The China Syndrome Affects Banks: The Credit Supply Channel of Foreign Import Competition*

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Abstract

We study the effects of rising Chinese import competition in the early 2000s on banks' credit supply policies. Using bank-firm-level data on the universe of Spanish corporate loans, we exploit heterogeneity across banks in the exposure of their loan portfolios towards firms competing with Chinese imports. Banks rebalanced their loan portfolios by cutting the supply of credit to firms affected by Chinese competition, while lending more to non-exposed sectors, especially to construction firms. The surge in the supply of credit to construction companies holds above and beyond banks' exposure to the housing boom, and is concentrated in areas with either fewer investment opportunities outside of exposed manufacturing firms or fewer exporting firms. This portfolio reallocation depressed further the economic activity of firms competing with Chinese imports, and contributed to the boom of the construction sector.

Key Words: Trade Shock, Bank Loans, Real Effects, Banks' Portfolio Reallocation, Credit Register.

JEL Classification Codes: G21, G32, F65.

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1 Introduction

Over the recent decades China has progressively integrated into the world economy through a process which changed dramatically global trade flows. The share of world manufacturing export accounted for by China rose from 2% in 1990 to 4% in 2000, and then increased even more rapidly, reaching a value of 11% in 2010. The rising Chinese competition had widespread consequences on advanced economies: firms operating in sectors more exposed to competitive pressures from Chinese imports experienced a sharp drop in profitability, sales, employment, capital expenditures, and innovation (Xu, 2012; Acemoglu et al., 2016; Bloom et al., 2016; Pierce and Schott, 2016; Hombert and Matray, 2018; Autor et al., 2019), a phenomenon which has been referred to as the "China Syndrome".[1]

This paper studies the effect of the increase of Chinese imports competition in the early 2000s on banks' credit supply policies. To do so, we merge bank-firm-level information from the Spanish Credit Registry, which covers the universe of Spanish corporate loans, with balance-sheet information on banks and firms. We exploit heterogeneity across banks in the exposure of their loan portfolios towards firms competing with China, and find that banks rebalanced their loan portfolios towards non-exposed industries, especially to construction. These changes in credit supply depressed further the economic activity of firms competing with Chinese imports, and contributed to the boom of the construction sector.

The Spanish corporate loan market is an ideal case study to trace the effects of rising Chinese imports on credit flows. First, the magnitude of the acceleration of Chinese imports into the Spanish economy is remarkably similar to the one experienced by the United States. Second, we can match the universe of corporate loans and bank balance sheets to the balance sheets of around 90% of all firms

[1]The China Syndrome is consistent with the results of Bernard et al. (2006) on the negative effects of the exposure to low-wage countries import competition on plant survival and growth. The rise of China exports also affected local labor markets, causing a decline in employment and wages (Autor et al., 2013, 2014), and an increase in political polarization (Autor et al., 2017).

(Almunia et al., 2018). Third, Spanish firms are highly bank dependent (Delgado et al., 2007; Arce et al., 2018). In this way, we can exclude the possibility that any variation in bank loans is substituted with alternative sources of financing. Fourth, the prolonged boom in economic activity and credit flows of the Spanish economy in the early 2000s lessens the concern that the identification of the rising Chinese import competition captures any other contemporaneous negative shock.

To understand the impact of import penetration on bank lending, we exploit heterogeneity across banks in the exposure of their loan portfolios towards firms competing with China. The import penetration was heterogeneously distributed across industries within the manufacturing sector: roughly half of Spanish imports from China were concentrated in five three-digit NACE industries (i.e., rubber, footwear, industrial machineries, toys, and textiles). Thus, banks that in 2000 were lending relatively more to firms operating in these industries had a larger exposure to the drop in firms' ability to meet debt obligations triggered by the dramatic rise of Chinese import competition. Importantly, banks' exposure to Chinese imports does not correlate with observable characteristics of banks' balance sheets or loan portfolios.[2]

Since the rise of Chinese imports could be driven by Spanish demand factors, we sharpen the identification of the exposure to import penetration with a strategy similar to Autor et al. (2013, 2014, 2017, 2019) and Acemoglu et al (2016): we instrument the exposure of Spanish industries to China import competition with the sectoral exposures of a pool of non-E.U. advanced economies. Under the identifying restriction that demand shocks across these advanced countries are weakly correlated, our instrumenting strategy isolates the supply-side component which caused the massive worldwide rise of Chinese exports. Indeed, during the 1990s

[2]For instance, the least and most exposed banks are located just 50 km apart, they are both local saving banks, both very concentrated in just few industries, with the only difference that one bank was lending to firms operating in the agriculture sector, whereas the other was providing credit to footwear firms.

China undertook a transition to a market-oriented economy which boosted aggregate productivity (Hsieh and Klenow, 2009; Brandt et al., 2012; Zhu, 2012; Hsieh and Ossa, 2016). We also consider an alternative strategy which instruments import penetration with industry-level shipping costs (Bernard et al., 2006; Valta, 2012; Barrot et al., 2018, 2019).

We identify the change in *credit supply* due to bank exposure to import penetration by focusing on multi-bank firms. In this way, we can follow the approach of Khwaja and Mian (2008): we saturate the cross-section regression with firm fixed effects and leverage the variation of bank-firm credit within any given firm. Since firm fixed effects absorb the unobserved firm credit demand, any remaining variation in lending within firms comes from supply motives. We also consider an alternative setting to identify credit supply, in which we focus on all firms, and absorb credit demand with the combination of firm controls and sector-province fixed effects.

The baseline regression shows that banks exposed to import penetration cut the supply of credit between 2000 and 2006 to firms operating in sectors competing with Chinese goods. Yet, banks did not shrink their balance sheets, as they rebalanced their loan portfolios by lending more to firms in non-exposed sectors. Hence, banks shielded their balance sheets by shifting their loan portfolios away from the industries affected by rising Chinese competition. To dig deeper on this process of credit reallocation, we split non-exposed firms into manufacturing, services, and construction firms, and explore the credit supply channel of import competition within each of these three samples. Although banks reallocate their portfolios towards firms in all these non-exposed sectors, the evidence on the surge in credit supply to construction firms is relatively more robust across all specifications.

The portfolio reallocation we document could capture changes in the sectoral allocation of banks' loans which have nothing to do with the rising foreign import competition. For instance, banks could shift their portfolios out of manufacturing

industries closely following the process of structural transformation towards services (Bustos et al., 2016, 2017). To rule out this hypothesis, we propose a placebo exercise in which we consider the effects of bank exposure to *non-exposed* manufacturing in 2000. Consistently with the premise that bank exposure to import competition does not capture potential confounding factors, this measure implies no credit reallocation whatsoever to services and construction. Another concern in the interpretation of our results is the fact that the reallocation of credit supply to construction could be driven by the contemporaneous housing boom. Indeed, Chakraborty et al. (2018), Cuñat et al. (2018), Martin et al. (2018) show that banks reacted to the housing boom by shifting their loans to construction firms and mortgage lending. We show that the portfolio reallocation towards construction due to rising Chinese imports holds above and beyond bank exposure to local changes in either house prices or mortgage credit.

Then, why did exposed banks tend to shift their loan portfolios mainly to construction firms? The portfolio reallocation due to Chinese import competition depends on the characteristics of local economic activity. Indeed, the increase in the supply of credit to construction firms is larger in areas with less valuable alternative investment opportunities, that is, areas in which there are either fewer firms that operate in non-exposed industries outside of the construction sector or fewer exporting firms that could gain from the access of China into world trade (Feenstra et al., 2017). The combination of the marked spatial agglomeration of manufacturing industries (Krugman, 1991; Ellison and Glaeser, 1997; Ellison et al., 2010) and the fact that in our sample also bank lending is highly geographically concentrated implies that banks could mainly shield their balance sheet from the decline in profitability of the industries competing with Chinese imports by shifting their loans to construction firms.

The credit supply channel of foreign import penetration had large real effects. In addition to confirming the findings of previous studies indicating that rising imports

depressed the economic activity of competing domestic firms, we highlight a new channel through which these firms experienced a further drop in real outcomes triggered by the cut in bank lending. This novel mechanism accounts for around one third of the negative effects due to firms' direct exposure to foreign imports: a one-standard deviation increase in the direct sectoral exposure to Chinese imports reduced sales in exposed manufacturing firms between 2000 and 2006 by 24.1%, whereas the drop in sales associated to a one-standard deviation increase in bank exposure to Chinese imports equals 8.3%.

Finally, we show that banks' portfolio reallocation caused a surge in the real outcomes on firms in non-exposed sectors. This effect is particularly relevant – and statistically significant – for construction firms, as a one-standard deviation increase in bank exposure to China raised sales, value added, and employment of the construction sector between 2000 and 2006 by roughly 6%. Thus, banks' loan portfolio reallocation reduced further the activity of firms exposed to China competition, and contributed to the boom of the Spanish construction sector.

1.1 Related Literature

Although there is a vast literature that studies how foreign import penetration affects firms and households, the effects on the credit market have attracted much less attention. Among the few exceptions, Barrot et al. (2018) find that areas more exposed to Chinese imports had a faster rise in households' demand for mortgages. We complement this study by focusing on the supply of loans to firms, rather than households' credit demand. Importantly, the rise of credit to the construction sector we identify cannot be rationalized by the effect of Chinese imports on the demand of mortgages. Indeed, Barrot et al. (2018) show that households' credit demand surges mainly via home equity extraction, whereas in Spain home equity extraction practices are virtually inexistent (Haurin, 2017). In addition, Xu (2012), Valta

(2012), and Autor et al. (2019) document that firms exposed to foreign import competition experienced a drop in debt, and an increase in financing costs. Our contribution to these papers is threefold. First, we identify the role of credit supply in the change of overall corporate loans by isolating credit demand through multi-bank firms, as in Khwaja and Mian (2008). Second, we show that the drop in credit of firms competing with Chinese imports came with an increase in lending to firms in non-exposed sectors, through banks' decisions to rebalance their loan portfolios. Third, we trace the real effects of all these changes in credit supply.

Our paper contributes to the literature on the role of banks' internal capital markets (Gan, 2007; Houston et al., 2007; Desai et al., 2008; Gilje et al., 2016; Cortes and Strahan, 2017; Chakraborty et al., 2018; Cuñat et al., 2018; Martin et al., 2018), which tends to focus on how banks propagate either positive or negative shocks across different geographical regions or lending types. Instead, this paper studies banks' reallocation of loan portfolios across different industries, as in Martin et al. (2018) and De Jonghe et al. (2019). In particular, we show that the rise of Chinese imports can be viewed as a negative shock to the ability to repay debt obligations to firms operating in industries facing this extra amount of competition, and banks used their internal capital markets to reallocate their portfolios aways from these industries. This mechanism resembles the theory emphasized by Stein (1997) and Scharfstein and Stein (2000), in which a constrained business reallocates its limited resources from the least deserving project to the most profitable ones. In this sense, the closest paper to ours is Chakraborty et al. (2018), which documents how banks' exposure to the housing price boom generate a crowding-out of credit from commercial lending towards mortgage lending.

Finally, we add to the literature on the bank lending channel (Kashyap and Stein, 1995; Khwaja and Mian, 2008; Jimenez et al., 2012; Chodorow-Reich, 2014; Amiti and Weinstein, 2018; Huber, 2018), by documenting that banks changed their credit supply policies amidst the dramatic rise of Chinese imports.

2 Data and Methodology

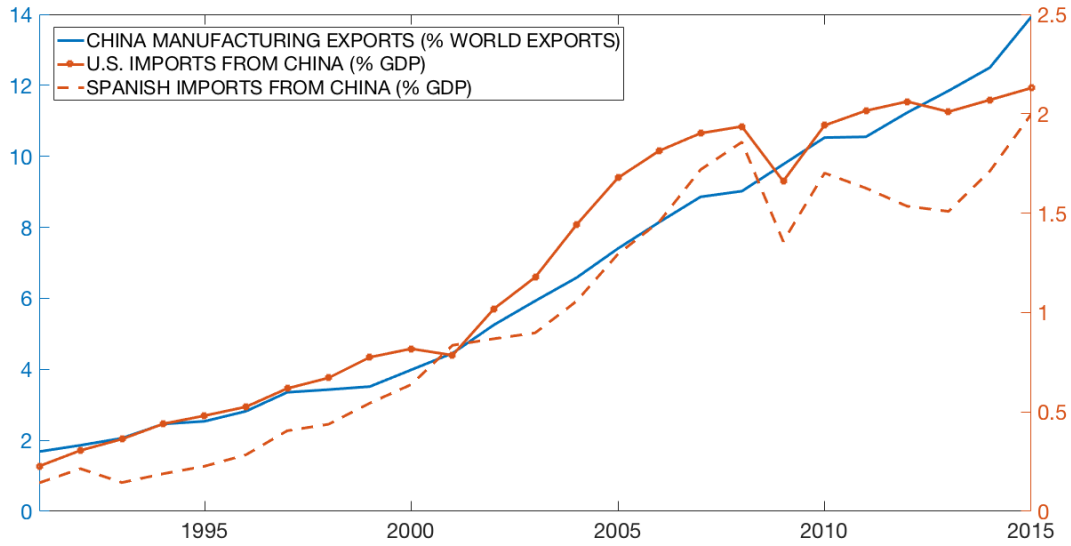
2.1 The Rise of China

The last two decades witnessed dramatic variations in the structure of global trade flows, and the lion's share of these changes consists in the massive increase in the amount of Chinese manufacturing goods which are exported worldwide. This pattern can be noted by looking at Figure 1, which reports the share of Chinese manufacturing exports as a fraction of world manufacturing exports, from 1991 to 2015. This share has been constantly trending up: it was 2% in 1991, increased up to 4% in 2000, and then has accelerated substantially in the early 2000s, by reaching a value of 11% in 2010. Figure 1 shows also that the share of Spanish imports of Chinese manufacturing goods, as a fraction of Spanish GDP, displays a very similar trend. Indeed, the share doubled in just six years, from a value of 2.8% in 2000 up to 5.5% in 2006. Interestingly, Chinese imports kept increasing even amidst the sharp contraction of the Spanish economy from 2008 on, and reached 8% of GDP in 2010. These dynamics track very closely the changes in the amount of Chinese imports experienced by the U.S. economy, both in terms of levels and relative changes over time.

What caused this dramatic increase in the relevance of China as a global exporting hub? The Chinese economy underwent two decades of reforms and sharp changes in its production structure, such as the liberalization of private economic activity, the transformation towards a market-oriented economy, the fostering of a better reallocation of resources, the rural-to-urban migration of millions of households, the use of foreign technologies and intermediate inputs, and the access to the WTO. These changes boosted Chinese aggregate productivity (Hsieh and Klenow, 2009; Brandt et al., 2012; Zhu, 2012; Hsieh and Ossa, 2016). According to the measure of TFP provided by the Penn World Table, aggregate productivity in China grew at an annual rate of 4.7% between 2000 and 2007, whereas in the United

States the growth rate of productivity during the same period was just 1%. As a result, the relative competitive advantage of Chinese goods substantially increased over the recent years.

Figure 1: The Rise of Chinese Imports.



Note: This graph reports the ratio of Chinese imports over total world exports (continuous line - measured on the left y-axis), the ratio of Spanish imports from China over Spanish GDP (dashed line - measured on the right y-axis), and the ratio of U.S. imports from China over U.S. GDP (squared line - measured on the right y-axis). All series are reported from 1991 and 2015. Source: UN Comtrade and WorldBank.

2.2 Chinese Import Penetration in Spain in the Early 2000s

To trace the effects of of rising Chinese imports on corporate credit flows, we focus on the Spanish corporate loan market between 2000 and 2006. We start in the year 2000 as this corresponds to the earliest period in which we can match the information on the universe of corporate loans and banks to the balance sheets of around 90% of all firms operating in Spain (Almunia et al., 2018). The coverage of the firm-level information increases progressively over the late 1990s, and therefore any evidence of banks' portfolio reallocation over this period of time could be just mechanically driven by the increase in the number of firms appearing in our

data. Nonetheless, starting the sample in the year 2000 fits our analysis as the normalization of trade relationships between advanced economies and China began exactly in the early 2000 under the push of the Clinton administration. We stop the sample in the year 2006 to avoid any confounding factor connected to the deep financial and banking crisis which characterized the Spanish economy throughout the Great Recession period.

To measure the impact of the rising penetration of Chinese goods in the Spanish economy at the sectoral level, we follow the approach of Acemoglu et al. (2016) and exploit the industry-level changes in import and export between Spain and China. Namely, we define the change in the Chinese import penetration for a specific sector s between 2000 and 2006 as

$$\Delta IP_{s,2000-2006} = \frac{\Delta M_{s,2000-2006}}{Y_{s,2000} + M_{s,2000} - X_{s,2000}} \tag{1}$$

which corresponds to the ratio of the changes in the imported goods of each sector between 2000 and 2006 over the total absorption capacity of each industry, where M_s and X_s denote Chinese imports and exports of goods of sector s, respectively, and Y_s is total sales of Spanish firms operating in sector s. Throughout the paper, all variables are defined in annualized terms.

Although Chinese imports increased dramatically – and asymmetrically across industries – from the year 2000 on, these dynamics could also be driven by demand motives internal to the Spanish economy. To rule out this possibility, we follow Autor et al. (2013, 2014, 2017, 2019) and instrument the changes in the Chinese import penetration with an analogous index which exploits the variation in the imports of Chinese goods in a pool of non-E.U. advanced countries, consisting of Australia, Canada, Japan, New Zealand, and the United States. Thus, the instrument is defined as

$$\Delta IP^{\star}_{s,2000-2006} = \frac{\Delta M^{\star}_{s,2000-2006}}{Y_{s,2000} + M_{s,2000} - X_{s,2000}} \tag{2}$$

where $\Delta M^{\star}_{s,2000-2006}$ denotes the overall change in the imports of goods of sector s in these foreign economies. To deal with the different magnitude of the numerator and denominator, we standardize the former such that the maximum value of $\Delta IP^{\star}_{s,2000-2006}$ equals the maximum value of $\Delta IP_{s,2000-2006}$.

This instrumenting strategy isolates the supply component of the rise in the competitiveness of Chinese goods. Under the identifying restriction that demand shocks are weakly correlated across countries, this approach captures the part of rising imports of Chinese goods which is due to the improvements in the aggregate productivity of the Chinese economy. Moreover, this instrument is highly relevant as the first-stage regression of $\Delta IP_{s,2000-2006}$ on $\Delta IP^{\star}_{s,2000-2006}$ gives a coefficient of 0.68, with a standard error of 0.02 and a R^2 that equals 0.85.

We also consider an alternative instrumental strategy that borrows from Bernard et al. (2006), Valta (2012), and Barrot et al. (2018, 2019). Namely, we instrument the sectoral import penetration index $\Delta IP_{s,2000-2006}$ with shipping costs $SC_{s,2000}$ measured by Bernard et al. (2006). These authors compute freight rates – defined as the markup of the ratio of freight costs over the total value of imports – at the industry level by using the product-level U.S. import data of Feentra (1996). Although these costs are defined as a reference to the U.S. economy, this instrument is highly relevant as the first-stage regression of $\Delta IP_{s,2000-2006}$ on $SC_{s,2000}$ gives a coefficient of -0.47, with a standard error of 0.15 and an R^2 that equals 0.71. This result highlights that the freight costs capture technological costs of imports at the industry-level which do not vary substantially across final-importing countries.

Then, we compute a measure of bank exposure to foreign import competition, which captures the exposure of bank corporate loan portfolios towards firms competing with Chinese imports. Accordingly, the change in the import penetration

between 2000 and 2006 for a given bank b weights the sectoral import penetration index with the share of credit that bank b grants to each firm f in sector s, that is

$$\Delta IP_{b,2000-2006} = \frac{\sum_{f \in s} \left[C_{b,f,s,2000} \times \Delta IP_{s,2000-2006} \right]}{\sum_f C_{b,f,s,2000}}, \tag{3}$$

where $C_{b,f,s,2000}$ denotes the overall amount of lending between bank b and firm f operating in sector s as of 2000. Analogously to the case of the index of sectoral import penetration, we rule out any possible demand component in bank exposure to Chinese competition by instrumenting the bank import penetration with an index which is built using the import flows of a panel of non-E.U. advanced countries, that is

$$\Delta IP^{\star}_{b,2000-2006} = \frac{\sum_{f \in s} \left[C_{b,f,s,2000} \times \Delta IP^{\star}_{s,2000-2006} \right]}{\sum_f C_{b,f,s,2000}}. \tag{4}$$

Although $\Delta IP^{\star}_{b,2000-2006}$ is the baseline instrument, we also consider a instrument which is based on shipping costs, which is

$$SC_{b,2000} = \frac{\sum_{f \in s} \left[C_{b,f,s,2000} \times SC_{s,2000} \right]}{\sum_f C_{b,f,s,2000}}. \tag{5}$$

Finally, we use an alternative measure of bank exposure to foreign imports, which defines bank specialization in the set of manufacturing firms which are competing with Chinese goods, in the spirit of De Jonghe et al. (2019). Bank specialization $SPEC_{b,2000}$ is defined as the share of credit of a given bank to the manufacturing industries exposed to Chinese competition over the overall size of corporate loans of that given bank as of 2000, that is

$$SPEC_{b,2000} = \frac{\sum_{f \in \text{ exposed manuf.}} C_{b,f,2000}}{\sum_f C_{b,f,2000}}. \tag{6}$$

Bank specialization captures the extent to which the corporate loan portfolio of a bank is tilted towards exposed manufacturing firms. This alternative measure

of bank exposure to exposed manufacturing firms is a special case of the bank exposure index of Equation (3) which abstracts from the variation of the index of import penetration across sectors $\Delta IP_{s,2000-2006}$.

2.3 Data

To carry out the analysis of this paper, we merge industry-level information on import and export flows between Spain and China, with data on credit flows among banks and firms, and balance sheet information on both bank and firms. We merge all these sources of data and build a sample that ranges over the period 2000-2006.

We derive measures of bank and sectoral exposure to China import competition by using data on international trade at the industry level, following the same steps of Autor et al. (2013), adapted to the case of the Spanish economy. The information on international trade at the sectoral level comes from the UN Comtrade Database. This database contains bilateral imports for six-digit Harmonized Commodity Description and Coding System products. Besides the data on the imports and exports of each sector from Spain to China, we use similar information on imports and exports of the same sectors in other non-E.U. advanced countries: Australia, Canada, Japan, New Zealand, and the United States.

Since the industry classification at the UN Comtrade Database differs from the standard classification method used in the European Union, we need to convert the six-digit HS product codes to the European standards. This conversion consists of two stages. First, we convert six-digit HS product codes to 1987 SIC codes using a crosswalk from Autor et al. (2013). Second, we convert 1987 SIC codes to the Statisical Classification of Economic Activities in the European Community, commonly referred to as NACE (for the French term "Nomenclature statistique des activités économiques dans la Communauté européenne"). More specifically, we convert the 1987 SIC codes to 3-digit NACE industries and then to CNAE-93

(the Spanish analogue to NACE Rev 1.1). We end up with information on Chinese imports for 252 industries at the 3-digit level of CNAE codes.

Table 1 reports the top-5 industries in terms of the import penetration index. Similarly to the case for the U.S. economy documented by Autor et al. (2013, 2014), the rise of Chinese imports was very concentrated in few industries, that is, those producing rubber, footwear, industrial machineries, toys, and textiles. These five industries account for almost a half of the total increase of Spanish imports from China, highlighting the fact that the competitive threats of Chinese imports affected asymmetrically Spanish production sectors.

Table 1: Top-5 Industries by Chinese Import Penetration.

Industry	Import Penetration
Rubber	12.91
Footwear	11.86
Industrial Machineries	9.81
Toys	8.70
Textile	8.66

Note: This table reports the five sectors characterized by the highest values for the average annual change in the import penetration of Chinese goods between 2000 and 2006, $\Delta IP_{s,2000-2006}$.

To understand the effects of Chinese import competition on the corporate loan market, we exploit the data of the Spanish Credit Register. This dataset, which is collected by the Bank of Spain in its role of banking supervisor, reports detailed monthly information on the credit position of each Spanish firm with each Spanish

bank at the monthly frequency, for all loans above 6,000 euros. These characteristics guarantee that de-facto we are observing the entire corporate loan market of the Spanish economy. This source of data has already been used by Jimenez et al. (2012, 2014, 2019) and Bentolilla et al. (2018).

Since the Credit Register reports the identifier of each bank and firm, we merge the loan-level data with the balance sheets on the entire universe of banks and the balance sheets of around 90% of all firms. The data on banks is collected by the Bank of Spain in its role of banking supervisor, and includes information on total assets, the holdings of cash and fixed income, the amount of net worth, and EBITDA. The data on firms combines the information of two different databases, the Spanish Commercial Register and SABI (Almunia et al., 2018). The final sample includes information on firms' identifier and name, industry of operation, total assets, equity, cash holdings, EBITDA, total sales, value added, and the number of employees. Moreover, we can identify each bank-firm relationship by aggregating loans within each bank-firm pair. This feature allows us to trace all the changes in credit flows between a given bank and a given firm over time. Unfortunately, the Credit Register collects information only on the quantities of each loan and not on the interest rates. Nevertheless, the dataset reports information on each bank-firm pair in which either firms missed to pay back their debt obligations or the bank considers the loan as doubtful, i.e., the bank considers that it is likely that the firm will miss a payment in the near future. In this way, we are able to compute the ratio of doubtful and non-performing loans over total loans.

With all these sources of information, we build a panel of both real variables and credit data on 123,508 firms, 162 banks, and 300,579 firm-bank observations. Table 2 reports some descriptive statistics on the the change in total credit of all firms, and firms across different sectors (i.e., exposed and non-exposed manufacturing firms, services firms, and constructions and real estate firms), as well as key firm characteristics.

Table 2: Descriptive Statistics.

	Mean	Median	P5	P95	SD	N
			Panel A. $\Delta\text{Log}\left(\text{Credit}_{2000-2006}\right)$			
All Firms	0.13	0.11	-0.79	0.97	0.56	300,579
Exposed Manufacturing Firms	0.11	0.08	-0.80	0.96	0.56	84,896
Non-Exposed Manufacturing Firms	0.12	0.10	-0.77	0.93	0.55	111,113
Services Firms	0.14	0.14	-0.76	0.96	0.56	45,144
Construction Firms	0.17	0.16	-0.84	1.07	0.61	59,425
			Panel B. Firm Characteristics			
Total Assets (TA) (,000)	5,695.79	472.72	46.87	6,641.00	40,705.06	300,579
Equity/TA	0.25	0.22	-0.10	0.74	0.27	300,579
Liquid Assets/TA	0.09	0.04	-0.01	0.36	0.14	300,579
ROA	0.11	0.10	-0.05	0.33	0.12	300,579

Note: Panel A of this table reports the descriptive statistics on the change in log credit between 2000 and 2006 at the firm level, with information also at the sectoral level. Panel B reports the descriptive statistics on other selected firm variables, that is, firm total assets, the ratio of equity over firm total assets, the ratio of liquid assets over firm total assets, and the return on assets (ROA). $P5$ denotes the fifth percentile, $P95$ denotes the ninety-fifth percentile, SD is the standard deviation, and N is the number of observations.

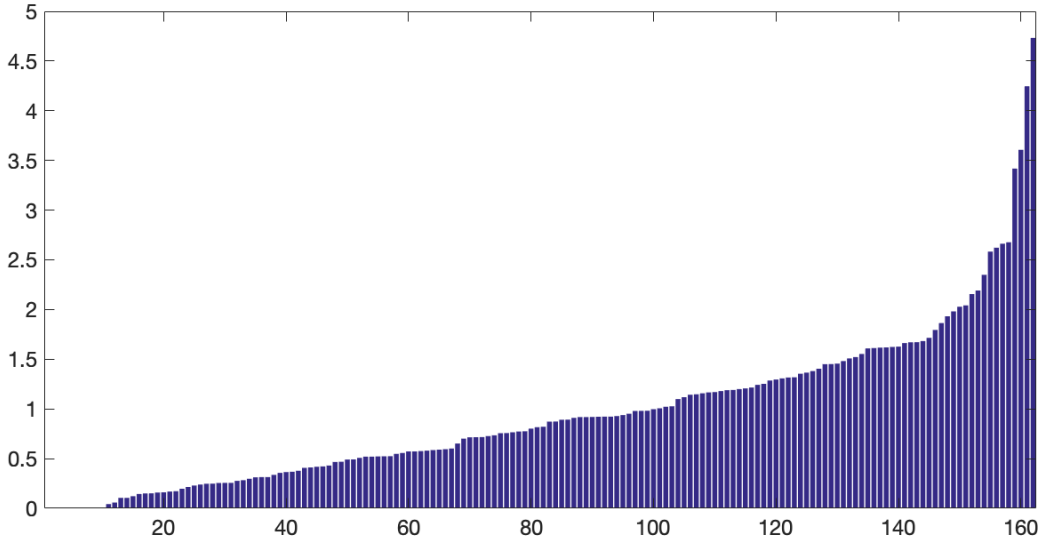
Table 3: Bank Import Penetration and Bank Characteristics

	Banks with Low Exposure to China	Banks with High Exposure to China	Difference
Log Total Assets	13.09	13.91	-0.82 (0.56)
Liquid Assets/Total Liabilities (%)	14.27	14.24	0.03 (1.48)
Equity/Total Liabilities (%)	9.77	8.87	0.90 (1.01)
NPLs (%)	1.72	1.40	0.32 (0.22)
ROA (%)	0.81	0.92	-0.11 (0.07)
Average Credit Share at Province-Sector Level (%)	20.57	16.80	3.78 (2.33)

Note: This table reports bank characteristics for banks with high exposure to China, defined as the banks in the top tercile in terms of bank exposure to Chinese imported goods $\Delta IP_{b,2000-2006}$, and banks with low exposure to China, defined as the banks in the lowest two terciles in terms of bank exposure to Chinese imported goods $\Delta IP_{b,2000-2006}$. The bank characteristics are the log of total assets, the ratio of liquid assets over total liabilities in percentage values, the ratio of equity over total liabilities in percentage values, the fraction of non-performing loans (NPLs) in percentage values, the return on assets (ROA) in percentage values, and the average share of banks' overall total corporate credit loans which is concentrated at the province-sector level in percentage values. The last column reports the difference between the values in bank characteristics across the two groups of banks, with the values in brackets reporting the standard errors associated with a test of difference in the means.

Figure 2 reports the values of the exposure to Chinese imports for each of the 162 banks in our samples. The figure shows that there is substantial heterogeneity in the way the rise of China affected the loan portfolios of Spanish financial institutions. Indeed, bank exposure to import penetration (bank import penetration hereafter) ranges between 0 and 5%, with a mean value close to 2%.

Figure 2: Bank Exposure to Import Competition.



Note: This graph reports the values in percentage points of the change in banks' exposure to foreign import competition from 2000 to 2006, $\Delta IP_{b,2000-2006}$.

Heterogeneity in bank exposure to Chinese imports is not correlated with bank observable characteristics. Indeed, Table 3 reports some key bank characteristics, such as the size of the balance sheet, the fraction of liquid assets, leverage, the profitability, the fraction of non-performing loans, and a measure of the diversification of the loan portfolio across provinces and sectors, for the banks in the top tercile of the bank import penetration vis-à-vis all other banks. The table shows that banks with lowest and highest exposure to China have no statistically significant difference in any of these characteristics. Importantly, banks with higher levels of exposure to China are not less diversified than less exposed financial institutions. Banks tend to have a portfolio rather concentrated across industries and provinces

independently on their exposure to foreign imports. For instance, the banks with the lowest and highest exposure to China are both local banks, both operate in the same geographical area as the two headquarters are 50 kilometres apart, and both banks are highly concentrated in very few industries. The only difference is that the least exposed bank is specialized in lending to agriculture firms whereas the most exposed bank supplies credit to footwear companies. Hence, larger values of bank import penetration are associated with those financial institutions that had a corporate loan portfolio relatively more tilted to the industries with the highest degree of Chinese import competition.

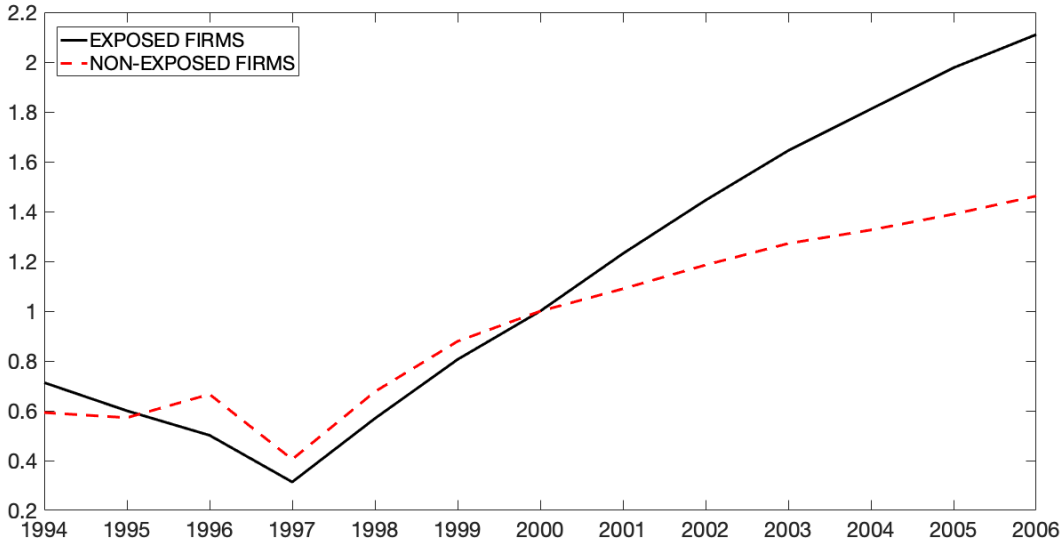
3 Import Competition and Credit Supply

How did the rising Chinese import penetration affect the Spanish corporate loan market? We start by providing some prima-facie evidence on the changes in both the ability to meet debt obligations and the total amount of credit among firms with different degrees of exposure to the competitive pressures of Chinese imported goods.

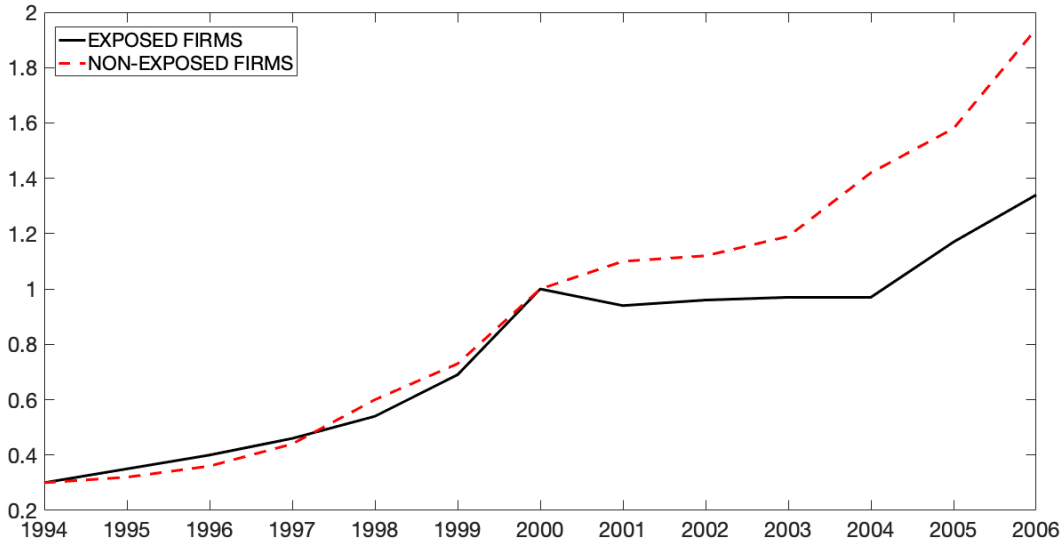
Panel A of Figure 3 plots the dynamics of the cumulative fraction of non-performing loans (NPLs) of firms exposed to Chinese competition vis-à-vis the non-performing loans of non-exposed firms between 1994 and 2006. Both lines are normalized to 1 in 2000. The figure shows that the cumulative NPLs of non-exposed firms grew at a constant rate over these year, from a value of 1% in 1994 to 1.6% in 2000, and 2.5% in 2006. Instead, although the growth rate of the NPLs of exposed firms was very similar to the one of non-exposed firms in the early years, from 2000 on the fraction of loans to exposed firms with repayment issues more than doubled, from 2.3% to 4.9%. These dynamics are consistent with the notion that the dramatic rise in the import penetration of Chinese goods from 2000 has negatively affected the profitability of firms in exposed sectors (Xu, 2012; Hombert and Ma-

Figure 3: Non-Performing Loans and Credit Across Exposed and Non-Exposed Firms.

(A) Non-Performing Loans



(B) Credit



Note: Panel A reports the cumulative ratio of non-performing and doubtful loans over total loans for both firms exposed to Chinese import competition (continuous line) and firms not exposed to Chinese import competition (dashed line), from 1994 to 2006. Both lines are normalized to 1 in 2000. Panel B reports the total amount of bank loans for firms exposed to Chinese import competition (continuous line) and the total amount of bank loans for firms not exposed to Chinese import competition (dashed line), from 1994 to 2006. Both lines are normalized to 1 in 2000.

tray, 2018; Autor et al., 2019), which resulted in a rapid increase of the likelihood that exposed firms could not meet their debt obligations, with their loans turning into non-performing.

Panel B of Figure 3 reports a similar plot on total bank credit of exposed and non-exposed firms. Although the entire period of time is characterized by a progressive loosening of financial conditions which triggered a rise in the overall amount of corporate credit (Martin et al., 2018; Jimenez et al., 2019), again there is a substantial asymmetry in the dynamics of total loans from the year 2000 on, such as total credit grows much faster among non-exposed firms. Roughly, bank credit of non-exposed firms doubled from 2000 to 2006, whereas it increased by just 40% among exposed firms. This finding is consistent with the results of Xu (2012), on the negative effects of import penetration on firms' overall debt positions. Again, the figure shows the absence of pre-existing trends, as the dynamics of credit of exposed and non-exposed firms are remarkably similar from 1994 to 2000.

Why did bank credit of exposed firms decline relatively to the amount of loans of non-exposed firms? The change in corporate credit could be explained either by demand motives, with firms reducing their outstanding credit to boost their ability to meet debt obligations, or by supply factors, with banks reducing the lending to firms exposed to Chinese competition to prevent a large surge of NPLs. To disentangle these possibilities and isolate uniquely the role of credit supply, in what follows we exploit the bank-firm-level dimension of our data.

3.1 The Changes in Bank Credit Supply

We identify the causal effect of banks' exposure to China on their credit supply policies by explicitly taking into account the fact that banks' exposure to China could influence asymmetrically the supply of credit towards firms, depending on firms' direct exposure to Chinese import competition. To unveil these patterns, we

run the regression

$$\Delta C_{b,f,s,2000-2006} = \beta_1 \Delta IP_{b,2000-2006} + \beta_2 \Delta IP_{b,2000-2006} \times \Delta IP_{s,2000-2006} + \ldots$$
$$\cdots + \mathbf{X'_{b,2000}} \beta_3 + \delta_f + \epsilon_{b,f,s,2000-2006} \qquad (7)$$

where $\Delta C_{b,f,s,2000-2006}$ is the change between 2000 and 2006 in the amount of credit from bank b to firm f operating in sector s. The coefficient β_1 captures the effect of bank exposure to China to the credit supply towards firms in non-exposed sectors, whereas the coefficient β_2 informs on how the changes in bank credit supply depend on firms' direct exposure to Chinese import competition. As long as the estimated signs of the coefficients β_1 and β_2 differ between each other, then bank exposure to China causes asymmetric changes in credit supply across industries with different levels of direct exposure to foreign imports.

This regression includes also a set of bank controls $\mathbf{X_{b,2000}}$, such as as the size of the balance sheet (i.e., log of total assets), the liquidity ratio (i.e., the ratio of cash plus fixed income over total assets), leverage (i.e., the ratio of net worth over total assets), the fraction of NPLs (i.e., the ratio of doubtful assets over total assets), ROA (i.e., the ratio of EBITDA over assets), sector specialization (i.e., the fraction of credit granted to firms in a given sector over total credit), province specialization (i.e., the fraction of credit granted to firms in a given province over total credit), and relationship lending (e.g., a dummy variable that equals 1 if bank b is the bank with the highest share of credit for firm f).

We identify the change in credit supply associated with bank exposure to import penetration through multi-bank firms, as in Khwaja and Mian (2008). By focusing on these companies, we can saturate the cross-section regression with firm fixed effects δ_f and leverage the variation of bank-firm credit within any given firm. Since the firm fixed effect absorbs the unobserved firm credit demand, any remaining variation in lending comes from supply motives. The Spanish economy represents

an ideal case for this identification strategy, as around 80% of all firms in our sample borrow from more than one bank. Instead, in other advanced economies the share of multi-bank firms tends to be well below 50% (Degryse et al., 2019). Moreover, Spanish firms are highly bank dependent (Delgado et al., 2007). For instance, only 94 non-financial companies had issued a bond at any time between 2006 and 2015 (Arce et al., 2018). In this way, we can exclude the possibility that any variation in bank loans is substituted with alternative sources of financing.

The identification of the credit supply channel hinges on two key assumptions: (*i*) firms' credit demand is held constant across banks and (*ii*) changes in credit supply do not vary systematically across firms. This second assumption is challenged by the evidence of Paravisini et al. (2017), which highlight the presence of firm- and sector-specific patterns in credit supply due to bank specialization. To address this issue, the regression explicitly controls for both lending relationships at the firm-bank level, and bank specialization across industries and provinces, as in De Jonghe et al. (2019). This approach allows us to elicit an identification strategy which isolates the role of bank exposure to China on credit supply that holds above and beyond any pattern of bank specialization at the firm-, sectoral-, and province-level.[3]

Column (1) of Table 4 reports the results of the regression (7) estimated with OLS methods. We find that bank exposure to Chinese competition had an asymmetric effect on firms depending on firm direct exposure to Chinese imports. Indeed, we estimate a positive and highly statistically significant coefficient β_1, which implies that banks increased their lending towards firms in non-exposed industries. Instead, the fact that the estimated coefficient β_2 is negative – and again highly statistically significant – implies that banks reduced the supply of credit to firms

[3]Moreover, Amiti and Weistein (2018) show that bank specialization does not bias our estimates of interest as long as bank exposure $\Delta IP_{b,2000-2006}$ is truly exogenous with respect to the omitted factors subsumed in the error term.

Table 4: Bank Exposure to China and Credit Supply.

	Dependent Variable: $\Delta C_{b,f,s,2000-2006}$		
	(1) OLS	(2) IV	(3) IV Shipping Costs
$\Delta IP_{b,2000-2006}$	1.585***	1.945***	1.390***
	(0.306)	(0.335)	(0.391)
$\Delta IP_{b,2000-2006} \times \Delta IP_{s,2000-2006}$	-13.313**	-16.992**	-13.996*
	(5.785)	(7.710)	(7.878)
Firm Fixed Effects	YES	YES	YES
Bank Controls	YES	YES	YES
R^2	0.460	-	-
Observations	249,782	249,782	249,782

Note: This table reports the results of a regression in which the dependent variable is $\Delta C_{b,f,s,2000-2006}$, the change in the credit between bank b and firm f between 2000 and 2006, and the independent variables are the change in bank import penetration $\Delta IP_{b,2000-2006}$ and the change in sectoral import penetration $\Delta IP_{s,2000-2006}$, and bank controls, such as the size of the balance sheet (i.e., log of total assets), the liquidity ratio (i.e., the ratio of cash plus fixed income over total assets), leverage (i.e., the ratio of net worth over total assets), the fraction of NPLs (i.e., the ratio of doubtful assets over total assets), ROA (i.e., the ratio of EBITDA over assets), sector specialization (i.e., the fraction of credit granted to firms in a given sector over total credit), province specialization (i.e., the fraction of credit granted to firms in a given province over total credit), and relationship lending (e.g., a dummy variable that equals 1 if bank b is the bank with the highest share of credit for firm f). The regression includes firm fixed effects. Column (1) reports the results for the case in which the regression is estimated using OLS. Column (2) reports the results for the case in which the regression is estimated using IV, in which the change in bank exposure to Chinese imports $\Delta IP_{b,2000-2006}$ and the change in the sectoral exposure to Chinese imports $\Delta IP_{s,2000-2006}$ are instrumented using $\Delta IP^{\star}_{b,2000-2006}$ and $\Delta IP^{\star}_{s,2000-2006}$, respectively. These instruments are derived by exploiting the change in the sectoral import penetration of a pool of non-E.U. advanced economies. Column (3) reports the results for the case in which the regression is estimated using IV, in which the change in bank exposure to Chinese imports $\Delta IP_{b,2000-2006}$ and the change in the sectoral exposure to Chinese imports $\Delta IP_{s,2000-2006}$ are instrumented using $SC_{b,2000}$ and $SC_{s,2000}$, respectively. These instruments are derived by exploiting the shipping costs computed by Bernard et al. (2006). In all cases, standard errors clustered at the industry-location-size level are reported in brackets. *, **, and *** indicate statistical significance at the 10%, 5% and 1%, respectively.

that were facing competing pressures from China.

Column (2) shows the results of the estimation in which the sectoral and the bank index of import penetration $\Delta IP_{s,2000-2006}$ and $\Delta IP_{b,2000-2006}$ are instrumented with the indexes that use the imports of Chinese goods in a pool of non-E.U. advanced economies, that is, $\Delta IP^{\star}_{s,2000-2006}$ and $\Delta IP^{\star}_{b,2000-2006}$. This approach raises slightly the magnitude of the coefficients, while maintaining the high statistical significance of both the cut in the supply of credit to exposed sectors and the increase in the lending to non-exposed firms. The results do not change if we use the alternative instrumental strategy of Column (3), in which $\Delta IP_{s,2000-2006}$ and $\Delta IP_{b,2000-2006}$ are instrumented with shipping costs $SC_{s,2000}$ and $SC_{b,2000}$, as in Bernard et al. (2006), Valta (2012), and Barrot et al. (2018, 2019). Overall, these results highlight that rising foreign imports triggered changes in the supply of credit that affected asymmetrically firms, as banks shifted their loan portfolios away from firms competing with Chinese goods.

Table 5 digs deeper in banks' loan portfolio reallocation, by running regression (7) on four different samples: we run one regression using data on exposed manufacturing firms, a regression using data on non-exposed manufacturing firms, then we focus on a sample of services firms, and finally we look at construction and real estate companies. Again, in each case we identify the variation in credit supply by focusing on multi-bank firms and absorbing firm credit demand with firm fixed effects. The results highlight once again that exposed banks reduced their supply of credit to exposed manufacturing firms, while raising lending to firms in all non-exposed sectors. These patterns hold true independently on whether we estimate the regression with OLS or IV methods.

When interpreting the economic implications of these regressions, we find that a one standard deviation increase in bank exposure to Chinese imports reduced the amount of credit at the bank-firm pair in the exposed manufacturing sector by 3.5%. Instead, the portfolio rebalancing of exposed banks generated an increase in

Table 5: The Effect of Bank Exposure to China on Credit Supply - Evidence Across Sectors.

	Dependent Variable: $\Delta C_{b,f,s,2000-2006}$							
	Exposed Manufacturing		Non-Exposed Manufacturing		Services		Construction	
	(1) OLS	(2) IV	(3) OLS	(4) IV	(5) OLS	(6) IV	(7) OLS	(8) IV
$\Delta IP_{b,2000-2006}$	0.825	1.668⋆⋆	1.877⋆⋆⋆	2.039⋆⋆⋆	1.668⋆⋆	2.218⋆⋆⋆	2.029⋆⋆⋆	2.128⋆⋆⋆
	(0.629)	(0.741)	(0.478)	(0.496)	(0.721)	(0.776)	(0.681)	(0.753)
$\Delta IP_{b,2000-2006} \times \Delta IP_{s,2000-2006}$	-10.310⋆	-17.231⋆						
	(6.134)	(9.591)						
Firm Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Bank Controls	YES	YES	YES	YES	YES	YES	YES	YES
R^2	0.409	-	0.450	-	0.535	-	0.503	-
Observations	75,395	75,395	94,521	94,521	33,092	33,092	46,774	46,774

Note: This table reports the results of a regression in which the dependent variable is $\Delta C_{b,f,s,2000-2006}$, the change in the credit between bank b and firm f between 2000 and 2006, and the independent variables are the change in bank import penetration $\Delta IP_{b,2000-2006}$ and the change in sectoral import penetration $\Delta IP_{s,2000-2006}$, and bank controls as in Table 4. The regression includes firm fixed effects. Column (1) reports the results for the case in which the regression is estimated using OLS on a sample of exposed manufacturing firms. Column (3) reports the results for the case in which the regression is estimated using OLS on a sample of non-exposed manufacturing firms. Column (5) reports the results for the case in which the regression is estimated using OLS on a sample of services firms. Column (7) reports the results for the case in which the regression is estimated using OLS on a sample of construction firms. Columns (2), (4), (6), and (8) report the results for the case in which the regression is estimated using IV, in which the change in bank exposure to Chinese imports $\Delta IP_{b,2000-2006}$ and the change in the sectoral exposure to Chinese imports $\Delta IP_{s,2000-2006}$ are instrumented using $\Delta IP^{\star}_{b,2000-2006}$ and $\Delta IP^{\star}_{s,2000-2006}$, respectively. These instruments are derived by exploiting the change in the sectoral import penetration of a pool of non-E.U. advanced economies. In all cases, standard errors clustered at the industry-location-size level are reported in brackets. ⋆, ⋆⋆, and ⋆⋆⋆ indicate statistical significance at the 10%, 5% and 1%, respectively.

the credit at the bank-firm pair by 5.4% for non-exposed manufacturing firms, 4.8% for services firms, and 5.9% for construction firms. Hence, the economic magnitude of the bank portfolio reshuffling towards non-exposed industries is largest within construction firms.

3.2 Further Evidence

The findings of the paper do not depend on the way we identify the variation in the supply of credit. Indeed, the results do not change if we consider an alternative setting to control for demand in the spirit of Degryse (2019). Table 6 looks at the effects of bank exposure to China on the change in credit across the four macro-sectors, but this time rather than absorbing demand by focusing on multi-bank firms so to saturate the regression with firm fixed effects, we consider two alternative approaches. First, we consider multi-bank firms and absorb credit demand with the combination of province-(3-digit)sector fixed effects and firm controls. Second, we keep controlling for credit demand with the combination of province-sector fixed effects and firm controls, but we extend the sample to all firms in our dataset. In all these exercises, our identification strategy hinges on the assumption that, within each 3-digit industry/location bin and conditional on firm characteristics, any variation in bank-firm credit is due to credit supply motives.

Table 7 looks at the effects of Chinese competition on the changes in credit supply to firms within the four different macro-sectors with a different definition of bank exposure to foreign import penetration, that is, bank specialization in exposed manufacturing firms in 2000 as defined in Equation (6). This alternative variable of bank exposure is a special case of the baseline measure of Equation (3) with the only difference that it abstracts from the variation of the index of import penetration across sectors $\Delta IP_{s,2000-2006}$. Hence, bank specialization in exposed manufacturing firms embeds less variation across financial institutions in their exposure to China

Table 6: Bank Exposure to China and Credit Supply - Alternative Credit Demand Controls.

	Dependent Variable: $\Delta C_{b,f,s,2000-2006}$							
	Exposed Manufacturing		Non-Exposed Manufacturing		Services		Construction	
	(1) Multi Bank Firms	(2) All Firms	(3) Multi Bank Firms	(4) All Firms	(5) Multi Bank Firms	(6) All Firms	(7) Multi Bank Firms	(8) All Firms
	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
$\Delta IP_{b,2000-2006}$	0.933	0.938*	1.758***	1.842***	1.644**	1.366***	2.289***	2.066***
	(0.596)	(0.540)	(0.460)	(0.404)	(0.671)	(0.523)	(0.612)	(0.522)
$\Delta IP_{b,2000-2006} \times \Delta IP_{s,2000-2006}$	-11.469*	-9.615*						
	(6.374)	(5.635)						
Firm Fixed Effects	NO	NO	NO	NO	NO	NO	NO	NO
Sector-Province Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Firm Controls	YES	YES	YES	YES	YES	YES	YES	YES
Bank Controls	YES	YES	YES	YES	YES	YES	YES	YES
R^2	0.179	0.198	0.177	0.210	0.296	0.352	0.219	0.283
Observations	75,395	84,521	94,521	111,060	33,092	44,871	46,774	59,403

Note: This table reports the results obtained by the same regressions of Table 5, with the only difference being the alternative settings to control for credit demand. Columns (1), (3), (5), and (7) uses multi-bank firms and controls for demand with the combination of province-sector fixed effects and firms covariates, which consist of leverage, the liquidity ratio, the return on assets, and size measured as the logarithm of assets. Columns (2), (4), (5), and (6) consider instead all firms and controls for demand with the combination of province-sector fixed effects and firms covariates.

Table 7: Bank Specialization in Exposed Manufacturing Firms and Credit Supply.

	Dependent Variable: $\Delta C_{b,f,s,2000-2006}$			
	Exposed Manufacturing	Non-Exposed Manufacturing	Services	Construction
	(1) OLS	(2) OLS	(3) OLS	(4) OLS
$SPEC_{b,2000}$	-0.052	-0.020	0.058	0.118***
	(0.042)	(0.033)	(0.047)	(0.044)
$SPEC_{b,2000} \times \Delta IP_{s,2000-2006}$	-0.788*			
	(0.463)			
Firm Fixed Effects	YES	YES	YES	YES
Bank Controls	YES	YES	YES	YES
R^2	0.409	0.450	0.534	0.503
Observations	75,395	94,521	33,092	46,774

Note: This table reports the results of regressions at the bank-firm level as in Table 4 in which the main independent variable is bank specialization in exposed manufacturing firms, defined as the share of credit to these firms in the overall bank corporate loan portfolio, as of 2000.

than the baseline measure. Consistently with this notion, the results indicate that the surge in credit from banks specialized in exposed manufacturing firms towards both non-exposed manufacturing firms and services firms is not statistically significant anymore. Nonetheless, we find again that exposed banks cut the supply of credit to exposed manufacturing firms, while raising lending to construction companies. This finding confirms once more that the bank portfolio reallocation due to rising Chinese imports was especially tilted towards the construction sector.

The portfolio reallocation that we document could capture changes in the sectoral allocation of bank loans which have nothing to do with the rising foreign

import competition. For instance, banks could shift their portfolios out of manufacturing industries closely following the process of structural transformation towards services (Bustos et al., 2016, 2017). To rule out this hypothesis, we run a placebo exercise: we change the definition of bank exposure by focusing on bank specialization in non-exposed manufacturing firms as of 2000, and evaluate whether also this alternative measure implies a change in credit across sectors from 2000 to 2006. More precisely, we compute bank exposure as

$$SPEC_b^{\text{Non-Exposed}} = \frac{\sum_{f \in \text{non-exposed manuf.}} C_{b,f,2000}}{\sum_f C_{b,f,2000}} \tag{8}$$

This measure is analogue to the one defined as in Equation (6), with the only difference that it focuses excusively on those manufacturing firms which operate in sectors which have *not* been affected by Chinese import competition. Table 8 reports the results of this placebo. The specialization in non-exposed manufacturing firms leads to a larger supply of credit to firms which operate exactly in these industries, corroborating the fact that our measure does capture patterns of bank specialization in lending across sectors. However, there is no reallocation whatsoever to other sectors, and especially to construction firms. This finding confirms that the portfolio switching towards the construction sector does depend on bank exposure to Chinese imports. Hence, our empirical strategy isolates the role of rising foreign imports on banks' credit supply policies and does not capture any alternative confounding factors.

Then, we study whether the changes in bank-firm credit due to bank and sectoral exposure to China competition worked mainly through either an extensive margin, such that exposed banks changed their decisions on the definition of new lending relationships, or an intensive margin, such that exposed banks altered the amount of credit which is granted to firms with established relationships. To isolate the role of the extensive margin, we run a regression in which the dependent variable

Table 8: Placebo Exercise.

	Dependent Variable: $\Delta C_{b,f,s,2000-2006}$			
	Exposed Manufacturing	Non-Exposed Manufacturing	Services	Construction
	(1) OLS	(2) OLS	(3) OLS	(4) OLS
$SPEC_b^{\text{Non-Exposed}}$	0.052	0.092***	0.063	0.029
	(0.036)	(0.033)	(0.044)	(0.044)
Firm Fixed Effects	YES	YES	YES	YES
Bank Controls	YES	YES	YES	YES
R^2	0.409	0.450	0.534	0.503
Observations	75,395	94,521	33,092	46,774

Note: This table reports the results of regressions at the bank-firm level as in Table 7 in which the main independent variable is bank specialization in non-exposed manufacturing firms $SPEC_b^{\text{Non-Exposed}}$, defined as the share of credit to these firms in the overall bank corporate loan portfolio, as of 2000.

is an indicator function which equals 1 in case we observe the establishment of a new credit relationship with a given bank and given firm between 2000 and 2006. Instead, we isolate the role of the intensive margin by looking into the change in lending over the period 2000-2006 between a given bank and a given firm, conditional on this bank-firm pair being already established in 2000. The results of Table 9 point out that the reduction in the supply of credit of exposed banks towards firms in the exposed manufacturing industries worked through both the intensive and extensive margins. On the other hand, while the rise in lending towards firms in non-exposed manufacturing industries and services worked only through the intensive margin, the extra supply of credit to construction firms was channeled both by establishing new credit relationships and by raising the amount of lending to firms with established bank connections.

So far, we have been looking at the effects of bank exposure to Chinese import penetration on the change in the supply of credit between a given bank-firm pair. This level of analysis allowed us to exploit within-firm variation such that we could isolate firms' credit demand and identify the variation in banks' credit supply. Nevertheless, the drop in the supply of credit between a given exposed bank and a given exposed firm could be offset if the exposed firm manages to receive additional lending from other financial institutions. To verify whether the changes in bank exposure to China do alter the overall credit of firms, we run the following regression at the firm-level using only the sample of multi-bank firms

$$\Delta C_{f,s,2000-2006} = \beta_1 \Delta \hat{IP}_{b,2000-2006} + \beta_2 \Delta IP_{s,2000-2006} + \dots \\ \dots + \mathbf{X'_{f,s,2000}}\beta_3 + \mathbf{X'_{s,2000}}\beta_4 + \hat{\delta}_f + \epsilon_{f,s,2000-2006} \quad (9)$$

where we define the bank exposure to Chinese competition at the firm-level $\Delta \hat{IP}_{b,2000-2006}$ as

$$\Delta \hat{IP}_{b,2000-2006} = \frac{\sum_b C_{b,f,s,2000} \times \Delta IP_{b,2000-2006}}{\sum_b C_{b,f,s,2000}}. \quad (10)$$

Table 9: Bank Exposure to China and Credit Supply - Extensive and Intensive Margins.

	Dependent Variable: $\Delta C_{b,f,s,2000-2006}$							
	Exposed Manufacturing		Non-Exposed Manufacturing		Services		Construction	
	(1) New Credit (0/1)	(2) Firms with relationship in 2000	(3) New Credit (0/1)	(4) Firms with relationship in 2000	(5) New Credit (0/1)	(6) Firms with relationship in 2000	(7) New Credit (0/1)	(8) Firms with relationship in 2000
	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
$\Delta IP_{b,2000-2006}$	-1.344**	0.871	0.341	1.910***	0.389	1.900**	1.015*	2.167***
	(0.526)	(0.646)	(0.451)	(0.494)	(0.580)	(0.766)	(0.535)	(0.715)
$\Delta IP_{b,2000-2006} \times \Delta IP_{s,2000-2006}$	-12.487**	-11.391*						
	(5.906)	(6.833)						
Firm Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Bank Controls	YES	YES	YES	YES	YES	YES	YES	YES
R^2	0.452	0.389	0.0.492	0.429	0.592	0.499	0.555	0.470
Observations	75,395	73,259	94,521	91,299	33,092	30,701	46,774	43,937

Note: This table reports the results of regressions analogous to those in Table 5, with the only difference that the dependent variable in Columns (1), (3), (5), and (7) is an indicator function that equals 1 if between 2000 and 2006 we observe a new bank-firm pair which was not established as of 2000, whereas in Columns (2), (4), (6), and (8) the dependent variable is the change in credit of a given bank-firm pair between 2000 and 2006, conditional on observing the bank-firm pair as already established as of 2000.

Basically, this new variable weights the bank exposure indexes with the share of credit between firm f and each bank with which the firm has a relationship. In the limiting case in which firm f has only a lending relationship, then the new variable $\Delta \hat{IP}_{b,2000-2006}$ coincides with the bank exposure index $\Delta IP_{b,2000-2006}$.

The regression also includes a set of firm characteristics $\mathbf{X'_{f,s,2000}}$, which consist of leverage, the liquidity ratio, the return on assets, and size measured in terms of assets, a set of sector characteristics $\mathbf{X'_{s,2000}}$, which consist of the sectoral averages of each firm control, and both sectoral and province fixed effects. Since we now study changes in credit at the firm-level, we cannot employ anymore firm fixed-effects to isolate firms' credit demand and identify changes in the supply of credit. Hence, the estimates on the effects of bank exposure to China on changes in credit supply at the firm-level could be biased if bank exposure does correlate with firms' credit demand. To address this concern, we follow the insights of Bonaccorsi di Piatti and Sette (2016), Cingano et al. (2016), and Jimenez et al. (2019), by adding to the regression the firm fixed effect $\hat{\delta}_f$ as estimated in the bank-firm-level regression (7). The inclusion of the estimate fixed effects allows us to control explicitly for the fact that firms exposed to Chinese import competition may change their demand for credit.

The results of Columns (1) - (4) in Table 10 show that even if we look at the changes in the entire amount of firms' credit, we still observe that exposed manufacturing firms experienced in drop in the supply of lending from exposed banks, whereas firms in non-exposed industries experienced a surge in the supply of credit.

Finally, we look at the changes in the total amount of lending at the bank level. Indeed, the results of the regressions at the bank-firm-level do not reveal whether either bank exposure to Chinese competition caused a decline in the total amount of bank corporate loans, or banks did not change the size of their balance sheets, and just perfectly offset the reduction in the supply of credit to exposed

Table 10: Bank Exposure to China and Credit Supply - Firm-Level and Bank-Level Evidence.

	Dependent Variable: $\Delta C_{f,s,2000-2006}$				Dependent Variable: $\Delta C_{b,2000-2006}$
	Exposed Manufacturing	Non-Exposed Manufacturing	Services	Construction	All Banks
	(1)	(2)	(3)	(4)	(5)
$\Delta \hat{IP}_{b,2000-2006}$	6.800**	7.183***	8.282**	7.457**	
	(2.874)	(2.162)	(3.356)	(3.667)	
$\Delta IP_{s,2000-2006}$	-37.888***				
	(14.186)				
$\Delta IP_{b,2000-2006}$					10.235
					(6.495)
Sector 1-digit & Province Fixed Effects	YES	YES	YES	YES	NO
Credit Demand Controls	YES	YES	YES	YES	YES
Firm & Sector Controls	YES	YES	YES	YES	NO
Bank Controls	NO	NO	NO	NO	YES
R^2	0.314	0.309	0.248	0.318	0.121
Observations	25,189	36,699	17,076	21,076	162

Note: Columns (1) - (4) of this table report the results of a regression in which the dependent variable is $\Delta C_{f,s,2000-2006}$, the change in the credit of firm f in sector s between 2000 and 2006, and the independent variables are the change in bank import penetration defined at the firm-level $\Delta \hat{IP}_{b,2000-2006}$ and the change in sectoral import penetration $\Delta IP_{s,2000-2006}$, firm controls as in Table 6, sector controls defined as the sector average of the variables used as firm controls, 1-digit sector fixed effects, province fixed effects, and credit demand controls in the form of the estimated firm-fixed effect from the bank-firm-level regressions. In all these four columns, standard errors clustered at the industry-location-size level are reported in brackets. Column (5) reports the results of a regression in which the dependent variable is $\Delta C_{b,2000-2006}$, the change in the credit of bank b between 2000 and 2006, and the independent variables are the change in bank import penetration $\Delta IP_{b,2000-2006}$ and bank controls, such as the size of the balance sheet, the liquidity ratio, leverage, the fraction of NPLs, ROA, sector specialization, province specialization, relationship lending, and estimated firm fixed effects from the bank-firm-level regressions, which are then defined at the bank level by weighting the fixed-effect of each firm with the share of credit of that firm over the overall credit position of the bank. In this case, standard errors clustered at the bank level are reported in brackets. *, **, and *** indicate statistical significance at the 10%, 5% and 1%, respectively.

manufacturing firms with an increase in lending to non-exposed industries. To evaluate the effects of bank exposure to import competition on the size of bank corporate loan portfolios, we run the following regression at the bank-level

$$\Delta C_{b,2000-2006} = \beta_1 \Delta IP_{b,2000-2006} + \mathbf{X'_{b,2000}}\beta_2 + \hat{\delta}_b + \epsilon_{b,2000-2006}. \tag{11}$$

The regression includes the same set of bank controls of regression (7), and includes also the estimated firm fixed effects, such as we can control for the possible role of changes in firm credit demand. Given the estimates of firm fixed effects of regression (7), we define the new set of fixed effects $\hat{\delta}_b$ as

$$\hat{\delta}_b = \frac{\sum_f C_{b,f,s,2000} \times \hat{\delta}_f}{\sum_f C_{b,f,s,2000}} \tag{12}$$

which weights the estimated firm fixed effects $\hat{\delta}_f$ by the share of credit of the bank-firm pair on the overall size of bank corporate loans. Again, the inclusion of the estimated firm fixed effects allows us to control explicitly for any change in firm credit demand.

Column (5) of Table 10 shows that the coefficient that relates the changes in the overall size of bank corporate loans to bank exposure to Chinese imports is not statistically significant. This finding implies that exposed banks did not shrink their balance sheets, but rather completely offset the reduction in the supply of credit to exposed manufacturing firms with the rise in lending to non-exposed industries.

Overall these results adds to the literature on the role of banks' internal capital markets (Gan, 2007; Houston et al., 2007; Desai et al., 2008; Gilje et al., 2016; Cortes and Strahan, 2017; Chakraborty et al., 2018; Cuñat et al., 2018; Martin et al., 2018), which tends to focus on how banks propagate either positive or negative shocks across different geographical regions or lending types. Instead, we document banks reallocation of loan portfolios across different industries, as in Martin et

al. (2018) and De Jonghe et al. (2019). From this point of view, the rise of Chinese imports can be interpreted as a negative shock to the ability to repay debt obligations to firms operating in industries facing this extra amount of competition, and banks used their internal capital markets to reallocate their portfolios aways from these industries. This mechanism resembles the theory emphasized by Stein (1997) and Scharfstein and Stein (2000), in which a constrained business reallocates its limited resources from the least deserving project to the most profitable ones. In this sense, our closest paper is Chakraborty et al. (2018), which documents how banks' exposure to the housing price boom generate a crowding-out of credit from commercial lending towards mortgage lending. The next section shows that our findings do not hinge on the crowding-out channel emphasized by Chakraborty et al. (2018), and that the effects of bank exposure to China on bank portfolio reallocation hold above and beyond bank exposure to the housing price boom in the early 2000s.

4 The Portfolio Reallocation To Construction

The reallocation of credit supply to construction could be driven by confounding factors that are related to the contemporaneous housing boom of the early 2000s. Indeed, Chakraborty et al. (2018), Cuñat et al. (2018), Martin et al. (2018) show that banks reacted to the housing boom by shifting their loans to construction firms and mortgage lending. This section shows that the effect of bank exposure to China on the surge in lending towards construction holds above and beyond bank exposure to the housing boom.

To dig deeper on the factors that determine bank portfolio reallocation to the construction firms, we add to our baseline regression three further controls. Column (1) of Table 11 introduces the share of mortgages in overall bank credit as of 2000, a variable that Martin et al. (2018) use to capture bank exposure to the housing

Table 11: The Portfolio Reallocation to Construction and the Housing Boom.

	Dependent Variable: $\Delta C_{b,f,s,2000-2006}$		
	(1) OLS	(2) OLS	(3) OLS
$\Delta IP_{b,2000-2006}$	4.842***	2.741***	2.231***
	(0.707)	(0.799)	(0.851)
$\left(\frac{\text{Mortgages}}{\text{Total Credit}}\right)_{b,2000}$	0.332***	0.341***	0.332***
	(0.026)	(0.026)	(0.027)
$\Delta\left(\frac{\text{Mortgages}}{\text{Total Credit}}\right)_{b,2000-2006}$		0.189***	0.191***
		(0.035)	(0.035)
Δ House Price$_{b,2000-2006}$			0.078*
			(0.043)
Firm Fixed Effects	YES	YES	YES
Bank Controls	YES	YES	YES
R^2	0.506	0.507	0.507
Observations	46,774	46,774	46,774

Note: This table reports the results of regressions at the bank-firm level as in Table 4, in which we consider additional control variables. Column (1) adds the share of mortgages in overall bank credit as of 2000. Column (2) adds the change in the share of mortgages in overall bank credit between 2000 and 2006. Column (3) adds a measure of house price change defined as the bank-level, which weights the changes in house price at the province level with the shares of credit that a given bank gives to each province.

price boom and the related shifts in bank lending towards construction. Column (2) adds also the change in the share of mortgages in total bank credit between 2000 and 2006. Finally, Column (3) introduces a measure of house price change defined at the bank-level using the same approach of Chakraborty et al. (2018): we weight the house price change in a given province with the share of credit that a given bank allocates to that province, and then sum over all provinces. Chakraborty et al. (2018) show that a higher housing appreciation at the bank-level predicts a shift in credit out of the corporate sector towards mortgages. The results of Table 11 highlight that the coefficients associated to the change in the supply of credit to construction firms due to bank exposure to Chinese competition keeps being highly statistically significant even after controlling for these additional measures of bank exposure to house price boom of the early 2000s.

Then, we highlight that the credit reallocation to construction depends on the characteristics of the local economic activity. Indeed, the surge in the credit supply to construction firms is larger in areas with less valuable alternative investment opportunities. To highlight the interaction between bank portfolio reallocation and the characteristics of local economic activity, we consider two measures of investment opportunities. In the first one, we capture the investment opportunities that banks face in a given province p in 2000 as

$$IO_{p,2000} = \frac{\sum_{f \in \text{province p}} \left(Y_{f,2000}^{\text{NonExpManuf}} + Y_{f,2000}^{\text{Serv}} \right)}{\sum_{f \in \text{province p}} \left(Y_{f,2000}^{\text{ExpManuf}} + Y_{f,2000}^{\text{NonExpManuf}} + Y_{f,2000}^{\text{Serv}} \right)} \tag{13}$$

which defines for each province the fraction of sales of firms which do not operate in either exposed manufacturing industries or the construction sector over total sales of all firms. A high value of the variable $IO_{p,2000}$ implies that in a given province there are relatively more investment opportunities outside of both exposed manufacturing and construction. Then, if a bank operates in areas with fewer

investment opportunities, then the only way it may reshuffle its loan portfolio out of exposed manufacturing firms is by raising lending to construction companies. In the second one, we define investment opportunities as the fraction of sales of exporting firms over total sales of all firms in each province p, that is

$$EXP_{p,2000} = \frac{\sum_{f \in \text{province p}} Y_{f,2000}^{\text{Exporter}}}{\sum_{f \in \text{province p}} Y_{f,2000}} \tag{14}$$

A higher value of the variable $EXP_{p,2000}$ indicates that in a given province there are relatively more investment opportunity in terms of exporting firms, as these companies could have gained from the access of China into world trade via a rise in exporting flows (Feenstra et al., 2017). For each of these two variables, the interaction uses the cross-sectional demeaned values such that the coefficient associated with bank exposure to Chinese imports $\Delta IP_{b,2000-2006}$ can be easily interpreted.

Table 12 shows that the portfolio reallocation to construction firms is larger in areas with fewer investment opportunities outside of exposed manufacturing firms or fewer exporting firms, as the coefficients associated to the interactions between $\Delta IP_{b,2000-2006}$ and either $IO_{p,2000}$ or $EXP_{p,2000}$ are highly negative and statistically significant. The relationship between the surge in credit supply to construction firms and the characteristics of local economic activity keeps holding even when we include the housing boom controls used in Table 11.

This finding indicates that the increase in the supply of credit to construction firms is stronger if banks operate in areas with fewer valuable investment opportunities. The rationale is this finding is twofold. On the one hand, manufacturing industries tend to agglomerate around very specific spatial clusters (Krugman, 1991; Ellison and Glaeser, 1997; Ellison et al., 2010). On the other hand, in our sample also bank lending is highly geographically concentrated: the average bank grants 49% of its total corporate loans within one single province.[4] As a result, banks

[4]Importantly, Table 2 indicates that bank exposure to Chinese import competition does not correlate with

Table 12: The Portfolio Reallocation to Construction and Local Economic Activity.

	Dependent Variable: $\Delta C_{b,f,s,2000-2006}$	
	(1) OLS	(2) OLS
$\Delta IP_{b,2000-2006}$	2.017***	1.983**
	(0.684)	(0.854)
$\Delta IP_{b,2000-2006} \times IO_{p,2000}$	-6.495**	-9.618***
	(3.156)	(3.481)
$\Delta IP_{b,2000-2006} \times EXP_{p,2000}$	-26.820**	-31.440**
	(13.434)	(13.532)
Firm Fixed Effects	YES	YES
Bank Controls	YES	YES
Housing Boom Controls	NO	YES
R^2	0.503	0.507
Observations	46,774	46,774

Note: This table reports the results of regressions at the bank-firm level as in Table 4, in which we consider additional control variables. Column (1) adds the interactions of bank exposure to Chinese imports $\Delta IP_{b,2000-2006}$ with both a variable $IO_{p,2000}$, which defines bank investment opportunities outside of exposed manufacturing-firms and construction firms for each province p, and a variable $EXP_{p,2000}$, which defines the share of credit to exporting firms in overall bank lending for each province p. In the interaction terms, the variables $IO_{p,2000}$ and $EXP_{p,2000}$ are demeaned with their cross-sectional average. Column (2) also introduces the housing boom controls used in Table 11.

could mainly shield their balance sheet from the decline in profitability of the industries competing with Chinese imports by shifting their loans to construction firms.

5 Real Effects

The previous sections have shown that banks exposed to Chinese import competition have reshuffled their corporate loan portfolios, by cutting the supply of credit to firms operating in sectors directly competing with Chinese goods, while raising the lending towards non-exposed industries, and in particular towards construction firms. In this section we evaluate whether the bank portfolio reallocation shaped only the dynamics of the corporate loan market, or if it had real effects by affecting the economic activity of Spanish firms.

To quantify the real effects of the bank portfolio reallocation, we focus on three key outcomes: value added, sales, and the number of employees. Then, we study to what extent the change in each of these variables between 2000 and 2006 was influenced by the direct exposure of each firm to Chinese competition, $\Delta IP_{s,2000-2006}$, and by the exposure of the banks associated with each firm $\Delta \hat{IP}_{b,2000-2006}$, which is defined as in Equation (10). To do so, we focus on multi-bank firms and run the regression

$$\begin{aligned}\Delta Y_{f,s,2000-2006} = \beta_1 \Delta IP_{s,2000-2006} + \beta_2 \Delta \hat{IP}_{b,2000-2006} + \mathbf{X}'_{\mathbf{f,s,2000}}\beta_3 + \dots \\ \dots + \mathbf{X}'_{\mathbf{s,2000}}\beta_4 + \delta_s + \delta_{\text{province}} + \hat{\delta}_f + \epsilon_{f,2000-2006} \qquad (15)\end{aligned}$$

where $\Delta Y_{f,s,2000-2006}$ is the relative change between 2000 and 2006 of one of the three real outcomes of firm f operating in industry s (i.e., value added, sales, and

differences in the geographical concentration of bank loan portfolios. In our sample all banks tend to be poorly geographically diversified, and banks with a higher exposure to firms competing with China are those financial institutions whose lending was concentrated in areas relatively more affected by rising foreign imports.

employment).

Importantly, each regression includes a set of firm characteristics $\mathbf{X'_{f,s,2000}}$, which consist of leverage, the liquidity ratio, the return on assets, and size measured in logarithm of assets, a set of sector characteristics $\mathbf{X'_{s,2000}}$, which consist of the sectoral averages of each firm control, and both sectoral and province fixed effects. In addition, we also control for the firm fixed effect as estimated in the baseline bank-firm-level regression on the change in credit, such that we can control for the estimated firm credit demand.

Table 13 reports the results for the regression on the change in sales across exposed manufacturing firms, non-exposed manufacturing firms, services firms, and construction firms, whereas Table 14 and Table 15 report similar results for the case in which the dependent variable is the change in either value added or the number of employees, respectively.

The credit supply channel of foreign import penetration had large real effects. In addition to confirming the findings of previous studies indicating that rising imports depressed the economic activity of firms operating in sector subject to the competition of Chinese goods, we highlight a new channel through which these firms experienced a further drop in their real outcomes triggered by the cut in the supply of credit from exposed banks. This novel mechanism accounts for around one third of the negative effects due to firms direct exposure to foreign imports. For instance, a one-standard deviation increase in the direct sectoral exposure to Chinese imports reduced sales in exposed manufacturing firms between 2000 and 2006 by 24.1%, whereas the drop in sales associated to a one-standard deviation increase in bank exposure to Chinese imports equals 8.3%.

Banks' portfolio reallocation caused a surge in the real outcomes on firms in non-exposed sectors. This channel is only relevant for construction firms, as the effects on non-exposed manufacturing firms and services firms is not statistically significant. A one-standard deviation increase in bank exposure to China raised

Table 13: Real Effects - Sales.

	Dependent Variable: $\Delta\text{Sales}_{f,s,2000-2006}$			
	Exposed Manufacturing	Non- Exposed Manufacturing	Services	Construction
	(1) OLS	(2) OLS	(3) OLS	(4) OLS
$\Delta\hat{IP}_{b,2000-2006}$	-3.404*	-1.324	-0.897	4.334*
	(1.770)	(1.827)	(2.184)	(2.418)
$\Delta IP_{s,2000-2006}$	-0.872***			
	(0.160)			
Sector 1-digit Fixed Effects	YES	YES	YES	YES
Province Fixed Effects	YES	YES	YES	YES
Credit Demand Controls	YES	YES	YES	YES
Firm Controls	YES	YES	YES	YES
Sector Controls	YES	YES	YES	YES
R^2	0.111	0.098	0.067	0.106
Observations	24,429	37,206	16,128	20,441

This table reports the results of a regression in which the dependent variable is the change in sales of firm f between 2000 and 2006, and the independent variables are the change in bank import penetration defined at the firm level $\Delta\hat{IP}_{b,2000-2006}$ and the change in sectoral import penetration $\Delta IP_{s,2000-2006}$, firm controls in Table 6, sector controls defined as the sector average of the variables used as firm controls, 1-digit sector fixed effects, province fixed effects, and credit demand controls in the form of the estimated firm-fixed effect from the bank-firm-level regressions. Standard errors clustered at the industry-location level are reported in brackets. *, **, and *** indicate statistical significance at the 10%, 5% and 1%, respectively.

Table 14: Real Effects - Value Added.

	Dependent Variable: ΔValue Added$_{f,s,2000-2006}$			
	Exposed Manufacturing	Non- Exposed Manufacturing	Services	Construction
	(1) OLS	(2) OLS	(3) OLS	(4) OLS
$\Delta \hat{IP}_{b,2000-2006}$	-2.764* (1.435)	-1.8691 (1.383)	-1.869 (1.921)	5.080*** (1.765)
$\Delta IP_{s,2000-2006}$	-0.699*** (0.145)			
Sector 1-digit Fixed Effects	YES	YES	YES	YES
Province Fixed Effects	YES	YES	YES	YES
Credit Demand Controls	YES	YES	YES	YES
Firm Controls	YES	YES	YES	YES
Sector Controls	YES	YES	YES	YES
R^2	0.097	0.095	0.083	0.106
Observations	23,555	35,441	15,181	18,173

This table reports the results of a regression in which the dependent variable is the change in value added of firm f between 2000 and 2006, and the independent variables are the change in bank import penetration defined at the firm level $\Delta \hat{IP}_{b,2000-2006}$ and the change in sectoral import penetration $\Delta IP_{s,2000-2006}$, firm controls in Table 6, sector controls defined as the sector average of the variables used as firm controls, 1-digit sector fixed effects, province fixed effects, and credit demand controls in the form of the estimated firm-fixed effect from the bank-firm-level regressions. Standard errors clustered at the industry-location level are reported in brackets. *, **, and *** indicate statistical significance at the 10%, 5% and 1%, respectively.

Table 15: Real Effects - The Number of Employees.

	Dependent Variable: ΔEmployees$_{f,s,2000-2006}$			
	Exposed Manufacturing	Non- Exposed Manufacturing	Services	Construction
	(1) OLS	(2) OLS	(3) OLS	(4) OLS
$\Delta \hat{IP}_{b,2000-2006}$	-0.538**	-0.049	0.078	0.374*
	(0.237)	(0.193)	(0.275)	(0.210)
$\Delta IP_{s,2000-2006}$	-0.065***			
	(0.019)			
Sector 1-digit Fixed Effects	YES	YES	YES	YES
Province Fixed Effects	YES	YES	YES	YES
Credit Demand Controls	YES	YES	YES	YES
Firm Controls	YES	YES	YES	YES
Sector Controls	YES	YES	YES	YES
R^2	0.045	0.050	0.035	0.055
Observations	24,341	35,292	16,011	20,379

This table reports the results of a regression in which the dependent variable is the change in the number of employees of firm f between 2000 and 2006, and the independent variables are the change in bank import penetration defined at the firm level $\Delta \hat{IP}_{b,2000-2006}$ and the change in sectoral import penetration $\Delta IP_{s,2000-2006}$, firm controls in Table 6, sector controls defined as the sector average of the variables used as firm controls, 1-digit sector fixed effects, province fixed effects, and credit demand controls in the form of the estimated firm-fixed effect from the bank-firm-level regressions. Standard errors clustered at the industry-location level are reported in brackets. *, **, and *** indicate statistical significance at the 10%, 5% and 1%, respectively.

sales, value added, and employment of the construction sector between 2000 and 2006 by roughly 6%. Thus, although banks' loan portfolio reallocation reduced further the activity of firms exposed to China competition, it contributed to the boom of the Spanish construction sector.

The rationale of the differential effects of bank credit reallocation towards non-exposed sectors on the real effects of firms operating in industries, with only construction companies experiencing a surge in their economic activity, is twofold. First, although banks reallocate their loan portfolios towards firms in all these non-exposed sectors, the evidence on the surge in credit supply to construction firms is stronger and more robust across all specifications. Second, while the rise in lending towards non-exposed manufacturing and services firms worked only through the intensive margin, the extra supply of credit to construction firms was channeled both through the intensive and extensive margin. This is relevant as Midrigan and Xu (2014) show that changes in firms' financial frictions have larger aggregate effects when propagating through the extensive margin, whereas the intensive margin amplification is small.

These results add to the debate on the effects of rising Chinese competition on advanced economies. The literature so far has highlighted how firms exposed to competitive pressures from Chinese imports experienced a sharp drop in profitability, sales, employment, capital expenditures, and innovation (Xu, 2012; Acemoglu et al., 2016; Bloom et al., 2016; Pierce and Schott, 2016; Hombert and Matray, 2018; Autor et al., 2019). We add to these findings on two dimensions. First, we highlight a novel amplification channel, through which changes in the supply of credit towards firms in exposed manufacturing industries generate a further drop in firms' economic activity. Second, bank exposure to China implies a reallocation of bank lending towards non-exposed sectors. In particular, this spillover effect caused a rise in the economic activity of the construction firms. Hence, the reallocation of bank corporate loan portfolios triggered by the rising Chinese import competition

contributed to the construction sector boom of the early 2000s.

6 Conclusion

This paper studies the effects of the rising Chinese import penetration in the early 2000s on the Spanish corporate loan market. In particular, we show that banks have reshuffled their loan portfolios by cutting the supply of credit to firms in exposed sectors, and increased the lending to non-exposed industries. These changes in credit flows further depressed the real economic activity of firms competing with Chinese goods. Thus, we provide a novel amplification channel of the negative effects of foreign rising imports on the activity of competing domestic firms.

We also show that the portfolio reallocation towards non-exposed sectors has benefited especially construction firms, which have experienced an increase in both the availability of credit and real outcomes. This finding adds a novel narrative to rationalize the construction boom of the Spanish economy in the early 2000s. Importantly, the surge in credit supply to construction above and beyond banks' direct exposure the the housing price boom, and depends on the characteristics of local economic activity, as it is larger in areas with less valuable alternative investment opportunities.

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