The Role of Foreign Banks in Trade

by

Stijn Claessens, Omar Hassib, and Neeltje van Horen[*]

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Abstract

This paper provides evidence that foreign banks through their "brick and mortar" operations play an important role in facilitating trade. Combining data on bilateral, sectoral trade with bilateral data on foreign bank presence for 95 exporting and 122 importing countries for the period 1995-2007, we show that, controlling for the impact of domestic financial development, local presence of foreign banks, especially from the importing country, is associated with higher exports in sectors more dependent on external finance. Furthermore, the entry of a bank from an importing country boosts bilateral exports disproportionately more in external finance dependent sectors, especially when banks active in trade finance enter countries with relative low financial development and weak informational environments. Our findings are consistent with foreign banks facilitating trade over and beyond what domestic banks do through external financing and (transfer of) specialized knowledge and technology, with important real economic benefits.

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1.   Introduction

The global financial crisis has shown how internationally active banks can transmit shocks across borders (e.g., Cetorelli and Goldberg, 2011; Ongena, Peydro, Van Horen, 2013). This has led to a lively debate in both academic and policy circles on the risks and benefits of financial globalization (e.g., Obstfeld, 2015, IMF, 2015 and IIF, 2014). Much of recent analysis, however, has focused on understanding the risks associated with financial globalization, while the benefits have received much less attention. In this paper we focus on one potentially important benefit: the role foreign banks through their "brick and mortar" operations can play in facilitating trade.

Exploiting data for a large sample of exporting and importing countries, we show that the local presence of foreign banks, especially from the importing country, is associated with higher exports in sectors more dependent on external finance, with effects over and above those of domestic financial development. Furthermore, the entry of a foreign bank from the importing country boosts bilateral exports disproportionally in external finance dependent sectors, especially when banks active in trade finance enter countries that are financially less developed and have weaker informational environments. As trade is an important engine for economic growth, especially for developing countries (e.g., Dollar and Kraay, 2004), our findings indicate that foreign banks can have important real economic benefits for many countries.

Building on the theoretical work of Kletzer and Bardhan (1987), the literature has long argued that financial development matters especially for firms that trade. Trade often involves substantial upfront sunk and fixed costs, like learning about profitable export opportunities and setting up foreign distribution networks. In addition, long time lags associated with international transactions imply that working capital needs are often higher. Furthermore, the additional risks of selling products overseas combined with exporters having limited capacity to evaluate such risks, make them often turn to banks for, besides financing, payment insurance and guarantees. Indeed, substantial empirical evidence exists that shows that greater financial development helps increase trade (for a review, see Foley and Manova, 2014).

It is an open question, however, to what extent the type of bank, i.e., foreign or domestic owned, matters for trade. Several arguments can be made why especially foreign banks might boost trade over and above what domestic banks can do. First, providing finance for trade tends to be a specialized business as it often involves specific products, like letters of credit, and the need to hedge currency risk. This business is mostly done by a limited set of banks that have the

required size, global focus and reach.[1] As foreign affiliates of these banks can utilize the expertise of their parents, they likely have an advantage providing finance specific for trade, especially compared to domestic banks in financially less developed countries.

Second, foreign banks have (under certain circumstances) been found to introduce new and better technologies and to increase competition in the local banking system. This in turn increases the quality and reduces the costs of financial intermediation and as a result improves access to finance for (certain types of) firms (for a review, see Claessens and Van Horen, 2013). As access to finance is especially important for firms that trade, the presence of foreign banks may especially benefit these firms and therefore boost exports.

Finally, foreign banks might be better able to reduce risks specific to firms that trade. For one, the enforcement of international contracts and payments tends to be more difficult than that of domestic ones.[2] Foreign banks present in the exporting country may help overcome some of these problems and can provide a substitute commitment technology if needed (e.g., provide (additional) insurance through guarantes). Indeed, in a theoretical model Olsen (2013) shows that bank linkages can help guarantee payments and enforce cross-border contracts. Also, through its international network, a foreign bank can likely better than a domestic bank assess risks at both the exporter and importer side of a transaction and thus reduce information asymmetries.[3] As such, foreign banks may be more willing to lend to firms that trade which can boost exports, especially to the home country of the bank itself.[4]

If the abovementioned channels contribute to reducing the cost and increasing the availability of external finance for exporting firms, then the presence of foreign banks, especially those from the importing country, should have a positive impact on exports over and above

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[1] See Niepmann and Schmidt-Eisenlohr (2013) and Del Prete and Federico (2014) for a description of the market structure for trade finance in the US and Italy respectively.

[2] To deal with these risks, various forms of financing of trade – open account, cash in advance or letter of credit – are utilized, with the specific form used found to importantly depend on the contracting environment and financial market characteristics in both the exporting and importing country (Antras and Foley, forthcoming; Schmidt-Eisenlohr, 2013).

[3] Ahn (2011) argues that, as a letter of credit allows the bank of the exporter to transfer the risk of non-payment by the importer to the importer's bank, the exporter's bank replaces its inferior screening technology over the importer with the superior technology of the importer's bank, thereby reducing the overall effect of information asymmetry. A foreign bank from the importing country can effectively do the same.

[4] In the theoretical model of (domestic) interregional trade of Michalski and Ors (2010), for example, a bank charges a lower premium for trade-related projects when present in both regions compared to projects involving trade between regions when not present in both, since presence in both regions enables the bank to better assess risks through collecting and sharing information. This same argument applies to foreign banks.

general financial sector development. To examine this, we combine detailed data on bilateral, sectoral trade with bilateral data on foreign bank presence for 95 exporting and 122 importing countries for the period 1995-2007. As foreign bank presence varies importantly among exporting countries and within a country over time (Figure 1), we can exploit both cross-section and time-series variations in our dataset. Furthermore, there is little relationship between domestic financial development and the share of foreign banks, i.e., a country can be financially highly developed or underdeveloped with few or many foreign banks present (Figure 2).[5] This allows us to examine the impact of foreign bank presence over and above financial sector development.

We present two sets of evidence demonstrating that foreign banks facilitate trade. First, we document the existence of a positive relationship between foreign bank presence and exports in sectors more dependent on external finance and show that this relationship is particularly strong when a foreign bank from the importing country is present. We build here on the earlier literature on the role of financial development in firm growth and utilize differences across sectors on the expected impact of increased external finance availability. The availability of outside funding is shown to be more important for the performance of industries that are naturally more dependent on external finance (Rajan and Zingales, 1998).[6] As such, if foreign banks facilitate trade through greater availability of external financing, and especially of the type specific to trade, then their presence should disproportionately increase exports in those sectors more dependent on external finance. Using sectoral exports for 28 sectors also allows us to control for all (time-varying) country factors that might simultaneously influence foreign bank presence and exports.

Our results show that, controlling for domestic financial development, foreign bank presence is associated with greater exports in those sectors naturally more intensive in their external financing needs and that this effect is stronger when a foreign bank from the importing country is present, both at the intensive and extensive margin. An increase in general foreign bank presence in terms of asset shares by one standard deviation means exports in sectors at the 75th percentile of the distribution of external financing dependency are 7.3 percentage points

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[5] Claessens and van Horen (2014b) show that foreign bank presence can be explained by various factors, only one of which is a country's financial development.
[6] See further, among many others, Braun (2003), Claessens and Laeven (2003), and Fisman and Love (2007).

higher than in sectors at the 25th percentile. A similar increase in the presence of foreign banks from the importing country implies an increase of 9.1 percentage points. These results are robust to adding various control variables, including other forms of financial integration, and using different estimation techniques.

While exploiting cross-sectoral variation in external financing needs importantly reduces the risk that our results are biased due to endogeneity, some concerns might remain. For example, foreign banks may enter a country in which demand for loans is higher due to stronger growth in exports by firms in external finance dependent sectors. In this case, foreign banks do not "cause" the export growth. We therefore conduct an event study, similar to Trefler (2004) and Manova (2008), as a test on the causal relationship between foreign banks and subsequent trade developments. Specifically, we estimate the change in sectoral exports from exporting country i to importing country j between the years before and after a bank from importing country j for the first time enters exporting country i. Again, we exploit the idea that bilateral exports in sectors more dependent on external finance should be especially sensitive to the entry of a bank from the importing country. This procedure also effectively controls for all variations in initial conditions at the country pair-sector level at the time of entry.

Studying the impact of 187 entries by banks from 65 importing countries in 76 exporting countries that took place between 1995 and 2004, we show that exports increase disproportionately more in sectors more dependent on external finance when a bank from the importing country enters the exporting country, both at the intensive and extensive margin. Between a sector in the 25th percentile of external finance dependency distribution and one in the 75th percentile, export growth after the entry of a bank from the importing country is 11.7 percentage points larger. Furthermore, this effect is especially pronounced when a bank active in trade finance enters an exporting country with relative low levels of financial development and quality of information. This suggests that (transfer of) specialized knowledge and technology for trade financing is an important reason why foreign banks facilitate trade over and beyond what domestic banks can do.

Our paper adds to several strands of the literature. First, it adds to the literature on the domestic impact of foreign banks. Foreign banks have in general been found to lower the overall costs and increase the quality of financial intermediation, both directly and through competitive effects on domestic banks (Claessens, Demirguc-Kunt and Huizinga, 2001; Claessens, 2006,

reviews). Foreign banks also help increase access to financial services of households and firms and enhance the financial and economic performance of their borrowers (Clarke, Cull, Martinez Peria and Sanchez, 2003, Martinez-Peria and Mody, 2004). In terms of overall impact, Bruno and Hauswald (2013) find that foreign bank presence increases real economic growth.

The magnitude of these effects of foreign bank presence though are found to depend on a number of factors. For one, the overall economic and institutional development of the host country and the foreign banks' market share matter (Demirguc-Kunt, Laeven and Levine, 2004; Beck and Martinez Peria, 2008; Claessens and Van Horen, 2014a). And foreign bank presence seems to benefit especially through external financing firms that are larger and informationally less opaque (Mian 2006). Indeed, in countries at very low levels of economic development, foreign bank presence has been found to actually reduce overall credit because of adverse selection effects (Detragiache, Gupta and Tressel, 2008; Gormley, 2010). At the same time, Giannetti and Ongena (2009) find that in Central and Eastern Europe, having a relationship with a foreign bank stimulates firm-level sales and asset growth of young, unlisted firms, especially larger ones. We add to this literature by showing that the presence of foreign banks has a beneficial impact on the real economy by facilitating international trade. But we also show, exploiting our large sample of countries, that these effects vary importantly across exporting countries and types of foreign banks.

Second, our paper relates to the growing literature on the relationship between finance and trade. Besides Kletzer and Bardhan (1987), many theoretical papers (e.g., Beck, 2002; Matsuyama, 2005; and Wynne, 2005) show that better developed financial systems imply a comparative advantage in trade for industries that rely more on external finance. And substantial empirical evidence indicates that domestic financial development importantly facilitates trade, both at the country- (Beck, 2002, 2003; Svaleryd and Vlachos, 2005; Hur, Raj and Riyanto, 2006; Manova, 2013; Becker, Chen and Greenberg, 2013) and firm-level (Greenaway, Guariglia and Kneller, 2007; Muuls, 2008; Manova, Wei and Zhang, forthcoming; Berman and Hericourt, 2010; Minetti and Zhu, 2011), with studies also using sectoral external dependencies to identify the channel.[7]

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[7] Some papers (Do and Levchenko, 2007; Braun and Raddatz, 2008), however, point out the possibility of reverse causality: higher export demand could translate into higher observed levels of private credit.

The role of banks globally active in facilitating trade, however, has so far received little attention. Hale, Candelaria, Caballero and Borisov (2013) find that new connections between banks established through participation in syndicated lending in a given country-pair lead to an increase in trade in the following year. And Bronzini and D'Ignazio (2012) find that Italian firms are more likely to export to a country if its bank has an affiliate in that country.[8] We add to this literature by showing for a large number of countries that "brick and mortar" presence of foreign banks can promote trade, with a specific role for banks globally active in trade finance, and that effects go beyond FDI and cross-border lending linkages.

Finally, our paper relates to the broader literature on the nexus between finance and growth. Following the seminal work of King and Levine (1993a, b) a number of papers have shown that financial development furthers economic growth (Demirguc-Kunt and Maksimovic, 1998, Levine and Zervos, 1998; Rajan and Zingales, 1998; Beck, Levine and Loayza, 2000; see Levine, 2005 for a review). Studying mainly US data, a number of studies have highlighted different channels through which this growth can take place. These include: increased competition among banks (Jayaratne and Strahan, 1996), growth in entrepreneurial activity among firms (Black and Strahan, 2002), increased entry of new firms (Cetorelli and Strahan, 2006; Kerr and Nanda, 2009), and promoting labor participation of minorities (Black and Strahan, 2001; Levine, Rubinstein, and Levkov, 2014). Building on this literature, Michalski and Ors (2012), studying inter-state trade patterns and financial deregulation in the US, show that when a financial system becomes more integrated this has a positive impact on (domestic) trade. They argue that this is due to the comparative advantage that multiregional banks have in collecting and sharing information internally. Our study adds to this by documenting that global financial integration through the local presence of foreign banks can generate economic growth by facilitating international trade.

The remainder of the paper is structured as follows. The next section describes the different data sources we use and combine. Section 3 presents the methodology and the empirical findings related to our panel analysis and section 4 related to the event-study respectively.

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[8] While not explicitly studying the role of globally active banks, Niepmann and Schmidt-Eisenlohr (2014) find that a shock to the supply of letters of credit has a larger impact on US exports to countries where fewer US banks are active. In addition, Manova (2008) shows that after equity market liberalization exports increase disproportionately in external finance dependent industries, which suggests that foreign equity financing also has a positive impact on trade.

Section 5 explores the channels through which foreign banks might facilitate trade. Section 6 concludes.

2.   Data

We want to examine to what extent the presence of foreign banks facilitates firms' exports and what mechanisms may play a role. To this end, we need to combine sectoral and bilateral data on exports with detailed and bilateral data on foreign bank presence. We also need sectoral data on external financial dependency. We describe these data in detail here, leaving the description of the control variables we use to the next section.

We obtain data on bilateral trade flows for 134 countries at the 3-digit ISIC industry level for 28 manufacturing sectors from the UN COMTRADE database for the period 1995-2007. We purposely end our sample period in 2007 as to avoid our results being influenced by the global financial crisis. As expected, the value of exports and number of trade partners differ greatly across countries and sectors. Appendix Table 1 reports for each exporting country total exports for the 28 manufacturing sectors, the number of different sectors a country exports in, and the number of trading partners (all as of 2007).

To measure foreign bank presence we use the bank ownership database constructed by Claessens and Van Horen (2014a). The database contains ownership information of 5,324 banks that were active for at least one year between 1995 and 2009 and that reported financial statements to Bankscope. It covers 137 countries and coverage is very comprehensive, with banks included accounting for 90 percent or more of banking system assets. A bank is considered foreign owned if 50 percent or more of its shares is owned by foreigners, with residence of its main owner determined as the country for which the total shares held by foreigners is the highest.[9] To determine the importance of foreign banks in financial intermediation, we match ownership data with balance sheet data provided by Bankscope.

The bank ownership database has two important features that are crucial to our analysis. First, the ownership information is captured at each point in time. This means we can determine the importance of foreign banks in financial intermediation in the exporting country for each year

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[9] This implies that a foreign bank may be considered French owned, even though French investors only hold 20 percent while German and UK shareholders each hold 15 percent. In most cases, however, a foreign bank is majority owned by one parent bank. For further details see Claessens and Van Horen (2014a).

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in our sample period, a feature that we will exploit in our panel regression approach (Section 3). Second, for each foreign bank and for each year, we know the country in which its parent is headquartered. This allows us to determine the importance of foreign banks from each importing country in financial intermediation in the exporting country for each year, which we also exploit in Section 3. It also allows us to pinpoint the exact year in which a bank from a particular importing country entered a particular exporting country for the first time, which we exploit in our event study in Section 4. Using the information on what bank enters in which countries, we lastly study whether or not the foreign bank is active in trade finance, along with exporting countries characteristics, has a differential impact on export growth to examine the channels through which foreign banks facilitate trade (Section 5).

We exclude a number of countries from our sample: offshore centers, as very specific factors may drive a bank's decision to enter those;[10] and exporting countries for which the share of banks with asset information available from Bankscope is less than 60 percent in at least one year between 2005 and 2007.[11] This leaves us with a final sample of 95 exporting and 122 importing countries. Appendix Table 2 provides a list of all exporting countries in our sample, the share of foreign banks (in assets and numbers), the number of foreign banks present, and in how many different countries the parent banks are headquartered (all as of 2007).

In 2007, 1,043 foreign banks headquartered in 77 different home countries were active in our sample of exporting countries. The importance of foreign banks in that year varies greatly by exporting country and ranges from a zero (e.g., Ethiopia) to a 100 percent share, as for some other African countries. On average, 11 foreign banks from six different home countries are present in an exporting country. In most countries where foreign banks are present, banks from several different home countries are active and only in very few countries (only 11, or just 10 percent of the countries in our sample) are only foreign banks from one country present. In 78 percent of the 11,590 possible exporting-importing combinations in our sample is at least one foreign bank present, yet in only six percent of these pairs is it a bank headquartered in the importing country. The number of foreign bank entries that take place over the sample period ranges by exporting country from 0 to 39 with an average of 7 entries.

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[10] We define the following countries as offshore centers: Andorra, Antigua and Barbuda, Bahamas, Bahrain, Barbados, Bermuda, British Virgin Islands, Cayman Islands, Cyprus, Liechtenstein, Mauritius, Netherlands Antilles, Panama, Seychelles and Singapore.

[11] Including these countries does not affect our main results.

Both our panel as well as our event study importantly rely on exploiting industry differences with respect to their dependency on external finance, as done in much prior literature, also that studying the role of finance in promoting exports (e.g., Manova, 2013). For technological reasons innate to the manufacturing process, producers in certain industries incur higher up-front financing needs that cannot be generated internally, thus typically requiring more external finance (Rajan and Zingales, 1998). This industry characteristic is widely viewed as sector-specific, technologically-determined innate to the manufacturing process and unlikely to be determined by financial development or the presence of foreign banks. At the same time, if foreign banks play a role in boosting exports through providing external financing, then this should affect firms in those sectors highly dependent on external finance more.

We follow this literature and define external financial dependency as the fraction of total capital expenditure not financed by internal cash flows from operations. Even though these sectoral characteristics could differ across countries, the measure is typically constructed using US data.[12] We use the values as provided by Manova (2013) who uses data for all publicly-listed US-based companies available in Compustat averaged over 1986-1995. Appendix Table 3 lists for all sectors in our sample the ratios used for external finance dependency. Table 1 provides some summary statistics on the key dependent and independent variables, while Appendix Table 4 provides the detailed description and the sources of the variables used in our analysis.

3.   The role of foreign banks in trade: panel analysis

Our empirical analysis proceeds in two steps. In this section we establish that, controlling for a number of country characteristics including domestic financial sector development, a positive relation exists between the presence of foreign banks in the exporting country and the relative magnitude of its exports in sectors dependent on external finance. In Section 4, we use an event-study of the impact of foreign banks' entry on changes in trade which allows for a causal interpretation of the role of foreign banks, while in section 5 we explore the heterogeneity in foreign banks and exporting countries to detect specific channels.

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[12] This is for three reasons. First, as the US has one of the most advanced financial systems, the behavior and choices of firms likely reflect optimal choices of external financing and asset structure, and not financing constraints. Second, detailed firm-level data needed to construct the variables are not available for many countries. Finally, for our empirical strategy only a relative ranking of sectors across the two dimensions is needed; therefore using US data is not a problem if industries' relative ranking is the same across countries even if the exact magnitudes may vary.

3.1 Empirical methodology

We start our analysis by examining whether a higher presence of foreign banks is associated with a higher level of exports in sectors more dependent on external finance. To this end, we regress the log of the value of exports from country i to country j in 3-digit ISIC sector s at year t, on a measure of foreign bank presence interacted with the industry measure of external finance dependency. Our identification therefore rests on allowing the impact of foreign bank presence to vary by sectors that differ with respect to the dependency on external finance. If foreign banks facilitate trade through greater availability of external finance, then their presence should disproportionally benefit exports in those sectors more dependent on external finance. Our focus is mainly on the intensive margin, but we show that our results also hold when studying the extensive margin only or the two margins together.

We define foreign bank presence (FB_{it}) as the share of the assets of all foreign banks active in exporting country i in total bank assets in exporting country i at time t. The asset share is our preferred measure as it captures the importance of foreign banks in financial intermediation in an exporting country (i.e., there can be many foreign banks present in a country, but if they are small, niche players then their role in financial intermediation is more marginal). Unfortunately, asset information is only reliable available from 2005 onwards, reducing our sample period to only 2005-2007. Therefore, we also use two alternative ways to define FB_{it}. The first is a dummy which is one if at least one foreign bank is present in exporting country i at time t. The second is the share of all foreign banks present in the total number of banks active in exporting country i at time t. Both these variables are available over the full sample period, 1995-2007. In order to examine whether the presence of foreign banks from importing country j has an additional effect over and above general foreign bank presence, we also include a variable capturing the importance of importing country foreign banks (IFB_{ijt}). This variable is defined the same way as FB_{it}, except that now only foreign banks from the importing country are taken into consideration in the nominator.

As Manova (2013) and others have shown, countries with a higher level of financial development tend to export relatively more in sectors that require more outside capital. We control for this by interacting the level of financial development, captured by private credit to GDP (as is standard in the literature), with the sector's measure of external finance dependency.

Our specification therefore allows us to examine the role of foreign banks in facilitating trade over and above the impact of domestic financial development.

Our baseline model is as follows:

$$lnE_{ijst} = \beta_1 FB_{it} \cdot extfin_s + \gamma_1 IFB_{ijt} \cdot extfin_s + \gamma_2 IFB_{ijt} + \delta_1 FD_{it} \cdot extfin_s$$
$$+ \kappa' X_t + \epsilon_{it} + \mu_{jt} + \varphi_s + \eta_{ijst},$$

where subscripts i and j denote exporting and importing country respectively, and s and t denote sector and year respectively. The dependent variable E_{ijst} equals the (log of) exports from country i to country j in sector s in year t ; FB_{it} is either a dummy if at least one foreign bank is present in the exporting country at time t, or the share of foreign banks in the exporting country i at time t in terms of numbers or assets; IFB_{ijt} is defined the same way as FB_{it} except that only foreign banks from importing country j are taken into account; FD_{it} captures financial development in the exporting country i at time t; $extfin_s$ measures the external financing dependency of sector s; k' is a coefficient vector, and X_t is a matrix of control variables which, in the base line specification, includes (the log of) the distance between the exporting and importing country; ϵ_{it}, μ_{jt} and φ_s are vectors of exporter-year, importer-year and industry-fixed effect coefficients, respectively; and η_{ijst} is the error term. All regressions are estimated using OLS and standard errors are clustered by exporting-importing pairs.

The inclusion of exporter-year and importer-year fixed effects allows us to control for all (time-varying) exporting country factors that might simultaneously influence foreign bank presence (or financial development) and the level of exports, including through (time-varying) changes in demand at the importer side. Real GDP in both exporting and importing country, variables commonly used in the empirical trade literature, are subsumed in these fixed effects. Industry fixed effects allow us to control for other (time-invariant) sector characteristics that might affect trade patterns. Altogether, the inclusion of this extensive set of fixed effects should importantly reduce concerns that our results are driven by omitted variables or reverse causality. In our robustness tests, however, we address possible remaining concerns more formally.

3.2   Baseline results

In Table 2 we provide the results based on our baseline regression model. Using the full, 1995-2007 period, we find (column 1 and 2) that countries with foreign bank presence, either captured using a dummy for the presence of at least one foreign bank or the share of foreign banks in terms of numbers, export relatively more in sectors more dependent on external finance. When we use the share of foreign bank presence in terms of assets for the 2005-2007 period (column 3), we find the same result. These effects are clearly in addition to the effects of general financial sector development, which in itself also increases exports for those sectors more financially dependent (with the coefficients for those variables not differing much from those obtained by Manova, 2013).

In the next three regressions (columns 4-6), we allow the impact of foreign banks from the importing country to differ from that of general foreign bank presence. In each of the three specifications we find that the positive relationship between the presence of foreign banks and exports in sectors more dependent on external finance is more pronounced when the foreign banks present are headquartered in the importing country. (Note that the coefficients on general foreign bank presence do not change in magnitudes, so this is an additional effect.) In the next two sections we will further examine the impact of these foreign banks from the importing country, both to establish a causal relationship between foreign bank presence and trade, and to provide more insights in how foreign banks facilitate trade.

The results so far suggest that the presence of foreign banks provides for additional financing to firms more dependent on external finance, which allows them to increase their exports. Effects are economically significant: an increase in foreign bank presence in terms of assets by one standard deviation means exports in the sector at the 75th percentile of the distribution of external financing dependency are 7.3 percentage points higher than in the sector at the 25th percentile of the distribution. An increase in the presence of a foreign bank from the importing country with one standard deviation implies an increase between the 25th and the 75th percentiles of 9.1 percentage points. While economically a smaller effect compared to general domestic financial development (29.4 percentage points for one standard deviation), these increases are by no means marginal.

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3.3   Robustness tests

We next conduct a number of robustness tests in which we include various other country variables that may affect exports through interactions with the industry measure of external finance dependency, consider also the extensive margin, and use alternative estimate techniques. Results are reported in Table 3, where column 1 repeats the base regression results of Table 2, column 6. In general, the results show that our findings are robust to adding additional fixed effects and control variables, to different ways of clustering, to varying the dependent variable, and to using alternative estimation methods.

In the first robustness regression (column 2) we include, besides the exporter-year fixed effects, importer-year-industry fixed effects, i.e., a full matrix of all 122 importers times 28 sectors times the three years. This way we control for any demand and price effects that may vary by importer and by sector. The statistical significance and size of the coefficient of the interaction of external financial dependence with foreign bank presence remains largely unchanged, while the coefficient of the interaction with the presence of foreign banks from the importing country becomes somewhat smaller. In the second robustness test (column 3), we include importer-exporter fixed effects, i.e., a full matrix of pairwise dummies, thus controlling for any differences in cultural similarities or other institutional factors between importer and exporter country that might simultaneously affect trade costs and the presence of foreign banks (from the importing country). The significance and size of the interaction of external financial dependence with foreign bank presence remains again unchanged, as does the interaction with the presence of foreign banks from the importing country (it only becomes somewhat smaller and less significant). Results thus remain supportive of the hypothesis that foreign bank presence facilitates trade.

Countries differ, besides in their domestic financial development and the presence of foreign banks, in various other ways that can affect their export performance. While the various fixed effects we use already control for any time-invariant and time-varying exporting country characteristics, there could still be country characteristics that interact with sectoral characteristics to affect exports. Therefore we include, in line with the general law and finance literature, the exporter's country's level of corruption and the prevalence of the rule of law in the country as key (institutional) development indicators and interact these two variables with the sectoral measure of external finance dependency. We find (column 4) that the better export

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performance also comes about in part through easier access to external financing in general associated with a better rule of law and less corruption (i.e., not necessarily from the formal banking system). Importantly, the results on the role of foreign bank presence are not affected. While the coefficient for the interactions of foreign bank presence and financial development with external finance dependency becomes somewhat smaller than in the base regression, this is likely because other two country variables assume some of the beneficial effects of financial development.

Countries might also differ in their natural endowments which can affect their export performance. For example, a country rich in human capital may have a comparative advantage to export more in a sector that relies naturally more on human capital. Similar to Manova (2013), we therefore use the following three country factor endowments: human capital intensity, physical capital intensity, and natural resource intensity. We interact these with the corresponding sectoral intensities, where the benchmarks are, similar to the external finance dependency measure, obtained from US corporate data. Regression results (column 5) show indeed that more human capital and natural resource intensive sectors export more in countries that are more endowed with capital and natural resources. Most importantly, however, even with these extensive controls and interactions, the positive relationship between foreign bank presence on export performance in sectors more dependent on external finance are reconfirmed, with the two interaction coefficients equally statistically significant, albeit somewhat smaller compared to the base regression.

Next, we address the concern that our main result might be driven by other financial linkages that also help firms export more. To this end, we include the stock of general FDI in and cross-border bank loans to the exporting country (both as a share of GDP) and interact them with our sectoral measures of external financial dependency. Results (column 6) show that in countries with greater FDI, exports are indeed larger in sectors more dependent on external finance. The effects of foreign bank presence on export performance, however, are reconfirmed.[13]

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[13] The parameter capturing the impact of general foreign bank presence becomes somewhat smaller compared to the base regression, suggesting that the share of foreign banks and the stock of general FDI are somewhat correlated. Indeed, Poelhekke (2014) shows that the presence of a foreign bank tends to attract non-financial MNEs from the same home country (i.e., firms follow their banks) and that this effect is especially strong in countries where investing is more hazardous. If these MNEs subsequently export back to their home country, this can be another channel through which foreign banks can facilitate trade. Since the impact of foreign banks from the importing country becomes slightly stronger, however, this does not appear to drive our regression results.

Interestingly, the ratio of cross-border loans to GDP interacted with sectoral external finance dependency is not positive. It suggests either that cross-border loans are not used as much for trade finance or that foreign banks play an important additional role by being locally present (or both).

We also want to explicitly control for the possibility that foreign bank presence might not directly provide financing for exports (for those firms in sectors that are more dependent on external finance), but rather helps increase the general economic activity of firms, both those domestically- and internationally-oriented. It could for example be that the entry of a foreign bank reduces credit constraints for all firms, as found in many papers, without scaling up exports especially. We therefore include the (log of) the number of local establishments in the country by sector and year (the sample becomes somewhat smaller as we do not have this information for all countries). The results (column 7) show that the size of the interaction of overall foreign bank presence with financial dependency becomes only slightly lower (and its significance does not change), indicating that we are not just capturing cross-border sales increasing similar to domestic sales. The coefficient for the interaction of the presence of foreign banks from the importing country, while still positive, is less precisely estimated, but still significant at the 15 percent level.

So far we have clustered standard errors at the exporter-importer pair level to allow errors to be correlated within each country pair. However, one could argue that errors might be correlated within exporting countries and more specifically within each sector in each country. To make sure our results are not affected by the specific choice of clustering, we re-estimate our baseline model and allow for clustering at the exporting-industry level. The results (column 8) show that our result is not affected by the choice of clustering as all significance levels remain the same as in the baseline.

Until now we have focused on the intensive margin, i.e., we examined whether the level of bilateral, sectoral exports is higher in exporting countries with a greater presence of foreign banks (from the importing country), conditional on the fact that export takes place between the two countries in that sector. However, it is also of interest to examine to what extent the presence of foreign banks affects the selection into exporting, i.e., the extensive margin. To this end, we construct a dummy variable which is one if country i exports to country j in sector s at time t. For 52 percent of all observations exports are positive. We estimate our model using Probit, using

again exporter-year, importer-year and industry fixed effects, and clustering standard errors by exporter-importer pair. The results (column 9) show that countries with a higher presence of foreign banks are more likely to export to a given market in sectors more dependent on external finance. This effect is, again, more pronounced when foreign banks from the importing country are present.

We prefer to study the intensive and the extensive margin separately as the decision to intensify exports when exports are already taking place is likely different from the decision to start exporting to a particular market in the first place. An alternative approach, however, is to estimate both decisions jointly. To this end, we do not make the dependent variable the log of the value of exports but rather its level (i.e., we keep the zeroes). We estimate this model using Poisson Pseudo ML instead of OLS as Poisson is ideally suited for fixed-effect-type analysis of count panel data models (Wooldridge, 2002; Santos Silva and Tenreyro, 2006). The results (column 10) show again that a higher foreign bank presence is significantly associated with larger exports in sectors more dependent on external finance. However, in this case the additional impact of the presence of foreign banks from the importing country is only significant at the 15 percent level.

4.   The role of foreign banks in trade: event study

4.1   Empirical methodology

While exploiting the cross-country and time-series variation in foreign bank presence and the cross-sector variation in external financing needs importantly reduce the probability that our results are biased due to endogeneity, some reverse causality concerns might nevertheless remain. For example, foreign banks may enter a country in which demand for loans is higher due to growth in exports by firms in external finance dependent industries. We therefore also conduct an event study similar to Trefler (2004) and Manova (2008). This approach allows us to isolate the impact of foreign banks on trade from changes over time within the exporting country and provides a pure test of the causal relationship between changes in presence of foreign banks and trade.

In almost all exporting countries in our sample, at least one foreign bank was already active in 1995, the start of our sample period. Over the course of our sample period, however, banks entered in many countries that were headquartered in countries from which no bank was

yet present in the exporting country. As such, entry of a foreign bank meant a new bilateral bank link was established. These events allow us to study the change in sectoral exports to the importing country in the years before and after a bank from the importing country enters for the first time the exporting country. Studying the growth in sectoral exports between before and after entry effectively removes all sector-country pair fixed effects and controls for variations in initial conditions at the sector-country pair level at the time of entry. And using growth rates at the sectoral level allows us to exploit again the idea that bilateral exports in sectors more dependent on external finance should be especially sensitive to the entry of a bank from the importing country. As such, this approach provides for an unbiased estimate of the causal impact of foreign banks on trade.

To assure we have sufficient years after the event and also to avoid the trade collapse in the wake of the global financial crisis to affect our results, we only consider foreign bank entries that took place between 1995 and 2004. For our sample of exporting countries, we identified 187 cases in which such a new bilateral link was established. These entries took place in 76 different exporting countries and involved banks headquartered in 65 different importing countries. In Section 5 we will use differences with respect to a number of characteristics of both the exporting country and parent bank to gather more insights regarding the channels through which foreign banks can facilitate trade.

Since it can take some time for the impact of foreign bank entry on exports to materialize, we define in our baseline regression the dependent variable as the difference in (the log of) the average values of exports from country i to country j in the 3-digit ISIC sector over the three year window after the entry of the bank from country j in country i compared to the three year window before. By taking the three-year averages after and before the event, we assure that our results are not affected by transient movements in trade. In one of our robustness test, we also look at the difference between the value of exports four years after the event and in the year leading up to the event. To make sure our results are not affected by large outliers we drop outliers at the 1th and 99th percentile.[14] Our baseline model for the event study is thus as follows:

$$\Delta E_{ijs} = \alpha + \beta_1 extfin_s + \epsilon_t + \eta_{ijs},$$

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[14] Results are robust to winsorizing at the 1st and 99th percentile and not excluding outliers.

where subscripts *i* and *j* denote exporting and importing country respectively, and *s* denotes sector. The dependent variable ΔE_{ijst} equals the difference in the (log of) average exports from country *i* to country *j* in sector *s* between *(t+1, t+3)* and *(t-1, t-3)*; $extfin_s$ measures the external financing dependency of the sector *s*; and η_{ijs} is the error term. Since the foreign bank entries from the various importing country take place in different years, we also include entry-year fixed effects (ϵ_t). Unless otherwise specified, all regressions are estimated using OLS and standard errors are double clustered, at the exporter and importer country level.

4.2   Results

As Table 4 shows, the beneficial impact of foreign banks on trade is confirmed even in this econometrically demanding set-up. The constant in the base results (column 1) shows that within three years after entry of a foreign bank from the importing country, exports to the same importing country tend to grow by at least 27.1 percent in general. More importantly, as the significantly positive coefficient on the sectoral external financing variable shows, they tend to grow faster when the sector is more dependent on external finance. This additional effect is economically very significant: if one moves from a sector in the 25th percentile of external finance dependency distribution to one in the 75th percentile, export growth after the foreign bank enters is 11.7 percentage points larger, which, compared to the mean growth rate, translates into a 35 percent higher growth rate (the mean growth rate is 35 percent). The contribution of foreign banks to increasing exports thus importantly comes about through relaxing external financing constraints.

Of course, exports could be growing at a normal rate of 27 percent, so one cannot attribute the estimate for the average effect necessarily to the entry of the foreign bank (alone). Therefore, we adjust in column (2) for the possibility of a trend by making the dependent variable the difference between the growth rate during a "placebo-event" three years prior to the actual entry and the growth rate between the three years before and after the actual entry. As the constant is no longer statistically significant, this regression shows that entry of a bank from the importing country does not raise the growth rate for sectors with zero external finance dependency. The effect that runs through the external dependence channel remains, however, and is again economically large: if we move from the 25th to the 75th percentile of external finance

dependency then the growth rate differential is 6.6 percent (which is substantial compared to the average incremental growth rates of 7 percent). The fact that the slope on external finance dependency is lower than without the trend correction suggests that exports in sectors more dependent on external finance were growing faster in the first place, maybe facilitated by domestic financial sector development. Nevertheless, there remains a substantial additional effect of foreign bank entry related to the easing of external financing constraints.

In some countries, foreign banks entered directly after a banking crisis, often as countries opened up their financial system and weak banks were sold. Therefore, it is possible that our baseline is upward biased since the crisis likely lowered trade in external finance dependent industries in the pre-entry, crisis period. In other words, it is possible that the increase that we observe is not due to the entry of a foreign bank from the importing country, but rather due to past problems in the domestic banking sector depressing earlier exports. Following the crisis dating of Laeven and Valencia (2013), we identify all entries which took place within three years after a crisis. When we drop these (22) entries, the significance of external financial dependence does not change and the parameter even becomes slightly larger (column 3).

Another potential driver of our results could be that entries coincide with the liberalization of the equity market in the exporting country which allows foreign capital to enter the country and which in itself has been found to have a positive impact on trade (Manova, 2008). However, if we drop those exporting countries where the equity market was liberalized in the three years before or after the entry of the foreign bank from the importing country, our baseline result still holds and again becomes stronger (column 4).

An issue with any event study is that one has to take a stance on the amount of time it takes for the impact of the event to materialize. To check that our result is not dependent on this choice, we also examine the growth in sectoral, bilateral exports over a five year period (1 year before entry and 4 year after entry). Again, we find that results do not change (column 5). A move from 25th to 75th percentile external financial dependence increases growth then by 10.6 percentage points, which is 21 percent higher than the mean growth rate over those 5 years.

So far, we have focused on the impact of foreign bank entry on the intensive margin (as we used only those observations where export was already non-zero in the pre-entry period). Entry of a bank from an importing country, however, can also increase the likelihood that exports start taking place, i.e., it can affect the extensive margin as well, especially in external finance

dependent industries. Therefore, in the last column, we examine for all sector-pairs where no trade took place before entry, whether trade occurred after entry. We use a Probit regression and define the dependent variable as a dummy which is equal to one if country i starts exporting to country j in sector s in the three years after entry. While in the vast majority of sector-pairs (80 percent), trade already took place before entry, our sample still contains 968 sector-pairs with no exports before entry. In 47 percent of these cases exports occurred after entry. And, as the result in column (6) shows, the probability of this happening is higher the more the sector is dependent on external finance. Specifically, a move from the 25th to 75th percentile increases the probability of exporting by 4.3 percentage points. This suggests that foreign bank entry helped especially external financing dependent firms get into exporting.

Our event study approach implies that we control for variations in initial conditions at the sector-country pair level at the time of entry, which includes, for example, the degree of exports by multinationals from the bank's home country present in the exporting country at the time of entry. However, one might still be worried that our results are biased due to some residual endogeneity. For example, foreign banks might more likely invest in countries in which they expect exports to grow in the near future for example due prior or current investments from multinationals from the bank's home country. Note that anticipated export growth driving foreign bank entry would only bias our results if this growth occurs in an industry that is highly dependent on external finance.[15]

As further evidence that foreign banks have a causal impact on trade, we conduct an additional set of robustness tests. Specifically, we investigate how the entry of a bank from importing country j in exporting country i impacts exports between exporting country i and all other countries in which banks from importing country j are already present. In other words, we examine the impact of the creation of a new indirect link between the exporting country and a third importing country. An example can clarify here. Suppose a bank from the United States enters Brazil for first time (i.e., a new bilateral link is established), but that there are already banks from the United States present in both Canada and Mexico, but there are no banks from Canada and Mexico already in Brazil. Then we can say that the entry of the US bank creates an

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[15] It is also possible that multinationals actually follow their banks and not the other way around as shown by Poelhekke (2014). If these multinationals subsequently start exporting back to their home country, this could be an alternative channel through which foreign banks can facilitate trade.

indirect link both between Brazil and Canada, and between Brazil and Mexico, as exporters in Brazil can now benefit from the fact that the bank from the United States also has a presence in Canada and Mexico. This would be a truly exogenous event, in that the newly established indirect relationships are not due to any pair-wise factors (in terms of anticipated bilateral trade or new investments), but rather due to an investment driven by completely orthogonal reasons.

To examine the impact of newly established indirect links, we estimate the same model as in Table 4, except that the dependent variable is now defined as the growth in sectoral exports between the newly indirectly linked countries (e.g., Brazil and Canada, and Brazil and Mexico) over the three year period before and three year period after the event (i.e., the entry of a bank from the United States in Brazil). In total, the 187 newly created bilateral links generate an additional 1,144 new indirect links. Table 5 reports the regression results and show that the findings are very consistent with the event study for the direct effects: sectors that are more dependent on external financing see higher growth in their exports (column 1), even when controlling for the three year pre-event growth in exports (column 2). And the establishment of indirect links also has a positive effect on the extensive margin, i.e., the occurrence of sectoral trade when there was not trade before (column 3).[16]

Summarizing, we obtain consistent evidence of a first-order effect of foreign bank presence on trade using two different methodologies. First, we document the existence of a positive relationship between exports in sectors more dependent on external finance and the presence of foreign banks, especially those from the importing country. Second, we show that exports increase disproportionately in sectors more dependent on external finance when a bank from the importing country enters the exporting country for the first time, or when an indirect link is established. In the next section, we continue to use our event-study methodology but exploit variations along different dimensions for the exporting countries and banks to shed light on the possible channels through which foreign banks facilitate trade.

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[16]Since for many of these newly created indirect links, there may not have been any preexisting trade (nor necessarily any trade afterwards, only in 20% of the cases), there are relatively many observations in the regression for the extensive margin.

5.   Channels through which foreign banks facilitate trade

It is likely that characteristics of the exporting country matter for the degree to which foreign banks help with increasing exports. In financially less developed countries, firms, especially those in financially more vulnerable sectors, are likely to find it more difficult to raise external financing, including trade finance. In such countries, the presence (or entry) of foreign banks may especially help overcome some financing constraints, and thus boost exports. The effects of (entry of) foreign banks in countries that have greater institutional weaknesses, in terms of the availability of information or the enforcement of contracts, as well as those countries that are further away, are more ambiguous. On one hand, foreign banks may bring specialized skills and technology, making it easier to address such institutional weaknesses and to overcome distance constraints, and thus to extend external financing, thereby helping boost trade. On the other hand, foreign banks may find it harder to work in such environments as they are more used to making decisions on the basis of hard information and, if needed, to enforce contracts using judicial systems.

Besides exporting country characteristics we also expect parent bank characteristics to matter. As noted in the introduction, providing finance for trade tends to be a specialized business that is mainly done by large, globally active banks. We would expect that especially foreign affiliates of banks active as trade financers to bring specialized skills in trade financing. We therefore thus expect that the degree to which the parent bank is engaged in trade finance matters for the benefits the presence of a foreign bank (or its entry) brings in the form of increasing exports.

To examine how these exporting country and foreign bank differences matter and may drive the general result on the benefits of foreign banks for exports, we continue with our event study, but allow the impact of the sector dependency on external finance to differ across a number of country and foreign bank dimensions. First, we split the sample of exporting countries on the basis of financial development, foreign bank presence, and various institutional environment characteristics. For financial development, we use the ratio of private sector credit to GDP. We consider the importance of foreign banks in financial intermediation in the exporting country at the time of entry as there may be economies of scale and externalities or some threshold effects at play. As we only study entries that happen prior to 2005, we have to measure foreign bank presence by its share in numbers. To capture differences in institutional

environments, we use the cost of enforcing contracts and the availability of credit information, with both variables from the World Bank Doing Business Indicators. For these exporting country characteristics, we split our sample in three groups of exporting countries, low (bad), intermediate (weak) and high (strong), using the 33th and 66th percentile of the respective distributions as cut-off. Note that the correlations between these four variables ranges from -0.6 (between the share of foreign banks and credit information) and 0.5 (between financial development and credit information), indicating that the splits capture different groups of countries. Lastly, we consider the distance between the exporting and importing country, as a proxy for the degree of information asymmetries and difficulty doing business.

Second, to capture differences in the degree to which a foreign bank is active in trade finance globally, we first need to determine the parent bank behind the entry of a foreign bank (recall that the bank ownership database of Claessens and Van Horen, 2014a only provides information on the home country of the majority foreign shareholder). Next, we identify those banks which appear in de trade finance league tables of Dealogic between 1996 and 2004 (the years in which our events take place) and rank these banks on the basis of their total amount of trade financing over those years. We then split the sample of entries into two types: those investments done by parent banks in the top 30 trade finance providers; and all others. In total 23 different parent banks in our sample occurred in the top 30 of trade finance providers. These include, Citi Bank, Deutsche Bank, HSBC, Santander, Societe Generale and UniCredit and other large, globally active banks. In total these parent banks where responsible for 30 percent of the events in our sample.

The results, in Table 6, show that the impact of foreign banks varies by a number of country and bank aspects. The first column repeats our baseline results showing that the entry of a foreign bank from the importing country leads to a disproportional increase in exports in sectors more dependent on external finance, a result which is largely confirmed for the other specifications (first row). We then, studying all entries (columns 2-6), examine in what type of exporting countries foreign banks may be especially beneficial or not (in the following regressions the group of high (strong) is every time the base case). Results suggest that entry by foreign banks has more beneficial impact on exports if the share of overall local financial intermediation by foreign banks is not too low (column 3) and the distance of the exporting country to the bank's home country is not too far (column 6). The level of local financial sector

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development, the enforcement of contracts, and the informational quality of the market do not seem to influence the general effect of a foreign bank entry from the importing country on exports (columns 2, 4, and 5). While still conducive to entry for other reasons, it thus appears that with a limited footprint and in far countries foreign banks can less easily identify firms with profitable trade opportunities and provide trade-related financing. As such, enhancing financing for trade is not a given for foreign banks, but can depend importantly on the structure of the local market and distance to the bank.

When we next split the sample and consider either only entries of trade banks (column 7-12) or of non-trade banks (column 13-18), we find some striking differences. First, when we run the base regression on the two subsamples, we see that the beneficial impact of foreign bank presence holds for both groups, but that the impact is somewhat smaller for the trade banks (columns 7 vs. 13), suggestive that non-trade banks bring other skills when entering foreign markets (e.g., they may be better able to assess risks, notably in developing countries and emerging markets). Second, the significant coefficients in column (8) show that entry by trade banks in countries that are financially less developed drives much of the additional impact on the growth of exports of external finance dependent sectors, since for the overall sample the coefficients for these interaction variables were not significant (column 2). This result also contrasts with that for the non-trade banks, where the interactions are insignificant (column 14). Furthermore, trade banks seem to play some role in overcoming information problems as their impact is especially strong when creditor information is less easy to come by (column 11). In other words, the documented general beneficial role of foreign banks on the growth of exports occurs importantly when banks globally active in trade finance enter countries that are financially less developed or have worse informational environments. This suggests that the role of foreign banks is not just providing external financing, but importantly also bringing specialized technology and know-how specific to financing trade.

The role of non-trade banks in affecting export seems to be somewhat different. While entry of these banks also has a positive impact on exports of sectors more dependent on external finance, column (15) shows that this is only the case when foreign banks are quite important in financial intermediation (when more than 23 percent of the assets are held by foreigners). In contrast, trade banks made a difference, but only less so when their markets shares was low (column 9). For the impact of entry by non-trade banks, the financial development of the

exporting country (column 14) or the presence of (or lack thereof) enforcement (column 16) and creditor information (column 17) are irrelevant. Importantly, distance matters for non-trade banks, as the beneficial impact of entry diminishes when the importing and exporting country are further apart (column 18), but not for trade banks (column 12). This qualifies the finding of Mian (2006) – that foreign banks find it easier to operate in countries that are closer, as it shows that this holds less for trade banks and export financing, possibly because these banks have better skills and a large global network.

6. Conclusions

This paper investigates empirically whether the benefits of foreign bank presence also extend to trade. It develops a number of arguments why foreign banks may play a special role in enhancing trade and investigates these using a unique dataset of bilateral foreign bank presence combined with data on bilateral sectoral exports for 95 countries. We find that sectors with greater external financial dependency tend to export more when more banks are foreign owned, and even more so when a bank from the importing country is present. These effects are over and beyond the impact of general financial development. Furthermore, the entry of a bank from an importing country increases bilateral exports more in external finance dependent sectors, with this effect also found for countries that are indirectly linked through this entry, thus controlling for all endogeneity. Differentiating further, we find that foreign banks support trade more if they are more engrained in the local banking system. Furthermore, the entry of a bank with large trade finance business has a larger impact in countries at relatively low levels of financial development and informational quality, suggesting the (transfer of) specialized knowledge and technology to be important for financing trade.

Given the importance of trade for economic development, our findings indicate that foreign banks can have a positive impact on a country beyond their impact on lowering the cost and increasing the quality of financial intermediation. We also find, however, that these benefits importantly vary by the characteristics of both the bank and the country in which the bank invests. Yet, global foreign banks can also introduce financial instability, at least during the recent crisis, suggesting possibly some tradeoffs. Our findings that financially and informationally less developed countries benefit less from entry by banks not globally active in trade finance suggest some tradeoffs too given ongoing changes in the pattern of (bilateral)

foreign bank presence, including greater roles for banks from emerging markets and developing countries, and more intra-regional investments (Claessens and Van Horen, 2014c). More generally, in light of the ongoing transformation of the global banking system, our findings are of much policy relevance. Yet, they also indicate the need for further research on the role of foreign banks and the channels through which they may affect the real economy.

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Figure 1
Foreign bank presence in 1995 and 2007

Percentage of foreign banks to total banks (number), 1995
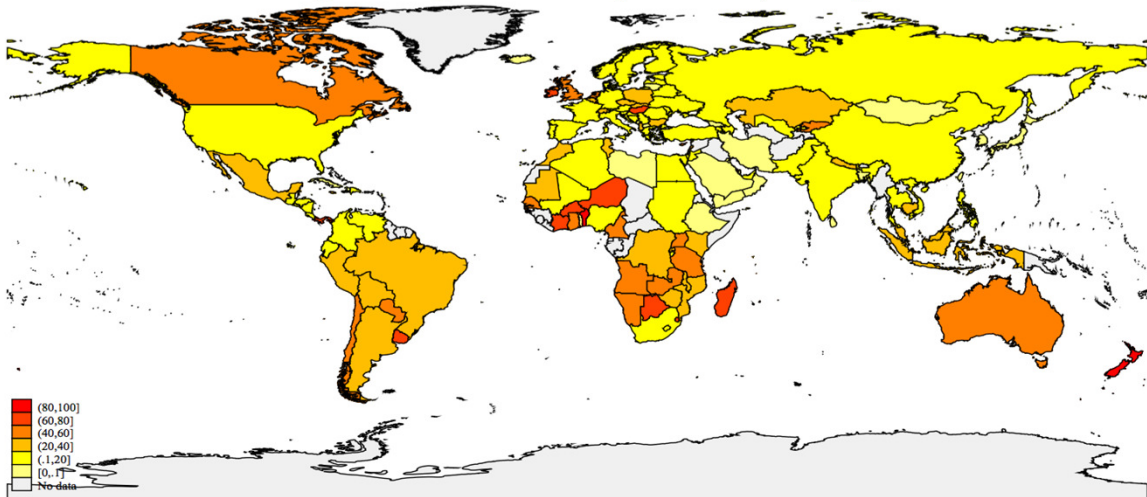
Percentage of foreign banks to total banks (number), 2007
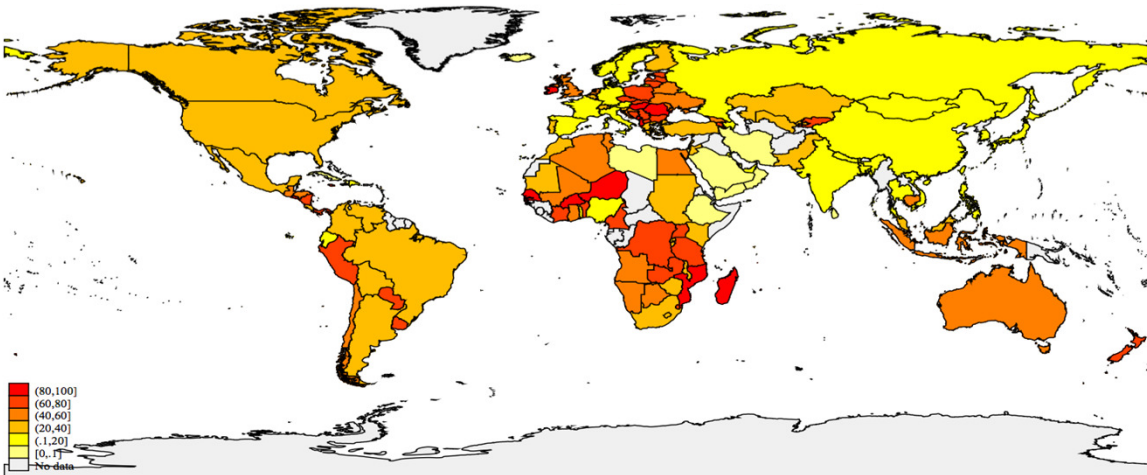
Figure 2
Financial development and exporting countries' foreign bank presence

This figure plots private credit to gdp in the exporting country against share of foreign banks active in the exporting country in 2007.
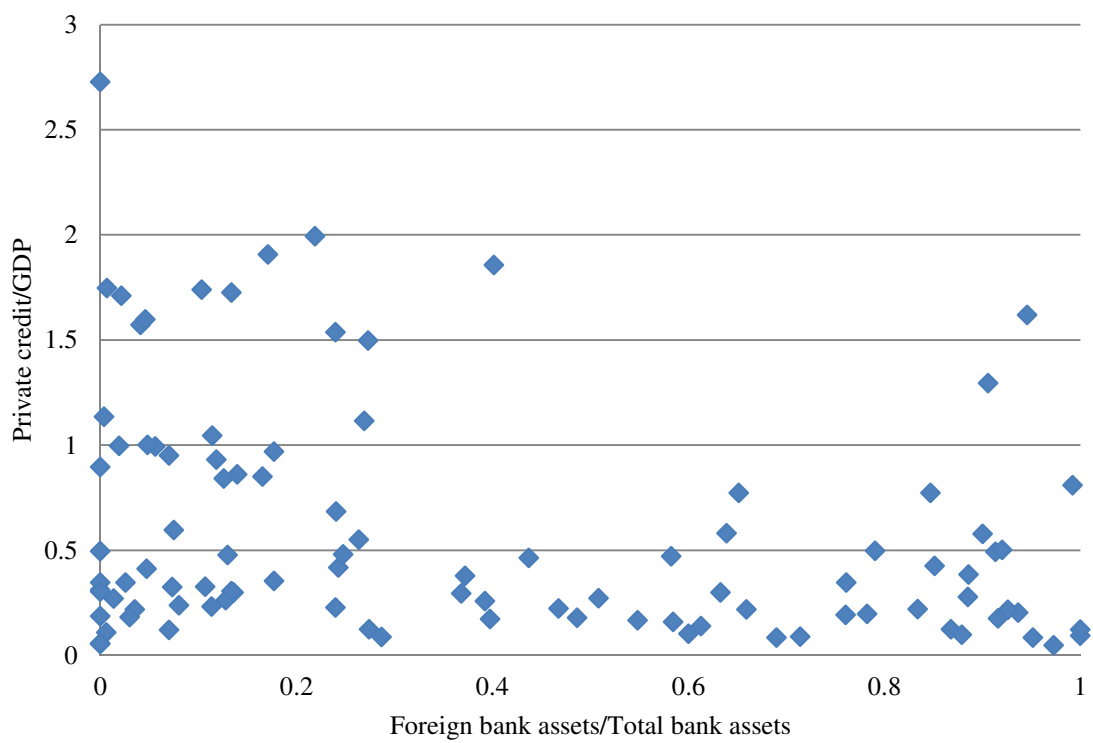
Table 1
Summary statistics

This table shows the summary statistics of the key variables used in the panel analysis (based on the 2005-2007 sample) and in the event study.

Variable	Obs	Mean	Median	St. Dev.	Min	Max
Panel analysis						
Export (intensive margin)	491,657	12.79	12.99	3.87	0	25.13
Export (dummy)	940,744	0.52	1	0.50	0	1
Export (intensive and extensive margin; bil)	940,744	0.03	0.00	0.47	0	82.28
For banks (FB) (dummy)	491,657	0.93	1	0.25	0	1
For banks (FB) (number)	491,657	0.33	0.29	0.26	0	1
For banks (FB) (asset)	491,657	0.30	0.17	0.32	0	1
Importing country for banks (IFB) (dummy)	491,657	0.08	0.00	0.28	0	1
Importing country for banks (IFB) (number)	491,657	0.01	0.00	0.02	0	0.5
Importing country for banks (IFB) (asset)	488,035	0.01	0.00	0.04	0	0.94
Fin dev (FD)	476,551	0.79	0.71	0.56	0.05	2.73
External finance (extfin)	491,657	0.28	0.23	0.32	-0.45	1.14
Distance	491,657	8.30	8.50	0.94	4.57	9.87
Corruption	491,657	0.54	0.31	1.03	-1.42	2.55
Rule of law	491,657	0.52	0.50	0.96	-1.40	2.00
Human capital index * Industry H intensity	464,179	2.77	2.70	0.88	0.59	5.95
Capital stock per capita * Industry K intensity	480,657	0.73	0.67	0.38	0.13	2.43
Resource Rent (%GDP) * Industry N intensity	491,657	1.63	0	6.91	0	68.17
FDI stock	484,873	0.44	0.31	0.61	0.08	5.80
Cross-border lending	488,879	0.23	0.10	0.55	0.00	5.82
Domestic production	346,368	6.49	6.76	2.22	-2.56	11.73
Event study						
Export growth	3,806	0.33	0.31	1.20	-4.88	4.48
Export growth - trend corrected	3,217	0.07	0.04	1.50	-7.84	8.01
Export growth (dummy)	968	0.47	0.00	0.50	0.00	1.00
External finance (extfin)	3,806	0.26	0.22	0.32	-0.45	1.14
Indirect export growth	15,009	0.23	0.22	1.45	-4.94	5.29
Indirect export growth - trend corrected	12,666	-0.04	-0.05	1.91	-8.52	9.04
Indirect export growth (dummy)	14,279	0.20	0.00	0.40	0.00	1.00

Table 2
Foreign banks and trade - Panel analysis

This table shows regressions to estimate the impact of foreign bank presence on export. The dependent variable is (log) exports from country i to country j in a 3-digit ISIC sector s and year t. *FB* (foreign banks) is a dummy which is one if at least one foreign bank is present in the exporting country (column [1] and [4]) or the share of foreign banks in terms of numbers (column [2] and [5]) or in terms of assets (column [3] and [6]). *IFB* (importing country foreign banks) is a dummy which is one if at least one foreign bank headquartered in the importing country is present in the exporting country (column [4]) or equals the share of foreign banks from importing country j in terms of numbers (column [5]) or in terms of assets (column [6]). *FD* (financial development) is measured by private credit to GDP. External finance dependency, *extfin*, is defined in the text. The sample period in columns [1], [2], [4] and [5] is 1995-2007 and in columns [3] and [6] 2005-2007. All regressions are estimated using OLS and robust standard errors are clustered by exporter-importer pair. ***, **, * correspond to the 1%, 5%, and 10% level of significance, respectively.

	1995-2007		2005-2007	1995-2007		2005-2007
	dummy	number share	asset share	dummy	number share	asset share
	[1]	[2]	[3]	[4]	[5]	[6]
FB * extfin	0.181***	0.111*	0.730***	0.178***	0.098	0.724***
	(0.052)	(0.067)	(0.062)	(0.052)	(0.068)	(0.063)
IFB * extfin				0.200***	2.816***	1.298***
				(0.054)	(0.621)	(0.392)
IFB				0.520***	5.519***	2.859***
				(0.056)	(0.658)	(0.544)
FD * extfin	1.732***	1.736***	1.679***	1.733***	1.741***	1.678***
	(0.028)	(0.028)	(0.035)	(0.028)	(0.028)	(0.035)
Distance	-1.712***	-1.712***	-1.838***	-1.667***	-1.679***	-1.817***
	(0.023)	(0.023)	(0.026)	(0.023)	(0.023)	(0.026)
Fixed effects	Exporter-year, importer-year and industry					
Obs	1,726,604	1,726,604	476,551	1,726,604	1,726,604	473,162
R2	0.559	0.559	0.575	0.561	0.561	0.575

Table 3
Panel analysis - Robustness tests

This table examines the robustness of the impact of foreign bank presence on export. The dependent variable is the log of exports from country i to country j in a 3-digit ISIC sector s at year t, unless otherwise specified. Regression [1] is our baseline model (regression [6] in Table 2). Regression [2] includes importer*year*sector fixed effects and regression [3] exporter-importer pair fixed effects. Regression [4] includes measures of institutional development interacted with external finance. Regression [5] includes exporters' factor endowments. Regression [6] includes the stock of FDI and cross-border loans in the exporting country interacted with external finance. Regression [7] controls for selection into domestic production. In regression [8] standard errors are clustered by exporter-industry instead of exporter-importer pair. In regression [9] the dependent variable is a dummy which is 1 if country i exports to country j in sector s at time t. This model is estimated using Probit. In regression [10] the dependent variable is the value of exports from country i to country j in a 3-digit ISIC sector s and year t. This model is estimated using Poisson Pseudo ML. The sample period for all regressions is 2005-2007. All regressions are estimated using OLS and robust standard errors are clustered by exporter-importer pair, unless otherwise specified. ***, **, * correspond to the 1%, 5%, and 10% level of significance, respectively. Table A4 in the Appendix contains all variable definitions.

	Base	Importer * year * industry FE	Pair FE	Institutions	Factor endowments	Financial integration	Domestic production	Cluster by exporter-industry	Extensive margin	Intensive and extensive margin
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
FB * extfin	0.724***	0.776***	0.824***	0.236***	0.506***	0.602***	0.488***	0.724***	0.216***	1.079***
	(0.063)	(0.062)	(0.061)	(0.063)	(0.064)	(0.075)	(0.068)	(0.252)	(0.0263)	(0.289)
IFB * extfin	1.298***	0.883**	0.667*	1.568***	1.311***	1.369***	0.756	1.298**	1.962***	1.813
	(0.392)	(0.401)	(0.386)	(0.353)	(0.403)	(0.390)	(0.527)	(0.553)	(0.669)	(1.230)
IFB	2.859***	3.027***		2.783***	2.472***	2.766***	2.611***	2.859***	2.823***	0.818
	(0.544)	(0.547)		(0.523)	(0.534)	(0.545)	(0.535)	(0.241)	(0.383)	(0.510)
FD * extfin	1.678***	1.668***	1.617***	0.452***	1.472***	1.596***	1.132***	1.678***	0.753***	0.854***
	(0.035)	(0.035)	(0.035)	(0.055)	(0.036)	(0.040)	(0.037)	(0.155)	(0.0228)	(0.151)
Distance	-1.817***	-1.835***		-1.820***	-1.820***	-1.815***	-1.844***	-1.817***	-0.962***	-0.954***
	(0.026)	(0.027)		(0.026)	(0.027)	(0.027)	(0.030)	(0.019)	(0.0169)	(0.0322)
Corruption * extfin				-0.316***						
				(0.063)						
Rule of law * extfin				1.203***						
				(0.070)						
Human capital * industry H intensity					1.857***					
					(0.074)					
Physical capital * industry K intensity					-0.371					
					(0.244)					
Natural resources * industry N intensity					0.034***					
					(0.002)					
FDI * extfin						0.178***				
						(0.000)				
Cross-border * extfin						-0.027				
						(0.032)				
Domestic production							0.417***			
							(0.010)			
Fixed effects	Exporter-year, importer-year and industry									
Obs	473,162	473,162	473,162	473,162	456,299	470,661	346,368	473,162	897,848	897,848
(Psuedo) R2	0.575	0.600	0.670	0.577	0.582	0.576	0.616	0.575	0.519	0.624

Table 4
Foreign banks and trade - Event study

This table examines impact of the entry of a foreign bank from the importing country in the exporting country on export growth between the two countries. The dependent variable equals the (log of) average exports from country i to country j in sector s between $(t+1, t+3)$ and $(t-1, t-3)$, where t is the year in which a foreign bank from country j entered country i, unless otherwise specified. Regression [1] is the baseline model. Regression [2] controls for pre-event trend. The dependent variable in this regression equals the difference in growth rate of exports between $(t-1, t-3)$ and $(t-4, t-6)$ and between $(t+1, t+3)$ and $(t-1, t-3)$, where t indicates the year in which a bank from country j enters country i. In regression [3] exporting countries that experienced a banking crisis in the three years leading up to the entry are excluded and in regression [4] exporting countries that liberalized their equity market in the three years before and after the entry are excluded. In regression [5] the dependent variable equals the growth in sectoral exports in one year pre-ceeding the entry and 4 years after the entry. In regression [6] only sector-country pairs are included in which no export took place in the three years leading up to the entry. The dependent variable is a dummy which is one if country i starts exporting to country j in sector s in the three years after the entry took place. All regressions are estimated using OLS except the last regression which is estimated using Probit. All coefficients are marginal effects. Robust standard errors are clustered by exporter and importer. ***, **, * correspond to the 1%, 5%, and 10% level of significance, respectively. Table A4 in the Appendix contains all variable definitions.

	Base	Controlling for pre-entry trend	No crisis in 3 years before entry	No equity market liberalization in 3 years before or after entry	Dependent variable is export growth between t-1 and t+4	Extensive margin
	[1]	[2]	[3]	[4]	[5]	[6]
Extfin	0.346***	0.194**	0.361***	0.371***	0.313***	0.126**
	(0.070)	(0.077)	(0.068)	(0.074)	(0.085)	(0.053)
Constant	0.271	0.111	0.385***	0.265	0.275**	0.358**
	(0.170)	(0.164)	(0.089)	(0.170)	(0.121)	(0.147)
Fixed effects			event-year fixed effects			
Obs	3,806	3,217	3,372	3,515	3,228	968
(Pseudo-)R2	0.033	0.026	0.034	0.037	0.057	-

Table 5
Foreign banks and trade - Event study: Indirect effects

This table examines impact of the entry of a foreign bank from the importing country in the exporting country on export growth between the exporting country and any countries in which banks from the importing country also have a presence. The dependent variable equals the (log of) average exports from country i to country m ($m \neq j$) in sector s between $(t+1, t+3)$ and $(t-1, t-3)$, where t is the year in which a foreign bank from country j entered country i, unless otherwise specified. Regression [1] is the baseline model. Regression [2] controls for pre-event trend. The dependent variable in this regression equals the difference in growth rate of exports between $(t-1, t-3)$ and $(t-4, t-6)$ and between $(t+1, t+3)$ and $(t-1, t-3)$, where t indicates the year in which a bank from country j enters country i. In regression [3] only sector-country pairs are included in which no export took place in the three years leading up to the entry. The dependent variable is a dummy which is one if country i starts exporting to country m ($m \neq j$) in sector s in the three years after the entry took place. All regressions are estimated using OLS except the last regression which is estimated using Probit. All coefficients are marginal effects. Robust standard errors are clustered by exporter and importer. ***, **, * correspond to the 1%, 5%, and 10% level of significance, respectively. Table A4 in the Appendix contains all variable definitions.

	Base	Controlling for pre-entry trend	Extensive margin
	[1]	[2]	[3]
Extfin	0.222***	0.152***	0.068***
	(0.047)	(0.054)	(0.012)
Constant	0.374***	-0.350*	-1.081***
	(0.097)	(0.186)	(0.155)
Fixed effects		event-year fixed effects	
Obs	15,009	12,666	14,279
(Pseudo-)R2	0.027	0.025	-

Table 6
Channels through which foreign banks facilitate trade

This table examines the channels through which foreign banks can facilitate trade. The dependent equals the (log of) average exports from country i to country j in sector s between $(t+1, t+3)$ and $(t-1, t-3)$, where t is the year in which a foreign bank from country j entered country i. In Regression [1]-[6] entries by all foreign banks are included. In Regression [7]-[12] only entries by banks that are important providers of trade finance (see main text for explanation) and in Regression [13]-[18] only other foreign banks are included. For each group the first regression is the baseline model and in the subsequent regressions the impact of external financial dependency is allowed to vary with respect to several exporting country characteristics: financial sector development, share of foreign banks, enforcement of contracts, creditor information and distance between the two countries. For all country characteristics, except distance, the sample is split in three groups based on the 33th and 66th percentile of the respective distributions. All regressions are estimated using OLS and robust standard errors are clustered by exporter and importer. ***, **, * correspond to the 1%, 5%, and 10% level of significance, respectively. Table A4 in the Appendix contains all variable definitions.

	All entries						Entries by important trade financers						Entries by non-trade financers					
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]
Extfin	0.347***	0.142	0.696***	0.398***	0.195*	1.067**	0.215**	-0.005	0.459***	0.209*	-0.027	0.026	0.401***	0.235*	0.792***	0.478***	0.343**	1.440**
	(0.070)	(0.095)	(0.154)	(0.097)	(0.110)	(0.437)	(0.087)	(0.089)	(0.157)	(0.122)	(0.074)	(0.399)	(0.086)	(0.139)	(0.175)	(0.118)	(0.148)	(0.574)
Extfin * FD low		0.464						0.916***						0.252				
		(0.308)						(0.207)						(0.423)				
Extfin * FD int		0.342						0.235***						0.294				
		(0.218)						(0.030)						(0.285)				
Extfin * FB low			-0.474**						-0.374**						-0.503*			
			(0.211)						(0.185)						(0.262)			
Extfin * FB int			-0.540**						-0.243						-0.701**			
			(0.236)						(0.158)						(0.298)			
Extfin * Enf bad				-0.352						-0.195						-0.419		
				(0.246)						(0.194)						(0.295)		
Extfin * Enf weak				0.090						0.162						0.078		
				(0.176)						(0.164)						(0.205)		
Extfin * Info bad					0.267						0.473**						0.114	
					(0.226)						(0.203)						(0.284)	
Extfin * Info weak					0.217						0.385***						0.068	
					(0.223)						(0.140)						(0.309)	
Extfin * Distance						-0.096*						0.024						-0.141*
						(0.057)						(0.050)						(0.079)
Fixed effects	event-year fixed effects																	
Obs	3,805	3,805	3,805	3,805	3,805	3,805	1,194	1,194	1,194	1,194	1,194	1,194	2,611	2,611	2,611	2,611	2,611	2,611
R2	0.033	0.038	0.039	0.037	0.035	0.035	0.052	0.069	0.056	0.054	0.059	0.052	0.035	0.037	0.043	0.039	0.035	0.037

Appendix Table A1
Overview of exporting countries' trade activity (2007)

This table lists all 95 exporting countries in our sample. *Total exports* equals the sum of all exports to all destination countries in all 28 manufacturing sectors (in billion USD). *Nr. sectors* equals the number of different sectors the country exports in and *Nr. trading partners* equals the number of different destination country the exporting countries trades with.

Country	Total export	Nr. sectors	Nr. trading partners
Algeria	10.94	28	79
Argentina	41.65	28	131
Armenia	0.95	28	77
Austria	147.96	28	132
Azerbaijan	2.30	28	77
Bangladesh	12.76	28	126
Belgium	416.53	28	132
Bolivia	1.20	26	73
Bosnia Herzegovina	3.49	28	97
Botswana	4.79	28	74
Brazil	123.71	28	131
Bulgaria	16.58	28	131
Cambodia	3.45	27	100
Cameroon	1.40	27	86
Canada	312.69	28	132
China	1,238.78	28	132
Colombia	15.85	28	121
Costa Rica	6.67	28	95
Croatia	10.32	28	124
Czech Rep.	122.09	28	132
Denmark	83.11	28	132
Dominican Republic	4.93	28	96
Ecuador	4.45	28	105
Egypt	7.54	28	128
El Salvador	3.93	28	82
Estonia	11.09	28	122
Ethiopia	0.24	26	101
Finland	88.01	28	132
France	516.46	28	132
Georgia	0.76	28	79
Germany	1,285.57	28	132
Greece	20.51	28	131
Guatemala	4.82	28	91
Honduras	1.39	28	81
Hong Kong	346.20	28	131
Hungary	85.26	28	132
Iceland	4.63	28	106
India	133.74	28	132
Indonesia	77.99	28	132
Ireland	118.38	28	132
Israel	42.50	28	127
Italy	511.89	28	132
Japan	684.25	28	132
Jordan	3.48	28	116
Kazakhstan	14.20	28	99
Kenya	1.93	28	115
Korea (South)	360.82	28	132
Kuwait	3.14	28	114
Latvia	7.16	28	125
Libya	6.09	14	43
Lithuania	15.76	28	118
Luxembourg	15.56	28	131
Macedonia	2.52	28	87

Appendix Table A1 - cont'd

Country	Total export	Nr. sectors	Nr. trading partners
Madagascar	1.15	28	91
Malawi	0.63	28	92
Malaysia	154.45	28	131
Mexico	223.62	28	127
Moldova	1.16	28	77
Mongolia	0.28	28	57
Mozambique	0.38	28	73
Namibia	3.16	28	104
Netherlands	396.93	28	133
Nigeria	2.25	28	87
Norway	53.91	28	133
Oman	3.10	28	94
Pakistan	16.74	28	131
Paraguay	1.48	28	99
Peru	12.96	28	117
Philippines	46.60	28	126
Poland	137.35	28	133
Portugal	46.69	28	133
Qatar	6.42	28	99
Romania	38.45	28	131
Russian Federation	147.26	28	126
Saudi Arabia	49.04	28	123
Senegal	1.17	28	99
Slovakia	57.46	28	131
Slovenia	26.31	28	126
South Africa	50.04	28	129
Spain	234.73	28	132
Sri Lanka	6.27	28	128
Swaziland	1.28	28	27
Sweden	163.33	28	133
Switzerland	170.60	28	132
Tanzania	0.89	28	101
Thailand	140.41	28	132
Trinidad and Tobago	5.88	28	88
Tunisia	12.54	28	117
Uganda	0.57	28	90
United Arab Emirates	32.04	28	130
United Kingdom	386.87	28	132
United States	1,069.23	28	133
Uruguay	3.64	28	123
Yemen	1.09	28	79
Zambia	4.32	28	78

Appendix Table A2
Overview of exporting countries' foreign bank presence (2007)

This table lists all 95 exporting countries in our sample. *Share foreign banks (assets)* equals the assets of all foreign banks active in the exporting country as a share of all banking assets in the exporting country. *Share foreign banks (number)* equals the total number of foreign banks active in the exporting country as a share of the total number of banks active in the exporting country. *Nr. foreign banks* is the total nr of foreign banks active in the exporting country. *Nr. home countries* reflects the number of different countries the parent banks of foreign banks active in the exporting country are headquartered in. All variables are measured in 2007.

Country	Share foreign banks (assets)	Share foreign banks (number)	Nr. foreign banks	Nr. home countries
Algeria	0.07	0.60	9	4
Argentina	0.27	0.32	22	11
Armenia	0.60	0.64	9	5
Austria	0.27	0.11	11	8
Azerbaijan	0.01	0.09	2	1
Bangladesh	0.03	0.03	1	1
Belgium	0.13	0.39	12	6
Bolivia	0.18	0.40	4	4
Bosnia Herzegovina	0.91	0.63	15	5
Botswana	0.94	0.56	5	3
Brazil	0.24	0.36	51	16
Bulgaria	0.79	0.69	18	11
Cambodia	0.61	0.46	6	6
Cameroon	0.71	0.64	7	5
Canada	0.04	0.40	21	9
China	0.02	0.15	21	10
Colombia	0.14	0.29	5	4
Costa Rica	0.37	0.21	10	5
Croatia	0.90	0.46	16	5
Czech Rep.	0.85	0.64	14	6
Denmark	0.17	0.09	8	4
Dominican Republic	0.08	0.05	2	2
Ecuador	0.11	0.15	4	4
Egypt	0.25	0.52	13	9
El Salvador	0.97	0.90	9	7
Estonia	0.99	0.75	6	5
Ethiopia	0.00	0.00	0	n.a.
Finland	0.85	0.22	2	2
France	0.06	0.05	5	4
Georgia	0.66	0.58	7	7
Germany	0.11	0.14	14	10
Greece	0.14	0.28	5	4
Guatemala	0.13	0.42	8	6
Honduras	0.44	0.56	10	8
Hong Kong	0.91	0.71	27	10
Hungary	0.64	0.87	27	9
Iceland	0.00	0.00	0	n.a.
India	0.05	0.11	8	4
Indonesia	0.24	0.46	31	15
Ireland	0.40	0.86	25	9
Israel	0.00	0.00	0	n.a.
Italy	0.07	0.10	10	6
Japan	0.01	0.02	2	1
Jordan	0.17	0.30	3	3
Kazakhstan	0.13	0.40	12	8
Kenya	0.39	0.25	9	7
Korea (South)	0.12	0.19	3	2
Kuwait	0.08	0.11	1	1
Latvia	0.65	0.62	13	8
Libya	0.00	0.00	0	n.a.
Lithuania	0.92	0.70	7	6
Luxembourg	0.95	0.96	71	16
Macedonia	0.63	0.64	9	7

Country	Share foreign banks (assets)	Share foreign banks (number)	Nr. foreign banks	Nr. home countries
Madagascar	1.00	1.00	6	2
Malawi	0.29	0.29	2	1
Malaysia	0.18	0.34	14	10
Mexico	0.78	0.39	18	8
Moldova	0.37	0.41	7	4
Mongolia	0.07	0.10	1	1
Mozambique	1.00	0.90	9	7
Namibia	0.58	0.43	3	1
Netherlands	0.10	0.44	14	9
Nigeria	0.03	0.15	3	3
Norway	0.17	0.02	2	2
Oman	0.00	0.00	0	n.a.
Pakistan	0.51	0.35	9	7
Paraguay	0.55	0.62	8	7
Peru	0.49	0.64	9	7
Philippines	0.01	0.15	7	4
Poland	0.76	0.75	36	15
Portugal	0.24	0.33	9	6
Qatar	0.00	0.00	0	n.a.
Romania	0.89	0.81	21	10
Russian Federation	0.11	0.17	39	17
Saudi Arabia	0.00	0.00	0	n.a.
Senegal	0.93	0.85	11	5
Slovakia	0.89	0.75	12	6
Slovenia	0.24	0.33	7	3
South Africa	0.27	0.22	6	6
Spain	0.02	0.07	7	7
Sri Lanka	0.00	0.00	0	n.a.
Swaziland	0.83	0.80	4	2
Sweden	0.00	0.01	1	1
Switzerland	0.05	0.23	22	12
Tanzania	0.87	0.62	16	11
Thailand	0.05	0.14	3	2
Trinidad and Tobago	0.13	0.56	5	3
Tunisia	0.26	0.50	8	5
Uganda	0.95	0.79	11	8
United Arab Emirates	0.01	0.18	3	3
United Kingdom	0.13	0.56	50	23
United States	0.22	0.26	18	8
Uruguay	0.47	0.80	24	10
Yemen	0.00	0.00	0	n.a.
Zambia	0.88	0.80	8	7

Appendix Table A3
Industry characteristics

This table lists all 27 sectors used in our empirical analysis and their measures of external finance dependence as provided by Manova (2013) Table A2.

ISIC code	Industry	External finance dependence
311	Food products	0.1368
313	Beverages	0.0772
314	Tobacco	-0.4512
321	Textiles	0.4005
322	Wearing apparel, except footwear	0.0286
323	Leather products	-0.1400
324	Footwear, except rubber or plastic	-0.0779
331	Wood products, except furniture	0.2840
332	Furniture, except metal	0.2357
341	Paper and products	0.1756
342	Printing and publishing	0.2038
351	Industrial chemicals	0.2050
352	Other chemicals	0.2187
353	Petroleum refineries	0.0420
354	Misc. petroleum and coal products	0.3341
355	Rubber products	0.2265
356	Plastic products	1.1401
361	Pottery, china, earthenware	-0.1459
362	Glass and products	0.5285
369	Other non-metallic products	0.0620
371	Iron and steel	0.0871
372	Non-ferrous metals	0.0055
381	Fabricated metal products	0.2371
382	Machinery, except electrical	0.4453
383	Machinery, electric	0.7675
384	Transport equipment	0.3069
385	Prof and scient equipment	0.9610
390	Other manufactured products	0.4702

Table A4
Variable Definitions and Sources

This table shows variables definitions and data sources for all the variables used in the empirical analysis.

Variable	Definition	Source
Export	The (log of) exports from country i to country j in sector s at year t in US dollars. Converted to 3-digit ISIC sectors.	Comtrade
Export (dummy)	Dummy variable that is one when country i exports to country j in sector s at year t. Converted to 3-digit ISIC sectors.	Comtrade
Export growth	The (log of) average exports from country i to country j in sector s between (t+1, t+3) and (t-1, t-3), where t indicates the year in which a bank from country j enters country i.	Comtrade
Export growth (trend corrected)	The difference in growth rate of exports between (t-1, t-3) and (t-4, t-6) and between (t+1, t+3) and (t-1, t-3), where t indicates the year in which a bank from country j enters country i.	Comtrade
Export growth (dummy)	Dummy variable that is equal to one if country i starts exporting to country j in sectors s in the three years after entry of a bank from country j in country i.	Comtrade
Indirect export growth	The (log of) average exports from country i to each country m in which banks from country j have a presence at time t (where $m \neq j$) in sector s between (t+1, t+3) and (t-1, t-3), where t indicates the year in which a bank from country j enters country i.	Comtrade
Indirect export growth (trend corrected)	The difference in growth rate of exports between (t-1, t-3) and (t-4, t-6) and between (t+1, t+3) and (t-1, t-3), where t indicates the year in which a bank from country j enters country i.	Comtrade
Indirect export growth (dummy)	Dummy variable that is equal to one if country i starts exporting to another country m in which banks from country j have a presence at time t (where $m \neq j$)in sectors s in the three years after entry of a bank from country j in country i.	Comtrade
External finance (extfin)	Sector reliance on external financing, measured as: share of capital expenditures not financed with cash flows from operations. Calculated for US-based companies using Compustat over the period: 1986-1995.	Manova (2013), based on: Braun (2003)
For banks (FB) dummy	Dummy variable that is one if there is at least one foreign bank active in the exporting country.	Claessens and Van Horen (2014)
For banks (FB)	Share of foreign banks in all banks operating in the exporting country (in assets or numbers).	Claessens and Van Horen (2014)/Bankscope
Importing country for banks (IFB) dummy	Dummy variable that is one if there is at least one foreign bank from the importing country active in the exporting country.	Claessens and Van Horen (2014)
Importing country for bank (IFB)	Share of foreign banks from the importing country in all banks operating in the exporting country (in assets or numbers).	Claessens and Van Horen (2014)/Bankscope
Fin dev (FD)	Private credit by deposit money banks and other financial institutions as a percentage of GDP.	Global Financial Development, World Bank
Distance	Distance in km between exporting and importing country according to the great circle distance formula (in log).	CIA World Factbook (2005)
Corruption	The extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests.	Kaufmann, Kraay and Mastruzzi (2009)

Variable	Definition	Source
Rule of law	Quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.	Kaufmann, Kraay and Mastruzzi (2009)
Human capital (H)	Human capital index based on years of schooling.	Penn World Tables 8.0
Physical capital (K)	Capital stock measured in 2005 US dollars divided by population size.	Penn World Tables 8.0
Natural resources (N)	Natural resources rents as measured by the sum of oil rents, natural gas rents, coal rents (hard and soft), mineral rents, and forest rents as percentage of GDP.	World Development Indicators, World Bank
Industry H intensity	Sector human capital intensity.	Manova (2013), based on: Braun (2003)
Industry K intensity	Sector physical capital intensity.	Manova (2013), based on: Braun (2003)
Industry N intensity	Sector natural resource intensity.	Manova (2013), based on: Braun (2003)
FDI stock	Inward stock of FDI as percentage of GDP.	UNCTAD
Cross-border lending	Total cross-border liabilities as percentage of GDP, ultimate risk basis.	BIS consolidated statistics
Domestic production	Number of establishments by sector (log).	UNIDO
Trade financer	Foreign bank owned by parent company that was among the top 30 banks that acted as a mandated lead arranger in syndicated loans for trade finance (based on total deal volume over the period 1994-2004).	Claessens and Van Horen (2014); Dealogic
Enforcement contracts	Cost of enforcing contracts (% per claim).	Doing Business indicators
Credit information	Credit information index which captures rules affecting scope, access, and quality of credit.	Doing Business indicators