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**Article**

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## DEVELOPMENT ECONOMICS | RESEARCH ARTICLE

# A dynamic analysis on foreign bank entry Nexus economic growth in Sub-Sahara African countries

Fetene Bogale Hunegnaw<sup>1\*</sup> and Adem Feto Bedhaso<sup>2</sup>

**Abstract:** This study investigated the direct link between foreign bank entry and economic growth in Sub-Sahara African countries using a dynamic generalized method of moment estimator. It also studied a comparative analysis on banking environment for SSA countries that open and restrict banking industries to foreign ownership using descriptive analysis. The descriptive evidence suggests that SSA countries that allowed foreign bank entry have better banking service access, competition and depth than SSA countries that restrict banking industries to foreign ownership. Econometric estimation result shows a foreign bank asset share has a direct positive effect on economic growth. The findings of this study provide imperative policy implication to SSA countries that did not open their banking sector to foreign investment. They could open the door for foreign bank involvement in the banking industries and reap all the good benefits that SSA countries that open their banking industries to foreign investors are enjoying.

**Subjects:** Economics; Development Economics; Banking

**Keywords:** Foreign Bank Entry; Economic Growth; SSA; GMM estimator

### ABOUT THE AUTHORS

Dr. Fetene has a PhD in Economics from Seoul National University. Currently he is working as assistant professor of economics in Adama Science and Technology. He has completed one research project by sponsorship of Adama Science and Technology University. He also published six articles in internationally reputed journals (International Trade Journal, International Trade and Development Journal, Journal of International Migration and Integration, Journal of International Integration, Seoul Journal of Economics) and presented research work in both national and international conferences.

Mr. Adem Feto is a senior lecturer in Arsi University. He has a Master in Economics from Haramaya University and currently he is attending PhD in economics in Bahir Dar University. He has published seven articles in locally and internationally reputed journals and he successfully completed one research project by sponsorship of Adama Science and Technology University and numerous consultancy works with sponsorship of Arsi University.

### PUBLIC INTEREST STATEMENT

While many studies show that opening-banking sector to foreign investors benefit more than average weight, the implementation has not yet been made in a significant number of SSA countries. This might be due to the absence of deep empirical investigation on foreign bank entry and the economic growth in many SSA countries.

This study provides a comparative analysis on banking environment for SSA countries and the descriptive results suggests that SSA countries that opened their banking sector to foreign investors have better banking service access, depth and competition than SSA countries that restrict banking industries to foreign investors. Moreover, econometric analysis shows a direct positive link between foreign bank asset share and economic growth. Thus, this study suggests SSA countries can open the door to foreign bank involvement in the banking sector and reap all the good benefits.

## JEL Classifications: F4

### 1. Introduction

In recent decades, developed and developing countries increasingly allow banks to be foreign-owned. However, many Sub Saharan African countries are unwilling to open the banking industries to foreign ownership. Will policies that encourage international banking sector integration spur economic growth in developing countries? The role of foreign banks in developing countries has been hotly debated and the issue is still far from conclusive effects. International Monetary Fund and the World Trade Organization consider that banking sector integration spurs economic growth in developing countries.

By bringing additional capital, allocation of funds for profitable users, exerting corporate control, and enabling risk management, foreign banks may directly boost capital accumulation and accelerate long-run economic growth (Lehner et al., 2008; Bayraktar & Wang, 2008). On the other hand, the presence of foreign banks intensifies the probability of the banking sector crisis and makes the hosting sector fragile (Barth et al., 2004; De Haas & Van Lelyveld, 2014). In these ways, foreign banks will destabilize the domestic economy and hurt long-run economic growth. Moreover, foreign banks' credit is skewed to large firms (Bruno & Hauswald, 2014; Beck et al., 2018).

The literature on the effect of foreign bank entry in SSA countries is very small in volume and the findings for the existing few studies also have no clear-cut results. Figueira et al. (2006), conclude that there is some evidence that foreign-owned banks are more efficient than domestically owned banks. Dwumfour (2017), which examined banking stability in SSA, posited that the presence of foreign banks in the domestic industry reduces stability, which corroborates the fragility view.

In light of existing debates on effect of liberalizing restrictions on foreign bank entry, this research offers empirical evidence on effect of foreign banks' entries on economic growth in SSA countries.

### 2. Literature review

#### 2.1. Theoretical background

A bank is an institution whose current operations consist of granting loans and receiving deposits from the public (Freixas & Rochet, 2008). The role of commercial banks can be described as follows: borrowing by accepting term deposits, and by issuing debt securities such as banknotes and bonds. Banks lend money by making advances to customers on current accounts, by making installment loans, and by investing in marketable debt securities and other forms of money lending. Banks exert a fundamental influence on capital allocation, risk-sharing, and economic growth. Banks can also help to alleviate agency problems by monitoring investors and making sure that they are making productive use of their loans (Aghion et al., 2016; Jovanovic & Greenwood, 1990).

In a well-globalized economy, foreign investors can own banks. Banks are defined as foreign-owned if at least 51 percent of their shares are foreign-owned (J. Wu et al., 2010). Foreign banks may influence long-run economic growth directly through bringing additional capital, new and better skills, management techniques, training procedures, technology, and products to the domestic market. It also facilitating risk management and improve the efficiency of resource allocation in ways that accelerate long-run economic growth. By contesting markets and sharpening competition, foreign banks raise the overall level of banking sector efficiency. Thus, domestic banks provide better services; domestic banks become better at mobilizing savings, energetically seeking profitable uses for these savings, exerting corporate control, and easing risk management in ways that accelerate long-run economic growth.

The role of foreign banks with respect to banking stability has been a topic high on the policy and research agenda since the start of the global financial crisis. Conceptually, foreign banks may

influence financial fragility in both positive and harmful ways (Levine, 1996). In terms of potential harms, foreign banks are often accused of stimulating capital flight. Thus, in stressful times, foreign banks will flee; may facilitate capital outflows, currency crises, and financial instability, which in turn can hurt the supply of credit by these affiliates in the host market (Peek & Rosengren, 2000). Contrasting arguments, however, suggest foreign bank activity may not intensify fragility may even enhance stability. It is important to realize that foreign banks can offer valuable diversification services and can absorb shocks occurring in the host market. Several studies have highlighted how foreign banks can enhance financial stability and improve economic growth when crises occur in the host country (Crystal et al., 2002; De Haas & Van Lelyveld, 2010).

## 2.2. Empirical review of literature

A series of cross-country empirical studies show that the presence of foreign-owned banks is associated with greater efficiency and competition in a host country's banking sector and improve economic growth. For example, Demirgüç-Kunt et al. (1998) and Claessens et al. (2001) show that foreign banks play a statistically and economically significant role in improving the efficiency of domestic banks by reducing costs, profits, and net interest margins. Foreign banks are more cost-efficient than domestic banks (J. C. Green et al., 2004). Foreign banks are found to be cost and profit efficient than domestic banks, especially state-owned domestic banks (Bonin et al., 2005). In addition, foreign bank presence and fewer restrictions on banks' activities have been directly linked to greater competitiveness in a host country's banking sector (Gelos & Roldos, 2004). Moreover, other cross-country studies that compare the relative performance of foreign and domestic banks, find that foreign banks have relatively higher interest margins, profitability, and lower overhead costs in developing host countries (Grigorian & Manole, 2006; Micco et al., 2007). These authors conclude that foreign banks in developing countries are relatively strong competitors in underdeveloped banking markets and can exert pressure on domestic banks to become more efficient and competitive and have positive effect on domestic economic growth. Foreign ownership could affect banks' profitability positively because foreign banks possess superior technology, have high governance standards, are better in mitigating risk and benefit from special tax breaks. The cross-country study conducted by Yanikkaya et al. (2018) provides evidence for this argument. Levine (2001) points out that international financial integration promote growth through improvements in the domestic financial markets. Barajas et al. (2000) provide evidence on the competitive effect of foreign entry in Colombia. They find that foreign entry improves the efficiency of the domestic banking system by reducing non-financial costs and foreign banks in Colombia did not compete against domestic ones in all sectors. Similarly, Clarke et al. (2005) find that although foreign banks in Argentina competed beyond the wholesale market in the late 1990s, they did not compete with domestic banks in all sectors. Using data for the Philippines (1990–98), Unite and Sullivan (2001) investigate how foreign bank entry and increased foreign ownership affected domestic banks and conclude that foreign competition forces domestic banks to be more efficient and foreign bank penetration led to an increase in loan loss provisions. In Poland, foreign banks were found to be more cost-efficient than domestic banks, except those domestic banks that had a high share of foreign customers (Nikiel & Opiela, 2002). In these countries, foreign banks appear to be more efficient than their domestic counterparts are, and foreign entry seems to improve the efficiency of domestic banks. Al-Harbi (2019) study also shows that foreign ownership has a positive impact on the financial sector in Organization of Islamic Cooperation countries.

Besides these positive effects, there might be some costs associated with foreign banks such that they may dominate the entire domestic financial market or foster capital flight. In the case of India, foreign banks are less cost-efficient and productive than domestic banks (Sensarma, 2006). The profitability of the foreign banks in China was lower than that of domestic banks (H-L. Wu et al., 2007). Recent evidence indicates that banks with greater (minority) foreign ownership shares and less state ownership are more cost and profit efficient than others in China (Berger et al., 2009). Foreign ownership could affect banks' profitability negatively because foreign banks are affected not only by the economic and financial conditions in the countries where they operate but also by the situations in their home countries. Mungly et al. (2016) reported a negative

relationship between foreign ownership and banks' profitability. Findings of recent studies focusing specifically on the recent global financial crisis suggest that at the height of the crisis global banks were transmitting shocks across borders through their affiliates. De Haas and Van Lelyveld (2014), for example, compare foreign banks with large domestic banks and find that the former group on average contracted their lending more. Popov and Udell (2012) show that if banks in the vicinity of the firm were experiencing distress at the onset of the global financial crisis, the likelihood of a firm being credit constrained increased foreign banks and banking stability in SSA countries.

Despite considerable research on foreign bank inflows effect on domestic banking and economic growth, little can be said about the African context, with the exception of Vogel and Winkler (2010), Dwumfour (2017), Figueira et al. (2006), and Sulemana and Kpienbaareh (2018). The former examines whether increases in the market share of foreign banks in many emerging markets since the mid-1990s contribute to financial stability in the respective host countries during the global financial crisis. The study suggests that the stabilizing impact of foreign banks was limited to the cross-border component of financial globalization and two regions, Eastern Europe, and SSA countries. Only in the SSA region, this was translated into more stable credit growth. Thus, hopes that a stronger presence of foreign banks might help host countries in isolating domestic credit from international shocks did not materialize during the 2008 crisis. The work of Dwumfour (2017), which examined banking stability in SSA countries, posited that net interest margin is the main determinant of stability in the industry and that the presence of foreign banks in the domestic industry reduces stability, which corroborates the fragility view. However, after investigating both the positive and negative effects of foreign banks in the literature, but it can be said that the positive ones generally dominate. Figueira et al. (2006), conclude that there is some evidence that foreign-owned banks are more efficient than domestically owned banks. However, there is high variance in the data with some foreign-owned banks performing relatively badly, while some perform relatively well, the same applies to domestically owned banks, therefore, the performances were inconclusive. Besides, there is a methodological gap as they indicated in their limitation part. The authors used only a cross-sectional analysis data for 2001/02 and they could not find the effect of foreign ownership changes over time.

### 3. Data and data analysis methods

#### 3.1. Theoretical and empirical model specification

The neoclassical growth model postulates that economic growth is a function of technical progress in the long run (Solow, 1956). This model could not give room to other factors that may influence growth, for instance, financial development. However, the endogenous growth literature predicts a positive relationship between financial development, real income, and investment (King & Levine, 1993). Well-developed financial markets promote investment and growth by channeling financial resources to the most productive uses. Given these theoretical postulations, we considered an algebraic representation of the simplest endogenous growth model—"AK" model:

$$Y_t = AK_t^\alpha \quad (2.1)$$

Where  $Y_t$  denotes the aggregate output at time  $t$ ,  $K_t$  is the investment at time  $t$ , while  $A$  denotes total factor productivity growth (TFP). The TFP captures growth in production due to other factors other than increase in physical input (capital) in the growth model. The endogenous growth model thus provides a flexible platform for a large number of factors that affect economic growth through the TFP.

Given that TFP is endogenously determined, the endogenous growth literature argues that financial development and bank competition affects growth not only through capital accumulation but also through the TFP channel. This channel, suggests that an efficient financial system affects

growth by facilitating the adoption of modern technology to boost the development of the knowledge and technology-intensive industries.

Foreign banks' entry directly affects domestic financial markets by introducing new and better management techniques, technology, and services. They may also improve access to international markets, and help the development of ancillary institutions by improving the flow of information about borrowers. Thus, foreign banks may directly reduce firms' cost of borrowing, and increase the level of investment and the efficiency of the combination of labor and capital in production; in turn, the level of economic growth.

Based on empirical specifications in Bayraktar and Wang (2008) and including other more relevant variables for SSA countries, total factor productivity can be examined with the following variables of interest resulting in:

$$A = F(GS, IR, GDPPC, TOP, LF, FBS, BC, BD, BI, BS) \quad (2.2)$$

By substituting equation (2.2) into equation (2.1), we obtain:

$$Y_t = K_t^{\alpha_1} GS_t^{\alpha_2} IR_t^{\alpha_3} GDPPC_t^{\alpha_4} TOP_t^{\alpha_5} LF_t^{\alpha_6} FBS_t^{\alpha_7} BC_t^{\alpha_8} BI_t^{\alpha_9} BS_t^{\alpha_{10}} \quad (2.3)$$

Where  $A$  is total factor productivity,  $Y_t$  is real GDP per capita growth;  $K$  is an investment that is measured by the share of gross fixed capital formation to GDP and is expected to exert a positive effect on GDP growth. The higher the rate of investment, the higher the growth rate of the SSA countries' economy, all things being equal. This is in line with both the neoclassical and endogenous growth predictions.

$GS$  is government spending on education to GDP. It is used as a proxy to investment in human capital. Human capital is a factor that influences the productivity of the labor force through absorption of new technology, increasing innovativeness, and promoting efficient management. Therefore, this variable is included in the model to represent the knowledge, skills, competence, and attributes embodied in individuals that facilitate the creation of personal, social, and economic well-being. The variable is represented by the share of public spending on education to GDP as a proxy for human capital investment. Therefore, a higher level of investment in human capital  $t$  is expected to increase economic growth.

$IR$  is the inflation rate as measured by the consumer price index which reflects the yearly percent change in the cost to the average consumer of acquiring a set of the basket of commodities and services. Theoretically, inflation increases the cost of borrowing for investment activities leading to a reduction in productivity and staggered growth management. Inflation measures the level of uncertainty about the future market environment, firms becoming more reluctant to attain long-run commitments in the presence of higher price variability; the expected sign of this variable is thus negative. It shows or measures the status of macroeconomic stability. In contrast, there is an argument that an increase in inflation encourages private investment, which boosts economic growth (Bakare, 2011).

$GDPPC$  is the initial GDP per capita. A country in a lower initial development stage may grow faster than the countries in a higher level development stage, which is consistent with a converging pattern of economic growth across countries (Solow, 1956; Levine et al., 2000).

$TOP$  is trade openness that is proxied by an international trade policy variable, i.e. the trade to GDP ratio, with an expected positive coefficient. Higher openness expected to enhance economic growth through higher competition and technological progress.



LF is a labor force to total labor; theoretically, the labor force is a major element for economic growth. However, it is not necessary that the labor force to be positively correlated with the growth rate of output if it could not be used efficiently and if it is less productive, it may be a burden for the economy because of the high rate of unemployment.

FBS is a foreign bank's total asset share to total bank assets. We identify a bank as "foreign" if more than 51 percent of the ownership of capital of the bank is held by foreign ownership (H-L. Wu et al., 2007). Foreign banks' entry is expected to provide direct benefits to host economies such as new and better management techniques, technology, quality services, and more access to international markets. Thus, foreign banks may directly reduce firms' cost of borrowing, and increase the level of investment and the efficiency of the combination of labor and capital in production; in turn, the level of economic growth.

BC is a bank competition. The bank concentration ratio is used as a proxy to bank competition and it is defined as the fraction of total industry assets managed or controlled by the largest banks in the industry. In other words, the index decreases as the degree of competitiveness increases. Competition among banks affects economic growth in two ways: First, banking competition facilitates access to credit for small and new firms, which is important for economic growth. Second, companies dependent on external financing to run their operations are associated with slow patterns of economic growth; an increase in market power may hasten that economic growth (Diallo & Koch, 2018; Mitchener & Wheelock, 2013). Claessens (2009) also states that banking competition increases the quality of financial services and market innovation. It also reports that banking competition draws organizations and households toward banking products, which contributes to the growth of the overall economy.

BD is a bank depth indicator that is employed to estimate the effect of financial deepening on economic growth. The variable is computed as the ratio of banking credit to the private sector to GDP. BD is the credit extended to the private sector by universal banks. This ratio stresses the importance of the role played by the financial sector, especially the deposit money banks, in the financing of the private economy. It isolates credit issued to the private sector from the credit issued by governments, and public enterprises. A higher BD indicates a higher level of domestic investment, indicating higher output holding everything else constant. Arcand et al. (2015) study show that the relationship between economic growth and private sector credit is positive, but that the relationship between economic growth and the square of private sector credit (that is to say, the effect of credit to the private sector when it is at a high level) is negative. The relationship is positive up to a certain level of financial depth, and beyond a threshold, the effects of financial depth become negative. According to the different specifications estimated by Arcand et al. (2015), the threshold (as a percentage of GDP) lies between 80 percent and 100 percent of the credit to the private sector

BI is a bank efficiency (reverse inefficiency) indicator, which is controlled by three variables (Bayraktar & Wang, 2005): profits ratio to total assets (before tax), overhead costs ratio to total assets, and net interest margin. We interpret higher levels of these measures as representing a lower level of banking sector efficiency (higher inefficiency). Holding other factors constant, high profits and net interest margin may reflect an absence of rigorous competition, large overhead costs may reflect a less efficient management and organization system. Thus, these variables are expected to hurt economic growth.

BS is a banking stability indicator proxied by bank Z-Score. The Z-score is widely used as a measure of bank stability (Demirgüç-Kunt & Huizinga, 2010; Laeven & Levine, 2009). It combines banks' buffers (capital and profits) with the risks they face (measured by the standard deviation of returns). The Z-score measures the number of standard deviations a return realization has to fall in order to deplete equity. A higher Z-score implies a lower probability of insolvency, providing a direct measure of stability that is superior to analyzing leverage. Z-score:  $Z = (k + \mu)/\sigma$ , where  $k$  is equity capital and reserve as a percent of total assets,  $\mu$  is average net income as a percent of



total assets, and  $\sigma$  is the standard deviation of return on assets as an indicator of return volatility. The coefficient associated with Z-score is expected positive on economic growth.

By using logarithm we can transform equation (2.3) to a linear form. The logarithmic transformation of a model can be written as

$$\log Y_t = \alpha_0 + \alpha_1 \log K_t + \alpha_2 \log GS_t + \alpha_3 \log IR_t + \alpha_4 IR_t + \alpha_5 IR_t + \alpha_6 \log GDPPC_t + \alpha_7 \log TOT_t + \alpha_8 \log LF_t + \alpha_9 \log FBS_t + \alpha_{10} \log BC_t + \alpha_{11} \log BI_t + \alpha_{12} \log BS_t + F_{i,t} + T_{i,t} + \varepsilon_t \quad (2.4)$$

The coefficients  $\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5, \alpha_6, \alpha_7, \alpha_8, \alpha_9$  and  $\alpha_{10}$  are elasticities of their respective variables,  $\alpha_0$  is the constant component,  $t$  denotes time,  $\varepsilon$  is the error term,  $F_{i,t}$  and  $T_{i,t}$  are country and time fixed effects respectively.

### 3.2. Data type and sources of data

The data set includes 30 Sub-Sahara African countries that open the banking sector to foreign investors and 13 SSA countries that restrict their banking sector. Our data set covers the years from 2000 to 2015. Since BANKSCOPE reports banking sector variables only for the most recent years, it is not possible to conduct longer-term growth analysis. The 30 Sub-Sahara African countries that open the banking sector to foreign investors are Angola, Benin, Botswana, Burkina Faso, Burundi, Cote d'Ivoire, Cameroon, Congo, D. R., Congo Rep., Ghana, Kenya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Seychelles, South Africa, Sudan, Swaziland, Tanzania, Togo, Uganda, Zambia. The 13 SSA countries that do not globalized banking sector: Cape Verde, C.A. Republic, Chad, Djibouti, Eq. Guinea, Eritrea, Ethiopia, Gabon, Gambia, G.-Bissau, Lesotho, Liberia, Sierra Leone, and Somalia.

The BANKSCOPE database is the main source for secondary bank-level data variables such as net interest margin, overhead costs ratio to total assets, and bank return (before-tax) ratio to total assets. Other secondary data were collected from world development indicators and International Monetary Fund.

### 3.3. Data analysis methods

#### 3.3.1. Descriptive analysis method

The researchers used descriptive analysis to compare banking environment in SSA countries that open banking industry to foreign investors relative to the SSA countries that restrict banking industry to foreign investors. It is used to compare foreign bank penetration, banking depth, banking access and banking concentration in the banking industry of SSA countries that open their banking industries to foreign investor and SSA countries that restrict banking industries to foreign investors.

#### 3.3.2. Econometric model

This research aims to investigate direct link between foreign bank entry and economic growth. GMM instrumental variable estimation method is applied to control for endogeneity, omitted variable bias, measurement error, and unobserved potential heterogeneity (Caselli et al., 1996; Bond et al., 2001). In particular, a system GMM, developed by Arellano and Bover (1995), Blundell and Bond (1998) is found to reduce a small sample bias that characterizes the first-differenced GMM. A System GMM technique addresses the following problems: (i) potential endogeneity bias (ii) unobserved heterogeneity due to omitted variables. Also, the dataset used in the study has a short-time dimension and a relatively large country dimension ( $T < N$ ). Hence, a system GMM estimator is recommended for consideration in empirical growth research. This econometric technique has been recently used in the growth literature as an alternative to cross-sectional estimators: Thus, we used a system GMM approach in our study and we consider the relevant results as the most appropriate in our empirical work. This model estimates a system of equations, combining the regression equation in levels and in

first differences to reduce possible biases associated with estimating the regression equation in differences only. This GMM estimator is a dynamic one that estimates the model in first differences and uses lagged values of the variables as instruments. The starting point is a standard specification in levels, where the dependent variable  $Y_{i,t}$  is persistent, i.e. it is a function of its own past values. The model includes a set of independent variables  $X_{i,t}$ , which are assumed to be weakly exogenous and  $F_{i,t}$  is a country effect and  $T_{i,t}$  is a time fixed.

$$Y_{i,t} = \varphi_0 Y_{i,t-1} + \varphi_n X_{i,t} + F_{i,t} + T_{i,t} + \varepsilon_{i,t} \quad (2.5)$$

After taking first differences, the previous equation yields:

$$\Delta(Y_{i,t}) = \varphi_0 \Delta Y_{i,t-1} + \varphi_n \Delta X_{i,t} + \Delta \varepsilon_{i,t} \quad (2.6)$$

One result of the transformation is that all variables that are time-invariant, such as the country fixed effects ( $F_{i,t}$ ) and time fixed effect ( $T_{i,t}$ ) drop out of the model. A key problem with the model of equation (2.6) is the potential endogeneity of the control variables as well as the correlation between the lagged dependent variable  $Y_{i,t-1}$  and the error term  $\Delta \varepsilon_{i,t}$ . This problem can be solved by using higher-order lags of  $Y_{i,t-1}$  as instruments for  $\Delta Y_{i,t-1}$ . For the GMM estimator to yield unbiased and consistent estimators requires the validity of the moment conditions.

$$E(\Delta \varepsilon_{i,t} Y_{t-k}) = E(\Delta \varepsilon_{i,t} X_{t-k}) = 0, \quad k > 1 \quad (2.7)$$

To check the validity of the instruments used in estimating the equations, two specification tests have been introduced by Arellano and Bond (1991) and Arellano and Bover (1995). These are the Sargan test of over-identification and the test for second-order serial correlation AR (2). Thus, we used these two model specification tests to check the validity of our estimation results. The Sargan test tests the overall validity of instruments. The null hypothesis of the Sargan test is that the instruments are not correlated with the residuals. The rejection of the null hypothesis means that instruments are not valid. Second-order serial correlation AR (2) checks the second-order serial correlation. The null hypothesis is that the differenced error term is not second-order serially correlated. The instruments are assumed to be valid if the null hypothesis is not rejected.

## 4. Results and discussions

### 4.1. Descriptive results discussions

This section provides a general overview of the banking environment in SSA countries. It compares foreign bank penetration among SSA countries that open banking industry to foreign investors and the depth, access and banking concentration relative to SSA countries that restrict banking industries to foreign investors.

#### 4.1.1. Foreign bank penetration

Table 1 shows the percentage of foreign banks among total banks and the percentage of foreign bank assets among total bank assets (foreign bank penetration) in 30 selected SSA countries. These countries are Angola, Benin, Botswana, Burkina Faso, Burundi, Cote d'Ivoire, Cameroon, Congo, D. R., Congo, Rep., Ghana, Kenya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Seychelles, South Africa, Sudan, Swaziland, Tanzania, Togo, Uganda, and Zambia.

Our estimation of the foreign bank penetration level is based on total assets varies among the sample countries. On average during our sample period (2000–2015), Mauritania, Nigeria, and Sudan have the lowest penetration of foreign banks among selected SSA countries (only 6 percent, 12percent, and 12percent respectively). While Madagascar, Mozambique, Benin, and Cote d'Ivoire

have the highest average foreign bank penetration level (100 percent, 98 percent, 93 percent, and 93 percent respectively).

#### 4.1.2. Access to bank service

Bank penetration also remains low in Africa and less than a quarter of sub-Saharan Africa's population has access to a formal bank account. This indicates that (i) there is less financial inclusion particularly in low-income communities and (ii) the degree to which private individuals can access financial services is limited. About 21 percent of the adult population having a bank account, Sub-Saharan Africa has the lowest level of financial penetrations. In other developing regions such as Latin American and the Caribbean, the share is 34 percent, whereas in OECD countries the average is 90 percent (African Development Bank Group, 2015). However, access to banking services has shown significant improvement in recent years. Account penetration in SSA countries has recorded a remarkable increase of almost 20 percent between 2011 and 2014, although from a low base (20.5 percent of the adult population). As mentioned before, these favorable developments have been facilitated by ongoing financial innovation. In particular, the rapid penetration of mobile phones has contributed to the fast rise of mobile banking in SSA, providing an opportunity to reach consumers in remote areas where efficient transport infrastructure is lacking (Marchettini et al., 2015).

Based on our descriptive analysis (shown in Table 2), SSA countries that open their banking industry have higher banking service access than SSA countries that restrict banking industries to foreign investors. On average (from 2000 to 2015) about 213 adults per 1,000 have bank accounts; banks provide 12 ATMs for 100,000 adults and 16 percent of firms access to bank service to finance their investment. In the contrast, in SSA countries that restrict their banking industries to foreign ownership,

**Table 1. The mean of foreign bank share (2000–2015)**

Country	Foreign bank share (%)	Foreign bank asset share (%)	Country	Foreign bank share (%)	Foreign bank asset share (%)
Angola	48	52	Mauritius	66	60
Benin	83	93	Mozambique	88	98
Botswana	59	87	Namibia	44	56
Burkina Faso	93	89	Niger	83	71
Burundi	32	58	Nigeria	16	12
Cote d'Ivoire	71	93	Rwanda	35	35
Cameroon	65	76	Senegal	74	81
Congo, D. R.	66	60	Seychelles	37	61
Congo, R	71	59	South Africa	20	23
Ghana	52	64	Sudan	17	12
Kenya	28	39	Swaziland	71	83
Madagascar	100	100	Tanzania	61	61
Malawi	30	32	Togo	16	31
Mali	50	41	Uganda	76	88
Mauritania	25	6	Zambia	77	89
Total				55	60

Source: authors' calculation based on bank scope and GFID

on average (from 2000 to 2015) only about 123 adults per 1,000 have bank accounts, banks provide 3.4 ATMs for 100,000 adults and 11 percent of firms access to bank service to finance their investment.

Overall Table 2 shows that in all indicators of bank access, SSA countries that open their banking industry to foreign investors have better bank access performance than SSA countries that restrict their banking industry to foreign ownership. Thus, the results of the descriptive statistics confirm that allowing foreign bank entry to the domestic banking sector improves the penetration of the banking industry in the country. This might be foreign banks come with financial innovation such as smartphone technology which is becoming more readily available, especially for the unbanked, as costs fall. Joint ventures between banks and telecom companies are beneficial to both parties. Banks provide the license and therefore the ability to channel deposits, while telecom companies provide platforms.

#### 4.1.3. Bank depth

The depth of financial development, an indicator of the extent to which agents can use financial markets for savings and investment decisions has a strong link with long-term economic growth as it enhances firms' and businesses' ability to invest in long-term and risky initiatives. A common indicator of financial deepening is domestic credit to the private sector as a percentage of GDP.

Table 3 shows that SSA countries that open their banking sector to foreign ownership have higher bank service depth than SSA countries that restrict their banking industry to foreign ownership. For example, SSA countries that open their banking industries to foreign ownership have about 19 percent private credit by deposit money banks to GDP, 24 percent domestic credit to the private sector to GDP, 24 percent bank deposits to GDP. In contrast, SSA countries that restrict foreign bank entry to banking industries have only about 10 percent private credit by deposit money banks to GDP, 16 percent domestic credit to the private sector to GDP, 19 percent bank

**Table 2. Bank access (2000–2015)**

Country	ATMs per 100,000 adults	Firms using banks to finance investments (%)	Bank accounts per 1,000 adults	Bank branches per 100,000 adults	Small firms with a bank loan (%)
SSA countries restrict	3.4	11.1	123.4	4.4	20.0
SSA countries open	11.9	16.1	212.6	5.9	17.8
SD(Open vs. restrict)	6.01	3.54	63.07	1.06	1.56

Source: authors' calculation based on bank scope and GFID and NBE.

**Table 3. Bank depth (2000–2015)**

Country	Private credit by deposit money banks to GDP (%)	Liquid liabilities to GDP (%)	Domestic credit to the private sector (% of GDP)	Bank deposits to GDP (%)
SSA countries restrict	10.02	31.89	15.82	18.93
SSA countries open	19.20	29.05	22.48	24.41
SD(Open vs. restrict)	6.49	2.01	4.71	3.87

Source: authors' calculation based on bank scope and GFID

deposits to GDP. These evidences reflect, in particular, the higher performance of SSA countries that open their banking sector to foreign ownership except liquid liabilities to GDP ratio.

#### 4.1.4. Banking competition

Banking systems in most SSA countries are characterized by high concentration. Bank restructuring, privatization, and new entries reduced concentration ratios slightly from the late 1990s to 2005–11, but these remain high when compared with other developing countries. Banking systems in most SSA countries are characterized by high concentration, as measured by the share of banking assets held by the five largest banks.

Table 4 shows an overview of the competitiveness and ownership structure in the banking industries in SSA. We compare SSA countries that allow their banking industry to foreign ownership relative to SSA countries that restrict their banking industry to foreign ownership. We used the Lerner index, Boone indicator, 5-bank asset concentration, bank credit to bank deposits (percentage) that captures bank competition. The higher values of these indicators show a lower degree of competition. Table 4 results show that foreign bank presence increases bank competition in the banking sector in SSA countries. For instance, SSA countries that allow their banking industries to foreign ownership have average 0.28 Lerner index and 86 percent asset concentration among top 5 banks while SSA countries that restrict their banking industry to foreign ownership have a 0.39 Lerner index and 96 percent asset concentration among top 5 banks.

The standard deviations of all indicators of banking concentration (monopoly) are higher in SSA countries that allow their banking industries to foreign ownership than SSA countries that restrict their banking industry to foreign ownership. From these results, we need to take caution because perhaps there are other regional differences (e.g., general development and regulations) influencing the effect of foreign presence and assets concentration on competitiveness and efficiency as hinted by Claessens and Horen (2015).

#### 4.2. Econometric estimation results

The regression equation was estimated for a direct effect of foreign banks on economic growth, as specified in equation (2.4). A dynamic GMM estimator is used in estimating coefficients. The results for the direct links are given in Table 5. Five different regression models were estimated. The results are given in columns. In the second column (Model 1), the results are reported without any efficiency and stability indicators. In all other models, we control indirect effects (efficiency and stability) of foreign banking sector. In the three different types of efficiency indicators (net interest margin, before-tax profits, and overhead costs) and stability indicator results are shown in Model 2, Model 3, model 4, and Model 5 respectively.

Table 5 shows the empirical results related to foreign bank penetration and GDP growth. We find that the sign of the foreign bank asset share coefficients are positive and statistically significant in all

Table 4. Bank monopoly (2000–2015)					
Country	Lerner index	Boone indicator	5-bank asset concentration	Concentration (%)	Bank credit to bank Dep. (%)
SSA countries restrict	0.39	-0.06	95.79	92.95	58.29
SSA countries open	0.28	-0.08	86.11	74.18	75.96
SD(Open vs. restrict)	0.08	0.01	6.84	13.27	12.49

Source: authors' calculation based bank scope and GFID

**Table 5. Direct effect of a foreign bank on GDP growth**

Independent variables	Dependent Variable: Real GDP Per Capita growth (Y)				Stability indicator	
	Model 1	Model 2	Model 3	Model 4		Model 5
Macroeconomic variables			efficiency indicators			
L.Y(Log)	-0.22*** (0.00)	-0.23*** (0.00)	-0.27*** (0.00)	-0.22*** (0.01)	-0.21*** (0.00)	
K(Log)	0.18* (0.06)	0.15* (0.06)	0.16 (0.11)	0.17* (0.08)	0.17* (0.10)	
GS (Log)	0.85*** (0.00)	0.77*** (0.00)	0.82*** (0.00)	0.82*** (0.01)	0.81*** (0.00)	
IR(Log)	0.15* (0.08)	0.12 (0.11)	0.14* (0.072)	0.13 (0.14)	0.15** (0.05)	
GDPPC (Log)	-0.24** (0.03)	-0.26** (0.02)	-0.22* (0.05)	-0.25** (0.03)	-0.24** (0.04)	
TOT(Log)	0.03 (0.53)	0.06 (0.55)	0.02 (0.69)	0.04 (0.40)	0.04 (0.43)	
LF(Log)	-0.03 (0.79)	-0.23*** (0.00)	-0.00 (0.98)	-0.02 (0.85)	-0.04 (0.63)	
Banking Variables						
FBS(Log)	0.09*** (0.01)	0.07*** (0.002)	0.08** (0.01)	0.08** (0.01)	0.09*** (0.010)	
BC (Log)	-0.05 (0.27)	-0.12*** (0.00)	-0.05 (0.23)	-0.06 (0.23)	-0.05 (0.26)	
BD(Log)	0.01 (0.86)	0.02 (0.81)	0.01 (0.889)	0.03 (0.75)	0.02 (0.81)	

(Continued)



**Table 5. (Continued)**

Independent variables	Dependent Variable: Real GDP Per Capita growth (Y)				Stability indicator
	Model 1	Model 2	Model 3	Model 4	
Macroeconomic variables					
BI1 (log)		-0.27** (0.04)			
BI2 (log)			0.20 (0.20)		
BI3 (log)				-0.28* (0.09)	
BS (log)					1.34 (0.16)
Constant	1.08** (0.19)	1.94** (0.01)	0.85 (0.27)	1.72** (0.08)	-0.04 (0.72)
No. of Observations	97	97	97	97	97
Number of Countries	24	24	24	24	24
Number of instruments	20	20	20	20	20
Sargan Test- chi2	9.66(0.21)	9.26(0.24)	9.33(0.23)	9.30(0.23)	9.69(0.21)
AR(2) Test-Z	0.85 (0.39)	0.55(0.59)	0.99 0(.32)	1.01(0.32)	0.86 (0.39)

Source: authors' calculation

P-values in parentheses: \* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01

five estimation models. A 1 percent increase in foreign bank asset share to total banking assets increases GDP per capita growth by 0.09 percent if we do not control banking efficiency and stability indicators. A 1 percent increase in foreign bank asset share to total banking assets increases GDP per capita growth by 0.07 percent, 0.08 percent, 0.08 percent, and 0.09 percent in model 2 (bank net interest margin is controlled), model 3 (bank return ratio to total assets is controlled), model 4 (overhead cost ratio to total assets is controlled) and model 5 (Z-Score is controlled) respectively. Thus, the results suggest that foreign banks play a positive role in enhancing economic growth; however, it is worthwhile to note that although the effect of foreign bank penetration on the GDP per capita growth is statistically significant, it is relatively small.

The estimated relationship between domestic bank credits to the private sector to GDP ratio (banking sector depth) and GDP growth also reveals a positive relationship but not statistically significant. The positive results show that deepening the financial sector of the SSA economy increases GDP growth. This result is consistent with Barro (1991) who predicts that financial deepening affects growth through investment. This has been validated since investment exerts a positive effect on economic growth. The positive effect of the ratio of domestic bank credit to the private sector to GDP on economic growth could therefore be viewed from the positive influence of investment on economic growth.

The coefficient on (the inverse of) the banking competition variable, bank concentration, has a negative sign and is statistically significant in all models. This implies that higher competitiveness in the banking sector is associated with higher economic growth. When the banking sector becomes competitive, the cost of external financing for firms could be lowered, and it fosters output growth to be higher. If we control bank return ratio to total assets, a 1 percent increase in concentration ratio reduces GDP growth by 0.12 percent. The result is consistent with Idun and Aboagye (2014) who reported a positive relationship between bank competition and economic growth.

The estimated coefficient of initial GDP per capita is negative and statistically significant. A 1 percent higher in initial real GDP per capita reduces GDP per capita growth by 0.24 if banking efficiency and stability indicators are not controlled. If we control both efficiency and stability indicators, a 1 percent higher in real GDP per capita reduces GDP per capita growth by 0.26 percent, 0.22 percent, 0.25 percent, and 0.24 percent if bank net interest margin, return before tax ratio to total assets, overhead cost ratio to total assets and Z-Score are controlled respectively. These results are consistent with the evidence of conditional convergence (Solow, 1956; Levine et al., 2000).

The coefficient of investment (K) is positive as expected and statistically significant. This implies that a higher growth rate of fixed capital accumulation is associated with a higher rate of economic growth. This is consistent with the main propositions of the Solow growth model and endogenous growth theory (Benhabib & Spiegel, 2000; Romer, 2012) fixed capital formation ratio to GDP exerts a positive and statistically significant effect on economic growth in SSA countries. From the results, the coefficient of fixed capital formation ratio to GDP (0.18) indicated that a 1 percent increase in fixed capital formation ratio to GDP will cause GDP growth to increase by 0.18 percent approximately, ceteris paribus; if efficiency and stability indicators are not controlled. A 1 percent increase in fixed capital formation ratio to GDP increases GDP per capita growth by 0.15 percent, 0.16 percent, 0.17 percent, and 0.17 percent if bank net interest margin, return before tax ratio to total assets, overhead cost ratio to total assets and Z-Score are controlled respectively.

The sign of the proxy to investment on human capital, a government spending on education to total GDP has an expected positive sign, indicating a 1 percent increase in government spending on education as a percent of total GDP increases GDP per capita growth by 0.85 percent if banking efficiency and stability indicators are not controlled. In contrast, A 1 percent increase in government spending on education increases GDP per capita growth by 0.77 percent, 0.82 percent,

0.82 percent, and 0.81 percent respectively if bank net interest margin, return before tax ratio to total assets, overhead cost ratio to total assets and Z-Score are controlled respectively.

The coefficient on the labor force is negative; suggesting the economic growth in SSA economies is negatively associated with the labor force to total labor. This might be because SSA countries could not use their labor force efficiently and their labor force is less productive because there is a burden for the economy because of the high rate of unemployment but the results are not statistically significant.

Interestingly, this study found that there is a positive and statistically significant relationship between inflation and GDP growth. The results in all estimations are consistent with the work of Bakare (2011) and Frimpong and Marbuah (2010) that concluded an increase in inflation was found to encourage private investment which boosts economic growth. Thus, if inflation increases by 1 percent, GDP growth will increase by 0.15 without controlling efficiency and stability indicators. If efficiency and stability indicators are controlled, a 1 percent increases in inflation rate increases GDP per capita growth by 0.12 percent, 0.14 percent, 0.13 percent, and 0.15 percent respectively given bank net interest margin, return before tax ratio to total assets, overhead cost ratio to total assets and Z-Score are controlled respectively.

Conventional results are obtained for trade openness. Openness to trade is often theorized to raise economic growth through channels such as access to advanced technology from abroad, greater access to a variety of inputs for production, and access to broader markets that raise the efficiency of domestic production through increased specialization. However, the results are not statistically significant for all four models. Trade openness rather has a deleterious effect on economic growth. The result is not surprising in the SSA countries' case as businesses often complain of losing out of competition as trade liberation encourages the importation of cheaper commodities into the economy relative to locally manufactured ones.

As the level of efficiency indicators fall, it is expected that economic growth drops because capital accumulation would be restricted with a higher cost of borrowing. The coefficients of the net interest margin and bank overhead cost ratio to total assets have an expected negative sign, implying that the higher the level of net interest margin and overhead cost ratio to total assets (higher inefficiency), the lower the level of economic growth. A 1 percent increase in net interest margin and bank overhead costs ratio to total assets reduces GDP per capita by 0.27 percent and 0.28 percent respectively.

Bank return on assets (before tax) has an unexpected sign but the coefficient is not statistically significant. A positive sign for banks' profit ratio may be expected if we take higher profits as an indicator of a higher level of financial activities. In this case, higher growth means higher levels of financial activity, in turn, higher profits for banks. Thus, the relationship between profits and growth can be positive. Similarly, the Z score has a positive effect on GDP per capita growth of SSA countries but it is not statistically significant

Finally, both test statistics support the model since we fail to reject the null hypothesis in each case. The Sargan test indicates that the instruments are not correlated with the error term, and the second-order test, AR(2) shows that the error terms in the first difference regression equation do not exhibit any second-order serial correlation.

## 5. Conclusion

This study provides a comparative analysis on banking environment for SSA countries that open their banking industries to foreign ownership and SSA countries that restrict banking industries to foreign investors using descriptive statistics. Moreover, a direct link between foreign bank asset share and economic growth was estimated using a system GMM dynamic panel estimator in Sub-Saharan African countries.

The descriptive evidence suggests that SSA countries that opened their banking sector to foreign investors have better banking service access, depth and competition than SSA countries that restrict banking industries to foreign investors. A system GMM estimation result for a direct effect of foreign bank asset share shows that in each case, the sign of the foreign bank asset share is positive and statistically significant with and without controlling banking efficiency and stability indicators. These results are important to show that foreign banks play a statistically and economically significant direct role in improving the growth rate independent of their indirect effects on growth.

Generally, the empirical results in this research support the issue that foreign bank entry improves economic growth directly. Thus, the results of this study can provide a policy implication to SSA countries that did not open their banking industries. They could open the door for foreign bank involvement in the financial sector and reap all the good benefits that SSA countries that open their banking industry to foreign investors are enjoying.

The null hypothesis of the Sargan test is that the instruments are not correlated with the residuals. The null hypothesis of the second-order correlation test is that the errors in the first-difference regression exhibit no second-order serial correlation. Y, K, GS, IR, GDDPC, TOT, LF, BC, BI, and BS represent real GDP per capita growth, fixed capital formation to GDP, government spending on education to GDP, inflation rate, initial GDP per capita; trade openness, labor force to total labor, foreign bank total asset share to total bank assets; bank competition, bank depth, bank efficiency indicators (BI1)- bank net interest margin, BI2-bank return on assets before tax and BI3- bank overhead costs to total assets) and banking sector stability respectively.

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**Appendix**

**Table A1. Summary of descriptive statistics**

Variable	Obs	Mean	Std. D.	Min	Max
<b>Banking sector variables</b>					
ATMs per 100,000 adults	296	11.86	16.15	0.00	69.28
Bank accounts per 1,000 adults	289	212.59	263.67	0.41	1753.84
Bank branches per 100,000 adults	355	5.90	8.68	0.40	54.84
Deposit money banks' assets to GDP (%)	469	25.70	22.36	0.63	122.80
Bank capital to assets ratio (%)	227	10.61	6.43	-29.69	47.04
Domestic credit to private sector (% of GDP)	472	22.48	26.92	0.00	160.13
Small firms with a bank loan or line of credit (%)	50	17.78	11.44	2.20	43.60
Firms using banks to finance investments (%)	50	16.12	10.27	2.10	43.20
Bank net interest margin (%)	461	6.83	3.32	0.62	39.24
Bank overhead costs to total assets (%)	461	5.79	2.69	0.66	27.64
Bank cost to income ratio (%)	462	63.51	18.65	20.00	166.25
Bank return on assets (% before tax)	461	2.91	2.22	-15.10	10.87
Foreign banks among total banks (%)	416	55.02	25.95	0.00	100.00
Foreign bank assets among total bank assets (%)	251	59.98	28.66	0.00	100.00

(Continued)

**Table A1. (Continued)**

Variable	Obs	Mean	Std. D.	Min	Max
<b>Banking sector variables</b>					
Bank concentration (%)	430	74.18	17.77	23.32	100.00
Lerner index	371	0.28	0.15	-1.15	0.57
Boone indicator	448	-0.08	0.28	-3.20	1.13
5-bank asset concentration	334	86.11	14.17	33.42	100.00
Bank Z-score	463	10.39	6.22	1.40	45.21
Bank accounts per 1,000 (%)	53	26.71	20.21	1.52	82.21
Broad money (% of GDP)	472	107.88	1175.47	1.62	18,347.09
<b>Macroeconomic Variables</b>					
Broad money to total reserves ratio	359	19.52	223.38	0.23	3986.53
GDP per capita (constant 2010 US\$)	480	2101.61	2599.87	219.19	13,542.23
Government expenditure on education(%GDP)	285	4.31	1.52	1.01	10.68
Gross fixed capital formation (% of GDP)	468	21.43	8.07	2.78	60.02
GDP per capita growth (annual %)	480	2.29	3.66	-15.30	30.36
Labor force, total	463	6.69	0.51	5.52	7.74
Trade (% of GDP)	479	2.23	0.09	2.08	2.51
Consumer price index (2010 = 100, average)	477	88.83	34.80	2.91	348.99

Source: authors' calculation based on bank scope and GFID



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