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Marcin Borsuk, Oskar Kowalewski,
Pawel Pisany

State-owned banks and international shock transmission

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Abstract

In this study, we reassess the links between commercial bank ownership and lending growth during the 1996–2019 period. We find evidence that the lending activities of foreign state-controlled and foreign privately owned banks differ, particularly during different crisis type periods and origins. Foreign state-controlled banks' loan growth rates are higher than those of foreign private-owned banks during host banking crises. By contrast, foreign state-controlled banks reduce their credit growth during a home banking crisis, while foreign private-owned banks increase lending in the host countries. Moreover, we find evidence that bank-specific characteristics were more important determinants of credit growth than ownership structure during the global financial crisis of 2008 and gain in importance in the post-crisis period.

Keywords: foreign banks, state-controlled banks, credit growth, crisis, internal capital market
JEL: G01, G21, G28

Nontechnical Summary

In this study, we employ a new dataset on commercial bank ownership and reassess the links between domestic and foreign ownership and lending during the 1996–2019 period. Additionally, we distinguish between foreign privately owned and foreign state-controlled banks to enhance our understanding of foreign banks' lending behaviors during normal times as well as during crisis periods. We contribute to the existing research by showing that there is a difference between foreign government-controlled and foreign private-owned banks' reactions during different types and origins of crisis periods.

We do this by analyzing the behavior of commercial banks during normal times as well as during a systematic banking crisis, the global financial crisis of 2008, the sovereign crisis, and the currency crisis. To this end, we utilize a unique database with financial and ownership data on 11,384 commercial banks from 165 countries for the 1996–2019 period. As our data span a long time period, we are also able to analyze domestic and foreign bank lending behaviors using subsamples for the periods before and after the global financial crisis.

Analyzing the behavior of banks during normal times, we reconfirm that foreign state-owned and foreign privately-owned banks are lending more than domestic state-controlled banks. Our results show that domestic government-controlled bank lending growth is less sensitive to business cycle fluctuations than that of private domestic banks and foreign banks. However, we find that the credit supply of foreign banks changed significantly in the host countries after the global financial crisis. Our results show that foreign banks, both privately owned and government-controlled, had higher loan growth rates than domestic banks before the global financial crisis. After the global financial crisis, however, this effect decreased.

We confirm that during a domestic banking crisis period, the overall supply of credit declines. We provide evidence that foreign banks can have a stabilizing influence during a local banking crisis. We find, however, that this effect is mainly due to the credit growth of foreign state-controlled banks. Thus, the lending of foreign state-controlled banks was countercyclical during the host country banking crises. By contrast, we find evidence that foreign state-controlled banks are reducing lending more than domestic banks during a banking crisis in their home country, while at the same time, we find evidence that foreign privately owned banks increase lending in host countries. Consequently, we find strong evidence that the lending behavior of foreign privately

owned banks and foreign government-controlled banks differs depending on the crisis origin. These effects, however, disappear for the years following the global financial crisis, which we attribute to the new regulations and prudential policies. As a result of those regulations, in explaining credit growth abroad, bank-specific variables are more important than ownership type. Indeed, our results also show that ownership type does not explain credit decline in countries affected directly by banking crisis during the crisis period of 2008-2009, while bank-specific variables do. Conversely, we observe that domestic state-controlled banks had higher lending growth rates than foreign-owned and domestic privately-owned banks during the GFC when we use the full sample. We attribute the results to government policies in countries that were not affected by the banking crises in this period, which were aimed at smoothing the business cycle, especially during deep recessions. Thus, the results confirm that domestic government bank ownership may increase the effectiveness of countercyclical macroeconomic policies.

The results are important from a policy perspective, as we illustrate that a mixed composition within the banking sector, consisting of foreign and domestic-owned banks that are controlled by the state and private owners, is advisable. In addition, we confirm that bank-specific characteristics, mainly for privately owned banks, are important in explaining credit growth during normal times and periods of financial shocks. Henceforth, supervisory organizations should not only control the financial situation of the domestic and foreign banks in the sector but also concentrate on maintaining a mixed-ownership structure of the banking sector.

1. Introduction

A dramatic increase in foreign bank activities has been observed across countries during the last two decades. This trend has been viewed positively in the literature, as foreign banks have improved the functioning of domestic banking markets, particularly in developing countries. The extant literature documents that foreign banks stabilized the lending situation during local crisis periods. Moreover, foreign banks have been perceived as more efficient than domestic banks, particularly state-owned banks. In developing countries, governments were therefore eager to privatize the financial institutions they owned and to reduce entry barriers to multinational banks.[1] However, the situation reversed dramatically following the global financial crisis (GFC) of 2008. During this period, compared to domestic banks, particularly state-owned banks, foreign-owned banks often reduced their lending activity. The resilience of state-owned banks to the GFC provided a renewed impetus to the debate on the economic costs and benefits of state banking.[2] Previous research has illustrated that state banks tend to perform poorly (Cornett et al., 2010), misallocate resources, and create lower economic growth (La Porta et al., 2002). At the same time, the GFC showed that government-owned banks may play an important role in stabilizing credit flows during crises. Brei and Schclarek (2013) find that government-owned banks increase their lending during crisis periods compared to normal times. They clarified that government-owned banks can counteract the lending slowdown of private banks and consequently argued that governments can play an active countercyclical role in their banking systems directly through ownership in local banks.

Using a theoretical model, Brei and Schclarek (2015) provided further evidence that state-owned banks can provide more loans to the real sector during times of crisis than private banks, which reduces lending and increases liquidity holdings. They argue that this is because the objective of state-owned banks is not only to maximize profits given risks but also to stabilize and promote the recovery of the economy. In general, the empirical literature provides evidence consistent with the theoretical predictions, finding that lending by state banks is substantially less procyclical than

[1] Cull et al. (2018) present an excellent review of the empirical literature on the implication of government and foreign ownership on bank performance and competition, financial stability, and access to finance.

[2] A good example is the AAF Virtual Debate between Charles Calomiris and Franklin Allen on state-owned banks, which is available at https://blogs.worldbank.org/allaboutfinance/the-aaf-virtual-debates-join-charles-calomiris-and-franklin-allen-in-a-debate-on-state-owned-banks

lending by private banks. The existing studies, however, concentrate only on domestically owned government banks, while nothing is known about how state-controlled foreign banks operate abroad during normal times and crisis periods.

In this study, especially by distinguishing foreign private-owned and government-owned banks, we aim to enhance the understanding of foreign banks' lending behavior. Gonzalez-Garcia et al. (2013) distinguished four groups of state-owned financial institutions: retail commercial banks, development banks, quasi-narrow banks, and development agencies. In our study, we focus on state-owned commercial banks that perform the same type of operations as private commercial banks. In other words, state-owned commercial banks collect deposits and use them to provide loans to firms and individuals. Moreover, state-owned retail banks provide different financial services and act as universal or near-universal commercial banks both at home and abroad.

However, in their lending behaviors, state-owned commercial banks can be significantly different from privately owned banks, as they pursue a different lending agenda in response to the government's needs. Gonzalez-Garcia et al. (2013) argued that the objectives of state-owned banks often lead to reduced profitability, as they provide loans in noncommercial terms or based on noneconomic criteria. Cornett et al. (2010) documented that state-owned banks finance the government to a greater degree and have greater credit risk than privately owned banks. This, in turn, leads to higher risk and misallocation of capital within the economy. The existing evidence demonstrates that domestic government banks behave differently from privately owned banks during normal times as well as crisis periods (Cull and Peria, 2013; Allen et al., 2017; Bosshardt and Cerutti, 2020). Whether this behavior also applies to foreign state-owned subsidiaries abroad is not known so far.

Foreign banks can have a stabilizing or destabilizing influence on the local banking sector, depending on the type and origin of the shocks that hit the host economy. On the one hand, existing studies reveal that unlike domestic banks in general and government-owned banks, in particular, which reduce lending during such episodes (Allen et al., 2017), foreign banks have a stabilizing impact by continuing to extend credit during local banking crisis periods (De Haas and Van Lelyveld, 2006). On the other hand, foreign banks can import shocks from abroad, either from their home country or from other countries where they have significant operations. This, in turn, can destabilize the host country's banking sector. In such a situation, recent research demonstrates that

domestic government-owned banks can help stabilize the banking sector. Moreover, recent research provides evidence that state ownership also explains the lending behavior of banks during a sovereign crisis. However, it is not known whether foreign state-owned banks behave differently from domestic government-owned banks or more like foreign privately owned banks. The lending behavior of foreign banks can differ depending not only on the ownership but also on the type of shock, which in turn can influence whether they act as external shock amplifiers in the host country.

We attempt to provide some answers to the issues outlined above using a unique dataset of 11,384 commercial banks from 165 countries for the 1996–2019 period. The dataset allows us to control for the state and private ownership of foreign banks and the period before and after the GFC. The two periods differ not only in terms of the dynamics of foreign bank expansion (Claessens and Van Horen, 2014) but also in terms of bank regulations, including the exposure to foreign banks (Fratzscher et al., 2016).

Using this setup, we provide evidence that the lending practices of foreign privately owned and foreign state-controlled banks differed during prosperous and crisis periods depending on their type and origin. In particular, we show that the type of foreign ownership plays a role during a banking crisis depending on its origin. By contrast, we find no such evidence when we control for sovereign or currency crises in the host and home markets. We argue that those differences between foreign privately owned and state-controlled banks reflect the different objectives of these banks and access to finding.

Our argument is supported by the fact that we find that bank-specific characteristics, such as profitability and solvency, are also important yet only for foreign privately owned banks. However, we find no evidence that the poor financial performance of the parent banks of foreign banks, both privately owned and state-controlled, was directly related to the decline in the lending of their subsidiaries during crisis periods. Overall, our results are robust to the augmentation of the estimation method, sample, and variables employed in the regression.

We contribute to the existing literature in the following three ways. First, we extend the existing literature on the lending activities of foreign-owned banks by providing evidence—for the first time, to the best of our knowledge—on how state-controlled banks operate abroad. In our study, we present evidence on foreign state-controlled banks' lending activities abroad during normal

and crisis periods of different origins.

As such, we contribute to the literature by providing new evidence on the transmission of shocks to the real economy via the banking channel. We confirm that foreign banks can mitigate the impact of host country-induced crises and can act as external shock amplifiers depending on the origin of the crisis and type of ownership. In our analysis, we distinguish between foreign private and state-controlled banks and document that their behavior differs, particularly during a home and host banking crisis. We also present evidence that a systematic banking crisis can be transmitted via the banking channel from the home market to the host market, although we find no such evidence for a sovereign and currency crisis.

Last, this study complements the literature on foreign bank lending by providing evidence on how the lending of domestic and foreign banks changed over the last two decades, particularly following the GFC period. Our results suggest that the regulations introduced after the crisis as well the divestment of subsidiaries by multinational banks changed the landscape of global banking. Moreover, bank-specific variables once again play an important role in explaining credit growth abroad, while to a lesser extent bank ownership.

In contrast to the existing studies that use bank-level data generally denominated in US dollars, we calculate loan growth rates in domestic currency. This way, in our opinion, we can better address exchange rate fluctuations, particularly during crisis periods in developing countries. It allows us to present robust evidence on domestic and foreign bank lending growth using a large sample of countries during the normal and crisis periods.

This paper is organized as follows. Section 2 presents a review of the literature on state and foreign bank lending. Section 3 describes the data and introduces the econometric methodology. In Section 4, the results for different crisis periods and the sensitivity analysis are presented. Finally, Section 5 provides concluding remarks.

2. Literature

The study combines two main strands of the banking literature. The first strand analyzes foreign bank lending in host countries, particularly in developing countries. In these countries, we observed a large increase in foreign ownership in the banking sectors in the 1990s (Claessens and Van Horen, 2014), often as a consequence of and a perceived solution to banking crises (Dages

et al., 2000). Prior to the GFC, the arguments behind this government policy were that the presence of foreign banks increases the stability and availability of bank credit, particularly during a local banking crisis, which was supported by empirical research. Dages et al. (2000) analyzed the lending behavior of banks in Mexico and Argentina and showed that foreign banks reported notable credit growth during and after domestic crisis periods. Peria et al. (2005) confirmed these results and presented that foreign banks did not reduce their credit supply during adverse economic times in Latin America. Additionally, they found some evidence that foreign banks viewed crisis periods as an opportunity to expand business in the host countries. De Haas and Van Lelyveld (2006) presented similar results for Central and Eastern European (CEE) countries. Moreover, they documented that unlike greenfield foreign banks, domestic banks reduced lending during local crisis periods. Arena et al. (2007) provides evidence that foreign banks' lending and deposit rates are less volatile than those of domestic banks in times of crisis in Latin America and Asia over the period 1989-2001. They argue that their research suggests that foreign bank entry may have contributed somewhat to stability in credit markets in emerging countries.

While there is a sizeable body of research showing that diversity in ownership may contribute to greater stability of credit in times of a domestic banking crisis, few studies have focused on the cross-border transmission of shocks prior to the GFC. In a seminal study, Peek and Rosengren (1997) investigated how the collapse of asset prices in Japan during the early 1990s affected the operations of Japanese bank subsidiaries in the US. They found that the decline in the parents' risk-based capital ratios translated into a significant decline in total loans by their US subsidiaries. In the same vein, Chava and Purnanandam (2011) and Schnabl (2012) use the exogenous shock provided by the Russian crisis of 1998 and come to similar results on the effects on bank lending to borrowers in the US and Peru, respectively. The conclusion of both studies is that the global integration of the banking sector can contribute to the propagation of shocks across countries and consequently reduce bank lending in affected countries.

In line with this evidence, De Haas and Van Lelyveld (2006) showed that the financial health of the parent bank impacts the ability of subsidiaries to expand credit in CEE countries. In a later paper, De Haas and Van Lelyveld (2010) presented that the home and host country conditions and the health of parent banks influence the subsidiaries' lending in host countries. The authors provided evidence that within multinational banks, an internal capital market exists and is used

as a tool to manage the credit growth of their subsidiaries across the host countries. They argue that having a financially strong parent bank allows subsidiaries to expand their lending activities at a faster pace. Moreover, unlike domestic banks, foreign bank subsidiaries supported by healthy parent organizations do not reduce lending in host country crisis periods.

The GFC provided further evidence that foreign banks can destabilize the local banking sector because they can act as external shock amplifiers (Aiyar, 2012). De Haas and Van Lelyveld (2014) reported that foreign banks in CEE countries had to slow down credit growth almost three times as fast as domestic banks during the GFC. Fungáčová et al. (2013) presented similar results for Russia. Overall, the empirical results showed a negative response during the GFC; however, the effects were heterogeneous depending on country (Jeon et al., 2013) and bank-level characteristics (Allen et al., 2014).

Cetorelli and Goldberg (2012) showed that when hit by a funding shock, parent banks reallocate liquidity in the organization according to a locational pecking order. Subsidiaries that were more important for the parent bank were relatively protected from liquidity reallocations, while traditional funding locations were used more extensively to buffer shocks to the parent bank balance sheets. Similarly, De Haas and Van Lelyveld (2014) argued that parent organizations that experience a banking crisis in the home market can no longer support subsidiaries and that internal funding may even be sourced from subsidiaries to rescue the business activity of the parent organization in its home market. In particular, they show that during the GFC, the subsidiaries of banking groups that relied significantly on wholesale funding were forced to slow down lending more than other banks. These observations led the authors to figuratively compare financial integration to a double-edged sword. Foreign banks may act countercyclically in the case of only host country crises. However, the GFC indicated that if a parent home-banking crisis occurs, the lending policy of multinational banking groups may become procyclical in host countries and may contribute to the deterioration of their financial system conditions. In other words, from the group's perspective, the core market is protected to the detriment of peripheral markets.

A slightly different approach was taken by Bonin and Louie (2017), who distinguished two different groups of foreign banks in their study and separately examined (i) the subsidiaries of six large European multinational banks and (ii) other foreign banks in CEE countries. They investigated foreign bank behaviors during the GFC and the Eurozone crisis (2010) and found that bank

lending was reduced during both crises, although the two foreign bank groups defined by the authors behaved differently. The selected multinational banks' lending in host countries did not differ significantly from domestic bank lending, and they continued financing the respective host economies during the hard times of crises. By contrast, other smaller foreign banks behaved procyclically; that is, they contributed to the credit boom during the prosperity period and decreased lending abruptly during crises.

The second strand of the literature explores government-owned bank lending behaviors relative to those of privately owned or foreign banks, which have concentrated so far only on the local market. Dages et al. (2000), who studied the lending of banks in Mexico and Argentina, documents that there are differences between public and private banks' responses to local shocks. They argued that the differences reflect the role of different lending motives across these two institutions. La Porta et al. (2002) argue that politicians use government-owned banks to further their own political goals, while Dinç (2005) shows that compared to private banks, government-owned banks increase their lending in election years. Thus, it is not surprising that a number of studies have found that government-owned banks have a higher fraction of nonperforming loans than privately owned banks (Micco and Panizza, 2006) and can have a destabilizing impact on the financial sector.

On the other hand, a number of studies have also shown that state-owned bank lending could be beneficial during economic downturns. Micco and Panizza (2006) documented that the credit growth of government-owned banks is less procyclical than that of privately owned banks. Similarly, Bertay et al. (2015) contended that lending by state-owned banks is less procyclical than lending by privately owned banks, especially in countries with good governance. They find that lending by state-owned banks in high-income countries is countercyclical.

Brei and Schclarek (2013) argue further that government-owned banks may play a role in stabilizing credit flows during a crisis. His theoretical models suggested that state banks are better able to provide loans to the real sector during crises, while private banks cut back lending and increase liquidity holdings. This is because government-owned banks are assumed not to have pure incentives to maximize profits given risks and are less likely than private banks to suffer bank runs because of the greater likelihood that they will be recapitalized.

The empirical results presenting the lending behavior of state-owned banks versus private-owned

banks, however, provide mixed evidence. Allen et al. (2017) found only weak evidence that during the GFC, the lending of government-owned banks increased relative to that of private domestic banks in CEE countries most likely because of stimulus programs or political pressure. With the notable exception of the GFC, they also found, however, that foreign banks and domestic government-owned bank behaviors were strongly dependent on the type of economic shock. During host country banking crises, the credit growth of foreign banks remained constant or increased, whereas the lending by government-owned banks declined,. By contrast, the home crisis periods resulted in decreased lending by affected foreign bank subsidiaries. In a similar vein, Bosshardt and Cerutti (2020) investigated lending by domestic government-owned banks during the GFC in emerging economies. They argued that state-owned banks indeed lent more during the GFC, which was probably caused by external factors that motivated those banks to pursue a stabilizing role during economic turmoil. Moreover, they contended that relatively high lending during the GFC did not compromise the portfolio quality and stability of state-owned banks in emerging economies.

Cull and Peria (2013) examined the impact of bank ownership on credit growth in a sample of Latin American and Eastern European countries before and after the GFC and found mixed results. They reported that unlike those in Eastern Europe, domestic state-owned banks in Latin America acted countercyclically during the crisis, thus emphasizing regional differences. Chen et al. (2016) analyzed the lending behaviors of state-owned and private-owned banks through the prism of institutional quality in the host country. They documented that government-owned banks had higher loan growth rates than private banks during the crisis. Moreover, in countries with low corruption, increased lending by government banks was associated with better bank performance and more favorable GDP and employment growth during the crisis period. However, the results for countries with high corruption were more consistent with the so-called political view presented in other research, for instance, Sapienza (2004). The increased lending by government-owned banks is associated with underperformance relative to that of privately owned banks and creates no beneficial effects on either GDP growth or employment.

Overall, the empirical evidence suggests that foreign banks tend to help stabilize credit when countries face domestic shocks. In contrast, domestic state-owned banks are often engaged in political lending and are more likely to destabilize the local banking sector. Thus, in many countries,

in particular developing countries, the governments decided to privatize their state-owned banks and often sold them to foreign investors to stabilize their banking sectors. The GFC experience, however, demonstrated a trade-off, as foreign-owned banks can also transmit external shocks and might not always contribute to expanding access to credit. However, the existing empirical results indicate that domestic government-owned banks may help stabilize credit growth during crises, which was observed during the GFC. The existing studies, however, only concentrate on domestic government-owned banks and suggest that in their objectives and risk assessments, they differ from private-owned banks. The existing research showing differences in lending growth between foreign and domestic banks and documenting the different objectives between privately owned and state-controlled banks led us to formulate the following hypothesis:

> **Hypothesis 1**: *The lending of foreign and domestic banks, both privately and state-owned, differs during normal times and crisis periods depending on the type of exogenous shocks and their origin*

> **Hypothesis 2**: *Foreign state-controlled banks and foreign private-owned banks respond differently depending on the type of exogenous shocks and their origin.*

3. Data and methodology

We construct an unbalanced panel dataset using both bank-level and macroeconomic data. We retrieved bank-level data for commercial banks from Bureau van Dijk's BankScope and BankFocus databases. In our study, we do not include saving and cooperative banks, as they are generally small and have only local presence. In contrast, development banks, which often have a strong international presence, are also not included, as their mission and business models differ from those of commercial banks. Commercial banks, particularly those with a foreign presence, tend to be listed as universal banks, often with broad mandates. However, development banks vary in mandate and scope, are usually equipped with public guarantees, and often combine for-profit and nonprofit activities. Most importantly, commercial banks generally operate as first-tier institutions, which means they interact directly with the final borrower. By contrast, a substantial number of development banks are second-tier institutions (Fernández-Arias et al., 2020), which

also often manage and distribute state aid (e.g., KfW in Germany, BPI in France, CDP in Italy, and ICO in Spain).

To create time series information on the ownership of banks, we used past and current information on ownership structures from the two abovementioned databases. In addition, we used various websites, including Orbis's online database, to classify the owner as private or state. We complement this information with information from several other sources, including individual bank websites and annual reports and the websites of parent companies, banking regulatory agencies, and central banks.

Using the ownership information, we first establish whether the banks are owned by foreign or domestic shareholders. We consider a bank to be foreign-owned when at least 50% of its capital is owned by foreign shareholders (Allen et al., 2017), which we encode using a dummy variable FGN. Next, we analyze the shareholder structure to establish whether the bank is controlled by private shareholders or by the government. We classify a bank as government-controlled if the government controls directly or indirectly at least 20% of the bank's capital. This threshold for state ownership has often been used in the literature. Panizza (2021) and La Porta et al. (1999) argued that this benchmark level is sufficient to control a company. We employ two dummies to encode domestic and foreign government-controlled banks. The dummy GOV_{D} takes the value of one if the bank is owned by the domestic government and zero otherwise. The dummyGOV_{F} takes the value of one if the bank is owned directly or indirectly by the foreign government. As an example, we will classify the commercial bank Banco Internacional de São Tomé e Príncipe (BISTP) in São Tomé and Príncipe as a foreign state-controlled bank. The largest three shareholders of the bank are the Portugues Caixa Geral de Depósitos and the two Angolan private banks Banco Aficano de Investimentos and Banco Angolando de Investimentos. Overall, the foreign shareholders own more than 75% of the equity, whereas the largest shareholder is the state-controlled Caixa Geral de Depósitos. This bank is fully owned by the Portuguese government, and consequently, we classify it as a domestic state-controlled bank in Portugal, while we encode its operation abroad as a foreign state-controlled bank when it controls directly or indirectly at least 20% of the capital. Similarly, we will encode the Bahraini Arab Banking Corporation (ABC) in Bahrain and its subsidiaries worldwide as foreign state-controlled, as the largest shareholder of ABC is directly the Central Bank of Libya (59.37%).

Consequently, we classify banks with government ownership of less than 20% as privately owned banks. To encode foreign privately owned banks, we use the dummy variable $PRIV_{\mathrm{F}}$, which takes the value of 1 when at least 50% of the capital is owned by a foreign entity and the government ownership is less than 20%. Finally, we encode all the remaining banks as domestic privately owned banks using a dummy $PRIV_{\mathrm{D}}$. We omit this dummy from the regressions to avoid multicollinearity, although it is captured by the constant in the regressions. While domestic and foreign privately owned banks represent the largest group of banks in our sample, their composition changes over time.

In the remainder of the study, we use the definition of state-controlled banks to underline the difference in ownership thresholds between state and private banks. However, we generally find that unlike foreign privately owned banks, state-controlled banks are in most cases wholly owned subsidiaries. Indeed, the structure presented in the example of BISTP is rare in our sample, and in the past, Caixa Geral de Depósitos owned 55% of the capital of the bank.

Figure 1 shows the average share of domestic and foreign state-controlled banks in the countries' total banking assets over the years 1996-2019. As the graphic shows, domestic and foreign state-controlled banks have the largest share in assets in developing countries. A closer analysis of our data reveals that domestic state-controlled banks often decided to expand to neighborhood countries or regions. As an example, Russian banks have a strong presence in Belarus and Kazakhstan. While, the Libyan or Qatar state-controlled banks are strongly present in many African countries. This strategy explains the distribution of state-controlled banks in our sample, which, however, also changes over time. An overview of the trends in foreign ownership and domestic state ownership in the banking sectors across countries in the last two decades is presented by Claessens and Van Horen (2014) and Panizza (2021), respectively.

The necessary financial data for subsidiary and parent banks was retrieved from the BankScope and BankFocus database. We use unconsolidated accounts for the banks, but when they are not available, we use consolidated financial statements. We winsorize all bank-level variables for subsidiaries and parents at the 1% level and provide the definitions of all the variables used in the study and their sources in the Appendix Table A1.

The final sample consists of an unbalanced panel of 89,323 observations for 11,384 banks in 165 countries. In terms of bank ownership types, the sample includes 9,020 domestic privately owned

banks, 490 domestic state-controlled banks, 2,251 foreign privately owned banks and 412 foreign state-controlled banks. We decided to split the full sample into two subsamples, as we expect that foreign bank lending may have changed following the GFC and the Eurozone crisis. The two subsamples include 1996–2007 and 2010–2019. In the sensitivity analysis, in the regression, we additionally use a subsample that consists of bank subsidiaries and their parent banks. Using ownership data for the ultimate owners, we identified 204 parent banks that owned 826 foreign bank subsidiaries in 130 countries over the 1996–2019 period.

3.1. Bank characteristics

Our dependent variable is the percentage of real growth in total gross loans in the domestic currency (Δ *Loans*) of bank i in country c in year t. We follow Bonin and Louie (2017) and calculate the real (inflation-adjusted) growth of gross lending using the domestic currency.

By contrast, most studies convert loans to US dollars (e.g. Cull and Peria (2013); Allen et al. (2017); Panizza (2021)), which is not problematic for developed countries. However, the share of state-owned banks is not uniform across countries. Panizza (2021) illustrates that the share of state-controlled banks in advanced economies dropped from 5.5% in 1995 to below 4% over the 1999–2007 period but started to increase following the GFC. In middle- and low-income economies, the share of total assets of state-controlled banks decreased from approximately 20% in the mid-1990s to approximately 15% in 2018. By contrast, state ownership increased rapidly in developing countries in East Asia after the Asian financial crisis and then remained constant at approximately 30%. In developing countries of other regions, state ownership mostly decreased in the last two decades and then flattened to approximately 25% of bank assets in East Europe and Central Asia or increased again in Latin America and the Caribbean, the Middle East, North Africa, and Sub-Saharan Africa. In South Asia, state ownership, despite its ongoing decline, remained high at approximately 50% in 2018. Thus, the figures illustrate that state ownership remains relatively high in most of the developing or emerging countries, which dominate the world economy as well as our sample.

The domestic currencies of developing countries often fluctuate, particularly during periods of economic uncertainty. Therefore, loan growth rates may be biased because of domestic currency volatility against the US dollar or other hard currencies. For example, Corsetti et al. (1999) demonstrated that during the Asian crisis of 1997, the currencies of Thailand, Malaysia, Indonesia, and

the Philippines came under speculative pressure, which eventually led to a devaluation of domestic currencies in the region. The loss in the value of domestic currencies against the US dollar within a period of six months ranged from 5% in Taiwan to more than 40% in Thailand, Malaysia, Indonesia, and the Philippines. Similarly, the domestic currencies in CEE countries first appreciated against the US dollar in the 2005–2007 period and then sharply depreciated as the GFC hit the region. Bonin and Louie (2017) illustrated that the correction in the calculation of bank loan growth in eight Central European countries provides slightly different results and contradicts those presented earlier in the literature.

In the regression, we control for the following bank characteristics that may influence a bank's tendency to expand its loan portfolio: *liquidity* (liquid assets to total assets), *profitability* (return on assets), *solvency* (equity to assets), and total bank assets to countries' GDP as a measure of *size*. The bank-specific characteristics mentioned in the literature are found to be important determinants of foreign banks' lending behavior (Allen et al., 2017).

Jeon et al. (2013) contended that banks can resort to liquid assets to finance their lending and that therefore more liquid banks tend to increase their credit at faster rates. Peek and Rosengren (1997) found that better-capitalized banks facilitate faster loan growth. However, Black and Strahan (2002) demonstrated that less liquid banks or undercapitalized banks can be prone to moral hazard and can rapidly expand lending. Kishan and Opiela (2000) found that the effects of monetary policy on bank loans depend on bank capitalization and size and illustrated that undercapitalized and small banks are more responsive than well-capitalized and large banks to monetary shocks.

3.2. Country characteristics

Claessens and Van Horen (2012) documented that the relative performance of foreign banks is better when the geographical, cultural, and institutional distance is small. We control for geographical *distance* using a variable that measures the differences in the log of kilometers between the capitals of the home and host countries. We control for cultural aspects using a dummy *language*, which equals one if the official language in both countries is identical. Additionally, we control for the differences in the institutional environment in the host and home countries using a dummy *common law* that equals one if the countries have the same legal origins (Buch and DeLong, 2004). The language and common law variables also proxy for information costs, which

influence the strategy of multinational banks and may also explain the lending of their subsidiaries abroad (Buch, 2003).

We follow Allen et al. (2017) and employ a country's GDP *growth* and inflation rate (*CPI*) as country macroeconomic variables reflecting the attractiveness of expanding credit in the host country. We expect banks to be positively and relatively strongly related to the host countries' GDP growth. By contrast, we expect a negative relationship between CPI and loan growth, as a high inflation rate reflects unstable macroeconomic conditions in the host country.

Last, we control for a systematic banking crisis using a dummy variable, *crisis*, which takes a value of one for years in which the host (or home) country experienced a systematic banking crisis. We identify the years of the domestic systematic banking crisis in a particular country using the Laeven and Valencia (2020) database. Furthermore, we use the database to identify local sovereign and currency crises, which we use in the sensitivity analysis. Finally, we employ a GFC crisis dummy that takes the value of one for the years 2008–2009 and zero otherwise. In the regression, we interact the crisis dummies with the ownership variables to observe the impact of ownership on bank loan growth during crisis periods.

Table 1

3.3. Methodology

The relationship between loan growth and bank-specific characteristics is evaluated using the following specification:

$$\Delta L_{i,c,t} = \alpha_0 + \beta_1 Bank_{i,c,t-1} + \beta_2 Own_{i,c,t} + \beta_3 Host_{c,t} + \iota_{ct} + \epsilon_{i,c,t}, \quad (1)$$

where the dependent variable is the real credit growth of bank *i* in country *c* in year *t*; $Bank_i, c, t$ represents one-period lagged variables controlling for the characteristics of banks *i*; Own_i, c, t are ownership dummy variables controlling for domestic and foreign government-controlled banks as well as private foreign-owned banks; and $Host_c, t$ is a set of host-country macroeconomic variables, including a crisis dummy. In the regression, the ownership dummy variables interact with the crisis dummies to measure how the lending of domestic state-controlled, foreign state-controlled and privately owned banks reacts (relative to that of privately domestically owned banks) to exogenous shocks. When we use the subsample of multinational bank subsidiaries,

$Bank_i, c, t-1$ additionally includes one-period lagged variables controlling for parent bank characteristics. We estimate the regression equation using polled ordinary least squares with country-year fixed effects (ι_{ct}) that control for unobserved confounding factors that can drive loan growth at the country level. We weigh the observations, with the weights equal to the number of banks in the host country, to prevent any bias due to differences in market size. All standard errors are robust and allow for clustering at the host country level.

4. Results

Columns (1)-(2) in Table 2 present the results for the growth of total real gross loans for the years 1996–2019. Columns (3)–(4) and (5)–(6) list the results for the subsamples that include 1996–2007 and 2010–2019, respectively.

The results confirm that bank liquidity and profitability are positively correlated with credit growth. The coefficients are positive and significant in all specifications at the 1% level. In contrast, we find that the coefficient for size is negative and significant, which means that smaller banks report higher credit growth. In line with Allen et al. (2017), we find that adding the ownership variables does not change the sign or significance of the coefficients for the bank-level variables. This implies that bank-level variables are important in explaining credit growth.

Our assumption that foreign bank lending has changed following the GFC crisis is confirmed by the results. In columns (1)–(4), the coefficients for foreign bank ownership are positive and statistically significant at the 1% level. Moreover, we find that the coefficient of ownership is positive and statistically significant for foreign state-controlled and foreign private-owned banks. The results are in line with the literature and confirm that before the GFC, foreign banks' credit growth was higher than that of private domestic banks.

The results in columns (5) and (6), however, reveal that the situation changed following the GFC. The coefficients for foreign ownership remain positive and is statistically significant at the 5% level, but we observe that the size of the coefficient for both types of foreign-owned banks is smaller for the post GFC period than for the pre GFC period. This implies a change in the dynamic of credit growth for foreign banks abroad, which could be the consequence of slower economic growth in many countries following the GFC. Additionally, since 2008, we can observe a gradual withdrawal of multinational banks from both developed and emerging markets. New regulations

and the tightening of prudential policies, especially the increased capital requirements, are the most cited reason for the banks' retrenchment from abroad (Fratzscher et al., 2016).

Emter et al. (2019) suggest that the deleveraging of banks starts with shedding cross-border assets initially while sheltering domestic assets. The arguments on the importance of prudential policies on lending are supported by the bank-level variables. In columns (5) and (6), for the post-crisis periods, the coefficient for loan of deposits is negative and statistically significant at the 1% level. Conversely, the coefficient for solvency is positive and statistically significant at the 1% level. However, both coefficients are insignificant for the pre-crisis period. In our opinion, the differences in the results reflect the higher capital and higher quality liquid assets requirements introduced by the Basel Committee on Banking Supervision following the GFC. Moreover, the changes in significance of the ownership variables may indicate that the banks' financial characteristics play an even more important role than ownership in determining the credit growth ratios in the post-crisis period. At the same time, the results support the Dermine (2013) warning that new regulations may reduce the supply of bank loans.

Our results confirm our hypothesis of different lending behaviors of foreign privately owned and foreign state-controlled banks during normal times. In columns (2) and (6), the size of the coefficient for foreign privately owned banks is larger than that of foreign state-controlled banks. The differences between the two coefficients are statistically significant at the 1% level in column (2), which in terms of economic magnitude means that the credit growth of foreign privately owned banks was 90 basis points higher than that of foreign state-controlled banks over the years 1996-2019. This means, in other words, that foreign privately owned banks are lending more aggressively than foreign state-controlled banks.

By contrast, in column (4), size of the coefficient for foreign state-controlled banks is larger than that of foreign privately owned banks. The results suggest that the foreign state-controlled banks were lending more aggressively than other banks prior to the GFC. Fischer et al. (2014) find that the German state-controlled Landesbanken lend to riskier borrowers and charged significantly lower interest rates in comparison to other banks prior to the GFC. Similarly, Hellwig (2018) documents that the Landesbanken WestLB, HSH Nordbank, LBBW, BayernLB, who operated both in Germany and abroad, were engaged in reckless lending and investment prior to the GFC. The activity ended in public bailout in 2008 and the number of Landesbanken dropped in Germany from 12 in 2007

to 5 at the end of 2018.

As expected, we find that domestic government-controlled banks provided less credit than domestic privately owned banks and foreign banks. In all specifications, the coefficient for domestic government-controlled banks is negative but is only statistically significant at least at the 5% level in columns (1)–(4). This means that the lending dynamics of domestic government-controlled banks also changed after the GFC, what also indicate the change of size of the ownership coefficients during the sub-periods. One explanation can be the nationalization of privately owned banks that directly encountered or whose parent companies encountered financial problems during the GFC. Thus, the nationalization included both healthy and financially troubled banks. As a robustness test, we decided to exclude all financial institutions that received state aid or were nationalized. The exclusion of these institutions does not change our main results, although we do not present them here for brevity.

In line with the literature, we find that the coefficient of distance is negative in all specifications and statistically significant at the 1% level. In other words, we find that banks are more likely to provide loans in areas closer to the country of the parent bank. We may assume that a shorter distance helps mitigate information asymmetry and helps with communication with the parent bank. The importance of proximity between countries also signals the positive coefficient for common law, which is significant but only in columns (3)–(4) at the 1% level. In contrast, the coefficient of common language is negative in all specifications but is also statistically insignificant. Hence, the results indicate that closer cultural and geographical proximity is positively related to lending growth, yet the results are driven mainly by the period before the GFC.

The remaining macroeconomic control variables are aligned with the literature. The coefficient of economic growth is positive and significant in columns (1)–(6) at the 1% level. While, the coefficient of inflation is statistically significant and positive in columns (1)–(2) and (3)–(4), while negative in columns (3)–(4). The changes in the sign of the coefficient reflect that the post-crisis recovery period is accompanied by expansionary monetary policy in most developed countries, which confirms that the macroeconomic environment is important in explaining countries' credit growth.

Table 2

4.1. Host Banking Crisis

In Table 3, we present the specification where we introduce a dummy for a banking crisis in the host country. We interact the variable with the ownership variables to analyze the impact of the host country crisis on bank lending depending on the type of bank. Columns (1)–(3) in Table 3 present the results for the full sample, while columns (4)–(5) and (6)–(7) list the results for the subsamples covering the years 1996–2007 and 2010–2019, respectively.

In all the specifications, the bank-level, the cultural proxies and macroeconomic-control variables influence the dependent variable in the directions identified in Table 2. Moreover, these variables do not change their statistical significance, and their coefficients are highly stable in magnitude. For this reason, to keep the following tables concise, we present only the estimation results for the ownership variables, the crisis dummies and the interaction terms that are crucial to our hypotheses testing.

The coefficient for bank ownership does not change signs or significance after adding the new control variable for host banking crisis. The only exception is the coefficient for domestic state-control, which remains negative but is now statistically significant at the 10% level in columns (6)–(7). The results confirm our assumption about the change in dynamics of credit growth of domestic state-controlled banks relative to private-owned banks following the GFC. The coefficient for the host banking crisis is negatively related to loan growth and statistically significant at the 1% level in all specifications. In other words, we confirm that, on average, banks reduce lending in periods of a systematic banking crisis in the host country.

In columns (1), (4) and (6), the coefficient of the interaction term between the crisis dummy and domestically state-controlled banks is positive but statistically insignificant. Similarly, the coefficient of the interaction term between a host country crisis and foreign ownership is positive and statistically insignificant in column (2). This positive effect seems to be driven mostly by the foreign state-controlled bank, for which the coefficient of the interaction term between a host crisis and ownership is positive and statistically significant at 5% level in columns (3) and (5). While, the interaction term between the crisis dummy and foreign private-owned banks remains statistically insignificant in all the specifications. The results reveals that foreign state-controlled banks stabilized the lending situation during a banking crisis in the host country. In column (7), however, the coefficient of the interaction term remains positive but insignificant, implying that this effect

diminished following the GFC. In our opinion, on the one hand, it confirms that in the post GFC period, bank characteristics play a larger role in explaining credit growth than ownership type. On the other hand, in the last decade, we did not have many banking crisis in the developing countries where a large number of foreign banks operate.

Overall, the results confirm our hypothesis that foreign state-controlled and foreign private-owned banks differ in their lending behavior during crisis periods. In our opinion, foreign state-controlled banks use the situation to expand lending during crisis periods in host countries, as their parent banks have different objectives than foreign private-owned banks and have stable access to financing. Conversely, the parents of privately owned subsidiaries may decide to reduce the allocation of capital to subsidiaries in host countries affected by a host crisis. De Haas and Van Lelyveld (2010) found evidence that in reaction to real-economic shocks, the multinational banks reallocate capital among their subsidiaries such that the profitability of lending in a country changes, which they call the substitution effect. The substitution effect implies that the parent bank sharpens business cycles as they use their internal capital market to shift capital from low-return countries to high-return countries. As in the crisis periods, economic growth declines, and in line with substitution theory, we observe a decline in the credit growth of privately owned subsidiaries.

Table 3

4.2. Home banking crisis

In Table 4, we present the results, where we control for the banking crisis in the foreign banks' home country. Columns (1)–(2) present the results for the full sample, while columns (4)–(5) and (6)–(7) present the results for the subsamples covering 1996–2007 and 2010–2019, respectively. In all the following regressions, we control for bank-level variables, proxies and macro-country variables, as in Table 2, and the results are in line with our main results, although we do not report them here for brevity.

As expected, the results provide evidence that a banking crisis in a foreign bank's home country is negatively related to lending in the host country. The coefficients of the home banking crisis are negative and statistically significant in almost all specifications. A closer look shows, however, that there are once again some differences across the types of foreign-owned banks and the sub-

periods. In column (3), we find that the coefficient of the interaction term between the home country crisis and a foreign government-controlled bank is negative and statistically significant at the 1% level. In contrast, in column (4), the coefficient of the interaction term between the home country crisis and foreign private bank ownership is positive and statistically significant at the 1% level. This implies that foreign state-controlled banks reduced lending in the host countries during a home country banking crisis, while foreign privately owned banks expand their lending at the same time.

The results for foreign state-controlled banks support the finding that foreign banks can act as external shock amplifiers (Peek and Rosengren, 1997; Aiyar, 2012). However, the results for privately owned banks are in line with the substitution effect reported by De Haas and Van Lelyveld (2010), who find some evidence that multinational bank subsidiaries expand lending faster when economic growth in their home country decreases. In contrast, we expect that state-controlled banks will move their capital from the host markets to the home market to act countercyclically during a local banking crisis. The change in internal capital allocation within state-controlled banks explains the lower growth of foreign state-controlled subsidiaries.

Interestingly, the situation reversed following the GFC. In column (5), the coefficient of the interaction term between a home country crisis and a foreign government controlled bank is now positive, while in column (6), the coefficient of the interaction term between crisis and foreign private ownership is negative. Both coefficients are, however, statistically insignificant and smaller than those for the pre-GFC period. In our opinion, the results show that after the post-GFC period, in determining credit growth, the foreign banks' financial characteristics are more important than ownership structure during a home crisis period.

Table 4

4.3. Global financial crisis

Table 5 presents the results for the determinants of bank lending growth during the GFC. Columns (1)–(3) list the results for the full sample, while columns (4)–(6) present the results that exclude those banks that received government financial aid, including those that were nationalized. We conducted this segregation to check whether it impacts our results, as government aid was often based on conditions, while the nationalization of multinational banks changed the composition

of foreign state-controlled banks for the years following the crisis. We discover that excluding these banks did not alter the main results presented in columns (1)–(3).

We find that the coefficients of ownership do not change their sign or significance as we employ the variable for the GFC, which confirms the findings presented in Table 2. In line with Cull and Peria (2013); Chen et al. (2016); Allen et al. (2017); Bonin and Louie (2017), we find that the coefficient of GFC is negative and statistically significant at the 1% level in all specifications. Similarly, the coefficient of the interaction term between foreign ownership and GFC is negative, although it is not statistically significant.

By contrast, we find that domestic state-controlled banks had higher lending growth rates than foreign-owned and domestic privately-owned banks during the GFC. The coefficient of the interaction term between domestic state-controlled banks and GFC is positive and statistically significant at the 5% level. The results support the argument of Yeyati et al. (2007) that the countercyclical lending of domestic state-controlled banks may increase the effectiveness of countercyclical macroeconomic policies and help to smooth out the business cycle.

We recognize that previous results indicated that domestic state-controlled banks are also likely to reduce lending during a domestic banking crisis. The differences in the results can be explained by the sample composition, which includes a large number of countries, including economies that were not directly affected by the GFC. In these countries, we may expect that state-controlled banks were more likely to provide countercyclical lending. Bosshardt and Cerutti (2020) shows that domestic state-owned banks lent relatively more during the GFC in emerging markets because they pursued an objective of helping to stabilize the economy, rather than because they had superior fundamentals or access to public or depositors' funding. Moreover, they report that the relative countercyclicality of public bank lending was not present in those countries before the GFC. Similarly, Cull and Peria (2013) showed that the loan growth of government-controlled banks was similar to that of domestic private banks in Eastern Europe during the GFC, while it was the opposite in Latin America, where government-owned banks' lending growth exceeded that of domestic private and foreign-owned banks during the crisis.

Thus, we decided to check the sensitivity of the results on GFC and rerun the regression using a subsample including only the period 2006–2012. In the subsample we encoded only the countries that had a systematic banking crisis during the GFC period. We find that the result for foreign-

owned banks is similar to those in Table 5.[3] We find that the coefficient of the interaction term between domestic state-controlled banks and GFC turns positive but is now statistically insignificant. By contrast, the coefficient for foreign state-controlled banks is positive and statistically significant, what confirms our previous results that foreign state-controlled banks stabilized the lending situation during a banking crisis in the host country. While, we do not find any evidence that the domestic state-ownership played a significant role in countries directly affected by the banking crisis during the GFC. Moreover, the results confirms that the link between loan growth and bank ownership was not homogeneous across countries during the period of GFC (Cull and Peria, 2013).

Table 5

5. Sensitivity analysis

5.1. Selection bias

We check the robustness of our main results by conducting an array of additional analyses. First, we check whether the ownership effect on lending is not a result of selection bias and that it does not pick up any other effect, such as variations in financial characteristics between foreign private-owned and foreign state-controlled banks. Hence, we run a propensity score matching technique using bank-level characteristics, and then we rerun our baseline models on the one-to-one matched sample of foreign private-owned banks and foreign state-controlled banks.

Table 6 shows the results for the matched sample during the home and host crisis period. Columns (1)–(2) list the results for the host crisis during the periods 1996-2007 and 2010-2019, respectively. Columns (3)–(4) and (5)–(6) show the results for the home crisis during the periods 1996-2007 and 2010-2019, respectively. In line with our previous results, the coefficients show that foreign state-controlled banks are more likely to expand credit activity during host banking crises. In contrast, in the period of the home crisis, foreign state-controlled banks are reducing their credit growth abroad. Unlike state-controlled banks, foreign privately owned banks contract credit during host banking crisis periods, while they increase loan growth during home banking crisis periods.

[3]We do not report the results for brevity, yet they are available upon request

Overall, the results confirm our hypothesis that the ownership status of foreign banks, namely, state versus private, explains the differences in loan growth in host countries during host and home banking crisis periods. In our opinion, it also shows that the internal capital markets of foreign state-controlled and foreign private-owned banks differ, which we associate with different lending motivations and possibilities to access funding during crisis periods. Brei and Schclarek (2013) argue that government-owned banks are less likely than private banks to suffer withdrawals of deposits during a crisis period. In contrast, Hasan et al. (2013) establish that depositors' actions are more strongly influenced by negative press rumors concerning parent companies than by fundamentals. Consequently, private banks are more likely to hoard liquidity and move their scare capital to those markets that provide the highest return.

Table 6

5.2. Internal market

We further analyze the importance of internal capital markets and bank-specific characteristics by controlling for parent bank characteristics, which can also affect subsidiary banks' credit supply in the host country (De Haas and Van Lelyveld, 2010). In the regression, therefore, we include the following bank-specific measures as independent variables: *liquidity* (parent liquid assets to total assets), *profitability* (parent banks' return to assets), and *size* (parent bank assets to home country GDP).

Table 7 presents the results for the foreign bank subsidiary subsample, in which we control for the parent bank financial situation. We divide the sample into subsamples that consist of foreign state-controlled and foreign privately owned banks. As we are not able to control for the parent bank financial status of all the foreign bank subsidiaries, the subsamples are smaller and include fewer countries than our full sample. Columns (1)–(2) present the results where we control for the host banking crisis period, columns (3)-(4) for the home banking crisis periods, and columns (5)–(6) for the GFC period.

In column (1), the coefficient for crisis is positive and statistically significant, which presents evidence that foreign state-controlled banks are more likely to increase lending during a banking crisis in the host country. In contrast, the coefficient for crisis is negative in column (3), indicating that foreign state-controlled banks contracted lending in the period of a home crisis, but it is sta-

tistically insignificant. Columns (5) and (6) confirm that both private and state-controlled foreign banks reduced lending during the GFC, but the coefficients for crisis are insignificant. We find, however that the coefficient of crisis is larger for foreign government-controlled banks, indicating a larger decline in lending than that of foreign privately owned banks. Overall, the results support our previous findings and confirm our hypothesis that the behavior of foreign state-controlled and foreign privately owned banks differs during crisis periods.

We find evidence that bank-specific characteristics are important in explaining loan growth, particularly for foreign private-owned banks. In all the specifications, the coefficient of solvency of privately owned subsidiaries is positively and statistically related to loan growth. For state-controlled banks, none of the coefficient of bank-level variables is statistically significant. Those differences statistical significance and the sign of coefficients, in particular the coefficient for profitability, supplement the argument that in contrast to their private peers, state-controlled banks do not have pure incentives to maximize profits given risks (Brei and Schclarek, 2015).

In line with Allen et al. (2017), we find little evidence that the parent banks' financial situation determines the loan growth of foreign subsidiaries. We find that only the coefficient for the interaction term parent bank profitability and GFC for privately owned banks is negative and significant. However, the other interaction terms for privately owned banks and state-controlled banks are statistically insignificant. Thus, on the one hand, we do not find evidence that the lending of foreign bank subsidiaries is influenced by parent banks during crisis periods. On the other hand, the differences between the subsamples confirm that ownership type plays an important role in explaining the loan growth of foreign bank subsidiaries in crisis periods.

Table 7

5.3. Sovereigns and currency crisis

Last, to analyze the sensitivity of our results, we expand our study and employ a crisis dummy that takes the value of one if the particular host or home country experienced a sovereign crisis or currency crisis during the 1996–2019 period. These crises affect the economy, and hence, they most likely affect the lending activity of the banks. The existing link between the domestic sovereign crisis and bank lending was confirmed by Altavilla et al. (2017) and De Marco (2019), who investigated the determinants of banks' sovereign exposures and their effects on lending

during and after the 2009 Eurozone crisis. They found that the domestic sovereign exposure of banks in stressed countries led to reduced lending in their home markets. Meanwhile, Popov and Van Horen (2015) illustrated a direct link between the deteriorating creditworthiness of foreign sovereign debt and lending by banks holding this debt on their balance sheet.

Popov and Van Horen (2015) and De Marco (2019) distinguished between two channels through which sovereign debt held by banks can lead to a decline in bank credit. First, banks' losses on sovereign debt imply equity loss, which increases their default risk and hence their funding costs, forcing the most highly exposed banks to deleverage. Second, banks often use sovereign debt as collateral in the interbank market. Hence, a sovereign default reduces the eligibility of collateral and lowers banks' funding capacity.

By contrast, our preliminary analysis shows that these crises do not directly affect the bank loan growth, and therefore the conducted test may be viewed as a placebo test to our previous results. Figure 2 presents the volume of bank loans to private non-financial sector in two random countries from our sample, namely South Africa and Russia. In South Africa a sovereign crisis took place in 1985, while a currency crisis in 1984 and 2015. Russia reported a banking, sovereign and currency crisis in 1998, and once again a currency crisis 2014. On one hand, the visual inspection of the data reveals that bank lending was not strongly effected in the two countries neither by the local sovereign nor by the local currency crisis. Indeed, in both countries we can observe a positive trend in bank loan growth following the crisis periods. On the other hand, sovereign debt and currency crises tend to coincide or follow banking crises (Laeven and Valencia, 2020), what was the case in Russia in 1998.

As the number of these two types of crises is smaller than that of banking crises, we decided not to split the sample in our analysis into the pre- and post-GFC periods. Columns (1)–(3) of Table 8 present the results where we control for the sovereign crisis in the host country, while in columns (4)–(5), we control for the sovereign crisis in the home country. We control for bank-level variables, proxies and macro-country variables, as in Table 2, and the results are in line with the main results, although we do not report them here for brevity. The results in Tables 8 and 9 further show that adding the new crisis variables does not change the signs or significance of the bank ownership variables, confirming that domestic state-controlled banks are lending less aggressively than privately owned and foreign-owned banks. By contrast, the growth in the lending of foreign

banks, both state-controlled and privately owned, is more procyclical in normal times.

In line with our preliminary analysis, we find that the coefficient of the sovereign crisis in the host country is positive and significant at 1% level in columns (1)-(3). By contrast, the coefficient for the sovereign crisis in the home country is negative, yet it is statistically insignificant. Hence, we do not find evidence that a sovereign crisis has a negative effect on the average credit growth across all banks in the host countries. Moreover, we do not find any evidence that a home sovereign crisis can be transmitted via foreign bank subsidiaries to host countries.

The results in Table 8 suggest, however, some differences in the effect of sovereign crisis on loan growth depending on the type of banks based on ownership. One explanation for this is that banks tend to hold a large amount of government debt securities on their balance sheets (Popov and Van Horen, 2015). Banks also hold sizable amounts of debt issued by foreign sovereigns. Therefore, they are exposed to a sovereign crisis in the home country as well as the host country. We may further expect that the exposure to sovereign debt differs between privately owned banks and state-controlled banks.

Although our results do not confirm that both home and host sovereign crises have a negative impact on credit supply, we confirm that sovereign default has different effects on banks based on the banks' ownership. In column (2), the coefficient for foreign ownership is negative and statistically significant at 10% level. A closer analysis reveals that the result reflects the decline in lending by foreign state-controlled banks. Column (3), which lists the results of the interaction of foreign state-controlled banks with sovereign crises, indicates that the crisis dummy is negative and statistically significant at 10% level. While, the coefficient of the interaction term for foreign private-owned banks and sovereign crises is also negative, yet is insignificant. Thus, the results support our hypothesis that foreign state-controlled banks behave differently than foreign private-controlled banks during crisis periods.

One explanation for the results is that the level of exposure to risk depends on the bank's holding of domestic and sovereign government debt, which differs across banks and countries. Altavilla et al. (2017) documented that in stressed countries, banks more exposed to sovereign risk reported sharper reductions in loans and more pronounced increases in lending rates than less exposed banks. He further argued that banks' exposure to sovereign risk via government bond holdings acts as an amplification mechanism in the transmission of stress to the banking system, which

our results support.

Altavilla et al. (2017) found that domestic state-owned banks react to the sovereign crisis by increasing their domestic public debt holdings significantly more than privately owned banks. By contrast, we assume that foreign state-controlled banks are more eager to reduce their lending in sovereign debt of a distressed countries than foreign privately owned banks. This explains the different effects of the sovereign crisis on the lending activity of foreign state-controlled and foreign privately owned banks in the host countries.

Table 8

Finally, columns (1)–(3) and (4)–(5) of Table 9 present the results of the impact of the currency crisis in the host and home countries, respectively. In columns (1)–(3), we find that the coefficient of the local currency crisis is positive and statistical significant for host crisis the 1% level. By contrast, in column (4)–(5), the coefficient of the currency crisis in the home country are negative but statistically insignificant. Thus, the results are similar to those presented for sovereign crisis. By contrast, however, we do not find any evidence that the type of ownership played a significant role during the local currency crisis.

Table 9

Overall, the results of the sensitivity analysis confirm that the main results are unlikely to be driven by accidents, as ownership seems to play a role only during a banking crisis and only to some extent during a sovereign crisis. We conduct a wide array of additional analyses to check the robustness of our main results, although we do not report them here for brevity.[4] First, we check the consistency of the results after removing countries that are overrepresented in our sample, such as the United States. Second, we increase the set of explanatory variables and add additional control variables for banks and countries. Third, we employ the generalized method of moments estimation that better controls for the three sources of endogeneity, namely, unobserved heterogeneity, simultaneity, and dynamic endogeneity. The results of the robustness test using different methods, data, and variables confirm our results and the relationship between bank ownership

[4]The full results of the main regressions and the additional robustness check are available upon request.

and lending during normal and crisis periods. As in other studies, however, our empirical analysis has its limitations. Consequently, we interpret our results as a causal relationship; however, we are aware that it is not a precise test of the direction of the relationship.

6. Conclusions

The globalization of financial systems in most countries has reshaped the structure of banking industries worldwide, leading to the intensive development of multinational banks. A number of these multinational banks entered new markets through the acquisition of state-controlled banks, which was perceived as a positive development given that existing research demonstrated that foreign banks could stabilize lending during a domestic banking crisis. By contrast, domestic banks, especially in developing countries, reduced lending, which amplified the economic shock in those countries. In developing countries, the same applies to state-controlled banks, which, on average, are found to be less efficient and whose lending volume to the real economy is lower than that of privately owned banks (Micco and Panizza, 2006).

However, the situation changed dramatically following the GFC. New evidence has emerged illustrating that foreign banks can act as external shock amplifiers in host countries. In particular, in response to the financial problems of parent banks in industrialized countries, De Haas and Van Lelyveld (2014) and Allen et al. (2017) documented that subsidiaries of these banks reduced lending in CEE. Moreover, Brei and Schclarek (2013) found evidence that domestic government-owned banks increased their lending during crises relative to normal times, while private banks' lending decreased. They argued that domestic government-owned banks counteract the lending slowdown of private banks and therefore have an active countercyclical role in their banking systems.

Our study aimed to enhance the understanding of foreign banks' lending behaviors, especially by distinguishing those of foreign privately owned and foreign government-controlled banks, during normal times and crisis periods. We also contribute to the extant literature by analyzing the bank lending behaviors of domestic and foreign banks using subsamples for the periods before and after the GFC.

By analyzing the behavior of banks during normal times, our results confirmed the existing findings that foreign banks and domestic privately owned banks lend more than domestic state-

controlled banks. We found, however, that the credit growth of foreign banks changed significantly after the GFC. Our results demonstrated that foreign banks, both privately owned and government-controlled, had lent significantly more than domestic banks in the pre-GFC period; however, after the GFC, this effect diminishes. We attribute this change to the new regulations and prudential policies, which is supported by the results showing the importance of solvency and liquidity ratios in explaining lending growth.

We supplement the existing literature by showing that the overall supply of credit declines during a domestic banking crisis. Moreover, we document that foreign banks can have a stabilizing influence during a domestic banking crisis, but we show that this effect is mainly driven by the increase in lending by foreign-controlled banks. Thus, the lending of foreign state-controlled banks was countercyclical during the host country banking crises. By contrast, we find that foreign state-controlled banks are more likely than domestic banks to reduce lending during a banking crisis in the home market, while foreign privately owned banks increase lending in host countries during a home banking crisis. Thus, our results confirm that the lending behavior of foreign private-owned banks and that of foreign government-controlled banks differ during normal times yet differ particularly during crisis periods.

These differences, however, diminishes for the post-GFC period. In our opinion, the results may indicate that bank-specific factors are more important than ownership in explaining credit growth in the post-GFC period. Indeed, we find that bank-specific characteristics explain the supply of credit during normal times and crisis periods. In addition, our results indicate that after the GFC, bank-specific characteristics play a larger role in explaining credit growth, which we attribute to the new prudential regulations. Moreover, we demonstrated that the subsidiaries' financial situation was a more important determinant of credit growth than the parent banks' health during crisis periods.

One key takeaway is that substantial heterogeneity exists across domestic and foreign banks, countries, and time. The result is important from a policy perspective, as we illustrated that within the banking sector, a mixed composition consisting of foreign and domestic-owned banks that are controlled by the state and private owners is advisable. Thus, future research should focus on understanding the drivers of the heterogeneity among domestic and foreign banks.

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Figure 1: Share of domestic and foreign state-controlled banks

The average share of domestic state-controlled banks in total banking assets over the period 1996–2019

The average share of foreign state-controlled banks in total banking assets over the period 1996–2019

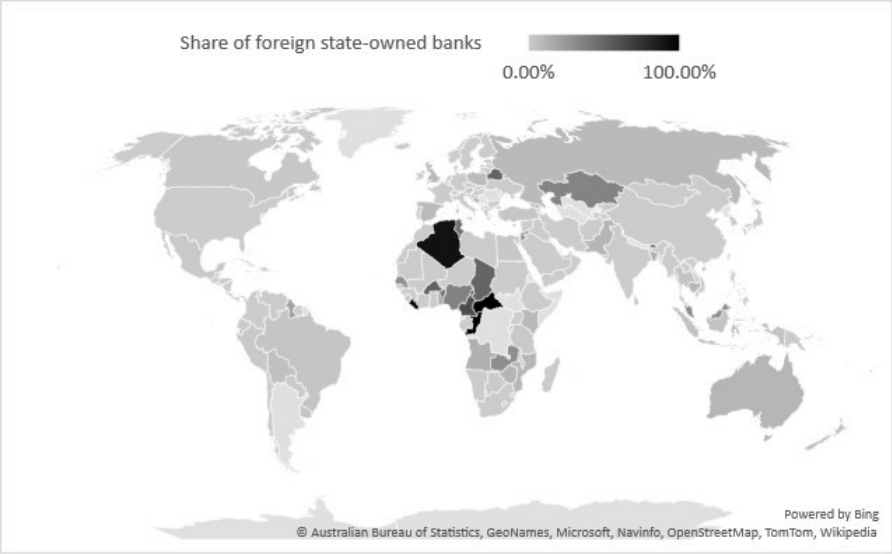

Figure 2: Bank credit development in South Africa and Russia

Credit to private non-financial sector from banks in local currencies (in billions)

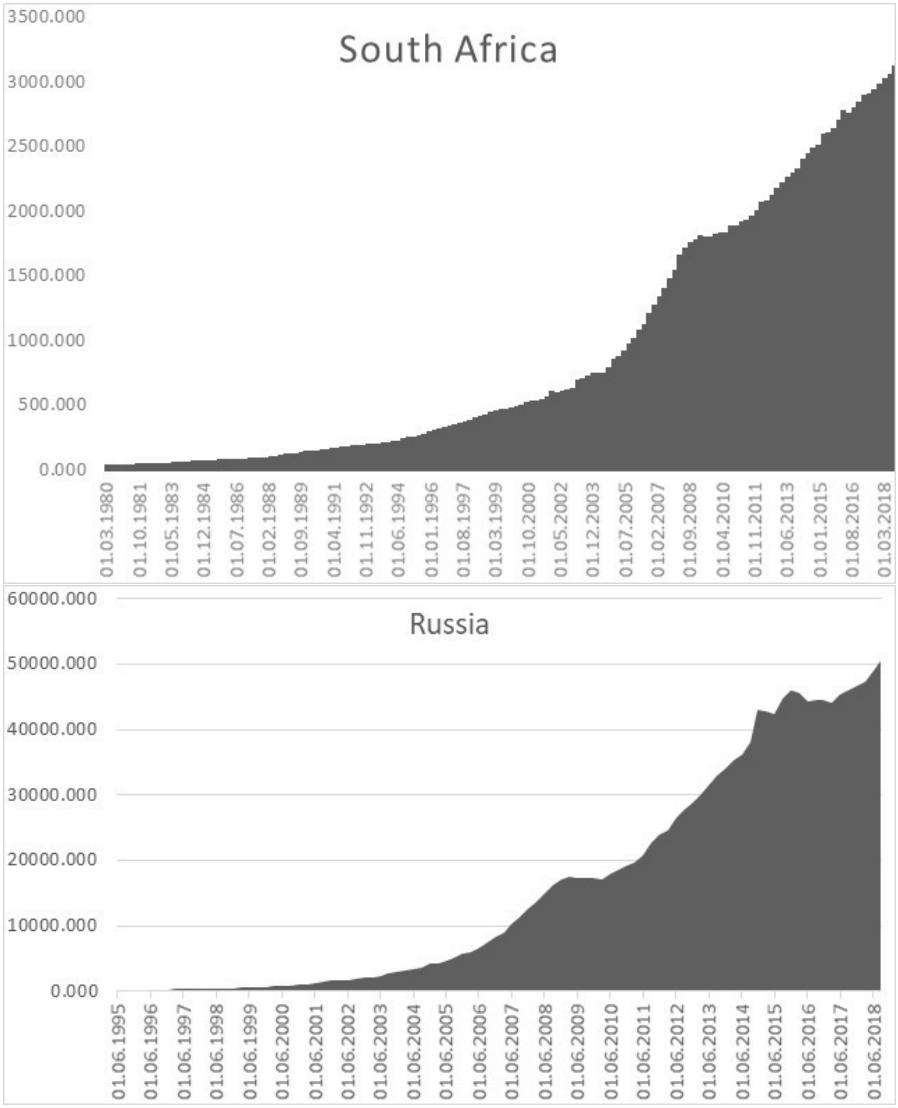

Table 1: Descriptive statistics

The table provides the descriptive statistics of the variables employed in the empirical specifications. The summary statistics for the bank-and country-level variables are based on the full sample for 1996–2019. All variables are defined in the Table A1.

	Mean	25th %	Median	75th %	Std. dev.	Obs.
Subsidiary characteristics						
Δ Gross loans	0.087	-0.052	0.055	0.183	0.225	89,323
Liquidity	0.211	0.075	0.158	0.307	0.169	89,323
Loan to Deposit	0.691	0.531	0.729	0.876	0.257	89,323
Profitability	0.011	0.004	0.011	0.018	0.012	89,323
Solvency	0.118	0.073	0.101	0.136	0.067	89,323
Size	0.009	0.000	0.001	0.009	0.015	89,323
GOV_D	0.054	0.000	0.000	0.000	0.225	89,323
FGN	0.259	0.000	0.000	1.000	0.438	89,323
GOV_F	0.032	0.000	0.000	0.000	0.176	89,323
$PRIV_F$	0.227	0.000	0.000	0.000	0.419	89,323
Parent bank characteristics						
Profitability	0.012	0.007	0.011	0.016	0.008	39,221
Size	1.485	0.007	0.022	0.262	5.132	39,703
Liquidity	0.160	0.061	0.115	0.217	0.134	40,079
Host country characteristics						
Distance	1.977	0.000	0.000	5.375	3.406	89,323
Language	0.099	0.000	0.000	0.000	0.299	89,323
Law	0.867	1.000	1.000	1.000	0.339	89,323
GDP growth	0.030	0.017	0.025	0.042	0.032	89,323
CPI	0.042	0.014	0.021	0.041	0.144	89,323

Table 2: Main results

This table reports the coefficients of the linear regression model using weighted least squares. Columns (1)–(2), (3)–(4), and (5)–(6) include the samples for the years 1996–2019, 1996–2007, and 2010–2019, respectively. The dependent variable is the change in real gross loans. The independent variables are defined in Table A1. All specifications include constants and country-year fixed effects. Robust standard errors controlling for clustering at the country level are in parentheses. ***, **, * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	1996-2019		1996-2007		2010-2019	
	(1)	(2)	(3)	(4)	(5)	(6)
Liquidity	0.112***	0.113***	0.135***	0.135***	0.075***	0.076***
	(0.014)	(0.014)	(0.024)	(0.024)	(0.018)	(0.018)
Loan to Deposit	-0.025***	-0.025***	-0.007	-0.007	-0.050***	-0.049***
	(0.009)	(0.009)	(0.017)	(0.017)	(0.012)	(0.012)
Profitability	0.978***	0.965***	1.682***	1.686***	0.773***	0.757***
	(0.186)	(0.187)	(0.253)	(0.253)	(0.251)	(0.253)
Solvency	0.077**	0.078**	-0.058	-0.058	0.160***	0.161***
	(0.038)	(0.038)	(0.063)	(0.063)	(0.048)	(0.048)
Size	-1.162***	-1.169***	-1.152***	-1.151***	-1.187***	-1.201***
	(0.155)	(0.155)	(0.250)	(0.250)	(0.202)	(0.201)
GOV_D	-0.017***	-0.017***	-0.028**	-0.028**	-0.014*	-0.014*
	(0.006)	(0.006)	(0.012)	(0.012)	(0.008)	(0.008)
FGN	0.101***		0.178***		0.069**	
	(0.025)		(0.037)		(0.032)	
GOV_F		0.092***		0.181***		0.060*
		(0.025)		(0.043)		(0.031)
$PRIV_F$		0.101***		0.178***		0.070**
		(0.025)		(0.036)		(0.032)
Distance	-0.015***	-0.015***	-0.023***	-0.023***	-0.012***	-0.012***
	(0.003)	(0.003)	(0.005)	(0.005)	(0.004)	(0.004)
Language	-0.005	-0.005	-0.016	-0.016	0.002	0.001
	(0.007)	(0.007)	(0.012)	(0.012)	(0.009)	(0.009)
Law	-0.002	-0.002	0.025**	0.025**	-0.013	-0.012
	(0.007)	(0.007)	(0.010)	(0.010)	(0.009)	(0.009)
GDP growth	3.729***	3.760***	5.075***	5.070***	9.606***	9.681***
	(0.276)	(0.279)	(0.289)	(0.290)	(0.420)	(0.420)
CPI	3.376***	3.391***	-1.151***	-1.143***	1.788***	1.794***
	(0.128)	(0.129)	(0.209)	(0.211)	(0.106)	(0.108)
Observations	76,556	76,556	27,630	27,630	43,339	43,339
R^2	0.42	0.42	0.38	0.38	0.42	0.42
Adj R^2	0.40	0.40	0.34	0.34	0.40	0.40

Table 3: Impact of the host banking crisis on lending in host countries

This table reports the coefficients of the linear regression model using weighted least squares. Columns (1)–(3), (4)–(5), and (6)–(7) include the years 1996–2019, 1996–2007, and 2010–2019, respectively. The dependent variable is the change in real gross loans. The variable crisis controls for the systematic banking crisis in the host country. The independent variables are defined in Table A1. All specifications include constant and country-year fixed effects as well as bank-level and country control variables, as in Table 2, which are not presented here for brevity. Robust standard errors controlling for clustering at the country level are in parentheses. ***, **, * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	1996-2019			1996-2007		2010-2019	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GOV_D	-0.017**	-0.017***	-0.017***	-0.029**	-0.028**	-0.015*	-0.014*
	(0.007)	(0.006)	(0.006)	(0.012)	(0.012)	(0.008)	(0.008)
FGN	0.101***	0.099***					
	(0.025)	(0.025)					
GOV_F			0.088***	0.181***	0.177***	0.060*	0.060*
			(0.025)	(0.043)	(0.043)	(0.031)	(0.032)
$PRIV_F$			0.099***	0.178***	0.178***	0.070**	0.071**
			(0.025)	(0.036)	(0.037)	(0.032)	(0.032)
Host Crisis	-0.173***	-0.186***	-0.184***	-0.075***	-0.080***	-0.510***	-0.502***
	(0.016)	(0.020)	(0.020)	(0.009)	(0.009)	(0.022)	(0.028)
GOV_D xCrisis	0.003			0.008		0.010	
	(0.018)			(0.026)		(0.026)	
FGNxCrisis		0.014					
		(0.015)					
GOV_FxCrisis			0.063**		0.136**		0.020
			(0.028)		(0.065)		(0.039)
$PRIV_F$xxCrisis			0.008		0.041		-0.009
			(0.015)		(0.035)		(0.019)
Bank controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	76,556	76,556	76,556	27,630	27,630	43,339	43,339
R^2	0.42	0.42	0.42	0.38	0.38	0.42	0.42
Adj R^2	0.40	0.40	0.40	0.34	0.34	0.40	0.40

Table 4: Impact of a home banking crisis on lending in host countries

This table reports the coefficients of the linear regression model using weighted least squares. Columns (1)–(3), (4)–(5), and (6)–(7) include the years 1996–2019, 1996–2007, and 2010–2019, respectively. The dependent variable is the change in real gross loans. The variable crisis controls for systematic banking crisis in the home country. The independent variables are defined in Table A1. All specifications include constant and country-year fixed effects as well as bank-level and country control variables, as in Table 2, which are not presented here for brevity. Robust standard errors controlling for clustering at the country level are in parentheses. ***, **, * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	1996-2019		1996-2007		2010-2019	
	(1)	(2)	(3)	(4)	(5)	(6)
GOV_D	-0.017***	-0.017***	-0.028**	-0.028**	-0.014*	-0.014*
	(0.006)	(0.006)	(0.012)	(0.012)	(0.008)	(0.008)
GOV_F	0.091***	0.091***	0.176***	0.176***	0.059*	0.059*
	(0.024)	(0.024)	(0.043)	(0.043)	(0.031)	(0.031)
$PRIV_F$	0.103***	0.103***	0.173***	0.173***	0.073**	0.073**
	(0.025)	(0.025)	(0.036)	(0.036)	(0.032)	(0.032)
Home crisis	-0.042***	-0.018	-0.064***	-0.177***	-0.047***	0.011
	(0.010)	(0.031)	(0.014)	(0.032)	(0.014)	(0.041)
GOV_FxCrisis	0.024		-0.113***		0.057	
	(0.032)		(0.033)		(0.043)	
$PRIV_F$xCrisis		-0.024		0.113***		-0.057
		(0.032)		(0.033)		(0.043)
Observations	76,556	76,556	27,630	27,630	43,339	43,339
R^2	0.42	0.42	0.38	0.38	0.42	0.42
Adj R^2	0.40	0.40	0.34	0.34	0.40	0.40
Bank controls	Yes	Yes	Yes	Yes	Yes	Yes
Country controls	Yes	Yes	Yes	Yes	Yes	Yes

Table 5: Global financial crisis

This table reports the coefficients of the linear regression model using weighted least squares. Columns (1)–(2) include the full sample of banks for the 1996–2019 period. Columns (4)–(6) lists a subsample that excludes banks that received government aid following the GFC. The dependent variable is the change in real gross loans. The variable GFC controls for the global financial crisis of 2007-2008. The independent variables are defined in Table A1. All specifications include constant and country-year fixed effects as well as bank-level and country control variables as in Table 2, which are not presented here for brevity. Robust standard errors controlling for clustering at the country level are in parentheses. ***, **, * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
GOV_D	-0.019***	-0.017***	-0.017***	-0.019***	-0.017***	-0.017***
	(0.007)	(0.006)	(0.006)	(0.007)	(0.006)	(0.006)
FGN	0.100***	0.102***		0.107***	0.108***	
	(0.025)	(0.025)		(0.024)	(0.024)	
GOV_F			0.094***			0.100***
			(0.025)			(0.024)
$PRIV_F$			0.102***			0.108***
			(0.025)			(0.025)
GF crisis	-0.611***	-0.589***	-0.590***	-0.611***	-0.587***	-0.588***
	(0.019)	(0.022)	(0.023)	(0.019)	(0.022)	(0.022)
GOV_DxCrisis	0.035**			0.035**		
	(0.015)			(0.015)		
FGNxCrisis		-0.017			-0.019	
		(0.012)			(0.012)	
GOV_FxCrisis			-0.025			-0.027
			(0.028)			(0.029)
$PRIV_F$xCrisis			-0.016			-0.018
			(0.012)			(0.013)
Bank controls	Yes	Yes	Yes	Yes	Yes	Yes
Country controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	76,556	76,556	76,556	76,091	76,091	76,091
R^2	0.42	0.42	0.42	0.42	0.42	0.42
Adj R^2	0.40	0.40	0.40	0.40	0.40	0.40

Table 6: Matched sample of foreign private-owned and state-controlled banks

This table reports the coefficients of the linear regression model employing a matched sample of foreign private-owned and foreign state-controlled banks using the propensity score matching technique. In columns (1)–(2), and (3)-(6) the crisis dummy represents a banking crisis in the host country and home country, respectively. Columns (1), (3)-(4), and (2), (5)–(6) include the years 1996–2007 and 2010–2019, respectively. The dependent variable is the change in real gross loans. The variable crisis controls for a systematic banking crisis in the host country. The independent variables are defined in Table A1. All specifications include constant and country-year fixed effects as well as bank-level and country control variables as in Table 2, which are not presented here for brevity. Robust standard errors controlling for clustering at the country level are in parentheses. ***, **, * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	Host Crisis		Home Crisis			
	(1996-2007)	(2011-2019)	(1996-2007)		(2010-2019)	
	(1)	(2)	(3)	(4)	(5)	(6)
GOV_D	-0.022***	-0.022***	-0.021***	-0.021***	-0.022***	-0.022***
	(0.008)	(0.005)	(0.008)	(0.008)	(0.005)	(0.005)
GOV_F	0.153*	-0.069	0.133	0.133	-0.072	-0.072
	(0.080)	(0.054)	(0.082)	(0.082)	(0.054)	(0.054)
$PRIV_F$	0.177**	-0.006	0.143*	0.143*	-0.026	-0.026
	(0.079)	(0.059)	(0.081)	(0.081)	(0.060)	(0.060)
Crisis	0.038	-0.854	-0.007	-0.193***	0.089	0.007
	(0.108)	(0.621)	(0.105)	(0.043)	(0.069)	(0.032)
GOV_FxCrisis	0.179*	0.018	-0.186		-0.082	
	(0.105)	(0.032)	(0.114)		(0.074)	
$PRIV_F$xCrisis	-0.059	-0.187***		0.186		0.082
	(0.062)	(0.064)		(0.114)		(0.074)
Bank controls	Yes	Yes	Yes	Yes	Yes	Yes
Country controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	19,847	34,969	19,847	19,847	34,966	34,966
R^2	0.46	0.51	0.46	0.46	0.51	0.51
Adj R^2	0.42	0.49	0.42	0.42	0.49	0.49

Table 7: Host, home and global financial crisis and parent bank fundamentals

This table reports the coefficients of a linear regression model using the sample of foreign bank subsidiaries and parent banks for the years of 1996-2019. The variable crisis controls in columns (1)-(2) for a host banking crisis; in columns (3)-(4) for a host banking crisis, and in columns (5)-(6) for the global financial crisis of 2008. In columns (1), (3), (5) and (2), (4), (6), the subsample consist of foreign state-controlled banks and foreign private-owned banks, respectively. The dependent variable is the change in real gross loans. The independent variables are defined in Table A1. All specifications include constant and country-year fixed effects as well gas bank-level and country control variables as in Table 2, which are not presented here for brevity. Robust standard errors controlling for clustering at the country level are in parentheses. ***, **, * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	Host Crisis		Home Crisis		GF Crisis	
	GOV	PRIV	GOV	PRIV	GOV	PRIV
	(1)	(2)	(3)	(4)	(5)	(6)
Subsidiary characteristics						
Liquidity	0.537	-0.359	0.569	-0.350	0.455	-0.354
	(0.600)	(0.389)	(0.563)	(0.390)	(0.647)	(0.391)
Loan to Deposit	0.033	-0.043	0.030	-0.043	0.055	-0.044
	(0.106)	(0.032)	(0.097)	(0.032)	(0.112)	(0.032)
Profitability	-30.193	3.268	-31.425	3.289	-40.142	3.343
	(32.973)	(9.600)	(33.140)	(9.577)	(34.217)	(9.567)
Solvency	-0.180	0.360***	-0.110	0.361***	-0.244	0.362***
	(0.474)	(0.101)	(0.440)	(0.101)	(0.528)	(0.101)
Size	-3.877	0.269	-3.332	0.312	-4.512	0.296
	(3.675)	(0.639)	(3.574)	(0.629)	(4.042)	(0.629)
Crisis	-1.216***	0.071	-0.451	0.011	-0.230	-0.064
	(0.436)	(0.047)	(0.325)	(0.036)	(0.314)	(0.042)
Parent bank characteristics						
Liquidity	-0.316	0.346	-0.371	0.340	-0.321	0.341
	(0.664)	(0.382)	(0.627)	(0.384)	(0.664)	(0.384)
Profitability	31.773	-3.510	32.706	-3.422	41.031	-3.431
	(31.923)	(9.414)	(32.185)	(9.404)	(33.406)	(9.393)
Size	-0.002	-0.001	-0.001	-0.001	-0.001	-0.001*
	(0.002)	(0.000)	(0.002)	(0.000)	(0.002)	(0.000)
LiquidityxCrisis	-0.194	-0.011	0.230	-0.023	1.223	-0.013
	(1.292)	(0.058)	(0.646)	(0.175)	(1.322)	(0.151)
ProfitabilityxCrisis	-0.943	-0.340	5.688	-2.422	10.001	-5.157**
	(5.673)	(1.976)	(8.696)	(2.697)	(41.835)	(2.110)
SizexCrisis	0.026***	-0.001	0.005	0.000	-0.064	0.000
	(0.008)	(0.001)	(0.015)	(0.002)	(0.551)	(0.002)
Observations	603	3,261	603	3,261	603	3,261
RR^2	0.64	0.38	0.64	0.38	0.65	0.38
Adj RR^2	0.11	0.18	0.11	0.18	0.12	0.18

Table 8: Sovereign crisis in the host and home country

This table reports the coefficients of a linear regression model using weighted least squares using the sample of domestic and foreign banks for the years of 1996-2019. The dependent variable is the change in real gross loans. In columns (1)–(3) and (4)–(6), the variable crisis controls for sovereign crises in the host and home countries, respectively. The independent variables are defined in Table A1. All specifications include constant and country-year fixed effects as well as bank-level and country control variables as in Table 2, which are not presented here for brevity. Robust standard errors controlling for clustering at the country level are in parentheses. ***, **, * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	Host Crisis			Home Crisis	
	(1)	(2)	(3)	(4)	(5)
GOV_D	-0.017***	-0.017**	-0.017***	-0.017***	-0.017***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
FGN	0.100***	0.101***			
	(0.025)	(0.025)			
GOV_F			0.092***	0.094***	0.094***
			(0.025)	(0.025)	(0.025)
$PRIV_F$			0.101***	0.103***	0.103***
			(0.025)	(0.025)	(0.025)
Sovereign crisis	0.136***	0.135***	0.138***	-0.055	-0.030
	(0.024)	(0.024)	(0.025)	(0.047)	(0.019)
GOV_DxCrisis	0.068				
	(0.049)				
FGNxCrisis		-0.057*			
		(0.034)			
GOV_FxCrisis			-0.073*	0.026	
			(0.042)	(0.050)	
$PRIV_F$xCrisis			-0.057		-0.026
			(0.036)		(0.050)
Bank controls	Yes	Yes	Yes	Yes	Yes
Country controls	Yes	Yes	Yes	Yes	Yes
Observations	76,556	76,556	76,556	76,384	76,384
R^2	0.42	0.42	0.42	0.42	0.42
Adj R^2	0.40	0.40	0.40	0.40	0.40

Table 9: Currency crisis in the host and home country

This table reports the coefficients of a linear regression model using weighted least squares and the sample of domestic and foreign banks for the years of 1996-2019. The dependent variable is the change in real gross loans. In columns (1)–(3) and (4)–(6), the variable crisis controls for currency crises in the host and home countries, respectively. The independent variables are defined in Table A1. All specifications include constant and country-year fixed effects as well as bank-level and country control variables as in Table 2, which are not presented here for brevity. Robust standard errors controlling for clustering at the country level are in parentheses. ***, **, * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	Host Crisis			Home Crisis	
	(1)	(2)	(3)	(4)	(5)
GOV_D	-0.018***	-0.017***	-0.017***	-0.017***	-0.017***
	(0.007)	(0.006)	(0.006)	(0.006)	(0.006)
FGN	0.100***	0.101***			
	(0.025)	(0.025)			
GOV_F			0.092***	0.094***	0.094***
			(0.025)	(0.025)	(0.025)
$PRIV_F$			0.101***	0.103***	0.103***
			(0.025)	(0.025)	(0.025)
Currency crisis	0.136***	0.135***	0.138***	-0.018	0.012
	(0.025)	(0.024)	(0.025)	(0.031)	(0.065)
GOV_DxCrisis	0.049				
	(0.034)				
FGNxCrisis		0.020			
		(0.027)			
GOV_FxCrisis			0.061	0.031	
			(0.040)	(0.074)	
$PRIV_F$xCrisis			0.013		-0.031
			(0.027)		(0.074)
Bank controls	Yes	Yes	Yes	Yes	Yes
Country controls	Yes	Yes	Yes	Yes	Yes
Observations	76,556	76,556	76,556	76,384	76,384
$R^2$2	0.42	0.42	0.42	0.42	0.42
Adj $R^2$2	0.40	0.40	0.40	0.40	0.40

Table A1: Variables and their definitions

Variable	Description
Bank level variables	
Loan growth	Real growth rate of gross loans in domestic currency
Liquidity	Liquid assets over total assets
Loan to Deposits	Ratio of total loans to total deposits
Profitability	Ratio of gross profit to total assets
Solvency	Ratio of equity capital to total assets
Size	Ratio of bank's total assets to countries GDP
GOV_D	Binary variable identifying domestic banks directly or indirectly controlled by the government in a given year
FGN	Binary variable identifying banks owned by foreign investors in a given year
GOV_F	Binary variable identifying foreign banks directly or indirectly controlled by the host government in a given year
$PRIV_F$	Binary variable identifying foreign banks directly or indirectly controlled by private investors in a given year
Parent bank level variables	
Liquidity	Liquid assets over total assets
Profitability	Ratio of gross profit to total assets
Size	Ratio of bank's total assets to countries GDP
Country control variables	
Host crisis	Binary variable equal to 1 for the years of systemic banking crisis in a host country and 0 otherwise.
Home crisis	Binary variable equal to 1 for the years of systemic banking crisis in a home country and 0 otherwise.
GF crisis	Binary variable equal to 1 for the years 2008-2009 and zero otherwise
Sov. crisis	Binary variable equal to 1 for the years of sovereign crisis in a host or home country and 0 otherwise.
Cur. crisis	Binary variable equal to 1 for the years of currency crisis in a host or home country and 0 otherwise.
Distance	Logarithm of distance between most populated city of each country (km)
Language	Dummy variable equal to 1 if countries share a common language spoken by at least 9% of the population, and 0 otherwise
Common law	Binary variable identifying countries that share common legal origins
Growth	Real rate of growth of GDP
CPI	Consumer price inflation

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Marcin Borsuk
European Central Bank, Frankfurt am Main, Germany; Polish Academy of Sciences, Warsaw, Poland;
University of Cape Town, Cape Town, South Africa; email: mborsuk@inepan.waw.pl

Oskar Kowalewski
IESEG School of Management, Paris, France; LEM-CNRS 9221, Lille, France; Polish Academy of Sciences, Warsaw, Poland;
email: o.kowalewski@ieseg.fr

Pawel Pisany
Polish Academy of Sciences, Warsaw, Poland; email: ppisany@inepan.pl

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Postal address 60640 Frankfurt am Main, Germany
Telephone +49 69 1344 0
Website www.ecb.europa.eu

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