

The impact of foreign bank deregulation on firm performance: evidence from China

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Abstract

This paper examines the impact of foreign bank entry on domestic firms' credit access and real economic outcomes, leveraging the staggered implementation of deregulation policies in China from 2001 to 2006. These policies allow foreign banks to gradually enter the Chinese banking market, creating differential access to foreign credit across cities. Using a comprehensive firm-level dataset from the Chinese Manufacturing Census, we find that privately owned enterprises obtain significantly more bank loans and exhibit higher growth in sales and investment compared to their state-owned counterparts. The benefits of foreign bank entry are most pronounced for firms that are young, small and more financially constrained. Increased competition and bank technology transfer are identified as the key channels driving these effects. Overall, our findings provide robust evidence that policy-driven foreign credit supply shocks mitigate financing constraints and improve economic outcomes for private enterprises compared to state-owned firms.

KEYWORDS

China, credit supply, financial constraints, foreign bank entry

1 | INTRODUCTION

Chinese banking is dominated by four very large state-owned banks, the 'big four', and such state ownership is possibly associated with low efficiency and restricted access to credit for privately owned enterprises (POEs). The financial reforms announced by Chinese authorities in the last two decades, including foreign bank entry and development of international bond markets, have allowed domestic corporate borrowers to get access to foreign funds. Previous studies have documented that the entry of these foreign banks has been associated with a more competitive and efficient banking environment in China (see Lin and Zhang 2009; Xu 2011). In this paper, we analyse whether opening up the banking sector for foreign bank entry has affected the performance of Chinese manufacturing firms, to the extent that the banking sector became more competitive

and efficient after foreign bank entry was allowed. Understanding how financial liberalization affects domestic firms' performance is critical for making informed policy decisions.

As part of its commitment to join the World Trade Organization (WTO), China removed restrictions on banking in addition to trade. Specifically, the Chinese central government agreed to remove restrictions on foreign banks' local-currency business in a number of cities every year during the first five years after accession (2001–6), with no restriction on foreign banks anywhere in the country afterwards. This step-by-step deregulation of foreign banks provides a suitable policy experiment for analysing the effects of foreign bank entry on the domestic financial system and firms' performance.¹ Theoretically, foreign bank competition may provide a greater supply of aggregate bank credit to all domestic borrowers and improve allocative efficiency. Financially constrained POEs could also benefit when large Chinese corporations increase their borrowing from foreign banks, since local banks might have to look for other small and retail customers. If large firms turn away from domestic financing sources, then commercial banks in China would be able to allocate more resources to financially constrained borrowers.

For identification, we explore this policy-driven timing and geographic variation across cities in China, regarding when foreign banks started conducting local-currency business with domestic borrowers located in the same city. There are three main threats to identification based on the timing and geographic policy variation.

First, spillover effects of foreign bank entry across cities could exist. Here, we assume that the direct effect of foreign bank entry is localized (although there can be other linkages across cities via firm competition, general equilibrium price effects, and so on). This assumption is reasonable given the regulation that firms in one city could not borrow from banks in another city before the end of 2006. As a result, these regional policies can be viewed as a shock to local credit supply. During a given period, firms in different cities have differential access to foreign bank credit.

Second, there were other reforms undertaken during the sample period, and these reforms could also have differential effects on firms' performance across cities. However, other reforms in China during the period proceeded on a nationwide basis, rather than following a specific regional timetable. Therefore the effects of other reforms would not confound the foreign bank deregulation effect, and will be absorbed by the time fixed effects. Even if the impact of another policy is not uniform across cities (e.g. international trade exposure), the policy should not be perfectly correlated with the foreign bank entry indicator.

Third, and more importantly, choices about the timing and location of foreign bank entry may be determined endogenously. The timing decisions on foreign bank entry were made by the central government, and we assume that they were unrelated to the firm-specific demand for credit. As a robustness check, we also conduct matching exercises to address concerns of selection bias over the choice on 'opened cities'.

Based on this identification strategy, we estimate the impact of foreign bank entry on firms' credit access and performance in China, focusing on whether the impact at the firm level differs by heterogeneity in credit constraints. We employ a difference-in-differences (DiD) strategy, and investigate the effect of the removal of foreign bank regulation on POEs' performance relative to that of state-owned enterprises (SOEs), using panel data on manufacturing firms from China's Annual Surveys of Industrial Firms (ASIF) from 1998 to 2007. This dataset covers around 90% of manufacturing GDP in China during the sample period, and provides detailed information on a firm's performance and ownership structure. Following Song *et al.* (2011), we use ownership structure as a proxy for firms' financial constraints under the assumption that POEs had less access to credit than SOEs prior to bank deregulation.² With rich panel data, we control for firm, city-year and industry-year fixed effects, as well as the POE time trend. This approach absorbs firm-level trends that differ between SOEs and POEs, along with city-year or industry-year-specific policy changes. Identification relies on the difference in within-firm changes between SOEs and POEs.

We find that on average, foreign bank entry does not have a significant impact on firms' credit access, as measured by the amount of bank loans, investment and sales. However, the impact of foreign bank entry varies with firm's ownership and *ex ante* financial constraints. Specifically, POEs, which were previously more financially constrained, generally benefit more from foreign bank entry relative to less constrained SOEs. After foreign bank entry is allowed, POEs gain substantially greater access to bank loans, which in turn enables them to increase investment and sales. This finding provides new insights into financial liberalization in China, suggesting that it serves as a powerful corrective to ownership-based lending discrimination. It challenges the notion that foreign banks primarily engage with large SOEs supported by the government due to their information disadvantage.

We explore two primary mechanisms to explain these findings. The first is a reallocation effect driven by increased competition. The entry of foreign banks appears to have prompted a reallocation of credit away from less-productive SOEs towards more productive but credit-starved POEs. More importantly, we provide novel evidence for a technology channel. We find that the positive effects on POEs are significantly more pronounced in cities with higher pre-existing technological readiness and more developed domestic financial technology (fintech) industries, suggesting a powerful complementarity. Furthermore, we show that foreign bank entry directly fosters local innovation, leading to a significant increase in a city's digital economy development, and growth in digital economy-related patents. Our results therefore suggest that the benefits of financial liberalization extend beyond simple competition, operating through technological spillovers that enhance local credit markets and foster innovation, ultimately alleviating the financing frictions that constrain private sector growth.

In terms of methodology, this paper is related to studies on state-level banking reforms in the USA. Using timing and state-level variation on cross-state bank branch legislation, Morgan *et al.* (2004) find that interstate bank branching deregulation leads to higher integration and less output volatility across US states. Our paper focuses on city-level foreign bank deregulation policies adopted in different years in China. One important difference is that each US state made individual decisions on legislation about bank branching, while the deregulation policies in China were implemented by the central government.

As a case study in an emerging market, this paper is closely related to Gormley (2010), which studies the impact of foreign bank entry on firms' performance in India. He uses variation in the location of foreign banks following a change in India's foreign bank lending policy. He finds that firms on average are less likely to get bank credit after foreign bank entry due to information asymmetry, but that profitable firms are more likely to secure bank credit. This paper differs in two important dimensions. First, China has a state-run sector that had privileged access to credit prior to reform, so we focus on the differential effects between SOEs and POEs, not just the overall level effect. Second, unlike India, the Chinese banking market was liberalized to foreign competition gradually, rather than all at once. Another study that is relevant to this paper is Lin (2011). She analyses data from listed companies on the Shanghai and Shenzhen stock exchanges only, and finds that more profitable firms benefit more from foreign bank entry in China. POEs listed on stock exchanges are generally large and profitable, and they are arguably not subject to financial constraints. In this paper, we use a large representative sample of both SOEs and POEs to study the impacts of foreign bank entry on different outcomes via easing financial constraints and through increased banking competition and local technological spillovers.

Our work is also distinct from recent studies on banking deregulation in China. For example, Gao *et al.* (2019) find that a partial bank entry deregulation in 2009 led to inefficient lending to SOEs. Our paper differs from their paper not only in its finding—that foreign entry benefits constrained POEs—but also in its identification strategy. While their study focuses on a single-period shock, which could potentially coincide with numerous other policy shocks occurring simultaneously, our analysis examines the staggered, multi-year rollout of deregulation across multiple cities between 2001 and 2006. This multi-period DiD design allows for more robust causal

inference by exploiting both cross-sectional and time series variation. We also explore the role of technology transfer in explaining our main findings. Foreign banks may directly introduce new and superior skills, management techniques, training procedures, technologies and products into the domestic market. This transfer of technology upgrades the efficiency of domestic banks. Furthermore, our paper provides compelling and timely policy implications. In light of the current global challenges, including trade wars, economic sanctions, geopolitical tensions and the decoupling of major economies, it is crucial to understand how China's integration with the global financial network influences its real economy. As emerging economies navigate increasing fragmentation and shifts in financial and trade alliances, our findings underscore the critical role of maintaining integration with the global financial network in supporting economic growth and improving capital allocation efficiency.

This paper contributes to several important debates in the literature.

First, this paper adds to the literature on the impact of foreign bank entry into developing countries. There exist two different views on the impact of foreign bank entry on firm's access to credit and performance.³ Some papers find a 'cream-skimming' effect, where foreign banks lend only to the most profitable local firms. For example, Mian (2006) and Gormley (2010) suggest that foreign bank entry tends to benefit larger firms only, and may even hurt small and medium-sized enterprises (SMEs) due to information asymmetry. Chemmanur *et al.* (2020) find that the stringency of bank screening of borrowers increases with greater banking sector competition. However, Clarke *et al.* (2006) find that foreign bank entry helps to reduce financing constraints for all firms, including SMEs. Giannetti and Ongena (2009) conclude that foreign bank entry stimulates growth in firm sales, assets and leverage for both listed and unlisted companies in Eastern European countries. Peng *et al.* (2022) find that the service trade liberalization alleviates financial constraints of Chinese enterprises.⁴ Our results are similar to the latter three studies. Using China's staggered, city-level deregulation as a quasi-natural experiment, we provide additional evidence in the context of Chinese firms that the benefits of deregulation are not uniform but are highly concentrated among previously credit-constrained POEs. These results provide insights into who benefits from liberalization, and demonstrates that foreign bank entry can be a tool to mitigate capital misallocation.

Second, this paper contributes to the growing finance literature on technology adoption and transfer (Buchak *et al.* 2018; Fuster *et al.* 2019; Berg *et al.* 2020; Di Maggio and Yao 2021; Choudhary and Limodio 2022; Pierri and Timmer 2022; D'Andrea and Limodio 2024; Kwan *et al.* 2024). We complement this strand of research by identifying a key channel of technology transfer through which foreign bank entry can enhance domestic banking efficiency. Our findings indicate that the effects of foreign bank entry are more pronounced in provinces with higher levels of technological readiness and more advanced domestic fintech industries, suggesting a complementarity between foreign expertise and local conditions. Furthermore, we show that foreign bank entry positively impacts the development of a city's digital economy, and fosters both digital economy-related invention and utility model patent applications and grants at the city level.

Third, our paper is related to the large literature on ownership discrimination, particularly the preferential credit access that SOEs enjoy over POEs in China (Brandt and Li 2003; Allen *et al.* 2005; Ge and Qiu 2007; Song *et al.* 2011; Hsieh and Song 2015; Gao *et al.* 2019; Liu *et al.* 2021). While the importance of POEs to China's economy has grown, their difficulty in accessing formal credit is well documented. We complement this research by using a quasi-exogenous policy shock to show that foreign bank entry can effectively counter this ownership-based discrimination, improving capital allocation efficiency by channelling credit to constrained POEs.

Finally, our contribution is strengthened by the use of more representative data that capture a wider range of financially constrained firms. Unlike studies that rely on publicly listed companies, our main analysis uses a comprehensive census of industrial firms that includes a vast number of unlisted, POEs that are more likely to face financing frictions. To expand our knowledge of

the policy's impact on an even more constrained segment, we complement these findings with evidence from the World Bank Enterprise Survey,⁵ which includes smaller firms. This additional analysis confirms that the positive effects on credit access are robust across a broad range of firm sizes, strengthening the external validity of our findings.

The remainder of the paper proceeds as follows. Section 2 provides an overview of China's policy change regarding foreign bank deregulation. Section 3 describes the firm-level data that we use in this study, and the baseline regression and identification strategy are explained in Section 4. Sections 5 and 6 present the main results and robustness checks. Section 7 concludes.

2 | POLICY EXPERIMENT WITH BANKING SECTOR LIBERALIZATION

2.1 | The Chinese banking sector before WTO accession

Prior to the reform in 1978, China had a single financial system. The People's Bank of China (PBOC) acted both as a commercial bank and a central bank. In 1978, the PBOC was split into four state-owned banks, and authorities began to establish various specialized commercial banks. Despite these reforms, financial policies in China remained heavily repressive, with heavily regulated interest rates, state-influenced credit allocation, frequently adjusted reserve requirements, and a tightly controlled capital account. A comprehensive dataset provided by Abiad *et al.* (2010) provides an index of financial liberalization for China and other countries in 2001, the year of China's WTO entry. China's financial liberalization index for that year was 0.36, which is quite low compared to the average for advanced economies, 0.93, or the average for emerging economies, 0.67.

This paper focuses on the financial opening in China following WTO entry. Before 2001, there were already a certain number of foreign bank branches operating in different cities. These branches, however, were only allowed to conduct foreign-currency business with foreign companies and foreign residents. Some foreign banks actually came to China following companies from their home countries that were making direct investments in the country. These banks had very limited business scope and could not lend to domestic firms directly.

2.2 | Policy experiment with foreign bank entry

'Foreign bank entry' in this study refers to foreign banks being allowed to conduct local-currency business with domestic firms. Restrictions on foreign banking activities were substantially relaxed after China acceded to the WTO in December 2001. During 2001–6, the geographic and client restrictions on local-currency business of foreign banks were phased out gradually based on the WTO accession agenda. This step-by-step entry of foreign banks provides a unique policy experiment for analysing the effects of financial opening on the domestic economy. Foreign banks were allowed to enter 20 Chinese cities (the 'opened regions') in phases before the end of 2005, and all geographic restrictions were removed by the end of 2006.

Table 1 shows a detailed timeline of geographic and client restrictions for local-currency business. For foreign-currency business, there were no geographic or client restrictions at the time of WTO accession. For local-currency business, the geographic restrictions on foreign bank lending were phased out gradually, starting with four cities (Shanghai, Shenzhen, Tianjin, Dalian) at the end of 2001. Foreign banks were allowed to conduct RMB business in Guangzhou, Zhuhai, Qingdao, Nanjing and Wuhan at the end of 2002; in Jinan, Fuzhou, Chengdu, Chongqing at the end of 2003; in Beijing, Kunming and Xiamen at the end of 2004; and in Shantou, Ningbo, Shenyang and Xi'an at the end of 2005. Geographic restrictions on local-currency business were

Table 1 Geographic and client restrictions for local currency business of foreign banks.

Geographic coverage	Cities with foreign bank entry in local currency business
End of 2001	Shanghai, Shenzhen, Tianjin, Dalian
End of 2002	Guangzhou, Zhuhai, Qingdao, Nanjing, Wuhan
End of 2003	Jinan, Fuzhou, Chengdu, Chongqing
End of 2004	Beijing, Kunming, Xiamen
End of 2005	Shantou, Ningbo, Shenyang, Xi'an
End of 2006	All other regions
Client coverage	Local-currency business for foreign banks
End of 2001	Permitted to invest in domestic banks
End of 2003	Permitted to provide services to Chinese enterprises
End of 2006	Permitted to provide services to all Chinese clients

Source: See p. 34 of the document WT/ACC/CHN/49/Add.2, available at http://www.wto.org/english/thewto_e/acc_e/completeacc_e.htm (accessed 16 January 2026).

completely lifted at the end of 2006. Before the end of 2006, foreign financial institutions in one region of China could not serve clients in any other region that had not been opened for foreign banks. In addition to the geographic coverage regulation, Table 1 also shows the client coverage policy. For local-currency business, foreign financial institutions were permitted to provide services to Chinese enterprises at the end of 2003. The client restriction was lifted at the end of 2006, when foreign financial institutions were permitted to provide services to all Chinese clients, including both firms and households.

We combine the geographic and client restrictions on foreign bank lending listed in Table 1 to obtain geographic variation across regions in local firms' access to foreign bank local-currency lending. First, foreign banks in 13 cities were allowed to conduct local-currency business with domestic firms in the same city, starting from the end of 2003 (the 13 cities are listed in the first three rows of Table 1). The authorities added another three cities to the list at the end of 2004, and four more cities at the end of 2005. Foreign banks could still invest in domestic banks in opened cities when they could not lend to domestic firms directly. In this way, domestic firms could benefit from foreign bank entry indirectly. Restrictions on the geographic and client coverage of foreign banks' local-currency business were completely lifted by the end of 2006. Beginning in 2007, foreign banks were allowed to conduct local-currency business with local firms and households across the entire country.

2.3 | A changed financial landscape

The WTO accession agenda (2001–6) is considered the landmark reform that gradually unlocked the space for foreign banks to penetrate and expand in China. This reform was driven by two main reasons: introducing competition and advanced skills to improve the efficiency of the domestic banking system, and fulfilling the rigid requirements of the WTO accession protocol. The phased opening of the banking sector not only expanded the presence of foreign banks in China, but also brought about significant changes in the competitive environment of the Chinese banking market. Foreign banks entered the market through Greenfield investment, setting up branches directly. By 2006, there were over 300 foreign bank branches in China. Foreign banks indeed entered into Chinese cities to commence local-currency business when restrictions were removed, and existing foreign banks expanded their business. For example, foreign banks issued more than 40% of new local-currency loans in Shanghai in 2006 (Xu and Lin 2007).

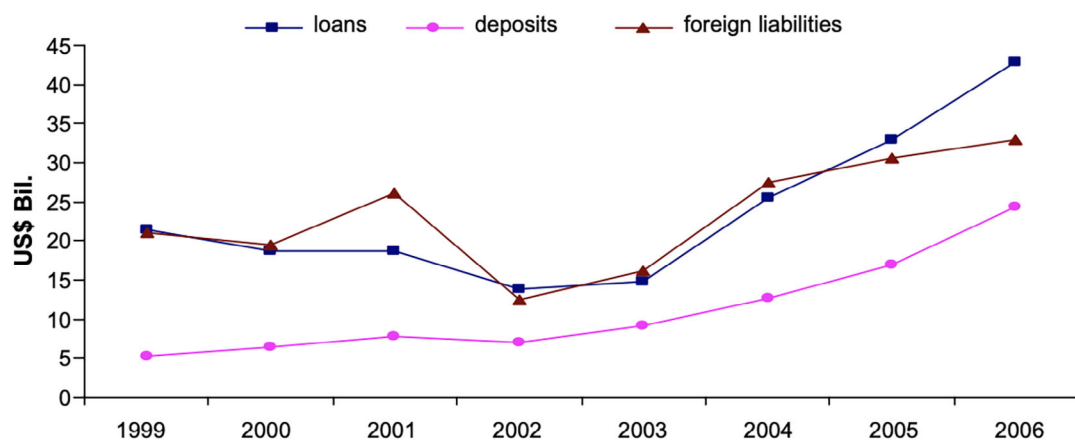


FIGURE 1 Balance sheets of foreign banks in China. Source: 2007 Almanac of China's Finance and Banking, and Xu (2011).

Figure 1 shows that there was a surge in foreign bank loans between 2003 and 2004 when foreign banks were permitted to lend to local firms. Another important feature of foreign bank activities shown in Figure 1 is that foreign banks extended more loans than they collected in deposits, because they could get funding from foreign countries to fill the gap between loans and deposits. Following the WTO accession, there was a sharp rise in loans followed by a rise in deposits, indicating a faster expansion of business due to relaxed restrictions.

The entry of foreign banks into China has fundamentally altered the competitive dynamics of the country's banking sector, particularly in terms of banking practices, customer service and firm performance. Foreign banks, leveraging their global expertise, have introduced advanced credit evaluation methods, robust risk management frameworks, and innovative financial products tailored to the needs of Chinese POEs. These include loans for SMEs, and supply chain financing solutions. Historically, China's domestic banks focused heavily on serving SOEs with relatively standardized lending practices. The entry of foreign banks disrupted this status quo, forcing domestic banks to modernize their operations and adopt similar tools and technologies in order to compete. This evolution has improved the overall efficiency and sophistication of China's banking sector, particularly in terms of credit allocation to POEs.

Foreign banks have also reshaped customer service dynamics in China's banking market. Unlike the traditional practices of domestic banks, which often lacked a client-centric approach, foreign banks introduced faster loan processing, greater transparency in lending terms, and personalized financial services. These banks emphasized relationship management, offering tailored financial solutions that met the specific needs of private businesses, especially young and small firms. In response, domestic banks have had to adapt, improving their customer engagement strategies, and significantly enhancing the quality of their services to retain and attract clients. This shift has marked a departure from the often bureaucratic and inflexible practices previously associated with domestic banks.

The resulting banking competition had profound implications for firm performance in China. With foreign banks actively targeting POEs—particularly those that were underserved by domestic banks—the availability of credit has increased significantly for these enterprises. While the importance of POEs to China's economy has grown, their difficulty in accessing formal credit is well documented. There exists ownership discrimination, particularly the preferential credit access that SOEs enjoy over POEs in China (Allen *et al.* 2005; Song *et al.* 2011; Hsieh and Song 2015; Gao *et al.* 2019; Liu *et al.* 2021). SOEs have historically benefited from preferential treatment in loan allocation due to government support (Geng and Pan 2024) and implicit

guarantees (Ge and Qiu 2007; Liu *et al.* 2021; Jin *et al.* 2023). In contrast, POEs often encounter significant barriers to credit access, forcing them to rely on more costly financing options such as informal financing (Allen *et al.* 2005). This situation is exacerbated by the perception among banks that POEs are riskier borrowers, largely due to their limited credit histories and lower expectations of government intervention in case of default (Brandt and Li 2003).

The financing advantages of Chinese SOEs primarily stem from institutional factors rather than inherent market competitiveness. The roots of this discrimination can be traced back to the structure of China's financial system, which was initially dominated by the PBOC until the late 1970s. The subsequent establishment of four primary state-owned banks created a framework that favoured SOEs, resulting in a system that disadvantaged POEs. Despite the formal recognition of the private sector in a 1999 constitutional amendment, state-owned banks continued to prioritize SOEs, reinforcing the financial constraints faced by POEs. Banks may prioritize political, ideological or personal objectives over profit maximization—a preference sustained by China's limited banking competition (Brandt and Li 2003). Significant reforms initiated in the 1990s aimed to rectify the inefficiencies within state-owned banks, including allowing foreign banks to enter the Chinese market.

This new competitive pressure also drives down borrowing costs, making loans more affordable for POEs, and enabling them to invest more in capital, technology and expansion. The improved access to credit and lower financing costs have allowed POEs, especially those that are young, small or financially constrained, to achieve substantial growth in productivity and sales. Additionally, the foreign banks' focus on POEs has encouraged domestic banks to reallocate their resources and shift some of their attention away from SOEs, reducing the historic bias in credit allocation, and fostering a more inclusive financial environment.

Despite the increased presence of foreign banks, SOEs remain the primary beneficiaries of bank loans due to their historical relationships with state-owned commercial banks and perceived lower risk. However, the entry of foreign banks may have indirectly pressured domestic banks to improve lending efficiency and reduce the overallocation of credit to underperforming SOEs. In addition, the heightened competition from foreign banks could have encouraged SOEs to improve their corporate governance and operational efficiency to maintain access to financing.

In summary, the entry of foreign banks into China has transformed the competitive dynamics of its banking sector by driving advancements in banking practices, improving customer service, and creating a more competitive financial environment. As a result, the effects of this changed financial landscape on domestic firms are uneven. This period provides valuable insights into how financial sector liberalization can influence firm dynamics and economic efficiency in a developing economy.

3 | DATA

3.1 | Industrial firm-level data

The Chinese firm-level data are from ASIF from 1998 to 2007. These surveys are conducted by the government's National Bureau of Statistics. This dataset covers all state-owned and non-state-owned industrial firms with more than 5 million RMB in revenue.⁶ Industrial firms are defined here to include manufacturing, mining and public utilities.⁷ The unit of observation is a firm, defined as a legal unit. Large Chinese enterprises may have multiple subsidiaries. As long as these subsidiaries are legal units, they will enter the dataset as individual firms. Brandt *et al.* (2012, 2014) provide an excellent introduction to and description of the ASIF dataset.

3.1.1 | Coverage of the sample

We set the sample period from 1998 to 2007 to cover the financial opening period following WTO accession. The raw dataset consists of over 160,000 firms in 1998, and grows to over 330,000 firms in 2007. This unbalanced panel of firms between 1998 and 2007 is the most comprehensive dataset available for Chinese firm-level research. It includes the production and financial variables of small and private firms, which is a big advantage over Compustat or Worldscope, which just cover large listed corporations.

3.1.2 | SOEs versus POEs

Firm ownership status is a potential source of heterogeneity in the impact of the financial opening policy in China.⁸ We will control for different trends for firms with different ownership in our analysis in the next section.

The existing empirical literature suggests that there are large differences between SOEs and POEs in terms of productivity, capital intensity, bank discrimination and credit constraints (see Brandt and Li 2003; Hsieh and Song 2015). SOEs generally have political connections and benefit from subsidized credit from state-owned banks, while POEs (generally without political connections) can only borrow at high interest rates from informal financial markets or rely on self-financing.

3.2 | City-level financial opening reforms

China's gradual opening up to foreign banks is a good experiment to study the impact of foreign bank entry, or more generally to study the impact of financial reform.⁹ To identify the impact of foreign bank entry at the city level, we use variation in both the timing and location of new foreign banks' entries, based on the banking sector liberalization policy adopted by the Chinese central government upon accession to the WTO in 2001.

One might want to measure foreign bank activities in terms of their total assets or total loans in a given region and year. It would also be useful to measure the distribution of banks' loans to different types of firms. However, there are empirical challenges to obtaining such measures of foreign bank activities. Annual reports of banks typically do not report the distribution of assets in different regions, and the distribution of loans to different types of firms. On the other hand, from the manufacturing firm data, we cannot observe the sources of funds. In addition, these measures are more likely than a simple dummy policy variable to be correlated with local credit demand shocks.

Given these data limitations and endogeneity concern, we follow Lin (2011) and simply use a dummy policy variable $Foreign\ bank_{c,t}$ indicating the timing and geographic variation in foreign bank entry into local-currency business with firms in a particular city. For example, in Beijing, $Foreign\ bank_{c,2004} = 0$ and $Foreign\ bank_{c,2005} = Foreign\ bank_{c,2006} = 1$, since Beijing opened up for foreign bank entry at the end of 2004.

4 | EMPIRICAL STRATEGY

4.1 | The average impact of foreign bank deregulation

Before we focus on differential impacts across firms, we first study the average impact of financial reform on firms' credit access and real activity. Firms located in cities where foreign bank credit

was unavailable and hence were plausibly unaffected by foreign bank entry comprise the control group. Comparing outcomes of firms with access to foreign bank lending to those of firms without such access identifies the average impact of foreign bank entry at the firm level. Specifically, we examine the average impact using the specification.

$$Y_{i,c,j,t} = \alpha_i + \phi_{j,t} + \beta \text{Foreign bank}_{c,t} + \gamma X_{i,c,j,t} + \varepsilon_{i,c,j,t}, \quad (1)$$

where i, c, j, t stand for firm, city, industry and year, respectively. The dependent variable $Y_{i,c,j,t}$ represents a firm-level outcome, for which we examine several measures of credit access and real activity. For credit access, we measure firm-level bank loans using short-term liabilities as our primary proxy. The rationale for this is twofold: first, financial intermediation in China during our sample period (1998–2007) was overwhelmingly dominated by bank loans; second, most firms, particularly private ones, had little to no access to long-term financing and relied heavily on short-term debt. For robustness checks, we also use short-term liabilities minus accounts payable, and use total liabilities as alternative proxies for bank loans. We also examine long-term debt separately as a proxy for bond financing, although we note that China's corporate bond market was relatively small compared with bank loans during this period. For real activity, we use the firm's annual sales revenue and investment, measured as capital expenditures.

Here, we want to look at the direct impact of foreign bank deregulation. In our baseline specification, we only control for firm fixed effects α_i , which absorb any unobserved time-invariant firm effects, and industry–year fixed effects $\phi_{j,t}$. The foreign bank entry indicator $\text{Foreign bank}_{c,t}$ varies at the city–year level. We include time-varying firm-level controls $X_{i,c,j,t}$ such as firm size and profitability. Consistent with Di Giovanni *et al.* (2022), Kalemli-Özcan *et al.* (2022) and Başkaya *et al.* (2024), these control variables are lagged by one period to mitigate potential reverse causality. The coefficient of interest, β , captures the average impact of foreign bank entry on firm outcomes. This identification strategy assumes that the effect of foreign bank entry is localized, an assumption justified by regulations that restricted firms from borrowing from banks in another city prior to the end of 2006.¹⁰

4.2 | Foreign bank deregulation and firm heterogeneity

To test whether foreign bank entry has differential effects across various types of firms, we employ a DiD methodology and estimate the regression equation.

$$Y_{i,c,j,t} = \alpha_i + \delta_{c,t} + \phi_{j,t} + \beta \text{Foreign bank}_{c,t} \times \text{FirmType}_i + \gamma X_{i,c,j,t} + \lambda t \times \text{FirmType}_i + \varepsilon_{i,c,j,t}, \quad (2)$$

where subscripts i, c, j, t stand for firm, city, industry and year, respectively. The dependent variable is a firm-level outcome $Y_{i,c,j,t}$, such as bank loans, investment or sales. FirmType_i is a time-invariant variable capturing a firm's *ex ante* characteristics, such as ownership type, age, or a financial constraint index. Our primary coefficient of interest, β , is on the interaction term between firm characteristic FirmType_i and policy dummy $\text{Foreign bank}_{c,t}$. This term allows us to test whether foreign bank entry has differential effects across different types of firms. To focus on the interaction term coefficients only, we include city–year and industry–year fixed effects, in which industries are defined at the 2-digit SIC level. These fixed effects control for any industry-level policies and city-level policies that vary across years, such as subsidies and taxes, as well as industry and city specific demand factors, that might affect results. Here, α_i is a firm fixed effect, which absorbs any unobserved time-invariant firm effects. For main firm-level heterogeneity, we use ownership type as the primary proxy for financial constraints. To account for potential pre-existing differences in growth paths, we include a time trend for POEs relative to SOEs, $t \times \text{POE}_i$, in our main specification. This control is critical as POEs and SOEs likely had different growth trajectories during China's reform process. Also, $X_{i,c,j,t}$ controls for time-varying

firm-level variables such as firm profitability and firm size, and $\varepsilon_{i,c,j,t}$ represents the error term. The standard errors are clustered at the city level to allow for correlation within a city across time, following Bertrand *et al.* (2004).

5 | EMPIRICAL RESULTS

5.1 | The average impact of foreign bank entry

We begin our empirical analysis by examining the average impact of foreign bank entry on firm-level performance using the specification from equation (1). The results, presented in panel A of Table 2, show that the coefficient on the foreign bank entry variable is small and statistically non-significant for all key outcomes, including firms' short-term borrowing (proxy for bank loans), long-term borrowing (proxy for bonds), sales and investment.

It is possible that loans and real outcomes are reallocated, causing them to move in opposite directions across different types of firms, which may result in a non-significant overall effect. To explore this possibility, we conduct a preliminary test by estimating the model separately on subsamples of SOEs and POEs. In panel B of Table 2, we report the average impact based on subsamples. Columns (1) and (2) correspond to SOEs, while the columns (3) and (4) correspond to POEs. From columns (1) and (2), we observe that foreign bank entry leads to a decrease in loans for SOEs, although this effect is statistically non-significant. In contrast, from columns (3) and (4), we find that foreign bank entry results in an increase in loans for POEs, but this effect is also statistically non-significant. Overall, the opposing signs in two subsamples are consistent with the reallocation hypothesis. This preliminary finding motivates a more rigorous test for differential effects, using a model with interaction terms. Therefore in the next subsection, we turn to this strategy to formally test how the impact of foreign bank deregulation varies with firm ownership and other key characteristics, and focus on the differential effects.

5.2 | Differential effects of foreign bank entry and firm heterogeneity

In this subsection, we report the differential effects of foreign bank entry across firms with different ownership and various levels of *ex ante* financial constraints, using the timing variation of foreign bank entry across cities in the full sample.

5.2.1 | SOEs versus POEs—main results

Previous literature suggests that discrimination in credit against POEs was common in domestic commercial banks even after WTO accession; see Song *et al.* (2011). Here, we test whether foreign bank entry has differential effects on firms' credit access and real performance between SOEs and POEs, using the specification.

$$Y_{i,c,j,t} = \alpha_i + \delta_{c,t} + \phi_{j,t} + \beta \text{Foreign bank}_{c,t} \times POE_i + \gamma X_{i,c,j,t} + \lambda t \times POE_i + \varepsilon_{i,c,j,t}. \quad (3)$$

Here, we focus on domestic-owned firms only, thus foreign-owned firms are not included in our estimation sample. POE_i is a time-invariant indicator variable equal to 1 if the firm is classified as a POE in its initial year in the sample, and 0 if the firm is state-owned. Lagged firm size (total assets) and profitability are used as firm-level time-varying control variables. We use measures of credit access, log sales and log investment as dependent variables. We control for city-year and industry-year fixed effects. Following Autor (2003), we include a relative linear trend for POEs, $t \times POE_i$, to allow firms with different ownership to have different trends.

Table 2 The average impact of foreign bank entry at the firm level.

<i>Panel A: The average impact in the whole sample</i>				
Dependent variable	(1) log(loans)	(2) log(bonds)	(3) log(sales)	(4) log(invest)
Foreign bank	0.0217 (0.0264)	0.0105 (0.0360)	-0.0044 (0.0144)	-0.0382 (0.0409)
Firm size _{<i>t</i>-1}	0.3381*** (0.0140)	0.3922*** (0.0210)	0.2618*** (0.0096)	-0.1166*** (0.0173)
Profitability _{<i>t</i>-1}	0.0556* (0.0288)	0.0337 (0.0431)	0.3700*** (0.0336)	0.3568*** (0.0643)
Constant	5.3989*** (0.1337)	-0.5875*** (0.2010)	7.2887*** (0.1015)	7.6024*** (0.1696)
Firm fixed effects	Yes	Yes	Yes	Yes
Industry-year fixed effects	Yes	Yes	Yes	Yes
POE time trend	Yes	Yes	Yes	Yes
Clustered at	City	City	City	City
Observations	901,411	901,411	901,411	567,731
Adjusted R-squared	0.7157	0.7008	0.8810	0.5111

<i>Panel B: POE versus SOE subsamples</i>				
Dependent variable	SOE subsample		POE subsample	
	(1) log(loans)	(2) log(loans)	(3) log(loans)	(4) log(loans)
Foreign bank	-0.0090 (0.0283)	-0.0067 (0.0257)	0.0415 (0.0271)	0.0362 (0.0288)
Firm size _{<i>t</i>-1}		0.3139*** (0.0187)		0.2930*** (0.0158)
Profitability _{<i>t</i>-1}		0.0086 (0.0741)		0.0742*** (0.0265)
Constant	8.6094*** (0.0034)	5.6874*** (0.1816)	8.4234*** (0.0084)	5.8655*** (0.1476)
Firm fixed effects	Yes	Yes	Yes	Yes
Industry-year fixed effects	Yes	Yes	Yes	Yes
Clustered at	City	City	City	City
Observations	390,915	268,591	893,772	615,982
Adjusted R-squared	0.7407	0.7591	0.6566	0.6993

Notes This table reports coefficients from regressions of firm outcomes on the foreign bank entry policy dummy. Panel A uses the full sample, while panel B presents results for subsamples of SOEs and POEs. Firm fixed effects and industry-year fixed effects are included in all columns. Firm size_{*t*-1} (total assets) and Profitability_{*t*-1} (profit divided by revenue) are used as firm-level time-varying control variables. Standard errors, clustered at the city level, are reported in parentheses.

***, **, * indicate $p < 0.01$, $p < 0.05$, $p < 0.1$, respectively.

5.2.2 | SOEs versus POEs—credit access

We first examine the impact of foreign bank entry on firms' differential access to credit. Our primary measure for a firm's bank loans is its total short-term liabilities. We select this as our baseline proxy for two main reasons, grounded in the institutional context of our 1998–2007 sample period: first, financial intermediation in China was overwhelmingly dominated by bank loans; and second, long-term financing was scarce, forcing most firms, particularly private ones, to rely

on short-term debt. As detailed in Online Appendix Table A9, short-term liabilities accounted for 89.2% of total liabilities for POEs, and nearly 65% of these firms reported zero long-term debt. Therefore short-term debt captures the most relevant financing margin for the firms that we study, although we also separately examine long-term debt as a proxy for firms' access to bonds and other long-term financing.

Table 3 presents the regression results for these credit access measures. In panel A, we use firm-level short-term debt (proxy for bank loans) and long-term debt (proxy for bonds) as dependent variables. In columns (1) and (3), we include the policy dummy as well as its interaction term with *POE*, without controlling for city-year fixed effects. In columns (2) and (4), we add city-year fixed effects and focus solely on the interaction terms. As a result, the direct effect of the foreign bank entry dummy is absorbed by the city-year fixed effects, and the coefficients of the interaction term capture the differential effects of foreign bank deregulation on credit access.

Column (2) of panel A in Table 3 shows that following foreign bank entry, POEs experience a statistically significant increase in bank loans of 7.7% relative to SOEs. We find a similar positive and significant effect for long-term debt in column (4), suggesting that financial liberalization may have also improved POEs' access to longer-term credit markets.

To ensure that these findings are not dependent on our specific proxy for bank loans, we conduct robustness checks using alternative definitions in panel B of Table 3. We use a more refined measure that excludes trade credit (i.e. short-term liabilities minus accounts payable) in column (1), and a broader measure of total liabilities in column (2). Across all specifications, the coefficient on the *Foreign bank* \times *POE* interaction term remains positive and highly statistically significant. This result confirms that our core result that foreign bank entry disproportionately improves credit access for POEs is robust to various definitions of bank loans.

The relevant literature, including Liu *et al.* (2021), emphasizes the potential role of privatization reforms in reducing ownership discrimination. We explicitly test this possibility in column (3) of panel B in Table 3. In our baseline regressions, the key variable of interest is *Foreign bank* \times *POE*, where *POE* represents the initial status of a POE. Here, we replace it with the variable *Foreign bank* \times *POE1*, where *POE1* reflects the time-changing status of POEs. By allowing *POE1* to change over time, we account for the role of privatization reforms. The results in column (3) show that the variable *Foreign bank* \times *POE1* is significant at the 5% level.

Furthermore, we would like to emphasize that our policy dummy *Foreign bank* exhibits significant city-level variation over time, making it unlikely to be highly correlated with privatization reforms. While we acknowledge that there is some overlap in timing between our policy and the privatization reforms, the city-level variation in foreign bank entry allows us to isolate the causal effects of foreign bank entry.

5.2.3 | SOEs versus POEs— sales, investment and productivity

Having established that foreign bank entry improves credit access for POEs, we next examine whether this translates into improved real economic outcomes. Table 4 presents the results for firms' sales, investment and productivity. We find strong evidence that improved credit access leads to significant real effects for POEs relative to SOEs. The key variable *Foreign bank* \times *POE* is statistically significant at the 1% level in columns (1) and (2). Column (1) shows that following the deregulation, POEs' sales grow by 3.8% more than those of SOEs. Similarly, column (2) indicates that their investment increases by a significant 6.6% more than their state-owned counterparts. Finally, in column (3), we test whether this increased investment translates into higher firm-level productivity (TFP). One might expect that by easing financial constraints, deregulation would allow firms to invest in new technologies and boost efficiency.¹¹ However, we find no statistically significant differential effect on TFP for POEs. Given this consistently null result across our specifications, we omit TFP from subsequent analyses for brevity.

Table 3 Effect of foreign bank entry on credit access: SOE versus POE.

<i>Panel A: Baseline results</i>				
Dependent variable	(1) log(loans)	(2) log(loans)	(3) log(bonds)	(4) log(bonds)
Foreign bank	-0.0373 (0.0249)		-0.0358 (0.0404)	
Foreign bank × POE	0.0942*** (0.0159)	0.0772*** (0.0135)	0.0738** (0.0321)	0.1699*** (0.0285)
Firm size _{<i>t</i>-1}	0.3349*** (0.0140)	0.3264*** (0.0137)	0.3897*** (0.0210)	0.3786*** (0.0197)
Profitability _{<i>t</i>-1}	0.0536* (0.0289)	0.0738*** (0.0262)	0.0322 (0.0429)	0.0355 (0.0425)
Constant	5.4305*** (0.1333)	5.5062*** (0.1311)	-0.5627*** (0.2012)	-0.4810** (0.1886)
Firm fixed effects	Yes	Yes	Yes	Yes
City-year fixed effects		Yes		Yes
Industry-year fixed effects	Yes	Yes	Yes	Yes
POE time trend	Yes	Yes	Yes	Yes
Clustered at	City	City	City	City
Observations	901,411	901,389	901,411	901,389
Adjusted R-squared	0.7158	0.7202	0.7008	0.7043
<i>Panel B: Alternative specifications</i>				
Dependent variable	(1) log(loans1)	(2) log(liabilities)	(3) log(loans)	
Foreign bank × POE	0.1115*** (0.0192)	0.0820*** (0.0122)		
Foreign bank × POE1			0.0475** (0.0188)	
Firm size _{<i>t</i>-1}	0.1328*** (0.0173)	0.3398*** (0.0135)	0.3281*** (0.0136)	
Profitability _{<i>t</i>-1}	0.0928** (0.0362)	0.0710*** (0.0249)	0.0748*** (0.0262)	
Constant	6.7641*** (0.1667)	5.5875*** (0.1296)	5.5057*** (0.1312)	
Firm fixed effects	Yes	Yes	Yes	
City-year fixed effects	Yes	Yes	Yes	
Industry-year fixed effects	Yes	Yes	Yes	
POE time trend	Yes	Yes	Yes	
Clustered at	City	City	City	
Observations	901,411	901,389	901,389	
Adjusted R-squared	0.7008	0.7043	0.7201	

Notes This table reports the differential effects of foreign bank deregulation on the credit access of POEs relative to SOEs. The baseline dependent variable, used as a proxy for bank loans, is a firm's total short-term liabilities. All regressions control for firm and industry-year fixed effects, lagged firm size (total assets), and lagged profitability (profit divided by revenue). Panel B presents several specifications to demonstrate the robustness of the findings. Column (1) uses an alternative loan proxy: short-term liabilities minus accounts payable. Column (2) uses total liabilities (short-term plus long-term) as the dependent variable. Column (3) uses the baseline loan proxy but employs a time-varying definition of POE status to account for privatization reforms. Foreign firms are excluded from the sample. Standard errors, clustered at the city level, are reported in parentheses.

***, **, * indicate $p < 0.01$, $p < 0.05$, $p < 0.1$, respectively.

Table 4 Effect of foreign bank entry on firms' performance: SOE versus POE.

Dependent variable	(1) log(sales)	(2) log(invest)	(3) log(TFP)
Foreign bank \times POE	0.0381*** (0.0116)	0.0664*** (0.0212)	0.0018 (0.0094)
Firm size $_{t-1}$	0.2525*** (0.0087)	-0.1268*** (0.0165)	0.0472*** (0.0043)
Profitability $_{t-1}$	0.3196*** (0.0309)	0.3198*** (0.0517)	0.1625*** (0.0218)
Constant	7.3866*** (0.0880)	7.6890*** (0.1567)	1.5108*** (0.0452)
Firm fixed effects	Yes	Yes	Yes
City-year fixed effects	Yes	Yes	Yes
Industry-year fixed effects	Yes	Yes	Yes
POE time trend	Yes	Yes	Yes
Clustered at	City	City	City
Observations	901,389	567,672	901,389
Adjusted R-squared	0.8851	0.5177	0.7198

Notes This table reports the effects of foreign bank deregulation on POEs' performance relative to that of SOEs. The dependent variables are the logarithms of the firm's annual sales, investment and TFP measured following Wooldridge (2009). All regressions control for firm, city-year and industry-year fixed effects, where industry classifications are at the 2-digit SIC level. *Firm size* $_{t-1}$ (total assets) and *Profitability* $_{t-1}$ (profit divided by revenue) are used as firm-level time-varying control variables. Foreign firms are excluded from the sample. Clustered standard errors (at the city level) are reported in parentheses.

***, **, * indicate $p < 0.01$, $p < 0.05$, $p < 0.1$, respectively.

One interpretation of these results is that repressive financial policies discriminate against POEs but favour SOEs, while foreign bank entry and competition in banking may be viewed as a way to reverse the effects of financial repression. Therefore previously constrained POEs are able to increase investment and sales when they get more access to bank credit. These results are consistent with the financial constraint hypothesis. We consider that the coefficient estimates of the foreign bank entry dummy β in equation (3) is a measure of the overall impact of this financial market opening policy on POEs relative to SOEs. These relative benefits for POEs are likely transmitted through several channels. First, the increase in credit could come directly from foreign banks' lending to POEs. Second, consistent with a reallocation effect, the entry of foreign banks intensifies competition, driving domestic banks to reallocate credit toward creditworthy POEs that they may have previously overlooked. Furthermore, our findings point to a crucial technology channel. Foreign banks bring advanced credit assessment and risk management technologies that can spill over to the domestic banking sector. This effect improves the overall efficiency of credit allocation, making it easier for all banks in the local market to identify and finance productive POEs. We will explore these mechanisms empirically in the next subsection, following some additional heterogeneity analysis.

5.2.4 | Young versus old firms

While ownership is a strong indicator of financial access in China, we further test our financial constraint hypothesis by examining other firm characteristics commonly associated with financing frictions: age, size and the SA index, a direct measure of financial constraints. Table 5 presents these results.

Table 5 Heterogeneous effects of foreign bank entry.*Panel A: Young versus old firms*

Dependent variable	(1) log(loans)	(2) log(sales)	(3) log(invest)	(4) log(TFP)
Foreign bank \times Young	0.0635*** (0.0115)	0.0326*** (0.0079)	0.0308* (0.0159)	-0.0056 (0.0082)
Firm size _{<i>t</i>-1}	0.3274*** (0.0136)	0.2545*** (0.0089)	-0.1226*** (0.0162)	0.0487*** (0.0044)
Profitability _{<i>t</i>-1}	0.0750*** (0.0261)	0.3211*** (0.0311)	0.3222*** (0.0518)	0.1634*** (0.0219)
Constant	5.5454*** (0.1297)	7.4334*** (0.0858)	7.7415*** (0.1560)	1.5284*** (0.0431)
Firm fixed effects	Yes	Yes	Yes	Yes
City-year fixed effects	Yes	Yes	Yes	Yes
Industry-year fixed effects	Yes	Yes	Yes	Yes
Young firm time trend	Yes	Yes	Yes	Yes
Clustered at	City	City	City	City
Observations	901,389	901,389	567,672	901,389
Adjusted R-squared	0.7202	0.8850	0.5176	0.7197

Panel B: Small versus large firms

Dependent variable	(1) log(loans)	(2) log(sales)	(3) log(invest)	(4) log(TFP)
Foreign bank \times Small	0.0916*** (0.0133)	0.0706*** (0.0093)	0.2169*** (0.0188)	0.0112 (0.0082)
Firm size _{<i>t</i>-1}	0.2654*** (0.0122)	0.2286*** (0.0085)	-0.2385*** (0.0170)	0.0493*** (0.0045)
Profitability _{<i>t</i>-1}	0.0452 (0.0274)	0.3081*** (0.0291)	0.2838*** (0.0462)	0.1635*** (0.0219)
Constant	6.3521*** (0.1182)	7.7645*** (0.0833)	9.1248*** (0.1706)	1.5171*** (0.0449)
Firm fixed effects	Yes	Yes	Yes	Yes
City-year fixed effects	Yes	Yes	Yes	Yes
Industry-year fixed effects	Yes	Yes	Yes	Yes
Small firm time trend	Yes	Yes	Yes	Yes
Clustered at	City	City	City	City
Observations	901,389	901,389	567,672	901,389
Adjusted R-squared	0.7250	0.8868	0.5263	0.7197

Table 5 (Continued)

Panel C: High versus low SA index firms

Dependent variable	(1)	(2)	(3)	(4)
	log(loans)	log(sales)	log(invest)	log(TFP)
Foreign bank \times FinCon	0.0931*** (0.0144)	0.0753*** (0.0098)	0.1740*** (0.0182)	0.0130 (0.0091)
Firm size _{<i>t</i>-1}	0.2828*** (0.0126)	0.2345*** (0.0087)	-0.2047*** (0.0166)	0.0488*** (0.0045)
Profitability _{<i>t</i>-1}	0.0537** (0.0270)	0.3111*** (0.0297)	0.2949*** (0.0480)	0.1633*** (0.0220)
Constant	6.1539*** (0.1223)	7.6965*** (0.0851)	8.7677*** (0.1655)	1.5214*** (0.0452)
Firm fixed effects	Yes	Yes	Yes	Yes
City-year fixed effects	Yes	Yes	Yes	Yes
Industry-year fixed effects	Yes	Yes	Yes	Yes
FinCon firm time trend	Yes	Yes	Yes	Yes
Clustered at	City	City	City	City
Observations	901,389	901,389	567,672	901,389
Adjusted R-squared	0.7235	0.8864	0.5237	0.7197

Notes This table reports heterogeneous effects based on firms' age, size and SA index. In panel A, the *Young* variable is a dummy variable that equals 1 if a firm's initial age is below the city median. In panel B, the *Small* variable is a dummy variable that equals 1 if a firm's initial total assets are below the city median. In panel C, we define the dummy variable *FinCon*, which equals 1 if a firm's SA index is greater than the city median. All regressions control for firm, city-year and industry-year fixed effects, where industry classifications are at the 2-digit SIC level. *Firm size*_{*t*-1} (total assets) and *Profitability*_{*t*-1} (profit divided by revenue) are used as firm-level time-varying control variables. Foreign firms are not included in the sample. Clustered standard errors (at the city level) are reported in parentheses. ***, **, * indicate $p < 0.01$, $p < 0.05$, $p < 0.1$, respectively.

We begin by exploring firm age and size, as younger and smaller firms are typically considered more financially constrained. We create a dummy variable *Young* for firms with an initial age below the city median, and another, *Small*, for firms with initial total assets below the city median.

The results in panel A of Table 5 indicate that the interaction term *Foreign bank* \times *Young* is positive and statistically significant in the first three columns, suggesting that foreign bank entry benefits young firms more in terms of loans, sales and investment. Young firms could obtain loans 6.4% more than old firms after foreign bank deregulation.

5.2.5 | Small versus large firms

We find a consistent pattern for firm size. The results in panel B of Table 5 show that the interaction term *Foreign bank* \times *Small* is positive and significant at the 1% level in the first three columns, confirming that smaller firms—another group typically facing financing hurdles—benefit disproportionately from the policy change. The coefficient shows that smaller firms would have access to 9.2% more credit compared with larger firms, and this credit access is associated with a 7.1% increase in sales relative to larger firms.

5.2.6 | High versus low SA index firms

Following Hadlock and Pierce (2010) and Song *et al.* (2021), we compute a firm's SA index using the established formula $SA\ index = -0.737 * size + 0.043 * size^2 - 0.040 * age$ to measure financial constraints. The SA index is negative, and as its value increases, a firm experiences greater financial constraint.

In the above equation, *size* is the natural logarithm of the enterprise's total assets (divided by one million yuan), and *age* is the enterprise's operating years. The equation is a quadratic function with an inflection point around 8.57. When size is less than 8.57, the SA index decreases with size; when size exceeds 8.57, the SA index increases with size. Upon examining our data, we find that the majority of observations for size are below 8.57. This result indicates a negative relationship between size and financial constraints, consistent with the findings reported in panel B of Table 5. Similarly, the SA index decreases with age, suggesting a negative relationship between age and financial constraints, as reflected in panel A of Table 5.

The results are reported in panel C of Table 5. Based on the initial SA index, we define the dummy variable *FinCon*, which equals 1 if a firm's SA index is greater than the city median. The coefficient on the interaction term *Foreign bank* \times *FinCon* is positive in the first three columns, suggesting that firms facing greater financial constraints benefit more in terms of loans, sales and investment compared to firms with smaller financial constraints.

5.3 | Mechanism

We now explore the mechanisms through which foreign bank entry affects domestic firms. Building on the framework identified by Levine (1996), we focus on two primary channels: increased competition and technology transfer. First, foreign bank entry intensifies competition in the domestic financial market. This increased pressure can compel domestic banks to become more efficient, for example, by reducing overhead expenses and improving their lending practices to protect market share. Second, foreign banks can serve as a conduit for technology transfer. They may directly introduce superior skills, advanced management techniques, and new financial products and technologies to the domestic market. This knowledge spillover can upgrade the capabilities and overall efficiency of the entire domestic banking sector. In this subsection, we provide empirical evidence for both channels to explain our main findings on firm-level credit access and real activities.

5.3.1 | Competition

The simple foreign bank entry dummy variable that we use for empirical analysis indicates whether each city is subject to actual as well as potential foreign bank entry. Therefore this dummy is associated with the extent of competition in the domestic banking market. Recent studies find that foreign banks are more efficient than domestic banks, and that foreign bank entry in China makes the banking market more competitive (see Berger *et al.* 2009; Xu 2011). As a result, the coefficient estimate of the foreign bank entry dummy could capture two channels through which financial opening policy could affect firms: (i) directly through the increased banking activities (credit supply) of the new foreign bank branches; and (ii) indirectly through increased competition in banking. This competitive pressure could impact firms' credit access and real performance.

We measure the bank competition index as the National Economic Research Institute index of marketization for provinces in China. The index measures the share of deposits and loans in non-state banks relative to state-owned banks (see Fan *et al.* 2010). We use this index to proxy

Table 6 Competition channel.

Dependent variable	(1) fcomp	(2) fcomp	(3) fcomp	(4) fcomp
Foreign bank	0.6151*** (0.1533)	0.6719*** (0.1770)		
GDP		-0.1457 (0.2417)		
Population		-2.1584** (0.8586)		
Foreign bank _p			0.9971*** (0.3400)	0.8835*** (0.2968)
GDP _p				3.9816** (1.9160)
Population _p				-4.5041 (3.5020)
Constant	5.2206*** (0.0184)	20.0757*** (6.0811)	4.9155*** (0.0873)	7.7367 (29.7172)
City fixed effects	Yes	Yes	No	No
Province fixed effects	No	No	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Clustered at	City	City	Province	Province
Observations	2940	2674	300	300
Adjusted R-squared	0.8121	0.8321	0.8024	0.8237

Notes In this table, we explore the channel of competition. In the first two columns, we run regressions at the city level. In the last two columns, we run regressions at the province level. The dependent variable is the National Economic Research Institute index of marketization for provinces in China. The index measures the share of deposits and loans in non-state banks relative to state-owned banks. The variables *GDP* and *Population* represent the natural logarithms of GDP and population at the city level, respectively. *Foreign bank_p* is assigned value 1 if at least one city within a province permits foreign bank entry. *GDP_p* and *Population_p* represent the natural logarithms of GDP and population at the province level, respectively. Foreign firms are not included in the sample. Clustered standard errors are reported in parentheses.

***, **, * indicate $p < 0.01$, $p < 0.05$, $p < 0.1$, respectively.

the competitiveness of the local banking sector at the province level. For foreign bank entry at the province level, if there is at least one city in a province allowing foreign banks to enter in year t , then we define *Foreign bank_p* = 1. As a robustness check, we also conduct city-level regressions, which include the city-level foreign bank dummy *Foreign bank* along with city-level control variables for GDP and population.

Table 6 presents the results. The first two columns report city-level regressions, while the last two columns focus on province-level regressions. Both variables, *Foreign bank* and *Foreign bank_p*, are significant at the 1% level, indicating that foreign bank entry significantly intensifies banking competition in the local financial market.

5.3.2 | Technology

In this subsection, we explore the role of technology. Foreign banks introduce advanced skills, management techniques and training procedures into the domestic market, fostering a transfer of technology that improves the efficiency of domestic banks.

First, we demonstrate that the effects of foreign bank entry are stronger in provinces with higher technological readiness and more advanced domestic fintech industries.

We use the internet penetration rate at the province level to measure technological readiness. *Netrate* is a dummy variable equal to 1 if a province's initial internet penetration rate is greater than the national median value. To identify the differential impacts of foreign bank entry for POEs, we focus on the variable *Foreign bank* \times *POE* \times *Netrate*, which is a triple interaction term of *Foreign bank*, *POE* and *Netrate*.

If the impact of foreign bank entry on POEs is larger in provinces with higher technological readiness, then we expect a significantly positive coefficient for *Foreign bank* \times *POE* \times *Netrate*. Indeed, in columns (1) and (2) of panel A in Table 7, we find a significantly positive coefficient for *Foreign bank* \times *POE* \times *Netrate*, indicating a complementary effect of technology.

We follow Song *et al.* (2021) to construct a regional fintech development indicator based on the establishment information of fintech companies. This indicator measures the degree of advancement of domestic fintech industries. *FinDev* is a dummy variable equal to 1 if a province's initial number of fintech companies is greater than the national median value.

To identify the differential impacts of foreign bank entry for POEs, we focus on the variable *Foreign bank* \times *POE* \times *FinDev*, which is a triple interaction term of *Foreign bank*, *POE* and *FinDev*. In columns (3) and (4) of panel A in Table 7, we find a significantly positive coefficient for *Foreign bank* \times *POE* \times *FinDev*. This result indicates that provinces with more advanced domestic fintech industries experience larger increases in loans after foreign bank entry, also suggesting a complementary effect of technology.

Second, we demonstrate that foreign bank entry has positive effects on a city's digital economy development. *DigEco* is a city-level digital economy index used to measure internet development at the city level. This index is constructed using four indicators: internet penetration rate, related employment, related output, and mobile phone penetration rate. By applying principal component analysis, we standardize the data for these four indicators, and reduce dimensionality to create a comprehensive digital economy development index, referred to as *DigEco*.

We report the results in panel B of Table 7. In column (1), we include only the variable *Foreign bank*, while in column (2), we add city-level control variables for GDP and population. In both columns, the variable *Foreign bank* is statistically significant at the 1% level, indicating that foreign bank entry has positive effects on the digital economy level of a city.

Finally, we explore the effects of foreign bank entry on a city's technological development. The patent dataset is sourced from China's State Intellectual Property Office. In China, patents are classified into three categories: invention, utility model and design. Since design patents lack technological substance, we follow the approach of Tan *et al.* (2020) and focus exclusively on invention and utility model patents. To proxy for a city's technological development, we use two measures: (i) the number of digital economy-related patents applied for and ultimately granted by a city (*Grant*); and (ii) the number of digital economy-related patents applied for by a city (*Apply*).

As argued by Cohn *et al.* (2022), fixed effects Poisson regression is more suitable for count variables, such as the number of patents, compared to log1plus regression. Therefore we adopt the methodology of Cohn *et al.* (2022) to analyse the impact of foreign bank entry on a city's technological development.

The first two columns and the last two columns of panel C in Table 7 focus on digital economy-related invention patents and utility model patents, respectively. In columns (1) and (2), the coefficients of *Foreign bank* are 0.1736 and 0.1070, respectively. These values imply that foreign bank entry results in a 19.0% ($e^{0.1736} - 1$) increase in invention patent applications, and an 11.3% ($e^{0.1070} - 1$) increase in invention patent grants. Similarly, the results in columns (3) and (4) confirm that foreign bank entry has positive effects on both digital economy-related utility model patent applications and grants at the city level.

Table 7 Technology channel.*Panel A: Complementary effect of technology*

Dependent variable	(1) log(loans)	(2) log(loans)	(3) log(loans)	(4) log(loans)
Foreign bank		-0.0395 (0.0253)		-0.0392 (0.0254)
Foreign bank × POE		0.0368 (0.0299)		0.0199 (0.0346)
Foreign bank × POE × Netrate	0.1009*** (0.0162)	0.0882** (0.0346)		
Firm size _{<i>t</i>-1}	0.3272*** (0.0136)	0.3354*** (0.0140)	0.3270*** (0.0136)	0.3353*** (0.0140)
Profitability _{<i>t</i>-1}	0.0762*** (0.0263)	0.0588** (0.0287)	0.0754*** (0.0262)	0.0581** (0.0283)
Foreign bank × POE × FinDev			0.0938*** (0.0162)	0.1042*** (0.0394)
Constant	5.5012*** (0.1304)	5.4262*** (0.1328)	5.5032*** (0.1306)	5.4279*** (0.1328)
Firm fixed effects	Yes	Yes	Yes	Yes
City-year fixed effects	Yes		Yes	
Industry-year fixed effects	Yes	Yes	Yes	Yes
POE time trend	Yes	Yes	Yes	Yes
Clustered at	City	City	City	City
Observations	900,746	900,764	900,746	900,764
Adjusted R-squared	0.7199	0.7155	0.7199	0.7155

Panel B: Foreign bank entry enhances a city's digital economy development

Dependent variable	(1) DigEco	(2) DigEco
Foreign bank	0.0037*** (0.0013)	0.0032*** (0.0009)
GDP		0.0030*** (0.0010)
Population		0.0103* (0.0060)
Constant	0.0027*** (0.0002)	-0.1019*** (0.0382)
City fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Clustered at	City	City
Observations	2439	2340
Adjusted R-squared	0.8967	0.9117

Table 7 (Continued)

Panel C: Foreign bank entry promotes the growth of digital economy-related patents

Dependent variable	(1)	(2)	(3)	(4)
	Apply invention	Grant invention	Apply utility model	Grant utility model
Foreign bank	0.1736*** (0.0099)	0.1070*** (0.0227)	0.0987*** (0.0090)	0.0429*** (0.0104)
GDP	0.6966*** (0.0330)	-0.4340*** (0.0706)	0.3590*** (0.0226)	0.4520*** (0.0250)
Population	0.2666*** (0.0123)	1.2130*** (0.0358)	0.1849*** (0.0127)	0.3478*** (0.0148)
City fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Observations	3371	3191	3375	3375
Number of cities	271	254	272	272

Notes This table reports the results on the channel of bank technology. In panel A, we demonstrate that the effects of foreign bank entry are stronger in provinces with higher technological readiness and more advanced domestic financial technology industries. *Netrate* is a dummy variable equal to 1 if a province's initial internet penetration rate is greater than the national median value. *FinDev* is a dummy variable equal to 1 if a province's initial number of fintech companies is greater than the national median value. In panel B, we show that foreign bank entry has positive effects on the digital economy level of a city. *DigEco* is a city-level digital economy index used to measure internet development at the city level. In panel C, we confirm that foreign bank entry has positive effects on both digital economy-related invention and utility model patent applications and grants at the city level. The first two columns and the last two columns focus on digital economy-related invention patents and utility model patents, respectively. Foreign firms are not included in the sample.

***, **, * indicate $p < 0.01$, $p < 0.05$, $p < 0.1$, respectively.

6 | ROBUSTNESS CHECKS

6.1 | Heterogeneous treatment effect

To address heterogeneous treatment effects, we adopt the heterogeneity-robust staggered DiD model proposed by Sun and Abraham (2021). This approach is critical, as prior research (Callaway and Sant'Anna 2021; Baker *et al.* 2022) has demonstrated that traditional two-way fixed effects regression can result in estimates with uninterpretable weights when applied to policies implemented asynchronously across regions. By using the heterogeneity-robust staggered DiD model, we achieve more accurate estimations of the causal effects of foreign bank entry.

The approach developed by Sun and Abraham (2021) is implemented through an interacted regression analysis, which examines the interactions between relative time indicators and cohort indicators. By calculating the cohort shares underlying each relative time, and deriving a weighted average of the initial estimates based on these proportions, this method accounts for variations in treatment timing across cohorts, ensuring a more precise evaluation of the treatment effects.

We report the results in Table 8. We first focus on the DiD policy dummy *Foreign bank* and present the results in panel A. We find that the coefficient of *Foreign bank* is not significant, which is consistent with the findings in panel A of Table 2.

Since our primary focus is the interaction term *Foreign bank* \times *POE*, we run regressions separately for SOEs and POEs. The results for SOEs and POEs are shown in panels B and C of Table 8, respectively. For SOEs, the coefficient is negative and statistically non-significant, while for POEs, the coefficient is positive and statistically non-significant. This result is also consistent with our results in panel B of Table 2.

In conclusion, our main results are robust to heterogeneous treatment effects.

Table 8 Heterogeneous treatment effects.

	ATT estimate	S.E.	<i>p</i> -value
Panel A: The whole sample	0.019	0.018	0.290
Panel B: SOEs subsample	-0.012	0.020	0.531
Panel C: POEs subsample	0.019	0.024	0.412

Notes This table reports the results based on the heterogeneity-robust staggered DiD approach developed by Sun and Abraham (2021). In panel A, we run regressions based on the whole sample. In panels B and C, we run regressions based on the subsamples of SOEs and POEs, respectively.

6.2 | Financial liberalization or trade liberalization in the post-WTO period?

A potential challenge to our identification strategy is the concurrent impact of trade liberalization. China's accession to the WTO not only opened its financial sector, but also led to a rapid increase in exports following tariff reductions. Even with uniform national tariff policies, local economies can experience differential trade shocks due to variations in industry specialization and trade exposure. This creates a potential confounding factor that could be correlated with our foreign bank entry measure.

To address the possible threat to identification from trade liberalization, we construct a time-varying trade openness index (*Trade Openness Index_{c,t}*) at the city-year level using the average export exposure per worker, following Autor *et al.* (2013), that is,

$$\text{Trade Openness Index}_{c,t} = \frac{\sum_i \text{Exports}_{i,c,t}}{\sum_i \text{Number of workers}_{i,c,t}},$$

where *i*, *c*, *j*, *t* stand for firm, city, industry and time, respectively. We run the following regression to estimate the differential impacts of both foreign bank entry and trade openness:

$$Y_{i,c,j,t} = \alpha_i + \delta_{c,t} + \phi_{j,t} + \beta_1 \text{Foreign bank}_{c,t} \times \text{POE}_i + \beta_2 \text{Trade Openness Index}_{c,t} \times \text{POE}_i + \gamma X_{i,c,j,t} + \lambda t \times \text{POE}_i + \varepsilon_{i,c,j,t}. \quad (4)$$

Both the financial liberalization and trade liberalization shocks vary at the city-year level. The results, reported in Table 9, show that after controlling for city-level trade exposure, foreign bank deregulation still has larger impacts on POEs relative to SOEs, in terms of credit access, sales and investment. Specifically, bank loans to POEs increase by 6.0% more than for SOEs when we also control for city-level trade exposure, an effect of similar magnitude to our baseline estimate. The effects on POEs' relative TFP is very small and remains non-significant. The coefficient on the trade exposure interaction term is also positive and significant for bank loans. A plausible explanation is that increased export activity provides POEs with more accounts receivable, which can then be used as collateral or serve as a positive signal of creditworthiness to obtain more bank financing.

This robustness check suggests that the main results in Subsection 5.2 are not driven by POEs being more exposed to export opportunities after China joined the WTO, and that financial development does play a role in explaining the relatively higher growth of credit access, sales and investment among POEs.

6.3 | Other robustness checks

To ensure the robustness of our findings, we conduct a series of additional tests, with details provided in Online Appendix C. First, to address potential systematic differences between policy

Table 9 Foreign bank entry versus trade openness.

Dependent variable	(1)	(2)	(3)	(4)
	log(loans)	log(sales)	log(invest)	log(TFP)
Foreign bank \times POE	0.0602*** (0.0163)	0.0239*** (0.0088)	0.0483** (0.0231)	-0.0042 (0.0086)
Trade \times POE	0.0414*** (0.0146)	0.0353*** (0.0090)	0.0354* (0.0201)	0.0186 (0.0120)
Firm size _{<i>t-1</i>}	0.3173*** (0.0135)	0.2464*** (0.0084)	-0.1371*** (0.0170)	0.0451*** (0.0041)
Profitability _{<i>t-1</i>}	0.0638** (0.0296)	0.3090*** (0.0316)	0.3043*** (0.0543)	0.1534*** (0.0230)
Constant	5.5031*** (0.1401)	7.4180*** (0.0900)	7.7405*** (0.1596)	1.5225*** (0.0577)
Firm fixed effects	Yes	Yes	Yes	Yes
City-year fixed effects	Yes	Yes	Yes	Yes
Industry-year fixed effects	Yes	Yes	Yes	Yes
POE time trend	Yes	Yes	Yes	Yes
Clustered at	City	City	City	City
Observations	810,254	810,254	515,204	810,254
Adjusted R-squared	0.7177	0.8833	0.5168	0.7166

Notes This table reports coefficients from regressions including a city-level trade openness index to address the threat to identification from trade liberalization. The city-level, time-varying variable *Trade* is defined as the average export value per worker in the manufacturing sector within the city. The dependent variables are the firm's loans, annual sales, investment and TFP measured following the methodology in Wooldridge (2009). *Firm size_{t-1}* (total assets) and *Profitability_{t-1}* (profit divided by revenue) are used as firm-level time-varying control variables. All regressions control for firm, city-year and industry-year fixed effects, where industry classifications are at the 2-digit SIC level. Foreign firms are not included in the sample. Robust standard errors, clustered at the city level, are reported in parentheses.

***, **, * indicate $p < 0.01$, $p < 0.05$, $p < 0.1$, respectively.

pilot cities and non-pilot cities, we employ two alternative sample strategies: (i) restricting the sample to only opened cities, and exploiting variation in their opening timings; and (ii) constructing a matched control group of cities using propensity score matching. The results from both approaches (panels A and B in Online Appendix Table A22) remain consistent with our baseline estimates. Second, to rule out confounding from spatial spillover effects, we re-estimate our models after excluding control group observations adjacent to treated cities. The results (panel C in Table A22) show little change, indicating limited spatial spillovers. Third, to address endogeneity concerns, we follow Liu *et al.* (2024) and adopt an instrumental variable approach using cities' per capita household savings as the instrument in a Heckman two-stage procedure, and the estimates reaffirm that foreign bank entry improves POEs' access to credit and operational performance (see Online Appendix Table A23). Finally, to examine whether the effects extend to SMEs, we supplement the analysis using World Bank Enterprise Survey data. The results indicate even stronger positive effects of foreign bank liberalization on SMEs (see Online Appendix Table A24). All robustness checks support the reliability of our main conclusions.

7 | CONCLUDING REMARKS

This paper examines the impact of foreign bank deregulation following China's WTO accession on firms' performance. The geographic and time series variation in foreign bank lending policies in China provides a suitable setting to identify the relationship between foreign bank entry

and domestic firms' real activities. On average, foreign bank entry in its early stages does not significantly affect city-level investment and output. However, the impact varies across ownership groups. The additional credit supply brought by foreign bank entry has a greater effect on investment and sales among POEs compared to SOEs.

The findings suggest that banking sector liberalization helps to alleviate financial constraints for firms without political connections more effectively than for firms with political connections. This policy likely reduces inefficiencies in resource allocation caused by state-owned banks' lending discrimination against POEs. In economies with highly repressive financial policies, such as the situation in China before the foreign bank deregulation, the state sector is often strongly favoured, while the private sector faces discrimination. The introduction of foreign banks mitigates the effects of such repressive policies, and as a result, reverses their previous distortions.

These findings lead to several policy implications. To amplify the benefits of foreign bank deregulation policies, policymakers could consider accelerating market access for qualified foreign institutions—particularly in regions with underdeveloped private financing—while simultaneously strengthening domestic fintech ecosystems to maximize technological spillovers. Such coordinated measures would leverage the observed complementarity between foreign expertise and local technological readiness. Targeted regulatory support for young firms and SMEs through credit guarantee schemes is further warranted, as these financially constrained borrowers derive disproportionate gains from foreign bank presence according to our findings.

For developing economies, two transferable principles emerge from China's experience. First, strategic sequencing that prioritizes liberalization in SME-concentrated sectors could amplify inclusive growth effects during initial reform stages. Second, financial opening policies can be coupled with investments in digital infrastructure (e.g. national payment systems) to build the technological absorption capacity necessary for knowledge transfer. Crucially, China's experience demonstrates that foreign bank entry can serve as a corrective mechanism against ownership-based lending discrimination, suggesting its potential as a policy tool for other developing economies seeking to reduce similar credit market distortions.

While this study establishes short- to medium-term benefits, critical knowledge gaps persist regarding long-term consequences. Three priority avenues warrant investigation: (i) the dynamic impact of foreign bank penetration on aggregate economic growth trajectories, particularly how efficiency gains translate into sustained GDP expansion; (ii) foreign banks' role in shaping credit cycle volatility, especially their amplifying/mitigating effects during systemic financial stress; and (iii) evolving SME–bank relationships beyond initial liberalization, including whether foreign lenders' early-stage outreach to constrained firms persists through maturity cycles. Methodological innovations combining dynamic general equilibrium models with granular loan-level data could further disentangle these complex interactions.

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ENDNOTES

- ¹ 'Foreign bank entry/deregulation' in this study refers to foreign banks being allowed to conduct local-currency business with domestic borrowers.
- ² The key model building block in Song *et al.* (2011) assumes that private firms with high productivity are financially constrained, while SOEs with low productivity have access to external finance, and this assumption is justified by empirical evidence.
- ³ See Clarke *et al.* (2006), Mian (2006), Detragiache *et al.* (2008) and Gormley (2010).
- ⁴ While the previous literature focuses on the effect of foreign bank entry on firms' credit access, there are some recent papers discussing the effect of foreign bank entry on corporate innovation and other dimensions. For instance, Gu *et al.* (2020) find that the entry of foreign banks can incentivize corporate innovation.
- ⁵ Enterprise Analysis Unit, World Bank Group (see <https://www.enterprisesurveys.org>, accessed 19 January 2026).
- ⁶ This dataset is truncated by size, as measured by firm's revenue. At the exchange rate of 8.27 RMB/USD, in force between January 1997 and July 2005, 5 million RMB amounts to 605,000 USD. Since smaller Chinese firms are more likely to be financially constrained, the estimated financial friction should be interpreted as a lower bound of the credit constraints faced by Chinese firms.
- ⁷ Dougherty *et al.* (2007) and Jefferson *et al.* (2008) are two of the earliest studies using this data. These studies analyse topics of particular importance to China, namely, the emergence of the private sector, and productivity convergence by ownership type and across space. Subsequently, researchers have studied a variety of topics spanning almost all fields of economics. In macroeconomics, for example, Hsieh and Klenow (2009) and Song *et al.* (2011) use the data to study resource reallocation and aggregate TFP growth. In international economics, Park *et al.* (2010) study the impact of the Asian financial crisis on Chinese manufacturing firms, while Brandt *et al.* (2012) document large productivity effects associated with China's entry into the WTO. In industrial organizations, Gao and Van Biesebroeck (2014) estimate the efficiency gains resulting from restructuring of the electricity sector. Aghion *et al.* (2015) evaluate the effectiveness of China's industrial policy more generally.
- ⁸ The ASIF dataset reports registered ownership type for each firm, and we use this registration type to identify a firm's ownership category. We can also identify a firm's ownership based on the owner's equity structure (paid-in capital), as we observe the composition of firms' paid-in capital split into six categories. The two measures of firm ownership are very similar, and results are robust if we move to the ownership definition based on equity structure.
- ⁹ Fan and Kalemli-Özcan (2016) study the effect of country-level financial reform on corporate savings in Asian countries. Here, we use within-country variation across cities to identify the effect of foreign bank entry reform.
- ¹⁰ Due to the government-imposed market segmentation by cities in China, firms are supposed to apply for loan from banks in the same city.
- ¹¹ Varela (2018) provides evidence on this channel using firm-level data around the deregulation of international financial flows in Hungary.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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