)	-0.041 (0.039)	0.016 (0.036)	0.014 (0.033)	0.020 (0.051)
Capital Intensity	0.008 (0.012)	-0.008 (0.022)	-0.004 (0.004)	0.004 (0.013)	-0.004 (0.015)	-0.019 (0.021)	-0.020*** (0.007)	-0.023* (0.013)
Family	-0.012 (0.031)	-0.044 (0.032)	-0.001 (0.033)	-0.057* (0.032)	0.025 (0.023)	-0.018 (0.028)	-0.048** (0.025)	-0.003 (0.027)
Leverage	0.076 (0.113)	-0.142 (0.131)	0.180* (0.092)	-0.262** (0.102)	-0.243 (0.159)	-0.050 (0.093)	-0.161 (0.140)	0.140* (0.080)
Group	0.022 (0.038)	-0.042** (0.017)	0.015 (0.033)	-0.034* (0.019)	-0.004 (0.018)	0.041* (0.022)	0.007 (0.018)	0.063** (0.026)
GDP (2009)	-0.008*** (0.001)	0.008*** (0.002)	-0.007*** (0.001)	0.008*** (0.002)	0.014*** (0.001)	0.016*** (0.001)	0.013*** (0.001)	0.013*** (0.001)
Mills ratio	0.391** (0.160)	-0.353** (0.149)	0.236 (0.154)	-0.144 (0.193)	-0.142 (0.106)	0.044 (0.176)	0.144 (0.133)	0.231** (0.098)
Country dummies	Y	Y	Y	Y	Y	Y	Y	Y
Sector dummies	Y	Y	Y	Y	Y	Y	Y	Y
Observations	2,205	2,205	2,177	2,177	1,825	1,803	1,847	1,897
Pseudo R-squared	0.0789	0.0568	0.0717	0.0545	0.0488	0.0980	0.0534	0.135

Note: The table reports regressions marginal effects. The dependent variable and the estimation method are reported at the top of each column. All of the regressions include country and industries fixed effects. In parentheses are robust standard errors which are clustered by country. The table also reports the Pseudo R^2 (*): coefficient significant at 10% confidence level; (**): coefficient significant at 5% confidence level; (***): coefficient significant at less than 1% confidence level.

Table 7: IV estimations

VARIABLES	(1) Probit Drop export 2009	(2) 2SLS Drop export 2009	(3) 2SCML Drop export 2009	(4) Probit Exit export 2009	(5) 2SLS Exit export 2009	(6) 2SCML Exit export 2009
Transactional lending	0.039 (0.032)	0.131 (0.225)	0.362 (0.459)	0.008 (0.018)	0.263*** (0.072)	1.392* (0.815)
Relationship lending	-0.064*** (0.022)	-0.182* (0.109)	-0.567* (0.299)	-0.029*** (0.007)	-0.207*** (0.029)	-0.968* (0.594)
Age	0.001*** (0.000)	0.001*** (0.000)	0.003** (0.001)	-0.001** (0.000)	-0.000*** (0.000)	-0.005** (0.002)
Size	0.021 (0.013)	0.034* (0.018)	0.107** (0.043)	-0.036*** (0.006)	-0.014*** (0.004)	-0.267*** (0.094)
Labor Productivity	-0.018 (0.017)	-0.019 (0.029)	-0.059 (0.093)	-0.016 (0.012)	0.016 (0.013)	0.011 (0.193)
Capital Intensity	-0.004 (0.014)	0.004 (0.011)	0.011 (0.039)	0.008 (0.011)	0.000 (0.009)	0.031 (0.067)
Family	-0.053 (0.033)	-0.061 (0.038)	-0.196** (0.082)	0.002 (0.010)	-0.010 (0.012)	-0.032 (0.146)
Leverage	-0.110 (0.133)	-0.144 (0.186)	-0.462 (0.450)	0.066 (0.135)	0.008 (0.202)	0.119 (0.733)
Group	-0.030 (0.027)	-0.027 (0.026)	-0.089 (0.085)	-0.009 (0.016)	-0.004 (0.021)	-0.056 (0.157)
GDP (2009)	-0.002** (0.001)	-0.019*** (0.002)	-0.057*** (0.018)	-0.004*** (0.001)	0.009*** (0.003)	0.088*** (0.034)
Mills ratio	0.159 (0.145)	0.287*** (0.098)	0.896 (0.559)	0.062 (0.039)	0.100*** (0.026)	0.455 (0.959)
Country dummies	Y	Y	Y	Y	Y	Y
Sector dummies	Y	Y	Y	Y	Y	Y
Observations	2,291	2,260	2,260	1,697	1,692	1,682
R-squared	0.056	0.049		0.120	0.037	
F instruments		147.8			66.52	
Wald p value			1.537			2.803

Note: The table reports regressions marginal effects. The dependent variable and the estimation method are reported at the top of each column. All of the regressions include country and industries fixed effects. In parentheses are robust standard errors which are clustered by country. The table also reports the Pseudo R^2 and F -test for instrumental variables. (*): coefficient significant at 10% confidence level; (**): coefficient significant at 5% confidence level; (***): coefficient significant at less than 1% confidence level.

Appendix: Survey questions

F.12. *Which factors are key in the choice of a main bank?*

- The bank offers competitive services and funding
- The bank offers efficient internet services
- The bank's lending criteria is clear and transparent
- The bank is conveniently located
- The bank has an extensive international network
- The bank offers also a consultancy on strategic financial decisions
- The bank has a long-lasting relationship with the firm
- The bank has flexible procedures/not constrained by red tape
- It was the Group's main bank
- Other

F.16. *Which type of information does the bank normally use/ask to assess your firm's credit worthiness?*

- Collateral
- Balance sheet information
- Interviews with management on firm's policy and prospects
- Business plan and firms' targets
- Historical records of payments and debt service
- Brand recognition
- Other