

Cyclicalitv of Lending in Africa: The Influence of Bank Ownership

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Abstract

Ownership structure of banks has dramatically changed over the past two decades in African countries with privatization and foreign bank entry, including the expansion of Pan-African banks. The objective of this paper is to investigate how bank ownership influences cyclicalitv of lending in Africa. We are then able to assess how changes in bank ownership influence the economy. To this end, we measure the sensitivity of bank loan growth to GDP per capita growth of the host country with dynamic GMM estimations. We use panel data from 230 commercial banks covering 38 African countries spanning the period from 2002 to 2015. We find that lending of African banks is procyclical for all types of banks. However, we observe that Pan-African banks are the least procyclical banks, while no significant difference in procyclicalitv is observed between state-owned banks, domestic private banks, and other foreign banks. In addition, we find limited evidence that foreign banks are influenced by GDP per capita growth of their home country. Therefore, our findings support the view that the expansion of Pan-African banks contributes to reduce cyclicalitv of lending. However, foreign bank entry can enhance the transmission of external shocks.

JEL Codes: G21, G32, N27.

Keywords: Africa, bank, loan growth, business cycles, financial stability, Pan-African banks.

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1. Introduction

African banking systems have remarkably and rapidly changed over the past two decades. A key change has been the evolution of the ownership structure of banks with liberalization and privatization reforms which have diminished the market share of state-owned banks and promoted foreign bank entry.

Foreign bank expansion on the African continent has taken place through the entry of banks from developed and developing countries but also through the emergence of Pan-African banks (PABs), which come from African countries. PABs have now become major banking players with a presence in 36 African countries and with the eight major PABs having activities in at least ten African countries.¹ Moreover, major PABs have a large market share in several African countries going from 15 to 45 percent (Beck, Fuchs, Singer and Witte, 2014).²

The expansion of PABs raises questions about its implications for African countries. The scarce literature on this topic has analyzed its consequences on financial inclusion (Beck, 2015), bank competition (Léon, 2016), bank market power (Nguyen, Perrera and Skully, 2016), bank efficiency (Zins and Weill, 2017) and on the determinants of this expansion (Kodongo, Natto and Biekpe, 2015).

However, the impact of foreign bank entry on cyclicity of bank lending remains unexplored. Cyclicity of bank lending refers to the fact that banks would grant too many loans during economic booms and cut too much lending during economic downturns. As a consequence, a cyclical lending behavior would have undesirable effects by amplifying recessions and by generating excessive credit expansion leading to an overheating of the economy. It can therefore have major detrimental consequences for the economy.

Cyclicity of bank lending is a key question associated with the debate around foreign bank expansion since foreign banks can have a more cyclical lending behavior than domestic banks. The argument is that economic troubles of the host country can lead foreign banks to reduce lending more than domestic banks because of a “lack of loyalty” (Fungacova, Herrala and Weill, 2013). Former literature has provided evidence in favor of a more cyclical

¹ According to Beck, Fuchs, Singer and Witte (2014), the eight major PABs are the Togolese Ecobank, the Nigerian United Bank for Africa, the Southern African Standard Bank Group, the Moroccan Banque Marocaine du Commerce Extérieur (BMCE), the Libyan Banque Sahélo-Saharienne pour l’Investissement et le Commerce (BSIC), the Moroccan Attijariwafa Bank, the Moroccan Banque Centrale Populaire du Maroc (BCP) and the Southern African Barclays Africa Group.

² In 2011, major PABs such as Ecobank, Standard Bank or BMCE own a market share from 15 to 45 percent in many African countries (Beck, Fuchs, Singer and Witte, 2014).

behavior of foreign banks (e.g., De Haas and van Lelyveld, 2006, in European transition countries; Fungacova, Herrala and Weill, 2013, in Russia; Bertay, Demirgüç-Kunt and Huizinga, 2013, in a worldwide study).

The objective of this paper is thus to examine whether the cyclicity of lending depends on bank ownership. We want first to know whether foreign banks have a different cyclical behavior in bank lending than domestic banks, second to find out whether PABs differ in cyclicity of bank lending from other non-African foreign banks.

To this end, we measure lending cyclicity by estimating the sensitivity of bank lending growth to GDP per capita growth of the host country. A greater sensitivity is associated with a more cyclical lending behavior. We use panel data from 230 commercial banks covering 38 African countries spanning the period from 2002 to 2015. Our dataset includes five groups of banks based on ownership: domestic privately-owned, domestic state-owned, Pan-African banks, banks owned by foreign developed investors, and banks owned by foreign developing investors. We are therefore able to compare lending behavior between all types of bank ownership in Africa.

We also investigate whether foreign banks have a lending behavior influenced by the business cycle in their home country. Namely, foreign banks can be more or less sensitive than domestic banks to the economic situation of the host country but they can also contribute to transmit external shocks. We then estimate the sensitivity of bank lending for the foreign banks of our dataset to GDP per capita growth in their home country. We can then check if the business cycle in the home country exerts an influence on the lending behavior of foreign banks, and we can check whether Pan-African banks differ in this aspect from foreign banks from developed countries and from foreign banks from developing countries. This question is of major importance to assess the cross-border transmission of shocks.

Our main findings can be summarized as follows. First, lending of African banks is procyclical with loan growth positively linked to host GDP per capita growth. Second, Pan-African banks are the least procyclical banks among the five types of banks. Other foreign banks do not differ from domestic banks for cyclicity. Foreign bank entry does not enhance procyclicality of lending behavior in Africa and may even diminish it through the expansion of Pan-African banks. Third, we observe limited evidence that foreign banks are influenced by GDP per capita growth of their home country. This finding is observed for all types of foreign banks with no difference in the sensitivity to the business cycle in the home country. This finding therefore suggests that, to some extent, foreign banks in African countries can

contribute to increase cross-border contagion since their lending behavior in the host country is sensitive to the economic situation in the home country.

Our contribution is twofold. First, we contribute to the burgeoning literature on African banks by examining how bank ownership influences cyclical behavior of lending behavior. We therefore provide important insights to assess how recent changes in the structure of the African banking markets can have macroeconomic effects.

Second, we provide a contribution to the literature on cyclical behavior of lending behavior. Several recent works have checked the link between bank ownership and cyclical behavior (e.g., Bertay, Demirgüç-Kunt and Huizinga, 2013, for state ownership; Behr, Foos and Norden, 2017, for banks with government involvement). The unique feature of African banking markets with the coexistence of foreign banks from other continents and foreign banks from Africa combined with the absence of former works help us contributing to the better understanding of how bank ownership shapes cyclical behavior of lending.

The remainder of this paper is organized as follows. Section 2 reviews the existing literature and the hypotheses. In Section 3 we describe the data and the empirical methodology. Section 4 presents our empirical findings. Section 5 concludes.

2. Background

This section is devoted to the background for our research question. We first provide theoretical and empirical elements from the literature on how bank lending reacts to the business cycle. We then present the hypotheses on how bank ownership can exert an impact on this relation.

2.1 Literature review

We briefly survey the literature related to our research question.

The first strand of literature concerns the theoretical elements with two recent models. Althammer and Haselmann (2011) show that foreign banks improve host banking systems' stability, particularly during economic downturns. Soft information loses reliability during recession and thus domestic banks lose their comparative advantage in comparison to foreign banks that resort more to hard information. Brei and Schclarek (2015) theorize that credit growth is comparable between state-owned and private banks during normal times but that state-owned banks would adopt a countercyclical role during recession times while private banks would be more procyclical. They give three explanations to such result. First, state-

owned banks differ from private banks in terms of objectives: they aim at stabilizing the economy. Second, state-owned banks would be less hurt by deposit withdrawals thanks to a better access to recapitalization funds. Third, state-owned banks would suffer less from deposit withdrawals thanks to a higher trustworthiness in promising a future recapitalization.

The second strand of literature concerns empirical works on cyclicity of bank lending. We can survey these studies by considering separately cross-country studies gathering different groups of countries, studies on developed countries, and studies on developing and transition countries.

Concerning the cross-country works including different groups of countries, several works show that state-owned banks would be less pro-cyclical than their private counterparts (Micco and Panizza, 2006; Bertay, Demirgüç-Kunt and Huizinga, 2015) suggesting a credit smoothing role of state-owned banks.

State-owned banks' credit growth would however increase during election times, suggesting a political link (Dinç, 2005). In their study on 1633 banks in 111 countries covering the 1999-2010 period, Bertay, Demirgüç-Kunt and Huizinga (2015) also find that foreign-owned banks' lending is particularly procyclical. Regarding the lending pattern during the GFC, results are different. Studying over 21,000 banks located in 193 countries around the world, Dekle and Lee (2015) find no credit growth differences between state-owned banks and private banks during the GFC. However, Brei and Schlarek (2013), analyzing 764 banks in 50 countries, find that state-owned banks' lending increases during crises relative to normal times, whereas private-banks' lending declines, suggesting that public banks play an active countercyclical role. Studying 45 multinational banks from 18 home countries implanted across 46 countries over the 1991-2004 period, De Haas and Lelyveld (2010) show that parent banks manage the lending growth of their subsidiaries through an internal capital market, meaning that subsidiaries and parent banks are financially linked. Dekle and Lee (2015) confirm that such internal capital market influences cross-border credit.

Concerning the empirical works in developed countries, Behr, Foos and Norden (2017) find that German banks with a public mandate are 25 percent less procyclical than other local banks because of differences in business objectives. Studying 12 Western European economies, Ferri, Kalmi and Kerola (2014) find that stakeholder banks' lending is less cyclical than shareholder banks' lending, confirming the idea that credit growth depends on banks' business objectives. Meriläinen (2016) shows that credit growth decreased in 18 Western European countries as a result of the financial crisis, but stakeholder banks reduced

the negative impact of the crisis. Cooperative and public saving banks would stabilize Western European financial systems. Sapienza (2004) shows that Italian public banks' credit growth is linked to the electoral agenda, highlighting again the political objective state-owned banks may pursue.

Considering the empirical studies in developing and transition countries, Glen and Mondragon-Vélez (2011) study 22 developing economies over the 1996-2008 period and find that bank loan portfolio performance, measured with loan loss provisions, is driven by GDP growth. Ibrahim (2016) shows that Malaysian banks are procyclical and that Islamic banks are not more procyclical than their conventional counterparts and can even be countercyclical. Regarding the impact of the crisis, Fungacova, Herrala and Weill (2013) show that Russian banks' lending decreased during the financial crisis. Foreign-owned banks' credit growth decreased more and state-owned banks' lending decreased less relative to domestic private banks. Studying Eastern European and Latin American banks over the 2004-2009 period, Cull and Martinez Peria (2013) find different results between both geographic areas. In Eastern Europe, foreign-owned banks reduced their credit supply more than domestic private banks while state-owned banks did not adopt a countercyclical behavior. In Latin America, however, state-owned banks were less procyclical than the other banks and less robust differences were found between foreign and domestic banks during the crisis. Such findings highlight the fact that the influence of bank ownership on lending is not homogenous across developing countries. Coleman and Feler (2015) find that Brazilian state-owned banks adopted a countercyclical behavior during a recession but such lending pattern was politically oriented and raised allocation inefficiency issues. Analyzing the behavior of foreign banks during financial crises in eight emerging European economies over the 2004-2010 period, Bonin and Louie (2017) separate foreign banks into two categories: "the Big 6 banks" – referring to subsidiaries of the Big 6 European multinational banks – versus the other foreign banks. They find that the non-Big 6 banks acted pro-cyclically and decreased their lending tremendously during the financial crisis. The Big 6 banks, however, staid committed to the region; their credit growth did not differ from that of domestic banks, supporting according the authors the idea that multinational banks consider their host countries as "second home markets".

The third strand of literature concerns the sensitivity of foreign bank lending to home country situation. Iwanicz-Drozdowska and Witkowski (2016) study the credit growth of foreign-owned banks in Central and Eastern European countries during the 2000-2014 period, and find that both the parent bank situation and the home country macroeconomic context

influence a subsidiary lending behavior. Such influence is amplified in the crisis and post-crisis periods. Focusing also on Central and Eastern European countries for the 1994-2010 period, Allen et al. (2017) show that the type of crisis – namely, host, home, global and simultaneous crisis – shapes the impact of ownership structure on a bank’s lending behavior. Finally, Dekle and Lee (2015) show that the level of sovereign debt in the country where a foreign bank is headquartered influences its lending behavior.

The final strand of literature we want to briefly describe deals with African banking systems. Studies investigating these systems remain scarce. Akinboade and Makina (2010) study the relation between bank lending and the business cycle in South Africa during the 1980-2005 period and find that South African banks’ credit growth is procyclical. Ftiti, Kablan and Guesmi (2016) realize a study in Burkina Faso, Côte d’Ivoire and Niger on the period 1980-2013 and find a robust relationship between credit to the private sector and commodities on the long term, suggesting that lending is sensitive to commodity shocks. Dwumfour (2017) analyzes banking stability in 32 Sub-Saharan African countries from 2000 to 2014. He shows that an important presence of foreign-owned banks weakens stability in normal times but foreign-owned banks would help stabilizing African banking sectors during crises periods. Allen and Giovannetti (2011) study the transmission channels of the global financial crisis to 46 Sub-Saharan African countries and find that trade is the main direct channel followed by intra-African remittances. Concerning the financial sector, they find that banking sectors dominated by foreign banks suffered more (highlighting Mozambique, Swaziland and Madagascar) and that the most integrated financial markets – South Africa, Kenya, Ghana and Nigeria – endured a direct impact and propagated the adverse spill-overs to neighboring countries.

2.2 Hypotheses:

We now derive hypotheses from the literature.

We first focus on the cyclicity of foreign banks relative to domestic banks.

There are two arguments from the literature supporting a greater cyclicity of foreign banks. First, these banks resort more on hard information and less on relationship lending. Empirical works tend to show that banks employing soft information are less procyclical (Ferri, Kalmi and Kerola, 2014; Meriläinen, 2016). Second, foreign banks would reduce lending more than domestic banks during economic troubled times because of a “lack of loyalty” (Fungacova, Herrala and Weill, 2013).

Hypothesis 1a: Foreign banks' lending is more cyclical than domestic privately-owned banks' lending.

However, three arguments are in favor of the opposing view. First, foreign banks can benefit from parental support. In times of economic difficulties in the host country, the subsidiary can rely on the parent bank to give financial support that allows the foreign bank to keep its activities normally. Moreover, foreign banks are dependent on the internal capital market, and internal capital market might be little or even not sensitive to the host macroeconomic conditions. Second, well-established foreign banks may consider the host country as a “second home market” (Bonin and Louie, 2017). Because of the importance they play in the host market, such banks have incentives to stay committed during financial turmoil. Third, following Althammer and Haselmann (2011), foreign banks would be less affected than domestic banks by economic downturns since they resort more to hard information. In opposition, soft information more utilized by domestic banks would become less reliable during troubled times.

Hypothesis 1b: Foreign banks' lending is less cyclical than domestic privately-owned banks' lending.

We turn to the comparison between PABs and other foreign banks. As shown by Bonin and Louie (2017), foreign banks can differ in terms of lending behavior. PABs, foreign banks from developed countries and foreign banks from developing countries can therefore adopt a different lending pattern. PABs expanded their activities aggressively and recently (Beck et al., 2014). Their main development started in the mid-2000s, whereas foreign banks from the developed countries are established for a longer time. Such rapid and relatively new expansion could lead to less loyal banks and thus more pro-cyclical behaviors.

In addition, parent banks from developed countries can have a larger internal capital market than those from African countries, leading to lower sensitivity of foreign banks from developed countries to host country economic conditions.

Hypothesis 2a: Pan-African banks are more procyclical than other foreign banks.

However, according to Beck et al. (2014), PABs resort to local labor, local IT functions and local management functions, leading to an “indigenization process”. Thanks to such process, PABs can build more relationship lending than the other foreign banks. Moreover, according to Nguyen, Perera and Skully (2016), PABs have a different business model as they focus more on traditional intermediation activities and less on revenue diversification in comparison to other foreign banks in Africa. Such different business model may lead to the

use of more soft information. Relationship lending and the use of soft information lead to less procyclical behaviors (Ferri, Kalmi and Kerola, 2014; Meriläinen, 2016).

Hypothesis 2b: Pan-African banks are less procyclical than other foreign banks.

Former literature on cyclicalities of state-owned banks helps us deriving hypotheses for state-owned banks relative to domestic private banks. State-owned banks have different objectives leading them to support the economy during economic turmoil through lending boost (Bertay, Demirgüç-Kunt and Huizinga; 2015; Behr, Foos and Norden, 2017). In addition, state-owned banks' lending behavior can be influenced by political motivations to preserve social stability in particular during troubled times (Sapienza 2004; Dinç, 2005). We thus expect the government involvement in banks to lead to a less procyclical behavior than domestic private banks.

Hypothesis 3: State-owned banks are less procyclical than domestic private banks.

Finally, we consider the sensitivity of lending by foreign banks to the business cycle in their home country. We expect that lending by foreign banks is positively influenced by home-country economic conditions for two reasons. First, the internal capital market influences the lending behavior (Dekle and Lee, 2015). We thus expect foreign banks' credit behavior to be sensitive to home GDP per capita growth as the parent bank's situation can spread through the internal capital market. The internal capital market allows parent banks to expand financial support in times of home economic booms and to shorten it during financial downturns. Second, economic situation in the home country of the foreign bank can influence decisions at the banking group level and can therefore contribute to affect the lending policy of the foreign bank in the host country.

Hypothesis 4: Foreign banks' lending in Africa is sensitive to home-country business cycle.

3. Data and methodology

3.1 Data

Our analysis is based on an unbalanced panel of 230 commercial banks covering 38 African countries for the period going from 2002 to 2015. Unconsolidated accounting level data are from Bureau van Dijk's Bankscope database and macroeconomic data are from World Development Indicators database from the World Bank. We built a comprehensive database indicating the ownership structure of each bank for every year. Ownership

information was collected from Bankscope database and from websites and annual reports of banks and central banks.

A bank is considered as foreign if a foreign organization is the first shareholder or if the majority of the shares is controlled by foreign companies. The same definition applies for the other ownership types. We distinguish foreign banks between those owned by African investors, by investors from developed countries, and by investors from other developing countries.³

Five ownership types coexist in our sample, corresponding to five dummies: *Pan African*, *Foreign Developed*, *Foreign Developing*, *Domestic Private*, and *State-Owned*. If there is a merger or acquisition in year t , we include it from year $t+1$ onwards in our database. Our dependent variable is loan growth, defined as the change of bank i 's total net loans in real US dollars from the year $(t-1)$ to the year t as follows:

$$\frac{\text{Total Loans } (t)_i - \text{Total loans } (t - 1)_i}{\text{Total loans } (t - 1)_i}$$

We winsorize loan growth at the 5% and 95% percentile in order to remove the outliers in line with Behr, Foos and Norden (2017)⁴. We keep only banks for which we have three-year observations available.

The explanatory variable of interest is the host GDP per capita growth rate and is an indicator of the business cycle. We test the alternative use of the GDP growth rate as a robustness check. In the additional estimations on foreign banks, we consider home GDP per capita growth rate as the main explanatory variable to test its influence on the lending behavior of foreign banks in the host country.

We include three bank-level control variables in line with former literature (Ferri, Kalmi and Kerola, 2014). The first is *Bank size* defined as the log of total assets. Its expected sign is ambiguous. On the one hand, large banks can be in a better position to face economic downturns in the host country thanks to a greater diversification. On the other hand, small banks can be less hampered in times of financial turmoil because they resort more to relationship lending (Brei and Schclarek, 2015). The second is *Bank soundness*, measured by the ratio of equity to total assets, while the third is *Liquidity* defined as the ratio of liquid assets to total assets. Controlling for liquidity is even more important since banks in Africa hold a large amount of liquidity (Nketcha, Nana and Samson, 2013). The impact of both latter variables on loan growth is ambiguous. On the one hand, banks that are more capitalized and

³ For the classification of the countries, see Appendix 2.

⁴ We also realize the estimations by dropping the 5% and 95% percentiles in order to remove the outliers. Results are consistent and can be obtained on request.

that hold higher amounts of liquidity may have more funds available for lending, especially in times of crisis. On the other hand, undercapitalized and less liquid banks may be subject to moral hazard and aggressive lending behaviors (Allen et al., 2017).

We control for macroeconomic conditions with two country-level variables: *Inflation* and *GDP per capita*. Inflation and GDP per capita have been log-transformed to curtail the effects of extreme values. Finally, following Allen et al. (2017), we create a dummy variable *Global Crisis* that equals one for the years 2008, 2009 and 2010 to control for the impact of the crisis on banks' lending behavior in our third robustness check.

Table 1 provides descriptive statistics for our sample, while Table 2 displays a comparison of the balance sheet variables by ownership type.

3.2 Methodology

Following empirical studies on banks' cyclicalities (Bertay, Demirgüç-Kunt and Huizinga, 2015; Ibrahim, 2016; Behr, Foos and Norden, 2017; Allen, Jackowicz, Kowalewski and Kozłowski, 2017), we estimate the following equation with data on bank *i* in country *j* in year *t*:

$$\begin{aligned}
Credit_{Growth_{i,j,t}} &= \alpha + \sigma Credit_{Growth_{i,j,t-1}} + \beta_1 HostGDPpercapita_{Growth_{j,t}} + \beta_2 PAB_{i,j,t} \\
&+ \beta_3 (PAB * HostGDPpercapita_{Growth})_{i,j,t} + \beta_4 Developed_{i,j,t} \\
&+ \beta_5 (Developed * HostGDPpercapita_{Growth})_{i,j,t} + \beta_6 Developing_{i,j,t} \\
&+ \beta_7 (Developing * HostGDPpercapita_{Growth})_{i,j,t} + \beta_8 StateOwned_{i,j,t} \\
&+ \beta_9 (StateOwned * HostGDPpercapita_{Growth})_{i,j,t} + \delta B_{i,j,t-1} + \gamma W_{j,t} \\
&+ YEARdummy_t + COUNTRYdummy_j + \varepsilon_{i,j,t}
\end{aligned}$$

The loan growth rate is regressed on the real GDP per capita growth rate in order to estimate procyclicality: a positive and significant coefficient β_1 is associated with procyclicality of African banks.

To examine the differences in cyclicity across ownership types, we add interaction terms between the real GDP per capita growth rate and ownership dummy variables. For example, we put the dummy variable $PAB_{i,j,t}$, which is equal to one if the bank is Pan-African and zero otherwise, and we interact this dummy with the GDP per capita growth rate ($PAB \times HostGDPpercapita_{Growth}$) $_{i,j,t}$. We do it for each ownership type by considering domestic private banks as the omitted category. Therefore, the coefficients of the interaction terms

provide information on the differences in cyclicity between domestic private banks and each other ownership type.

The one-period-lagged dependent variable is included to capture potential dynamics in real lending. In order to address endogeneity issues and fixed effects problems, we employ a dynamic System-GMM panel estimator (Arellano and Bover, 1995; Blundell and Bond, 1998) using lagged first differences as instruments. We use two-step GMM estimation and the Windmeijer (2005) correction to minimize the downward bias in standard errors⁵. We evaluate the appropriateness of our GMM estimations and of our instruments with the Hansen test of over-identifying restrictions and the Arellano-Bond tests for error autocorrelation (Arellano and Bond, 1991). For all our results discussed later, the Hansen and the Arellano-Bond AR(2) tests confirm the appropriateness of our instruments and detect no second-order serial correlation.

The vector $B_{i,j,t-1}$ consists of bank-level control variables, all lagged one year to alleviate a possible endogeneity problem. We also include macroeconomic control variables in the vector $W_{j,t}$. In some specifications, we include year dummies to capture year specific economic conditions ($YEARdummy_t$) and country dummies ($COUNTRYdummy_j$).

Our second range of estimations aims at determining whether foreign banks' lending behavior is sensitive to the home country macroeconomic situation. To study this issue, we realize our empirical work only on the 131 foreign banks from our sample. We use the following regression:

$$\begin{aligned}
Credit_{Growth_{i,j,t}} &= \alpha + \sigma Credit_{Growth_{i,j,t-1}} + \beta_1 HomeGDPpercapita_{Growth_{j,t}} \\
&+ \beta_2 HostGDPpercapita_{Growth_{i,j,t}} + \beta_3 Developed_{i,j,t} \\
&+ \beta_4 (Developed * HomeGDPpercapita_{Growth})_{i,j,t} + \beta_5 Developing_{i,j,t} \\
&+ \beta_6 (Developing * HomeGDPpercapita_{Growth})_{i,j,t} + \delta B_{i,j,t-1} + \gamma W_{j,t} \\
&+ YEARdummy_t + COUNTRYdummy_j + \varepsilon_{i,j,t}
\end{aligned}$$

$HomeGDPpercapita_{Growth_{j,t}}$ is the GDP per capita growth rate in the country where the parent bank is headquartered. We interact this variable with dummy variables for foreign banks from developed countries and from developing countries, meaning that the omitted category is Pan-African banks. The coefficient β_1 measures the lending' cyclicity of foreign banks in Africa relative to their home country situation. β_4 and β_6 measure whether a

⁵ The one-step GMM estimation has also been realized and gives the same results but is not in the paper for consistency.

different behavior exists between PABs and other foreign banks in terms of sensitivity to the home country economic situation.

4. Results

4.1 Baseline results

Table 3 shows the baseline results. In odd-numbered columns, we include all the ownership dummies and their interaction terms with *Host GDP per capita growth*, domestic private banks being the omitted category. In even-numbered columns, we only include *Pan-African* and *PAB x Host GDP per capita growth*, in order to compare PABs to the rest of the banks in our sample. The results for the AR(2) and Hansen tests confirm the validity of our instrumentation for all the regressions.

We provide alternative specifications to test the sensitivity of the results. Columns (1) and (2) display estimations without control variables, country fixed effects, and year fixed effects. Columns (3) and (4) add control variables. Columns (5) and (6) add control variables and year fixed effects. Columns (7) and (8) add control variables and country fixed effects. Columns (9) and (10) include control variables, country fixed effects, and year fixed effects. Several conclusions emerge.

First, we find evidence of procyclicality of lending for African banks. The coefficient of *Host GDP per capita growth* is significantly positive in all estimations, showing that loan growth evolves with the business cycle.

Second, we show that Pan-African banks are less cyclical than domestic private banks. Namely the interaction term *Pan-African x Host GDP per capita growth* is significantly negative in nine of the ten estimations. We therefore provide support for the hypothesis 2b.

Third, we observe no difference in cyclicity for foreign banks from developed countries, foreign banks from developing countries, and state-owned banks with domestic private banks. Interaction terms of dummy variables *Developed*, *Developing*, and *State-Owned*, with *Host GDP per capita growth* are not significant (with one exception for *Developed* and for *State-Owned*) in the estimations.

Hence, we do not find evidence supporting neither the hypothesis 1a, nor the hypothesis 1b. There is no systematic difference in cyclicity between foreign banks and domestic private banks.

The finding of no different lending behavior between state-owned banks and domestic private banks contributes to reject our hypothesis 3: state-owned banks do not adopt a different lending behavior than domestic private banks in Africa. It differs from the findings of Micco and Panizza (2006), Bertay, Demirgüç-Kunt and Huizinga (2015) and Behr, Foos and Norden (2017) who find that state-owned banks are less procyclical. It suggests that the situation would be different on this question in Africa.

Both latter findings therefore support the view that PABs are the least cyclical banks among the different bank ownership types of African banks. How can we explain this conclusion?

First, the fact that PABs are less cyclical than other foreign banks can result from their “indigenization process” as developed by Beck et al. (2014) with a greater use of local labor, local IT functions and local management functions. This process helps PABs using more soft information which can favor lower procyclicality.

Second, the fact that PABs are also less cyclical than domestic banks, private and state-owned, can be explained by the importance of PABs in several African countries. As explained before, the market share of PABs can be very high in many cases. This situation leads the parent bank to consider the host country as a “second home market” (Bonin and Louie, 2017). As a consequence, these banks have incentives to be “loyal” to the host country during recessions. In addition, PABs can benefit from parental support like all foreign banks and as such can use an internal capital market which makes them less sensitive to host country business cycle.

These latter arguments explain why we do not observe greater cyclicity for foreign banks in general in Africa. But PABs combine these reasons with the “indigenization process” allowing them to be the least cyclical banks.

The conclusion that PABs are the least cyclical banks is of utmost interest in terms of implications. It suggests that the expansion of these banks can contribute to reduce cyclicity of lending behavior and can therefore diminish the amplification of the business cycle.

This finding does not mean that Pan-African banks are not procyclical. In all estimations, the overall effect of *Host GDP per capita growth* on loan growth of Pan-African banks is positive. For instance, if we consider the column (1), the global effect of *Host GDP per capita growth* is the sum of the coefficient of this variable and the coefficient of the interaction term between this variable and PAB which is equal to $3.540 - 2.454 = 1.086$.

The analysis of control variables shows a negative and significant coefficient for bank size in all estimations, suggesting that smaller banks have higher credit growth. This result is

in line with the findings of Bertay, Demirgüç-Kunt and Huizinga (2015), Brei and Schclarek (2013) and Ibrahim (2016) for other geographic samples. It may be explained by the fact that smaller banks succeed in expanding lending thanks to relationship lending and the higher use of soft information. Liquidity is significantly positive in all regressions, suggesting that banks holding more liquid assets have a higher credit growth in Africa. This finding is at odds with Allen et al. (2017) in Central and Eastern Europe and with Ferri, Kalmi and Kerola (2014) in the Euro area, who find that more liquid banks lend less. Finally, bank soundness is not significant in all estimations. It accords with the findings of Bertay, Demirgüç-Kunt and Huizinga (2015) and Ibrahim (2016) who do not observe any link between this variable and credit growth.

4.2 Sensitivity of foreign banks to home country growth

We test now the hypothesis that home country economic growth exerts an influence on lending behavior of foreign banks. We therefore restrict our analysis to the sample of foreign banks. *Developed* and *Developing* dummy variables are interacted with *Home GDP per capita growth*, with PABs being the omitted category.

Table 4 displays the estimations. We test again several specifications to check the sensitivity of our results. In column (1), we adopt the specification without control variables, year dummy variables, and country dummy variables. In column (2), we add control variables. In column (3), we include control variables and year dummy variables. In column (4), we include control variables and country dummy variables. In column (5), we include control variables, year dummy variables, and country dummy variables. The Hansen tests and the AR(2) tests validate our empirical model in all specifications.

We find some evidence that home country economic growth influences the lending behavior of foreign banks in host countries. *Home GDP per capita growth* is positive in all five estimations, and significant in two of them. We thus obtain some limited support for the hypothesis 4 according to which foreign bank's lending is sensitive to home country business cycle in Africa. It accords with the findings of Iwanicz-Drozdowska and Witkowski (2016) that the home country macroeconomic context influences subsidiaries' lending behavior.

Furthermore, we observe no difference in the sensitivity to home country growth between the three types of foreign banks: *Developed* \times *Home GDP per capita growth* and *Developing* \times *Home GDP per capita growth* are not significant in all estimations. Therefore Pan-African banks do not differ from foreign banks from developed countries and from developing countries in this aspect.

For the rest, we still observe a significantly positive coefficient for *Host GDP per capita growth* in all estimations, confirming the procyclical behavior of foreign banks in Africa. The comparison of the results for *Home GDP per capita growth* and *Host GDP per capita growth* shows that foreign banks are more sensitive to growth in the host country than in the home country.

To sum it up, these estimations show that lending behavior of all foreign banks are sensitive to home country economic conditions and may therefore contribute to transmit external shocks to the host country. However, this potential drawback of foreign bank entry should not be overestimated since this sensitivity is not significant in all estimations and since it is weaker than the sensitivity of lending behavior of foreign banks to host country growth.

4.3 Robustness checks

We perform three robustness checks. In each case, we redo first the baseline estimations in a first table, then the sensitivity of foreign banks to home country business cycle in a second table.

First, we check whether our main findings are still observed when replacing GDP per capita growth rate with GDP growth rate as a measure of the business cycle. Tables 5 and 6 display the estimations. They confirm our main results. First, banks in Africa are procyclical since *Host GDP growth* is significantly positive in all estimations in Table 5. Second, PABs are less procyclical than domestic private banks since $PAB \times Host\ GDP\ growth$ is significant and negative in most estimations in Table 5. Third, foreign banks are sensitive to the home macroeconomic situation since *Home GDP growth* is significantly positive in three regressions in table 6. Finally, no difference is observed in the sensitivity of foreign banks to home GDP growth since $Developed \times Home\ GDP\ growth$ and $Developing \times Home\ GDP\ growth$ are not significant.

Second, we add three control variables to test the sensitivity of our findings to the set of control variables: loans to other earning assets, deposits growth and ROAA. Tables 7 and 8 report the estimations. Our main results are confirmed. In table 7, *GDP per capita growth* is significantly positive in the 4 estimations and $PAB \times GDP\ per\ capita\ growth$ is significantly negative in 3 estimations, confirming that African banks are procyclical but PABs are less procyclical. In table 8, *Home GDP per capita growth* and *Host GDP per capita growth* are significantly positive in all regressions, confirming that foreign banks are sensitive to both home and host macroeconomic situations. Finally, no difference is observed in the sensitivity of foreign banks to home GDP per capita growth.

Third, we check whether the global financial crisis influences the results. To this end, we add the dummy variable *Global Crisis*, which is equal to one for the years 2008, 2009 and 2010 following Allen et al. (2017) and the interaction terms between each ownership type and *Global Crisis* to capture differences in responses to the crisis following Bertay, Demirgüç-Kunt and Huizinga (2015). Table 9 reports the estimations for the cyclicity of lending. We observe that *Global crisis*, *Developing × Global crisis*, *PAB × Global crisis*, and *State-owned × Global crisis* are not significant in all estimations. Only the negative coefficient of *Developed × Global Crisis* is significant in all estimations. Therefore, these results mean that the GFC has no impact on lending for all types of banks with the exception of foreign banks from developed countries which reduced their lending during that period.

The finding for foreign banks from developed countries is in line with what has been found for foreign banks in other papers: Fungacova, Herrala and Weill (2013) in Russia and Cull and Martinez Peria (2013) in Eastern Europe also find that foreign banks' credit growth decreased more during the GFC relative to domestic private banks. The absence of different lending behavior for state-owned banks during the GFC is in line with Dekle and Lee (2015) in their worldwide study, but differs from Brei and Schclarek (2013), Fungacova, Herrala and Weill (2013) and Coleman and Feller (2015) who find a countercyclical behavior.

The fact that state-owned banks did not increase lending during the crisis to support the economic activity may come from the fact that they did not have to compensate any credit downturn in Africa since only foreign banks from developed countries reduce their lending. In addition, state-owned banks play a minor role in African countries in most cases, which is a major difference with other countries like for instance Russia. As such, their influence to support the economy can make them not relevant for the authorities.

Table 10 displays the estimations for the sensitivity of foreign banks to home country business cycle. We find that *Global crisis*, *Developing × Global crisis*, and *Developed × Global crisis* are not significant in most estimations. For the rest, we observe the same findings than in the main estimations with a significantly positive coefficient for *Home GDP per capita growth* in two estimations and for *Host GDP per capita growth* in all estimations.

In a nutshell, these estimations tend to show no impact of the global financial crisis on our main findings.

5. Conclusion

The expansion of foreign banks in Africa raises questions about its economic consequences for the host countries. In this paper we investigate how bank ownership influences the cyclicity of lending in Africa. Cyclicity of lending is a major issue since greater cyclicity of banks contributes to amplify economic booms and busts and is therefore detrimental for the economy.

Our findings can be summarized as follows. First, we find evidence of procyclicality of lending for African banks. Second, we observe differences in cyclicity across ownership types of banks: Pan-African banks are the least procyclical banks. Other foreign banks do not differ in cyclicity from domestic private banks and state-owned banks. Third, we find limited evidence that all types of foreign banks are influenced by GDP growth of their home country.

Evidence that African banks are procyclical and that foreign banks are sensitive to home country economic conditions is in line with what has been observed in former literature in other regions of the world. However, the key findings on the link between bank ownership and cyclicity differ from what studies tend to show with greater cyclicity of foreign banks (e.g., Bertay, Demirgüç-Kunt and Huizinga, 2013).

We explain the fact that foreign banks are not more cyclical than domestic banks in Africa by the fact that parent banks consider the host country as a “second home market” (Bonin and Louie, 2017), notably because of the strong involvement in the host country in many cases, and by their access to an internal capital market.

Lower cyclicity of PABs can then be explained by the fact that these banks combine characteristics of domestic banks and of foreign banks. In addition to the characteristics of foreign banks just mentioned, they resort to local resources through an “indigenization process” and as such rely more on soft information in their lending behavior like domestic banks.

These findings have several policy implications. They support the view that the expansion of PABs contributes to reduce cyclicity of lending. As a consequence, favoring the entry of PABs is beneficial for stabilizing the economy. Moreover, they show that foreign bank entry as a whole does not lead to greater cyclicity for African countries. However, foreign bank entry can contribute to enhance the transmission of external shocks since these banks are sensitive to the business cycle of the home country.

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Table 1.
Descriptive statistics

Variable	Obs	Mean	Std dev	Min	Max
Credit growth (%)	1907	19.263	27.149	-16.469	90.041
Equity	2137	328,513	837,653	-173,013	8,307,651
Total assets	2137	3,888,411	12,200,000	10,227	12,700,000
Loans	2137	2,131,504	7,875,480	1,484	74,440,403
Liquid assets	2137	792,639	2,182,918	2,149	26,637,083
Deposits and short-term funding	2137	3,086,167	9,544,633	5,246	92,900,000
ROAA (%)	2136	1.711	2.195	-26.533	16.031
Lagged size	1907	13.784	1.446	9.233	18.658
Lagged bank soundness (%)	1907	10.691	5.614	-15.555	83.210
Lagged liquidity (%)	1907	28.034	16.760	1.620	91.371
Lagged deposits growth (%)	1677	23.692	62.375	-79.209	1271.922
Lagged loans to other earning assets (%)	1907	213.156	177.548	33.476	715.387
Lagged ROAA (%)	1906	1.716	2.234	-26.533	16.031
State-owned bank	2137	0.104	0.306	0	1
Domestic private bank	2137	0.328	0.470	0	1
Foreign developed bank	2137	0.210	0.407	0	1
Foreign developing bank	2137	0.064	0.245	0	1
Pan-African bank	2137	0.293	0.455	0	1
Host GDP per capita growth (%)	2135	2.699	3.252	-15.248	33.576
Host GDP growth (%)	2135	5.003	3.516	-12.674	37.999
Host GDP per capita	2135	2,597.403	2,420.168	111.531	23,347.66
Host Inflation (%)	2141	7.830	9.221	-3.100	108.897
Home GDP per capita growth (%)	1198	1.164	3.339	-62.214	11.186
Home GDP growth (%)	1212	2.814	3.513	-62.076	13.016
Global Crisis	2137	0.237	0.425	0	1

This table indicates the mean values, standard deviations, minimum and maximum values for the variables used in our empirical work for the full sample. All statistics are computed for observations over the period 2002-2015.

Table 2.
Descriptive statistics by ownership type

Variable	Pan- African	Foreign developed	Foreign developing	Domestic private	Domestic public
Credit growth (%)	19.913 (28.503)	15.699 (25.283)	16.106 (22.069)	21.329 (27.912)	19.992 (26.482)
Lagged size	13.194 (1.033)	13.677 (1.030)	13.816 (1.071)	14.097 (1.807)	14.708 (1.359)
Lagged bank soundness	9.918 (5.927)	11.210 (4.834)	12.896 (7.432)	11.293 (5.343)	8.526 (4.757)
Lagged liquidity (%)	29.181 (16.918)	30.575 (17.428)	27.497 (15.572)	24.471 (15.041)	29.133 (19.377)
Lagged loans to other earning assets (%)	193.970 (141.446)	209.119 (172.763)	191.476 (206.579)	233.203 (184.663)	226.760 (226.743)
Lagged deposits growth (%)	25.822 (59.318)	18.366 (37.838)	30.907 (130.267)	26.439 (66.844)	15.343 (24.464)
Lagged ROAA (%)	1.627 (2.698)	2.322 (1.865)	1.377 (1.612)	1.712 (2.188)	0.958 (1.470)

Mean values are indicated for each ownership type with standard deviations in parentheses below.

Table 3
Cyclicity of lending: baseline estimations

	Credit growth (1)	Credit growth (2)	Credit growth (3)	Credit growth (4)	Credit growth (5)	Credit growth (6)	Credit growth (7)	Credit growth (8)	Credit growth (9)	Credit growth (10)
Lagged credit growth	0.173*** (0.000)	0.170*** (0.000)	0.100*** (0.009)	0.107*** (0.006)	0.079** (0.035)	0.085** (0.026)	0.093*** (0.008)	0.095*** (0.007)	0.075** (0.033)	0.079** (0.024)
Host GDP per capita growth	3.540*** (0.000)	2.549*** (0.000)	2.630*** (0.001)	2.017*** (0.000)	2.444*** (0.002)	1.851*** (0.000)	2.476*** (0.001)	1.979*** (0.000)	2.322*** (0.001)	1.905*** (0.000)
Pan-African	0.071** (0.016)	0.055*** (0.007)	-0.020 (0.552)	-0.004 (0.853)	-0.022 (0.512)	-0.003 (0.883)	-0.030 (0.319)	0.001 (0.978)	-0.027 (0.378)	0.005 (0.837)
PAB × Host GDP per capita growth	-2.454*** (0.004)	-1.444** (0.013)	-1.691** (0.045)	-1.044* (0.052)	-1.461* (0.087)	-0.854 (0.121)	-1.519* (0.059)	-0.978* (0.074)	-1.419* (0.087)	-0.969* (0.088)
Foreign developed	0.008 (0.819)		-0.060 (0.100)		-0.068* (0.066)		-0.065* (0.073)		-0.076** (0.037)	
Developed × Host GDP per capita growth	-1.919* (0.100)		-1.336 (0.237)		-1.198 (0.293)		-0.988 (0.326)		-0.857 (0.407)	
Foreign developing	0.050 (0.121)		-0.019 (0.645)		-0.018 (0.686)		-0.075* (0.074)		-0.066 (0.104)	
Developing × Host GDP per capita growth	-1.822 (0.268)		-1.414 (0.340)		-1.450 (0.337)		-0.391 (0.790)		-0.474 (0.739)	
State-owned	0.059* (0.091)		0.072** (0.049)		0.060 (0.119)		0.055 (0.150)		0.045 (0.226)	
State-owned × Host GDP per capita growth	-2.094** (0.040)		-1.540 (0.123)		-1.446 (0.143)		-1.012 (0.296)		-0.980 (0.309)	
Lagged Size			-0.064*** (0.000)	-0.057*** (0.000)	-0.058*** (0.000)	-0.053*** (0.000)	-0.080*** (0.000)	-0.078*** (0.000)	-0.075*** (0.000)	-0.072*** (0.000)
Lagged Bank Soundness			0.165	0.157	0.244	0.230	0.091	-0.046	0.108	0.013

			(0.329)	(0.374)	(0.159)	(0.198)	(0.624)	(0.816)	(0.522)	(0.941)
Lagged Liquidity			0.336***	0.329***	0.315***	0.306***	0.394***	0.382***	0.383***	0.363***
			(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
GDP per capita			0.023**	0.019**	0.024**	0.020**	0.039	0.033	0.173***	0.172***
			(0.016)	(0.037)	(0.012)	(0.027)	(0.314)	(0.363)	(0.000)	(0.000)
Inflation			-0.103	-0.040	-0.121	-0.057	-0.087	-0.101	-0.121	-0.136
			(0.504)	(0.791)	(0.433)	(0.709)	(0.691)	(0.651)	(0.587)	(0.542)
Year fixed effects	No	No	No	No	Yes	Yes	No	No	Yes	Yes
Country fixed effects	No	No	No	No	No	No	Yes	Yes	Yes	Yes
Constant	0.045*	0.061***	0.727***	0.657***	0.719***	0.661***	0.747***	0.803***	-0.008	-0.021
	(0.070)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.004)	(0.002)	(0.979)	(0.949)
Number of observations	1675	1675	1668	1668	1668	1668	1668	1668	1668	1668
Number of banks	230	230	230	230	230	230	230	230	230	230
Number of instruments	186	180	191	185	192	186	228	222	229	223
Second order AR tests	0.143	0.120	0.404	0.321	0.545	0.456	0.412	0.370	0.542	0.489
Hansen test	0.204	0.199	0.217	0.235	0.199	0.237	0.319	0.383	0.409	0.428

The table shows the results of two-step system GMM panel regressions (Arellano and Bover, 1995; Blundell and Bond, 1998) with Windmeijer (2005) correction. The dependent variable is *Credit growth*, which is the growth rate of net loans in real US dollars. We regress *Credit growth* on bank ownership and bank-level variables in the period 2002-2015. *Host GDP per capita growth* is the annual percentage growth rate of GDP per capita in the African host country. *Pan-African*, *Foreign developed*, *Foreign developing* and *State-owned* are dummies respectively equal to 1 if the bank is a Pan-Africa bank, a foreign bank from a developed country, a foreign bank from a developing country, or a domestic state-owned bank. The omitted category are domestic privately-owned banks. Each ownership category is interacted with *Host GDP per capita growth* in order to capture the different lending cyclicality relative to domestic private banks' lending cyclicality. All the bank-level and macroeconomic control variables are defined in Appendix 3. Year and country dummies are incorporated in some specifications. The p-values for robust standard errors are given in parentheses and ***, **, * correspond to the 1%, 5%, and 10% levels of significance, respectively.

Table 4
Sensitivity to home country business cycle

	Credit growth (1)	Credit growth (2)	Credit growth (3)	Credit growth (4)	Credit growth (5)
Lagged credit growth	0.142*** (0.005)	0.062 (0.219)	0.051 (0.292)	0.050 (0.257)	0.033 (0.456)
Home GDP per capita growth	0.674 (0.175)	0.731* (0.062)	0.728* (0.063)	0.578 (0.108)	0.548 (0.125)
Host GDP per capita growth	1.277*** (0.000)	0.959*** (0.005)	0.946*** (0.006)	1.071*** (0.003)	1.009*** (0.005)
Foreign developed	-0.046** (0.035)	-0.017 (0.489)	-0.026 (0.257)	-0.059 (0.323)	-0.084 (0.203)
Developed × Home GDP per capita growth	-0.179 (0.814)	-0.594 (0.363)	-0.608 (0.348)	-0.164 (0.801)	0.011 (0.986)
Foreign developing	-0.005 (0.830)	0.028 (0.446)	0.024 (0.535)	-0.101 (0.155)	-0.122* (0.096)
Developing × Home GDP per capita growth	-0.740 (0.210)	-1.047 (0.166)	-0.971 (0.205)	-0.653 (0.448)	-0.549 (0.537)
Lagged Size		-0.090*** (0.000)	-0.075*** (0.000)	-0.153*** (0.000)	-0.134*** (0.000)
Lagged Bank Soundness		0.305 (0.280)	0.351 (0.199)	-0.520 (0.311)	-0.439 (0.373)
Lagged Liquidity		0.322*** (0.000)	0.305*** (0.000)	0.512*** (0.000)	0.489*** (0.000)
GDP per capita		0.012 (0.350)	0.011 (0.398)	0.148* (0.073)	0.263*** (0.002)
Inflation		0.086 (0.668)	0.016 (0.935)	-0.428 (0.235)	-0.518 (0.158)

Year dummies	No	No	Yes	No	Yes
Country dummies	No	No	No	Yes	Yes
Constant	0.098*** (0.000)	1.119*** (0.000)	0.996*** (0.000)	0.983* (0.096)	-0.036 (0.963)
Number of observations	951	949	949	949	949
Number of banks	131	131	131	131	131
Number of instruments	84	89	90	122	123
Second order AR tests	0.175	0.546	0.633	0.502	0.601
Hansen test	0.271	0.120	0.145	0.341	0.414

The table shows the results of two-step system GMM panel regressions (Arellano and Bover, 1995; Blundell and Bond, 1998) with Windmeijer (2005) correction. The database is only made of foreign-owned banks. The dependent variable is *Credit growth*, which is the growth rate of net loans in real US dollars. We regress *Credit growth* on bank ownership and bank-level variables in the period 2002-2015. *Home GDP per capita growth* is the annual percentage growth rate of GDP per capita in the foreign banks' home country. *Host GDP per capita growth* is the annual percentage growth rate of GDP per capita in the African host country. *Foreign developed* and *Foreign developing* are dummies respectively equal to 1 if the bank is a foreign bank from a developed country and a foreign bank from a developing country. The omitted category are Pan-African banks. Each ownership category is interacted with *Home GDP per capita growth* in order to capture the different lending cyclicity relative to Pan-African banks' lending cyclicity. All the bank-level and macroeconomic control variables are defined in Appendix 3. Year and country dummies are incorporated in some specifications. The p-values for robust standard errors are given in parentheses and ***, **, * correspond to the 1%, 5%, and 10% levels of significance, respectively.

Table 5.**Cyclicality of lending: Robustness check with GDP growth**

	Credit growth (1)	Credit growth (2)	Credit growth (3)	Credit growth (4)	Credit growth (5)
Lagged credit growth	0.146*** (0.000)	0.088** (0.026)	0.067* (0.087)	0.077** (0.034)	0.056 (0.109)
Host GDP growth	3.413*** (0.000)	2.565*** (0.001)	2.429*** (0.002)	2.423*** (0.000)	2.262*** (0.000)
Pan-African	0.113*** (0.010)	0.007 (0.888)	0.004 (0.941)	-0.002 (0.954)	-0.004 (0.928)
PAB × Host GDP growth	-2.278*** (0.004)	-1.450* (0.073)	-1.248 (0.125)	-1.397* (0.050)	-1.308* (0.071)
Foreign developed	0.042 (0.457)	-0.031 (0.614)	-0.038 (0.516)	-0.048 (0.361)	-0.061 (0.244)
Developed × Host GDP growth	-1.875* (0.071)	-1.303 (0.232)	-1.193 (0.273)	-0.965 (0.313)	-0.787 (0.403)
Foreign developing	0.020 (0.748)	-0.049 (0.462)	-0.048 (0.473)	-0.122* (0.055)	-0.124* (0.059)
Developing × Host GDP growth	0.775 (0.679)	0.609 (0.713)	0.693 (0.675)	1.523 (0.346)	1.646 (0.332)
State-owned	0.086* (0.063)	0.096* (0.060)	0.086* (0.089)	0.057 (0.225)	0.044 (0.344)
State-owned × Host GDP growth	-1.715* (0.059)	-1.334 (0.161)	-1.284 (0.174)	-0.671 (0.452)	-0.602 (0.504)
Lagged Size		-0.063*** (0.000)	-0.056*** (0.000)	-0.077*** (0.000)	-0.077*** (0.000)
Lagged Bank Soundness		0.168 (0.325)	0.267 (0.127)	0.098 (0.583)	0.109 (0.533)
Lagged Liquidity		0.323*** (0.000)	0.298*** (0.000)	0.379*** (0.000)	0.359*** (0.000)
GDP per capita		0.031*** (0.002)	0.031*** (0.001)	0.037 (0.318)	0.176*** (0.000)
Inflation		-0.088 (0.574)	-0.108 (0.484)	-0.042 (0.847)	-0.088 (0.683)
Year dummies	No	No	Yes	No	Yes
Country dummies	No	No	No	Yes	Yes
Constant	-0.020 (0.611)	0.601*** (0.000)	0.598*** (0.000)	0.714*** (0.006)	-0.044 (0.894)
Number of observations	1675	1668	1668	1668	1668
Number of banks	230	230	230	230	230
Number of instruments	186	191	192	228	229
Second order AR test	0.136	0.360	0.510	0.402	0.549
Hansen test	0.177	0.143	0.141	0.295	0.397

The table shows the results of two-step system GMM panel regressions (Arellano and Bover, 1995; Blundell and Bond, 1998) with Windmeijer (2005) correction. The dependent variable is *Credit growth*, which is the growth rate of net loans in real US dollars. We regress *Credit growth* on bank ownership and bank-level variables in the period 2002-2015. *Host GDP growth* is the annual percentage growth rate of GDP in the African host country. *Pan-African*, *Foreign developed*, *Foreign developing* and *State-owned* are dummies respectively equal to 1 if the bank is a Pan-Africa bank, a foreign bank from a developed country, a foreign bank from a developing country, or a domestic state-owned bank. The omitted category are domestic privately-owned banks. Each ownership category is interacted with *Host GDP growth* in order to capture the different lending cyclicalities relative to domestic private banks' lending cyclicalities. All the bank-level and macroeconomic control variables are defined in Appendix 3. Year and country dummies are incorporated in some specifications. The p-values for robust standard errors are given in parentheses and ***, **, * correspond to the 1%, 5%, and 10% levels of significance, respectively.

Table 6**Sensitivity to home country business cycle: Robustness check with GDP growth**

	Credit growth (1)	Credit growth (2)	Credit growth (3)	Credit growth (4)	Credit growth (5)
Lagged credit growth	0.141*** (0.006)	0.064 (0.199)	0.050 (0.297)	0.052 (0.240)	0.037 (0.402)
Home GDP growth	0.706 (0.157)	0.674* (0.052)	0.681* (0.051)	0.554* (0.099)	0.532 (0.100)
Host GDP growth	1.233*** (0.000)	0.938*** (0.005)	0.945*** (0.006)	0.952*** (0.007)	0.863** (0.017)
Foreign developed	-0.037 (0.164)	-0.010 (0.699)	-0.021 (0.382)	-0.042 (0.431)	-0.047 (0.412)
Developed × Home GDP growth	-0.011 (0.987)	-0.431 (0.460)	-0.448 (0.439)	0.104 (0.875)	0.293 (0.664)
Foreign developing	0.020 (0.607)	0.081 (0.199)	0.078 (0.215)	-0.052 (0.553)	-0.055 (0.517)
Developing × Home GDP growth	-0.765 (0.413)	-1.573 (0.149)	-1.618 (0.134)	-1.136 (0.333)	-1.166 (0.301)
Lagged Size		-0.090*** (0.000)	-0.073*** (0.000)	-0.149*** (0.000)	-0.129*** (0.000)
Lagged Bank Soundness		0.302 (0.280)	0.346 (0.193)	-0.450 (0.338)	-0.355 (0.408)
Lagged Liquidity		0.321*** (0.000)	0.302*** (0.000)	0.489*** (0.000)	0.462*** (0.000)
GDP per capita		0.020 (0.131)	0.019 (0.144)	0.125 (0.113)	0.249*** (0.002)
Inflation		0.069 (0.726)	-0.016 (0.934)	-0.498 (0.192)	-0.530 (0.182)
Year dummies	No	No	Yes	No	Yes
Country dummies	No	No	No	Yes	Yes
Constant	0.056** (0.040)	1.024*** (0.000)	0.886*** (0.000)	1.217** (0.035)	0.145 (0.820)
Number of observations	963	961	961	961	961
Number of banks	132	132	132	132	132
Number of instruments	84	89	90	122	123
Second order AR tests	0.153	0.501	0.606	0.477	0.564
Hansen test	0.249	0.113	0.143	0.292	0.412

The table shows the results of two-step system GMM panel regressions (Arellano and Bover, 1995; Blundell and Bond, 1998) with Windmeijer (2005) correction. The database is only made of foreign-owned banks. The dependent variable is *Credit growth*, which is the growth rate of net loans in real US dollars. We regress *Credit growth* on bank ownership and bank-level variables in the period 2002-2015. *Home GDP growth* is the annual percentage growth rate of GDP in the foreign banks' home

country. *Host GDP growth* is the annual percentage growth rate of GDP in the African host country. *Foreign developed* and *Foreign developing* are dummies respectively equal to 1 if the bank is a foreign bank from a developed country and a foreign bank from a developing country. The omitted category are Pan-African banks. Each ownership category is interacted with *Home GDP growth* in order to capture the different lending cyclicalities relative to Pan-African banks' lending cyclicalities. All the bank-level and macroeconomic control variables are defined in Appendix 3. Year and country dummies are incorporated in some specifications. The p-values for robust standard errors are given in parentheses and ***, **, * correspond to the 1%, 5%, and 10% levels of significance, respectively.

Table 7

Cyclical of lending: Robustness check with additional bank-level control variables

	Credit growth (1)	Credit growth (2)	Credit growth (3)	Credit growth (4)
Lagged credit growth	0.107*** (0.007)	0.076* (0.052)	0.095*** (0.010)	0.079* (0.072)
Host GDP per capita growth	2.530*** (0.002)	2.221*** (0.007)	2.554*** (0.000)	2.346*** (0.002)
Pan-African	-0.033 (0.342)	-0.038 (0.278)	-0.033 (0.266)	-0.029 (0.354)
PAB × Host GDP per capita growth	-1.688** (0.043)	-1.347 (0.115)	-1.614** (0.037)	-1.468* (0.067)
Foreign developed	-0.063 (0.103)	-0.072* (0.055)	-0.062* (0.091)	-0.069* (0.069)
Developed × Host GDP per capita growth	-1.347 (0.246)	-1.145 (0.317)	-1.184 (0.235)	-1.093 (0.295)
Foreign developing	-0.040 (0.366)	-0.039 (0.396)	-0.073 (0.149)	-0.072 (0.170)
Developing × Host GDP per capita growth	-1.314 (0.391)	-1.349 (0.366)	-0.742 (0.640)	-0.776 (0.617)
State-owned	0.073* (0.063)	0.057 (0.129)	0.068 (0.116)	0.046 (0.301)
State-owned × Host GDP per capita growth	-1.417 (0.169)	-1.262 (0.218)	-1.099 (0.257)	-0.981 (0.329)
Lagged Size	-0.072*** (0.000)	-0.065*** (0.000)	-0.091*** (0.000)	-0.083*** (0.000)
Lagged Bank Soundness	0.197 (0.299)	0.272 (0.149)	0.042 (0.869)	0.083 (0.728)
Lagged Liquidity	0.229*** (0.000)	0.198*** (0.000)	0.264*** (0.000)	0.257*** (0.000)
Lagged Loans to OEA	-0.031*** (0.000)	-0.033*** (0.000)	-0.037*** (0.000)	-0.035*** (0.000)
Lagged Deposits Growth	-0.017 (0.139)	-0.014 (0.153)	-0.022* (0.064)	-0.019 (0.103)
Lagged ROAA	0.189 (0.639)	0.274 (0.502)	0.573 (0.180)	0.423 (0.351)
GDP per capita	0.035*** (0.000)	0.034*** (0.000)	0.041 (0.308)	0.170*** (0.000)
Inflation	-0.233 (0.132)	-0.268* (0.086)	-0.127 (0.578)	-0.150 (0.522)
Year dummies	No	Yes	No	Yes
Country dummies	No	No	Yes	Yes
Constant	0.860*** (0.000)	0.867*** (0.000)	1.094*** (0.000)	0.314 (0.354)

Number of observations	1667	1667	1667	1667
Number of banks	230	230	230	230
Number of instruments	194	195	231	232
Second order AR tests	0.455	0.687	0.531	0.668
Hansen test	0.221	0.242	0.281	0.304

The table shows the results of two-step system GMM panel regressions (Arellano and Bover, 1995; Blundell and Bond, 1998) with Windmeijer (2005) correction. The dependent variable is *Credit growth*, which is the growth rate of net loans in real US dollars. We regress *Credit growth* on bank ownership and bank-level variables in the period 2002-2015. *Host GDP per capita growth* is the annual percentage growth rate of GDP per capita in the African host country. *Pan-African*, *Foreign developed*, *Foreign developing* and *State-owned* are dummies respectively equal to 1 if the bank is a Pan-Africa bank, a foreign bank from a developed country, a foreign bank from a developing country, or a domestic state-owned bank. The omitted category are domestic privately-owned banks. Each ownership category is interacted with *Host GDP per capita growth* in order to capture the different lending cyclicity relative to domestic private banks' lending cyclicity. All the bank-level and macroeconomic control variables are defined in Appendix 3. Year and country dummies are incorporated in some specifications. The p-values for robust standard errors are given in parentheses and ***, **, * correspond to the 1%, 5%, and 10% levels of significance, respectively.

Table 8**Sensitivity to home country business cycle:****Robustness check with additional bank-level control variables**

	Credit growth (1)	Credit growth (2)	Credit growth (3)	Credit growth (4)
Lagged credit growth	0.078 (0.128)	0.064 (0.199)	0.070 (0.119)	0.053 (0.257)
Home GDP per capita growth	0.723* (0.058)	0.725* (0.057)	0.661* (0.074)	0.660* (0.082)
Host GDP per capita growth	1.000*** (0.002)	0.985*** (0.003)	1.011*** (0.007)	0.919** (0.018)
Foreign developed	-0.019 (0.432)	-0.031 (0.179)	-0.017 (0.768)	-0.029 (0.611)
Developed × Home GDP per capita growth	-0.703 (0.314)	-0.739 (0.279)	-0.204 (0.775)	-0.122 (0.872)
Foreign developing	0.023 (0.533)	0.016 (0.666)	-0.063 (0.395)	-0.066 (0.342)
Developing × Home GDP per capita growth	-1.061 (0.172)	-0.957 (0.230)	-0.810 (0.375)	-0.905 (0.323)
Lagged Size	-0.088*** (0.000)	-0.070*** (0.000)	-0.144*** (0.000)	-0.129*** (0.000)
Lagged Bank Soundness	0.379 (0.245)	0.419 (0.180)	-0.389 (0.511)	-0.290 (0.618)
Lagged Liquidity	0.327*** (0.000)	0.305*** (0.000)	0.498*** (0.000)	0.437*** (0.001)
Lagged Loans to OEA	-0.000*** (0.000)	-0.000*** (0.004)	-0.000*** (0.000)	-0.000*** (0.000)
Lagged Deposits Growth	-0.008 (0.617)	-0.006 (0.744)	-0.017 (0.439)	-0.017 (0.415)
Lagged ROAA	-0.211 (0.675)	-0.195 (0.695)	0.340 (0.600)	0.290 (0.642)
GDP per capita	0.010 (0.451)	0.008 (0.520)	0.142* (0.084)	0.258*** (0.002)
Inflation	0.122 (0.556)	0.044 (0.830)	-0.413 (0.275)	-0.501 (0.197)
Year dummies	No	Yes	No	Yes
Country dummies	No	No	Yes	Yes
Constant	1.096*** (0.000)	0.943*** (0.000)	1.236** (0.014)	-0.123 (0.852)
Number of observations	948	948	948	948
Number of banks	131	131	131	131
Number of instruments	92	93	125	126
Second order AR tests	0.451	0.547	0.399	0.509

Hansen test	0.139	0.195	0.380	0.415
<p>The table shows the results of two-step system GMM panel regressions (Arellano and Bover, 1995; Blundell and Bond, 1998) with Windmeijer (2005) correction. The database is only made of foreign-owned banks. The dependent variable is <i>Credit growth</i>, which is the growth rate of net loans in real US dollars. We regress <i>Credit growth</i> on bank ownership and bank-level variables in the period 2002-2015. <i>Home GDP per capita growth</i> is the annual percentage growth rate of GDP per capita in the foreign banks' home country. <i>Host GDP per capita growth</i> is the annual percentage growth rate of GDP per capita in the African host country. <i>Foreign developed</i> and <i>Foreign developing</i> are dummies respectively equal to 1 if the bank is a foreign bank from a developed country and a foreign bank from a developing country. The omitted category are Pan-African banks. Each ownership category is interacted with <i>Home GDP per capita growth</i> in order to capture the different lending cyclicalities relative to Pan-African banks' lending cyclicalities. All the bank-level and macroeconomic control variables are defined in Appendix 3. Year and country dummies are incorporated in some specifications. The p-values for robust standard errors are given in parentheses and ***, **, * correspond to the 1%, 5%, and 10% levels of significance, respectively.</p>				

Table 9
Cyclicity of lending: The impact of the global financial crisis

	Credit growth (1)	Credit growth (2)	Credit growth (3)	Credit growth (4)	Credit growth (5)
Lagged credit growth	0.174*** (0.000)	0.100*** (0.010)	0.078** (0.039)	0.093*** (0.009)	0.070* (0.064)
Host GDP per capita growth	3.592*** (0.000)	2.645*** (0.001)	2.384*** (0.004)	2.482*** (0.000)	2.204*** (0.002)
Global crisis	0.026 (0.380)	0.010 (0.730)	-0.005 (0.858)	0.009 (0.732)	-0.016 (0.536)
Pan-African	0.087*** (0.004)	-0.009 (0.791)	-0.012 (0.720)	-0.019 (0.571)	-0.018 (0.588)
PAB × Host GDP per capita growth	-2.581*** (0.002)	-1.743** (0.037)	-1.459* (0.090)	-1.574** (0.047)	-1.495* (0.066)
PAB × Global crisis	-0.045 (0.275)	-0.034 (0.368)	-0.031 (0.405)	-0.035 (0.321)	-0.033 (0.370)
Foreign developed	0.032 (0.391)	-0.039 (0.278)	-0.047 (0.194)	-0.045 (0.239)	-0.056 (0.138)
Developed × Host GDP per capita growth	-2.106* (0.058)	-1.380 (0.223)	-1.221 (0.288)	-1.047 (0.309)	-0.922 (0.392)
Developed × Global crisis	-0.079** (0.048)	-0.068* (0.067)	-0.068* (0.067)	-0.074** (0.046)	-0.072** (0.042)
Foreign developing	0.053 (0.123)	-0.019 (0.690)	-0.021 (0.683)	-0.079* (0.081)	-0.076* (0.089)
Developing × Host GDP per capita growth	-1.853 (0.276)	-1.366 (0.348)	-1.405 (0.364)	-0.290 (0.847)	-0.591 (0.653)
Developing × Global crisis	0.026 (0.527)	0.007 (0.882)	0.011 (0.829)	0.028 (0.584)	0.043 (0.448)

State-owned	0.047 (0.165)	0.065* (0.093)	0.046 (0.245)	0.041 (0.328)	0.022 (0.605)
State-owned × Host GDP per capita growth	-2.050** (0.038)	-1.506 (0.129)	-1.374 (0.164)	-0.983 (0.316)	-0.992 (0.314)
State-owned × Global crisis	0.038 (0.443)	0.026 (0.549)	0.033 (0.443)	0.034 (0.409)	0.041 (0.324)
Lagged Size		-0.063*** (0.000)	-0.057*** (0.000)	-0.079*** (0.000)	-0.077*** (0.000)
Lagged Bank Soundness		0.151 (0.376)	0.233 (0.191)	0.046 (0.805)	0.037 (0.853)
Lagged Liquidity		0.342*** (0.000)	0.322*** (0.000)	0.402*** (0.000)	0.370*** (0.000)
GDP per capita		0.023** (0.014)	0.024** (0.011)	0.042 (0.268)	0.193*** (0.000)
Inflation		-0.101 (0.507)	-0.105 (0.490)	-0.054 (0.805)	-0.044 (0.841)
Year fixed effects	No	No	Yes	No	Yes
Country fixed effects	No	No	No	Yes	Yes
Constant	0.036 (0.155)	0.718*** (0.000)	0.720*** (0.000)	0.743*** (0.003)	-0.063 (0.840)
Number of observations	1675	1668	1668	1668	1668
Number of banks	230	230	230	230	230
Number of instruments	191	196	197	233	234
Second order AR tests	0.156	0.395	0.520	0.412	0.573
Hansen test	0.214	0.246	0.186	0.190	0.215

The table shows the results of two-step system GMM panel regressions (Arellano and Bover, 1995; Blundell and Bond, 1998) with Windmeijer (2005) correction. The dependent variable is *Credit growth*, which is the growth rate of net loans in real US dollars. We regress *Credit growth* on bank ownership and bank-level variables in the period 2002-2015. *Host GDP per capita growth* is the annual percentage growth rate of GDP in the African host country. *Pan-African*, *Foreign developed*, *Foreign developing* and *State-owned* are dummies respectively equal to 1 if the bank is a Pan-Africa bank, a foreign bank from a developed country, a foreign bank from a developing country, or a domestic state-owned bank. The omitted category are domestic privately-owned banks. Each ownership category is interacted with *Host GDP per capita growth* in order to capture the different lending cyclicalities relative to domestic private banks.

lending cyclicality. Following Allen, Jackowicz, Kowalewski and Kozlowski (2017), *Global crisis* is a dummy equal to 1 for the years 2008-2010. *Global crisis* is interacted with each ownership category in order to capture the different responses of banks to the global financial crisis relative to domestic private banks. All the bank-level and macroeconomic control variables are defined in Appendix 3. Country dummies are incorporated in some specifications. The p-values for robust standard errors are given in parentheses and ***, **, * correspond to the 1%, 5%, and 10% levels of significance, respectively.

Table 10**Sensitivity to home country business cycle: The impact of the global financial crisis**

	Credit growth (1)	Credit growth (2)	Credit growth (3)	Credit growth (4)	Credit growth (5)
Lagged credit growth	0.151*** (0.004)	0.077 (0.128)	0.065 (0.184)	0.068 (0.131)	0.051 (0.258)
Home GDP per capita growth	0.718 (0.155)	0.795* (0.055)	0.806* (0.056)	0.625 (0.102)	0.610 (0.129)
Host GDP per capita growth	1.195*** (0.001)	0.837** (0.019)	0.785** (0.029)	0.859** (0.026)	0.716* (0.065)
Global crisis	-0.019 (0.516)	-0.035 (0.201)	-0.044 (0.118)	-0.037 (0.180)	-0.060** (0.039)
Foreign developed	-0.033 (0.238)	-0.007 (0.778)	-0.015 (0.529)	-0.028 (0.680)	-0.072 (0.313)
Developed × Home GDP per capita growth	-0.617 (0.458)	-1.062 (0.124)	-1.160* (0.092)	-0.446 (0.544)	-0.358 (0.625)
Developed × Global crisis	-0.032 (0.431)	-0.023 (0.559)	-0.027 (0.484)	-0.019 (0.644)	-0.016 (0.688)
Foreign developing	-0.025 (0.283)	0.017 (0.674)	0.009 (0.821)	-0.100 (0.184)	-0.121 (0.114)
Developing × Home GDP per capita growth	-0.650 (0.306)	-0.971 (0.211)	-0.915 (0.250)	-0.467 (0.652)	-0.396 (0.701)
Developing × Global crisis	0.102*** (0.005)	0.062 (0.259)	0.062 (0.259)	0.101 (0.178)	0.100 (0.151)
Lagged Size		-0.086*** (0.000)	-0.071*** (0.001)	-0.148*** (0.000)	-0.118*** (0.000)
Lagged Bank Soundness		0.227	0.279	-0.641	-0.642

		(0.416)	(0.305)	(0.226)	(0.208)
Lagged Liquidity		0.316***	0.309***	0.508***	0.485***
		(0.000)	(0.000)	(0.000)	(0.000)
GDP per capita		0.013	0.012	0.155*	0.301***
		(0.353)	(0.356)	(0.078)	(0.000)
Inflation		0.076	0.007	-0.343	-0.516
		(0.728)	(0.974)	(0.359)	(0.183)
Year dummies	No	No	Yes	No	Yes
Country dummies	No	No	No	Yes	Yes
Constant	0.101***	1.076***	0.960***	1.346***	-0.122
	(0.000)	(0.000)	(0.000)	(0.008)	(0.857)
Number of observations	951	949	949	949	949
Number of banks	131	131	131	131	131
Number of instruments	87	92	93	125	126
Second order AR tests	0.187	0.479	0.560	0.438	0.530
Hansen test	0.200	0.124	0.135	0.273	0.387

The table shows the results of two-step system GMM panel regressions (Arellano and Bover, 1995; Blundell and Bond, 1998) with Windmeijer (2005) correction. The database is only made of foreign-owned banks. The dependent variable is *Credit growth*, which is the growth rate of net loans in real US dollars. We regress *Credit growth* on bank ownership and bank-level variables in the period 2002-2015. *Home GDP per capita growth* is the annual percentage growth rate of GDP per capita in the foreign banks' home country. *Host GDP per capita growth* is the annual percentage growth rate of GDP per capita in the African host country. *Foreign developed* and *Foreign developing* are dummies respectively equal to 1 if the bank is a foreign bank from a developed country and a foreign bank from a developing country. The omitted category are Pan-African banks. Each ownership category is interacted with *Home GDP per capita growth* in order to capture the different lending cyclicalities relative to Pan-African banks' lending cyclicalities. Following Allen, Jackowicz, Kowalewski and Kozłowski (2017), *Global crisis* is a dummy equal to 1 for the years 2008-2010. *Global crisis* is interacted with each ownership category in order to capture the different responses of banks to the global financial crisis relative to domestic private banks. All the bank-level and macroeconomic control variables are defined in Appendix 3. Country dummies are incorporated in some specifications. The p-values for robust standard errors are given in parentheses and ***, **, * correspond to the 1%, 5%, and 10% levels of significance, respectively.

Appendix

Appendix 1: Banks in our sample

Host Country	Total number of banks	Foreign		Domestic		
		Pan-African	Developed	Developing	Private	Public
Algeria	13	0	3	4	1	5
Angola	11	1	4	0	4	2
Benin	4	4	0	0	0	0
Botswana	5	3	1	0	1	0
Burkina Faso	5	4	0	0	2	0
Cameroon	6	3	3	0	1	0
Cape Verde	2	0	1	0	1	0
Congo	3	3	1	0	0	0
Côte d'Ivoire	6	4	3	0	0	0
Democratic Republic of Congo	4	0	2	0	2	1
Djibouti	2	1	2	0	0	0
Egypt	24	1	4	9	4	6
Equatorial Guinea	1	0	1	0	0	0
Eritrea	1	0	0	0	0	1
Ethiopia	6	0	0	0	5	1
Gabon	2	1	0	0	1	0
Ghana	10	5	2	0	2	1
Kenya	16	4	2	1	9	1
Lesotho	1	1	0	0	0	0
Madagascar	2	1	1	0	0	0
Mali	5	4	1	0	2	0
Mauritius	12	4	3	2	5	0
Morocco	9	0	2	0	6	1
Mozambique	5	2	2	0	1	0
Namibia	4	3	0	0	1	0
Niger	1	1	0	0	0	0
Nigeria	16	2	2	0	13	0
Rwanda	1	0	0	0	0	1
Senegal	8	4	2	0	2	1
Seychelles	1	1	0	0	0	0
South Africa	8	0	1	0	7	0
Sudan	3	0	0	1	1	1
Togo	2	0	0	0	2	0
Tunisia	13	2	3	2	5	3
Uganda	4	2	1	0	1	0
United Republic of Tanzania	7	2	2	0	3	0
Zambia	5	3	2	0	0	1
Zimbabwe	2	1	0	0	1	0
Total	230	67	51	19	83	26

Appendix 2: Foreign banks' parent in our sample

Parent bank	Home country	Host countries (Africa)
<i>Pan African</i>		
Access Bank	Nigeria	Ghana
Attijari Bank	Morocco	Cameroon, Congo, Côte d'Ivoire, Gabon, Mali, Senegal, Tunisia
Bank of Africa // Banque Marocaine du Commerce Extérieur (BMCE) after 2010	Mali // Morocco after 2010	Benin, Burkina Faso, Côte d'Ivoire, Djibouti, Kenya, Madagascar, Mali, Senegal
Banque Atlantique // Groupe Banque Centrale Populaire after 2012	Togo // Morocco after 2012	Benin, Burkina Faso, Côte d'Ivoire, Mali, Senegal
Barclays Africa Group	South Africa	Botswana, Egypt, Ghana, Kenya, Mauritius, Mozambique, Seychelles, Tanzania, Uganda, Zambia
BGFI Group	Gabon	Congo
Diamond Bank	Nigeria	Benin
Ecobank	Togo	Benin, Burkina Faso, Cameroon, Congo, Côte d'Ivoire, Kenya, Mali, Niger, Nigeria, Senegal
Firststrand Limited	South Africa	Botswana, Namibia, Zambia
I&M Holdings Limited	Kenya	Mauritius
Investec Bank Limited	South Africa	Mauritius
Libyan Foreign Bank	Libya	Tunisia
Nedbank	South Africa	Namibia
Standard Bank	South Africa	Angola, Botswana, Ghana, Kenya, Lesotho, Mauritius, Mozambique, Namibia, Nigeria, Tanzania, Uganda, Zambia, Zimbabwe
United Bank for Africa	Nigeria	Burkina, Cameroon, Ghana
Zenith Bank	Nigeria	Ghana
<i>Foreign developed</i>		
Banco Comercial Português	Portugal	Mozambique
Banco Espírito Santo	Portugal	Angola
Banco BPI	Portugal	Angola
BPCE	France	Algeria, Cameroon, Djibouti, Mauritius
BNP Paribas	France	Algeria, Côte d'Ivoire, Senegal, Tunisia
Caixa Económica Montepio Geral	Portugal	Angola
Caixa Geral de Depósitos (CGD)	Portugal	Cape Verde, Mozambique, South Africa
Crédit Agricole	France	Cameroon, Congo, Côte d'Ivoire, Egypt
HSBC	United Kingdom	Egypt, Mauritius
Intesa Sanpaolo	Italy	Egypt
Piraeus Bank	Greece	Egypt
Rabobank	Netherlands	Tanzania, Zambia
Société Générale	France	Algeria, Cameroon, Côte d'Ivoire, Equatorial Guinea, Ghana, Madagascar, Morocco, Senegal, Tunisia
Standard Chartered	United Kingdom	Botswana, Ghana, Kenya, Mauritius, Nigeria, Tanzania, Uganda, Zambia

Citibank	United States	Kenya, Morocco, Nigeria
<i>Foreign developing</i>		
Abu Dhabi Islamic Bank	United Arab Emirates	Egypt
Ahli United Bank	Bahrain	Egypt
Al Baraka Bank	Bahrain	Algeria, Egypt, Tunisia
Arab Bank Plc	Jordan	Tunisia
Bank ABC (Arab Banking Corporation)	Bahrain	Algeria, Egypt
Bank Audi	Lebanon	Egypt
Bank of Baroda	India	Kenya
BLOM Bank	Lebanon	Egypt
Bumiputra Commerce Bank (now CIMB bank)	Malaysia	Mauritius
Burgan Bank	Kuwait	Algeria
Dubai Islamic Bank	United Arab Emirates	Sudan
The Housing Bank for Trade and Finance (HBTF)	Jordan	Algeria
National Bank of Dubai	United Arab Emirates	Egypt
National Bank of Kuwait (SAK)	Kuwait	Egypt
State Bank of India (SBI)	India	Mauritius
Union National Bank	United Arab Emirates	Egypt

Appendix 3: Description of the variables

Variable	Definition	Source
Credit growth (%)	% Annual change in total net loans (in dollars)	Authors' calculations based on Bankscope
Lagged size	Lagged log of total assets	Authors' calculations based on Bankscope
Lagged bank soundness (%)	Lagged ratio of equity to total assets (%)	Authors' calculations based on Bankscope
Lagged liquidity (%)	Lagged ratio of liquid to total assets (%)	Authors' calculations based on Bankscope
Lagged deposits growth (%)	Lagged annual change in deposits (in dollars) (%)	Authors' calculations based on Bankscope
Lagged loans to other earning assets (%)	Lagged ratio of loans to other earning assets (%)	Authors' calculations based on Bankscope
Lagged ROAA (%)	Lagged Return on Average Assets (%)	Authors' calculations based on Bankscope
State-owned bank	Dummy equal to 1 if government-owned	Bankscope, banks and central banks' websites
Domestic private bank	Dummy equal to 1 if domestic privately-owned	Bankscope, banks and central banks' websites
Foreign developed bank	Dummy equal to 1 if owned by a foreign developed bank	Bankscope, banks and central banks' websites
Foreign developing bank	Dummy equal to 1 if owned by a foreign developing bank	Bankscope, banks and central banks' websites
Pan-African bank	Dummy equal to 1 if Pan-African	Bankscope, banks and central banks' websites
Host GDP growth (%)	Annual percentage growth rate of GDP at market prices based on constant local currency. Aggregates are based on constant 2010 U.S. dollars.	WDI
Host GDP per capita growth (%)	Annual percentage growth rate of GDP per capita based on constant local currency. Aggregates are based on constant 2010 U.S. dollars.	WDI
Host GDP per capita	GDP per capita in constant 2010 U.S. dollars.	WDI
Host Inflation (%)	Inflation as measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly.	WDI
Home GDP growth (%)	Annual percentage growth rate of GDP at market prices based on constant local currency. Aggregates are based on constant 2010 U.S. dollars.	WDI
Home GDP per capita growth (%)	Annual percentage growth rate of GDP per capita based on constant local currency. Aggregates are based on constant 2010 U.S. dollars.	WDI
Global Crisis	Dummy equal to 1 for the years 2008-2010	Authors' calculations

Appendix 4: Correlation matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Credit growth (1)	1.000													
Lagged credit growth (2)	0.339	1.000												
Host GDP per capita growth (3)	0.191	0.171	1.000											
Host GDP growth (4)	0.235	0.213	0.943	1.000										
Home GDP per capita growth (5)	0.160	0.098	0.537	0.502	1.000									
Home GDP growth (6)	0.196	0.141	0.493	0.514	0.943	1.000								
Lagged size (7)	-0.337	-0.296	-0.136	-0.217	-0.085	-0.135	1.000							
Lagged bank soundness (8)	0.048	-0.010	0.046	0.046	-0.012	-0.026	-0.090	1.000						
Lagged liquidity (9)	0.240	0.144	0.114	0.149	0.021	0.056	-0.244	-0.064	1.000					
Lagged loans to OEA (10)	-0.196	-0.030	-0.090	-0.156	-0.048	-0.056	0.078	0.055	-0.387	1.000				
Lagged deposits growth (11)	0.175	0.372	0.072	0.085	-0.012	0.030	-0.158	0.067	0.069	0.034	1.000			
Lagged ROAA (12)	-0.009	0.057	0.020	0.042	-0.057	-0.087	0.046	0.303	0.015	-0.060	-0.017	1.000		
Host GDP per capita (13)	-0.163	-0.158	-0.132	-0.285	-0.149	-0.213	0.515	0.094	-0.162	0.182	-0.033	-0.064	1.000	
Host inflation (14)	0.070	0.052	0.222	0.225	0.152	0.147	-0.036	0.147	0.127	-0.181	0.006	0.165	-0.157	1.000