



Ibrahim, R.O., & Nageri, K.I. (2023). Foreign Financial Flows on Financial Efficiency in Sub-Saharan African Countries. *Copernican Journal of Finance & Accounting*, 12(4), 49-71. <http://dx.doi.org/10.12775/CJFA.2023.020>

**RAHJI OHIZE IBRAHIM\***

Al-Hikmah University

**KAMALDEEN IBRAHEM NAGERI\*\***

Al-Hikmah University

## FOREIGN FINANCIAL FLOWS ON FINANCIAL EFFICIENCY IN SUB-SAHARA AFRICAN COUNTRIES

**Keywords:** foreign financial flows, financial efficiency, remittance, Foreign Direct Investment.

**J E L Classification:** F24, F35, H21.

**Abstract:** The level of financial efficiency in Sub-Saharan Africa (SSA) remained low and incomparable to that of industrialized nations of the world, despite the supposed advantages of foreign capital inflows. This study examined the relationship between foreign financial inflows and financial efficiency in Sub-Saharan Africa against this backdrop (SSA). This study's specific goals are to look into how remittance inflows affected financial efficiency in SSA and how FDI inflows affected it as well. Out of 49 countries in Sub-Saharan Africa, 42 were chosen for the study using a purposive sampling technique and an ex-post facto research design. The study used pooled mean group, mean group, and dynamic fixed effects techniques to estimate the model parameters

---

Date of submission: May 1, 2023; date of acceptance: August 23, 2023.

\* Contact information: [ibrahimrahji2010@gmail.com](mailto:ibrahimrahji2010@gmail.com), Department of Banking and Finance, Al-Hikmah University, Ilorin, Nigeria, phone: 08028365940; ORCID ID: <https://orcid.org/0000-0002-3329-1081>.

\*\* Contact information (corresponding author): [nagerisuccess2000@yahoo.co.uk](mailto:nagerisuccess2000@yahoo.co.uk), Department of Banking and Finance, Al-Hikmah University, Ilorin, Nigeria, phone: 08056172296; ORCID ID: <https://orcid.org/0000-0002-5569-2169>.

using panel autoregressive distributed lag (PARDL) methods of estimation. The findings revealed that remittance inflows have significant positive impact on the financial efficiency, while FDI inflows have insignificant influence on the financial efficiency. In addition, the combination of economic growth with remittance inflows yielded negative impact on the financial efficiency while the combination of economic growth with FDI inflows yielded a positive impact on financial efficiency. The study concluded that remittance and FDI inflows play vital roles in guaranteeing improvement in financial efficiency of Sub-Sahara African countries directly and indirectly through inclusive economic growth. The study recommended that financial openness policies, like removing restrictions and encouraging free flow of financial resources between entities in domestic economy and foreign economies to promote further foreign financial inflows and enhance further financial efficiency. It is also recommended that financial openness policy should be pursued alongside inclusive economic growth measures such as economic diversification policies.

## ■■■ INTRODUCTION

A developed financial sector typically has active institutions to mobilize savings for investment purposes, attracts the reservoir of savings, idle funds, and distributes same to business owners, households, governments, and other entities for investments projects and other purposes with an view toward earning returns that serve as the foundation for economic growth (Kolawole, Ijaiya, Sanni & Aina, 2019). The inflow of international capital and transfers is one of the elements that are thought to aid in the growth of the financial sector of developing nations, notably those of Sub-Saharan Africa (SSA) (Arezki & Brückner, 2012). In particular, FDI (foreign direct investment) and remittance inflows, on the one hand, FDI is a source of financial resource augmentation for investment and if it has the absorptive potential, it is expected to have a positive and growing effect on the receiving economy. Remittances, on the other hand, are funds that migrants send back to their home countries, usually to their surviving relatives to help with financial needs. Both have been suggested to be significant factors in raising living standards in Sub-Saharan Africa (SSA) (Nyanhete, 2017).

The level of financial efficiency in SSA countries is not encouraging and incomparable to those of other regions of the world, even though, the perceived benefits that the financial sector could gain from the inflows of FDI and remittances are enormous (Muruko-Jaezuruka & Gupta, 2020). This might be related to the composition of these inflows, the channel of entry and the activities being utilized on. For instance, the World Bank (2020) estimates that Africans

living abroad remit about \$40 billion annually to their home countries. This sum, however, seems insufficient considering that hundreds of millions of African migrants living all over the world might realistically mobilize more than \$100 billion annually to advance the continent (Desbordes & Wei, 2014).

Furthermore, financial efficiency viewed from the margin between lending and deposit interest rates (with lower margin indicating higher efficiency), SSA has the highest margin (and relatively least efficiency) with 9.1 percent, followed by Latin America and the Caribbean with 6.3 percent, South Asia with 5.6 percent, Middle East and North Africa with 5.0 percent and East Asia and Pacific with 4.9 percent.

Given the above-highlighted issues related to financial efficiency, FDI and remittances, attempt has been made to empirically investigate if the persistent increase in the inflows of FDI and remittances has actually contributed to increase in financial sector efficiency. Though, the studies on the effect of each of FDI and remittance on economic growth are numerous (such as Danmola & Wakili, 2013; Adeagbo & Ayandibu, 2014; Oshota & Badejo, 2014; Olagbaju & Akinlo, 2017; Peprah, Ofori & Asomani, 2019), studies on either FDI or remittances on the financial sector are scanty, especially when it concerns studies in Sub-Saharan Africa (Khatir & Guvenek, 2021; Chan, Sotomayor & Lien, 2019; Zardoub & Sbouï, 2021; Vasile, Stefan, Comes, Bunduchi & Stefan, 2020; Yinusa, Odusanya & Olowofela, 2018; Ayman, Mohammed & Najed, 2019; Muruko-Jaezuruka & Gupta, 2020). The few studies conducted on the effect of FDI and remittances on the financial sector were conducted on individual countries or at most, on a subset of countries in a region. Extant literature on the role of FDI and remittances on financial sector efficiency on a geographical or economic region such as Sub-Saharan Africa is sparse. Such investigation can thus be helpful for collective regional policy on how to tackle the inflows of foreign investment and remittances to bring the much needed development in the countries' financial sector.

More so, these few studies were based on static data analysis, with the study by Ayman, Mohammed and Najed (2019) conducted for Jordan being the only exception, despite being a well-established argument that static treatment of relationship among variables yields bias estimates if a dynamic relationship actually exist. The emergence of this study to examine the nexus between foreign financial inflows (remittance and FDI inflows) and financial efficiency for a panel of Sub-Sahara African countries on a dynamic analysis basis will unravel the intricate relationship between the interplay of FDI and remittance

inflows and financial sector efficiency in Sub-Saharan Africa; charting the way forward for policy directions in SSA. The rest of this study are divided into four sections, section two involves the review of related literature, section three provides the methodology adopted, section four presents the analysis and discussion of the results, while section five involves the conclusion and recommendations of the study.

### **REVIEW OF RELATED LITERATURE**

Through financial contributions, the diaspora sends social remittances to their home communities in the areas of health, education, and infrastructure development. The ideals and conventions that social capital is based on are also included in remittances. For instance, social and political leaders can occasionally use the prominence they gain abroad to further their causes back home. Additionally, they incorporate ideals of how organizations ought to function, including principles of good polity, good religion, and appropriate conduct for clergy and elected officials. Again, examples of these include how people assign domestic chores, the types of religious practices they follow, and how much they participate in political and civic organizations. Social remittances are deliberately and methodically passed.

Even though there are private and public foreign investments, private investment can further be divided into direct and indirect - portfolio investments (Yinusa et al., 2018). Public foreign investment refers to financial contributions made to a developing country's economy by foreign governments and governmental organizations. Here, the foreign government makes some capital investments in emerging nations that could hasten their development. This can be accomplished by directly investing in the projects (direct investment) or indirectly investing through a representative in the developing country who funds the project on the behalf of the foreign government.

When a developing country's economy receives private foreign investment, it typically takes the form of multinational businesses investing in industries that replace imported goods (MNCs). The multinational corporations (MNCs) bring with them managerial services, a variety of business methods, such as cooperative agreements, marketing restrictions, advertising, and transfer pricing (Okereocha, 2016).

Theoretically, the eclectic theory of FDI also known as the OLI (Ownership, Location and Internalisation) paradigm hypothesis was propounded by John H. Dunning in 1977 as an integration of the internalisation, industrial organization and location theories. Ownership (O) explains the “advantage, why” or motivation, of Multi-National Corporations (MNCs) accomplishments to indicate ownership specific advantage over competitive firms. Location (L) explains the “advantage, where” or location of the MNCs specific to the country such as specifics availability of labour force and quality, natural resources and social infrastructure. Internalisation (I) explains the “advantage, how”, or the manner, of MNCs activities in relation to ownership and control either no control to full control. Therefore, FDI occurs when the OLI interact to explain factors of production (especially labour) mobility leads to location-related differences for MNCs and leads to localisation of idea and industry.

McKinnon (1973) and Shaw (1973) developed the McKinnon-Shaw hypothesis, also known as the financial liberalization idea. It is predicated on the idea that financial liberalization is necessary for the growth of the financial sector, which ultimately results in economic expansion. According to the argument, managing the financial system discourages saving, skews the loan market, and so stifles and kills the drive for economic growth. Financial repression occurs when the government interferes with the effective operation of domestic financial markets by lowering financial asset returns and shifting credit allocation away from the market and toward the government, so depressing the economy (Fry, 1973; Athukorala & Rajapatirana, 1993). The capacity of the banking industry to move funds from households to investors is critical (that is financial intermediation). Mckinnon blames the failure of emerging nations to achieve true growth on the interventionist policies of their governments. He thinks that these actions take the shape of strict reserve requirements and deposit limits, which deter people from holding claims on the local banking system.

According to the hypothesis, domestic savings would rise at high and positive real interest rates, increasing the quantity of loanable money available for investment. When governmental limitations on financial activity are loosened or removed, international capital flows are allowed, and the dynamics of supply and demand interact to determine prices for financial services, the financial sector is said to have liberalized. Government use of restrictions and price distortions on the financial sector to increase public revenue through the financial sector are barriers to the development of the financial sector in a financially depressed economy (Creane, Goyal, Mobarak & Sab, 2004).

Rajan and Zingales (2003) made a contribution with their interest group theory of financial development, sometimes known as the simultaneous openness hypothesis. The theory demonstrates how interest groups, international commerce, and capital inflows can affect the growth of the financial industry. It implies that in order to encourage the development of the financial sector, trade and financial openness are essential. However, the idea contends that when the economy is only accessible to commerce or capital, financial sector development will be constrained. In other words, for a nation's financial sector to grow, trade and capital borders must be opened simultaneously. Interest groups, particularly established firms, frequently resist the expansion of the financial sector because potential competitors would gain entry to the domestic market as a result of greater financial access. As a result, established businesses are opposed to the financial sector's expansion since it fosters rivalry. Because potential competitors' access to capital is restricted in a closed economy, incumbent corporations benefit from the slow growth of the financial sector (Hauer, Prati, & Bircan, 2013).

Demand following hypothesis was put forth by Robinson (1952), Patrick (1966) and Demetriades and Hussein (1996). The demand-following theory postulates that it is economic expansion that leads to financial development. This paradigm contends that as the actual economy grows, so does the need for financial services. To meet the growing demand for financial services caused by the expansion in financial services, new financial institutions and markets are introduced (Demetriades & Hussein, 1996). This hypothesis is crucial to the study because it offers a different explanation that suggests economic growth is what propels the deepening of the financial sector rather than just agreeing that there is a relationship between advancements in the financial sector and economic growth. The economy tends to enjoy steady expansion when proper remittance and foreign direct investment inflow utilization is realized, and this growth will afterwards result in substantial development of the financial sector.

The review of empirical literature in this study covers developed, developing and Sub-Saharan Africa studies. Apart from the earlier studies, some of the recent studies on the subject matter include the study conducted by Yilmaz and Sezgin (2020) on the impact of remittances on the development of the financial sector in Central and Eastern European nations between 1996 and 2015 using the causality test of Dumitrescu and Hurlin and the LM bootstrap cointegration test of Westerlund and Edgerton. The results revealed that trade openness, financial sector development, and remittances all had a cointegrating relation-

ship. Additionally, there was a one-way causal relationship between financial progress and remittances. Additionally, Naceur, Chami, and Trabelsi (2020) use cross-country as well as dynamic panel GMM regressions to look at the association between remittances and financial inclusion for a sample of 187 countries between 2004 and 2015. These flows operate as a replacement for conventional financial channels at low levels of remittances-to-GDP, which lowers financial inclusion. Remittance-to-GDP ratios, which are often above 13%, are high and favorably affect financial inclusion since they tend to supplement official access and usage channels. This „U-shaped” connection emphasizes how remittance flows contribute to household consumption finance at low levels, but at high levels of remittance-to-GDP, they increase formal household bank deposits and enable more intermediation.

Muruko-Jaezuruka and Gupta (2020) use autoregressive distributed lag bounds co-integration analysis for long-run estimation on the Namibian economy over the years of 1990 to 2017. They look at the effects of foreign direct investment on financial development. The short-run dynamics and the direction of causation were also examined using the Granger causality approach and the Error Correction Model. The findings supported the existence of a long-term relationship between foreign direct investment (FDI) and financial development, along with economic growth and human capital, as well as a unidirectional causal relationship between FDI and financial development as measured by domestic credit to the private sector and a bidirectional causal relationship as measured by private credit by deposit money banks.

Using annual panel data for the years 1980 to 2018, Saidu and Salisu (2020) assess the long-term link between remittances and economic growth in a few selected SSA nations. According to the results of the long run cointegrating parameter estimates, SSA nations’ economic growth is boosted by a rise in remittances, foreign direct investment, trade openness, and domestic investment. Additionally, Siddiquee and Rahman (2020) use the Granger causality test and Vector Error Correction Model (VECM) from 1990 to 2018 to examine the short- and long-term effects of foreign direct investment, financial development, capital formation, and labor forces on the economic growth of Bangladesh. The study’s findings indicate that capital production affects gross domestic product (GDP) in a positive way over the long term but negatively over the short term, indicating that there is still room for improvement in capital management efficiency. Similar to how labor forces have a negligible short-term influence and a negative long-term impact on GDP, which confirms the presence of a sizable

proportion of unskilled workers with inefficient allocation in the economy. The short-term but significant long-term negative effects of financial development on GDP are found to indicate the banking sector's susceptibility.

Using institutional quality as a moderator, Aminul Islam, Khan, Popp, Sroka and Olah (2020) look into the relationship between financial development and FDI. 79 Belt and Road Initiative (BRI) partner nations make up the sample. The empirical results of traditional and reliable estimators demonstrate that FDI is considerably attracted to BRI host countries with strong financial development, with institutional quality moderating this relationship. Using panel data from 2000 to 2017, Naqeeb and Eglantina (2021) investigate the impact of financial development and remittances on economic growth across six Western Balkan nations (WBC). According to system GMM research, financial development (measured by the wide money stock ratio) and remittances have a favorable effect on economic growth throughout WBC. However, the relationship between remittances and financial development has a major and detrimental impact on economic growth.

In order to achieve the goal of the study, econometric technique was used by Kalejaiye, Johnson, Ishola and Aderemi (2021) to evaluate the factors that influenced FDI inflows into Romania between 1990 and 2018. As a result, there is a negative correlation in Romania between FDI inflows, growth rate, and market size. However, there is a correlation between FDI inflows and GDP per capita and per capita growth. Additionally, it might be proven that there is a unidirectional causal relationship between FDI inflows and economic growth.

Majeed, Jiang, Ahmad, Khan and Olah (2021) use practical generalized least squares and augmented mean group methodologies to analyze the data for 102 nations participating in the Belt and Road Initiative across Asia, Europe, Africa and Latin America from 1990 to 2017. According to the study, there is a statistically significant association between FDI, trade openness, government consumption, and inflation and financial development. Financial development increased in Asia, Europe, and Latin America but dropped in Africa as a result of FDI, trade openings, and government spending. On all continents, inflation had a detrimental effect on financial progress. Furthermore, the Dumitrescu–Harlin panel causality test demonstrated a two-way causality relationship among FDI, trade openness, and financial development in Asia and Europe. The relationship between FDI and financial development in Latin America, in contrast, is unidirectional. The results by income show that because of high factor costs, low- and middle-income countries attracted more FDI than high-income ones.



Al-Qudah, Piontek and Olah (2021) investigate the connection between FDI, financial development, and economic growth in Jordan from 1993 to 2018. Empiricism and positivism were used as philosophical pillars in the study, which employed the deductive reasoning method associated with quantitative research. To determine whether there is a relationship between economic growth, FDI, and financial development, Johansen's co-integration analysis method was used. According to the study's findings, FDI, financial development, and economic growth are all closely related over the long term. Additionally, statistical evidence of interaction between FDI and stock market financial development indices was found. Other relevant works are the one conducted by Kakhkharov, Akimov and Rohde (2014); Salahuddin and Gow (2015); Matuzeviciute and Butkus (2016); Abosedra and Fakih (2017); Bhattacharya, Inekwe and Paramati (2018); Tu, Phi, Tuan, Yoshino, Sarker and Taghizadeh-Hesary (2019) among others.

Considering the studies reviewed above showed that they are either associated with the measurement problems or methodologies adopted. All these therefore, reveal important gaps identified in the empirical literature which the present study intends to fill by examining the impact on FDI and remittance inflows on financial efficiency of Sub-Saharan African countries.

## METHODOLOGY

Ex-post facto research design was used in this study since the investigation was conducted after the fact without the researcher's intervention and because the study's necessary data were already available. The World Bank Indicators and the International Monetary Fund provided the secondary data for this study, which covered the forty-one (41) year period from 1980 to 2020. This involves all countries of Sub-Saharan Africa, which are comprised of forty-nine (49) countries, i.e., fifty-four (54) African countries minus five (5) Northern African countries. However, forty-two (42) countries in Sub-Saharan African were chosen as the sample of this study. This sample is selected by excluding countries that have similar traits as those of the Arab worlds, as well as excluding Somalia and South Sudan due to data availability.

### Model Specification

The econometric model of the impact of FDI and remittance inflows on financial depth in Sub-Sahara Africa and relevant control variables are included based on the evidence from the empirical literature. The model of this study is therefore specified in a functional form as follows:

$$FE = f(FDI, REM, GDPgr, FDI * GDPgr, REM * GDPgr, GE, INF, PG) \quad (1)$$

Where FE is financial efficiency; FDI is foreign direct investment inflows; REM is remittance inflows; GDPgr is economic growth; GE is government expenditure; INF is inflation rate; PG is population growth. In addition to the buildup of the theoretical link provided in the interest group theory of financial development, both the direct and indirect (by interaction with economic growth) impact of FDI and remittance inflows are also included in the model. Government expenditures was included due to the empirical argument that they provide the needed infrastructural facilities to aid economic activities and hence, to capture the effectiveness of the fiscal policies. Inflation was included to capture the effectiveness of the monetary policies and population growth was included to growth for the need for financial services which can also serve as a driving force of development. The structural model specification of this study can therefore be written as follows.

$$FE_{it} = \alpha_0 + \alpha_1 FDI_{it} + \alpha_2 REM_{it} + \alpha_3 GDPgr_{it} + \alpha_4 (FDI * GDPgr)_{it} + \alpha_5 (REM * GDPgr)_{it} + \alpha_6 GE_{it} + \alpha_7 INF_{it} + \alpha_8 PG_{it} + \varepsilon_{it} \quad (2)$$

where  $\alpha_0$  is the constant parameter;  $\alpha_1 - \alpha_8$  are the slope parameters and the coefficients of each explanatory variable;  $\varepsilon$  is the disturbance term. The expected directions of effect of the explanatory variables on financial efficiency are presented in the following inequality notations:  $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_8 > 0$  and  $\beta_7 < 0$

The panel summary statistics was employed to give a description of the variables employed in this study. These statistics include the mean, standard deviation, minimum and maximum values. The correlation analysis was also conducted to examine the relationships that exist among the variables employed for this study. Unit root and cointegration tests were used to assess the behavior of the variables prior to inferential analysis. The panel ARDL estimators, which comprise mean group (MG), pooled mean group (PMG), and dynamic fixed effect (DFE), are appropriate for the panel data used in this work (DFE). To use these estimators, remember that a dynamic heterogeneous panel can be incorporated into an error correction model based ARDL (p,q) method, where p is the lag of the dependent variable and q is the lag of the regressors. As a result, the following is the typical model for foreign financial inflows and financial efficiency.

$$\Delta \ln(FE)_{i,t} = \sum_{j=1}^{p-1} \beta_j^i \Delta \ln(FE)_{i,t-j} + \sum_{j=0}^{q-1} \rho_j^i \Delta \ln X_{i,t-j} + \delta^i [\ln(FE)_{i,t-1} - \{\theta_0^i + \theta_1^i X_{i,t-1}\}] + \mu_{it} \tag{3}$$

where: FE is financial efficiency, X represents the vector of explanatory variables, including foreign financial inflows,  $\beta$  and  $p$  represent the short-run dynamic coefficients of the lagged dependent and explanatory variables,  $\theta$  is the long-run coefficient,  $\delta$  is the coefficient of the speed of adjustment to equilibrium in the long-run, subscripts i and t are respectively, the country indicator (i.e. the SSA countries) and period indicator, and  $\mu$  represents the error term. The long-run regression produced from the following equation (4) is represented by the entire term in the square bracket.

$$\ln(FE)_{i,t} = \theta_0^i + \theta_1^i X_{i,t} + \varepsilon_{i,t} \tag{4}$$

Given that the three (3) variants of the panel ARDL methods produce consistent short and long-run estimates even in the face of endogeneity, it is necessary to make a choice between the three variants as to the most efficient estimator. This was done through the Hausman specification test. The Hausman test proposed by Hausman (1978) was conducted as an evaluation technique

for the three estimators. The test identified which result (PMG, MG and DFE) is statistically appropriate. Thus, the appropriate result was interpreted.

### RESULTS AND DISCUSSION

Looking at the descriptive statistics in table 1, each of the variables through the summary statistics results, on the average, the financial efficiency in Sub-Saharan Africa was approximately 8.42 percent. This has a spread of approximately 8.2 percent among the countries. The country that had the lowest financial efficiency during the period recorded a negative value of -3.601 while the country with the highest financial efficiency recorded 70.75 percent. On the average, remittance as a percent of GDP was approximately 5.8 percent of GDP. This has a spread of 26.58 percent of GDP. The country that had the lowest remittances as a percent of GDP during the period recorded it as 0.0001 percent of GDP while the country with the highest remittances as a percent of GDP recorded it as 513.9 percent of GDP. On the average, foreign direct investment was 4.53 percent of GDP. This has a spread of 9.38 percent of GDP among the countries. The country that had the lowest foreign direct investment during the period recorded a negative value of -11.62 percent of GDP while the country with the highest foreign direct investment recorded it as approximately 162 percent of GDP. On the average, economic growth was 4.64 percent. This has a spread of 6.9 percent among the countries. The country that had the lowest economic growth during the period recorded a negative growth of 36.39 percent while the country with the highest economic growth recorded it as approximately 150 percent.

**Table 1.** Results of Summary Statistics of Variables

Variable	Mean	Std. Dev.	Min	Max
DEP	8.421	8.174	-3.601	70.75
REM	5.778	26.58	0.0001	513.9
FDI	4.527	9.381	-11.62	161.8
GDPGR	4.637	6.999	-36.39	149.9
GE	14.98	7.167	0.911	62.13

**Table 1.** Results...

Variable	Mean	Std. Dev.	Min	Max
INF	12.20	124.4	-9.616	4145.1
PG	2.477	0.971	-2.628	8.117

Note: DEP is financial depth proxied by the ratio of domestic credit to private sector to GDP; REM is remittance inflows as ratio of GDP; FDI is foreign direct investment inflows as ratio of GDP; GDPGR is annual economic growth; GE is government expenditure as ratio of GDP; INF is annual inflation rate; and PG is annual population growth rate.

Source: author's computation.

On the average, government expenditure was 14.98 percent of GDP. This has a spread of 7.167 percent of GDP. The country that had the government expenditure during the period recorded it as 0.91 percent while the country with the highest government expenditure recorded it as 62.13 percent. On the average, inflation was double digit of 12.20 percent. This has a very wide spread of 124.4 percent. The country that had the lowest inflation during the period recorded it as a negative 9.61 percent while the country with the highest inflation recorded it as a very high inflation of 4145 percent. On the average, population growth was 2.48 percent, which has a spread of 0.97 percent. The country that had the lowest population growth during the period recorded a negative value of 2.63 percent while the country with the highest population growth recorded it as 8.12 percent.

Table 2 presents the unit root test generated from the Fisher-type augmented Dickey-Fuller. The results revealed that remittances, foreign direct investment, economic growth, government expenditure, inflation and population growth are stationary at level. These variables are regarded as  $I(0)$  variables. This further implies that only financial efficiency is not stationary at level, but it became stationary after first difference. Financial efficiency is therefore, regarded as  $I(1)$  variables. This means that there is a combination of  $I(0)$  and  $I(1)$  variables employed in the models of this study. This leads to the appropriateness of a dynamic ARDL model, which is done through the pooled mean group, mean group and dynamic fixed effects estimations. Prior to these estimations, the fact that a variable is not stationary at level (i.e. it is not  $I(0)$  but is  $I(1)$  series) necessitate a cointegration test which was conducted and explained afterwards.

**Table 2.** Results of Augmented Dickey-Fuller Unit Root Test of Variables

Variable	Test at Level Series		Test at First-Difference Series		Order of Integration
	Pm-statistic	p-value	Pm-statistic	p-value	
DEP	0.895	0.185	33.71	0.000	I(1)
REM	4.299	0.000	–	–	I(0)
FDI	7.078	0.000	–	–	I(0)
GDPgr	24.58	0.000	–	–	I(0)
GE	6.421	0.000	–	–	I(0)
INF	30.48	0.000	–	–	I(0)
PG	82.34	0.000	–	–	I(0)

Source: author's computation.

The cointegration test results that are generated from the Westerlund procedure and presented in table 3 shows that financial efficiency model has a statistic value of -8.064 (with the p-value of 0.000), which suggests that the statistic is significant. It is concluded that the variables of the financial depth model are cointegrated and have long-run relationship.

**Table 3.** Westerlund Error Correction-Based Cointegration Test Results

Model	z-statistic Value	p-value
Financial Efficiency Model	-8.064	0.000

Source: author's computation.

Considering the evidence from the cointegration test, table 3 presents the results of the impact of foreign finance inflows on financial efficiency of Sub-Saharan Africa. The result of the Hausman test shows statistics value of 0.29 and 9.99 and p-values of 1.000 and 0.265 for the choice between the pooled mean group and each of mean group and dynamic fixed effects variants, respectively, this implies that the statistics are not significant. With the Hausman test's null hypothesis being that 'the pooled mean group is preferred to its mean group

and dynamic fixed effects counterparts, the test results indicate that this null hypothesis could not be rejected since the Hausman test's statistics are not significant. Therefore, the pooled mean group is more appropriate than the mean group and the dynamic fixed effects estimates.

In table 4 the pooled mean group result shows that, in the long run, remittance, foreign direct investment economic growth, interaction between remittance and economic growth, interaction between foreign direct investment and economic growth, government expenditure and population growth have positive coefficients (0.014, 0.013, 0.119, 0.001, 0.003, 0.076 and 0.718 respectively) while inflation has a negative coefficient (-0.036). However, the coefficients of remittance, economic growth, interaction between remittance and economic growth, interaction between foreign direct investment and economic growth, interaction between remittance and economic growth rate, government expenditure and population growth are statistically significant, judging from each of their p-values being less than 0.01 (i.e. 1%, significance level).

This suggests that these variables are statistically significant at 1% significance level. On the other hand, foreign direct investment and inflation are not statistically significant because their p-values are greater than even 0.1, which is the 10% significance level. This signifies remittance, economic growth, interaction between remittance and economic growth, interaction between foreign direct investment and economic growth, interaction between remittance and economic growth rate, government expenditure and population growth have long run impact on financial efficiency (i.e. Interest rate spread, which is the difference between lending and domestic interest rate) in Sub-Saharan Africa while foreign direct investment and inflation do not have long run impact on financial efficiency in Sub-Saharan Africa.

The significant positive coefficient of remittance indicates that a point increase in the remittance will lead to a long-run rise in financial efficiency in Sub-Saharan Africa as by 0.014 percent points. Similarly, the significant positive coefficient of economic growth indicates that a point increase in economic growth will lead to a long-run rise in financial efficiency in Sub-Saharan Africa by 0.119 percent. Also, the significant positive coefficient of interaction between remittance and economic growth indicates that a unit increase in the interaction between remittance and economic growth will lead to a long-run rise in financial efficiency of Sub-Saharan Africa as by 0.001 percent. The significant positive coefficient of interaction between foreign direct investment and economic growth indicates that a unit increase in the interaction between

**Table 4.** Panel ARDL Error Correction Model (ECM) Short- and Long-Run Estimates for Financial Efficiency

Variable	Pooled Mean Group (PMG)				Mean Group (MG)				Dynamic Fixed Effects (DFE)			
	Coef.	Std. Err.	z	p-value	Coef.	Std. Err.	z	p-value	Coef.	Std. Err.	z	p-value
<b>Long Run Estimates</b>												
REM	0.014***	0.005	2.73	0.006	117.2	83.73	1.4	0.161	0.170	0.192	0.88	0.378
FDI	0.013	0.020	0.68	0.497	-63.39	66.61	-0.95	0.341	-0.421**	0.192	-2.19	0.029
GDPGR	-0.119***	0.024	-4.91	0.000	-16.75	18.02	-0.93	0.352	0.749**	0.325	2.31	0.021
REM*GDPGR	-0.001***	0.001	-2.85	0.004	-13.45	9.690	-1.39	0.165	-0.016	0.017	-0.96	0.336
FDI*GDPGR	0.003***	0.001	3.3	0.001	8.994	9.715	0.93	0.355	-0.006	0.009	-0.68	0.498
GE	0.076***	0.021	3.6	0.000	0.998	1.110	0.9	0.369	-0.235	0.292	-0.81	0.421
INF	-0.036	0.024	-1.5	0.133	-0.413	0.363	-1.14	0.256	-0.678***	0.186	-3.64	0.000
PG	0.718***	0.072	9.94	0.000	133.4	143.0	0.93	0.351	-1.988	1.727	-1.15	0.250
<b>Short Run Estimates</b>												
ΔEFF(-1)	0.199***	0.034	5.75	0.000	0.546***	0.078	6.94	0.000	0.079***	0.017	4.68	0.000
ΔREM	1.419	1.444	0.98	0.326	-19.22	17.04	-1.13	0.259	0.002	0.007	0.35	0.724
ΔFDI	0.604	0.637	0.95	0.343	1.403	1.215	1.16	0.248	-0.009	0.012	-0.73	0.462
ΔGDPGR	0.507	0.541	0.94	0.348	1.056	1.008	1.05	0.295	0.020	0.013	1.48	0.139
ΔREM*GDPGR	-0.089	0.124	-0.72	0.474	1.785	1.551	1.15	0.250	-0.001	0.000	-0.75	0.454
ΔFDI*GDPGR	-0.082	0.090	-0.91	0.361	-0.215	0.174	-1.23	0.218	-0.000	0.000	-0.53	0.595



Table 4. Panel ARDL...

Variable	Pooled Mean Group (PMG)			Mean Group (MG)			Dynamic Fixed Effects (DFE)					
	Coef.	Std. Err.	z	p-value	Coef.	Std. Err.	z	p-value	Coef.	Std. Err.	z	p-value
ΔGE	0.092	0.056	1.62	0.106	0.125	0.088	1.42	0.155	0.056	0.034	1.64	0.102
ΔINF	-0.013	0.012	-1.11	0.268	-0.039*	0.022	-1.78	0.075	0.018***	0.001	27.93	0.000
ΔPG	-7.661	4.750	-1.61	0.107	-9.727	7.425	-1.31	0.190	0.108	0.196	0.55	0.580
Constant	-1.505***	0.337	-4.46	0.000	-14.78	5.627	-2.63	0.009	-1.704***	0.517	-3.29	0.001
Observations	1081				1081				1081			
Number of Groups	47				47				47			
Hausman test					0.29			1.00	9.99			0.265

Note: DEP is financial depth proxied by the ratio of domestic credit to private sector to GDP; EFF is financial efficiency proxied by interest rate spread, which is the difference between lending and deposit interest rate; ACC is financial accessibility proxied by the number of bank branches per 100,000 individuals; STA is financial stability proxied by the average percentage ratio of capital to risk-weighted assets of banks; REM is remittance inflows as ratio of GDP; INF is foreign direct investment inflows as ratio of GDP; GDPGR is annual economic growth; GE is government expenditure as ratio of GDP; INF is annual inflation rate; and PG is annual population growth rate.

Source: author's computation.

foreign direct investment and economic growth in Sub-Sahara African countries will lead to a long-run rise in financial efficiency in Sub-Saharan Africa by 0.003 percent.

Similarly, the significant positive coefficient of government expenditure indicates that a point increase in government expenditure will lead to a long-run rise in financial efficiency in Sub-Saharan Africa by 0.076 percent. Also, the significant positive coefficient of population growth indicates that a unit increase in population growth will lead to a long-run rise in financial efficiency in Sub-Saharan Africa as by 0.718 percent. Contrarily, the coefficient of foreign direct investment and inflation do not have a long run impact on financial efficiency in Sub-Sahara Africa.

As for the results of the short-run estimates, change in first year lag of financial efficiency, change in remittance, change in foreign direct investment, change in economic growth and change in government expenditure have positive coefficients (0.199, 1.419, 0.604, 0.507 and 0.092 respectively) while change in interaction between remittance and economic growth, , change in interaction foreign direct investment and economic growth, change in inflation have and change in population growth negative coefficients (-0.089,-0.082,-0.013 and -7.661 respectively). However, none of these coefficients is statistically significant except that of change in the first-year lag of financial efficiency, judging from each of their p-values being greater than even 0.1 (i.e. 10% significance level). This suggests that these variables do not short run impact on financial efficiency in Sub-Saharan Africa. This implies that a unit increase in change in first year lag of financial efficiency is capable of influencing a short run rise in financial efficiency in Sub-Sahara Africa by 0.199 percent point.

### DISCUSSION OF FINDINGS

The findings that emerged from the results of this study, particularly those from the panel ARDL results, are discussed here. Given the findings of this study that remittance inflows have positive influence on the financial efficiency in Sub-Saharan Africa, it implies that greater levels of remittance inflows to Sub-Saharan African countries promotes further efficiency of their financial sector. It further means that putting more efforts and dedication to ensuring that greater proportion of the inflow of remittances passes through the formal channel can lead to increase in the level of financial efficiency in these coun-

tries. This finding is in line with the interest group theory of financial development which postulates that cross border transactions including the flow of capital and transfer payments are all part of financial openness and are necessary to promote financial development. The finding is also in line with the findings of Matuzeviciute and Butkus (2016), Yilmaz and Sezgin (2020) and Tu et al. (2019).

Further findings in this regard revealed that the combination of economic growth with remittance inflows yielded a negative impact on financial efficiency. The finding that economic growth causes remittance inflow to reduce financial efficiency viewpoints is contrary to a priori expectation. This contrary result may be as a result of the structure of economic growth mostly experienced in Sub-Sahara African countries which is usually exclusive. Exclusive economic growth omits some part of the economy, which may include the financial sector, from the growth process and this might explain why the combination of economic growth and remittance cause financial efficiency to fall. Further findings in this regard revealed that the combination of economic growth with FDI inflows yielded positive impact on financial efficiency. The finding that FDI inflow, supported by economic growth, promotes further financial efficiency is in line with a priori expectation. The finding is also in line with the demand following hypothesis that improvement in economic growth leads to further development of the financial sector.

### ■■■ CONCLUSION AND RECOMMENDATIONS

The level of financial efficiency in SSA countries is not encouraging and incomparable to those of other regions of the world, even though, the perceived benefits that the financial sector could gain from the inflows of FDI and remittances are enormous. One of the factors that are perceived to help in the development of the financial sector of developing countries, particularly those of Sub-Saharan Africa (SSA), is the inflow of international capital and transfers (foreign direct investment - FDI and remittance). Against this background, the study examines the impact of foreign financial flows on financial efficiency in Sub-Saharan Africa using panel autoregressive distributed lag (PARDL). The specific objectives were stated to: investigate the impact of remittance inflows on financial efficiency in Sub-Saharan Africa; and examine the impact of FDI inflows on financial efficiency in Sub-Saharan Africa.

Evidences from the results show that remittance inflows play a vital role in guaranteeing long-term improvement in the efficiency of the financial sector of Sub-Sahara African countries. It is further concluded that FDI inflows is not as vital as remittance inflows in guaranteeing long-term improvement in the efficiency of the financial sector of Sub-Sahara African countries. Furthermore, with its interaction with non-inclusive economic growth, remittance caused a setback to financial efficiency in Sub-Sahara African countries. More so, when strengthened by sustained economic growth, FDI inflow is responsible for the long-term improvement in financial efficiency in Sub-Sahara African countries.

It is therefore recommended that policymakers and financial authorities should enact further financial openness policies such as removing restrictions and regulations on the free flow of financial resources between entities in the domestic economy and those in the foreign economies. Doing this is expected to attract more remittance inflows to them and as well, help to improve the efficiency of the financial sector of these countries. It is also recommended that inclusive economic growth should be pursued through economic diversification policies, which take all important sectors of the economy into consideration when putting up plans to strengthen the growth of economic activities. This measure is expected to be inclusive enough to accommodate the efficiency of the financial sector and help it achieve the enormous benefits from the inflow of remittances and FDI.

## ■■■ REFERENCES

- Abosedra, S., & Fakih, A. (2017). The relationships between economic growth, financial deepening, and information and communication technology. *Journal of Economic Research*, 19(1), 1–17. <http://dx.doi.org/10.17256/jer.2014.19.1.001>.
- Adeagbo, O., & Ayandibu, A.O. (2014). Impact of remittances on development in Nigeria: Challenges and prospects. *Journal of Sociology and Social Anthropology*, 5(3), 311–318. <https://doi.org/10.1080/09766634.2014.11885635>.
- Al-Qudah, L., Piontek, B. & Oláh, J. (2021). Economic growth and foreign direct investment in the context of financial development: Evidence from Jordan. *European Research Studies Journal*. 24(2), 762-782. <http://dx.doi.org/10.35808/ersj/2263>.
- Aminul Islam, M., Khan, M.A., Popp, J., Sroka, W., & Olah, J. (2020). Financial development and foreign direct investment – The moderating role of quality institutions. *Sustainability*, 12(3556), 1-22. <http://dx.doi.org/10.3390/su12093556>.
- Arezki, R., & Brückner, M. (2012). Rainfall, financial development, and remittances: Evidence from Sub-Saharan Africa. *Journal of International Economics*, 87(2), 377–385. <https://doi.org/10.1016/j.jinteco.2011.12.010>.

- Athukorala, P., & Rajapatirana, S. (1993). Domestic financial market and the trade liberalization outcome: Evidence from Sri Lanka. *World Development*, 21(7), 1191–1203.
- Ayman, A.A., Mohammed, S., & Najed, A. (2019). Foreign direct investment and economic growth in Jordan: An empirical research using the bounds test for cointegration. *Revista Finanzas y Política Económica*, 11(1), 55–63. <http://dx.doi.org/10.14718/revfmanzpolitecon.2019.11.1.4>.
- Bhattacharya, M., Inekwe, J., & Paramati, S.R. (2018). Remittances and financial development: Empirical evidence from heterogeneous panel of countries. *Applied Economics*, 50(38), 4099–4112. <https://doi.org/10.1080/00036846.2018.1441513>.
- Chan, L.H., Sotomayor, M., & Lien, D. (2019). Impacts of the contributions of FDI and remittances on the economic growth in Asia and Latin America: A comparative study. *Frontiers of Economics in China*, 14(3), 371–400.
- Creane, S., Goyal, R., Mobarak, A.M., & Sab, R. (2004). Financial sector development in the Middle East and North Africa (IMF working paper no. 201). Washington DC: International Monetary Fund.
- Danmola, R.A., & Wakili, A.M. (2013). The impact of net migrant remittance on economic growth: Evidence from Nigeria. *International Journal of Humanities and Social Science*, 3(8), 303–315.
- Demetriades, P.O., & Hussein, K.O. (1996). Does financial development cause economic growth? Time-series evidence from 16 countries. *Journal of Development Economics*, 51(2), 387–410. [https://doi.org/10.1016/S0304-3878\(96\)00421-X](https://doi.org/10.1016/S0304-3878(96)00421-X).
- Desbordes, R., & Wei, S. (2014). The effects of financial development on foreign direct investment. *World Bank Group Policy Research Working Paper 7065*. Washington: World Bank Group.
- Fry, M.J. (1973). Money and capital or financial deepening in economic development? *Journal of Money, Credit and Banking*, 10(1), 464–475.
- Hauner, D., Prati, A., & Bircan, C. (2013). The interest group theory of financial development: Evidence from regulation. *Journal of Banking & Finance*, 37(3), 895–906. <https://doi.org/10.1016/j.jbankfin.2012.10.008>.
- Kakhkharov, N., Akimov, A., & Rohde, N. (2014). Transaction costs and recorded remittances in the post-Soviet economies: Evidence from a new dataset on bilateral flows. *Economic Modelling*, 60, 98–107. <https://doi.org/10.1016/j.econmod.2016.09.011>.
- Kalejaiye, T., Johnson, I., Ishola, A., & Aderemi, T. (2021). Reinvestigating determinants of foreign direct investment inflows in European countries: Any difference from the Romanian economy? *Economic insights –Trends and challenges*, 10(2), 49–60. <http://dx.doi.org/10.51865/EITC.2021.02.05>.
- Khatir, A., & Guvenek, B. (2021). The effects of FDI and remittances on the economic growth of selected SAARC Countries. *Journal of Economic and Administrative Approaches*, 3(2), 66–76.
- Kolawole, K.D., Ijaiya, M.A., Sanni, M., & Aina, T. (2019). Impact of financial intermediation on domestic investment in Sub-Saharan Africa. *Fountain University Osogbo Journal of Management*, 4(2), 56–72.
- Majeed, A., Jiang, P., Ahmad, M., Khan, M.A., & Olah, J. (2021). The impact of foreign direct investment on financial development: New evidence from panel cointegra-

- tion and causality analysis. *Journal of Competitiveness*, 13(1), 95–112. <https://doi.org/10.7441/joc.2021.01.06>.
- Matuzeviciute, K., & Butkus, M. (2016). Remittances, development level, and long-run economic growth. *Economies*, 4(4), 28–48. <https://doi.org/10.3390/economies4040028>.
- McKinnon, R.I. (1973). Money and capital in economic development. Washington DC: Brookings Institution.
- Muruko-Jaezuruka, V., & Gupta, P. (2020). Assessing foreign direct investment long-run contribution to financial development: Evidence from Namibia. *Economic Bulletin*, 40(4), 3111–3123.
- Naceur, S.B., Chami, R., & Trabelsi, M. (2020). Do remittances enhance financial inclusion in LMICs and in fragile states? IMF Working Paper No. 20/66.
- Naqeeb, U., & Eglantina, H. (2021). The effect of financial development and remittances on economic growth. *Cogent Economics & Finance*, 9(1), 1–15. <https://doi.org/10.1080/23322039.2021.1932060>
- Nyanhete, A. (2017). The role of international mobile remittances in promoting financial inclusion and development. *European Journal of Sustainable Development*, 6(2), 256–266. <https://doi.org/10.14207/ejsd.2017.v6n2p256>.
- Okereocha, C. (2016). Recession pushes up Nigeria's misery index. *The Nation*, 2(3791), 14.
- Olagbaju, I.O., & Akinlo, A.E. (2017). Dynamics of foreign direct investment, financial development and economic growth in Sub-Saharan Africa. *Ife Journal of Economics and Finance*, 6(1&2), 107–133.
- Oshota, S.O., & Badejo, A. (2014). The impact of remittances on economic growth in Nigeria: An error correction modelling approach. *Zagreb International Review of Economics & Business*, 17(2), 21–43.
- Patrick, H.J. (1966). Financial development and economic growth in underdeveloped countries. *Economic Development and Cultural Change*, 14(1), 174–189.
- Peprah, J.A., Ofori, I.K., & Asomani, A.N. (2019). Financial development, remittances and economic growth: A threshold analysis. *Cogent Economics & Finance*, 7(1), 1–20. <https://doi.org/10.1080/23322039.2019.1625107>.
- Rajan, R.G., & Zingales, L. (2003). The great reversals: The politics of financial development in the twentieth century. *Journal of Financial Economics*, 69, 5–50. [https://doi.org/10.1016/S0304-405X\(03\)00125-9](https://doi.org/10.1016/S0304-405X(03)00125-9).
- Robinson, J. (1952). *The generalization of the general theory: The Rate of Interest and Other Essays*. London: MacMillan.
- Saidu, I., & Salisu, A. (2020). International remittances and economic growth in some selected Sub-Saharan African countries: Evidence from panel co-integration approach. *Journal of Economics and Development Studies*, 8(2), 63–71.
- Salahuddin, M., & Gow, J. (2015). The relationship between economic growth and remittances in the presence of cross-sectional dependence. *The Journal of Developing Areas*, 49(1), 207–221. <https://doi.org/10.1353/jda.2015.0007>.
- Siddiquee, Md.N., & Rahman, M.M. (2021). Foreign direct investment, financial development, and economic growth nexus in Bangladesh. *The American Economist*, 66(2), 265–280. <https://doi.org/10.1177/0569434520938673>.

- Tu, C.A., Phi, N.T.M., Tuan, L.Q., Yoshino, N., Sarker, T., & Taghizadeh-Hesary, F. (2019). Remittance inflows, financial inclusion, and economic development: An empirical analysis of the world sample. ADBI Working Paper 1000. Tokyo: Asian Development Bank Institute. <https://www.adb.org/publications/remittance-inflows-financial-inclusion-economic-development> (accessed: 14.02.2023).
- Vasile, V., Ștefan, D., Comes, C.A., Bunduchi, E., & Ștefan, A.B. (2020). FDI or remittances for sustainable external financial inflows. Theoretical delimitations and practical evidence using granger causality. *Romanian Journal of Economic Forecasting*, 23(4), 131.
- World Bank (2020). World bank migration and development report. <http://econ.worldbank.org> (accessed: 27.11.2020).
- Yilmaz, B., & Sezgin, E. (2020). Impact of domestic public borrowing on financial development: Evidence from EU transition economies. *Applied Economics Journal*, 28(1), 18–42. <https://so01.tci-thaijo.org/index.php/AEJ/article/view/242794> (accessed: 14.02.2023).
- Yinusa, O.G., Odusanya, I.A., & Olowofela, O.E. (2018). Foreign direct investment and financial development in economic community of West African States. *EuroEconomica*, 3(37), 29–40.
- Zardoub, A., & Sboui, F. (2021). Impact of foreign direct investment, remittances and official development assistance on economic growth: Panel data approach. *PSU Research Review*. <https://doi.org/10.1108/PRR-04-2020-0012>.