

*Full Length Research Paper*

# **Migrant remittances, financial market development, and per capita real growth in sub-Saharan Africa**

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**The inflow of migrant remittances to developing economies in the recent past has been one of the most topical issues discussed in growth literature due to the increasing volume, stable nature, and capacity to enhance growth. This study examines the effect of migrant remittances and financial market development, on per capita real growth in sub-Saharan Africa (SSA). Data from twenty-seven African countries between the period 2000 and 2020 was employed for this study. The pool mean group (PMG) was deployed in analyzing the data. The study outcome revealed that migrant remittances positively influence and facilitate growth in the SSA region. The study also affirmed that equity market development contributes positively to growth in the SSA region. Furthermore, the study also established that banking sector development seems not to affect growth positively in the SSA. In addition, the study also recommends some policies for the region to implement.**

**Key words:** Migrant remittances, financial market development, pool mean group, sub-Saharan Africa.

## **INTRODUCTION**

The inflow of migrant remittances to developing economies in the recent past has been one of the most topical issues discussed in growth literature due to the increasing volume, stable nature, and capacity to enhance growth. The remarkable increase in the volume of migrants' remittances moving into the developing countries is largely due to the increasing level of immigration between the developed countries and the developing countries together with the modern technological innovations which have boosted the international transfer of payment at a reduced cost (Meyer and Shera, 2017). Migrant remittances refer to funds transferred from migrants working abroad to their

families in their country of origin. It is viewed as the second most essential source of external funding that most developing economies rely on after foreign direct investment (FDI) (World Bank, 2018; Yoshino and Otsuka, 2020; Omon, 2021).

Based on the World Bank report the inflow of migrant remittances reached a record high in 2018 (\$529 billion), an increase of 9.6% compared to 2017 (\$483 billion). The report attributed the growth in migrant remittances to the strong economic activities and employment opportunities in the United States and European economies. Although there was a decline in 2020 due to the impact of the pandemic, the inflow rose by 7.3% (\$589 billion) in 2021.

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Also, in sub-Saharan Africa (SSA), the inflow of migrant remittances soared 14.1% to \$49 billion in 2021 due to strong economic conditions in developed economies (World Bank Report, 2022).

Despite the enormous inflow of migrant remittances to SSA, the region in the past years has been confronted with inadequate resources which have hindered them to embark on developmental projects to improve the welfare of the citizenry. On average, the SSA region has a low GDP when compared with the other regions, and the SSA region is faced with lots of challenges. Although some studies ascribed these challenges to the structural features of most of the economies in the SSA region which include macroeconomic policies, poor savings culture among the populace, level of the financial market, banking sector development, and regulation among others. Hence, to bridge the gap, governments in the SSA region often rely on migrant remittances to enhance and sustain real per capita growth.

According to Sghaier (2021), migrant remittances impact growth positively when there is a well-developed financial market (equity and banking sector development) which can pave the way for recipients of remittances to demand and have access to other banking products, capital market instruments, and services that will in turn drive growth positively. However, in most SSA economies, the financial market is still underdeveloped due to lack of financial infrastructures, weak monetary management, low income of most economic agents and households, government interference, history of financial repression, inadequate prudential, regulatory, and prudential frameworks, judicial enforcement rights, and weak creditors' rights (Mlachila et al., 2013; Bekele and Degu, 2021). To this end, the study aims to proffer answers to the following research questions: to what extent do migrant remittances and financial market development (equity market development and banking sector development) affect real per capita growth?

This study contributes to the literature by considering financial market development (equity market development and banking sector development) to unravel migrant remittances' effect on real per capita growth, unlike previous studies that employ financial development. More so, in terms of measurement of financial market development, the study uses equity market development and banking sector development. The study employs the gross portfolio equity asset to GDP as a measure of equity market development, unlike other studies that use the value of total traded shares expressed as a percentage of total market capitalisation and the value of listed shares in the stock exchange divided by GDP. Using gross portfolio equity asset to GDP serves as a robust measure of equity market development since it measures the financial depth and stability of the equity market.

In addition, the study adopts the ratio of bank credit to bank deposit as a measure of banking sector

development. The reason for using this measure is because it captures both the asset side and liability side of the bank statement of financial position, and it also measures financial stability (Rajan and Zingales 2003; Toyin and Toyin, 2016) unlike previous studies that used either private credit as a share of GDP (Naghshpour and Iii, 2018; Camara and Diallo, 2020) or the ratio of deposit to GDP (Rajan and Zingales 2003; Ngongang, 2015; Ahmed and Basir, 2016; Agbo and Nwankwo, 2018; Gashi, 2019; Siriki and Machrafi, 2021) as a measure of banking sector development. The weakness of using private credit as a share of GDP is that it only captures the asset side of a bank statement of financial position but ignores the liability side of the bank statement of financial position. Also, using the ratio of deposit to GDP signifies ignoring the asset sides and focusing on the liability side of the bank statement of financial position. In addition, these two methods only focus on depth and not financial stability.

## REVIEW OF THEORIES AND LITERATURE

### Theoretical review

Several theories in the literature have provided reasons why migrant remittances flow into developing countries. This study reviewed theories such as the developmental optimistic theory, and the developmental pessimistic theory. The developmental optimistic theory was one of the earliest theories of migrant remittances. During the period of 1950 and 1960s, the theory was popular, and it holds an optimistic view that migrant remittances flow to promote growth in recipient countries. According to the developmental optimistic theory, migrant remittances have the capacity of aiding and enhancing economic growth in a country. This theory emerged from the neoclassical migration hypothesis which provided reasons why labour migration exists. According to the neoclassical migration hypothesis, the differences in wage levels between economies are the major reasons for the bulk of labour migration, and in the absence of wage differentials among economies, labour migration will stop. The neoclassical migration hypothesis thus concluded that labour would move from developing/developed nations to developed/developing nations, while capital in contrast moves in the opposite direction.

The developmental pessimistic theory, on the other hand, came about in the early 1960s. According to this theory, migrant remittances do not lead to sustainable development. The theory argued that the negative effect of brain drain cannot substitute the gain linked with migrant remittances. The theory is of the view that due to the huge cost associated with emigration, the poor face a challenge in migrating, and the inflow of migrant remittances will further create an income gap in

developing economies as the migrant remittances inflows will hugely be spent on consumption instead of productive investment. The pessimistic theory also documented that the flow of migrant remittances would lead to a fall in labour supply in recipient economies when people start substituting work-related income for income coming from migrant remittances as workers start consuming more leisure while depending solely on the flow of migrant remittances (Cham et al. 2008). The theory also noted that the flow of migrant remittances might increase the level of corruption among government officials since migrant remittances reduce the incentive of households to hold the government accountable.

Aside from the theoretical review of migrant remittances, this study also reviews empirical literature between migrant remittances, financial market development, and real per-capita growth. For example, Giuliano and Ruiz-Arranz (2009) using a panel GMM method found that between the period 1975 and 2002, migrant remittances affect growth positively in seventy-five developing economies. The result confirmed that a substitution effect is found when migrant remittances interacted with financial development. Alkhatlan (2013) employing an ARDL and ECM method between the period 1970 and 2010 indicated that migrant remittances have an adverse effect on growth in Saudi Arabia in the short run, while in the long run, migrant remittances have a negative and insignificant effect on Saudi Arabia's growth. Also, Lartey (2013) using GMM concluded that migrant remittances positively influence the growth of thirty-six SSA economies for the periods 1990 to 2008. Shafqat et al. (2014) employing an OLS concluded that migrant remittances drive and enhance growth positively in Pakistan for the period 1991 to 2010. Kratou and Gazdar (2015) employing IV with GMM option, examined the link between migrant remittances and growth in twelve MENA economies for the period 1984 and 2011. The study showed that in the short run, migrant remittances affect growth adversely in MENA economies.

Fasanya and Baruwa (2015) exploring the effect of migrant remittances on growth in the West Africa Monetary Zone (WAMZ) between the period 1970 and 2011 using a panel cointegration concluded that migrant remittances positively influence the growth of six economies in the WAMZ region. The study also found that for migrant remittances to positively affect growth, a sound macroeconomic policy needs to be adopted. Meyer and Shera (2017) using fixed effect regression estimates, confirmed that for the period 1999 and 2013, migrant remittances have a positive influence on the growth of six high migrant remittances-receiving economies (Bulgaria, Moldova, Albania, Macedonia, Romania, and Herzegovina). Using time series analysis, Sarkar et al. (2018) showed that for the period 1995 to 2016, migrant remittances drive Bangladesh's growth. Shah and Majid (2018) using data from 1973 to 2015 and employing OLS and VECM methods concluded that migrant remittances affect Pakistan's growth positively.

Pepurah et al. (2019) using an ARDL technique documented that migrant remittances positively affect growth in the short and long run between 1984 and 2015 in Ghana. Anetor (2019) examined the migrant remittances-growth nexus concerning the role of financial sector development in Nigeria between 1981 and 2017. The study outcome revealed that migrant remittances and financial sector development have an adverse effect on growth in the short and long run.

Employing a GMM estimation technique, Izevbigie (2020) concluded that between the period 2005 and 2017, migrant remittances positively influences growth in the ECOWAS region. The author concluded that the government should ensure that migrant remittances are channeled to productive use. Keho (2020) using data from 1980 and 2017 examined whether migrant remittances influence financial development in ECOWAS economies. The author concluded that the inflow of migrant remittances to the region affects financial development adversely. Oteng-Abayie et al. (2020) employing an auto-regressive distributed lag (ARDL) method showed that migrant remittances retard growth in Ghana in the long run between the period 1970 to 2016. Employing fully modified ordinary least square and general least square Islam (2021) confirmed that migrant remittances drive growth in South Asian countries between the period 1986 to 2019. Ur Rehman and Hysa (2021), using a system GMM technique documented that migrant remittances affect growth positively in six Western Balkan economies for the period 2000 to 2017. Qutb (2021) employing a vector error correction model (VECM) approach showed that migrant remittances have an adverse effect on growth in Egypt for the period 1980 to 2017. The findings of Shakya and Gonpu (2021) showed that migrant remittances do not contribute to growth in Nepal for the period 1976 to 1997.

However, despite the mixed findings on the role of migrant remittances on per capita real growth, this paper tests the following hypothesis.

Hypothesis 1: Migrant remittances have no significant effect on per capita real growth in SSA.

Some studies have investigated the effect of banking sector development on growth, one such work is the study done by Uddin et al. (2013) who documented that during the period 1971 to 2011, banking sector development affects growth positively in Kenya using ARDL technique. Adusei (2013) employing fully modified ordinary least square and GMM showed that for the period 1971 to 2010 banking sector development has an adverse effect on Ghana's growth. Using ECM Ayunku and Etale (2014) concluded that between the period 1977 and 2010 banking sector development affect Nigeria's growth positively. Pradhan et al. (2014) using data from twenty-six ASEAN economies between the period 1961 and 2012 and employing VECM and Granger causality test showed that banking sector development has a

long-run link with economic growth and a bi-directional causality exist between the banking sector and economic growth. Using a system GMM, Petkovski and Kjosevski (2014) documented that when credit to the private sector and interest margin (a measure of banking sector development) are used, banking sector development has an adverse effect on growth in sixteen economies in Southeastern and Central Europe between the period 1991 and 2011. Ngongang (2015) employing a system GMM on data obtained from twenty-one Sub-Saharan Africa (SSA) economies concluded that banking sector development has an adverse effect on growth in the region between the period 2000 and 2014. Abugamea (2016) using ordinary least squares (OLS) concluded that for the period 1995 to 2014 in Palestine banking sector development has an adverse effect on growth.

Employing panel dynamic ordinary least square, Tongurai and Vithessonthi (2018) concluded that banking sector development has a positive effect on industrial development between the period 1960 to 2016. Ibrahim and Alagidede (2018) using a system GMM showed that banking sector development supported growth in 29 SSA economies for the period 1980 to 2014. Employing panel fully modified ordinary least square and dynamic ordinary least square, Bist (2018) showed that banking sector development affects growth positively in sixteen low-income economies (15 low-income African economies and 1 non-Africa economy). Employing an ARDL approach Paudel and Acharya (2020) concluded that for the period 1965 to 2018 banking sector development affects growth positively in Nepal. Adopting an ARDL approach, Almahadin et al. (2021) showed that for the period 1980 to 2018 banking sector development drives growth positively in Bangladesh. Siriki and Machrafi (2021) using the VAR technique concluded that for the period 1990 to 2019 that banking sector development affects growth positively in Cote D'Ivoire.

Furthermore, some studies have also investigated the effect of equity market development on growth. One such study includes Nzomoi and Ikikii (2013) who documented that for the period 2000 to 2011 and using a linear regression model, stock market development influenced growth positively in Kenya. Employing a panel data analysis approach, Ngare et al. (2014) indicated that between the period 1980 and 2010 stock market development positively affect growth in thirty-six African countries. Aigbovo and Izekor (2015) employing an ECM technique concluded that in Nigeria between the period 1980 and 2011 stock market development contribute positively to Nigeria's growth. Employing an ECM method, Ologunwa and Sadjibo (2016) indicated that capital market development is a key driver of growth in Nigeria. Using an ARDL technique, Nyasha and Odhiambo (2017) documented that for the period 1980 to 2012 stock market development positively influence growth in Kenya.

Ananwude and Osakwe (2017) using an ARDL

revealed that between the period 1981 and 2015 stock market development has a positive but insignificant effect on Nigeria's growth both in the long and short run. Ogbeide and Akanji (2018) using a panel generalized method concluded that for the period 1994 to 2014 stock market development positively contribute to growth in BRICS (Brazil, Russia, India, China, and South Africa) nations. Employing system GMM, Twerefou et al. (2019) showed that between the period 1993 and 2013 stock market development positively affects growth in SSA. Cave et al. (2020) employing data from 101 economies and using panel data techniques concluded that for the period 1990 to 2014 stock market development contribute to growth positively. Bhattarai et al. (2021) employing an ARDL method documented that for the period 1994 to 2019, Nepal stock market development affects growth positively.

Besides, several other studies in the literature have also shown that the stock market does not affect growth. Employing a vector auto-regressive approach, Wang and Ajit (2013) showed that for the period 1996 to 2011 stock market development has an adverse effect on growth in China. Adusei (2014) documented that the period 2006Q1 to 2013Q2 using an ARDL approach showed that stock market development does not contribute to growth in Ghana. Nyasha and Odhiambo (2015) employing an ARDL technique showed that between the period 1980 to 2012, there is an absence of any link between stock market development and growth in South Africa. Employing a VECM approach Magweva and Mashamba (2016) between the period 1989 and 2014 concluded that stock market development has an adverse effect on growth in Zimbabwe in the long run. Pan and Mishra (2018) employing an ARDL method concluded that in China for the period 1991 to 2015 stock market development has an adverse effect on growth in the long run. Employing a system GMM, Kagochi and Durmz (2020) concluded that stock market development does not contribute to growth in SSA economies. Ezeibekwe (2021) employing VECM concluded that from 1981-2017 stock market development does not contribute to growth in Nigeria.

Despite the mixed empirical evidence on the role of financial market development on per capita real growth, this paper tests the following hypothesis:

Hypothesis 2: Financial market development (equity market development and banking sector development) has no significant effect on per capita real growth in SSA.

This study contributes to the literature by considering financial market development (equity market development and banking sector development) to unravel migrant remittances' effect on real per capita growth, unlike previous studies that employ financial development by using either private credit as a share of GDP in measuring financial development (banking sector development). The

**Table 1.** Variables' description, measurement, and source.

Variable	Notation	Measurement	Expectation	Source
GDP per capita growth rate	GDPPCGR	Calculated by dividing GDP at constant prices by the population of a country or area.	-	WDI, 2023
Migrant Remittances	REM	Ratio of migrant remittances to GDP.	Positive	WDI, 2023
Equity Market Development	EMD	Ratio of gross portfolio equity assets to GDP	Positive	FRED. ST. LOUISFED, 2023
Banking Sector Development	BSD	Ratio of bank credit to bank deposit.	Positive	FRED.ST LOUISFED, 2023
Domestic Investment	DI	Gross capital formation (i.e. ratio of gross capital formation divided by GDP	Positive	WDI, 2023
Human Capital	HC	Secondary school enrollment (% gross)	Positive	WDI, 2023
Trade Openness	TOP	Ratio of the sum of exports plus imports of goods to total output	Positive	WDI, 2023
Inflation	INF	Consumer price index (annual % change in the cost to the average consumer of acquiring a basket of goods and services	Positive/Negative	WDI, 2023

Source: Author (2023).

weakness of using private credit as a share of GDP is that it only captures the asset side of a bank statement of financial position but ignores the liability side of the bank statement of financial position. Also, using the ratio of deposit to GDP signifies ignoring the asset sides and focusing on the liability side of the bank statement of financial position. In addition, these two methods only focus on depth and not financial stability.

This study in resolving this shortcoming adopts the ratio of bank credit to bank deposit as a measure of banking sector development. The reason for using this measure is because it captures both the asset side and liability side of the bank statement of financial position, and it also measures financial stability.

Furthermore, the study employs the gross portfolio equity asset to GDP as a measure of equity market development, unlike other studies that use the value of total traded shares expressed as a percentage of total market capitalisation and the value of listed shares in the stock exchange divided by GDP. Using gross portfolio equity asset to GDP serves as a robust measure of equity market development since it measures the financial depth and stability of the equity market.

## METHODOLOGY

### Sources of data

Data from twenty-seven countries in sub-Saharan Africa (SSA) economies from 2000 to 2020 will be used for this study. The SSA is used because the region is one of the major recipients of migrant remittances (World Bank Report, 2022). Data will be sourced from the World Bank Development Indicator (WDI), a publication of the World Bank, and FRED ST. LOUISFED. The following variables such as economic growth (GDPPCGR) remittances (REM), equity market development (EMD), banking sector development (BSD), domestic investment (DI), human capital (HC), trade openness (TOP), inflation rate (INF) was employed in the study as depicted in Table 1 (Appendix).

### Model specification

The empirical model of the study is built on the augmented Solow growth model advanced by Mankiw et al. (1992) which is an extension of the Solow growth model.

Using the traditional Cobb-Douglas production, the augmented Solow growth is stated as:

$$Y_t = f(A_t K_t H_t) \quad (1)$$

where  $Y_t$  is the output of the economy and represents the real per capita GDP growth rate at time  $t$ ,  $A_t$  is technology

at time  $t$ ,  $K_t$  is capital stock at time  $t$ , and  $H_t$  is human capital at time  $t$ .

The endogenous growth model noted that through capital inflows (migrant remittances) developing economies can obtain the required technology ( $A_t$ ) to stimulate, enhance, and promote economic growth (Romer, 1990; Mankiw et al., 1992).

Equation 1 becomes Equation 2 as migrant remittances could be welfare-enhancing or investment-enhancing via the equity market and banking sector.

$$Y = f(REM_t BSD_t EMD_t K_t HC_t) \quad (2)$$

Expressing Equation 2 in econometric form:

$$GDPPCGR_{it} = \alpha_0 + \alpha_1 REM_{it} + \alpha_2 BSD_{it} + \alpha_3 EMD_{it} + \alpha_4 DI_{it} + \alpha_5 HC_{it} \quad (3)$$

where  $\alpha_0$  is constant,  $\alpha_1$  to  $\alpha_5$  are parameters to be estimated.

In Equation 3, GDPPCGR (real per capita growth rate) is used to replace  $Y_t$ ,  $DI_t$  is used to replace  $K_t$ . Subsequently, the control variable trade openness (TOP), and inflation (INF) is added to the model to capture trade liberalization and the effect of inflation.

Following the review of theories, empirical literature, theoretical framework, and study objective, the study functional model becomes:

**Table 2.** Descriptive statistic.

Variable	Mean	Min.	Max.	Std.
GDPPCGR	3.222	0.00082	15.711	2.42995
REM	2.477	0.00019	16.64626	3.1648
EMD	9.397	0	150.7288	17.9356
BSD	68.883	8.17773	131.1308	21.4126
DI	24.297	6.69904	60.0583	8.96427
HC	42.249	6.1974	311.8663	24.39775
TOP	61.075	0.78463	152.5471	25.0659
INF	11.039	0.03668	513.9065	32.39356

Number of observations 546.

Source: Author's Computation from Stata (2023).

$$GDPPCGR_{it} = f(GDPPCGR_{it}, REM_{it}, EMD_{it}, BSD_{it}, DI_{it}, HC_{it}, TOP_{it}, INF_{it}) \quad (4)$$

Expressing Equation 4 in econometric form:

$$GDPPCGR_{it} = \alpha_0 + \alpha_1 REM_{it} + \alpha_2 EMD_{it} + \alpha_3 BSD_{it} + \alpha_4 DI_{it} + \alpha_5 HC_{it} + \alpha_6 TOP_{it} + \alpha_7 INF_{it} + \mu_{it} \quad (5)$$

where GDPPCGR is real per capita growth rate, REM is migrant remittances, EMD is equity market development, BSD is banking sector development, DI is domestic investment, HC is human capital, TOP is trade openness, INF is inflation, *i* and *t* refers to cross-country at time *t*,  $\alpha_0$  is constant,  $\alpha_1$  to  $\alpha_7$  are parameters to be estimated, and  $\mu_{it}$  is the error term.

Expressing Equation 5 in pool mean group form

$$\begin{aligned} \Delta GDPPCGR_{it} = & A + \emptyset GDPPCGR_{it-1} + \\ & \alpha_1 \sum_{i=1}^p \Delta GDPPCGR_{it-i} + \alpha_2 \sum_{i=1}^p \Delta REM_{it-i} + \alpha_3 \sum_{i=1}^p \Delta EMD_{it-i} + \alpha_4 \sum_{i=1}^p \Delta BSD_{it-i} + \alpha_5 \sum_{i=1}^p \Delta DI_{it-i} + \alpha_6 \sum_{i=1}^p \Delta HC_{it-i} + \\ & \alpha_7 \sum_{i=1}^p \Delta TOP_{it-i} + \alpha_8 \sum_{i=1}^p \Delta INF_{it-1} + \beta_1 GDPPCGR_{it-1} + \beta_2 REM_{it-1} + \beta_3 EMD_{it-1} + \beta_4 BSD_{it-1} + \beta_5 DI_{it-1} + \beta_6 HC_{it-1} + \\ & \beta_7 TOP_{it-1} + \beta_8 INF_{it-1} + \mu_{it} \end{aligned} \quad (6)$$

where *A* is constant,  $\emptyset$  is the coefficient of the past lagged value of the dependent variable,  $\alpha_1$  to  $\alpha_8$  are the short-run coefficients while  $\beta_1$  to  $\beta_8$  indicates the long-run coefficients.

A priori expectation:

$$\alpha_0 > 0, \alpha_1 > 0, \alpha_2 > 0, \alpha_3 > 0, \alpha_4 > 0, \alpha_5 > 0, \alpha_6 > 0, \alpha_7 < 0$$

The model examines the effect of remittance and financial market development (equity market development and banking sector development) on real per capita growth.

### Method of data analysis

The study employed the use of a pool mean group (PMG) and the mean group (MG) techniques in analyzing the study model. However, before using the PMG technique, the study first carried out a panel first-generation and second-generation unit root test. The study also carried out a cross-sectional dependence test to determine whether to report the first-generation panel unit root test or the second-generation panel unit root test. The first-generation panel unit root test is reported provided there is an absence of cross-sectional dependence among the panel series. Also, the study carried out panel cointegration test with or without cross-sectional dependence. Finally, the study also carried out the PMG and MG test and used the Hausman test to determine the test to report. If the *p*-value is not significant, the PMG result is reported vice-versa.

## RESULTS

### Descriptive statistic

Table 2 shows the descriptive statistics of the variables used in the study. As shown in the table, the average GDP per capita growth in SSA is 3.22% while the maximum is 15.71%. On average, the ratio of migrant remittances to GDP (REM) is 2.45, while the average gross portfolio equity assets to GDP (EMD) and the ratio of bank credit to bank deposit (BSD) are 9.39 and 68.88, respectively. More so, on average gross fixed capital formation is 24.29% while human capital is 42.25% an indication that human capital is less fully developed in SSA. In addition, the descriptive statistic also revealed that on average trade openness is 61.08% an indication that SSA economies are liberalizing their economies to trade while the average inflation rate (INF) is 11.04%.

**Table 3.** Correlation matrix.

Correlation	GDPPCGR	REM	EMD	BSD	DI	HC	TOP	INF
GDPPCGR	1.000	-0.013	-0.067	-0.132	0.178	-0.028	0.068	0.089
REM		1.000	-0.199	0.045	0.1666	0.168	0.109	-0.109
EMD			1.000	0.052	-0.139	0.186	0.088	-0.068
BSD				1.000	-0.118	0.218	-0.088	-0.273
DI					1.000	0.079	0.357	-0.046
HC						1.000	0.275	-0.087
TOP							1.000	-0.014
INF								1.000
RIR								
UNR								
GG								
EMM								

Source: Author's Computation from Stata (2023).

**Table 4.** Multi-collinearity result.

Variable	Variance inflation factor (VIF)
REM	1.12
EMD	1.14
BSD	1.17
DI	1.22
HC	1.22
TOP	1.27
INF	1.1

Source: Author's Computation from Stata (2023).

**Table 5.** Cross-section dependence test.

Cross-section dependence test	Statistic	p-value
Pesaran's test of cross-sectional independence	0.768	0.442

Source: Author's Computation from Stata (2023).

### Correlation analysis

Table 3 reveals the outcome of the correlation analysis. The outcome of the correlation analysis revealed that the variables are weakly correlated an indication that the study is not suffering from multicollinearity. In addition, Table 3 reveals that REM, EMD, BSD, and HC are negatively correlated with GDPPCGR while gross DI, INF, and TO are positively correlated with GDPPCGR in SSA between the period 2000 and 2020.

### Multi-collinearity test

The multi-collinearity test was carried out using the

variance inflation factor (VIF). Based on the results shown in Table 4, there is an absence of multi-collinearity among the variables since the VIF for each variable is below 10.

### Cross-sectional dependence test

This study employs the Pearson Cross-Sectional Dependence test to test for the presence of cross-sectional dependence among the panel series. The result in Table 5 reveals that the null hypothesis of an absence of cross-sectional dependency is accepted, and the alternative hypothesis of cross-sectional dependence is rejected. Hence, there is no cross-sectional dependence

**Table 6.** First generation panel unit root test.

Series	First-generation panel unit root test <sup>a</sup>										Second-generation panel unit root test <sup>b</sup>		
	Common unit root process test					Individual unit root process test					Pesaran's CADF test		
	LLC		Breitung		Im et al		ADF		PP		Series	1(0)	1(1)
	1(0)	1(1)	1(0)	1(1)	1(0)	1(1)	1(0)	1(1)	1(0)	1(1)		1(0)	1(1)
GDPPCGR	(3.45)***		(7.478)***		(5.454)***		(15.33)***		(15.32)***		GDPPCGR	(2.224)***	
REM	(2.912)***			(8.354)***	(9.359)***		(1.935)***		(1.935)**		REM		(2.460)***
EMD	(2.613)***		(4.289)***			(6.059)***	(3.563)***		(3.563)***		EMD		(2.679)***
BSD	(4.728)***			(10.702)***	(3.175)***		(1.462)*		(1.462)**		BSD		(2.085)**
DI	-	(1.114)***	(11.718)***		(9.753)***			(27.819)***	(19.808)***		DI		(3.297)***
HC	(96.128)***			(5.894)***		(9.243)***	(11.266)***			(27.819)***	HC		(2.434)***
TOP	(2.962)***			(10.85)***		(9.109)***		(21.291)***	(11.266)***		TOP		(2.34)***
INF	(39.057)***		(3.036)***		(14.629)***		(18.142)***		(18.142)***		INF		(2.584)***

\*\*\*, \*\*, \*, represent 1, 5 and 10%, respectively.  
 Source: Author's Computation from Stata (2023).

among the panel series and the study adopts the first-generation unit root test.

**Panel data unit root test**

Table 6 shows the first-generation and the second-generation panel unit root test. Based on the cross-sectional dependence test result in Table 5 which shows an absence of cross-sectional dependency among the panel series, the study reports the first generation panel unit root test (Table 6). The first generation unit root test carried out were categorized into common unit root process tests (Levin, Lin & Chin test and Brietung test) and individual unit root process tests (Im, Perseran & Shim W-test, ADF- Fisher and ADF- Choi Z-test). From the outcome in Table 6, the majority of the test confirmed that the

following series GDPPCRG, REM, EMD, BSD, and INF are stationary at level {1(0)} while DI, HC, and TOP are stationary at first difference {1(1)}.

**Panel cointegration test**

Table 7 shows the panel cointegration results with and without cross-sectional dependence. Since there is an absence of cross-sectional dependence among the series, this study reports the panel cointegration test without cross-sectional dependence using the Kao and Pedroni tests (Table 7). Based on the outcome in Table 7, the null hypothesis that all panels are cointegrated is accepted, and the alternative that all panels are not cointegrated is rejected. Hence, the study concludes that the variables are cointegrated (have a long-run relationship).

**Panel regression estimates**

Table 8 shows the panel pool mean group estimates and the panel mean group estimates. However, based on the Hausman test result, it can be seen that the pool mean group is the preferred estimation technique since both the p-values exceed 0.05. Hence, the pool mean group estimation is reported. From the pool mean group estimates the coefficient of migrant remittances (0.113) is positive and statistically significant at 5%. This implies that migrant remittances have contributed to the economic growth in the SSA region. The result is in tandem with previous studies (Kumar et al., 2018; Peprah et al., 2019; Izevbigie, 2020; Islam, 2021; Sghaier, 2021) who affirmed that migrant remittances affect growth positively.

Consequently, the outcome in Table 8 indicates



**Table 7.** Panel cointegration without and with cross-sectional dependence.

Estimate	Statistic
<b>Without cross-sectional dependence<sup>a</sup></b>	
<b>Kao test</b>	
Panel ADF-statistic	(5.522) <sup>***</sup>
<b>Pedroni test</b>	
Panel PP-statistic	(17.029) <sup>***</sup>
Panel ADF-statistic	(12.163) <sup>***</sup>
<b>With cross-sectional dependence<sup>b</sup></b>	
Variance ratio	1.4002 <sup>**</sup>

<sup>\*\*\*</sup>, <sup>\*\*</sup>, represents 1 and 5%.

Source: Author's Computation from Stata (2023).

**Table 8.** Panel regression estimates (Model 1).

Variable	Pool Mean Group Estimates			Mean Group Estimates		
	Dependent variable: GDPPCGR			Dependent variable: GDPPCGR		
	Coefficient	Standard error	t-Statistic	Coefficient	Standard error	t-Statistic
<b>Long-run</b>						
REM	0.113	0.068	1.66 <sup>**</sup>	8.241	3.950	2.09 <sup>**</sup>
EMD	0.117	0.012	9.98 <sup>***</sup>	(0.700)	4.739	(0.15)
BSD	(0.007)	0.006	(1.1)	(0.086)	0.037	(2.34) <sup>***</sup>
DI	(0.539)	0.0169	(3.18) <sup>***</sup>	0.109	0.234	0.46
HC	(0.037)	0.013	(2.93) <sup>***</sup>	0.119	0.148	0.81
TOP	0.02	0.006	3.32 <sup>***</sup>	0.009	0.033	0.27
INF	(0.0632)	0.0163	(3.89) <sup>***</sup>	(0.110)	0.098	(1.13)
<b>Short-run</b>						
EC	(0.781)	0.962	(8.11) <sup>***</sup>	(1.201)	0.096	(12.55) <sup>***</sup>
D.REM	4.014	2.941	0.172	(2.214)	2.254	(0.98)
D.EMD	(10.198)	15.766	0.518	(8.321)	5.810	(1.43)
D.BSD	0.042	0.018	0.023	0.026	0.038	0.69
D.DI	(0.183)	0.243	0.451	(0.657)	0.5272	(1.25)
D.HC	(0.166)	0.180	0.358	(0.301)	0.289	(1.04)
D.INF	(0.007)	0.039	0.852	0.049	0.056	0.88
Constant	3.869	0.529	7.33 <sup>***</sup>	(9.256)	13.642	(0.68)
Hausman test						
PMG vs MG	19.92[0.1]					
Number of observations	520					

<sup>\*\*\*</sup>, <sup>\*\*</sup>, <sup>\*</sup> represent 1, 5, and 10%, respectively.

Source: Author's Computation from Stata (2023).

that the coefficient of equity market development (0.117) is positive and statistically significant at 1 percent. This connotes that equity market development has influenced economic growth in the SSA region. The result is similar to the following existing studies (Aigbovo and Izebor, 2015; Chen and Komal, 2016; Ayadi, 2018; Hossin and

Islam, 2019; Hamzah et al., 2020; Yemelyanova, 2021) that affirmed that equity market development affects economic growth positively.

In addition, the regression estimates further indicate that the coefficient of banking sector development is negative (-0.007) and statistically insignificant. This

**Table 9.** Variables' description, expectation, and outcome.

Variable	Notation	Expectation	Outcome
GDP per capita growth rate	GDPPCGR	-	-
Migrant remittances	REM	Positive	Positive
Equity market development	EMD	Positive	Positive
Banking sector development	BSD	Positive	Negative
Domestic investment	DI	Positive	Negative
Human capital	HC	Positive	Negative
Trade openness	TOP	Positive	Positive
Inflation	INF	Positive/Negative	Negative

Source: Author (2023).

connotes that banking sector development has not culminated in economic growth in the SSA region. This outcome lends credence to previous works (Ngongang, 2015; Abugamea, 2016; Nyasha and Odhiambo, 2017; Cave et al., 2020; Yemelyanova, 2021) that assert that banking sector development has not culminated in economic growth.

Furthermore, the coefficient of domestic investment is negative but insignificant, implying that domestic investment is inadequate to cause growth in the region. More so, human capital (HC) has a negative coefficient and significant implication that the level of human capital in SSA does not facilitate growth. The plausible reasons for this are the prevalent brain drain and the high level of adult illiteracy witnessed in the region. Besides trade openness (TOP) coefficient is positive and statistically significant at 1% an indication that trade openness positively influences growth in the region. This implies that the more the SSA region reduces the numerous trade barriers, the higher the growth of the economy. Lastly, inflation is negative and statistically significant at 1%, suggesting that inflation retards economic growth adversely.

## DISCUSSION

Having considered the effect of migrant remittances and financial market development on per capita real growth in SSA, the study's outcome in Tables 8 and 9 reveal that migrant remittances positively influence economic growth in SSA. The economic rationale for this is that most of the economies in SSA rely on migrant remittances from abroad to improve their standard of living. More so, it gives the recipients additional sources of income to address the challenges faced when starting a new venture, building a house, accessing good healthcare, and increasing households' purchasing power. This is in line with previous studies (Kumar et al., 2018; Peprah et al., 2019; Izevbigie, 2020; Islam, 2021; Sghaier, 2021) who confirmed that migrant remittances enhance economic growth.

In addition, the study's outcome also indicated that equity market development contributes positively to economic growth in the SSA region. The economic rationale for this result is that the equity market encourages and facilitated the mobilization of domestic savings via the issuance of equity shares and distribution of such funds to the deficit sectors that needs the funds for investment, and this, in turn, enhances and promotes economic growth in the region. The result confirms existing studies (Aigbovo and Izekor, 2015; Chen and Komal, 2016; Ayadi, 2018; Hossin and Islam, 2019; Hamzah et al., 2020; Yemelyanova, 2021) that affirmed that equity market development affects economic growth positively.

Furthermore, considering the impact of banking sector development on economic growth, the study outcome showed that banking sector development seems not to have contributed to economic growth in the region. The plausible rationale for this is that the banking sector in SSA is faced with a lot of challenges such as (highly concentrated in the urban areas, barriers to entry and exit, poor IT infrastructures, cyber security risk, weak corporate governance, political instability, ineffective regulatory framework, and lack of innovative financial product that make use of technology among others) which in turn limit the financial intermediation of banks thus constrains growth in the region. In addition, a huge proportion of domestic savings in the banking sector are mostly channeled to less risky and short-term investments rather than to the productive sector (manufacturing and agricultural sector). The outcome is similar to previous works (Ngongang, 2015; Abugamea, 2016; Nyasha and Odhiambo, 2017; Cave et al., 2020; Yemelyanova, 2021) that affirmed that banking sector development has not contributed to economic growth.

## Conclusion

What is the effect of migrant remittances and financial market development on economic growth? To shed some light on these key questions, the study analysed the relationship between migrant remittances, financial market

development, and real per capita growth in SSA. The study uses panel data from twenty-seven countries covering the period 2000-2020. The pool mean group was deployed to analyse the data. The study has established that migrant remittances positively influence and facilitate growth in the SSA region. The study also affirmed that equity market development contributes positively to growth in the SSA region. Furthermore, the study also established that banking sector development seems not to affect growth positively in the SSA.

The outcome of the study provides significant policy direction. Since the finding of the study revealed that migrant remittances drive economic growth, the government should establish strategies and incentives to encourage migrants to freely remit foreign earnings through the financial markets to spur economic growth. More so, since equity market development promotes economic growth, it is suggestive that the regulators of the stock market should formulate policies that would increase equity investment which would improve the equity market and position it further for long-term investment opportunities required for sustained economic growth.

In addition, the study outcome revealed that bank sector development seems not to facilitate growth due to some inherent challenges. To overcome these inherent challenges, the bank boards need to invest heavily in IT infrastructures to drive down the cost of services, strengthen corporate governance within the bank, ensure effective and efficient internal control in place to combat the incidence of fraud, and also ensure that the workforce maintains high professional standards and ethics required by the profession. More so, the monetary authority needs to strengthen its oversight function to ensure that banks comply with existing and new regulations.

Future studies can carry out a comparative study by investigating the relationship between migrant remittances, financial market development, and economic growth in SSA by focusing on their income level (that is, low income level, lower-middle income level, and upper-middle income level).

## CONFLICT OF INTERESTS

The author has not declared any conflicts of interests.

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**Appendix:** List of countries.

<b>S/N</b>	<b>Countries</b>
1	Angola
2	Benin
3	Botswana
4	Cabo Verde
5	Congo Dem. Rep.
6	Cape Verde
7	Côte d'Ivoire
8	Ethiopia
9	Gabo
10	Ghana
11	Guinea
12	Guinea Bissau
13	Kenya
14	Malawi
15	Mali
16	Mozambique
17	Namibia
18	Niger
19	Nigeria
20	Rwanda
21	Senegal
22	Sudan
23	Tanzania
24	Togo
25	Uganda
26	Zambia
27	South Africa