Exporter Dynamics and Information Spillovers through the Main Bank*

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Tomohiko INUI†
Keiko ITO‡
Daisuke MIYAKAWA**
Keishi SHOJI††

Abstract

This paper examines how firms' decision to start exporting is affected by the availability of information on export markets. Unlike existing studies which focus on information sharing among firms, we are interested in the information provided by firms' main bank. Specifically, using a unique dataset containing information on both Japanese firms' export activities and their main banks' experience in transacting with other exporting firms, we examine whether main banks act as a conduit of information on export markets. We find that information spillovers through main banks positively affect client firms' decision to start exporting (extensive margin), implying that information on foreign markets provided by banks substantially reduces the fixed entry cost of exporting. On the other hand, we do not find any evidence that information provided by banks has an effect on the export volume or on the growth rate of exports (intensive margin). Our results highlight that channels of information spillovers other than those examined in the literature so far may be of considerable importance.

Key words: Export Decision; Lender Bank; Information Spillover; General and Specific Information.
JEL Classification: F10, F14, G21, L25

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† Professor, College of Economics, Nihon University, 1-3-2, Misaki-cho, Chiyoda-ku, Tokyo, 101-8360, JAPAN. E-mail: inui.tomohiko@nihon-u.ac.jp.
‡ Associate Professor, School of Economics, Senshu University. 2-1-1 Higashi-mita, Tama-ku, Kawasaki, Kanagawa, 214-8580, JAPAN. E-mail: keiko-i@isc.senshu-u.ac.jp.
** Associate Senior Economist, Research Institute of Capital Formation, Development Bank of Japan. 1-9-3 Otemachi Chiyoda-ku, Tokyo, 100-0004, JAPAN. E-mail: damiyak@dbj.jp.
†† Researcher, The House of Representatives, 1-7-1 Nagata-cho, Chiyoda-ku, Tokyo, 100-0014, JAPAN. E-mail: s10425@shugiinjk.go.jp.

1. Introduction

The relationship between globalization and firms' performance has been the subject of numerous studies and there is growing evidence that there is a positive relationship between the two. Yet, researchers' understanding of the dynamic behavior of firms in a globalized economy is still far from sufficient to propose specific policies that help firms to grow in such an environment. For instance, micro-data analyses on various countries confirm that the international performance of a country tends to hinge on a handful of high-performing firms (Mayer and Ottaviano 2008), suggesting that increasing the number of firms involved in international activities is important for the successful internationalization of a country. However, both theoretical and empirical research to date has not produced an adequate answer to the question of how to increase the number of firms involved in international activities. For example, although there is wide empirical support for the theoretical prediction that firms with higher productivity are more likely to become exporters, a growing number of studies is producing results suggesting that productivity advantages alone do not sufficiently explain the self-selection of firms into exporting. Such studies (see, e.g., Bernard et al. 2003; Mayer and Ottaviano 2008; and Todo 2011) point out that while such productivity advantages certainly do appear to exist, their impact is economically negligible. This implies that our knowledge about the determinants of the export decision remains very limited and no conclusive answer has yet been found as to what factors are important for firms to become an exporter and grow through exporting.

The international trade literature suggests that to start exporting firms incur sunk fixed costs, since initially they are uncertain about their export profitability and they have to collect a considerable amount of relevant information on export markets. Moreover, firms need to modify products to suit local tastes and set up distribution networks. Developing a theoretical model, Melitz (2003) therefore suggests that only firms which are sufficiently productive to cover such fixed costs can be exporters. The above-mentioned empirical studies examining this hypothesis, however, indicate that there must be other important factors which affect firms' decision to export.

In other words, they suggest that even when their productivity is not very high firms can be exporters as long as other critical conditions are satisfied.

The extant literature has focused on a number of conditions or factors that may affect firms' export decision. One important research strand in this context concentrates on export spillovers. The idea is that information exchange with other exporting firms reduces the individual fixed costs associated with exporting, and that such information exchange therefore increases the probability that a firm will export (see, e.g., Krautheim (2007) for a theoretical investigation).[1] Having access to information on foreign markets, the hypothesis goes, substantially reduces uncertainty and encourages firms to engage in export activities. Empirical work by Koenig et al. (2010) confirms this hypothesis by finding that the presence of other exporters has a positive effect on the export decision of other firms. Although Koenig et al. (2010) find evidence of positive export spillovers, the evidence produced by other empirical studies on such export spillovers is at best weak (e.g., Aitken et al. 1997, Barrios et al. 2003, Bernard and Jensen 2004), which means that the search for possible channels of information spillovers continues.

Against this background, this paper focuses on information provided by lender banks as one potential channel of information spillovers. Most existing empirical studies examining information spillovers from other exporting firms assume that firms in the same region and/or industry are likely to exchange information with each other; however, such studies do not explicitly discuss the channel through which such information exchange takes place. The hypothesis we examine here is that lender banks work as a conduit for such information. In the case of Japan, lender banks provide not only financial support but also business consulting

[1] Other strands in the literature examine the relationship between firms' export status and their innovative capacity, the price and/or quality of their product, various country characteristics, and institutional factors such as free trade agreements, economic diplomacy, and so on. Moreover, especially since the 2008 global financial crisis, the impact of credit constraints on firms' export decision has gained growing attention among researchers and policy makers. Because exporting involves higher entry costs than selling in the domestic market and most entry costs must be paid up front, only firms with sufficient liquidity can meet them. Based on this line of reasoning, Chaney (2005) augmented a Melitz-type model with liquidity constraints and suggests that financial frictions affect the selection of firms into exporting. Several studies, such as Bellone et al. (2010), Muûls (2008), Manova et al. (2011), Feenstra et al. (2011), and Minetti and Zhu (2011), have produced evidence indicating that credit constraints severely restrict firms' export capacity.

services utilizing extensive knowledge collected through their lending transaction relationships and from various information sources. Since the monitoring of borrower firms is important for banks, banks in general should accumulate information on borrower firms and related parties. Thus, if we assume that a particular bank is very knowledgeable about overseas business opportunities either through its own banking activities or transactions with client firms with experience in exporting, potential exporter firms would find it helpful to consult with such a bank. That financial institutions may indeed play an important role in determining client firms' export activities has recently been highlighted in studies by Amiti and Weinstein (2011) and Paravisini et al. (2011), which indicate that banks' financial health plays an important role in determining firms' export behavior. Inui et al. (2011), on the other hand, focus on banks' ability to screen, monitor, and advise client firms as a determinant of export behavior. Specifically, using a measure of banks' efficiency as a proxy for their ability to screen, monitor, and advise client firms, they find that bank efficiency has a positive effect on the export decision and overseas sales ratio of client firms.

The aim of this paper is to explore the role of banks as information providers by explicitly quantifying banks' ability to provide information on export markets using a unique panel dataset for Japan in which firms are matched to lender banks. In fact, Japanese Bankers Association (2011) provides various examples of how banks provide supporting services to firms when the firms start exporting to a new foreign market and/or open affiliates or branches overseas. According to the report, banks not only provide financial support to firms but also actively introduce them to foreign firms that are potential business partners or providers of business supporting services.[2] We therefore conjecture that banks play a crucial role in substantially reducing the fixed entry costs incurred by client firms when starting to export. Specifically, we hypothesize that the provision of information by lender banks helps firms to start exporting based on the same mechanisms that information exchange with other exporting firms helps potential

[2] We also interviewed an assistant general manager at the international business support office at a regional bank and found that not only large (city) banks but also many regional banks have been making strong efforts to support client firms trying to expand international transactions and business. Examples of such support services are summarized in Box 1.

export starters. To examine this hypothesis, we focus on firms' main bank which, in line with previous studies, we define as the top lender bank of a firm and investigate the importance of information flows from the main bank to client firms as a source of spillovers.[3]

This paper contributes to the existing literature in at least two ways. First, it is the first study to examine the export decision by using a dataset that makes it possible to link firm-level information with information on the major lender banks of each firm. The paper explores the impact of information spillovers through main banks on both firms' decision to start exporting (*the extensive margin*) and on the volume exported by each firm (*the intensive margin*). Second, the paper investigates whether the importance of information provided by banks differs across export destination regions and examines what type of information – that is, general information on overseas markets regardless of the destination or destination-specific information – is more relevant for firms' export decision.

Our results show that information on overseas markets provided by a main bank substantially reduces the fixed costs of starting exporting for a firm and thereby increases the probability that the firm will start exporting. However, the effect of such information on the volume of exports is not very clear.

The organization of this paper is as follows. Section 2 briefly explains the roles that main banks play in Japan and presents the empirical strategy. Section 3 describes the dataset used in this paper and provides some descriptive statistics on our sample firms. Next, Section 4 presents our estimation results. Finally, Section 5 discusses the policy implications and concludes.

[3] Of course, there are several other sources from which firms obtain information on export markets. Economic diplomacy and chambers of commerce in destination countries (Creusen and Lejour 2011) are another source of information on foreign markets, although we do not address the role of economic diplomacy here due to data constraints. As described below, information on the destination of exports is only available at the broad region level (e.g., North America or Asia) and not at the country level. Yet another potentially important conduit for information on export markets is trading companies and wholesalers. Unfortunately, we cannot identify transaction relationships between exporter firms and trading companies.

2. Empirical Strategy

2.1 The Main Bank System in Japan

The "main bank system" has been a key feature of Japan's economic system that can be traced back as far as the early post-war period.[4] In this system, a firm's "main bank" usually is the bank from which it has borrowed the most and with which it typically has a long-term relationships. In addition, it is widely argued that main banks not only provide loans to client firms but also play a consulting role by providing relevant business information. In addition, main banks may get involved in the management of a firm in times of distress. Although the extent and form of main banks' involvement in firms' management in times of financial difficulties have been changing over time, main banks are still perceived to play an important role as providers of both funds and information to their client firms.

Trying to provide a theoretical underpinning for such long-term relationships between main banks and borrower firms, Patrick (1994) argues that such relationships enable banks to gain access to "soft information" on borrower firms, which helps to raise the efficiency of loan screening and borrower monitoring. The argument that repeated bank loan transactions lead to the accumulation of soft information on client firms has also been voiced in more recent studies such as Degryse et al. (2009).

Such soft information on borrower firms and banks' own ability to collect information on industry-, region-, and nation-wide businesses has been helping Japanese main banks to provide effective and useful financial and consulting services to their client firms, and thereby has been contributing both to main banks' profits and the growth of their client firms' business. Particularly in recent years, aware of the fact that the growth prospects for Japan's domestic market are not very promising and domestic manufacturing production has in fact been shrinking, banks have been promoting various services to support client firms' international activities. With more and more Japanese large firms relocating production overseas, smaller domestic firms are

[4] For an overview of the origins of the main bank system, see, e.g., Hoshi and Kashyap (2001).

forced to reduce their output, resulting in falling demand of funds, which in turn reduces business opportunities for banks in Japan. Moreover, if banks' existing client firm went out of business, banks would not only lose current business but also future business in which to utilize the firm-specific soft information they have accumulated. Thus, faced with a potentially shrinking market at home, many banks in recent years have put greater emphasis on providing support services to client firms seeking to exploit growth opportunities overseas.

Concrete examples of the kind of support services that banks provide to their borrowers to help them with regard to international activities are provided by a Japanese Bankers Association (JBA) report (Japanese Bankers Association 2011). According to the report, other than traditional banking services such as the usual loan business, deposit services, payment services, lease and leaseback deals, or the issue of stand-by letters of credit, main banks often provide client firms with information on potential business partners in foreign countries as well as advice on recruiting employees, advertising, tax systems, and administrative issues such as accounting systems and laws and regulations. These examples indicate that banks provide not only financial transactions but also information services, and in the report, the JBA cites a survey it conducted according to which 38 out of 43 Japanese banks with activities in Asia say they provide services other than loan, deposit, and payment services. Specifically, 32 out of the 38 banks with activities in Asia say they provide information related to investment (i.e., tax and accounting systems, etc.), while 31 banks provide opportunities for business matching (e.g., organizing business matching events for Japanese firms and potential local partners). In addition, many banks provide information on firms located in destination regions (14 banks), loan guarantees (12 banks), and support with export and import procedure (8 banks).[5]

2.2 Empirical Model

This section explains the empirical strategy we employ to investigate the determinants

[5] For further details and examples of such support services, see Box 1.

of the export decision and of the export volume. We are particularly interested in the impact of information provided by main banks on the probability that a firm starts exporting (i.e., the extensive margin) and on the export volume (i.e., the intensive margin). Following previous empirical studies on the determinants of the extensive and intensive margin (e.g., Koenig et al. 2010, Minetti and Zhu 2011), we assume that firm *i* starts exporting if its profits are larger when exporting than when not exporting. Let π_{ijt}^{*} represent the difference between the profits of firm *i* when it starts exporting to destination *j* at time *t* and its profits when it does not start exporting to destination *j* at time *t*. The difference is determined by firm characteristics (e.g., size, productivity, and the skill level of workers), the firm's financial conditions (e.g., the leverage ratio, liquidity ratio, and short-term loan ratio), and the amount of information on the export market available to the firm. The availability of information on the export market is assumed to substantially lower the uncertainty of profits from exporting and hence, to lower either the variable or the fixed cost of exporting. While export spillovers are also taken into account, we are particularly interested in information provided through the main bank of the firm. Therefore, we parameterize π_{ijt}^{*} as:

$$\pi_{ijt}^{*} = \alpha_1 + Z_{it}\beta_1 + I_{ijt}\gamma_1 + \varepsilon_{ijt}$$

where Z_{it} is a vector of controls for firm characteristics and the firm's financial conditions which may affect firm *i*'s differential profits π_{ijt}^{*}; I_{ijt} is a vector of variables representing information available to the firm; and ε_{ijt} captures unobserved firm characteristics and other unknown factors that may also affect differential profits.

We assume that firm *i* starts exporting if the differential profits $\pi_{ijt}^{*}>0$. Under the assumption that ε_{ijt} is a normally distributed random error with zero mean and unit variance, the probability that firm *i* starts exporting can be written as:

$$Prob_{ijt} = Prob(\alpha_1 + Z_{it}\beta_1 + I_{ijt}\gamma_1 + \varepsilon_{ijt} > 0) \quad (1)$$

In the first instance, we estimate Equation (1) with a random effect panel probit approach. In order to take any potential endogeneity into account, we lag all right-hand side variables by one year.[6] The dependent variable $Prob_{ijt}$ denotes the change in export status at the firm- or firm-destination level and takes a value of 1 if a firm exports for the first time (overall) or the first time to destination *j* at time *t*. We define a firm as an export starter if the firm did not export over the last three years from *t-3* to *t-1* and exports at time *t*. $Prob_{ijt}$ takes a value of 0 if a firm did not export to destination *j* for the last three years prior to year *t* and does not export in year *t*. Firms which always export to destination *j* are not included in our analysis. Regarding control variables for firm characteristics and the firm's financial conditions (Z_{it}), we include firm size (the log of the number of employees of firm *i*), the TFP level of the firm, and the average wage rate of the firm as a proxy for the skill level of workers. Based on the results of both theoretical and empirical studies, we expect these variables to be positively correlated with firms' export decision. Further, to take the impact of liquidity constraints on firms' export behavior into account, we include variables representing firms' financial situation, such as their leverage ratio, their liquidity ratio, and the share of short-term loan in their total loans outstanding. The reason for including these variables is that, as highlighted by, e.g., Manova et al. (2011), Feenstra et al. (2011), and Minetti and Zhu (2011), financial constraints are likely to prevent firms from exporting because firms need sufficient liquidity in order to meet the entry costs associated with starting exporting. Therefore, we expect that firms with more liquidity are more likely to start exporting.

Regarding information available to the firm (I_{ijt}), we include variables representing the amount of information on export markets accumulated by a main bank and by a firm itself. The explanatory variable of main interest is the amount of information on export markets potentially available to the firm through its main bank, which is a proxy for the amount of information firm *i*'s

[6] As we will detail later, in order to address the endogeneity problem, we use a limited sample restricted to firms which maintained a relationship with their top lender (i.e., main bank) during the three years prior to the observation period. By doing so, we exclude cases where firms possibly changed their main bank in preparing to start exporting, i.e., cases where the bank and the firm are not randomly matched.

main bank has accumulated on destination *j*. Specifically, we measure this variable as the ratio of the number of the main bank's client firms that are exporting to destination *j* to the total number of the main bank's client firms, i.e., the intensity of each main bank's dealings with exporting firms. In addition, in order to take into account the information accumulated by firms themselves through their own international activities, we also include variables representing their overseas activities, such as the share of overseas employees in a firm's total number of employees and the share of overseas investment in a firm's total investment.[7] Industry dummies (for fifteen manufacturing industries) and time dummies are also included in order to control for industry-specific and time-specific fixed effects.

While Equation (1) focuses on the extensive margin, i.e., whether firms start exporting, we also examine the role of information spillovers through the main bank on the intensive margin, i.e., the export volume after firms start exporting. To do so, we adapt Equation (1) above as follows:

$$\mathrm{EXP}_{ijt} = \alpha_2 + \mathrm{Z}_{it}\beta_2 + \mathrm{I}_{ijt}\gamma_2 + \varepsilon_{ijt} \qquad (2)$$

where EXP_{ijt} is the log of firm *i*'s exports to destination *j* at time *t*. We also use the first-difference of the log of exports (i.e., the growth rate of exports) as a dependent variable for an alternative specification. The variables on the right-hand side are the same as those in Equation (1) and we again lag all variables by one year. As above, the variable we are most interested in is the amount of information on export markets potentially available to the firm through its main bank.

That the provision of information by the main bank may affect not only the extensive margin but also the intensive margin is suggested by the theoretical analysis by Rauch and Watson

[7] In addition, as highlighted in previous studies, there may be some spillovers from nearby exporters. In order to examine whether this is the case, we included dummies for the region in which firms' headquarters are located in order to control for export spillovers and other region-specific factors. However, we found that the region dummies were not significant and including them did not increase the explanatory power of our results, so that we decided to omit them here. A possible reason is that the headquarters of most firms in our sample are concentrated in a small number of prefectures (Tokyo, Osaka, and Hyogo).

(2003), who examine the relationship between the search costs for establishing new partnerships and export volumes. They suggest that the higher the costs of searching for a new supplier, the smaller tend to be the orders a buyer places with a supplier. In addition, buyers tend to place larger orders with suppliers once they know that the latter is able to fulfill larger orders. Based on this idea, if banks help in matching businesses in overseas markets and provide information to both the buyer and the supplier on their respective counterpart, this should substantially reduce uncertainty and possibly result in higher transaction volumes. We test this hypothesis by examining whether information spillovers through the main bank have a positive effect on the intensive margin or not.

We should note that in the estimation of Equation (2) non-exporters are excluded from the sample used for analysis. In cases such as here, where there is a risk of a selection bias, a typical solution employed often is to use a Heckman selection model. However, we do not employ the Heckman model and estimate Equations (1) and (2) separately, since it is difficult to find a variable which strongly affects the selection process (Equation (1)) but not the outcome (Equation (2)).[8] Therefore, we estimate Equation (2) separately from Equation (1), employing the fixed-effect panel estimation method.

3. Data and Descriptive Statistics

3.1 Data Description

The data used in this study are the firm-level panel data from the *Basic Survey on Business Structure and Activities (BSBSA)* collected annually by Ministry of Economy, Trade and Industry (METI) for the period 1997-2008. The survey is compulsory and covers all firms with at least 50 employees or 30 million yen of paid-in capital in the Japanese manufacturing, mining, and

[8] Although some previous studies employ a Heckman model to deal with selection bias (e.g., Bellone et al. 2010), not all do (see, e.g., Koenig et al. 2010, Paravisini et al. 2011, Manova et al. 2011). Moreover, for our data, finding an exogenous variable that is excluded from the export volume equation is extremely difficult. Although variables representing entry barriers to each export destination may be promising candidates for such an exogenous variable, we did not employ this approach here. The reason is that our information on export destinations is limited to destination regions (eight broad regions in the world), so that we do not have sufficient variation in entry barriers (see footnote 9).

wholesale and retail sectors and several other service sectors. The survey contains detailed information on firm-level business activities such as the 3-digit industry in which the firm operates, its number of employees, sales, purchases, exports, and imports (including a breakdown of the destination of sales and exports and the origin of purchases and imports).[9,10] It also contains R&D expenditures and patents owned, the number of domestic and overseas subsidiaries, and various other financial data such as costs, profits, investment, debt and assets.

The key aim of our analysis, as mentioned above, is to investigate the importance of information on destination markets and advice provided by main banks to their client firms. To do so, we combine the firm-level data with information on firms' main bank and examine the relationships between firm characteristics, main banks' ability to provide advice, and firms' export status. We augment the firm-level panel data taken from the BSBSA with information on firm characteristics stored in the Development Bank of Japan Corporate Financial Databank. We then merge the dataset with information on the main bank for each firm using the loan relation information stored in the NEEDS Financial Quest database. This database also includes various types of information on main banks.

Although the BSBSA includes a large number of unlisted firms, we have to restrict our sample to listed firms because the information on firms' bank loan relationships is available for listed firms only. Yet, even though we limit our sample to listed companies so that we can match firms to their main bank, our dataset nevertheless includes a considerable number of relatively small firms, which are listed on the stock exchange markets for start-up companies, and some of them are first-time exporters. Moreover, once firms have started exporting, many of them expand the range of destinations to which they export, so that when we examine the determinants of whether firms start exporting to a new destination, we can include more observations in our

[9] The survey asks for the amount as well as the destination or origin of exports and imports broken down into seven regions (Asia, Middle East, Europe, North America, Latin America, Africa, and Oceania). Unfortunately, more detailed information on the destination of exports and origin of imports is not available.

[10] Although the survey also asks non-manufacturing firms for information on exports and imports, they are required to provide the amount of trade in goods only. The survey does not cover international transactions in services.

analysis.

Our unbalanced panel data contain approximately 300–400 listed firms per year, approximately 5 percent of which are identified as export starters.[11] Although the number of pure first-time exporters is limited, there are a substantial number of exporters that expanded or reduced the number of destinations to which they exported during our observation period.

3.2 Variables

Let us now describe the variables for our estimation in detail. Basic statistics of all variables are provided in Table 1. Starting with the dependent variable, to estimate the extensive margin we construct three kinds of dummy variables. The first of these is *NEW_EXP*, which takes a value of 1 if the firm did not export to any of the regions considered in our analysis (i.e., Asia, North America, Central and South America, Africa, and Oceania) in years *t-3* to *t-1* but exported in year *t*.[12] The aim of using this three-year window is to identify export starters as unambiguously as possible. While employing this definition means that export starters still include firms that have past export experience and therefore are not pure first-time exporters, using a three-year window should reduce any possible biases arising from the misidentification of new exporters.[13] The second, alternative dependent variable we use is *NEW_EXP_REGION*, which takes a value of 1 if the firm did not export to one of the regions we focus on (i.e., Asia, North America, Central and South America, Africa, and Oceania) in years *t-3* to *t-1* but did export to one of those regions in

[11] We were able to match the BSBSA data with the other two databases for approximately 9,300 observations in the manufacturing sector. However, the sample size for our analysis is at most 3,000 observations. The reasons are as follows. First, we exclude firms which have positive exports throughout our observation period ("always" exporters), since our focus is on the decision to start exporting. Second, firms for which data on bank loan transactions are not available are excluded from our dataset. Third, as we employ a three-year window for identifying first-time exporters, firms which frequently changed their export status are excluded from our dataset. Namely, in our analysis, export starters are defined as firms that started exporting in year *t* but did not export in years *t-3* to *t-1*.

[12] The BSBSA also specifies other destination regions such as the Middle East and Europe. We ignore these regions due to the small number of export starters to those regions.

[13] Identifying pure first-time exporters is not straightforward. In fact, Koenig et al. (2010) consider that a firm is an export starter if it did not export in the previous year, while other studies such as Greenaway et al. (2007) and Bellone et al. (2010) simply look at whether a firm exports or not in each year. On the other hand, studies such as De Loecker (2007) define a firm as an export starter the first time it exported in the dataset. However, even with this definition, researchers are often likely to misidentify export starters when the time dimension of the dataset is not sufficiently long.

year *t*. The third dependent variable is defined by region. Thus, *NEW_EXP_ASIA* takes a value of 1 if the firm did not export to Asia in years *t-3* to *t-1* but did export to Asia in year *t*. In the same manner, we define *NEW_EXP_NA*, *NEW_EXP_CSA*, *NEW_EXP_AFR*, and *NEW_EXP_OCE*, for the decision to export to North America, Central and South America, Africa, and Oceania, respectively.

Next, we turn to our explanatory variables. The variable we are particularly interested in is the variable measuring the potential information spillovers through a main bank, *BANKINFO*. In order to construct the *BANKINFO* variable, we first construct the variable *NUM_EXPORTER*, which denotes the number of each bank's exporting client firms. We should note that for the *NUM_EXPORTER* variable, exporting firms for which a bank is not the main bank (i.e., not the top lender) are included. In this sense, we implicitly assume that all loan exposures to firms potentially contribute to the accumulation of overseas information at banks.[14] Therefore, the *NUM_EXPORTER* variable measures how many firms that could serve as a source of overseas information a firm's main bank transacts with. Given that *NUM_EXPORTER* is highly correlated with banks' size, we define *BANKINFO* as the ratio of *NUM_EXPORTER* to the total number of the bank's client firms (*NUM_CLIENT*). Through this metric, we intend to measure the intensity of each bank's exposure to exporting firms.[15] Since we have information regarding which regions each firm exports to, we can also define *NUM_EXPORTER* and *BANKINFO* by region. We

[14] Precisely speaking, we add the information about export dynamics stored in the BSBSA to the firm-bank-matched data constructed from the Financial Quest database. Then, summing up the total number of firms as well as the number of exporting firms to which each bank provides loans in each year, we construct *NUM_CLIENT* and *NUM_EXPORTER*. An alternative way to construct *BANKINFO* would be to focus on top lender relationships only. We prefer the former approach since it much better reflects the large variation across banks in terms of the extent to which they deal with exporting firms.

[15] Whether a bank has branches or subsidiaries abroad and how long these overseas branches or subsidiaries have been in operation are alternative measures for banks' stock of information on overseas markets. However, in this paper, we focus on banks' transaction relationships with exporters, for the following reasons. First, Japanese banks drastically reduced the number of overseas branches at the end of the 1990s when the banking sector took drastic restructuring measures to dispose of bad debts. Instead, they increasingly engage in business tie-ups with other domestic and/or foreign banks to provide international business support services to their client firms. Therefore, we do not consider the number of banks' overseas branches to be a good proxy for the amount of information on overseas markets accumulated by banks. Second, the number of overseas branches by country or region for each bank is not readily available in the database, while the total number of overseas branches for each bank is available. We have to compile the data using various data sources. Nevertheless, considering alternative measures for information spillovers through banks in the future would be a worthwhile exercise.

assume that *BANKINFO* measured regardless of destination regions is a proxy for information held by banks on foreign markets in general, while *BANKINFO* measured for each destination region is a proxy for region-specific information held by banks. For each firm, we use the *BANKINFO* variable in order to capture the amount of information provided by the main bank. In order to control for the size of the main bank, we also include *NUM_CLIENT* in our explanatory variables.

It could be argued that firms which are thinking of expanding their business overseas might try to establish a transaction relationship with a bank which is more likely to have a lot of overseas information. Given that such reverse causality could generate simultaneous equation bias in our estimation, we limit the sample to firms who had the same main bank throughout year *t-3* to year *t*. This allows us to focus on firm-bank pairs where the relationship is independent of the firm's decision to start exporting in year *t*.[16]

As for firm-specific variables, we include variables representing firms' size, labor quality, financial constraints, own overseas activities, and productivity. For firm size we use the (logarithm of) the number of employees (*LN_NUMWORKER*) and for labor quality the average wage (WAGE). Regarding financial constraints, we construct a number of variables: the leverage of a firm (ratio of total liabilities to total assets, *FLEV*), the ratio of bank loans to total liabilities (*FBDEP*), the ratio of liquidity assets to liquidity liabilities (*FLIQ*), and the short-term loan ratio (ratio of short-term bank borrowing to total bank borrowing, *STLOAN*). We construct a number of variables representing firms' own overseas activities: the share of overseas establishments (*FOR_BRANCH*), measured as the ratio of a firm's number of overseas branches or offices (not including overseas subsidiaries or affiliates) to the firm's total number of establishments, branches, or offices, including both domestic and overseas ones; the share of overseas employees (*FOR_EMP*), measured as the ratio of a firm's number of workers employed in overseas branches

[16] In order to rule out any endogeneity bias more rigorously, we could restrict our analysis to firms whose relationship with their main bank has been established even longer, or we could employ appropriate instruments for *BANKINFO*. Trying these alternative ways to address the endogeneity issue are tasks we leave for future research.

or offices (not including overseas subsidiaries or affiliates) to the firm's total number of workers employed in all establishments, branches, or offices; the overseas investment share (*FOR_INV*), measured as the ratio of a firm's overseas investment, including portfolio investment, to the firm's total investment; and the overseas lending share (*FOR_LOAN*), measured as the ratio of a firm's lending to affiliated firms overseas to the firm's total lending to affiliated firms at home and abroad.[17]

As for firm productivity, which, as mentioned above, is widely considered to be an important determinant of the export decision, we use the firm-level TFP data provided in the East Asian Listed Companies Database (EALC) 2010.[18] The firm-level TFP in the database is calculated using the multilateral TFP index method developed by Good et al. (1997).[19] Details on the TFP measure are provided in the Appendix.

INSERT Table 1

Our firm-bank matched data cover the period from fiscal 1997 to 2008. In order to control for the potential influence of outliers, we excluded observations in the tails for each variable.[20] Table 2 presents the correlation matrix for the variables used in our empirical analysis, while Table 3 shows the distribution of our sample firms by industry and year. As can be seen from Table 3, sample firms are concentrated in a limited number of industries (e.g., food and kindred products, chemicals, non-electrical machinery, electrical and electronic machinery, motor vehicles, transportation equipment and ordnance).

[17] The reason why the number of workers employed by overseas subsidiaries is not included is that the BSBSA does not contain such information. Similarly, the reason for using the ratio of overseas investment including portfolio investment is that the BSBSA does not allow us to distinguish between direct and portfolio overseas investment.

[18] The EALC is jointly compiled by the Japan Center for Economic Research, the Center for Economic Institutions (Hitotsubashi University), the Center for China and Asian Studies (Nihon University), and the Center for National Competitiveness (Seoul National University).

[19] For details on the TFP calculation, also see Fukao et al. (2011).

[20] We drop firms for which the absolute level of any of the explanatory variables falls into the 1st or the 99th percentile.

INSERT Tables 2 & 3

4. Estimation Results

4.1 The decision to enter specific markets

We first examine the determinants of firms' decision to participate in a new export market by estimating Equation (1). The estimation is conducted using observations for firms which did not export during the years *t-3* to *t* ("never" exporters) and observations for firms which did not export during the years *t-3* to *t-1* but exported in year *t* (first-time exporters). Thus, observations for firms which exported in at least one year during *t-3* to *t-1 as well as t* are excluded in the estimation. The results of the random effect probit estimation (average marginal effects) and the panel logit estimation (odds ratios) are shown in Tables 4 and 5, respectively. The first two columns in Table 4 show the results when we use *NEW_EXP* as the dependent variable and including (Column (1)) or excluding (Column (2)) *TFP×BANKINFO* among the explanatory variables. Columns (3) and (4) repeat the same regressions but using *NEW_EXP_REGION* as the dependent variable. In Columns (1) to (4) in Table 4, we do not distinguish between destination regions and the *BANKINFO* variable is simply the ratio of the number of a firm's main bank's exporting clients – regardless of the destination region – to the total number of the bank's client firms. *BANKINFO* here therefore captures the main bank's general exposure (not specific to a destination region) to client firms with export activities. The same applies to Columns (1) to (3) in Table 5. However, in the last column of Tables 4 and 5, we use the region-specific *BANKINFO* variable corresponding to the region to which a firm starts exporting.[21] In the case where a firm starts exporting to more than one region at a time, we randomly assign the region-specific *BANKINFO*. Finally, it should be noted that Columns (1) to (3) in Table 5 show the results using the same variables but different models for the panel logit estimation; that is, a population average

[21] In the case where firms start exporting to more than one region at a time, we randomly assign the region-specific *BANKINFO*. An alternative way would be to use the average of *BANKINFO* among those regions.

model (PA), a fixed effect model (FE), and a random effect model (RE).

Looking at the results shown in Table 4 and focusing on our variable of main interest, *BANKINFO*, we find that the coefficient is positive and significant in all estimations. Similarly, Table 5, which shows the results based on the panel logit estimation, suggests that main banks with greater exposure to firms with overseas business raise the likelihood that their client firms start exporting, hinting at the presence of information spillovers from the main bank, which is consistent with our prediction. Further, the results in Column (4) in Table 5 indicate that when we take account of destination region-specific information, *BANKINFO* has a significant positive effect on firms' export decision even when we control for firm-specific fixed effects.[22]

As for the other explanatory variables, firms' own overseas activities (e.g., the overseas employee ratio) have a positive effect on firms' decision to start exporting in many of the cases. On the other hand, for firm size, leverage, and liquidity the results vary depending on the estimation procedure and these variables are associated with a higher probability of starting exporting only in some cases.

A notable result is that the TFP level has almost no impact on the export decision. Given that the correlation between TFP and the interaction term between TFP and *BANKINFO* (*TFPxBANKINFO*) is very high for the whole sample, we run the same regressions without the interaction term (i.e., Columns (2) and (4) in Table 4). The results remain unchanged. This result is consistent with the finding in previous studies such as Todo (2011) that TFP is not a sufficiently strong factor to explain the export decision of Japanese firms.

Next, in order to examine whether the effect of region-specific information spillovers differs depending on the destination region we split the sample by export destination region. The estimation results for the sub-samples by destination region are shown in Table 6. The results suggest that *BANKINFO* has a significant positive effect on firms' export decision when they start

[22] Precisely speaking, the result of the likelihood ratio test presented in Column (5) in Table 4 implies that it is not necessary to employ the model with panel-level individual effects once we include the *BANKINFO* variable measured for each destination region (i.e., rho0=0 is not rejected even at the 10% significance level).

exporting to Asia (Column (1)), but that this is not the case for other regions. These results may reflect the fact that most Japanese banks have been increasingly putting efforts into their business in Asia by expanding service networks there while restructuring services in other regions, particularly in developed regions. Moreover, because first-time exporters to Asia tend to be smaller firms than those to other regions, the result may imply that information accumulated in main banks is more important for smaller firms, which do not have adequate capabilities to collect overseas information by themselves. This line of reasoning is supported by the fact that in Table 6 firm size has a significantly positive effect on the export decision in all cases except Asia.

4.2 Export volume and export growth

Table 7 reports the fixed-effect panel estimation results of Equation (2). In the estimation, we only include observations of first-time exporters, and we examine whether information spillovers through main banks affect the export volume (the value of exports in logarithm) or the growth rate of exports from year *t* to year *t+1* after the firm started exporting. Beginning with the results in Panel (a) in Table 7, we find that the coefficient on *BANKINFO* is not significant, implying that information spillovers do not have a clear effect on the volume of exports (i.e., the intensive margin). While firms' own international activities (the overseas investment ratio in Column (1)) tend to have a positive effect on the intensive margin, most of the other explanatory variables do not have a significant coefficient. Although it is possible that the results partly reflect the small sample size, they suggest that the export volume is mainly explained by firm fixed effects.

Next, we further split the sample by destination region and estimate the same equations as in Panel (a) for each destination region. Panel (b) shows the estimated coefficient on *BANKINFO* for each destination region. As can be seen, the coefficient is not significant in most cases and the impact of *BANKINFO* is ambiguous. Although we find a negative and significant coefficient on *BANKINFO* for the cases of North America, Africa, and Oceania, we should note that the number of observations is small, particularly in the latter two cases, for which we could

not calculate F-values. Therefore, we do not obtain clear and robust results for the impact of information spillovers on the intensive margin. This is in line with Koenig et al. (2010), who also do not find a significant impact of export spillovers on the intensive margin. Although our results are consistent with their results, which factors affect the intensive margin of exports is an issue that deserves further scrutiny.

4.3 Robustness checks

To check the robustness of our results, we also estimated Equation (1) using a logit estimator, for which the standard errors are corrected for clustering. Taking into account that observations within the same firm are not independent, standard errors are corrected for clustering across firms. Alternatively, standard errors are corrected for clustering across main banks, taking into consideration the possibility that observations of firms which have a transaction relationship with the same bank are not independent. In both cases, the logit estimation results with clustered standard errors are consistent with the results in Table 5 and *BANKINFO* has a significant positive effect on firms' export decision.[23]

In addition, bank characteristics may affect firms' export decision. For example, the Japan Bank for International Corporation (JBIC, the former Export-Import Bank of Japan) is a government financial institution which was originally established to promote cross-border trade and foreign investment. Therefore, JBIC may be particularly active in helping firms to start exporting. On the other hand, major commercial banks may differ from regional banks or local banks in terms of their scope of business and hence in the characteristics of information accumulated by them. In order to control for differences in bank characteristics, we include a JBIC dummy and a dummy for major commercial banks in the export decision estimation. However, neither dummy variable has a significant coefficient, and including these dummy variables does not change the significance of the *BANKINFO* variable.

[23] The estimation results are available upon request from the authors.

Finally, there may be several alternative ways to measure the amount of information on export markets available to a firm. While our main variable, *BANKINFO*, measures the intensity of banks' exposure to exporting firms, the absolute number of a bank's export client firms, *NUM_EXPORTER* may be a better way to measure the amount of information on export markets. However, when we replace *BANKINFO* with *NUM_EXPORTER*, we find that the coefficient on *NUM_EXPORTER* is not statistically significant. A possible reason is that *NUM_EXPORTER* is highly correlated with the total number of a bank's client firms (*NUM_CLIENT*), which we use as a proxy for the size of banks. As there are several other possible alternative specifications (e.g., using bank assets instead of *NUM_CLIENT*), it might be worthwhile to conduct further robustness checks in the future.[24]

5. Concluding Remarks

In this paper, we examined whether information spillovers through main banks affect client firms' export behavior (i.e., the extensive and intensive margins). We find that information spillovers through main banks have a positive effect on client firms' decision to start exporting. This implies that information on destination markets provided by main banks substantially reduces the fixed entry cost of exporting and encourages firms to become exporters. On the other hand, we

[24] In addition, we may need to control for shocks to banks' balance sheets as well as for firms' credit constraints. Other tasks left for the future are as follows. First, the results in Paravisini et al. (2011) imply that firms match with banks that have developed an expertise on certain export destinations, which other lenders may not have. Firms and banks are not randomly matched. We address this endogeneity issue by restricting our sample to firms which did not change their main bank during the three years prior to starting exporting. However, there may be some alternative ways to address this issue more rigorously. Second, the loan share of the main bank for each firm can be taken into account when constructing the *BANKINFO*. By doing this, we can measure not only the information accumulated in a main bank but also how smoothly or frequently the information could be transmitted to client firms. The closer the relationships that a non-exporting firm has with banks that have a large exposure to exporting firms, the more the non-exporting firm would benefit from the information accumulated by the banks. Third, we could take into account information accumulated by the second or third lender banks for each firm. However, according to an interview we conducted with a bank, firms usually consult their main bank (i.e., top lender) first on various issues related to their business. Firms ask their second or third, etc., lender bank for help only in cases where the main bank cannot provide satisfactory support to the client firm. Therefore, focusing only on main banks appears to be an appropriate and reasonable strategy.

did not find evidence that information spillovers through main banks have an effect on the export volume or on the growth rate of exports. This is more or less consistent with the findings obtained by Koenig et al. (2010).

A key contribution of this paper is that it proposes an additional channel of information spillovers ignored in previous studies. While existing studies, such as Koenig et al. (2010), concentrate on information spillovers from other exporting firms in the same region and/or industry, this study focuses on the importance of information provided directly by main lender banks through transaction relationships. If we look at our results in terms of the argument put forward by Chaney (2008) that a change in fixed costs only affects the extensive margin, while a change in variable costs affects both the intensive and the extensive margin, they suggest that information provided by banks contributes to a reduction in the fixed costs but not in the variable costs associated with exporting. On the other hand, Paravisini et al. (2011) suggest that credit frictions, by affecting the cost of working capital, affect the variable costs of exporting and hence the volume of exports. This result suggests that banks may play an important role in affecting the intensive margin as suppliers of funds. Thus, banks' role as suppliers of funds and as providers of information may affect fixed and variable costs and hence the extensive and the intensive margin differently. Untangling these two roles of banks and their impact on firms' export behavior is a topic we aim to further address in future research.

This paper also provides an important policy implication. As mentioned in the introduction, our knowledge regarding what factors are important for firms to become an exporter remains very limited, even though export promotion has been an important policy issue in many countries. With regard to Japan, studies such as Wakasugi et al. (2008) and Ito (2011) argue that there are still many firms which do not export even though their performance is good or they actively invest in research and development. Promoting exports by these firms is an urgent policy issues for Japan, which has been facing population decline and sluggish domestic demand for a prolonged period. This paper showed the importance of banks' role as an information provider for

potential exporters, implying that the government should proactively involve banks in its export promotion policies. Regional banks – seeing their client firms face declining domestic demand and therefore worried that their own business may shrink – may also be interested in providing more support services for firms trying to expand their business abroad. Helping such banks to build international service networks and building on the banks' support services may allow the government to implement its export promotion policies more effectively. Moreover, as banks have accumulated a lot of information on their client firms' business, they may have useful knowledge on what type of firms should receive support from the government and on what type of support is most effective. Of course, government and non-profit organizations already provide various support services for firms' international business and for trading companies. Information provided by such organizations or trading companies is complementary to information collected by banks through lending relationships, and it is important for the government to effectively utilize these various information sources for export promotion policies. According to the banker we interviewed, the advantage that banks have is that they possess detailed and wide-ranging information on individual firms' management, financial health, and business activities.

To conclude, we highlight several issues for future research. The first of these concerns the type of information provided by banks. While the information we considered was destination-specific information, it would be possible to take other, more detailed types of information additionally into account, such as industry-specific information. Second, our relatively long-panel dataset allows us to conduct a survival analysis-type of study on the status of exporting firms. This, in turn, allows us to examine how the duration of staying in export markets is determined, which is another important dimension discussed in the theoretical international trade literature (e.g., Schröder and Sørensen 2012). Although there are a fair number of empirical studies analyzing the determinants of the duration of imports, studies on the determinants of what kind of firms are "always" exporters so far have all been only at an aggregate level (e.g., Besedeš and Prusa 2006a, 2006b, Nitsch 2009, Besedeš and Blyde 2010). Third, although the expansion of

export destinations, particularly in the case of larger listed firms, often involves the establishment of new subsidiaries or affiliates abroad, this paper, partly because of data constraints, only focused on exporting and did not explicitly deal with foreign direct investment in a new location. As banks provide a wide range of support services for firms which try to open a foreign affiliate, investigating banks' role in firms' FDI decision is another promising research topic. Lastly, our results imply that information spillovers through main banks may be more important for smaller firms, which are more likely to choose Asia as their first export destination. Therefore, further investigation focusing on smaller firms would be a worthwhile exercise, if data for small firms were available. We believe that all of these extensions would provide further evidence for a better understanding of firms' overseas activities and the role of banks.

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Appendix: The multilateral TFP index

As detailed in Fukao et al. (2011), the TFP level of firm *i* in industry *j* in year *t*, $TFP_{i,j,t}$ is defined in comparison with the TFP level of a hypothetical representative firm in the benchmark year t_0 in industry *j*. In the EALC 2010 Database, the benchmark year t_0 is set to the year 2000 and the firm-level TFP level is calculated as follows, using the multilateral TFP index method developed by Good et al. (1997):.

$$\mathrm{LN}(\mathrm{TFP}_{i,j,t}) = \left\{\mathrm{LN}(\mathrm{Q}_{i,j,t}) - \overline{\mathrm{LN}(\mathrm{Q}_{j,t})}\right\} - \sum_{k=1}^{n}\left(\mathrm{S}_{i,k,j,t} + \overline{\mathrm{S}_{k,j,t}}\right)\left\{\mathrm{LN}(\mathrm{X}_{i,k,j,t}) - \overline{\mathrm{LN}(\mathrm{X}_{k,j,t})}\right\}$$

for $t = t_0$

$$\mathrm{LN}(\mathrm{TFP}_{i,j,t}) = \left\{\mathrm{LN}(\mathrm{Q}_{i,j,t}) - \overline{\mathrm{LN}(\mathrm{Q}_{j,t})}\right\} - \frac{1}{2}\sum_{k=1}^{n}\left(\mathrm{S}_{i,k,j,t} + \overline{\mathrm{S}_{k,j,t}}\right)\left\{\mathrm{LN}(\mathrm{X}_{i,k,j,t}) - \overline{\mathrm{LN}(\mathrm{X}_{k,j,t})}\right\}$$
$$+ \sum_{s=t_0+1}^{t}\left\{\overline{\mathrm{LN}(\mathrm{Q}_{j,s})} - \overline{\mathrm{LN}(\mathrm{Q}_{j,s-1})}\right\}$$
$$- \sum_{s=t_0+1}^{t}\sum_{k=1}^{n}\frac{1}{2}\left(\overline{\mathrm{S}_{k,j,s}} + \overline{\mathrm{S}_{k,j,s-1}}\right)\left\{\overline{\mathrm{LN}(\mathrm{X}_{k,j,s})} - \overline{\mathrm{LN}(\mathrm{X}_{k,j,s-1})}\right\}$$

for $t > t_0$

$$\mathrm{LN}(\mathrm{TFP}_{i,j,t}) = \left\{\mathrm{LN}(\mathrm{Q}_{i,j,t}) - \overline{\mathrm{LN}(\mathrm{Q}_{j,t})}\right\} - \frac{1}{2}\sum_{k=1}^{n}\left(\mathrm{S}_{i,k,j,t} + \overline{\mathrm{S}_{k,j,t}}\right)\left\{\mathrm{LN}(\mathrm{X}_{i,k,j,t}) - \overline{\mathrm{LN}(\mathrm{X}_{k,j,t})}\right\}$$
$$- \sum_{s=t+1}^{t_0}\left\{\overline{\mathrm{LN}(\mathrm{Q}_{j,s})} - \overline{\mathrm{LN}(\mathrm{Q}_{j,s-1})}\right\} + \sum_{s=t+1}^{t_0}\sum_{k=1}^{n}\frac{1}{2}\left(\overline{\mathrm{S}_{k,j,s}} + \overline{\mathrm{S}_{k,j,s-1}}\right)\left\{\overline{\mathrm{LN}(\mathrm{X}_{k,j,s})} - \overline{\mathrm{LN}(\mathrm{X}_{k,j,s-1})}\right\}$$

for $t < t_0$

where $Q_{i,j,t}$ stands for the real output (real sales) of firm *i* (in industry *j*) in year *t*, $X_{i,k,j,t}$ represents the real input of production factor *k* of firm *i* (in industry *j*) in year *t*, and $S_{i,j,k,t}$ is the cost share of production factor *k* at firm *i* (in industry *j*) in year *t*. $\overline{LN(Q_{J,t})}$ denotes the

arithmetic average of the log value of the output, in year *t*, of all firms in industry *j* to which firm *i* belongs, while $\overline{LN(X_{k,J,t})}$ stands for the arithmetic average of the log value of the input of production factor *k*, in year *t*, of all firms in industry *j* to which firm *i* belongs. Finally, $\overline{S_{k,J,t}}$ is the arithmetic average of the cost share of the input of production factor *k*, in year *t*, of all firms in industry *j* to which firm *i* belongs.

Table 1: Summary statistics

Variable	Obs.	Mean	Std. Dev.	Min.	Max.
NEW_EXP	3,220	0.02	0.15	0	1
NEW_EXP_REGION	3,220	0.15	0.36	0	1
NEW_EXP_ASIA	3,220	0.03	0.17	0	1
NEW_EXP_NA	3,220	0.03	0.17	0	1
NEW_EXP_CSA	3,220	0.07	0.25	0	1
NEW_EXP_OCE	3,220	0.04	0.2	0	1
LN_NUMWORKER	2,914	7.02	1.11	4.03	10.59
FLEV	3,205	0.52	0.18	0.05	0.96
FBDEP	3,209	0.31	0.21	0	0.89
FLIQ	3,215	1.56	0.85	0.26	8.46
STLOAN	2,948	0.53	0.32	0	1
WAGE	2,903	6.49	1.78	0.46	12.72
FOR_BRANCH	3,206	0.05	0.11	0	0.68
FOR_EMP	3,206	0	0.01	0	0.07
FOR_INV	3,201	0.25	0.44	0	3.36
FOR_LOAN	3,220	0.11	0.26	0	1
TFP	2,780	0.02	0.11	-0.97	0.59
NUM_EXPORTER	3,190	182.9	92.41	1	371
NUM_CLIENT	3,190	353.06	183.63	8	759
BANKINFO	3,190	0.52	0.07	0.08	0.78

Table 2: Correlation matrix

(Obs.=2242)

	NEW_EXP	NEW_EXP_REGION	NEW_EXP_ASIA	NEW_EXP_NA	NEW_EXP_CSA	NEW_EXP_OCE	LN_NUMWORKER	FLEV	FBDEP	FLIQ	STLOAN	WAGE	FOR_BRANCH	FOR_EMP	FOR_INV	FOR_LOAN	TFP	NUM_EXPORTER	NUM_CLIENT	BANK INFO	TFP× BANK INFO
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
(1)	1.00																				
(2)	0.35	1.00																			
(3)	0.82	0.38	1.00																		
(4)	0.35	0.40	0.35	1.00																	
(5)	0.10	0.64	0.10	0.13	1.00																
(6)	0.12	0.48	0.12	0.15	0.20	1.00															
(7)	-0.02	0.05	0.00	0.05	0.04	0.06	1.00														
(8)	0.01	0.03	0.01	0.02	0.03	0.04	0.00	1.00													
(9)	0.01	-0.02	0.01	-0.01	-0.02	0.00	-0.26	0.47	1.00												
(10)	-0.01	0.00	-0.01	-0.01	0.03	-0.03	-0.02	-0.68	-0.45	1.00											
(11)	0.01	0.04	0.01	0.02	-0.01	0.00	-0.12	-0.03	-0.01	-0.07	1.00										
(12)	-0.04	0.04	-0.02	0.00	0.04	0.06	0.18	0.02	-0.10	-0.01	-0.02	1.00									
(13)	-0.01	0.03	0.01	0.03	0.03	0.03	0.16	-0.02	-0.06	0.05	0.01	0.12	1.00								
(14)	-0.01	0.01	0.00	0.02	0.02	0.02	0.03	-0.06	-0.08	0.05	0.04	0.08	0.68	1.00							
(15)	-0.02	0.04	-0.03	0.02	0.01	0.03	0.13	-0.12	-0.06	0.06	-0.05	0.08	0.14	0.18	1.00						
(16)	0.00	0.00	0.00	-0.02	0.01	0.04	0.16	-0.09	-0.04	0.07	-0.05	0.05	0.06	0.07	0.19	1.00					
(17)	0.00	-0.03	0.00	-0.01	-0.03	0.00	-0.01	-0.21	-0.21	0.22	-0.04	0.13	0.04	0.04	0.20	0.04	1.00				
(18)	0.05	0.01	0.05	0.01	0.00	0.00	0.10	-0.06	-0.06	0.03	-0.01	0.08	0.05	0.04	0.01	0.02	0.11	1.00			
(19)	0.04	0.00	0.04	0.01	-0.01	-0.01	0.09	-0.06	-0.06	0.03	-0.02	0.06	0.05	0.03	0.02	0.02	0.14	0.98	1.00		
(20)	0.01	0.07	0.04	0.03	0.03	0.07	0.10	-0.01	-0.05	0.06	0.05	0.14	0.05	0.04	0.00	0.06	-0.07	0.04	-0.09	1.00	
(21)	0.00	-0.03	0.00	0.00	-0.03	0.00	-0.01	-0.22	-0.22	0.22	-0.04	0.13	0.04	0.04	0.19	0.03	0.99	0.10	0.13	-0.06	1.00

Table 3: Distribution of sample firms by industry and year

	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
Food and kindred products	43	41	40	32	32	34	44	44	52	362
Textile mill products, apparel	18	23	20	17	13	18	22	24	22	177
Lumber and wood products, furniture and fixtures	2	2	0	0	0	0	1	1	1	7
Paper and allied products	9	9	9	9	10	8	13	13	12	92
Printing, publishing and allied products	7	5	6	5	4	5	9	9	10	60
Chemicals	31	30	31	25	36	41	49	47	51	341
Petroleum and coal products	2	1	3	2	0	0	2	1	1	12
Rubber and miscellaneous plastics	6	4	7	5	5	5	4	7	10	53
Stone, clay and glass products	13	13	16	15	17	16	18	21	21	150
Metal	10	12	14	9	11	9	21	21	23	130
Non-metallic mining	11	8	7	6	5	6	12	12	15	82
Fabricated metal	15	15	14	9	11	10	20	19	19	132
Non-electrical machinery	18	15	13	12	19	24	26	35	32	194
Electrical and electronic machinery	52	45	51	39	49	62	65	75	77	515
Motor vehicles, transportation equipment and ordnance	28	36	31	28	36	43	44	46	46	338
Instruments	7	8	5	3	4	3	3	7	8	48
Miscellaneous manufacturing	19	18	17	19	16	17	20	21	22	169
Total	291	285	284	235	268	301	373	403	422	2,862

Table 4: Random-effect panel probit estimation results for extensive margin

	(1)	(2)	(3)	(4)	(5)
	NEW_EXP	NEW_EXP	NEW_EXP_REGION	NEW_EXP_REGION	NEW_EXP_REGION
Extensive Margin	dy/dx	dy/dx	dy/dx	dy/dx	dy/dx
LN_NUMWORKER	0.0594	0.0612	0.0849 **	0.0853 **	0.0890 **
	(0.0675)	(0.0672)	(0.0374)	(0.0374)	(0.0369)
FLEV	0.3496	0.3010	0.3927	0.3858	0.3923
	(0.6523)	(0.6510)	(0.3297)	(0.3290)	(0.3237)
FBDEP	0.8656 *	0.7559 *	0.0266	0.0231	0.0250
	(0.4495)	(0.4435)	(0.2334)	(0.2332)	(0.2290)
FLIQ	0.3966 ***	0.3785 ***	-0.0478	-0.0484	-0.0456
	(0.1466)	(0.1473)	(0.0734)	(0.0733)	(0.0725)
STLOAN	0.2612	0.3073	0.0411	0.0447	0.0383
	(0.2383)	(0.2377)	(0.1133)	(0.1129)	(0.1117)
WAGE	-0.0330	-0.0349	0.0068	0.0066	0.0111
	(0.0416)	(0.0416)	(0.0218)	(0.0218)	(0.0216)
FOR_BRANCH	0.5277	0.5627	-0.6871	-0.6884	-0.6460
	(1.1716)	(1.1886)	(0.4553)	(0.4552)	(0.4491)
FOR_EMP	24.5621	21.5684	16.4349 **	16.4852 **	15.5256 **
	(15.5615)	(16.1527)	(6.5394)	(6.5388)	(6.4744)
FOR_INV	0.2521	0.2648	-0.0238	-0.0251	-0.0140
	(0.2245)	(0.2179)	(0.0889)	(0.0888)	(0.0869)
FOR_LOAN	-0.5484 *	-0.5297	0.0226	0.0215	0.0315
	(0.3287)	(0.3291)	(0.1218)	(0.1217)	(0.1203)
TFP	-10.8578 **	-0.4327	-1.2803	0.2251	-0.0084
	(5.3428)	(0.8626)	(3.3607)	(0.4695)	(0.4941)
BANKINFO†	2.7098 ***	2.0666 **	1.5565 **	1.5628 **	0.4764 **
	(0.9117)	(0.8510)	(0.6591)	(0.6597)	(0.2028)
TFP×BANKINFO†	19.4209 **		2.8644		3.3046
	(9.7683)		(6.3235)		(2.2393)
NUM_CLIENT	0.0008 *	0.0007	0.0001	0.0001	0.0001
	(0.0005)	(0.0005)	(0.0002)	(0.0002)	(0.0002)
# Obs	1,178	1,178	2,589	2,589	2,570
# Groups	304	304	562	562	561
Obs per group: min	1	1	1	1	4
avg	3.9	3.9	4.6	4.6	4.6
max	10	10	9	9	9
Wald chi2	56.62	54.74	232.58	232.48	239.03
Prob > chi2	0.0265	0.0303	0.0000	0.0000	0.0000
Log likelihood	-313.15	-315.27	-942.19	-942.29	-933.58
Likelihood ratio test of rho0=0	5.23	5.53	1.83	1.8	0.61
Prob >= chibar2	0.011	0.009	0.088	0.09	0.217
Year dummies	yes	yes	yes	yes	yes
Industry dummies	yes	yes	yes	yes	no

Notes: Standard errors are in parentheses. ***, **, and * indicate significance at the 1, 5, and 10 percent level, respectively.

† The BANKINFO variable for Columns (1) - (4) is measured regardless of the destination region, while the BANKINFO variable in Column (5) is measured for each destination region.

Table 5: Panel logit estimation results for extensive margin

	(1)	(2)	(3)	(4)
	(PA) NEW_EXP_REGION	(FE) NEW_EXP_REGION	(RE) NEW_EXP_REGION	(FE) NEW_EXP_REGION
Extensive Margin	Odds Ratio	Odds Ratio	Odds Ratio	Odds Ratio
LN_NUMWORKER	1.1232 *	1.2843	1.1346 *	1.2746
	(0.0714)	(0.3007)	(0.0779)	(0.2972)
FLEV	4.3200 ***	8.0844	4.5162 ***	11.0653
	(2.3778)	(15.5052)	(2.6429)	(21.3757)
FBDEP	0.9486	3.1914	0.9595	3.5039
	(0.3790)	(3.3545)	(0.4077)	(3.6864)
FLIQ	1.1388	1.0604	1.1401	1.0357
	(0.1368)	(0.2999)	(0.1446)	(0.2969)
STLOAN	1.2091	1.4647	1.2230	1.4673
	(0.2364)	(0.6397)	(0.2520)	(0.6461)
WAGE	1.0447	0.9916	1.0486	1.0125
	(0.0387)	(0.0635)	(0.0411)	(0.0662)
FOR_BRANCH	0.4969	0.0572 **	0.4478	0.0847 *
	(0.3790)	(0.0759)	(0.3644)	(0.1128)
FOR_EMP	4.15E+09 **	3.12E+29 ***	5.16E+10 **	4.03E+27 ***
	(4.40E+10)	(5.75E+30)	(5.95E+11)	(7.38E+28)
FOR_INV	1.0870	0.7765	1.0813	0.8321
	(0.1633)	(0.2759)	(0.1713)	(0.2890)
FOR_LOAN	1.1376	1.3147	1.1477	1.2993
	(0.2333)	(0.4694)	(0.2505)	(0.4673)
TFP	0.1079	0.0076	0.1224	2.3192
	(0.6546)	(0.0712)	(0.7748)	(3.6080)
BANKINFO†	20.8130 ***	8.9001	23.5516 **	0.3393 **
	(24.6440)	(17.1476)	(29.2406)	(0.1519)
TFP×BANKINFO†	296.1543	3.66E+05	272.8471	3.16E+04 **
	(3373.71)	(6.50E+06)	(3250.91)	(1.59E+05)
NUM_CLIENT	1.0000	1.0006	1.0000	1.0003
	(0.0004)	(0.0006)	(0.0004)	(0.0006)
# Obs	2,589	1,413	2,589	1,396
# Groups	562	252	562	251
Obs per group: min	1	2	1	2
avg	4.6	5.6	4.6	5.6
max	9	9	9	9
Wald chi2	229.99	204.65	205.27	208.51
Prob > chi2	0	0	0.0000	0.0000
Log likelihood	-	-383.54	-964.05	-375.10
Likelihood ratio test of rho0=0	-	-	4.72	-
Prob >= chibar2	-	-	0.015	-
Year dummies	yes	yes	yes	yes
Industry dummies	no	no	no	no

Notes: Standard errors are in parentheses. ***, **, and * indicate significance at the 1, 5, and 10 percent level, respectively.

† The BANKINFO variable for Columns (1) - (3) is measured regardless of the destination region, while the BANKINFO variable in Column (4) is measured for each destination region.

Table 6: Random-effect panel probit estimation results for extensive margin by destination region

	(1)	(2)	(3)	(4)	(5)
	NEW_EXP_ASIA	NEW_EXP_NA	NEW_EXP_CSA	NEW_EXP_AFR	NEW_EXP_OCE
Extensive Margin	dy/dx	dy/dx	dy/dx	dy/dx	dy/dx
LN_NUMWORKER	0.0581	0.4464 ***	0.1009 *	0.1576 *	0.1499 **
	(0.0823)	(0.1621)	(0.0545)	(0.0843)	(0.0763)
FLEV	0.7978	1.2477	1.0709 **	1.4298 *	0.2956
	(0.7941)	(1.1094)	(0.5092)	(0.7510)	(0.6552)
FBDEP	0.4545	1.8494 **	-0.2969	-0.3514	-0.3018
	(0.5209)	(0.9449)	(0.3508)	(0.5145)	(0.4636)
FLIQ	0.3822 **	0.3905	0.1073	0.1339	-0.2702 *
	(0.1888)	(0.2378)	(0.1112)	(0.1625)	(0.1526)
STLOAN	0.3607	0.4460	0.0302	-0.0789	-0.0437
	(0.2663)	(0.3702)	(0.1705)	(0.2536)	(0.2199)
WAGE	-0.0798	-0.0997	0.0268	0.1146 **	0.0641
	(0.0511)	(0.0658)	(0.0327)	(0.0456)	(0.0410)
FOR_BRANCH	0.0332	-2.4972	-0.3675	0.8157	0.2359
	(1.5995)	(2.1615)	(0.7125)	(0.8552)	(0.8553)
FOR_EMP	42.2748 **	77.6527 **	17.8788 *	-2.6105	6.7518
	(21.2118)	(31.7772)	(9.4868)	(12.4718)	(11.3327)
FOR_INV	-0.5063	0.5267	-0.0772	0.1686	0.2356
	(0.3865)	(0.3795)	(0.1476)	(0.1818)	(0.1624)
FOR_LOAN	0.0485	-0.7049	0.3178 *	-0.0421	0.0036
	(0.3312)	(0.5758)	(0.1718)	(0.2431)	(0.2387)
TFP	-0.5318	-5.0289	-1.1761	0.3440	1.2884
	(7.3806)	(5.7492)	(2.3737)	(0.9744)	(2.3621)
BANKINFO†	2.8382 **	0.6886	1.4655	-0.0336	1.0355
	(1.4160)	(1.5599)	(1.1103)	(0.2954)	(1.0289)
TFP×BANKINFO†	1.7274	14.4149	8.8588	-3.6875	-6.3045
	(13.7284)	(13.6617)	(9.3470)	(14.2688)	(9.1479)
NUM_CLIENT	0.0008	0.0004	0.0001	0.0000	0.0002
	(0.0006)	(0.0007)	(0.0004)	(0.0006)	(0.0004)
# Obs	815	1,143	1,910	1,649	1,969
# Groups	213	275	483	434	454
Obs per group: min	1	1	1	1	1
avg	3.8	4.2	4	3.8	4.3
max	9	9	9	9	9
Wald chi2	41.33	22.84	164.84	82.65	40.6
Prob > chi2	0.249	0.9672	0.0000	0.0000	0.3147
Log likelihood	-157.3956	-197.99	-453.62	-323.76	-346.42
Likelihood ratio test of rho0=0	0	7.25	1.46	9.2	4.39
Prob >= chibar2	1	0.004	0.113	0.001	0.018
Year dummies	yes	yes	yes	yes	yes
Industry dummies	yes	yes	yes	yes	yes

Notes: Standard errors are in parentheses. ***, **, and * indicate significance at the 1, 5, and 10 percent level, respectively.

† The BANKINFO variable is measured for each destination region.

Table 7: Fixed-effect panel estimation results for intensive margin

Panel (a): All regions

	(1)	(2)
	LN_EXPORT	ΔLN_EXPORT
Intensive Margin	Coefficient	Coefficient
LN_NUMWORKER	0.1596	-0.4597 ***
	(0.2083)	(0.1744)
FLEV	-0.3610	-1.0596 *
	(0.6445)	(0.5894)
FBDEP	-0.2657	0.0972
	(0.3539)	(0.3608)
FLIQ	-0.0557	0.0253
	(0.1307)	(0.1336)
STLOAN	-0.0966	0.0247
	(0.1408)	(0.1402)
WAGE	0.0192	-0.0129
	(0.0271)	(0.0275)
FOR_BRANCH	0.7586	0.1181
	(0.4661)	(0.4290)
FOR_EMP	7.4139	-0.1965
	(5.5907)	(5.6848)
FOR_INV	0.4138 **	0.0531
	(0.1917)	(0.1541)
FOR_LOAN	0.0486	0.0039
	(0.0874)	(0.0798)
TFP	0.1745	-3.1451
	(2.2030)	(2.0943)
BANKINFO	-0.3234	-0.5169
	(0.4680)	(0.6068)
TFP×BANKINFO	-0.5957	6.9974 *
	(4.3403)	(4.2042)
NUM_CLIENT	0.0001	0.0000
	(0.0003)	(0.0003)
_cons	7.2424 ***	4.0855 ***
	(1.7397)	(1.4323)
# Obs	1,656	1,328
# Groups	426	389
Obs per group: min	1	1
avg	3.9	3.4
max	9	9
F	4.7	1.91
Prob > F	0	0.011
R-sq: within	0.0872	0.03
between	0.3209	0.0169
overall	0.247	0.0028
corr(u_i, Xb)	0.3668	-0.7657
Year dummies	yes	yes
Industry dummies	no	no

Notes: Standard errors clustered within a firm are in parentheses. ***, **, and * indicate significance at the 1, 5, and 10 percent level, respectively.

Table 7: Fixed-effect panel estimation results for intensive margin --- continued ---

Panel (b): Estimated coefficient for BANKINFO by destination region

	(1)	(2)	(3)	(4)	(5)
	Asia	North America	Central and South America	Africa	Oceania
Intensive Margin	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient
Dependent variable: LN_EXPORT					
BANKINFO	-0.4527	-0.4859	-2.3443	0.1132	-2.3285
	(0.5260)	(0.5162)	(2.6461)	(0.7668)	(1.3063)
# Obs	1,600	1,172	504	229	447
# Groups	415	348	261	147	199
Obs per group: min	1	1	1	1	1
avg	3.9	3.4	1.9	1.6	2.2
max	9	9	8	7	8
F	5.39	6.15	3.8	3.03	2.73
Prob > F	0	0	0	0	0.0002
R-sq: within	0.1024	0.37	0.29	0.33	0.16
between	0.2539	0.1355	0.1507	0.0185	0.0965
overall	0.1877	0.1298	0.1466	0.0468	0.1346
corr(u_i, Xb)	0.2644	0.0265	-0.1877	-0.3475	-0.035
Dependent variable: ΔLN_EXPORT					
BANKINFO	-0.1269	-1.1411 *	-2.0576	-2.8330 **	-6.1500 ***
	(0.7294)	(0.6456)	(2.6331)	(1.4032)	(1.7790)
# Obs	1,281	861	232	80	251
# Groups	381	291	103	48	117
Obs per group: min	1	1	1	1	1
avg	3.4	3	2.3	1.7	2.1
max	9	9	7	6	7
F	1.26	6.16	7.82	.	.
Prob > F	0.2057	0	0	.	.
R-sq: within	0.0225	0.49	0.40	0.67	0.17
between	0.002	0.3065	0.0167	0.0119	0.0267
overall	0.0008	0.3797	0.0729	0.02	0.0286
corr(u_i, Xb)	-0.7252	-0.3769	-0.6869	-0.9978	-0.6516
Year dummies	yes	yes	yes	yes	yes
Industry dummies	no	no	no	no	no

Notes: Standard errors clustered within a firm are in parentheses. ***, **, and * indicate significance at the 1, 5, and 10 percent level, respectively. Results for other explanatory variables not shown to conserve space. Most coefficients were found to be not statistically significant.