Foreign Banks and Firms' Export Dynamics: Evidence from China's Banking Reform

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Abstract

This paper investigates how banking integration affects export dynamics. To estimate the causal link, we exploit the phased liberalization of the Chinese banking industry to foreign competition across cities, based on WTO accession commitments, and use transaction-level data for all Chinese exporters. Following deregulation of foreign banks' local-currency lending, the increased local presence of foreign banks from the importing country raises export entry and initial sales to the same country for firms in the city, but has no effect on survival or growth. The effects are significantly more pronounced for firms in industries with less collateralizable assets and those exporting riskier goods. The results uncover particular channels for banking integration to facilitate exports, and are consistent with foreign banks having an informational advantage in screening export projects, relying less on collateral for their lending decisions, and in reducing export risk for firms exporting to the banks' country.

Key Words: Banking deregulation, Exports, Export dynamics, Export risk, Financial constraints, Financial globalization, Foreign banks, Knowledge spillover, Local-currency lending, Uncertainty.

JEL Classification Numbers: F10, F14, F36, G20, G28, G32.

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1 Introduction

A growing literature has documented the importance of the relationship between finance and international trade.[1] Exporters can be disproportionately affected by financial factors as they have to incur significant up-front trade costs to enter foreign markets, including costs to identify profitable export market opportunities, customize products to foreign demand and regulations, and set up distribution networks, which often require access to external capital (Manova, 2013; Melitz, 2003). Increasing export sales after entry or expanding exports to more destinations also involves substantial financing needs (Eaton et al., 2008; Chaney, 2016). Moreover, exports involve a longer time lag between production and sales revenues, tightening credit constraints on exporters. Exports also involve inherently more risk due to information asymmetries and because contracts are more difficult to enforce across borders.

Evidence has shown that financial development and access to finance can facilitate countries' participation in international trade, while financial underdevelopment and credit shocks significantly impede trade (see e.g., Amiti and Weinstein, 2011; Chor and Manova, 2012). However, there is still very limited firm-level evidence on the effects of financial globalization - and specifically banking integration - on export activity, and even less on its impact on export dynamics: entry, initial sales, survival and growth in new export markets. This paper contributes to fill this gap. We investigate how the presence and entry of foreign banks in a city following deregulation of foreign banks local-currency lending affect export entry, survival and growth in the country of origin of the foreign banks by firms in the city, and through which channels.

An important contribution of our paper is to identify a causal link between banking sector integration and export dynamics. To do so, we exploit the unique setting of the banking sector liberalization to foreign competition in China, upon accession to the Word Trade Organization (WTO) at the end of 2001, as a quasi-natural experiment. We use exceptionally detailed transaction-level export data for the universe of Chinese exporting firms, over the period from 2000 to 2006, as well as data on the presence and entry of foreign bank branches and representative offices in China, by Chinese city and country of origin, in each year. This is an excellent setting to study the impact of banking integration and foreign bank presence on export activity given detailed data availability, China's unprecedented export growth over the period and the significant credit constraints faced by Chinese firms.[2] We find that increased presence of foreign banks from the importing country in a city increases entry and initial sales of new exporters in the same country for firms in the city, when foreign bank credit in local-currency is available in the city, through overcoming credit constraints and export risk from information asymmetry.

To identify the causal relationship between financial factors and export dynamics, we explore

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[1] See Foley and Manova (2015) for a survey of the literature.

[2] China was one of the countries with higher financing obstacles among the countries surveyd in the Investment Climate Assessment in 2002 (see Claessens and Tzioumis, 2006).

the exogenous change in the presence of foreign banks and availability of external finance as a consequence of the Chinese government's commitments on the banking sector liberalization from 2001. These commitments implied a gradual liberalization of the Chinese banking market to foreign competition, across cities and time. Specifically, restrictions on foreign bank lending to local firms in local-currency in China were phased out gradually across regions, causing geographic variation on when foreign banks are permitted to conduct local-currency business with domestic firms in the same region. Foreign banks in China were not able to choose where to lend to domestic firms in local-currency, important for our identification. This results in differential access to foreign bank loans denominated in renminbi for firms located in different Chinese cities over time. The timing of liberalization across cities was chosen by the central Chinese government, and as such is unrelated to firm-level exports across destination countries. Our identification exploits this policy change and the resulting cross-city and time variation in the prevalence of foreign banks and access to foreign bank credit. We uncover particular channels for banking integration to facilitate exports: the role of informational advantage of foreign banks from the importing country in screening export projects and in transmitting information that mitigates export risks for firms that want to start exporting to the banks' origin country.

There are a number of reasons for the local presence of foreign banks from a country, and openness to foreign bank lending, to positively affect export entry and initial sales in the same country. Foreign bank affiliates may increase credit availability and introduce new financial instruments and technologies that reduce the cost of financial services, through increased competition. Additionally, foreign banks may be better placed to provide financial instruments that directly reduce export risk and insure against currency risk, such as letters of credit and derivatives. Notably, foreign banks may be able to better serve firms that want to export to the bank's origin country, as their presence in both countries can facilitate information flow and reduce the risks from information asymmetries (Portes and Rey, 2005; Michalski and Ors, 2012), and help enforce contracts (Anderson and Marcouiller, 2002). Foreign banks can also provide information about conditions in the export market and help firms assess the foreign market's profitability.

To estimate the effect of banking liberalization and foreign bank presence in the city on export dynamics, we employ a difference-in-differences approach. We estimate the differential effect of the banking reform and foreign bank presence for firms located in cities with availability of foreign bank loans in local-currency, following the policy change, relative to firms in other cities. The richness of our data allows us to control for city-country fixed effects in our specifications, which absorb any unobserved factors that could simultaneously affect new exporters' sales dynamics and foreign bank entry at the city-country level. In addition, we include firm-year, country-year or city-year fixed effects, which absorb firms' supply shocks, countries' demand

shocks, and city-level trends, respectively. Our identification thus exploits time series variation induced by the staggered policy change across cities, and cross-sectional variation induced by the geographic location of domestic firms and by the origin countries of the foreign banks in the city.

We find that the probability of entering into exports to a new foreign country is increasing in the prevalence in the city of foreign banks from the same country, when foreign banks can conduct local-currency business with firms in the city. We use an indicator variable that equals 1 after the banking market liberalization and interact it with the prevalence (number or density) of foreign banks from the importing country in the city in each year. The positive effect is statistically and quantitatively significant. Controlling for city-country and firm-year fixed effects, a one standard-deviation increase in the log density of foreign banks is associated with an 11% increase in the entry rate relative to the sample mean following the banking reform. Our regressions also control for learning spillovers from neighboring firms exporting to the same country on the entry probability of new exporters. The effects arise mostly from the prevalence of foreign bank branches, rather than representative offices. The positive effect from foreign banks in the city is country-specific: the prevalence of banks from other countries has no significant effect on the firm's probability of entering a new export country. This suggests that foreign banks boost export entry to their origin country by reducing information asymmetry and export risk about the country for new exporters. We also find that the prevalence of foreign banks in the city has a higher effect on export entry to countries that are more distant from China, and are thus associated with higher uncertainty and risk, as firms are less familiar with distant markets.

The prevalence in the city of foreign banks from the importing country also increases firms' initial export sales in the country after the banking reform. A one-standard deviation increase in the density of foreign banks in a city is associated with an increase in initial export sales to the banks' origin country of 1.6% relative to the sample mean following the banking liberalization. New exporters' survival in the market and post-entry export growth conditional on survival do not appear to be correlated with the prevalence of foreign banks and the availability of local-currency foreign bank loans. If the effects arise mainly from a reduction in financial constraints, these results suggest that the banking liberalization and increased prevalence of foreign banks affect exports through financing sunk entry costs rather than variable costs of increasing export sales after entry. Assuming that the fixed cost to export to a new country is higher than the costs of continuing to export to the destination, survival will be less responsive than entry. If the reduction in information asymmetry and export risk plays a main role in the effects, the results suggest that any information about the market is taken into account by the firm at the time of entry and does not affect survival or growth after entry.

We investigate potential mechanisms through which the banking reform and increased for-

eign bank entry from the importing country affect export dynamics: availability of external finance and export risk mitigation. To that end, we use a triple-difference approach to estimate the differential effect for firms across cities with varying foreign bank presence and local-currency lending availability, and across sectors with different innate degree of financial vulnerability (Rajan and Zingales, 1998) and product information and contractual complexity (Rauch, 1999; Nunn, 2007). We first examine whether the effects are stronger for firms in more financially constrained industries, evidence that increased availability of finance is a channel for the effects.[3] We do not find evidence of a stronger differential effect for firms in industries that are more dependent on external finance. However, we find that the differential effect on export entry is significantly more pronounced for firms in industries with fewer tangible assets, suggesting that new exporters with less ability to pledge tangible assets as collateral to raise external finance benefited more from the banking deregulation. This is consistent with foreign banks present in both the exporting and the importing country having better information or better technologies to screen exporters and therefore relying less on collateral in their lending decisions.

We also examine whether the mechanism for the impact of foreign bank liberalization and increased entry in China on export dynamics is related to information asymmetry and export risk. To that end, we investigate whether the differential effect is stronger for firms in industries with more differentiated goods, which have been shown to involve higher export uncertainty and risk due to their higher level of complexity, customization and contract incompleteness, relative to homogeneous goods (see e.g., Rauch, 1999; Berkowitz et al., 2006; Nunn, 2007; Ranjan and Lee, 2007).[4] We find that the differential effect on export entry and initial sales is positive and highly significant for firms in industries with riskier goods, while it is statistically insignificant for those in other industries. The pronounced effects for new exporters of more differentiated goods are consistent with the banking deregulation and increased foreign bank entry from the importing country helping to overcome information asymmetry and reduce export risks, which tend to be higher for more complex goods and when engaging with a new trading partner, as for firms that want to export to a new country.[5]

Our paper contributes to a growing literature on the relationship between finance and trade. Empirical studies have found evidence that credit constraints restrict international trade at the country-level (e.g., Manova, 2008; Chor and Manova, 2012; Manova, 2013; Minetti et al., 2021);

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[3] We use two common determinants of sectors' financial vulnerability, which are exogenous to individual firms: external finance requirement and asset tangibility (e.g., Rajan and Zingales,1998; Braun, 2003; Claessens and Laeven, 2003; Manova, 2013).

[4] We use the measures from Rauch (1999) to classify sectors according to the level of product differentiation. This approach has been extensively used in the literature (e.g., Caballero et al., 2018; Minetti et al., 2021; among many others).

[5] Previous literature has proposed other mechanisms that can mitigate the information and risk barriers hindering trade, including the importance of ethnic networks (Rauch and Trindade, 2002), trust (Guiso et al., 2009), business relationships (Cristea, 2011), the use of letters of credit (Ahn, 2011) and syndicated loans (Caballero et al., 2018).

and at the firm-level (e.g., Berman and Hericourt, 2010; Minetti and Zhu, 2011; Manova et al., 2015; Muûls, 2015). By investigating an episode of banking deregulation and the role of increased presence of foreign banks on exports, our paper adds specifically to studies of the relationship between financial globalization, particularly banking integration, and trade (Portes and Rey, 2005; Michalski and Ors, 2012; Claessens and Van Horen, 2021). By studying how the presence of foreign banks from the importing country affects firms' export dynamics, our paper also adds to the literatures that examine firms' export strategies and dynamics (e.g., Eaton, et al., 2008; Albornoz et al., 2012) and the determinants of exporters' entry and survival (e.g., Clerides et al., 1998; Bernard and Jensen, 2004; Koenig et al., 2010; Fernandes and Tang, 2014).[6]

Our paper adds to the literature in several respects. First, by exploring a quasi-experiment of staggered banking deregulation across cities, we are able to cleanly estimate the causal effect of banking integration and foreign bank presence on trade, avoiding the endogeneity and reverse causality problems in the supply of credit often present in this type of study. Second, it improves understanding of the role of financial integration in promoting exports at the firm-level, controlling for unobserved firm heterogeneity and the endogenous entry decisions that vary across firms. Importantly, we uncover the role of foreign banks from the importing country in screening export projects, reducing credit constraints, and in transmitting information that mitigates export risk for firms that want to export to the banks' country. Our results support the importance of financing sunk costs of exporting in shaping export dynamics, especially when financial markets are imperfect, and the role of foreign banks in reducing export risk for new exporters. Finally, we provide micro evidence on the impact of financial integration and foreign bank entry on firms' export dynamics in new markets, which has received little previous attention.

The rest of the paper is organized as follows. Section 2 reviews the previous literature. Section 3 discusses the institutional context of the banking sector in China. Section 4 describes the data used and reports summary statistics of the data. Section 5 discusses the empirical strategy and presents the results. The last section concludes.

2   Related Literature

Our paper contributes to two main strands of literature. First, we add to the literature on the relationship between finance and trade. Chaney (2016) develops a trade model with liquidity constraints and shows that only firms with sufficient liquidity are able to export. Manova (2013) shows theoretically and empirically that trade is lower in financially vulnerable sectors, which require more external finance or have less tangible assets, and in countries with less developed

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[6]We discuss the related literature in more detail in the next section.

financial markets. Empirical studies have shown that credit constraints restrict international trade at the country-level (e.g., Manova, 2008; Minetti et al., 2021). Firm-level studies have provided evidence of the link between financial conditions and firms' trade. Manova et al. (2015) and Minetti and Zhu (2011) show that credit constraints restrict international trade volume and participation, for Chinese and Italian firms, respectively. Muûls (2008) finds that financially vulnerable Belgian firms are less likely to export and those that do export less products and to fewer destinations. Greenaway et al. (2007) find evidence from UK data that exporters are financially healthier than non-exporters and firms that export for the first time have lower liquidity and higher leverage.[7]

By investigating an episode of banking deregulation and the role of increased presence of foreign banks on exports, our paper adds more specifically to studies of the relationship between financial globalization, and in particular banking integration, and international trade. Portes and Rey (2005) highlight the role of foreign banks in the exporting country in facilitating information flow about export risks. Using aggregate trade data for 14 advanced economies, they show that the number of branches in the export country of banks headquartered in the import country is positively correlated with trade in goods and equity flows.[8] Michalski and Ors (2012) focus on domestic trade and show that the US interstate banking deregulation increased trade across state-pairs in the period following the deregulation. They argue that banks present in the two regions have an advantage in screening and sharing information on trade projects between the two markets.[9] Similar to our paper, Claessens and Van Horen (2021) study the role of foreign banks in facilitating trade. Using aggregate bilateral trade data for a set of countries, they find that aggregate exports are larger when a foreign bank from the importing country is present in the export country, benefitting especially less developed economies. As we discuss below, our study differs from theirs in crucial respects.[10] Caballero et al. (2018) focus instead on the formation of bank linkages through cross-border syndicated lending and find a positive effect on exports.

Our work is distinct from and adds to this literature in several respects. We leverage the banking liberalization in China as a natural experiment and exploit variation across cities in the presence of foreign banks from the destination, as well as openness to foreign bank lending in

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[7]Foley and Manova (2015) provide a survey of the literature on trade and financing frictions.

[8]The role of foreign bank branches as transmitters of information has been proposed by Choi et al. (1986, 1996) and Jeger et al. (1992). As discussed above, other mechanisms that can mitigate the information and risk barriers to trade include ethnic networks (Rauch and Trindade, 2002), trust (Guiso et al., 2009), business relationships (Cristea, 2011), and the use of letters of credit (Ahn, 2011).

[9]Manova (2008) finds that equity market liberalization, as opposed to banking integration, increases country-level exports by more in sectors that require more external finance and have less collateralizable assets.

[10]Bronzini and D'Ignazio (2017) investigate whether Italian firms have a higher probability of starting to export to countries where their financing banks have branches. However, their data has serious limitations as it is based on a very small sample of firms, for a single year, and lists only the top three export countries for a firm, making it impossible to assign zeros to countries not served by the firm, necessary to study the probability of exporting to a country.

local-currency following the deregulation. This allows us to establish causality. We use detailed firm-level data for the universe of exporters and their destination countries, providing micro evidence on the firms' export patterns and accounting for the endogenous entry decisions that vary across heterogeneous firms. Using firm-level, within-country variation to identify the effect mitigates the potential endogeneity problem in the supply of credit. Finally, we focus on the impact of the banking liberalization on the dynamics of the export sector, not just on entry but on four measures of performance: entry, survival, initial sales, and export growth.

A broader literature studies the role of banking integration in general and the presence of foreign banks in particular on the economy. Cetorelli and Strahan (2006) and Bertrand et al. (2007) study the impact of banking deregulation in the U.S. and France, respectively, on firm entry and exit and industry structure in non-financial sectors. Giannetti and Ongena (2009) study the impact of foreign bank lending on the growth and financing of Eastern European firms. Lin (2011) and Gormley (2010) study the effects of the entry of foreign banks in China and India, respectively, on firms' domestic credit access.

Our work also relates to a strand of literature that has studied the effects of banking crises on international trade. Amiti and Weinstein (2011) find that the financial health of exporters' banks was an important determinant of firm-level exports during the Japanese financial crises of the 1990s. Chor and Manova (2012) study the fall in international trade during the 2008 global financial crisis and find that the fall in US imports was larger from countries with tighter credit markets and in sectors with higher external financing requirement. Paravisini et al. (2015) find that credit shocks during the financial crisis affect the intensive margin of exports but not the entry or exit of firms to new product and destination markets. This contrasts with our finding of a positive effect of the reduction in financial frictions on export entry. However, while they analyze a temporary shock to credit supply, we focus on a permanent banking deregulation episode. We also use a longer panel of data which allows more time to identify the effects on export dynamics, which often take some time to respond to credit shocks. Berman and Héricourt (2010), using a sample of firms in developing economies find that firms' access to finance has a positive effect on their entry decision but has no effect on the probability of remaining an exporter.

Our paper contributes to a second literature that studies firms' export strategies and dynamics (Eaton, et al., 2008; Albornoz et al., 2012; Fernandes and Tang, 2014, among others). This literature has shown that new exporters tend to start exporting with small shipments to test the market, and a large number of them stop exporting after the first year in export markets. Theoretical studies have incorporated learning and search in trade models to rationalize these findings (e.g., Rauch and Watson, 2003; Eaton et al., 2021; Nguyen, 2012). Most of these models focus on firms' export experience as a determinant of export dynamics.[11] In this paper

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[11] Fernandes and Tang (2014) focus instead on learning from neighboring exporters.

we uncover a new determinant of new exporters' export dynamics: firms' credit constraints and the role of foreign banks from the importing country in easing financial frictions and information asymmetry that reduces export risk for firms that want to export to the bank's country. Our paper is also related to an earlier strand of the literature that studies the determinants of exporters' entry and survival. Earlier studies include Aitken et al. (1997), Clerides et al. (1998), and Bernard and Jensen (2004), among other. Finally, our paper relates to the literature on the role of fixed and sunk costs of exporting in shaping trade patterns and dynamics (e.g., Bernard et al., 2003; Melitz, 2003; Bernard et al., 2007; Das et al., 2007; Chaney, 2008).

3   Institutional Background

This section discusses the institutional background of China's financial system, the setting we analyze in this paper, exploiting the banking liberalization upon accession to the WTO. China's Banking Sector prior to 1978 consisted of only the People's Bank of China (PBOC), while other banks such as the Bank of China were organized as divisions of the PBOC. From 1978, as part of wider economic reforms, the commercial banking functions of the PBOC were split into four state-owned banks, including the Industrial and Commercial Bank of China, the Bank of China, the Agricultural Bank of China, and the China Construction Bank; with the PBOC assuming the function of China's central bank in 1983. Banking in China until the early 2000s was dominated by the four state-owned banks, a legacy of the centralized banking system. Despite its large size, with its directed lending and administered interest rates, the banking system faced many challenges, including poor efficiency, misallocation of credit, and low capital adequacy (Huang, 2005; Havrylchyk and Poncet, 2007). The state-owned commercial banks were instructed to lend to state-owned enterprises while smaller credit cooperatives lent mostly to private enterprises. As a result, Chinese firms ranked in surveys among the most financially constrained in the world (e.g., Claessens and Tzioumis, 2006).

The government started to reform the financial and banking systems from 1993, recognizing the importance of improving financial intermediation. The reforms included the decentralization of re-lending by the PBOC, relaxation of credit controls and some interest rate control, establishment of prudential financial regulation, and the establishment of policy banks to separate policy from commercial lending (see Lin, 2011; and Park and Sehrt, 2001, for mode details). However, evidence from Park and Sehrt (2001) shows that policy lending by state-owned banks did not fall after the reforms and economic fundamentals did not affect total lending by state banks.

Foreign banks' were allowed to establish branches in some Chinese cities prior to 1993, but their activities remained subject to various operational restrictions. Specifically, they could only conduct foreign-currency business with foreign firms and citizens only. From 1993, as part of

the banking sector reforms, some geographic and client restrictions on foreign bank lending were lifted. First, foreign banks were allowed to conduct foreign-currency as well as renminbi (RMB) transactions with foreign firms and citizens. Client restrictions on foreign-currency business was lifted upon China's entry into the WTO on December 2001. By the end of 2001 there were 157 foreign bank branches in China. However, they could not conduct local-currency business with domestic firms, the local-currency business restriction remained in place.

The foreign banks' local-currency business geographic and client restrictions were phased out gradually between 2001 and 2006 as part of the WTO accession commitments, which required that China opened its financial services sector to international competition. Specifically, at the end of 2001, client and currency restrictions were lifted in the first four cities: Shenzhen, Shanghai, Dalian, and Tianjin. The gradual process continued and by the end of 2003, foreign banks in 13 Chinese cities were allowed to conduct local-currency business with local firms in the same city. The lifting of restrictions continued in the following years, with foreign banks in 12 additional Chinese cities being allowed to conduct RMB business activities with local firms from 2004 and 2005. Additionally, a 1999 rule determined that foreign banks in Shanghai could also conduct business with clients in the close by provinces of Jiangsu and Zhejiang, and that foreign banks in Shenzhen could extend business to clients in the close by provinces of Guangdong, Guangxi, and Hunan, which therefore also experienced liberalization of foreign banks' RMB business in 2001. The remaining geographical restrictions to conduct renminbi transactions were completely abolished at the end of 2006. As a result of the staggered liberalization across regions and time, domestic firms in different regions enjoyed differential access to foreign bank loans denominated in renminbi. Foreign banks have increased their presence in Chinese cities, predominantly through Greenfield investment, by opening new branches and representative offices, and moving into previously restricted business areas (see He and Fan, 2004; Lin, 2011, for more details). The annual number of foreign bank branch openings increased steadily between 2001 and 2006, and by 2006 there were 297 branches.[12]

China's gradual banking liberalization to foreign competition during 2000-2006 provides an excellent context to study the impact of foreign bank entry and openness to foreign bank credit on firm's export dynamics. Specifically, the geographic variation across regions in China regarding when foreign banks can conduct local-currency business with domestic firms in the same region and the fact that foreign banks in China were not able to choose where to lend in local-currency to domestic firms provides an outstanding natural experiment to identify the effects on firms' trade decisions. In particular, by exploiting increased entry of foreign banks from each origin country across Chinese cities and the differential access to foreign bank loans denominated in renminbi by firms in the city, we uncover the role of foreign banks from the

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[12]In our regressions we exclude China-foreign joint ventures as well as banks from Hong Kong, which is also excluded from the export data.

importing country in promoting firms' export entry to the banks' origin country.

4   Data Description

The first data set used in this paper is the international trade data from China's Customs Office, covering monthly export and import transactions of all Chinese firms between 2000 and 2006.[13] The data reports the value, in US dollars, and quantity of each firm-product-country level transaction, for over 7000 HS 8-digit product categories to (from) over 200 destination (source) countries. Additionally, firm-level information includes ownership type (domestic private, foreign, and state-owned), trade regime (processing or non-processing exports), and the firm's region or city in China. For our analysis, we aggregate monthly observations to the year level. The analysis focusses on firms' exports to a new foreign destination, based on the presence of foreign banks from the same destination country in the same city, and we thus collapse the product dimension of the data. We exclude exports to Hong Kong, where many firms have their headquarters which may intermediate re-exports abroad. We also exclude processing exports and focus on the sample of non-processing (or ordinary) exporters. In China, firms are legally required to register as processing or ordinary exporters. Processing exporters assemble intermediate inputs into final products for foreign final-goods producers, often having long-term relationships with the foreign buyers, who can provide information about product design and foreign demand as well as funding, and as such arguably have little to gain from the presence of foreign banks.[14] The information and credit effects from foreign banks in the city are thus more important for ordinary exporters than for processing exporters.

The empirical analysis studies firms' entry and survival in a new destination country, as well as initial exports and export growth, based on the presence of foreign banks from the same country in the city, and thus relies on firms' active entry and exit in foreign markets. Table A.1 in the Appendix presents statistics on export patterns, particularly destination scope, for the firms in our sample, in the first and last year of the analysis. A firm exports on average to between 6 and 7 countries, while the median is between 2 and 3. The prevalence of multi-destination exporters allows us to control for firm fixed effects in our regressions, and identify effects on export performance from variation across markets within a firm. The low average and median exporters' sales suggest active entry and exit in foreign markets by the many small exporters in the data, as documented for other countries in previous research.[15]

The second data set that we use for our analysis is data on foreign banks' affiliates operating

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[13]The same data set has been used by previous researchers, e.g., Ahn, Khandelwal and Wei (2010) and Manova et al. (2015).

[14]See Feenstra and Hanson (2005) and Fernandes and Tang (2012) for more details about processing and non-processing trade regimes in China.

[15]We obtain identical statistics on export patterns for the full sample of firms, in all cities, as those reported in Table A.1. This confirms that firms in the sample of cities that have foreign banks are not different in terms of export destination scope and average or median exports.

in China. We collect information on the number of foreign bank entities operating in a city, by country of origin, for the years from 2000 to 2006. The data is retrieved from Almanac of China's Finance and Banking for each year over 2001 to 2006, the same period as the export data. The data lists a range of information for each bank entity, such as the foreign bank's name, country of origin (incorporation), the affiliate name in China, city in China where it operates, operation start date, and the type of affiliate: branch, sub-branch, or representative office. Branches are integral parts of the parent bank, and as such can draw on the headquarters' capital base and offer a wide range of services. Sub-branches are administratively subordinate to a branch in the same prefecture, and are established to better serve large metropolitan and peripheral areas. Representative offices are not legally permitted to make loans, and instead act as agents for the foreign bank; they can provide consulting services, marketing research, discuss business initiatives with local companies, and serve as intermediaries between local businesses and their headquarters.[16]

We use each bank affiliate's country of origin and prefecture in China where it is located to obtain the number of foreign bank affiliates at the city-country-year level, for each bank entity type.[17] The results remain robust if we use the number of entrants in each year.[18] Table A.2 provides a summary of the number of foreign bank affiliates operating in China, for branches, representative offices, and all foreign bank subsidiaries, excluding banks from Hong Kong, which is dropped from the export sample, and China-foreign joint ventures. The number of foreign banks in China increased over the sample years since 2002, after China joined the WTO at the end of the previous year and the liberalization of the banking sector in China began. Table 1 reports the top 10 countries based on the total number of bank subsidiaries and branches operating in China in 2001 and 2005, the first and last year of the estimation sample, respectively. Among the countries with more banks in China are Japan, US, UK, France and Germany. We show below that the top 10 countries in terms of prevalence of foreign banks in China highly correlates with the top 10 countries by Chinese firms' export entry rates. Our analysis exploits the cross-city and time variation in the prevalence of foreign banks from the importing country and access to foreign bank lending in local-currency in the city to identify spillovers for export dynamics.

[Table 1 about here]

Our empirical analysis uses the staggered liberalization of the banking sector to foreign competition across Chinese cities over time since China joined the WTO in 2001, as discussed in the previous section, and the increased entry of foreign banks from each nationality across cities. In the baseline estimations we focus on the sample of cities that have foreign banks

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[16]China Banking Regulation, National Assembly Announcement 478 of 11th November, 2006.

[17]We exclude China-foreign joint venture entities.

[18]The affiliate's start year is used to obtain the number of entrants in each year, at the city-country level.

during the sample period, excluding those that never have any. As we include city fixed effects in our regressions, focussing on this sample produces similar results as when using the full sample, with all the cities.[19] We also explore information effects across destination countries, based on bilateral distance to China, using data from CEPII.[20] Fernandes and Tang (2014) show that a firm's probability of entry and initial sales in a market increase with the performance of neighboring exporters in the same city. We thus also control in our regressions for spillovers from neighboring exporters, identifying effects on export performance from the prevalence of foreign banks in the city, after controlling for learning spillovers from neighbors. We present summary statistics for the variables used in our specifications in Appendix Table A.3.

5 Empirical Analysis

This section presents the results of our empirical analysis on the effects of the banking sector liberalization and the prevalence of foreign banks across Chinese cities on export entry, initial export sales, survival and growth in export markets, using Chinese transaction-level export data and data on the presence of foreign bank affiliates across Chinese cities.

5.1 Export Entry

To estimate how the presence of foreign banks by country of origin affects firms' entry into the foreign countries following the reform, we define the entry dependent variable, $Entry_{irct}$, a dummy variable that takes the value 1 if firm i in city r started exporting to country c in year t. It takes the value zero for all potential destination countries that were not served by firm i in year t and before.[21] Firms that were already exporting to country c in $t-1$ are excluded from the analysis since we study the probability of entering a new market. $Entry_{irct}$ is not defined in 2000, the first year of the sample, and observations for the last year (2006) are dropped for consistency, as export survival and post-entry export growth, studied below, are not defined in the last sample year. Table 2 reports the top 10 countries based on their average export entry rates across firms and cities, for 2001 and 2005.

[Table 2 about here]

Our empirical analysis exploits the staggered liberalization in the banking sector across cities over time since China joined the WTO in December 2001. To cleanly estimate the effect of the prevalence of foreign banks and the banking sector liberalization across Chinese cities, we

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[19]Cities with foreign banks account for about 45% of China's non-processing firms' exports across sample years.

[20]http://www.cepii.fr/distance/dist_cepii.dta. See Mayer and Zignago (2006) for details.

[21]We consider as potential new destinations for a firm those countries that were served by at least one firm in the same city in $t-1$.

control for sets of fixed effects to absorb country-specific and city-specific trends in exports in our regressions. To study the propensity to enter a new foreign market, we estimate a probability model of entry, where the regressor of main interest is an interaction between the (log) number of foreign bank subsidiaries from country c in city r in China and the liberalization dummy for whether foreign banks in the city are permitted to lend to local firms in local-currency. We estimate the following entry specification:

$$\Pr\left[Entry_{irct}\right] = \alpha + \beta_1 \ln nfbanks_{rct} \times FBlib_{rt} + \beta_2 \ln nfbanks_{rct} + \beta_3 FBlib_{rt} + \theta \mathbf{X}' + \{FE\} + \epsilon_{irct},$$
(1)

Where $\ln nfbanks_{rct}$ is the (log) number or density of foreign bank subsidiaries in city r of banks headquartered in country c in year t.[22] $FBlib_{rt}$ is the cross-city and time banking reform dummy, which takes the value 1 in all the years after foreign banks in city r are permitted to lend to local firms in renminbi, and zero otherwise (before the liberalization and for cities that do not liberalize during the sample period). The interaction term between the two ($\ln nfbanks_{rct} \times FBlib_{rt}$) captures the differential effect of the prevalence of foreign banks from country c in city r on the probability that firm i starts to export to the same country in t, following the banking liberalization. As discussed above, the number of foreign bank affiliates includes branches, sub-branches and representative offices. In alternative specifications, we include the number of bank branches and representative offices separately.

Since cities vary in size and larger cities are likely to have both more firms and more foreign banks, we use the (log) density of foreign bank affiliates, dividing the number of bank affiliates by the area of the city in thousand square kilometers ($area_r$), as the measure of $\ln nfbanks_{rct}$. The results remain similar if we use the density or the number itself. In vector $\mathbf{X}$ we control for knowledge spillovers from neighboring firms, to cleanly estimate the effects arising from the presence of foreign banks on firms' exports, above any spillovers from neighbors. Specifically, we include the density of exporters in the city exporting to country c in both t and $t-1$ ($\ln(nn_{rct}/area_r)$), their average export growth ($\Delta \ln(x_{rct})$), a proxy for the signal about foreign demand, and the interaction between the two, as in Fernandes and Tang (2014).[23] $\mathbf{X}$ also includes the prevalence of banks from other countries in the city, as we discuss further below.

The impact of foreign bank presence and availability of credit from foreign banks is captured by β_1 which is estimated from time series and cross section variation in the presence of foreign banks over time and across cities and origin countries, and the change in the reform indicator $FBlib_{rt}$ for firms in cities where foreign bank local-currency loans become available, relative to firms in the control group, those in regions where foreign bank loans in RMB are not available

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[22]To preserve observations where the number is zero, we use the natural logarithm of the number or density of foreign banks plus 1.

[23]The signal from neighbors is defined as $\Delta \ln\left(x_{irct}\right) = \frac{1}{\mathbf{N_{rc,t-1}}} \sum_{i \in \mathbf{N_{rc,t-1}}} \left[\ln\left(x_{irct}\right) - \ln\left(x_{irc,t-1}\right)\right]$, where $\mathbf{N_{rc,t-1}}$ is the set of firms exporting to country c from city r, in both year t and $t-1$, and x_{irct} is the export level.

at the time. We include exhaustive sets of fixed effects ($\{FE\}$) which absorb any unobserved determinants of export dynamics. Specifically, we always include city-country fixed effects, which absorb any factors that could simultaneously affect new exporters' sales dynamics and foreign bank entry at the city-country level, as well as controlling for the bilateral distance and infrastructure for exports between a city and a destination country, historical factors, and any other unobserved determinants of exports from a city to a country. In addition, we include firm-year fixed effects, which account for firm-specific supply shocks, and for endogeneity in entry decisions across heterogeneous firms. City-year fixed effects control for shocks that affect all firms in a city, such as local policies. In alternative specifications, we also control for country-year fixed effects to absorb any shocks at the destination level, such as demand or exchange rate shocks, and economic policies affecting exports to a country. The main effect of the liberalization dummy is subsumed by the city-year fixed effects. The identifying assumption is that the introduction of the reform was not correlated with preexisting trends across cities. Including city-year fixed effects in our specification absorbs any city-year specific shocks. We also estimate event-study regressions below and show that there are no pre-trends, supporting the identification.

We estimate eq. (1) using a linear probability model, as in e.g., Bernard and Jensen (2004) and Albornoz et al. (2011).[24] We cluster standard errors at the city-country (rc) level, at which our main regressors are defined. Table 3 reports the estimation results from (1). All columns include city-country fixed effects. In addition to city-country fixed effects, columns (1), (2) and (5) also include firm-year fixed effects, columns (3) and (6) additionally include city-year fixed effects, and columns (4) and (7) country-year fixed effects. Coefficients on the regressor of main interest, the interaction between the density of foreign banks by city-country-year and the liberalization dummy for whether and when local-currency lending from foreign banks is available in the city of firm i, are all positive and statistically significant at the 1% level. This shows that firms' probability of entering into exports to a new foreign country c is increasing in the prevalence of foreign banks from the same country in the city, when foreign banks are permitted to conduct local-currency business with firms in the city. From column (2) onwards we control for learning spillovers from neighboring exporters. We obtain positive and significant coefficients for the three terms, consistent with the findings in Fernandes and Tang (2014) that average export growth of neighboring exporters to a market increases the probability of a firm entering the same market, more so when there are more firms serving the market. Importantly, we continue to find that the prevalence of foreign banks from a country and openness to local-currency lending from foreign banks in the city have a positive effect on the probability of starting to export to the same country. The estimates remain of similar magnitude and are

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[24]This allows including large sets of fixed effects, and the linear estimates are typically very close to Probit average marginal effects (see e.g., Wooldridge, 2002 and Angrist and Pischke, 2009).

robust to including the different sets of fixed effects as discussed above. We continue to obtain a positive and significant coefficient on the interaction between the density of foreign banks and the banking liberalization dummy. The results show that, controlling for firms' efficiency and knowledge, city-year or county-year trends, in addition to city-market unobserved factors, firms are more likely to enter into exports in a new country if there are more foreign banks from the same country in the city after the openness to local-currency lending by foreign banks.

[Table 3 about here]

If spillover effects from the presence of foreign banks on the probability of entering a new foreign market are country-specific and result from knowledge spillovers about the destination country, the prevalence of banks from other nationalities in the city should have no effect on the probability on entering a country. Thus, in columns (5) to (7), we include the density of banks from other countries in the city ($\ln nfbanks_{om,rct}$) and its interaction with the bank liberalization variable. The interaction term is statistically insignificant, showing that there are no differential effects from "other market" banks on the export entry probability to a country after the banking deregulation. Importantly, the coefficients on the interaction with the density of banks from the same country remain significant and of similar magnitude. Specifically, in column (5), when city-country and firm-year fixed effects are included, the estimated coefficient of 0.041 on the $\ln nfbanks_{rct} \times FBlib_{rt}$ interaction shows that a one standard-deviation increase in the log density of foreign banks (0.066 or 1 additional bank per thousand square kilometers) is associated with an increase in the entry probability of 0.0027, or 0.27 percentage points ($0.041 \times 0.066 \times 100$), following the banking reform. This corresponds to an 11% increase relative to the sample mean entry of 0.025, reported in Table A.3. In column (7), with city-country and city-year fixed effects, we continue to obtain a statistically significant effect, implying a 7% increase in the export entry probability, relative to the sample mean, for a one standard deviation higher density of foreign banks in the city. That is, firms are more likely to enter into exports in countries that have a higher prevalence of foreign banks in the city, when foreign banks are allowed to lend to local firms in local currency.

In Table 3 above we estimate the average effect of the prevalence of foreign banks on export entry following the reform. Next, we estimate the effects in each year relative to the introduction of the reform in the city, which also allows us to assess whether there are any pre-reform trends. To that end, we estimate event study regressions of the form:

$$\Pr\left[Entry_{irct}\right] = \alpha + \sum_{\tau} \beta_{\tau} \ln nfbanks_{rct} \times FBlib_r^{t+\tau} + \theta \mathbf{X}' + \{FE\} + \epsilon_{irct}, \qquad (2)$$

Here the coefficients of interest are β_{τ}, on the interaction between the density of foreign banks and a set of dummy variables for each year relative to the reform year, $FBlib_r^{t+\tau}$; where τ

denotes years since or prior to the reform. The lower-order terms of the main interaction are explicitly included or are subsumed by the sets of fixed effects. We include city-country fixed effects to account for unobserved city-country factors that could simultaneously affect exports and foreign bank entry, and additionally control for firm-year or city-year fixed effects, which absorb any potential city-year shocks that could coincide with the reform. We include the same set of controls as discussed above in $\mathbf{X}$. We use $t-1$, the year prior to the reform implementation in the city, as the reference period and β_τ is thus zero by construction for $\tau = -1$. Figure 1 plots out the estimated coefficients and 95% confidence bands. The coefficients are statistically insignificant prior to the reform, confirming that there are no prior trends in export entry before the policy change, supporting our identification strategy. After the banking liberalization that allowed foreign banks to conduct local-currency business with local firms, the effects become positive and statistically significant, showing increased export entry to countries with higher density of banks in the Chinese city following the reform.

[Figure 1 about here]

In Table 4, we estimate eq. (1) but including interactions between the banking reform indicator variable and both the density of foreign bank branches and the density of foreign bank representative offices separately, to assess whether the spillovers on the probability of export entry differ according to the prevalence of each of these types of bank subsidiaries. We find that the differential effect from the presence of foreign bank branches at the city-country level is positive and significant at the 1% level after the banking liberalization, and larger in magnitude. The estimate when city-country and firm-year fixed effects are included (column (2)) implies a 10% increase in the probability of entering a new market, relative to the sample mean, for a one standard deviation increase in the density of foreign bank branches from that country. The effect from the prevalence of foreign bank representative offices is smaller in magnitude, implying a 5% increase in export entry relative to the sample mean, as a result of a one standard deviation increase in the density of foreign bank representative offices; the estimates are also less significant. This result is expected since, as discussed above, representative offices unlike branches are not permitted to loan funds or conduct other banking services, although they can provide consulting, discuss business initiatives, and serve as intermediaries between local companies and their headquarters. The results remain robust for the different sets of fixed effects as above.

[Table 4 about here]

Next, we investigate whether spillovers from the presence of foreign banks on the export entry probability differ across foreign countries associated with different degrees of uncertainty; that

is, if the firms have different knowledge about the market. To that end, we use the geographic distance between the destination country and China, which varies across countries, as a proxy for uncertainty about a potential new export market. We estimate a specification which, in addition to the variables and controls discussed above, also includes an interaction between the (log) density of foreign banks by city-country-year and an indicator for whether the destination country is above the median distance across all destinations, $\ln nfbanks_{rct} \times I_{dist,c}$. We thus exploit the differential spillovers across markets based on whether they are more distant from China.

The results are reported in Table 5. We control for firm-year and city fixed effects. The estimates of the interaction $\ln nfbanks_{rct} \times I_{dist,c}$ are positive and significant at the 1% level. This result shows that the density of foreign banks in the city has a higher effect on export entry to more distant countries, with above-median distance from China. That is, if a country is associated with higher uncertainty and firms are less familiar with the market, a higher prevalence of foreign banks from that country in the city will have a higher effect on the export entry probability, relative to closer destinations. We continue to find that following the banking liberalization, a higher prevalence of foreign banks from the importing country in the city increases export entry in the same country: the estimate on $\ln nfbanks_{rct} \times FBlib_{rt}$ remains positive and statistically significant.

[Table 5 about here]

In sum, the results in this section show that firms are more likely to start exporting to countries with a higher prevalence of banks in the city after the staggered liberalization of the banking sector across Chinese cities, which lifted the restriction on foreign banks local-currency lending to local firms. The effect of the prevalence of foreign banks on the export entry probability is higher if the destination is more distant and hence associated with higher uncertainty and export risk.

Our finding that the shock affects the extensive margin of trade is in contrast with some previous results, e.g., Paravisini et al. (2015) find that the 2008 financial crisis affected Peruvian exporters' intensive margin but had no effect on entry or exit. Minetti et al. (2021) find no effect from foreign bank credit share on export entry rate. These findings contrast with what trade models with firm heterogeneity predict (e.g., Melitz, 2003). Our setting differs from these studies in a number of respects, which can explain our result of increased entry. We analyze an episode of banking deregulation that constitutes a permanent shock, while previous papers have mostly focussed on temporary shocks. Our analysis uses the Chinese banking market gradual liberalization to foreign competition, a setting where firms were highly financially constrained and a period with unprecedented growth in exports. We also use a longer panel of data which

allows more time to identify the effects on export entry, which often take some time to respond to financial shocks.

5.2   Initial Level of Exports

In this section, we investigate the effects of the prevalence of foreign bank subsidiaries in the city from the importing country on firms' export sales on entry in the same country. If the presence of foreign banks is associated with knowledge spillovers to local firms about the same country, or help ease credit constraints if, for example, foreign banks have an advantage in screening export projects to their home country, we expect positive effects not only on the probability of entering the market, but also on the initial level of exports in that market. To investigate this hypothesis, we estimate a specification similar to eq. (1) but where the dependent variable is now the (log) of initial exports of firm i (in city r) to country c in year t, $\ln\left(Exp_{irct}^{0}\right)$, with all the regressors and controls remaining the same. The regression results are presented in Table 6. We include different sets of fixed effects and controls across the columns of the table, as in Table 3 in the previous section.

In columns (2) to (4), we control for knowledge spillovers from neighboring exporters on firms' initial sales in a market, which have a positive and significant effect on initial export sales. The coefficient of main interest, on the interaction between the density of foreign banks, $\ln nfbanks_{rct}$, and the banking liberalization dummy, $FBlib_{rt}$, is positive and statistically significant when city-country and city-year fixed effects are included (column (3)). The main effect of the foreign bank density variable is also positive and significant. These results show that, after controlling for any determinants of exports from a city to a country and for city-level trends, firms start exporting with larger volumes in a new destination country when there are more foreign banks in the city from that country, more so when foreign banks are permitted to lend to local firms in renminbi.

[Table 6 about here]

Columns (5) to (7) investigate whether the spillover effects from the presence of foreign banks on exporters' initial sales in a market are country-specific. To that end, as in the previous section, we control for the log density of banks from other destinations in city r on initial exports to country c ($\ln nfbanks_{om,rct}$) and its interaction with the banking liberalization dummy. We find that both the main effect of the density of other-market banks and its interaction with the liberalization dummy are statistically insignificant or negative. This confirms that the prevalence of banks from other nationalities has no effect on the initial export sales in a market, suggesting that the effects arise through knowledge spillovers about the destination country. Importantly, the coefficient on the interaction with the density of banks from the same country

remains significant and of similar magnitude when we control for city-market characteristics and for city-level shocks (column (6)). The estimate on the interaction term of 0.179 suggests that an increase in the log density of foreign banks from the importing country in the city equal to the sample standard deviation increases exporters' initial sales on entry in the same country by an additional 1.2% when foreign banks are allowed to lend to local firms in local-currency. When we control for shocks at the destination level in addition to city-market fixed effects (column (7)), the coefficient on the interaction term shows that the same one-standard deviation increase in the density of foreign banks in a city from a country is associated with an increase in initial export sales to the same country by 1.6% following the banking liberalization. The effect is not statistically significant when firm-year fixed effects are included.

Figure 2 presents the event-study plot of the coefficients and 95% confidence bands from estimating eq. (2) with initial exports to a country as the dependent variable. Similar to Figure 1 above, $t - 1$ is the omitted category and thus the coefficients are estimated relative to this reference period. The coefficients are statistically insignificant prior to the banking reform, showing that there are no pre-trends in initial exports. The coefficients become positive after the deregulation of foreign banks' local-currency business with firms in the city. The coefficient is positive and statistically significant in t, after the liberalization, evidence a positive effect from the presence of foreign banks in the city on initial export sales to the same country following the reform. Though the coefficient remains positive in the two subsequent years, it is not significant, but in $t + 3$, the effect is again positive and significant.

[Figure 2 about here]

In column (1) of Table A.4 in the Appendix, we investigate whether the effect from the presence of foreign banks on initial exports to a country differs according to the degree of uncertainty about the country, proxied by geographical distance to China. As in Table 5 above, we include an interaction between the density of foreign banks at the city-country level and a dummy variable taking the value 1 if the country is above-median distance from China, and zero otherwise, as well as the main effects of the interaction. We control for firm-year and city fixed effects, spillovers from neighboring exporters, and include an interaction between the distance dummy variable and neighbors' average export growth in a destination, the signal about foreign demand, as above. We find that the distance interaction term of main interest is positive and statistically significant, showing that the prevalence of foreign banks in the city has a higher effect on initial exports to more distant and thus less familiar destinations, relative to nearby countries. The interaction between the reform variable and the density of foreign banks is positive and significant confirming that initial export sales are higher after the reform to countries with higher prevalence of banks in the city.

Research has shown that new exporters in a market typically start by exporting small

volumes to test the market, and then grow as they learn about the foreign market's demand, consumer tastes, etc. (e.g., Rauch and Watson, 2004; Albornoz et al., 2012). The results in this section suggest that the banking reform and increased prevalence of foreign banks in the city from the importing country can have positive spillovers for exporters which, not only encourage them to enter the same market, but also to start exporting with larger volumes on entry in the market.

5.3 Export Survival

This section investigates whether the prevalence of foreign banks in the city from a country also affects exporters' survival in the same country, conditional on entry. To that end, we define the survival dependent variable, $Survival_{irct}$, a dummy variable equal to 1 if firm i in city r did not export to country c in year $t-1$, started to export to c in year t, and remained in the market in $t+1$; $Survival_{irct}$ equals zero in the firm drops from the market the year after entering, that is, if the firm did not export to country c in $t-1$, started to export in year t and does not export in $t+1$. Therefore, $Survival_{irct}$ takes the value 1 for exporters that remain in the export market beyond the first year of exporting, and zero for single-year export incidences which do not survive in the market. $Survival_{irct}$ is not defined in 2006, the last year of the sample, and observations for 2000, the first year, are dropped for consistency with the entry regressions above. We estimate eq. (1) with the $Survival_{irct}$ dummy as the dependent variable. The results from estimating a linear probability model of export survival are reported in Table 7. We include the same sets of fixed effects and controls across the table's columns as in previous sections.

[Table 7 about here]

Columns (2) to (4) control for spillovers from neighboring exporters on firms' survival in an export market. We find that the coefficient of main interest, on the interaction between the log density of foreign banks in the city from a country and the cross-city-time banking liberalization dummy, $\ln nfbanks_{rct} \times FBlib_{rt}$, is statistically insignificant across the specifications. The main effect of the log density of foreign banks is also insignificant except in column (3) when city-year and city-country fixed effects are included. We also find that the prevalence of neighbors exporting to the same country has a negative and significant effect on export survival, suggesting that the positive effect it has on entry may subsequently lead to increased exit of the least productive exporters.[25]

Columns (5) to (7) include additionally the density of foreign banks in the city from other countries, to control for potential effects from other countries' banks on the survival probability

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[25]This is in line with the finding in Fernandes and Tang (2014).

in a market. These are statistically insignificant or negative. We continue to find that there are no statistically significant effects from the density of banks from the importing country and the banking deregulation on the export survival probability in the same country, except in column (7), when country-year fixed effects are included along with city-country fixed effects and the other controls, where the interaction term is positive and significant. Spillovers from other-country banks continue to be insignificant or negative. These results generally suggest that the reform and the prevalence of foreign banks in the city from the importing country do not affect exporters' survival in the same country.[26] Our results suggest that, if the banking liberalization and increased prevalence of foreign banks affect exports through reducing financing constraints, they do so mainly through the sunk entry cost that firms have to pay to enter the new market. They are consistent with larger sunk entry costs than per period fixed costs to continue in the market, or with financial constraints being less important for the continuing decision in the market. If on the other hand the effect arises from a reduction in information asymmetry and thus export risk, any information about the market transmitted from foreign banks in the city is taken into account by the firm at the time of entry and thus no longer affects export survival.

5.4   Post-entry Export Growth

In this section, we investigate how the presence of foreign banks in the city from a country may affect firms' export growth after entry in the same country, and whether there are differential effects after the banking liberalization across Chinese cities, which allowed foreign banks to bo business with local firms in local-currency. To that end, we estimate eq. (1) with post-entry export growth as the dependent variable, defined as the log change in exports, $\triangle \ln (Exp_{irc,t+1}) = \ln (Exp_{irc,t+1}) - \ln (Exp_{irct})$. The dependent variable is thus the growth rate of exports of firm i (in city r) in new export country c after entry, conditional on survival in the market beyond the first year of exporting.

[Table 8 about here]

The regression results are presented in Table 8. We always include city-country fixed effects and additionally include the same progression of the other sets of fixed effects and controls across the columns of the table as in previous sections. We find that the coefficients on the regressors of main interest, the density of foreign banks from country c in city r ($\ln nfbanks_{rct}$) and its interaction with the banking reform dummy ($FBlib_{rt}$) are generally statistically insignificant when firm-year or city-year fixed effects are included. When we include country-year fixed effects and control for knowledge spillovers from neighbors (column (4)), we find a positive and significant coefficient on the foreign bank density main effect. The estimate of 0.56 implies an

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[26]Berman and Héricourt (2010) find that financial constraints matter for the decision to enter the export market but not for the size or the probability of remaining an exporter.

increase in export growth in a market in the first year after entry of 3.7 percentage points if the density of foreign banks from the same market in the city increases by one sample standard deviation. The coefficient on the interaction with the dummy for the openness to local-currency lending from foreign banks continues to be statistically insignificant. The results remain similar when we account for effects from the prevalence of foreign banks from other countries (columns (5) to (7)).

In sum, these results generally suggest that the reform and increased prevalence of foreign banks in the city have no effect on the growth rate of exporters after entry in a country. Similar to the results above for survival, a reason for this finding is that once information spillovers from the prevalence of banks in the city are taken into account in the decision to enter the export market and in the initial level of sales, there are less unanticipated factors about the market that would affect post entry export growth. Moreover, if foreign banks reduce credit constraints, the results are consistent with the effect on exports arising through the financing of sunk entry costs rather than variable costs of increasing export sales after entry, or financial constraints being less important for the growth decision in the market.

5.5 Mechanisms for the Effects

In the previous sections we established a positive relation between the local presence in China of foreign banks from the importing country and firms' export entry and initial export sales after the banking reform, while no effects were found on export survival and post-entry growth. In this section we investigate two main mechanisms through which the banking integration and increased foreign bank entry from the importing country affect export dynamics: increased availability of external finance and mitigation of information asymmetries and export risk. To that end, we use a triple-difference approach to estimate the differential effect for firms across cities with varying foreign bank presence and local-currency lending availability, and across sectors with different innate degree of financial vulnerability (Rajan and Zingales, 1998) and product information and contractual complexity (Rauch, 1999; Nunn, 2007). We estimate specifications of the form:

$$
\begin{aligned}
Y_{irsct} = \ & \alpha + \beta_1 \ln nfbanks_{rct} \times FBlib_{rt} \times Z_s + \beta_2 \ln nfbanks_{rct} \times FBlib_{rt} \\
& + \beta_3 \ln nfbanks_{rct} \times Z_s + \beta_4 FBlib_{rt} \times Z_s + \beta_5 \ln nfbanks_{rct} + \beta_6 FBlib_{rt} \\
& + \beta_7 Z_s + \theta \mathbf{X}' + \{FE\} + \epsilon_{irsct},
\end{aligned}
\tag{3}
$$

Where the dependent variable, Y_{irsct}, is either export entry, initial sales, survival or export growth after entry for firm i, in city r, sector s, exporting to country c in year t, as in previous sections. Z_s is either one of two sectoral measures of financial vulnerability: external finance dependency ($Extfin_s$) and asset tangibility ($Tang_s$) or a measure of product differentiation or

riskiness ($diff_s$). The coefficient of main interest is now β_1, on the triple difference interaction, which estimates the differential effect for firms located in cities where foreign bank credit in renminbi becomes available (following the liberalization) and in sectors with high financial constraints or product riskiness. β_2 estimates the main effect of the increased log density of foreign banks in the city from the importing country ($\ln nfbanks_{rct}$) following the banking deregulation ($FBlib_{rt}$), as in previous sections. We include the same sets of controls and fixed effects ($\{FE\}$) as in previous sections. Some of the lower-order terms and main effects are subsumed by the sets of fixed effects included.

We first examine whether the effects are stronger for firms in more financially constrained industries, evidence that increased availability of finance is a channel for the effects on exports.[27] We use two common determinants of a sectors' financial vulnerability, which have been extensively used in previous literature (e.g., Claessens and Laeven, 2003; Manova et al., 2015; Claessens and Van Horen, 2021; Minetti et al., 2021) and which are exogenous from the perspective of individual firms. The first measure is external finance requirement, which is intrinsically higher in some industries due to, e.g., the initial project scale, requirement for up-front long-term investment, continuing investment in working capital, or the cash harvest period (Rajan and Zingales, 1998). The second measure is the share of tangible assets used in production (such as plants and equipment) that firms can pledge as collateral to access external finance (see e.g., Braun, 2003; Claessens and Laeven, 2003; Manova, 2013). These measures are provided in Manova (2013) and come from Braun (2003); they are constructed from data for all publicly listed US-based companies from Compustat, averaged over 1986–1995, for the median firm in each sector.

External finance dependence is measured as the share of capital expenditures not financed by internal cash flows from operations and asset tangibility is the share of net plant, property and equipment in total book value assets. These measures are widely considered to be sector-specific characteristics, intrinsic to the manufacturing process of the sector, and as such are unrelated to the banking deregulation in China and prevalence of foreign banks. They are also measured for a reference country, the US, and prior to the estimation sample period.[28] We use indicator variables which take the value 1 if the sector is above-median external finance dependency or asset tangibility across sectors, and zero otherwise, thus estimating the differential effect for firms with high (above-median) financial vulnerability, relative to those with low (below-median)

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[27]The firms' industry is the HS 2-digit sector of the firms' main line of business, with larger exports.

[28]These measures are typically constructed from US data for two sets of reasons. First, the US has one of the most advanced financial systems, and as such, firms' are unlikely to be constrained and likely follow optimal external financing choices. Second, using measures from a reference country ensures that they are not endogenous and are constructed from the best available data. Moreover, identification only requires that the relative ranking of the sectors' measures is stable across countries, not the level itself. The measures have been shown to capture innate technological properties of the industries, and their ranking tends to be stable over time, while displaying much larger variation across sectors than across firms within a given industry (Rajan and Zingales, 1998; Braun, 2003).

financial vulnerability. Our results remain robust to using continuous measures.

The results from estimating eq. (3) are reported in Table 9. In panel A we assess the effects of external finance dependency. We continue to find that a higher density of foreign banks from a country increases the probability of export entry to the same country, for firms in cities with openness to foreign bank lending in local-currency (columns (1) and (2)). Initial export sales and survival also increase, when city-country and country-year fixed effects are included (columns (4) and (6)). However, we do not find evidence of a stronger differential effect for firms in industries that are more dependent on external finance. The coefficient of the triple interaction between the log density of foreign banks, the banking reform variable and the sector measure of external finance dependence, $\ln nfbanks_{rct} \times FBlib_{rt} \times Extfin_s$ - which captures the differential effect of the banking deregulation and increased presence of foreign banks in the city for firms with above-median external finance dependence - is not statistically significant. This shows that firms in industries with higher financing requirement did not benefit more from the deregulation and foreign bank entry. Previous literature has suggested that domestic banks often protect incumbent firms and increased foreign bank competition may drive away domestic banks, reducing overall bank credit (see e.g., Giannetti and Ongena, 2009; Gormley, 2010; and Lin, 2011). This could explain the insignificant results for external finance dependency.

[Table 9 about here]

In Panel B of Table 9, we interact the log density of foreign banks and banking liberalization variable with the sectors' measure of asset tangibility. We find that the differential effect on export entry is significantly more pronounced for firms in industries with fewer tangible assets. The triple interaction term $\ln nfbanks_{rct} \times FBlib_{rt} \times Tang_s$ is negative and statistically significant when city-country fixed effects are included along with firm-year or country-year fixed effects (columns (1) and (2)). These results suggest that new exporters with less ability to pledge tangible assets as collateral to raise external finance benefited more from the foreign bank deregulation and prevalence. This could be because foreign banks present in both the exporting and the importing country may have better information on both sides of the transaction, or better technologies to screen exporters and evaluate export projects for local firms that want to export to the bank's country, and therefore rely less on collateral in their lending decisions. This result provides evidence that reduction in financial constraints for new exporters is a channel for the effects.

Next, we investigate whether the mechanism for the impact of foreign bank liberalization and increased entry across Chinese cities on export dynamics is related to the mitigation of information asymmetry and export risk. International trade is riskier than domestic sales because contracts are harder to enforce across borders and less information may be available about the trading partners. By being present in both the exporting and the importing country, foreign

banks can facilitate the transmission of information about transaction risks (Portes and Rey, 2005; Michalski and Ors, 2012) and help enforce contracts (Anderson and Marcouiller, 2002). They can also provide information about conditions in the export market and help firms assess the market's profitability. The literature has shown that exports of differentiated goods involve higher uncertainty and risk relative to homogeneous goods. This arises because differentiated goods have a higher level of complexity, making export contracts more incomplete and harder to enforce and hence subject to higher export risks (Berkowitz et al., 2006). The higher level of complexity also makes the quality of differentiated goods more uncertain to the buyer and more subject to contract enforcement problems (Ranjan and Lee, 2007). More complex goods also tend to be more customized and to require relationship-specific investments (Nunn, 2007). More differentiated and complex goods are thus more subject to export risks, which foreign banks from the importing country can help mitigate.

Therefore, we examine whether the differential effect of foreign bank local-currency business liberalization and increased entry is stronger for firms in industries with more differentiated goods, which involve higher export uncertainty and risk. To that end, we use the measures from Rauch (1999) to classify sectors according to the level of product differentiation. This approach has been extensively used in previous literature (e.g., Caballero et al., 2018; Minetti et al., 2021; among many other).[29] The measure of product differentiation that we use is a dummy variable equal to 1 for a HS 2-digit sector, if at least half of the HS 6-digit goods within the HS2 are classified as differentiated by Rauch (1999), and zero otherwise.[30] The results from estimating eq. (3), where Z_s is now the sector measure of product differentiation, or riskiness, $diff_s$, are presented in Table 10.

[Table 10 about here]

We find that the differential effect on export entry is positive and significant for firms in industries with riskier goods, while it is statistically insignificant for those in other industries. The triple interaction term $\ln nfbanks_{rct} \times FBlib_{rt} \times diff_s$ is positive and significant at the 1% level, showing strong effects on export entry for differentiated goods' exporters. The main interaction, $\ln nfbanks_{rct} \times FBlib_{rt}$, which measures the effect for exporters in industries with homogeneous goods, is statistically insignificant (columns (1) and (2)). We also find a positive effect on initial export sales, but only when when city-country and firm-year fixed effects are included (column (3)). We continue to find no statistically significant effects for export survival or growth conditional on entry. The pronounced effects on entry for new exporters of more

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[29]Rauch (1999) defines differentiated products as those not traded in organized exchanges nor reference priced. The rationale, as discussed in Rauch and Trinidade (2002), is that goods with reference prices are sufficiently homogeneous that price conveys all relevant information for international trade. This is not the case for differentiated goods, which do not have reference prices.

[30]Our results are robust to using a continuous measure equal to the share of differentiated goods within a HS2 sector.

differentiated goods are consistent with the banking deregulation and increased foreign bank entry from the importing country helping to overcome information asymmetry and reduce export risk, which tends to be higher for more complex goods and when engaging with a new trading partner, as for firms that want to export to a new country. In sum, our results support mitigation of export risks as a mechanism for the effects of the foreign bank deregulation and increased prevalence on export dynamics.

6 Conclusion

In this paper we investigate how the presence and entry of foreign banks in a city and openness to foreign bank local-currency lending affect export entry, survival and growth to the origin country of the foreign bank by firms in the city, and through which channels. We exploit the unique setting of the banking sector liberalization to foreign competition in China, upon accession to the WTO at the end of 2001, as a quasi-natural experiment. We use transaction-level export data for the universe of Chinese exporting firms, and data on the presence and entry of foreign bank branches and representative offices in China, by city and country of origin, in each year. The staggered liberalization of the Chinese banking market across cities and time and the exogenous increase in the presence of foreign banks allows us to identify the causal link between banking integration and export dynamics.

We find that firms' probability of starting to export to a new foreign country and initial export sales are increasing in the prevalence in the city of foreign banks from the same country, when foreign banks can conduct local-currency business with firms in the city. The richness of our data allows us to control for city-country fixed effects in our specifications, which absorb any unobserved factors that could simultaneously affect new exporters' sales dynamics and foreign bank entry at the city-country level. In addition, we include firm-year, country-year or city-year fixed effects. The positive effect of foreign banks in the city is country-specific, and higher for export entry to more distant countries, which tend to be associated with higher uncertainty and risk. New exporters' survival and post-entry growth are not correlated with the prevalence of foreign banks and availability of foreign bank credit. The results are consistent with foreign banks reducing information asymmetry and export risks about the country for new exporters, which are taken into account at the time of entry and no longer affect survival or growth after entry. Results are also consistent with a reduction in financial frictions and higher sunk entry costs than per period costs to continue in the market or increase export sales after entry.

We investigate potential mechanisms through which the banking integration and increased foreign bank entry from the importing country affect export dynamics: export risk mitigation and trade financing. We find that the differential effect on export entry is significantly more pronounced for firms in industries with fewer tangible assets, suggesting that new exporters

with less collateralizable assets to raise external finance benefited more. This is consistent with foreign banks from the importing country having better information or better technologies to screen exporters, therefore relying less on collateral in their lending decisions. We also find that the differential effect on export entry and initial sales is positive and highly significant for firms in industries with riskier goods (due to their complexity, customization and contract incompleteness), while it is insignificant for those in other industries, consistent with the information flow and export risk mechanism.

Our paper uncovers new results for banking integration to facilitate export dynamics and suggests that foreign banks may have an information advantage in screening and evaluating business prospects of local firms that want to export to the foreign bank's home market and in transmitting information that mitigates export risks. This can arise if foreign banks are in a better position to support and evaluate local firms' exports to their home country. For example, US banks operating in China may have better knowledge about the potential growth and competition in the US market than a domestic bank (or banks from other foreign countries) in China, which will help them evaluate business plans that aim to export to the US. US banks may also provide regulatory and commercial advice and information to local firms exporting to the country.

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8 Tables and Figures
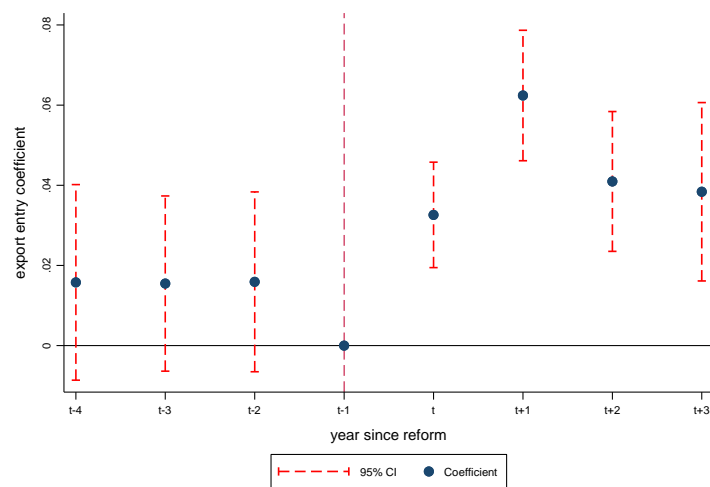
Figure 1: Effect of the reform and foreign bank presence on export entry
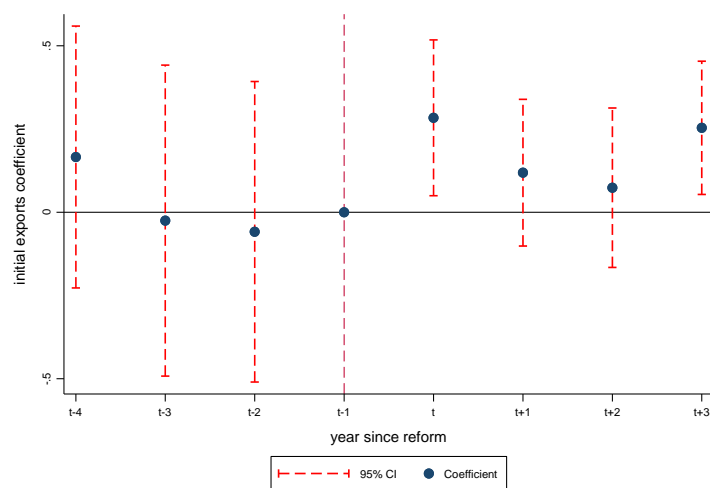
Figure 2: Effect of the reform and foreign bank presence on initial export sales

Table 1: Top 10 countries by total number of bank affiliates and bank branches in China

Number of foreign banking institutions

	2001		2005
Country	No. bank affiliates	Country	No. bank affiliates
Japan	73	Japan	75
United States	29	United States	41
France	27	United Kingdom	27
Germany	22	South Korea	23
United Kingdom	20	France	23
Singapore	18	Germany	23
Netherlands	15	Singapore	18
Italy	12	Italy	17
South Korea	11	Netherlands	15
Thailand	9	Canada	10

Number of foreign bank branches

	2001		2005
Country	No. bank branches	Country	No. bank branches
Japan	26	United States	22
France	17	Japan	21
United States	14	South Korea	19
Singapore	12	United Kingdom	16
South Korea	9	Singapore	14
United Kingdom	8	France	14
Netherlands	8	Netherlands	10
Germany	7	Germany	9
Thailand	5	Thailand	6
Canada	4	Belgium	5

Banks from Hong Kong are excluded as Hong Kong is dropped from the export sample. China-foreign joint ventures are also excluded.

Table 2: Top 10 countries by average export entry rates

	2001		2005
Country	Entry rate	Country	Entry rate
United States	0.2043	United States	0.2694
Japan	0.1916	Japan	0.1747
Korea	0.1236	Korea	0.1522
Germany	0.1035	Germany	0.1452
Singapore	0.0986	United Kingdom	0.1256
Taiwan	0.0960	Australia	0.1218
United Kingdom	0.0924	Canada	0.1152
Australia	0.0899	Italy	0.1137
Malaysia	0.0839	Singapore	0.1126
Italy	0.0799	Taiwan	0.1068

The sample includes ordinary (non-processing) exporters in cities with foreign banks during the sample period.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
				Table 3: Export entry and foreign banks			

Table 3: Export entry and foreign banks

Dependent variable:	(1)	(2)	(3)	(4)	(5)	(6)	(7)
				Entry_{irct}			
$\ln(\text{nfbanks}_{rct}/\text{area}_r) \times \text{FBlib}_{rt}$	0.0368***	0.0352***	0.0361***	0.0279***	0.0408***	0.0412***	0.0247***
	(0.00577)	(0.00559)	(0.00560)	(0.00399)	(0.00806)	(0.00811)	(0.00402)
$\ln(\text{nfbanks}_{rct}/\text{area}_r)$	-0.00353	-0.00525	-0.00638	-0.00559	-0.00750	-0.00843	-0.00793
	(0.00806)	(0.00808)	(0.00810)	(0.00846)	(0.0147)	(0.0148)	(0.00869)
$\ln(\text{nn}_{rct}/\text{area}_r) \times \Delta \ln(x_{rct})$		0.000991***	0.00102***	0.000677***	0.000988***	0.00101***	0.000638***
		(0.000112)	(0.000114)	(0.000143)	(0.000112)	(0.000113)	(0.000136)
$\ln(\text{nn}_{rct}/\text{area}_r)$		0.00239***	0.00208***	-0.000852***	0.00239***	0.00208***	-0.00104***
		(0.000264)	(0.000258)	(0.000305)	(0.000264)	(0.000258)	(0.000306)
$\Delta \ln(x_{rct})$		0.00123***	0.00126***	0.000617***	0.00123***	0.00126***	0.000603***
		(0.000172)	(0.000173)	(0.000187)	(0.000171)	(0.000173)	(0.000179)
$\ln(\text{nfbanks}_{om,rct}/\text{area}_r) \times \text{FBlib}_{rt}$					0.0345	0.0316	0.000355*
					(0.0342)	(0.0348)	(0.000210)
$\ln(\text{nfbanks}_{om,rct})/\text{area}_r)$					-0.00654	-0.00596	0.0114***
					(0.0652)	(0.0661)	(0.00163)
Firm-year fixed effects	yes	yes			yes		
City-year fixed effects			yes			yes	
Country-year fixed effects				yes			yes
City-country fixed effects	yes	yes	yes	yes	yes	yes	yes
No. Obs.	17145908	15929696	15929696	15929685	15929696	15929696	15929685
R-sq.	.144	.149	.071	.0712	.149	.071	.0712

All lower-order terms of the interactions are explicitly included or are subsumed by the sets of fixed effects. $\ln(\text{nfbanks}_{rct}/\text{area}_r)$ is the log density of foreign banks from country c in city r and year t; FBlib_{rt} is the banking liberalization dummy variable; and $\ln(\text{nfbanks}_{om,rct})/\text{area}_r)$ is the density of foreign banks from other countries in the city. Columns (2)-(7) also control for the density of exporters in the city exporting to country c ($\ln(\text{nn}_{rct}/\text{area}_c)$), their average export growth ($\Delta\ln(x_{rct})$) and the interaction between the two. The estimation period is 2001-2005.

	(1)	(2)	(3)	(4)
Dependent variable:		Entry$_{irct}$		
ln(nfbranches$_{rct}$/area$_r$) × FBlib$_{rt}$	0.0580***	0.0565***	0.0560***	0.0356***
	(0.0147)	(0.0146)	(0.0146)	(0.00640)
ln(nfreps$_{rct}$/area$_r$) × FBlib$_{rt}$	0.0294*	0.0277*	0.0282*	0.0111
	(0.0158)	(0.0154)	(0.0154)	(0.00834)
ln(nfbranches$_{rct}$/area$_r$)	0.00814	0.00398	0.00506	0.00206
	(0.0252)	(0.0247)	(0.0250)	(0.00930)
ln(nfreps$_{rct}$/area$_r$)	-0.0123	-0.0147	-0.0168	-0.0130
	(0.0240)	(0.0239)	(0.0238)	(0.0112)
ln(nn$_{rct}$/area$_r$) × Δ ln(x$_{rct}$)		0.000991***	0.00102***	0.000649***
		(0.000112)	(0.000113)	(0.000131)
ln(nn$_{rct}$/area$_r$)		0.00241***	0.00210***	-0.000364
		(0.000261)	(0.000255)	(0.000309)
Δ ln(x$_{rct}$)		0.00124***	0.00126***	0.000615***
		(0.000171)	(0.000172)	(0.000172)
Additional controls	ln(nfbranches$_{om,rct}$/area$_r$)×FBlib$_{rt}$; ln(nfbranches$_{om,rct}$/area$_r$); ln(nfreps$_{om,rct}$/area$_r$)×FBlib$_{rt}$; ln(nfreps$_{om,rct}$/area$_r$)			
Firm-year fixed effects	yes	yes		
City-year fixed effects			yes	
Country-year fixed effects				yes
City-country fixed effects	yes	yes	yes	yes
No. Obs.	17145908	15929696	15929696	15929685
R-sq.	.144	.149	.071	.0713

All lower-order terms of the interactions are explicitly included or are subsumed by the sets of fixed effects. ln(nfbranches$_{rct}$/area$_r$) is the log density of foreign bank branches from country c in city r and year t, and ln(nfreps$_{rct}$/area$_r$) is the log density of foreign bank representative offices. See Table 3 notes for remaining variables.

Dependent variable:	(1)	(2)
	Entry$_{irct}$	
ln(nfbanks$_{rct}$/area$_r$) × I$_{dist,c}$	0.0901**	0.0928***
	(0.0394)	(0.0350)
ln(nfbanks$_{rct}$/area$_r$) × FBlib$_{rt}$	0.0237**	0.0413***
	(0.0116)	(0.0145)
ln(nfbanks$_{rct}$/area$_r$)	0.0643***	-0.0128
	(0.0129)	(0.0190)
ln(nn$_{rct}$/area$_r$) × △ ln(x$_{rct}$)	0.00151***	0.00171***
	(0.000364)	(0.000353)
ln(nn$_{rct}$/area$_r$)	0.0158***	0.0157***
	(0.000511)	(0.000506)
△ ln(x$_{rct}$)	0.00105	0.00132*
	(0.000710)	(0.000691)
Additional controls		yes
Firm-year fixed effects	yes	yes
City fixed effects	yes	yes
No. Obs.	15304689	15304689
R-sq.	.125	.126

All lower-order terms of the interactions are explicitly included or are subsumed by the sets of fixed effects. All results include the terms I$_{dist,c}$ and △ln(x$_{rct}$)×I$_{dist,c}$. Column (2) includes as additional controls the terms: ln(nfbanks$_{om,rct}$/area$_r$)×I$_{dist,c}$, ln(nfbanks$_{om,rct}$/area$_r$)×FBlib$_{rt}$ and ln(nfbanks$_{om,rct}$)/area$_r$). See also Table 3 notes.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:				$\ln(\text{Exports}_{irct}^U)$			
$\ln(\text{nfbanks}_{rct}/\text{area}_r) \times \text{FBlib}_{rt}$	0.0293	0.00910	0.169**	0.0712	-0.0634	0.179*	0.237**
	(0.0700)	(0.0702)	(0.0676)	(0.101)	(0.125)	(0.101)	(0.102)
$\ln(\text{nfbanks}_{rct}/\text{area}_r)$	0.340*	0.316*	0.315*	0.205	0.429*	0.411*	0.103
	(0.201)	(0.185)	(0.177)	(0.187)	(0.240)	(0.221)	(0.178)
$\ln(\text{nn}_{rct}/\text{area}_r) \times \Delta \ln(x_{rct})$		0.0286***	0.0309***	0.0287***	0.0285***	0.0306***	0.0304***
		(0.00696)	(0.00733)	(0.00723)	(0.00696)	(0.00733)	(0.00717)
$\ln(\text{nn}_{rct}/\text{area}_r)$		0.0836***	0.0654***	-0.261***	0.0838***	0.0657***	-0.263***
		(0.0232)	(0.0235)	(0.0216)	(0.0232)	(0.0235)	(0.0214)
$\Delta \ln(x_{rct})$		0.0776***	0.0783***	0.0708***	0.0775***	0.0781***	0.0703***
		(0.0130)	(0.0139)	(0.0141)	(0.0130)	(0.0139)	(0.0141)
$\ln(\text{nfbanks}_{om,rct}/\text{area}_r) \times \text{FBlib}_{rt}$					-0.331	0.104	-0.0748***
					(0.496)	(0.347)	(0.0155)
$\ln(\text{nfbanks}_{om,rct})/\text{area}_r)$					0.536	0.482	0.0166
					(0.674)	(0.532)	(0.0684)
Firm-year fixed effects	yes	yes			yes		
City-year fixed effects			yes			yes	
Country-year fixed effects				yes			yes
City-country fixed effects	yes	yes	yes	yes	yes	yes	yes
No. Obs.	393894	390668	423274	423247	390668	423274	423247
R-sq.	.417	.417	.0808	.0805	.417	.0808	.0806

Table 6: Initial export sales and foreign banks

All lower-order terms of the interactions are explicitly included or are subsumed by the sets of fixed effects. $\ln(\text{nfbanks}_{rct}/\text{area}_r)$ is the log density of foreign banks from country c in city r and year t; FBlib_{rt} is the banking liberalization dummy variable; and $\ln(\text{nfbanks}_{om,rct})/\text{area}_r)$ is the density of foreign banks from other countries in the city. Columns (2)-(7) also control for the density of exporters in the city exporting to country c ($\ln(\text{nn}_{rct}/\text{area}_c)$), their average export growth ($\Delta\ln(x_{rct})$) and the interaction between the two. The estimation period is 2001-2005.

Table 7: Export survival and foreign banks

Dependent variable:	(1)	(2)	(3)	(4) Survival_{irct}	(5)	(6)	(7)
$\ln(\text{nfbanks}_{rct}/\text{area}_r) \times \text{FBlib}_{rt}$	0.00500	-0.00305	0.0143	0.00691	0.00982	0.0277	0.0675**
	(0.0162)	(0.0169)	(0.0154)	(0.0288)	(0.0282)	(0.0247)	(0.0279)
$\ln(\text{nfbanks}_{rct}/\text{area}_r)$	0.0395	0.0438	0.0960***	0.0390	0.0135	0.0799*	0.0144
	(0.0265)	(0.0273)	(0.0339)	(0.0490)	(0.0446)	(0.0473)	(0.0487)
$\ln(\text{nn}_{rct}/\text{area}_r) \times \Delta \ln(x_{rct})$		0.00140	0.00220	0.000168	0.00144	0.00221	0.00198
		(0.00179)	(0.00186)	(0.00244)	(0.00179)	(0.00187)	(0.00226)
$\ln(\text{nn}_{rct}/\text{area}_r)$		-0.0323***	-0.0528***	-0.0771***	-0.0324***	-0.0528***	-0.0779***
		(0.00633)	(0.00611)	(0.00601)	(0.00633)	(0.00611)	(0.00572)
$\Delta \ln(x_{rct})$		0.00341	0.00198	0.00322	0.00344	0.00199	0.00414
		(0.00354)	(0.00349)	(0.00413)	(0.00354)	(0.00349)	(0.00396)
$\ln(\text{nfbanks}_{om,rct}/\text{area}_r) \times \text{FBlib}_{rt}$					0.0537	0.0633	-0.0238***
					(0.0993)	(0.0794)	(0.00366)
$\ln(\text{nfbanks}_{om,rct})/\text{area}_r)$					-0.147	-0.0737	-0.0571***
					(0.141)	(0.127)	(0.0179)
Firm-year fixed effects	yes	yes			yes		
City-year fixed effects			yes			yes	
Country-year fixed effects				yes			yes
City-country fixed effects	yes	yes	yes	yes	yes	yes	yes
No. Obs.	393894	390668	423274	423247	390668	423274	423247
R-sq.	.436	.436	.0891	.0873	.436	.0891	.0876

All lower-order terms of the interactions are explicitly included or are subsumed by the sets of fixed effects. $\ln(\text{nfbanks}_{rct}/\text{area}_r)$ is the log density of foreign banks from country c in city r and year t; FBlib_{rt} is the banking liberalization dummy variable; and $\ln(\text{nfbanks}_{om,rct})/\text{area}_r)$ is the density of foreign banks from other countries in the city. Columns (2)-(7) also control for the density of exporters in the city exporting to country c ($\ln(\text{nn}_{rct}/\text{area}_c)$), their average export growth ($\Delta\ln(x_{rct})$) and the interaction between the two. The estimation period is 2001-2005.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable:				$\Delta \ln(\text{Export}_{irct})$			
$\ln(\text{nfbanks}_{rct}/\text{area}_r) \times \text{FBlib}_{rt}$	0.235	0.157	-0.115	-0.135	0.941*	0.617*	-0.0378
	(0.176)	(0.162)	(0.0945)	(0.0901)	(0.508)	(0.373)	(0.101)
$\ln(\text{nfbanks}_{rct}/\text{area}_r)$	0.171	0.0733	0.263*	0.560***	-0.490	-0.381	0.374**
	(0.293)	(0.226)	(0.139)	(0.154)	(0.554)	(0.411)	(0.174)
$\ln(\text{nn}_{rct}/\text{area}_r) \times \Delta \ln(x_{rct})$		0.0171	0.0287***	0.0714***	0.0167	0.0286***	0.0622***
		(0.0136)	(0.00995)	(0.0122)	(0.0135)	(0.00999)	(0.0117)
$\ln(\text{nn}_{rct}/\text{area}_r)$		-0.0432	-0.121***	0.00332	-0.0426	-0.120***	0.0126
		(0.0494)	(0.0396)	(0.0402)	(0.0494)	(0.0396)	(0.0403)
$\Delta \ln(x_{rct})$		0.905***	0.936***	0.920***	0.906***	0.936***	0.920***
		(0.0318)	(0.0245)	(0.0279)	(0.0318)	(0.0244)	(0.0275)
$\ln(\text{nfbanks}_{om,rct}/\text{area}_r) \times \text{FBlib}_{rt}$					3.103	2.897**	-0.0396
					(1.915)	(1.443)	(0.0287)
$\ln(\text{nfbanks}_{om,rct})/\text{area}_r)$					-1.847	-2.348	0.366***
					(2.083)	(1.644)	(0.0755)
Firm-year fixed effects	yes	yes			yes		
City-year fixed effects			yes			yes	
Country-year fixed effects				yes			yes
City-country fixed effects	yes	yes	yes	yes	yes	yes	yes
No. Obs.	120787	120787	138989	138928	120787	138989	138928
R-sq.	.344	.352	.0451	.0452	.352	.0451	.0454

All lower-order terms of the interactions are explicitly included or are subsumed by the sets of fixed effects. $\ln(\text{nfbanks}_{rct}/\text{area}_r)$ is the log density of foreign banks from country c in city r and year t; FBlib_{rt} is the banking liberalization dummy variable; and $\ln(\text{nfbanks}_{om,rct})/\text{area}_r)$ is the density of foreign banks from other countries in the city. Columns (2)-(7) also control for the density of exporters in the city exporting to country c ($\ln(\text{nn}_{rct}/\text{area}_c)$), their average export growth ($\Delta\ln(x_{rct})$) and the interaction between the two. The estimation period is 2001-2005.

Table 9: Exports, foreign banks and financial constraints

Dependent variable:	(1) Entry$_{irct}$	(2) Entry$_{irct}$	(3) ln(Exports$^0_{irct}$)	(4) ln(Exports$^0_{irct}$)	(5) Survival$_{irct}$	(6) Survival$_{irct}$	(7) Δ ln(Export$_{irct}$)	(8) Δ ln(Export$_{irct}$)
Panel A: Financial vulnerability measure - Extfin								
ln(nfbanks$_{rct}$/area$_r$) × FBlib$_{rt}$	0.0508***	0.0260***	-0.0663	0.305***	0.0172	0.0774**	1.179**	-0.141
	(0.0102)	(0.00750)	(0.163)	(0.113)	(0.0335)	(0.0337)	(0.481)	(0.133)
ln(nfbanks$_{rct}$/area$_r$) × FBlib$_{rt}$ × Extfin$_s$	-0.0159	-0.00192	0.0111	-0.0988	-0.00939	-0.0170	-0.338	0.198
	(0.00969)	(0.0106)	(0.144)	(0.140)	(0.0256)	(0.0229)	(0.221)	(0.192)
ln(nfbanks$_{rct}$/area$_r$)	-0.000664	0.00873	0.505**	0.0942	0.0114	0.0287	-0.730	0.483**
	(0.0157)	(0.0108)	(0.254)	(0.177)	(0.0470)	(0.0500)	(0.520)	(0.196)
ln(nfbanks$_{rct}$/area$_r$) × Extfin$_s$	-0.0104	-0.0258***	-0.132	0.0133	0.00313	-0.0186	0.359*	-0.198
	(0.00911)	(0.00926)	(0.127)	(0.129)	(0.0234)	(0.0204)	(0.217)	(0.188)
No. Obs.	15701130	15701119	388539	420609	388539	420609	119975	137860
R-sq.	.15	.0719	.417	.0836	.436	.0895	.351	.0456
Panel B: Financial vulnerability measure - Tang								
ln(nfbanks$_{rct}$/area$_r$) × FBlib$_{rt}$	0.0443***	0.0332***	-0.0560	0.274***	0.00689	0.0483*	0.932*	-0.0207
	(0.00758)	(0.00415)	(0.128)	(0.0892)	(0.0282)	(0.0281)	(0.505)	(0.130)
ln(nfbanks$_{rct}$/area$_r$) × FBlib$_{rt}$ × Tang$_s$	-0.0182**	-0.0325***	-0.0110	-0.148	0.0230	0.0783***	0.0132	0.00474
	(0.00826)	(0.00932)	(0.182)	(0.223)	(0.0307)	(0.0206)	(0.235)	(0.166)
ln(nfbanks$_{rct}$/area$_r$)	-0.00865	-0.0139	0.419*	0.0878	0.0171	0.0363	-0.458	0.374**
	(0.0150)	(0.00955)	(0.243)	(0.176)	(0.0454)	(0.0486)	(0.545)	(0.184)
ln(nfbanks$_{rct}$/area$_r$) × Tang$_s$	0.00322	0.0198**	0.0462	0.0937	-0.0164	-0.0875***	-0.0959	-0.0728
	(0.00871)	(0.00911)	(0.150)	(0.191)	(0.0317)	(0.0220)	(0.227)	(0.156)
No. Obs.	15701130	15701119	388539	420609	388539	420609	119975	137860
R-sq.	.15	.0721	.417	.0811	.436	.0883	.351	.0456
Additional controls	yes	yes	yes	yes	yes	yes	yes	yes
Firm-year fixed effects	yes		yes		yes		yes	
Country-year fixed effects		yes		yes		yes		yes
City-country fixed effects	yes	yes	yes	yes	yes	yes	yes	yes

All lower-order terms of the interactions are explicitly included or are subsumed by the sets of fixed effects. Extfin is the measure of external finance dependence and Tang is the measure of asset tangibility. These measures of financial constraints take the value 1 if the firm's HS2 sector is above the median across sectors for each of the measures and zero otherwise. All columns include as additional controls: ln(nn$_{rct}$/area$_r$)×Δln(x$_{rct}$), ln(nn$_{rct}$/area$_r$), Δln(x$_{rct}$), ln(nfbanks$_{om,rct}$/area$_r$)×FBlib$_{rt}$, and ln(nfbanks$_{om,rct}$)/area$_r$). Even columns also include the stand-alone financial constraints term and its interaction with the banking liberalization dummy. See Table 3 notes for remaining variables.

Table 10: Exports, foreign banks and information asymmetry

Dependent variable:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Entry_{irct}		$\ln(\text{Exports}^0_{irct})$		Survival_{irct}		$\Delta \ln(\text{Export}_{irct})$	
$\ln(\text{nfbanks}_{rct}/\text{area}_r) \times \text{FBlib}_{rt}$	0.0160	0.000312	-0.287*	0.0462	0.00976	0.0834***	0.956*	-0.169
	(0.0103)	(0.00823)	(0.158)	(0.194)	(0.0395)	(0.0309)	(0.524)	(0.159)
$\ln(\text{nfbanks}_{rct}/\text{area}_r) \times \text{FBlib}_{rt} \times \text{diff}_s$	0.0302***	0.0308***	0.278*	0.243	0.0000316	-0.0201	-0.0152	0.181
	(0.00861)	(0.00856)	(0.148)	(0.169)	(0.0314)	(0.0250)	(0.250)	(0.186)
$\ln(\text{nfbanks}_{rct}/\text{area}_r)$	-0.00265	-0.00164	0.651***	0.211	0.0103	-0.0210	-0.601	0.442**
	(0.0153)	(0.00941)	(0.250)	(0.240)	(0.0513)	(0.0514)	(0.561)	(0.213)
$\ln(\text{nfbanks}_{rct}/\text{area}_r) \times \text{diff}_s$	-0.00572	-0.00829	-0.276**	-0.148	0.00361	0.0417*	0.124	-0.107
	(0.00686)	(0.00772)	(0.139)	(0.171)	(0.0322)	(0.0251)	(0.243)	(0.179)
Additional controls	yes	yes	yes	yes	yes	yes	yes	yes
Firm-year fixed effects	yes		yes		yes		yes	
Country-year fixed effects		yes		yes		yes		yes
City-country fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
No. Obs.	15923657	15923646	390654	423222	390654	423222	120787	138928
R-sq.	.149	.0714	.418	.0806	.436	.0878	.352	.0454

All lower-order terms of the interactions are explicitly included or are subsumed by the sets of fixed effects. diff_s is the measure of product information asymmetry in a sector; it takes the value 1 if at least half of the HS 6-digit products within an HS2 sector are differentiated, according to Rauch (1999) classification, and zero otherwise. All columns include as additional controls: $\ln(\text{nn}_{rct}/\text{area}_r) \times \Delta\ln(x_{rct})$, $\ln(\text{nn}_{rct}/\text{area}_r)$, $\Delta\ln(x_{rct})$, $\ln(\text{nfbanks}_{om,rct}/\text{area}_r) \times \text{FBlib}_{rt}$, and $\ln(\text{nfbanks}_{om,rct})/\text{area}_r)$. Even columns also include the diff term main effect and its interaction with the banking liberalization dummy. See Table 3 notes for remaining variables.

A   Appendix

Table A.1: Summary statistics of trade patterns

	2001	2005
Firm level		
Number of countries		
Mean	6	7
Median	2	3
Standard dev.	9	11
Exports (thousands US$)		
Mean	1028	1528
Median	174	283
Standard dev.	7517	18000
Aggregate level		
Number of firms	12211	39225
Number of countries	207	220
Exports (millions US$)	12500	59900

The sample includes ordinary (non-processing) exporters in cities with foreign banks during the sample period.

Table A.2: Summary statistics for the number of foreign bank affiliates in China

Year	No. branches	No. rep. offices	All bank affiliates
2001	125	184	309
2002	120	183	303
2003	130	197	327
2004	137	198	335
2005	164	219	383
2006	194	222	416

Banks from Hong Kong are excluded, as Hong Kong is dropped from the estimation sample. China-foreign joint ventures are also excluded.

Table A.3: Summary statistics of main variables

Variable	Mean	Median	Std. dev	No. Obs
Firm-city-country-year level variables				
$Entry_{irct}$	0.025	0.000	0.156	17146099
$\ln(\text{initial exports})_{irct}$	9.621	9.691	1.883	427076
$Survival_{irct}$	0.498	0.000	0.500	427076
$\Delta \ln(Export_{irct})$	0.547	0.499	1.715	139626
City-country-year level regressors				
$\ln(nfbanks_{rct}/area_r)$	0.008	0.000	0.066	20883
$\ln(nfbanks_{om,rct}/area_r)$	0.634	0.306	0.820	20883
$\ln(nfbranches_{rct}/area_r)$	0.005	0.000	0.045	20883
$\ln(nfbranches_{om,rct}/area_r)$	0.430	0.086	0.634	20883
$\ln(nfreps_{rct}/area_r)$	0.004	0.000	0.043	20883
$\ln(nfreps_{om,rct}/area_r)$	0.395	0.141	0.624	20883
$FBlib_{rt}$	0.594	1.000	0.491	20883
$\ln(nn_{rct}/area_r)$	0.442	0.371	2.010	17974
$\Delta \ln(x_{rct})$	0.112	0.134	0.697	17974
$\ln(nn_{rct}/area_r) \times \Delta \ln(x_{rct})$	0.109	0.074	1.464	17974

The sample includes ordinary (non-processing) exporters in cities with foreign banks during the sample period.

Dependent variable:	(1) $\ln(\text{Exports}_{irct}^0)$	(2) Survival_{irct}	(3) $\Delta \ln(\text{Export}_{irct})$
$\ln(\text{nfbanks}_{rct}/\text{area}_r) \times I_{dist,c}$	0.813**	0.0770**	0.0891*
	(0.316)	(0.0350)	(0.0491)
$\ln(\text{nfbanks}_{rct}/\text{area}_r) \times \text{FBlib}_{rt}$	0.161*	0.0222	0.0606
	(0.0969)	(0.0162)	(0.130)
$\ln(\text{nfbanks}_{rct}/\text{area}_r)$	-0.0516	0.0101	-0.0309
	(0.104)	(0.0197)	(0.130)
$\ln(\text{nn}_{rct}/\text{area}_r) \times \Delta \ln(x_{rct})$	0.0273**	0.00791***	0.0124
	(0.0109)	(0.00162)	(0.00882)
$\ln(\text{nn}_{rct}/\text{area}_r)$	0.143***	0.0808***	0.0668***
	(0.0108)	(0.00148)	(0.00585)
$\Delta \ln(x_{rct})$	0.0703*	0.0156**	0.921***
	(0.0367)	(0.00629)	(0.0283)
Additional controls	yes	yes	yes
Firm-year fixed effects	yes	yes	yes
City fixed effects	yes	yes	yes
No. Obs.	388452	388452	121053
R-sq.	.381	.422	.336

All lower-order terms of the interactions are explicitly included or are subsumed by the sets of fixed effects. All results include the terms $I_{dist,c}$ and $\Delta \ln(x_{rct}) \times I_{dist,c}$. See notes to Table 3.