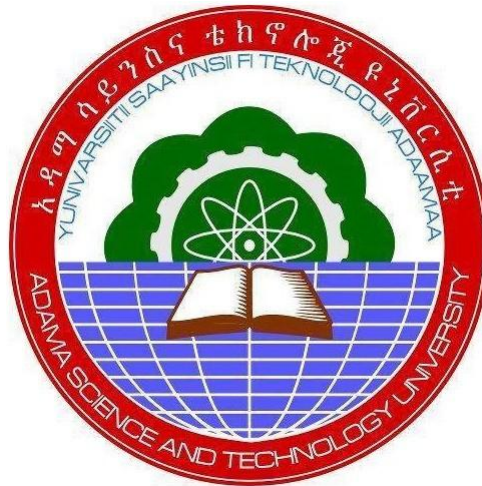


Foreign Bank Entry Nexus Economic Growth: A panel Data Analysis of Sub-Saharan African Countries and its implications for Ethiopia



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Abstract

This study provides a general overview of the banking environment and direct and indirect links between foreign bank entry and economic growth in Sub-Saharan African countries using descriptive statistics and generalized method of moments (GMM) estimator. The researchers used descriptive analysis to compare banking service access, depth, stability, and competition between SSA countries that allow their banking sector to foreign investors and SSA countries that do not open the banking sector to foreign investors. A system GMM was applied to estimate the direct and indirect links between foreign bank entry and economic growth.

The descriptive evidence suggests that SSA countries that allowed foreign bank entry have better banking service access, depth, and competition than non-bank globalized countries. Consistent with all other SSA countries which do not allow foreign bank entry, Ethiopia has very low performance in bank penetration, depth, efficiency, and competitiveness as compared to bank globalized SSA countries. The two sets of regression equations were estimated for (a) the direct effect of foreign banks and (b) the indirect effect of foreign banks on economic growth. A system GMM estimation result shows that foreign bank asset share has a direct positive effect on economic growth and it is statistically significant. Foreign bank asset share also indirectly increases economic growth through improving efficiency. However, the foreign bank asset share has a negative sign on Z-score indicating that foreign bank entry reduces economic growth indirectly through increasing banking instability in SSA countries. Hence the more pragmatic and reasonable choice should be striking the balance between the two opposite effects.

The findings of this study can provide imperative policy implications for Ethiopia. Ethiopia 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. However, enacting laws and implementing them in a more stringent approach is very essential to curb the potential instability effect of foreign bank entry on the banking sector.

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Acronyms (abbreviations)

- AfDB-African Development Bank
- AR-Auto Regression
- ATMs-Automatic Teller Machine System
- GDP –Gross Domestic Product
- GFID-Global Finance
- GMM- Generalized Method of Moments
- NBE-National Bank of Ethiopia
- OECD-Organization for Economic Cooperation and Development
- SSA-Sub Saharan African
- WTO –World Trade Organizati

1.Introduction

1.1. Background and justification

In recent decades, developed and developing countries increasingly allow banks to be foreign-owned. However, many Sub Saharan African countries to list Ethiopia Cape Verde, C.A. Republic, Chad, Djibouti, Eq. Guinea, Eritrea, Gabon, Gambia, G.-Bissau, Lesotho, Liberia, Sierra Leone, and Somalia, are unwilling to open the banking sector to foreign investors. 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 implication that foreign bank entry positively affects the host country's economic growth is still far from conclusive. International Monetary Fund and the World Trade Organization consider that banking sector integration spurs economic growth in developing countries. Various researchers also argue that foreign banks and particularly large international banks should be allowed to operate in developing countries because the presence of foreign banks may have a positive effect on the economic growth of hosting countries both via direct effect and or the indirect effects on domestic banking sector (Claessens et al., 2001 and Lehner and Schnitzer, 2008).

Foreign bank penetration direct benefits may arise when foreign banks bring additional capital into the host countries, seek profitable uses of these funds, and exert effective corporate control for productive use of loanable funds. By doing this, foreign banks may directly boost the efficiency of resource allocation, leading to accelerated economic growth in the host country (Demirguc-Kunt et al., 1998). However, there are only limited number of researches on the direct linkage between foreign bank entry and economic growth in host economies.

At the same time, foreign bank entry could improve economic growth indirectly by creating competitive pressures on domestic banks that stimulate efficiency (increasing profit margins and reducing overhead expenses), stability, innovation, and institutional quality such as regulation and supervision of the banking sector by forcing domestic banks to push up their screening skills to the same level as the foreign competitors, adopt modern practices and technologies of foreign competitors

which lead domestic financial intermediaries to provide better services in risk sharing, information, and liquidity. (Hermes and Lensink, 2004). Through these channels, liberalizing restrictions on foreign bank activity would improve the quality of banking services and boost economic growth.

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 and Lelyveld, 2014 and Dwumfour, 2017). Foreign ownership is positively associated with bank fragility. This is mainly due to the foreign banks may facilitate international capital flows, spur excessive borrowing, and overwhelm the capabilities of domestic regulators. In these ways, foreign banks will destabilize the domestic economy and hurt long-run economic growth¹. An important concern of foreign bank presence is the tendency of foreign banks to leave foreign markets instantly in case of economic crises (Peek and Rosengren, 2000). Especially after the recent crisis, concerns have been raised that foreign banks can be a source of contagion. When faced with capital or funding shocks at home, foreign banks might withdraw from cross-border banking activities to redirect lending at home. This can translate in a reduction in the capital that parents lend to their foreign affiliates, which in turn can harm the supply of credit by these affiliates in the host market.

However, there is a “foreign bank influx-stability hypothesis” against to aforementioned hypothesis “foreign bank influx-fragility hypothesis”. This hypothesis argues for the position that foreign banks’ inflow reduces the probability of banking crises and, therefore, brings stability to the financial sector of the host market. A few studies that support the stability view include Demirguc-Kunt et al. (1998), Arena et al. (2007), and De Haas and van Lelyveld (2006, 2010).

Moreover, foreign banks’ credit is skewed to large firms. Researchers such as Bruno and Hauswald (2014) worry that foreign bank focuses mostly on incumbent and wealthy firms and may push domestic banks out of the market as the result of their superior efficiency. Beck et al. (2018) also argued that foreign banks’ entry affects the availability of credit for small or opaque organizations. They suggest that larger firms

¹ Besides aforementioned direct and indirect 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

may get benefits from the existence of a foreign bank(s), but small firms are not affected. On the other side, investors might transfer their savings out of domestic banks into foreign banks due to the better service quality and international status, causing the domestic banks to incur more costs to attract more traditional investors or alternative investors with different sources of funding.

There are other studies in contrast to the aforementioned results. For example, Clarke et al. (2001) find that foreign bank penetration improves financing conditions for enterprises of all sizes, although this process seems to benefit larger firms more. Hence, it is not yet clear whether a higher level of foreign bank penetration has a positive or a negative effect on firms' access to credit.

In SSA countries the literature on the effect of foreign bank entry on economic growth is very small in volume and with no clear-cut results. Such neglect is unfortunate because there are no clear-cut results on the effect of globalization of the banking sector on economic growth. Figueira et al. (2006) and Dwumfour (2017) are the only existing studies (as far as the authors' knowledge). 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 effects for differing levels of domestic and foreign ownership on performance 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. This means that they have been unable to trace the impact of ownership changes over time. Dwumfour (2017), which examined banking stability in SSA, 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, a major concern of the study by Dwumfour (2017) is the reported significant and high-value coefficients, which is an indication of specification problems.

Although acutely relevant for pending policy initiatives (for example Ethiopia which is negotiating to join WTO but unable to join despite a long time negotiation) there exists surprisingly little rigorous on the relationship between foreign bank ownership and economic performance in Sub-Sahara African countries. Thus, given the

unwillingness of some African countries to open the banking sector to foreign investors; questionable results on the effect of globalizing bank sector on economic growth; a little volume of literature on the topic, especially on SSA countries, and the existence of methodological gaps in existing few studies, motivated us an inquiry into the direct and indirect effects associated with the globalizing banking sector to the economic growth of host countries in SSA countries.

In light of existing debates regarding the effect of liberalizing restrictions on foreign bank entry, this research offers empirical evidence on the following questions associated with the relationship between foreign banks and economic growth in SSA countries.

- Do foreign banks' entries accelerate economic growth directly?
- Do foreign banks' entries improve the efficiency of the banking system?
- Do foreign banks' entries increase banking stability?
- Do bank stability and efficiency improve economic growth?

1.2. Objective

Given the above main questions, this research aims to investigate the direct and indirect links between foreign bank entry and economic growth in Sub-Sahara African countries, using a generalized method of moments (GMM) dynamic panel system estimator (Arellano and Bover, 1995). Specifically, the study will

- investigate the direct effect of foreign bank entry on economic growth.
- examine the effect of foreign bank entry on banking sector efficiency.
- examine the effect of foreign bank entry on banking stability.
- investigate the indirect effect of a foreign bank entry on economic growth.
- draw implications to Ethiopia from Sub-Saharan African countries' experience.

1.3. Significance and beneficiaries

While many studies are showing that more than the average weight to the benefit of opening the financial sector, the implementation has not yet been made in a significant number of Sub-Saharan African countries. This might be due to the

absence of deep empirical investigation on foreign bank entry and the economic growth in many SSA African countries. Moreover, existing very limited studies have methodological gaps with no clear cut results. This study attempted to fill these gaps by using an appropriate model.

A long time ongoing discussion towards WTO membership by Ethiopia has also raised the question of liberalizing the financial as well as telecom sectors. The former sector is reserved for Ethiopian national, while the latter is under state monopoly. With this situation, it perhaps is possible to liberalize the sector at any time to tap the above benefit and to fulfill the membership condition. The accession process is based on negotiations: thus committing itself to comply with the WTO regulations at a fixed time in the future. However, the experience of other countries shows that Ethiopia would be requested to open up the key service sectors for foreign competition if it joins the organization. Therefore, this study will provide some policy implications for policy decisions. Finally, there is still a debate on the opening of the banking sector. Therefore; this study provides some academic additions for existing knowledge.

1.4. Organization of the study

This research is organized into five sections. Section one provides a general introduction to the whole report. Section two describes the review of related literature. Section three provides a detailed description of the methodology employed by the researchers. Section four contains results and discussions. Finally, the last section includes the conclusion of the researchers and gives relevant recommendations based on the findings of the study.

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 and 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; Greenwood and Jovanovic, 1990). Well-functioning banks can channel savings toward the most efficient uses. The underdeveloped economies with a low level of financial intermediation and a small, illiquid banking industry may be unable to channel savings efficiently.

In a well-globalized economy, banks can be owned by foreign investors. Banks are defined as foreign-owned if at least 51 percent of their shares are foreign-owned (Wu et al., 2010). Foreign banks may influence long-run economic growth directly and indirectly. By bringing additional capital, and facilitating risk management, foreign banks may directly boost capital accumulation and the efficiency of resource allocation in ways that accelerate long-run economic growth. Foreign banks may also spur growth indirectly by intensifying competition. By increasing competition, foreign banks raise the overall level of banking sector efficiency. Increasing competition from foreign banks forces the domestic banks to push up their screening skills to the same level as the foreign competitors, which leads domestic financial intermediaries to provide better services in risk sharing, information, and liquidity.

Even under the neoclassical theory of growth, improved efficiency will push the economy to grow faster as the domestic banks move towards the technical frontier. According to the AK (endogenous growth) theory, greater bank efficiency will permanently raise the rate of growth. The theory can be easily explained by looking at

the equation: $\frac{\bar{K}}{K} = \frac{sY - \delta K}{K}$

Where sY denotes the aggregate savings, δK denotes the aggregate depreciation of capital, \bar{K} denotes the capital accumulation. For a given K , \bar{K}/K (the economic growth rate in the endogenous theory) is positively related to Y , so bank inefficiency, by lowering Y for any given K , also lowers growth.

Opening the banking sector to foreign investors on economic growth can be illustrated using a simple neoclassical investment model. The theoretical equation of the model is adopted from Bayraktar and Wang (2005). Assuming that production function has been already maximized for labor, the profit function is determined by profitability shocks (A), private capital (K_p) and exogenous public capital stock per capita (K_g).

$$\pi = A_t K_{pt}^\alpha K_{gt}^{1-\alpha} \dots\dots\dots (2.1)$$

Where $0 < \alpha < 1$ the profit function exhibits a constant return to scale, suggesting a competitive product market. The capital stock is included to capture the possibly complementary effects of public capital on private capital. In the model, firms face two types of costs in the investment process: the actual cost of new capital and the cost of financing, where the second one may be caused by banking sector imperfections. The actual investment cost includes both payments for new capital, as well as additional capital adjustment cost, which is assumed to be convex:

$$C = P_{It} + \frac{\gamma}{2} \left[\frac{I_t}{K_{pt}} \right]^2 K_{pt}, \dots\dots\dots (2.2)$$

Where p is the price of new capital, it is an investment, and γ is the coefficient indicating the magnitude of the convex capital adjustment cost.

Firms may finance investments by either retained earnings or borrowing funds in the financial markets. It is assumed that the only source of external finance is through debt. In the presence of financial market imperfections, the cost of borrowing might be higher than the risk-free interest rate since financial intermediaries, in this case, may charge an external finance premium. The assumption is that the external finance

premium is a function of a firm's financial health, captured by the ratio of its debt to capital. Thus, the external finance premium is:².

$$\eta = \phi \frac{D_{t-1}}{K_{pt}} \dots \dots \dots (2.3)$$

Where D_{t-1} , the level of debt is borrowed in the previous period and ϕ determines the magnitude of the external finance premium, in turn, the financial market imperfections³

The expected sign of η is positive, indicating that a higher leverage ratio (D_{t-1}/K_{pt}) needs to pay a higher premium. Any factor reducing the external finance premium is expected to increase the level of investment.

Assuming that debt contracts are for one year, the debt payment by firms would be $(1+r) (1+\theta \frac{D_{t-1}}{K_{pt}}) D_{t-1}$, where r is the risk-free interest rate.

The value function maximized by a manager is:

$$V(A_t, K_{pt}, K_{gt}, D_{t-1}) = \underset{(I, D_t)}{Max} \pi (A_t, K_{pt}, K_{gt}) + D_t - C_t(K_{pt}, I_t) - (1+r_t)(1+\phi \frac{D_{t-1}}{K_{pt}}) D_{t-1} + \lambda E_{A_{t+1}/A_t}(A_t, K_{pt}, K_{gt}, D_t) \dots \dots \dots (2.4)$$

Subject to equations (2.1) and (2.2), and

$$I_t = K_{pt+1} - K_{pt}(1 - \delta)$$

Where $V(\cdot)$ is the value function, λ is the discount factor, and δ is the depreciation rate and A_{t+1}/A_t is the expected value of profitability shock in period t+1, A_{t+1} , given A_t . It is assumed that profitability shocks are serially correlated over time. Another assumption is that investment gets productive with one-period lag.

The 2-period version of the model is sufficient to show the link between investment and the cost of financing which depends on the development level of financial markets. In this case, investment and borrowing take place in period 1, and debt payment will be made in period 2:

$$V(A_1, K_{p1}, K_{g1}) = \left[\begin{array}{l} A_1 K_{p1}^\alpha K_{g1}^{1-\alpha} + D_1 - P_{I1} + \frac{\theta}{2} \left[\frac{I_1}{K_{p1}} \right] K_{p1} + \\ \lambda E_{A_2/A_1} A_2 K_{p2}^\alpha K_{g2}^{1-\alpha} - \lambda(1+r)(1+\phi \frac{D_1}{K_{p2}}) D_1 \end{array} \right] \dots \dots \dots (2.5)$$

² Gilchrist and Himmelberg (1998) present this kind of external finance premium. But they do not assign any functional form to it.

Where 1 stands for periods 1 and 2 for period 2. After dividing both sides of equation (2.5) by K_{p2} , we get:

$$V(A_1, K_{g1}) = \text{Max}_{(i_1, D_1) \left[\begin{array}{l} A_1 K_{p1}^\alpha K_{g1}^{1-\alpha} + D_1 - P_{I1} + \frac{\gamma}{2} \left[\frac{I_1}{K_{p1}} \right] K_{p1} + \\ \lambda E_{E_{A2/A1}} A_2 (I_1 + (1 - \delta)^\alpha K_{g2}^{1-\alpha} - \lambda(1+r)(1 + \phi \frac{I_1}{K_{p1}} \frac{d_1}{I_t + (1-\delta)}) d_1 \end{array} \right] \dots (2.6)$$

Where $V(\cdot) = V(\cdot) K_{p1} K_{g1} = K_{g1} / K_{p1} d_1 = D_1 / K_{p1} i_1 = I_1 // K_{p1} = K_{g1} // K_{p1}$

The first-order condition with respect to i_1 produces:

$$-p - \phi i_1 + \lambda E_{A2/A1} \frac{\partial \pi_2}{\partial i_1} - \lambda(1+r) \phi \frac{d_1^2}{(i_t + (1-\delta))^2} = 0$$

Where $\pi_2 = A_2 (i_2 + (1 - \delta))^\alpha K_{g2}^{1-\alpha}$, and the first-order condition with respect to d_1

$$\frac{[1-\lambda(1+r)] [i_t + (1-\delta)]}{\lambda(1+r) 2\phi} = d_1$$

After plugging equation (2.6) and in (2.5), we get

$$-p - \phi i_1 + \lambda E_{A2/A1} \frac{\partial \pi_2}{\partial i_1} - \frac{[(1-\lambda(1+r))]^2}{4\phi\lambda(1+r)} = 0$$

After rearranging equation (7), it becomes:

$$i_t = \left[-\frac{1}{\gamma} p + \frac{1}{\gamma} \lambda E_{A2/A1} \frac{\partial \pi_2}{\partial i_1} - \frac{[(1-\lambda(1+r))]^2}{4\phi\lambda(1+r)} \right]$$

The equation implies that the investment rate, i_t , is a negative function of the cost of capital, p , convex cost parameter, γ , and the parameter measuring the external finance premium ϕ ; and a positive function of expected future returns on capital, $\frac{\partial \pi_2}{\partial i_1}$. Thus, any factor decreasing the cost of borrowing, or capital adjustment increases the level of investment, in turn, economic growth.

2.2.1. Conceptual issues on banks and economic growth

Foreign banks may influence long-run economic growth directly and indirectly. By bringing additional capital, energetically seeking profitable users for these funds, exerting corporate control, and facilitating risk management, foreign banks may directly boost capital accumulation and the efficiency of resource allocation in ways that accelerate long-run economic growth. Foreign banks may also spur growth indirectly by intensifying competition. 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.

Lehner and Schnitzer (2008) studied the impact of foreign banks on host countries and they categorized the effects of foreign banks into two different channels, spillovers, and competitiveness. Spillovers may occur when domestic banks get their staff trained abroad or when domestic staff that has been employed and trained by foreign banks fluctuates to domestic banks. The replication of high-quality financial services offered by foreign banks may constitute a further channel for spillovers. Besides, spillovers may be realized through the implementation of better risk management techniques, superior forms of organization, or better data processing technologies. Moreover, foreign banks are likely to press for an improved explains these channels by setting up a model of spatial bank competition. Banks compete in prices for potential borrowers that engage in investment projects of uncertain returns. In their model, banks differ with respect to screening abilities

2.2.2. Conceptual issues on banks stability

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. Especially after the recent crisis, concerns have been raised that foreign banks can be a source of contagion. When faced with capital or funding shocks at home, foreign banks might withdraw from cross-border banking activities to redirect lending at home. This can translate in a reduction in the capital that parents lend to their foreign affiliates, which in turn can hurt the supply of credit by these affiliates in the host market (Peek and Rosengren, 2000)

Contrasting arguments, however, suggest foreign bank activity may not intense 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 when crises occur in the host country (Crystal et al., 2001; De Haas and Van Lelyveld, 2010).

In sum, though conceptual arguments exist for and against foreign bank entry, the major gap is the evidence: there is little systematic evidence regarding the connection between foreign bank entry and domestic financial fragility especially in SSA countries.

2.2.3. Conceptual issues on banks and efficiency

Foreign Banks influence banking sector profit margins and overhead expenses (Clasessens et al., 1997). Easing restrictions on foreign bank entry may improve the quality, pricing, and availability of banking services in many ways. Foreign banks may directly bring new and better skills, management techniques, training procedures, technology, and products to the domestic market. Also, foreign banks indirectly boost efficiency by stimulating competition and will put pressure on profits and overhead expenses. Furthermore, foreign banks may accelerate the development of ancillary institutions that promote the flow of information about firms. For instance, foreign banks may encourage the emergence of better rating agencies, accounting and auditing firms, and credit bureaus that acquire and process information. Finally, banks may stimulate improvements in the supervisory and regulatory framework.

2.2. Empirical review of literature

Empirical studies investigating the direct link between foreign banks and growth could not find any robust results. For example, Demirguc-Kunt, et al. (1998) cannot find any direct link between foreign banks and long-run economic growth.

On the other hand, 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. For example, Demirguc-Kunt et al. (1998) and Claessens et al. (2000, 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 (Green et al., 2003, 2004). Foreign banks are found to be cost and profit efficient than domestic banks, especially state-owned domestic banks (Bonin et al., 2005).

Also, foreign bank presence and fewer restrictions on banks' activities have been directly linked to greater competitiveness in a host country's banking sector (Claessens and Laeven, 2003; Gelos and 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 and profitability and lower overhead costs in developing host countries (Demirguc-Kunt and Huizinga, 2000; Micco et al., 2007; Grigorian and Manole, 2006). 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.

Levine (1996 and 2001) points out that international financial integration promotes 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. (2000) 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 and 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.

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). In part, this can be explained by the dominance of India's state-owned banking sector. The profitability of the foreign banks in China was lower than that of domestic banks (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). 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 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 and domestic banking stability, little can be said about the African context, except Vogel and Winkler (2010) and Dwumfour (2017). 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.

3. Data and methodology

3.1. Theoretical and empirical model specification

3.1.1. Direct link between a foreign bank and economic growth

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 and 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:

$$Y_t = AK_t^\alpha \dots\dots\dots (3.1)$$

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:

$$A=F(GS, IR, GDPPC, TOP, LF, FBS, BC, BD, BI, BS) \dots\dots\dots (3.2)$$

By substituting equation (3.2) into equation (3.1), we obtain:

$$Y_t = K_t^{\alpha_1} GS_t^{\alpha_2} IR_t^{\alpha_3} GDPPC_t^{\alpha_4} TOT_t^{\alpha_5} LF_t^{\alpha_6} FBS_t^{\alpha_7} BC_t^{\alpha_8} BI_t^{\alpha_9} BS_t^{\alpha_{10}} \dots\dots\dots (3.3)$$

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 development 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, and Robert; 1956 and Levine et al., 2000).

TOP is trade openness which 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 couldn't 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 individuals, firms (including banks). 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 and 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, government offices, and public enterprises. A higher BD indicates a higher level of domestic investment, indicating higher output holding everything else constant. Arcand et al. (2012) 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. (2012), the threshold (as a percentage of GDP) lies between 80% and 100% of the credit to the private sector

BI is a bank inefficiency (reverse efficiency) indicator which is controlled by three variables (Bayraktar and 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 higher level of banking sector 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 (Laeven and Levine, 2009; Demirguc- Kunt and Huizinga, 2010). 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, μ is average net income as a percent of total assets, and σ 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 3.3 to a linear form. The logarithmic transformation of a model can be written as

$$\log Y_t = \alpha_0 + \alpha_1 \log K_t + \alpha_2 \log GS_t + \alpha_3 \log IR_t + \alpha_4 \log GDPPC_t + \alpha_5 \log TOT_t + \alpha_6 \log LF_t + \alpha_7 \log FBS_t + \alpha_8 \log BC_t + \alpha_9 \log BI_t + \alpha_{10} \log BS_t + F_{i,t} + T_{i,t} + \varepsilon_t \dots \dots (3.4)$$

The coefficients $\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5, \alpha_6, \alpha_7, \alpha_8, \alpha_9$ and α_{10} are elasticities of their respective variables, α_0 is the constant component, t denotes time, ε is the error term, $F_{i,t}$ and $T_{i,t}$ are country and time fixed effects respectively.

3.1.2. Indirect link between foreign bank and economic growth

Foreign bank and Efficiency

Foreign bank entry improves economic growth indirectly through encouraging financial regulation, and improving domestic banks' efficiency by increasing competition through lowering profits and overhead expenses. Claessens et al. (2001) and Bayraktar and Wang (2005) show that an increase in foreign bank share increases competition in the domestic banking sector by reducing costs, profits, and net interest margins. A higher level of competition in domestic financial markets increases the efficiency of them, which leads domestic financial intermediaries to provide better services in risk sharing, information, and liquidity. All of these factors are expected to spur faster economic growth due to their effects on the development level of financial

markets. Thus, we hypothesize that the competition from foreign banks forces the domestic banks to cut their costs and to reduce their inefficiency which in turn promotes economic growth.

Based on King and Levine (1993) and other theoretical literature we can write inefficiency (reverse of efficiency) equations as follows:

$$BI = f(Y, IR, RIR, TR, GDPPC, FBS, BD, BC) \dots\dots\dots (3.5)$$

Where *BI* is a banking inefficiency which is controlled by profits ratio to total assets (before tax), overhead costs ratio to total assets, and net interest margin, *Y* is real GDP per capita growth, *IR* is the inflation rate, *RIR* is the real interest rate, *TR* is tax rate as a percentage of profit, *GDPPC* is real GDP per capita, *FBS* is foreign bank assets among total banks which is expected to reduce banking inefficiency (Bayraktar and Wang, 2005). *BD* is bank depth and *BC* is a bank competition. By using logarithm we can transform equation 3.5 to a linear form. The logarithmic transformation of a model can be written as

$$BI_{i,t} = \beta_0 + \beta_1 \log Y_{i,t} + \beta_2 \log IR_{i,t} + \beta_3 \log RIR_{i,t} + \beta_4 \log TR_{i,t} + \beta_5 \log GDPPC_{i,t} + \beta_6 \log FBS_{i,t} + \beta_7 \log BD_{i,t} + \beta_8 \log BCI_{i,t} + F_{i,t} + T_{i,t} + \varepsilon_{i,t} \dots\dots\dots (3.6)$$

Equation (3.6) estimates the link between the asset share of foreign banks and the efficiency of the banking sector. The coefficients $\beta_1, \beta_2, \beta_3, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7$ and β_8 are elasticities of their respective variables, β_0 is the constant component, *t* denotes time, $F_{i,t}$ and $T_{i,t}$ are country and time fixed effects respectively and ε is the error term.

Foreign banks and bank stability

The role of foreign banks concerning 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. After the recent crisis, concerns have been raised that foreign banks can be a source of contagion. When faced with capital or funding shocks at home, foreign banks might withdraw from cross-border banking activities to

redirect lending at home (Peek and Rosengren, 2000). Contrasting arguments, however, suggest foreign bank activity may enhance stability by offering valuable diversification services and absorbing shocks occurring in the host market. A study by De Haas and Van Lelyveld (2006, 2010) also highlighted how foreign banks can enhance financial stability when a crisis occurs in the host country. Another argument is competition frugality, which suggests a negative effect of competition on banks' stability (Mulyaningsih et al., 2015). Based on Demirgüç-Kunt et al. (1998), a ratio of nonperforming assets to the total banking system is used as a proxy for banking stability. However, in our study hence there is not sufficient data for this variable for many SSA countries, we use bank Z-score to measure banking stability. Based on Sulemana et al. (2018) and the theory of banking crises we can write the stability equation as follows:

$$BS=f(Y, IR, RIR, GDPPC, MS, FBS, BD, LAD, BMR, TOT, BI) \dots\dots\dots (3.7)$$

Where BS is the stability indicator and FBS, foreign bank asset share total bank asset which is our main independent variable. The first group of control variables captures macroeconomic and international factors such as rate of inflation (IR), a growth rate of real GDP per capita (Y) used to control for cyclical output effects, an initial level of real GDP per capita (GDPPC) which is used to control for economic development and expected to reduce the tendency of banking crises, percentage of trade to GDP (TOT), real interest rate (RIR) and mobile cellular subscribers per 100,000 (MS). The second set of control variables includes characteristics of banking system, banking inefficiency (BI) which is controlled by bank net interest margin, bank return ratio to total assets (before tax), and bank overhead costs ratio to total assets. Furthermore, banking depth (BD) which is controlled by bank credit to the private sector as a ratio of GDP which is expected to correlate positively with a banking crisis, sudden capital outflows or vulnerability to run on currency (BMR) and liquidity (LAD) which are controlled by broad money divided by foreign exchange reserves (BMR) and the ratio of loans to bank assets (LAD) respectively.

By using logarithm we can transform equation 3.7 to a linear form. The logarithmic transformation of a model can be written as

$$BS_{i,t} = \gamma_0 + \gamma_1 \log Y_{i,t} + \gamma_2 \log IR_{i,t} + \gamma_3 \log RIR_{i,t} + \gamma_4 \log GDP_{i,t} + \gamma_5 \log MS_{i,t} + \gamma_6 \log FBS_{i,t} + \gamma_7 \log BD_{i,t} + \gamma_8 \log LAD_{i,t} + \gamma_9 \log BMR_{i,t} + \gamma_{10} \log TOT_{i,t} + \gamma_{11} \log BI_{i,t} + F_{i,t} + T_{i,t} + \varepsilon_{i,t} \dots \dots \dots (3.8)$$

Equation (3.8) estimates the link between the asset share of foreign banks and stability in the banking sector.

Finally, in the second step of indirect estimation, the link between efficiency and stability variables and growth is estimated. The only missing explanatory variable for this estimation from equation (3.4) is the share of foreign banks in the banking sector.

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 do not open 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, International Monetary Fund, and the National Bank of Ethiopia.

3.3. Variable description

Our variables that were used for regression estimations can be classified as macroeconomic and banking sector variables. Bank variables include foreign bank

asset share to total bank assets (FBS), bank concentration (BC), bank credit to the private sector (BD), domestic bank net interest margin (BI1), bank return on assets before tax (BI2), bank overhead costs to total assets (BI3), Z-Score (BS) and broad money divided by foreign exchange reserves (BMR) and percentage of loans to bank assets (LAD). Macroeconomic indicators are real GDP per capita growth (Y), fixed capital formation to GDP, government spending on education to GDP (GS), consumer price index (IR), initial GDP per capita, trade openness (TOT), labor force to total labor (LF), the inflation rate (IR) and the real interest rate (RIR).

Bank variables

Bank Z-Score: It captures the probability of default of a country's banking system. Z-score compares the buffer of a country's banking system (capitalization and returns) with the volatility of those returns. It is estimated as Z- score: $Z=(k+\mu)/\sigma$, where k is equity capital and reserve as a percent of total assets, μ is average net income as a percent of total assets, and σ is the standard deviation of return on assets as an indicator of return volatility. This was collected from the Bank scope.

Broad money to total reserves ratio: broad money is the sum of currency outside banks; demand deposits other than those of the central government; the time, savings, and foreign currency deposits of resident sectors other than the central government; bank and traveler's checks; and other securities such as certificates of deposit and commercial paper.

Foreign bank share: The ratio of total assets of foreign banks to total assets in the banking sector.

Liquid assets to deposits and short term fund: The ratio of the value of liquid assets (easily converted to cash) to short-term funding plus total deposits. Liquid assets include cash and due from banks, trading securities, and at fair value through income, loans, and advances to banks, reverse repos, and cash collaterals.

Net interest margin (in percent of total assets): The net interest income as a percentage of total assets. The higher the ratio the cheaper the funding It is an indicator of operational performance.

Overhead Costs (in percent of total assets): It is a measure of efficiency. It is an indicator of the quality of operations.

Pre-tax operation income (in percent of total assets): The ratio of profit before tax to total assets.

Domestic credit provided by banking sector (% of GDP): Domestic credit provided by the banking sector includes all credit to various sectors on a gross basis, except credit to the central government, which is net. The banking sector includes monetary authorities and deposit money banks, as well as other banking institutions where data are available (including institutions that do not accept transferable deposits but do incur such liabilities as time and savings deposits).

Foreign own banks: Banks are defined as foreign-owned if at least 51 percent of their shares are foreign-owned (Wu et al., 2010). Their asset shares in total assets in the banking sector measure the share of foreign banks at the country level. A positive sign is expected, since an increase in the presence of foreign banks in a market may reduce the cost of financing, in turn, increase capital accumulation and economic growth.

Macroeconomic Variables

GDP per capita: GDP per capita is gross domestic product divided by midyear population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products.

GDP growth (annual %): Annual percentage growth rate of GDP at market prices based on constant local currency. Aggregates are based on constant 2010 U.S. dollars. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources.

Inflation, consumer prices (annual %): Inflation, as measured by the consumer price index, reflects the annual percentage change in the cost to the average consumer of acquiring a fixed basket of goods and services.

Real interest rate (%): The real interest rate is the lending interest rate adjusted for inflation as measured by the GDP deflator.

Tax rate: It is the ratio of taxes paid to profit before tax.

Trade openness- is trade openness which is proxied by an international trade policy variable, i.e. the trade to GDP ratio.

Fixed capita formation: Capital input is measured by the gross fixed capital formation, equivalent to gross domestic fixed investment, which includes plants, machinery, and equipment purchases; land improvements; and the construction of infrastructure. The growth rate of fixed capital formation is expected to be positively related to the growth rate of output.

3.4. Data analysis method

3.4.1.Descriptive analysis method

The researchers used descriptive analysis to compare banking service access, depth, stability, and competition between SSA countries that allow their banking sector to foreign investors and SSA countries that do not open the banking sector to foreign investors. For this purpose, the researchers used frequency, mean, and standard deviations.

3.4.2. Econometric model

This research aims to investigate direct and indirect links 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 and 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, system GMM estimators are recommended for consideration in empirical growth research. This econometric technique has been recently used in the growth literature as an alternative to cross-sectional estimators⁴. 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

⁴ See Levine, Loayza, and Beck (2000), Easterly and Levine (1997).

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.

$$Y_{i,t} = \varphi_0 Y_{i,t-1} + \varphi_n X_{i,t} + F_{i,t} + T_{i,t} + \varepsilon_{i,t} \dots \dots \dots (3.8)$$

After taking first differences, the previous equation yields:

$$\Delta(Y_{i,t}) = \varphi_0 \Delta Y_{i,t-1} + \varphi_n \Delta X_{i,t} + \Delta \varepsilon_{i,t} \dots \dots \dots (3.9)$$

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 (3.9) 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.

$$E(\Delta \varepsilon_{i,t} y_{t-k}) = E(\Delta \varepsilon_{i,t} X_{t-k}) = 0, \forall k > 1 \dots \dots \dots (3.10)$$

Thus, equations (3.4, 3.6, and 3.8) are estimated following the same methodology. 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 discussion

4.1. Descriptive results on banking environment in SSA and discussions

This section provides a general overview of the banking environment in globalized SSA countries relative to the non-globalized SSA, particularly to Ethiopia. It discusses the depth, access, efficiency, soundness, and concentration in the banking industry. Evidence suggests that the presence of larger foreign banks is usually associated with greater access to finance for small and medium scale enterprises (Clarke et al., 2005). However, unfair competition can arise in cases where foreign banks disproportionately dominate the banking industry in terms of assets and branches. Foreign banks with the capacity to obtain both hard and soft information about borrowers and businesses can embark on anticompetitive schemes by “cherry-picking” borrowers while worsening the remaining credit pool for small domestic banks (Detragiache et al., 2008). This can have an overall negative effect on small businesses and mitigate the positive effect of foreign bank entry experience.

4.1.1. Summary of descriptive statistics

The descriptive statistics are reported in Table 1. These statistics reveal some important characteristics of the banking sector and macroeconomy for SSA countries that opened the banking sector to foreign investment. For example, SSA economies are characterized by relatively large variations of their GDP per capita growth rates (the standard deviation is about 3.6 percent and larger than the mean growth rate of emerging economies of 3.2 percent), high but highly variant fixed capital growth as a percent of GDP (mean of 21.43 percent and standard deviation of 8.07), and high percent to GDP but a lower variation of labor force (6.69 mean and 0.51 percent standard deviation). The inflation rate in terms of consumer price index rate is relatively high with higher variations in the sampled SSA countries (about 88.83 percent mean and 34.80 percent standard deviations).

Finally, the mean values of the ratio of M2 to reserves and credit to the private sector indicate about 223.38 percent and 22.48 percent respectively. However, the maximum indicate about 3986.53 percent for the ratio of M2 to reserves and 160.13 percent for credit to the private sector.

Table 1: Summary of descriptive statistics

Variable	Obs	Mean	Std. D.	Min	Max
Banking sector variables					
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 (%)	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 deposits to GDP (%)	469	24.41	18.62	1.69	97.82
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
Bank credit to bank deposits (%)	470	75.96	24.55	13.75	137.33
Bank regulatory capital to risk-weighted assets %	212	17.60	5.36	1.75	38.20
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
Liquid assets to deposits and short term funding %	464	39.05	20.02	5.44	150.98
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
Banking crisis dummy (1=banking crisis, 0=none)	360	0.01	0.09	0.00	1.00
Bank Z-score	463	10.39	6.22	1.40	45.21
Bank nonperforming loans to gross loans (%)	210	9.98	9.94	0.96	74.10
Bank accounts per 1,000 (%)	53	26.71	20.21	1.52	82.21
Bank capital to assets ratio (%)	227	10.61	6.43	-29.69	47.04
Bank liquid reserves to bank assets ratio (%)	415	18.91	14.46	1.76	109.50
Bank nonperforming loans to total gross loans (%)	130	6.90	4.83	0.96	37.25
Broad money (% of GDP)	472	107.88	1175.4	1.62	18347.09
Macroeconomic Variables					
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	219.1	13542.23
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
Mobile cellular subscriptions (per 100 people)	480	40.41	39.66	0.02	169.00
Tax rate, percent of commercial profits	322	52.63	52.34	14.30	339.10
Real interest rate (%)	412	10.50	14.55	-60.80	96.37
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

Next to macroeconomic-specific variables, there are bank sector specific variables supplement to this study. Our main independent variables is foreign bank penetration which is proxied by either share of foreign bank assets to total asset or share of number of foreign banks to total number of banks in economy. In the SSA countries that opened their banking sector, the foreign bank penetration rate is around 57.5 percent on the average (59.98 percent in terms of total assets and 55.02 percent in terms of numbers).

Our other important banking sector variables are efficiency and stability indicators. Three different variables are used in controlling for the inefficiency (reverse efficiency) indicators, which may play an important role in reducing the cost of borrowing for firms. These are the level of net interest margin, profits before tax, and overhead costs. It is expected that as the level of these variables drops, the inefficiency (efficiency) of banks decrease (increase), indicating a higher level of competition. In sampled SSA countries inefficiency indicators are high with higher variations (means are 6.83, 5.79, and 2.91 respectively and standard deviations are 3.32, 2.69, and 2.22 respectively for net interest margin, bank overhead costs ratio to total assets, bank cost ratio to total asset, bank return ratio to total assets (before tax) respectively).

Moreover, to capture the banking sector stability, aggregate prudential ratios such as the ratio of non-performing loans to gross loans which is relevant as a warning signal for systemic banking solvency (Cihak and Schaeck, 2010), probability of bank crisis, and banking Z-score can be used. The mean z-score, probability of bank crisis, and bank non-performing loans to gross are 0.01, 10.39, and 9.98 percent respectively, revealing relatively low stability in the banking system of the SSA region with high variants (0.09, 6.22, and 9.94 standard deviations respectively).

The dependence on banks for financing investment varies substantially across countries, ranging from the lowest (2.10 percent) and the highest in (43.20 percent). It is evident that, mean of firms using banks to finance investments is low with high variations (16.12 percent and 10.27 percent standard deviations). To capture banking sector competition, bank concentration percent, Lerner index, Boone indicator, and 5-bank asset concentration can be used. These all variables measure banking concentration as a proxy to banking competition. The banking concentration level is

measured by the ratio of the assets in the largest banks' total banking sector assets. The means of bank concentration percent, Lerner index, Boone indicator, and 5-bank asset concentration are 74.18, 0.28, -0.08, and 86.11 percent respectively, revealing relatively low competitions in SSA countries' banking sector.

4.1.2. Foreign bank penetration

Table 2 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.

Table 2: 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

Our estimation of the foreign bank penetration level, 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%, 12%, and 12% respectively). While Madagascar,

Mozambique, Benin, and Cote d'Ivoire have the highest average foreign bank penetration level (100%, 98%, 93%, and 93% respectively).

4.1.3. 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% 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%, whereas in OECD countries the average is 90% (AfDB, 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 (IMF, 2015).

Based on our descriptive analysis (shown in Table 3), bank globalized SSA countries have better banking service access than non-bank globalized SSA countries. On average (from 2000-2015) 21% of adults have access to bank accounts in countries that open their banking sector to foreign investors. In the contrast, only 12% of adults have access to bank accounts in SSA countries that blocked foreign investors' entry in the banking sector. Ethiopia as a non-bank globalized country performed very low performance in bank penetration during the period under consideration. Only 9% of adults can access the bank account. Moreover, in non-bank globalized SSA countries, only 3.4 ATMs provide banking services for 100,000 adults. However, in globalized countries, about 12 ATMs provide banking services for 100, 000 adults. Disappointingly, the provision of ATMs per 100, 000 adults is only 0.2 for Ethiopia. In bank globalized SSA countries more firms (16%) access to bank service to finance their investment than non-bank globalized SSA countries firms (11%). In Ethiopia, only 13% of firms can access a bank to finance their investment. This figure shows

that firms in Ethiopia have better access to bank services than SSA countries that blocked their banking sector to foreign countries but less access than SSA countries that opened the banking sector to foreign investors.

Overall Table 3 shows that in all indicators of bank access, globalized SSA countries have better bank access performance than non-globalized SSA countries. The standard deviations of all indicators of bank access are higher between Ethiopia and bank globalized SSA countries than Ethiopia and non-bank globalized SSA countries. 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.

Table 3: 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 (%)
Non globalized SSA	3.4	11.1	123.4	4.4	20.0
Ethiopia	0.2	13.5	93.9	1.4	21.4
Globalized SSA	11.9	16.1	212.6	5.9	17.8
SD (Ethiopia VS Non globalized SSA)	2.3	1.7	20.9	2.1	1.0
SD (Ethiopia VS globalized SSA)	8.3	1.8	83.9	3.2	2.5
SD (Globalized VS Non globalized SSA)	6.01	3.54	63.07	1.06	1.56

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

4.1.4. 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. It captures claims on the private sector by deposit-taking financial institutions relative to economic activity and hence, reflects the role played by financial intermediaries in channeling savings to private sector investors. Higher domestic credit to the private sector is therefore indicative of the provision of productivity-enhancing financial services (King and Levine, 1993). The banking sector in sub-Saharan Africa has expanded steadily over the past decade. Helped by reform efforts (Kasekende, 2010), the depth and coverage of financial systems—as measured by all the standard indicators of financial development, such as the ratios of private sector credit to GDP. IMF (2015), however, shows that, on average, SSA countries continue to have a shallower financial system than in other developing regions of the world.

Table 4: 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 (%)
Non Globalized SSA	10.02	31.89	15.82	18.93
Ethiopia	17.47	39.79	20.81	30.73
Globalized SSA	19.20	29.05	22.48	24.41
SD (Non Globalized SSA VS Ethiopia)	5.27	5.59	3.53	8.34
SD (Globalized SSA VS Ethiopia)	1.22	7.59	1.18	4.47
SD (Globalized SSA VS Non Globalized)	6.49	2.01	4.71	3.87

Source: authors' calculation based on bank scope and GFID

Table 4 shows that SSA countries that open their banking sector to foreign ownership have higher bank service depth than countries that blocked their banking sector to foreign ownership. In bank –globalized SSA countries domestic credit to the private sector to GDP is 23 percent. On the other hand in non-bank globalized SSA countries, the share of domestic credit to the private sector to GDP is only 16 percent. In Ethiopia, the share of domestic credit to the private sector to GDP is 21 percent which is laid between the two groups of countries. Table 3 shows that in all proxies of bank depth, bank globalized SSA countries have higher bank depth than non-bank globalized SSA countries. This evidence reflects, in particular, the performance of SSA countries that open their banking sector to foreign ownership, recording an

average ratio of private credit by deposit money banks to GDP- 19%, domestic credit to the private sector to GDP -23%, and the ratio of bank deposits to GDP- 24%. The standard deviations of all indicators of bank access between Ethiopia and bank globalized SSA countries are higher than Ethiopia and non-bank globalized SSA countries except liquid liabilities to GDP ratio. This standard deviation result also strengthens the aforementioned findings.

4.1.5. Bank inefficiency

Cost controls and effective utilization of resources are central to the success of financial intermediaries operating in a competitive environment. While innovations in service delivery through electronic systems and consolidation movements in the banking industry are geared toward improvements in efficiency indicators, there is no consensus on what factors drive banking efficiency (Altunbas and Molyneux, 2001). The bank efficiency ratio is a quick and easy measure of a bank's ability to turn resources into revenue. The lower (higher) the ratio, the better, and an increase in the efficiency (inefficiency) ratio indicates either increasing costs or decreasing revenues.

In SSA countries, inefficiency (reverse efficiency) indicators are measured by net interest margin and return on assets (profitability indicators), have declined between 2004 and 2011 but remain very high, pointing to a lack of competition and ratio of overhead costs to total assets (low operational efficiency indicator) remains high which shows that banking systems in SSA are less efficient (Mecagni, 2015).

Tables 5 shows that in all three major indicators of the inefficiency of bank net interest margin, the ratio of overhead costs to total assets, and the ratio of return on assets before tax to total assets are higher in non-bank globalized SSA countries (7.43%, 6.9%, and 3.54% respectively) than bank globalized SSA countries (6.83%, 5.79%, and 2.91% respectively). The banking sector in Ethiopia has a 4.08% net interest margin, 2.16% overhead costs, and 3.55% return on assets before tax. These results show us operational inefficiency remains relatively high, as shown by a high bank net interest margin, the overhead ratio of costs to total assets, and the ratio of bank return to total assets before tax with banking systems in non-bank globalized SSA countries including Ethiopia than bank globalized SSA countries. As indicated

by their high net margin, non-bank globalized SSA countries banks may pass their high overhead costs on to their customers. The standard deviations of all bank inefficiency variables between Ethiopia and bank globalized SSA countries are higher than the standard deviation of all inefficiency variables between Ethiopia and non-bank globalized SSA countries. This evidence reflects, in particular, the performance of bank globalized SSA countries, recording lower bank inefficiencies than non-bank globalized SSA countries.

Table 5: Bank inefficiency (2000-2015)

Country	Bank net interest margin (%)	Bank-overhead costs to total assets (%)	Bank return on assets (% after-tax)	Bank return on assets (% before tax)
Non Globalized SSA	7.43	6.97	3.23	3.54
Ethiopia	4.08	2.16	2.62	3.55
Globalized SSA	6.83	5.79	2.18	2.91
SD(Non globalized SSA vs Ethiopia)	2.36	3.40	0.43	0.01
SD(Globalized SSA vs Ethiopia)	1.94	2.57	0.31	0.45
SD(Globalized vs non Globalized SSA)	0.42	0.83	0.74	0.45

Source: authors' calculation based on bank scope and GFID

4.1.6. Banking competition

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. 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 6 provides an overview of the competitiveness and ownership structure in the banking industries in bank globalized SSA relative to non-bank globalized SSA countries. We used the Lerner index, Boone indicator, 5-bank asset concentration, bank credit to bank deposits (%) that captures bank competition. For example, the higher values of the Lerner index indicate a lower degree of competition. As shown in

column 2 of Table 6, bank globalized SSA's banking environment is more competitive than non-bank globalized countries. Bank globalized countries have a 0.28 Lerner index and non-bank globalized countries have a 0.39 Lerner index which is higher than the bank-globalized SSA countries. Ethiopia's banking environment is much less competitive than that of bank globalized and non-bank globalized SSA countries. This is partly due to its closed policy to foreign investors and the very late privatization of the banking industry. Non-globalized and Ethiopia have higher Lerner indices (0.30 and 0.50 respectively) signaling a low competitive banking environment. Besides, bank globalized SSA countries have a lower degree of asset concentration among the top 5 banks than non-globalized SSA countries. The top five banks have 86% asset concentration in these countries. During the study period on average, the asset concentration among the top 5 banks in non-globalized SSA countries is 96%. From this result, we can conclude that foreign bank presence increases bank competition in the banking sector in SSA countries but we need to take caution here. 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 (2014).

The standard deviations of all indicators of monopoly are higher between Ethiopia and globalized SSA than Ethiopia and non-globalized SSA countries. This evidence reflects, in particular, the bank competition is very high in globalized SSA countries than in non-globalized SSA countries.

Table 6: Bank monopoly (2000-2015)

Country	Lerner index	Boone indicator	5-bank asset concentration	Concentration (%)	Bank credit to bank Dep. (%)
Non Globalized SSA	0.39	-0.06	95.79	92.95	58.29
Ethiopia	0.50	-0.04	95.93	88.66	57.41
Globalized SSA	0.28	-0.08	86.11	74.18	75.96
SD (Non glob. SSA vs Eth)	0.08	0.02	0.10	3.03	0.62
SD(Glob. vs Eth)	0.16	0.03	6.94	10.24	13.12
SD(Globalized vs Non Globalized)	0.08	0.01	6.84	13.27	12.49

Source: authors' calculation based bank scope and GFID

4.1.7. Bank soundness

Financial soundness in SSA countries has improved over the years, but some persistent weaknesses remain (IMF, 2015). In 2012–13, average non-performing loans (NPLs) for all low-income SSA countries stood at close to 7 percent, compared with 9.4 percent in 1996–99 and 9.1 percent in 2000–03. NPLs for middle-income SSA countries remain slightly higher. Provision rates (as a percentage of problem loans) declined between the late 1990s and 2000–03 for all SSA countries, but they had rebounded by 2012. Despite these improvements, asset quality and provisioning remain low compared with developing countries in other regions. Table 7 results on banking soundness support this evidence.

Table 7: Banking soundness

	Bank stability (2000-2015)				
	Bank regulatory capital to risk-weighted assets (%)	Banking crisis dummy (1=banking crisis, 0=none)	Bank Z-score	Bank nonperforming loans to gross loans (%)	Bank capital to assets ratio (%)
Non-Globalized SSA	20.75	0.93	13.69	15.6	12.56
Ethiopia	.	0.00	9.63	.	.
Globalized SSA	17.60	0.01	10.39	9.98	10.59
SD (Non-Glob SSA Vs Ethiopia)	.	0.66	2.87	16.33	.
SD(Globalized VS Ethiopia)	.	0.01	0.53	15.40	.
SD(Globalized Vs Non Globalized)	2.23	0.53	2.16	12.97	1.40

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

Table 7 indicates that SSA countries that open the banking sector to foreign investors have better financial soundness than those SSA countries that did not allow their banking sector to foreign ownership in three indicators out of five indicators.

However, a bank globalized SSA countries have less non-performing loans and the probability of banking crises (about 10% and 0.01 respectively) than non-globalized SSA countries (about 16% and 0.93 respectively). This might be due to uncontrolled

increases in credit to the private sector have the power to induce bank crisis, which is in line with Gwama (2014) and Bara et al. (2017) studies, which argue that the expansion of credit in an upturn in the economy results in accumulation of nonperforming loans, which causes a crisis. In most SSA countries there is always a high potential of accumulating non-performing loans if credit risk measures are not keenly implemented by banks and regulators.

Table 8 financial soundness of Ethiopia (2012-2018)

Soundness Indicators	End 2012	End 2013	End 2014	End 2015	End 2016	End 2017	End 2018
<i>Capital Adequacy</i>							
1 Capital to risk weighted assets	13.4	17.9	17.4	16.4	14.7	21.5	22.4
2 Regulatory capital to risk weighted asset	13.4	17.9	17.4	16.4	14.7	21.5	22.4
3 <i>Capital to total assets</i>	6.7	7.2	7.0	6.6	6.5	9.6	8.3
<i>Asset quality</i>							
1 NPLS to total loans	1.4	2.5	2.0	2.1	2.9	2.6	3.0
2 NPLs net of provisions to capital	-5.6	-0.5	-2.3	-1.1	2.9	2.1	-
<i>Earning and profitability</i>							
1 Return on assets	3.9	3.2	3.1	3.1	2.7	2.4	1.7
2 Return on equity	55.7	48.0	44.9	47.4	43.0	29.6	20.2
3 Gross interest income to total income	56.8	64.9	62.8	67.9	73.9	74.9	84.1
4 Interest margin to gross income	39.1	45.1	42.3	46.1	49.9	48.4	34.4
5 Non-interest expenses to gross income	22.9	26.9	32.7	32.1	33.1	34.2	36.1
6 Personnel expenses to non-interest Expenses	42.2	43.3	43.7	47.4	48.2	51.3	55.4
<i>Liquidity</i>							
1 Liquid assets to total Assets	20.6	23.2	16.2	11.7	11.9	12.9	12.7
2 Liquid assets to short-term liabilities	26.7	30.1	20.8	14.8	15.6	17.0	16.9
3 Total loans and bonds to total deposits	94.0	93.9	100.6	105.0	107.2	107.3	100.7

Source, NBE

Table 8 shows the Ethiopian banking sector's financial soundness in detail. From Table 8, we found that the sector remains healthy, characterized by adequately capitalized, liquid, and profitable banking institutions. Non-Performing Loans (NPLs) remain low at 2.96 percent, below the regulatory cap of 5 percent; while provisioning has been adequate. Nevertheless, the ratio of NPLs has continued to increase to 39

percent at the Development Bank of Ethiopia (DBE), above the supervisory target of 15 percent for development finance institutions. This has been attributed to the low productivity in agricultural projects, political unrest in parts of the country, and low international competitiveness of textile projects, to which the Bank has exposure (NBE, 2019).

4.2. Econometric estimation results

The two sets of regression equations are estimated for: (a) direct effect of foreign banks on economic growth, as specified in equation (3.4); indirect effect of foreign banks on economic growth, as specified in equations (3.7 and 3.8). A system GMM instrumental variable estimator is used in estimating coefficients. The estimation results are given in Tables 9-12.

4.2.1. Estimation of direct effect of foreign bank entry on economic growth

The results for the direct link are given in Table 9. Five different regression equations are estimated in this group. The results are given in columns. In the second column (Model 1), the results without any efficiency indicators are reported. In the following columns, 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.

As the level of inefficiency indicators increase, 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, 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.

Table 9: Direct effect of a foreign bank on GDP growth

Dependent Variable: Real GDP Per Capita growth (Y)					
Independent variables	inefficiency indicators				Stability indi.
Macroeconomic var	Model 1	Model 2	Model 3	Model 4	Model 5
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)
GDDPC (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 Variable s					
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)
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)
<i>No. of Observations</i>	97	97	97	97	97
<i>Number of Countries</i>	24	24	24	24	24
<i>Number of instruments</i>	20	20	20	20	20
Sargan Test- chi2	9.66(0.21)	9.26(0.24)	9.33(0.23)	9.30(.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

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 inefficiency 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.

Now we proceed to the discussion on the empirical results related to foreign bank penetration and GDP growth. We find that the sign of the foreign bank asset share coefficient is positive and statistically significant in all five estimation models. This result shows the interaction between foreign bank penetration and GDP growth is positive. 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 inefficiency 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. 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 is supported by 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 0.012 percent. The result is supported by 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 significant⁵. A 1 percent higher in initial real GDP per capita reduces GDP per capita growth by 0.24 if banking inefficiency and stability indicators are not controlled. If we control both inefficiency 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.

The coefficient of investment (K) is positive as expected and statistically significant, implying that a higher growth rate of fixed capital accumulation is associated with a higher rate of economic growth, which is consistent with the main propositions of the Solow growth model and endogenous growth theory (Benhabib and Spiegel, 2000 and 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 percentage increase in fixed capital formation ratio to GDP will cause GDP growth to increase by 0.18 percent approximately, *ceteris paribus*; if inefficiency and stability indicators are not controlled. If we control both inefficiency and stability indicators, 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 inefficiency and stability indicators are not controlled. If we control both inefficiency and stability indicators, 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.

⁵ The result is consistent with Solow and Robert (1956), Levine et al. ((2000)

The coefficient on the labor force is negative; suggesting the economic growth in our SSA economies is negatively associated with the labor force to total labor. This might be because SSA countries couldn't 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, the 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) where an increase in inflation was found to encourage private investment which boosts economic growth. Thus, if inflation increases by 1 percent, GDP growth will significantly increase by 0.15 without controlling inefficiency 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.

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.

4.2.2. Estimation of an indirect effect of foreign bank entry on economic growth

Efficiency and foreign bank entry in SSA

Applying the System GMM econometric estimation method indirect link between banking openness and economic growth was estimated. The indirect link between bank openness and GDP per capita growth works through improving the efficiency of the banking sector and improving bank stability. To capture the link between foreign bank entry and growth through inefficiency, a regression equation (3.6) is estimated and the effect of foreign bank entry on the stability of SSA countries is also estimated using regression equation (3.8). Finally, in the second step of indirect estimation, the link between inefficiency and stability variables and growth is estimated by using equation (3.3). The only missing explanatory variable for this equation (3.3) is the share of foreign banks in the banking sector and the estimated results for the regression equation (3.3) are given in Table 12.

Table 10 shows that the net interest margin and return on bank assets are negatively related to foreign bank assets share as expected, indicating that the inefficiency of the banking sector falls with a higher asset share of foreign banks. If foreign banks' asset share goes up by one percent, the net interest margin, return ratio to total assets before tax, and overhead costs to total assets of SSA banks fall by 0.02 percent in all cases.

The estimated coefficients of initial GDP per capita are negative and statistically significant in all inefficiency variables (except net interest margin which is not statistically significant). This is an expected sign because poor income countries have poorer credit quality and high loan defaults, and may increase the inefficiency of banks (Flamini et al. 2009). This suggests a negative relationship between growth and net interest margin, bank return ratio to total assets, and overhead cost ratio to total assets.

The availability of domestic credits, a measure of financial depth (BD), reduces the inefficiency of the banking sector. If foreign banks' asset share goes up by one percent, the return ratio to total assets before tax and overhead costs to total assets of SSA banks fall by 0.08 and 0.11 percent respectively. This shows that as domestic credit to private firms' increases, the inefficiency of the SSA banking sector falls.

Table 10: The effect of foreign bank on efficiency

Dependent Variable	Bank inefficiency indicators		
	BI1	BI2	BI3
Independent variables			
L2. BI1(log)	-0.11*** (0.00)		
L2. BI2(log)		-0.11*** (0.00)	
L2. BI3(log)			-0.14*** (0.00)
Macroeconomic variables			
Y(log)	0.02 (0.62)	0.05*** (0.01)	0.03** (0.02)
IR(log)	0.03*** (0.02)	0.01 (0.12)	0.02** (0.04)
RIR(log)	0.03*** (0.00)	-0.01 (0.31)	0.01 (0.17)
TR(log)	0.00 (0.64)	0.00* (0.06)	0.00** (0.04)
GDPPC(log)	-0.01 (0.45)	-0.04*** (0.00)	-0.03*** (0.00)
Banking Variables			
FBS(log)	-0.02** (0.03)	-0.02* (0.08)	-0.02* (0.07)
BD(log)	0.02 (0.18)	-0.08*** (0.00)	-0.11*** (0.00)
BC (log)	0.12*** (0.00)	0.02 (0.39)	0.03 (0.24)
Cons	2.63*** (0.00)	2.80*** (0.00)	2.44*** (0.00)
Number of countries	27	27	27
Number of instruments	26	26	26
Number of observations	170	170	170
Sargan Test- chi2	15.75 (0.40)	17.14 (0.32)	15.67 (0.40)
AR(2) Test-Z	-0.71 (0.48)	0.34(0.74)	1.20 (0.23)

Source: authors' calculation

P-values in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. 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. BI (BI1- bank net interest margin, BI2-bank return on assets before tax and BI3- bank overhead costs to total assets), Y, IR, RIR, TR, GDPPC, FBS, BD, and BC represent banking sector inefficiency, real GDP per capita growth, inflation rate, real interest rate, tax rate, initial GDP per capita, foreign bank total asset share to total bank assets, bank depth and bank competition respectively.

Inflation and real interest rates as macroeconomic instability signals have an expected positive sign on all inefficiency indicators. This shows as inflation increases, the inefficiency of the SSA banking sector increases. If inflation goes up by one percent, the net margin, bank return ratio to total assets before tax and overhead costs ratio to

total assets of SSA banks increases by 0.03, 0.01, and 0.02 percent respectively. However, the effect on the bank return ratio to total assets is not statistically significant. Similarly, a 1 percent increase in the real interest rate increases the bank's net interest margin by 0.03 percent. However, the results are not statistically significant on the bank overhead cost ratio to total assets and bank return ratio to total assets. These results confirm an increase in inflation and real interest rate increases the inefficiency of the banking sector in SSA countries. Finally, a high tax rate will increase the banking sector inefficiencies but the results are not economically significant.

Finally, the coefficient on (the inverse of) the banking competition variable, bank concentration, has a positive sign. This implies that a higher concentration in the banking sector is associated with higher banking inefficiency. If banking concentration goes up by one percent, the net interest margin, bank return on assets before tax and overhead costs to total assets of SSA banks increases by 0.12, 0.02, and 0.03 percent respectively. However, the effect on bank returns and overhead cost ratio to total assets are not statistically significant.

From Table 10, the p-values of the Sargan for over-identification restrictions results suggest that, in all the estimates, the instruments are valid. Besides, the test for the second-order autocorrelation in the disturbance term reported by AR (2) suggests that there is no evidence for significant second-order autocorrelation. This is in line with our expectations. Based on these tests, we can conclude that we have the right specification. The test statistics support the empirical model and instrumental variables used in the estimation process since we fail to reject the null hypothesis in each case.

Foreign bank entry and stability

The role of foreign banks on banking stability has been a topic high on the policy and research agenda since the start of the global financial crisis. The effect of foreign banks has no clear cut result. Table 11 shows that the foreign banks' asset share has a negative sign on Z-score without controlling inefficiency indicators and with controlling inefficiency indicators, indicating that the stability falls with a higher asset share of foreign banks. Without controlling inefficiency indicators, a 1 percent

increase in foreign banks' asset share goes up by one percent, banking Z-score falls by 0.10 percent.

Similarly, if foreign bank asset share raises by 1 percent the banking Z-score of SSA countries falls by 0.09, 0.10, and 0.09 percent, if we control net margin, bank return on assets before tax, and overhead costs to total assets respectively. These results confirm an increase in foreign bank asset share reduces banking sector stability in SSA countries. The relationship between foreign banks and stability is consistent with other empirical shreds of evidence. For example, Demirgüç-Kunt and Detragiache (2001) examined the relationship between banking crises and financial liberalization for 53 countries between 1980 and 1995 and they found that banking crises were more likely to occur in countries whose financial system was liberalized and institutional environment is weak. De Haas and Van Lelyveld (2014) and Dwumfour (2017) also argued that the presence of foreign banks intensifies the probability of banking sector crises in hosting countries.

The regulatory institutions in the home country may affect negatively the decisions of foreign banks to lend, merge, or acquire in the host environment (Peek and Rosengren, 2000). A related issue is the inability of domestic banks to compete with the high performing international banks. Foreign bank entry may lead to lowering the interest margins, further weakening of domestic players, and bankruptcies (Peek and Rosengren, 2000).

On the other hand, high inflation and high real interest rate as macroeconomic instability signals have an expected negative sign on banking Z-score in all five models. For example, if we control all banking inefficiency indicators and inflation goes up by one percent, the banking Z-score falls by 0.08 percent. This confirms an increase in the inflation rate reduces the banking sector stability of SSA countries. Similarly, if the real interest rate rises by a 1 percent banking Z-score falls by 0.05 percent in SSA countries without controlling efficiency indicators.

Table 11: The effect of foreign bank on stability

Dep variable(Stability)				
Independent variables	Model 1	Model 2	Model 3	Model 4
L.BS(log)	0.28* (0.070)	0.23** (0.05)	0.30* (0.06)	0.23** (0.05)
Macroeconomic var				
FBS(log)	-0.10*** (0.00)	-0.09** (0.01)	-0.10** (0.01)	-0.09** (0.01)
BD(log)	-0.02 (0.73)	-0.00 (0.97)	-0.03 (0.65)	0.00 (0.98)
LAD(log0	0.04 (0.22)	0.05* (0.07)	0.04 (0.25)	0.05** (0.04)
BM(Log)	-0.01 (0.50)	0.00 (0.84)	-0.01 (0.60)	-0.01 (0.44)
TOT(log)	-0.03 (0.30)	-0.03 (0.18)	-0.02 (0.38)	-0.04* (0.06)
BI1(log)		0.18*** (0.01)		
BI2(log)			-0.07 (0.49)	
BI3(log)				0.24** (0.03)
Cons	2.49*** (0.00)	2.33*** (0.00)	2.72*** (0.00)	2.13*** (0.00)
Number of countries	21	21	21	21
Number of instruments	20	21	21	21
Number of observations	159	159	159	159
Sargan Test- chi2	7.37 (0.40)	8.19(0.32)	7.55 (0.37)	7.49 (0.38)
AR(2) Test-Z	-1.44 (0.15)	-1.49(0.14)	-1.40(0.16)	-1.622(0.11)

Source: authors' calculation

P-values in parentheses: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. 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. BS, Y, IR, RIR, GDPPC, MS, FBS, BD, LAD and BM, TOT and BI represent stability indicator, real GDP per capita growth, inflation rate, real interest rate, real GDP per capita, mobile cellular subscribers per 100,000, foreign bank assets among total bank, banking depth, liquid assets to deposits and short term funds, broad money to reserve ratio, total trade to GDP and banking inefficiency (which is controlled by BI1- bank net interest margin, BI2-bank return on assets before tax and BI3 bank overhead costs to total assets) respectively).

The estimated coefficients of initial GDP per capita are positive but the results are statistically significant only if we control to return to total assets ratio and overhead cost ratio to total asset variables. These results have expected signs because high-income countries have high credit quality and low loan defaults (Flamini et al. 2009). This may reduce the stability of banks. However, highly growing countries have low banking sector stability. As Table 11 shows a 1 percent increase in GDP growth leads to 0.03, 0.06, 0.04, and 0.04 percent fall instability without controlling inefficiency

indicators and as we control net interest margin, bank return ratio to total assets, and overhead cost ratio to total assets respectively but the results are statistically significant only when we control bank return ratio to total assets.

The sign of the indicator of public infrastructure, mobile phone per 100,000 subscribers, has an expected positive sign, indicating a positive effect of infrastructure on banking sector stability. However, trade openness which is proxied by trade to GDP ratio reduces banking sector stability for SSA countries in all four models. As trade openness increases by 1 percent of banking Z-score falls by 0.03 percent in SSA countries without controlling inefficiency indicators. Consistently, if trade openness increases by 1 percent the banking Z-score of SSA countries controlling net margin, bank return on assets before tax and overhead costs to total asset falls by 0.03, 0.02, and 0.04 percent respectively. These results confirm that improvement in trade openness reduces banking sector stability in SSA countries. However, the result is statistically significant only if we control the overhead cost to asset ratio.

Table 11 result also indicates that the coefficient of the lagged z-score is significant and positive, implying strong persistence in the risk of bank insolvency in the region. That is, the previous bank probability of default is highly related to the current probability of default by banks in the region.

Overall, the variable of interest, foreign bank inflows, is statistically significant and negatively affects the z-score. This suggests that foreign banks' entry into the domestic banking sector increases banking sector risks of insolvency, thereby escalating the instability of the banking sector in the SSA region.

Finally, as we can see from Table 10 and 11, comparatively, the effect of foreign bank share on stability indicator is stronger than its effect on efficiency indicators. This will provide very important policy implications to SSA countries requiring serious attention to the supervision of banking sector to be more disciplined.

Bank efficiency, stability and GDP per capita growth (indirect effect)

In the second step, the link between inefficiency and stability variables and growth is estimated. The results are given in Table 12.

Table 12: The Indirect effect foreign bank on economic growth

Dependent Variable: Real GDP Per Capita growth (Y)				
Independent variables	Efficiency Indicators			Stability
Macroeconomic var	Model 2	Model 3	Model 4	Model 5
L.Y(Log)	-0.41*** (0.001)	-0.46*** (0.00)	-0.39*** (0.00)	-0.39** (0.02)
K(Log)	0.30*** (0.00)	0.25*** (0.01)	0.28*** (0.01)	0.27*** (0.01)
GS (Log)	0.65*** (0.00)	0.66*** (0.00)	0.68*** (0.000)	0.70*** (0.00)
Inf(Log)	0.06 (0.25)	0.02 (0.63)	0.05 (0.31)	0.04 (0.46)
GDDPC (Log)	-0.28** (0.02)	-0.24** (0.0)	-0.34*** (0.00)	-0.30** (0.03)
TOT(Log)	-0.02 (0.70)	-0.03 (0.35)	-0.02 (0.50)	-0.02 (0.59)
LF(Log)	-0.12 (0.23)	-0.19 (0.11)	-0.14 (0.14)	-0.17 (0.11)
Banking Variables				
BC (Log)	-0.05 (0.18)	-0.05* (0.09)	-0.07* (0.05)	-0.05 (0.18)
BD(Log)	0.11* (0.06)	0.10 (0.13)	0.16*** (0.01)	0.11 (0.13)
BI1(log)	-0.39*** (0.00)			
BI2(log)		-0.33** (0.02)		
BI3(log)			-0.40*** (0.00)	
BS(log)				0.14(0.12)
Constant	1.35 (0.16)	-0.16 (0.84)	1.33** (0.04)	0.55 (0.59)
<i>No. of Observations</i>	172	172	172	172
<i>Number of Countries</i>	24	24	24	24
<i>Number of instruments</i>	23	23	23	23
<i>Sargan Test</i>	10.77(0.46)	11.39(0.41)	11.21 (0.43)	11.03(0.45)
<i>AR(1)/AR(2) Test</i>	-0.74(0.46) -1.64(0.10)	-1.34(0.18) -0.91(0.37)	-1.12(0.27) 0-1.56 (0.12)	-1.15(0.26) -1.31(0.19)

Source: authors' calculation

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

K, HS, Inf, GDDPC, LF, BC, BI, and BS represent fixed capital formation to GDP, government spending on education to GDP, inflation rate, initial GDP per capita, labor force to total labor, foreign bank total asset share to total bank assets; bank competition, bank depth, bank efficiency (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.

The estimated coefficients are consistent with Table 9 results. Thus, our findings show that the results are robust. It is an expected result given the fact that the only missing explanatory variable in Table 12 is the share of foreign banks in the banking

sector. The net interest margin, bank return, and overhead cost ratios to total assets harm growth, indicating that a higher inefficiency reduces GDP per capita growth.

The effect of another variable of interest, Z-score as a stability indicator positively affects the GDP per capita growth but it is not significant. This positive result suggests that bank stability in SSA countries is very essential in enhancing GDP per capita growth.

Finally, the test statistics support the empirical model since we do not reject the null hypothesis. Overall, the results support the presence of an indirect link between foreign bank entry and growth.

5. Conclusion

This study provides a general overview of the banking environment using descriptive statistics and GMM dynamic panel system estimator in Sub-Saharan African countries. In descriptive statistics, we analyzed banking depth, access, efficiency, soundness, and concentration of SSA countries' banking industry and system GMM was applied to investigate the direct and indirect link between a foreign bank and economic growth in SSA countries.

The descriptive evidence suggests that SSA countries that opened their banking sector to foreign investors have better banking service access, depth, stability, and competition than non-bank globalized SSA countries. Ethiopia as non-bank globalized countries performed very low performance in bank penetration, depth, efficiency, and competitiveness as compared to bank globalized SSA countries.

The two sets of regression equations were estimated for: (a) direct effect of foreign banks and (b) indirect effect of foreign banks on economic growth using system GMM instrumental variable estimator. 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 after the efficiency level of the banking sector and other macroeconomic variables are controlled. 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, which work through raising the efficiency of domestic financial intermediaries and increases banking sector instability.

The indirect estimation has two steps to investigate the effect of foreign bank asset share on economic growth. The first step is the estimation of foreign asset share on efficiency and stability variable. The first results show: (i) inefficiency indicators (the net margin and return on bank assets) are negatively related to foreign bank assets share as expected, indicating that the inefficiency falls with a higher asset share of foreign banks. (ii) However, a rise in foreign banks' asset share has a negative sign on Z-score without controlling inefficiency indicators and with controlling inefficiency indicators, indicating that the stability falls with a higher asset share of foreign banks.

This confirms an increase in foreign bank asset share reduces banking sector stability in SSA countries.

In the second step, the link between inefficiency and stability variables and growth is estimated. Thus, our findings show that the results are robust. The inefficiency indicators (net interest margin, bank return to total asset ratio, and bank overhead cost to total asset ratio) hurt growth. This indicates a higher inefficiency may reduce GDP per capita growth. The effect of another variable of interest, Z-score as a stability indicator positively affects the GDP per capita growth but it is not significant. This positive result suggests that bank stability in SSA countries is very essential in enhancing GDP per capita growth.

Generally, the empirical results in this research support the issue that foreign bank entry improves economic growth directly, and indirectly through improving efficiency. However, foreign bank entry will reduce economic growth indirectly via increasing bank fragility. As indicated in our shreds of evidence from SSA countries that open the banking sector to foreign investors, it is hard to say that blocking of foreign bank entry in Ethiopia is credible and supported by sound analysis except for the stability issue as supported by our empirical analysis.

As the saying goes “don’t close your eyes not to see a bad person because you will miss a good one”. Hence the more pragmatic and reasonable choice should be striking the balance between the two extremes. Therefore, regulated foreign banking institutions have a lot to offer to our financial system. Thus, the results of this study can provide a policy implication to Ethiopia that Ethiopia 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 while enacting laws and implement them in a more stringent approach to regulate them to be disciplined to curb or minimize the potential instability problems.

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