Accounting for the Role of Financial Development in the Nexus between Remittances and Economic Growth in Nigeria

Eyitayo Oyewunmi Ogbaro[1] and Oluwatomiwo Sanni[2]

[1]*Department of Economics, Faculty of Business and Social Sciences, Adeleke University, Ede, Osun State, Nigeria. E-mail: ogbarooye@yahoo.com; eyitayo.ogbaro@adelekeuniversity.edu.ng*
[2]*Department of Economics, Faculty of Business and Social Sciences, Adeleke University, Ede, Osun State, Nigeria. E-mail: sannitomiwo@gmail.com*

Abstract: Scholars believe that remittances and financial development influence economic growth by allowing funds to be made accessible to an economy's deficit side. Hence, this study estimates the minimum threshold level of financial development that is required for remittances to promote the growth of the Nigerian economy. This is in addition to examining the direct effect of remittances as well as the interactive effect of remittances and financial development on Nigeria's economic growth. The empirical analysis is based on the modification of the New Structural Economics theory. Annual secondary time series data for the period 1981-2021 are employed for the purpose of empirical analysis. Data on economic growth measured using GDP per capita, remittances, financial development and physical capital are sourced from World Development Indicators. Data on human capital are sourced from the Central Bank of Nigeria Statistical Bulletin. The study uses the Fully Modified Ordinary Least Square method for the econometric analysis. The results of the study show that remittances have a negative and insignificant effect on economic growth in Nigeria. In contrast, the interaction of remittances and financial development is found to exert a positive and significant effect on economic growth. Findings also reveal the threshold value of financial development beyond which remittances promote growth in Nigeria. The study concludes that the effect of remittances on economic growth is contingent upon the development of the financial sector.

Keywords: Economic growth, financial development, FMOLS, remittances

1. INTRODUCTION

For more than half a century, the rising arguments about the causes of economic growth in developing countries have dominated the literature in economics. Labour force, physical capital investment, foreign capital flows, human capital, as well as research

and development are some of the causes of economic growth that have been identified. Other factors that are considered to also play important roles in a country's growth process are institutional elements such as political freedom, political instability, as well as voice and accountability (Fayissa & Nsiah, 2010). However, the macroeconomic effects of international remittances have recently piqued the interest of the literature on economic growth. This recent shift of attention could be due to the fact that, next to foreign direct investment (FDI), remittances now account for about half of poor nations' foreign aid receipts (Kapur 2003).

Moreover, for numerous developing countries, particularly those in Sub-Saharan Africa (SSA), remittances have become an important and growing source of foreign income. Workers' remittances are funds and items sent home by migrant workers to their families in their home countries. Remittances have long been seen as an important element of developing countries, serving as an important source of financial inflow for many of them. They can promote financial market activity, operate as a source of funding for company ventures, provide shock insurance, finance household expenses, create capital for households, and act as a way to close the savings and external funding gaps (Matuzeviciute & Butkus, 2016).

Global remittances totalled US$585.1 billion in 2016 according to the World Bank (2021a), with US$442 billion flowing to developing countries. It increased by 7% to US$613 billion in 2017 with an estimated value of US$450 billion flowing to developing nations. In 2018, the global figure was $ 616 billion dollars, and in 2019, the figure was $ 719 billion dollars, with $ 548 billion going to poor countries. In 2020, there was a drop in the global remittances as a result of COVID-19, the global remittances falling to $702 billion with an estimated value of $540 billion going to developing countries. Remittances are particularly significant because of the economic role they play in capital-deficient countries such as Nigeria. Their primary benefit to recipient households is an increase in their overall welfare. Seventy percent of remittances monies are spent on consumption, while thirty percent are invested. They assist citizens in developing countries in meeting basic requirements, investing in cash and non-cash assets, financing education, fostering new businesses, paying off debt, and driving economic growth (Ratha *et al*., 2011).

In most SSA nations, remittances enter through unofficial means, decreasing the impact of such funds or types on the banking sector. In the case of Nigeria, the inflow of remittances from 1980 to 2020 amounted to $446.119 billion (World Bank, 2021a). These data only include remittances received through official routes, while it is thought that there are sizable inflows through unofficial routes as well. The International Monetary Fund (IMF, 2011) has attributed this development, which has serious growth implications, to inadequate financial institutions in the developing countries.

For example, Falade *et al.* (2018) asserted that Nigeria's financial services are poor, contributing to the economy's underproductive real sector. Also, Omankhanlen *et al.* (2022) argued that Nigeria's financial system must be strengthened so that exports of resources will have a significant impact on economic growth.

This discourse has led to the emergence of a strand of the literature which identified the level of financial development in the recipient country as an important link between remittances and growth. Scholars in this strand have argued that remittances, if efficiently intermediated, would allow for the funding of growth-enhancing initiatives by financially constrained entrepreneurs. This is in addition to reducing liquidity constraints and boosting access to credit for the migrants' relatives (Adesoye *et al.*, 2019). It was in the recognition of these facts that World Bank (2013) had emphasised the importance of establishing effective institutions that are capable of promoting financial development particularly in developing countries in order to boost economic growth. According to Hamma (2016), financial development and remittances inflows influence economic growth by allowing funds to be made accessible to the economy's deficit side, which will have a multiplier effect on macroeconomic indicators. In addition, the economy needs finances as well as a well-developed financial institution to mobilise surplus funds and channel them to the deficit side. Also, Dabwor (2020) asserted that an expanding economy puts more pressure on the financial sector to mobilise the resources needed to create jobs by promoting production, thereby generating income. Nigeria has experienced financial development, and as a result of this financial deepening, money market development, equities and capital market activities, bank branches, as well as debit and credit card use have all expanded significantly over time. Point of Sale (POS), Automatic Teller Machine (ATM), electronic deposit transfer, more online banking services, automated banking and an overall growth in banking deposits are all indicators of improved use of payment systems in the Nigerian economy. This study, therefore, sought to investigate the extent to which the level of financial development experienced by Nigeria has efficiently intermediated the inflow of remittances, thereby boosting economic growth.

Previous studies have extensively focused on the individual effects of remittances and financial development on economic growth in Nigeria. The empirical analysis of the effect of remittances on economic growth utilising financial development as a transmission route has not received sufficient attention. Furthermore, the possibility of the existence of a threshold level of financial development above which the inflow of remittances promotes growth has not been adequately explored in the Nigerian context This is because almost all the few existing studies on the threshold analysis are panel studies which did not account for individual differences among countries. This study was, therefore, conducted to address these gaps in the literature.

2. EMPIRICAL REVIEW

The empirical literature on the relationship among remittances, financial development and economic growth in Nigeria can be categorised into four strands on the basis of their main objectives. The first strand comprises studies which examined the direct effects of remittances on economic growth. Although majority of these studies found significant positive effect, a few others found negative, mixed or insignificant effects. Studies that found positive and significant effects of remittances on economic growth in Nigeria include Iheke (2012), Akinpelu *et al.* (2013), Akonji and Wakili (2013), Ukeje and Obiechina (2013), Adarkwa (2015), Adeyi (2015), Azuh *et al.* (2015), Muriel (2015), Olusuyi *et al.* (2017), Garba *et al.* (2020), Mohammed (2021), as well as Okorie *et al.* (2022). On the other hand, studies that reported negative, mixed or insignificant effects of remittances on economic growth include Okodua *et al.* (2015), Loto and Alao (2016), Ibukun (2017), as well as Olayungbo *et al.* (2020). The inconclusiveness that is inherent in the evidence provided in this first strand of literature has prompted some scholars to investigate why remittances may have differential effects on economic growth in Nigeria.

Developing side by side with the first strand is another strand of the literature which is devoted to examining the influence of financial development on economic growth. The studies in this second strand made use of different measures of financial development which include domestic credit to private sectors by bank, money supply and banking sector credits. Just like the first strand, evidence in the strand is also not conclusive. On one hand, many of these studies found that financial development has a positive effect on economic growth in Nigeria. These studies include Akinlo and Egbetunde (2010), Odeniran and Udeaja (2010), Osuji and Chigbu (2012), Nkoro and Uko (2013), Balago (2014), Oriavwote and Eshenake (2014), Taofeek and Olumuyiwa (2016), Agbo and Nwankwo (2018), Azubuike (2019), Imoagwu and Ezeanyeji (2019), Mohammed *et al.* (2019), Akintola *et al.* (2020), Osakwe and Ananwude (2020), Albert *et al.* (2021), Michael *et al.* (2021), Odugbesan *et al.* (2021), as well as Sambo *et al.* (2021). However, few other studies found negative effect of financial development on economic growth and they include Maduka and Onwuka (2013), Chude and Chude (2016) as well as Iheanacho (2016).

The third strand entails studies which focused on the role of financial development in moderating the effect of remittances on economic growth. The emergence of this strand was as a result of the attempts that were made at understanding the factors that may be responsible for the differential effects of remittances and economic growth particularly in Nigeria using the interactive term between remittances financial development in their growth models. These studies include Olayungbo and Quadri (2019), Olaniyan *et al.* (2020) as well as Falade *et al.* (2021). Findings in this strand of the literature is

also not conclusive. This is because while the first study found that remittances and financial development are substitutes in the growth process, the other two found that the interactive effect of remittances and financial development on economic growth was positive and significant. These studies have, however, been criticised on the basis of their failure to identify the specific level of financial development that will guarantee the maximisation of the growth benefits of remittances.

The last strand of the literature consists a handful of studies that explored the possible existence of a threshold level of financial development above which the flow of remittances promotes growth. The emergence of this strand was as a result of attempts made to address the limitation of the third strand of the literature. Studies in this strand include Adetou and Fiondenji (2019) which used data on 13 members of the ECOWAS including Nigeria over the period 1985-2014 as well as dynamic panel threshold model. The study examined how financial development (measured as domestic credit to private sector by banks) influences a country's capacity to reap the growth benefits of remittances. The findings of the study indicated that when the threshold level of 4.95 is exceeded, remittances have a positive influence on economic growth, although the effect is not statistically significant.

Another study in the last strand is Bangake *et al.* (2020), which examined the relationship between remittances, financial development, and economic growth in 76 developing countries including Nigeria using data between 1975 and 2013. The study employed four indicators of financial development, namely, money and quasi-money, private sector credit, liquid liabilities, as well as commercial banking assets. The results of their Panel Threshold Regression (PTR) model revealed that the relationship between remittances and growth is positive for the financial development level between 20% and 50%. On the other hand, the study found the impact of remittances on growth to be insignificant for higher levels of financial development. In addition, Ofori *et al.* (2022) assessed the impact of remittances and financial development on income equalisation in 48 African countries including Nigeria from 1996 to 2020. By utilising income inequality measures such as the Palma ratio and net Gini index, the researchers found that directing resources towards the enhancement of Africa's financial sector could result in a more equitable income distribution. Specifically, the findings found that to achieve a minimum threshold of 23.05 for financial access and 3.02 for financial institutions' effectiveness is crucial in leveraging the potential of remittances to promote income equalisation in Africa. The consensus in the findings of these studies is the existence of a minimum threshold level of financial development that is required for maximising the positive impact of remittances on the economy.

Some important points can be deduced from the foregoing. Firstly, there is the need to provide further insight into the direct effect of remittances on economic growth

with a view to settling the controversy surrounding the nexus. Secondly, only a few studies have investigated the role of financial development in the connection between remittances and economic growth in Nigeria. Lastly, the possibility of the existence of a threshold level of financial development above which the inflow of remittances promote growth has not been adequately explored in the Nigerian context. The few existing studies are panel studies that did not take into consideration the peculiarities of the individual countries, with the exception of Ofori *et al.* (2022). The limitation of the study by Ofori *et al.* (2022) is that it failed to account for the endogeneity problem that may likely arise when examining a relationship that includes remittances and financial development. Another limitation of that study is that it used income equalisation instead of economic growth. This present study, therefore, addressed these gaps in the literature by investigating the minimum level of financial development that is required for maximising the growth benefits of remittances in Nigeria over the period 1981- 2021. This was in addition to examining the direct effect of remittances on economic growth as well as investigating the interactive effect of remittances and financial development on economic growth in Nigeria.

3. METHODOLOGY

3.1. Theoretical Framework

This study modified the NSE theory within the augmented Solow (1956) framework in order to arrive at its theoretical framework. The theory identifies a country's endowments such as capital (in this case remittances) and institutions (in this case financial institutions) among others, as drivers of growth. Hence, it regards remittances and financial development as complementary factors in the process of economic growth. It argues that a strong and efficient financial system plays a crucial role in directing resources towards their most productive utilisation, thus facilitating a more efficient allocation of resources and fostering overall growth. Moreover, it recognises an improved financial system as contributing to the enhancement of competition, particularly through startup initiatives, and stimulates innovation due to the presence of a highly skilled workforce. This is in addition to promoting an increase in the aggregate savings rate, ultimately leading to higher output levels.

3.2. Model Specification

In modelling the ideas stated above, this study adapted the Cobb-Douglas production function specification of Kumar *et al.* (2017) which is based on Solow's (1956) methodology. The function is stated generally as follows:

$$Y_t = A_t K_t^\alpha L_t^\beta \tag{1}$$

where Y is output, A is total factor productivity, K is capital, L is labour, and t is time-series observation. α and β represent the output elasticities with respect to capital and labour, respectively. Put differently, the two parameters represent, respectively, shares of capital and labour in total income. Assuming the production function in equation (1) exhibits constant returns to scale, such that $\alpha + \beta = 1$, and dividing the equation by L yields:

$$y_t = A_t k_t^\alpha \tag{2}$$

where y and k denote output per capita and capital per capita, respectively. Disaggregating capital per capita by type yields the following:

$$k_t^\alpha = k_{h_t}^\gamma * k_{p_t}^\delta \tag{3}$$

where k_h denotes human capital per capita and k_p is physical capital per capita, while $\gamma + \delta = \alpha$

Substituting equation (3) into (2) yields:

$$y_t = A_t k_{h_t}^\gamma * k_{p_t}^\delta \tag{4}$$

Expressing equation (4) in log form yields equation (5) as follows:

$$\ln y_t = \ln A_t + \gamma \ln k_{h_t} + \delta \ln k_{p_t} \tag{5}$$

This study models total factor productivity (A) in a way that is similar to the approach of Dinh Su and Phuc Nguyen (2020). The authors specified aggregate productivity as a function of foreign financial flows as shown below:

$$A_t = A_0 (Fcap)^\mu \tag{6}$$

where A_0 denotes initial total factor productivity, $Fcap$ represents foreign financial flows and μ denotes elasticity which measures effects of foreign financial flows on growth. In line with this, this study expresses as a function of remittances, which is a component of foreign financial flows, as shown thus:

$$A_t = A_0 (REM_t)^\mu \tag{7}$$

where A_0 is as earlier stated, REM denotes remittances and μ denotes elasticity which measures the impact of remittances on economic growth by considering the role of human capital.

Dinh Su and Phuc Nguyen (2020) further hypothesised that the effects of foreign financial flows on growth are both direct and indirect, with the latter depending on the capacity of the economy to absorb the superior technology that comes with such flows. This capacity, according to the authors, is measured by the economy's human capital stock. Hence, they specified μ as a function of human capital stock as follows:

$$\mu = \mu_0 + \mu_1 f(sh) \tag{8}$$

where μ_0 denotes initial total factor productivity, and sh is human capital stock.

However, this study modifies this specification by replacing human capital with financial development. Thus, it measures the effects of remittances on growth as a function of financial development. This is because a recipient country's level of financial development has been identified as an important factor through which remittances impact the growth process (Giuliano & Ruiz-Arranz, 2009; Nyamongo *et al.*, 2012). For instance, remittances inflows that are efficiently utilised would facilitate the finance of growth-enhancing initiatives by financially constrained businesspersons, reduce liquidity constraints and improve the access to credit for the migrants' families. In addition, when remittances are received through formal channels, it not only provides funds to banks but also acts as a catalyst for financial development. This, in turn, enables the government to access funds through loan charges. By encouraging the use of formal channels for remittance transfers, it creates a positive ripple effect on the financial sector and facilitates the flow of funds to various sectors of the economy. Consequently, this contributes to overall economic growth and development. Hence, μ is used to capture how productivity is influenced directly and indirectly by remittances as follows:

$$\mu = \mu_0 + \mu_1 f(FND_t) \tag{9}$$

where *FND* denotes financial development. For ease of analysis and in the light of Dinh Su and Phuc Nguyen (2020), equation (9) is simplified as follows:

$$\mu = \mu_0 + \mu_1 (\ln FND) \tag{10}$$

Substituting equation (10) into (7) yields the following:

$$A_t = A_0 (REM_t)^{\mu_0 + \mu_1 \ln FND_t} \tag{11}$$

Taking the natural logarithm of both sides of equation (11):

$$\ln A_t = \ln A_0 + \mu_0 \ln REM_t + \mu_1 \left(\ln REM_t * \ln FND_t \right) \tag{12}$$

Substituting equation (12) into (3.5) yields:

$$\ln y_t = \ln A_0 + \mu_0 \ln REM_t + \mu_1 (\ln REM_t^* \ln FND_t) + \gamma \ln k_{h_t} + \delta \ln k_{p_t} \tag{13}$$

Setting $\ln A_0 = \alpha$, $\mu_0 = \beta$, and $\mu_1 = \sigma$ in equation (13) leads to:

$$\ln y_t = \alpha + \beta \ln REM_t + \sigma (\ln REM_t^* \ln FND_t) + \gamma \ln k_{h_t} + \delta \ln k_{p_t} \tag{14}$$

Adding the disturbance term, ε_t, to equation (14) in order to transform it into an econometric model yields:

$$\ln y_t = \alpha + \beta \ln REM_t + \sigma (\ln REM_t * \ln FND_t) + \gamma \ln k_{h_t} + \delta \ln k_{p_t} + \varepsilon_t \tag{15}$$

The interactive term in equation (15), $REM_t^* \ln FND_t$, allows for examining how the role of remittances in the growth process is moderated by the level of financial development. Based on the equation, the interpretations of the role of financial development in mediating the remittances and growth nexus depends on the values of

β and σ. There exists four possible interpretations with regard to the values that β as well as σ can take, and they are as follows:

(i) β and σ are both positive. In this case, remittances impact growth positively, while financial development acts as a stimulus in boosting the positive contribution of remittances in the growth process.

(ii) β is positive while σ is negative. In this case, remittances are growth-promoting, but financial development acts as a drag through which the contribution of remittances in the growth process is leaked.

(iii) β is negative while σ is positive. In this case, remittances are growth-inhibiting, while financial development reduces the rate at which remittances inhibit growth by diverting remittances to higher-yielding investments.

(iv) β and σ are both negative. In this case, remittances act as a drag in the growth process by impacting growth negatively, while financial development worsens the rate at which remittances leak out growth.

In addition, it has been argued that the statistical significance of β and σ indicates that a threshold value of financial development exists and that beyond this threshold, financial development stimulates remittances positively to contribute strongly to the growth process. This threshold value is arrived at by obtaining the marginal effect of remittances on economic growth and setting it equal to zero. The marginal effect is obtained by finding the partial derivative of equation (15) with respect to remittances as shown below:

$$\frac{\partial \ln y_t}{\partial \ln REM_t} = \beta + \sigma \ln FND_t \qquad (16)$$

Hence, setting equation (16) to zero and making $\ln FND_t$ the subject of the outcome yields the threshold value as follows:

$$\ln FND_t = \left(\frac{-\beta}{\sigma}\right) \qquad (17)$$

It is necessary to remove the logarithmic effect by taking the exponential of the value of $\ln FND$ in equation (17) to find the value of FND as follows:

$$FND_t = e^{\left(\frac{-\beta}{\sigma}\right)} \qquad (18)$$

Thus, the condition to be fulfilled for financial development to stimulate remittances positively for the latter to contribute strongly to the growth process is given as:

$$FND_t > e^{\left(\frac{-\beta}{\sigma}\right)} \qquad (19)$$

A Priori Expectations

The a priori expectations for this study are as follows:

$\beta > 0$, which implies that an increase in remittances will promote the growth process of the economy;

$\sigma > 0$, which implies that an increase in the interaction of remittances and financial development will boost the growth of the economy;

$\gamma > 0$, which implies that an increase in human capital per capita will spur economic growth; and

$\delta > 0$; which implies that an increase in physical capital per capita will promote economic growth.

3.3. Technique of Analysis

Investigating the direct effect of remittances as well as the joint effect of remittances and financial development on economic growth in Nigeria would require estimating equation (15). This equation can be estimated by the Ordinary Least Square (OLS) provided that there is no simultaneity bias or endogeneity problem. However, evidence in support of the existence of bi-directional relationships among remittances, financial development and economic growth abounds in the literature (see, for example, Bangake *et al.*, 2020; Uddin *et al.*, 2020; Islam, 2021). Hence, failure to account for a feedback effect when examining the link among the three will introduce simultaneity bias and this may lead to the endogeneity problem (Bangake *et al.*, 2020; Shelton, 2021). In addition, the possibility of the explanatory variables on the right-hand side of equation (15) being endogenous also raises the simultaneity bias concern. Another reason why the equation may not be free from the endogeneity problem is the omitted variables bias (Hagan & Amoah, 2019; Shelton, 2021). This is because of the existence of other variables that are capable of influencing the effects of remittances on economic growth but which are not within the scope of this study.

The reasons highlighted above call for the use of a technique of estimation that is capable of capturing and dealing with the endogeneity problem. The efficiency of the FMOLS approach in dealing with the endogeneity problem is well documented in the literature (see, for example, Adusei, 2012; Peia & Roszbach, 2015). The technique gives room for estimating long-run parameters subject to the existence of a cointegration among the variables of interest. If this condition is met in this study, then the FMOLS would be used as the appropriate technique of estimation. To estimate the threshold level of financial development above which remittances promote growth, the study used equations (16) to (18).

3.4. Measurement of Variables and Sources of Data

The study employed annual time series data on Nigeria covering the period 1981-2021 collected from secondary sources. To measure economic growth which is the dependent variable, GDP per capita in current local currency (LCU) was used. Remittances were measured as personal remittances received in current US Dollars. Financial development was measured using domestic credit to private sector by banks as a percentage of GDP. For the purpose of empirical analysis, however, the data on financial development were converted to domestic credit to private sector by banks in constant LCU to ensure that all the variables are expressed in similar units. This was done by dividing domestic credit to private sector by bank as a percentage of GDP with GDP at constant LCU. Human capital was measured as the sum of government expenditures on education and health in LCU. Physical capital was measured using gross fixed capital formation (GFCF) in current LCU. All the data were sourced from the World Bank's World Development Indicators (WDI, 2021b), except government expenditures on education and health which were sourced from Statistical Bulletin of the Central Bank of Nigeria (CBN, 2021).

4.   EMPIRICAL RESULTS

This section presents the results of the statistical tests as well as empirical analysis carried out in the study and is divided into four sub-sections. Sub-section 4.1 reports the results of the descriptive statistics, while the results of the unit root test are shown in sub-section 4.2. The results of the empirical findings are presented in sub-section 4.3 while sub-section 4.4 is dedicated to the discussion of the empirical findings.

4.1. Descriptive Statistics

Results of the descriptive statistics, which is one of the statistical tests carried out in the study, are reported in Table 1. The average economic growth (represented by average GDP per capita) attained by the country for the period under study is ₦208,730.30, while the average remittances and financial development recorded for the period are ₦8.50 billion and ₦4.05 trillion respectively. The positive mean value recorded for remittances shows that the country recorded more personal remittances over the period of the study. The average human capital recorded for the period under study is ₦238 billion which is higher than the median of ₦73.20 billion, indicating that the human capital data is skewed to the right. The mean value for the physical capital is ₦7.96 trillion while the median is ₦2.47 trillion, indicating that the data are close to normal distribution. The minimum level of GDP per capita recorded for the period is about ₦1,853.14, which shows that economic growth was steady for most of the study period. The low values of the standard deviation obtained for remittances, financial

development and physical capital indicate the absence of outliers. Hence, the mean values for the respective variables accurately represent the population.

The skewness values obtained show that all the variables are positively skewed since the values are greater than zero. The kurtosis values of 2.68, 1.27 and 1.72 for GDP, remittances and financial development, respectively, indicate that the three variables are platykurtic since the values are less than three. However, the kurtosis values of the other variables are greater than 3, showing that they are leptokurtic (fat tail) data. The probability values of the Jarque-Bera statistic of 0.03, 0.04, 0.00 and 0.00 for GDP, remittances, human capital and physical capital, respectively, indicate that the four variables are not normally distributed. What these results suggest is that the method of OLS may not be appropriate for estimating equation (15). This is because an important assumption underlying the use of the method is that all the variables in the model are normally distributed.

Table 1: Descriptive Statistics

	GDP	REM	FND	K_h	K_p
Mean	208730.30	8.50	4.05	237.96	7.96
Median	65274.03	1.21	2.51	73.20	2.47
Maximum	825091.00	24.30	10.00	1070.00	58.30
Minimum	1853.14	0.002	0.98	0.25	0.09
Std. Dev.	251372.90	9.78	3.22	3.17	1.23
Skewness	1.01	0.41	0.63	1.27	2.49
Kurtosis	2.68	1.27	1.72	3.45	9.35
Jarque-Bera	7.12	6.26	5.46	11.42	111.23
Probability	0.03	0.04	0.07	0.00	0.00

Notes: GDP denotes Gross Domestic Product per capita and first four figures are in Naira, *REM* denotes remittances and first four figures are in billion naira, *FND* denotes financial development and first four figures are in trillion naira, K_h denotes human capital and figures are in billion naira, while K_p denotes physical capital and figures are in trillion naira.
Source: Researchers' Compilation (2023)

4.2. Correlation Matrix

The correlation matrix reported in Table 2 depicts a high correlation between GDP and each of remittances, financial development, human capital as well as physical capital. This is because each correlation coefficient is greater than 0.8, which is a rule of thumb. These results confirm the position of the study on the possible existence of the problem of endogeneity in the relationship of concern.

Table 2: Correlation Matrix

	GDP	*REM*	*FND*	*K_h*	*K_p*
GDP	1.000000				
REM	0.895196	1.000000			
FND	0.895487	0.928780	1.000000		
K_h	0.984513	0.844021	0.832358	1.000000	
K_p	0.903406	0.683476	0.703426	0.920585	1.000000

Source: Researchers' Compilation (2023)

4.3. Unit Roots Test Results

The unit root property of each variable was tested using the Augmented Dickey-Fuller (ADF) test which is based on the null hypothesis that the series under consideration has a unit root. This was done in order to ensure that none of the variables is integrated of the second order, *i.e.*, I(2). Presented in Table 3 are the results obtained from the inclusion of intercept only as well as intercept and trend in the test equation. It can be observed from the table that all the variables are stationary at first difference, i.e., I (1) at 5 percent level of significance. This shows that the FMOLS technique is appropriate for the empirical analysis.

Table 3: ADF Unit Root Test Results

Variable	Level		First Difference		Order of Integration
	Intercept	*Intercept and Trend*	*Intercept*	*Intercept and Trend*	
lnGDP	-1.38	0.17	-3.44*	-3.66*	I(1)
lnREM	-0.91	-1.70	-6.45*	-6.39*	I(1)
lnFND	-0.45	-2.47	-5.72*	-5.64*	I(1)
lnREM*lnFND	-0.74	-1.63	-5.80	-5.73	I(1)
ln K_h	-2.27	-3.00	-8.50*	-6.14*	I(1)
ln K_p	0.67	-2.23	-3.93*	-3.93*	I(1)

Notes: *ln* denotes natural logarithm, while ln *REM**ln*FND* denotes the interactive term between the natural logarithms of remittances and financial development. The critical value at 5% level of significance for intercept only is -2.94, while that of intercept and trend is -3.53. * denotes the rejection of the null hypothesis at 5% significance level.

Source: Researchers' Compilation (2023)

4.4. Results of Empirical Analysis

4.4.1. Direct Effect of Remittances on Economic Growth

Table 4 presents the regression results of the relationship between remittances and economic growth in Nigeria from 1981 to 2020. The table shows that remittances have a

negative effect on economic growth, with a coefficient of about -0.23. This implies that, holding other variables constant, a one percent increase in remittances will, on average, inhibit growth by about 0.23 percent decrease and vice versa. However, the effect is not significant at 5% level since the probability value is shown to be 0.08. Furthermore, the results show that the effect of human capital on economic growth is positive and significant, with a coefficient of about 0.25 and a probability value of 0.00. This implies that, holding other variables constant, a one percent increase in human capital will, on average, promote growth by about 0.25 percent, and vice versa at five per cent significance level. Similarly, the findings reveal that physical capital has a significant positive effect on economic growth, with a coefficient of about 0.46 and a probability value of 0.00. This implies that, holding other variables constant, a one percent increase in physical capital will, on average, promote growth by about 0.46 percent, and vice versa at five per cent significance level.

Table 4: FMOLS Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-10.35*	1.40	-7.39	0.00
lnREM	-0.23	0.13	-1.80	0.08
lnREM*lnFND	0.01*	0.00	2.85	0.00
ln K_h	0.25*	0.05	4.81	0.00
ln K_p	0.46*	0.09	5.30	0.00
R-squared	0.99			
Adjusted R-squared	0.99			

Note: * denotes significance at 5% level.
Source: Researchers' Compilation (2023)

4.4.2. Joint Effect of Remittances and Financial Development on Economic Growth

The results of the joint or interactive effect of remittances and financial development on economic growth are also reported in Table 4. The results show that the effect of the interactive term is positive and significant, with a coefficient of about 0.01 and a probability value of 0.00. This implies that holding other independent variables constant, a one per cent increase in the interaction of remittances and financial development will, on average, promote growth by about 0.01 per cent and vice versa at five percent level of significance. These results contradict those obtained on the direct effect of remittances on economic growth and they indicate that remittances promote growth only when they are interacted with financial development.

The values of the coefficient of determination (R-squared) as well as adjusted R-squared obtained from the estimation are approximately 0.99 which indicates that the model explains about 99 per cent variation in economic growth. In other words,

all the independent variables explain about 99 per cent of the variation in Nigeria's economic growth which shows that the estimated model has a very good fit.

4.4.3. Residual Diagnostics

In order to further confirm the reliability and validity of the results obtained from the FMOLS model, several residual diagnostic tests were conducted. The results of the tests are presented below.

A. Histogram Normality Test Results: The Jarque-Bera (JB) Normality test was conducted to check if the residuals are normally distributed or not. The test is based on the null hypothesis that the residuals are normally distributed. The decision rule is to reject the null hypothesis if the probability value is less than 0.05. The results of the test, which are presented in Figure 1, show that the probability value is about 0.32, which is above 0.05. Hence, the null hypothesis cannot be rejected and this implies that the residuals are normally distributed.
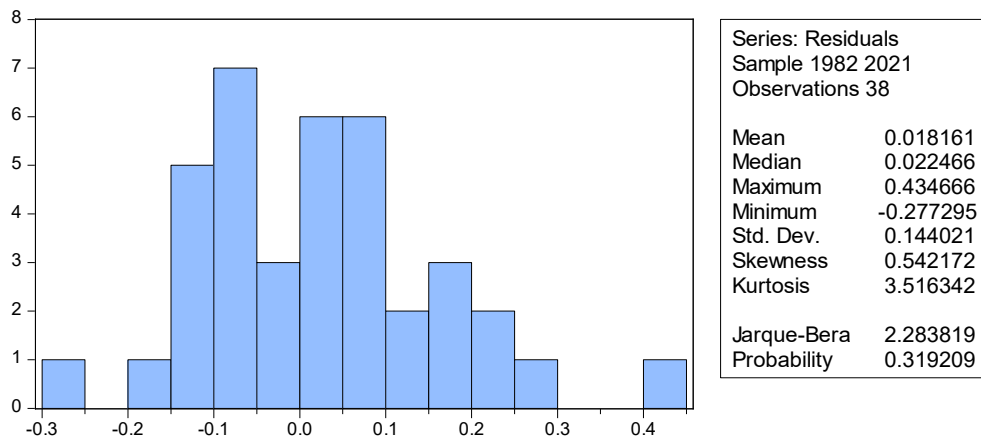

Series: Residuals	
Sample 1982 2021	
Observations 38	
Mean	0.018161
Median	0.022466
Maximum	0.434666
Minimum	-0.277295
Std. Dev.	0.144021
Skewness	0.542172
Kurtosis	3.516342
Jarque-Bera	2.283819
Probability	0.319209

Figure 1: Jarque-Bera (JB) Normality Test Results

Source: Researchers' Computation (2023)

B. Serial Correlation Test Results: The Breusch-Godfrey Serial Correlation Lagrange Multiplier (LM) test was carried out to check if the residuals are correlated. This test, which is based on the null hypothesis that there is no autocorrelation, helps to validate the randomness of errors. The decision rule of the test is to accept the null hypothesis if the probability value is greater than 0.05. The results of the test, which are reported in Table 5, reveal a probability value of 0.07. Since the value is greater than 0.05, the null hypothesis cannot be rejected and this shows that there is no serial correlation in the estimated model.

Table 5: Breusch-Godfrey Serial Correlation LM Test Results

F-statistic	2.63	Prob. F(2,34)	0.09
Obs*R-squared	5.37	Prob. Chi-Square(2)	0.07

Source: Researchers' Compilation (2023)

C. Heteroscedasticity Test: This study also conducted heteroscedasticity test to know if the variance of the errors from the regression is dependent on the values of the independent variables (a phenomenon that is known as heteroscedasticity) or not. The null hypothesis of the test is that there exists homoscedasticity in the estimated model. The decision rule is that the model is said to be homoscedastic if the probability value of the F-statistic is greater than 0.05. It can be observed from the results presented in Table 6 that the probability value of the F-statistic is greater than 0.05. Hence, the null hypothesis is accepted and the study concludes that the model is homoscedastic.

Table 6: Breusch-Pagan-Godfrey Heteroskedasticity Test Results

F-statistic	1.65	Prob. F(4,36)	0.18
Obs*R-squared	6.37	Prob. Chi-Square(4)	0.17
Scaled explained SS	5.32	Prob. Chi-Square(4)	0.26

Source: Researchers' compilation (2023)

4.4.4. Threshold Effect of Financial Development in the Remittances-Growth Nexus

This sub-section shows the estimation of the threshold level of financial development beyond which remittances stimulate economic growth. Before proceeding with the estimation, however, it is necessary confirm that the statistical significance of the coefficient of remittances (β) as well as the coefficient of the interaction of remittances and financial development (σ). This was done using the Wald test which is the test that is usually carried out to ascertain the statistical importance of explanatory variables in a model. A variable with a reported probability value of less than 0.05 obtained from the test is deemed to be statistically important in the model. The results of the Wald test, which are presented in Table 7, reveal that the probability values of both β and σ are significant at 5 percent level of significance. This implies that the threshold value of financial development actually exists. Hence, the study proceeded with the estimation of that value.

Table 7: Wald Test Results

Variables	*F-statistic*	*Probability Value*
lnREM	10.27	0.04
lnREM*lnFND	23.65	0.00

Source: Researchers' Compilation (2023)

The study utilised equation (16) to (18) in estimating the marginal effect of remittances on economic growth in Nigeria. This was done by taking the partial derivative of the fitted regression line with respect to remittances. The fitted regression line is given as follows:

$$\ln y_t = -10.35 - 0.23 \ln REM_t + 0.01 \left(\ln REM_t^* \ln FND_t \right) + 0.25 \ln k_{h_t} + 0.45 \ln k_{p_t}$$

(20)

Differentiating equation (20) with respect to remittances yields:

$$\frac{\partial \ln Y_t}{\partial \ln REM_t} = -0.23 + 0.01 \ln FND_t$$

(21)

Setting equation (21) to zero and solving for lnFND leads to the following:

$$-0.23 + 0.01 \ln FND = 0$$

(22)

Simplifying equation (22) gives:

$$0.01 \ln FND_t = 0.23$$

(23)

Thus,
$$\ln FND_t = 23$$
(24)

Taking the exponential of the value of *ln FND* in equation (24) to find the value of *FND* as follows:

$$FND = (e^{23}) = ₦9,744,803,446.25 \approx ₦9.75 \; billion$$

The implication of the result above is that financial development, measured using domestic credit to private sector by banks, must be above ₦9.75 billion for it to ensure that the inflow of remittances contribute positively to economic growth in Nigeria.

4.5. Discussion of the Findings

The results of this study showed that remittances had a negative and insignificant direct effect on economic growth for the period under study. These results contradict *a priori* expectation as well as the findings of Garba *et al.* (2020), Mohammed (2021) and Okorie *et al.* (2022), among others. However, the results are consistent with the results obtained by Okodua *et al.* (2015), Loto and Alao (2016) as well as Olayungbo *et al.* (2020) in terms of the sign of the effect. The results obtained on the direct effect of remittances on economic growth in Nigeria can be attributed to some factors. First, it could be that a larger percentage of the inflow of remittances into Nigeria is spent on imported goods instead of locally produced goods. This habit is growth-inhibiting because it will discourage local production, reduce employment rate, and increase the dependence of the country on foreign producers. Second, the negative relationship may simply be a reflection of the countercyclical nature of remittances, that is, the influence of growth on remittances rather than vice versa.

The results of the study further revealed that the interaction between remittances and financial development had a significant positive effect on economic growth. This finding conforms to a priori expectation that an increase in the interaction between remittances and financial development will lead to more growth for the economy. The results are also consistent with the studies by Olaniyan *et al.* (2020) and Falade *et al.* (2021) but are inconsistent with the results by Olayungbo and Quadri (2019). The negative sign of the direct effect of remittances together with the positive coefficient on the interactive term imply that remittances are growth-inhibiting, while financial development reduces the rate at which remittances inhibit growth by diverting remittances to higher-yielding investments. Put differently, the implication is that remittances alone do not promote economic growth on their own, except with the support of a well-developed and efficient financial system. In essence, remittances and financial development in Nigeria complement each other in the process of economic growth.

Results of the threshold analysis indicated that the value of financial development (measured in terms of domestic credit to the private sector by banks) beyond which remittances promote growth in Nigeria is ₦9.75 billion. This finding is in line with the assertion by Bangake *et al.* (2020) that a country's financial sector must be at a certain level before remittances can significantly influence the direction of economic growth. This threshold value of about ₦9.75 billion is less than the mean value of financial development which is reported as ₦4.05 trillion in Table 1. This implies that the country operated above the threshold for majority of the period of study. This assertion is backed by the regression results in Table 4, which showed that the interaction of financial development and remittances contributed significantly to the growth of the Nigerian economy during the period of study. Comparing the threshold results obtained by this study with existing evidence is quite difficult since the previous studies used different indicators of financial development in their analysis.

5. CONCLUSION

The study investigated the role of financial development in the link between remittances and economic growth in Nigeria over the period 1981-2021. To achieve this broad objective, it estimated the threshold level of financial development above which remittances promote growth. This was in addition to examining the direct effect of remittances as well as the interactive effect of remittances and financial development on economic growth.

The empirical evidence obtained in the study showed that remittances alone do not contribute significantly to economic growth in Nigeria. The findings indicated that when remittances are effectively channelled through a well-developed financial system, they can have a positive impact on economic growth. Based on the findings, the study

concludes that the impact of remittances on economic growth is contingent upon the development of the financial sector and that there is a threshold level of financial development that needs to be attained for remittances to translate into significant economic growth.

Based on its findings, the study recommends that there is the need for the government to design and implement policies that will ensure a reduction in the cost of transfers to encourage more inflow of remittances into the Nigerian economy. Also, the government needs to further strengthen the Nigerian financial system with a view to ensuring that remittances go through the formal financial system. This will increase the stock of credit available for investment purposes and enhance economic growth.

References

Adarkwa, M. (2015). Impact of remittances on economic growth: Evidence from selected West African countries (Cameroon, Cape Verde, Nigeria and Senegal). *African Human Mobility Review*, 1(2), 177-200. https://doi.org/10.14426/ahmr.v1i2.741

Adesoye, A. B., Adelowokan, O. A., Maku, O. E., & Babasanya, A. O. (2019). Unemployment, poverty and economic growth in Nigeria. *Journal of Economics & Management*, *35*, 5-17.

Adetou, A. E., & Fiodendji, K. (2019). Finance, institutions, remittances and economic growth: New evidence from a dynamic panel threshold analysis. *Journal of Applied Finance and Banking*, *9*(2), 69-104.

Adeyi, E. (2015). Remittances and economic growth; Empirical evidence from Nigeria and Sri Lanka. *Basic Research Journal of Education Research and Review*, *4*(5), 91-97.

Adusei, M. (2012). Financial development and economic growth: Is Schumpeter right?. *British Journal of Economics, Management & Trade*, 2 (3), 265–278.

Agbo, E. I., & Nwankwo, S. N. P. (2018). Effect of financial sector development on economic growth: A case of Nigeria. *Journal of Economics and Sustainable Development*, *9*(20), 80-91.

Akinlo, A. E., & Egbetunde, T. (2010). Financial development and economic growth: The experience of 10 sub-Saharan African countries revisited. *The review of finance and banking*, *2*(1), 17-28.

Akinpelu, Y. A., Ogunbi, O. J., Olaniran, Y. A., & Ogunseye, T. O. (2013). Corporate social responsibility activities disclosure by commercial banks in Nigeria. *European Journal of Business and Management*, *5*(7), 173-185.

Akintola, A. A., Oji-Okoro, I., & Itodo, I. A. (2020). Financial Sector Development and Economic Growth in Nigeria: An Empirical Re-Examination. *Economic and Financial Review*, *53*(8), 59-83.

Akonji, D. R., & Wakili, A. M. (2013). The impact of net migrant remittance on economic growth: bound approach. *International Journal of Energy Economics and Policy*, *6*(3), 389-400.

Albert, S. M., Samson, A. A., Gbeminiyi, A. T., & Sennuga, S. O. (2021). Financial Development and Economic Growth in Nigeria: The Case Study of Nigeria. *GPH-International Journal of Business Management (IJBM)*, *4*(04), 21-39.

Azubuike, C. R. (2019). Financial Sector Development and Nigeria's Economic Growth: *International Journal of Sustainable Development,* 2(12), 1-24.

Azuh, D., Fayomi, O., & Ajayi, L. (2015). Socio-cultural factors of gender roles in women's Healthcare Utilization in Southwest Nigeria. *Open Journal of Social Sciences*, *3*(4), 105–117. https://doi.org/10.4236/jss.2015.34013

Balago, G. S. (2014). Nexus between bank credit and economic growth in Nigeria: Evidence from VEC model. *Open Access Library Journal*, *1*(1), 1-12.

Bangake, C., Eggoh, J., & Semedo, G. (2020). Financial development thresholds and the remittances-growth Nexus. *Journal of Quantitative Economics*, *18*, 425-445.

Chude, N. P., & Chude, D. I. (2016). Impact of financial development on Economic growth in Nigeria: Vector error correction model. *EPRA International Journal of Economic and Business Review*, *4*(5), 25-39.

Dabwor, D. T., Iorember, P. T., & Danjuma, S. Y. (2022). Stock market returns, globalization and economic growth in Nigeria: evidence from volatility and cointegrating analyses. *Journal of Public Affairs*, *22*(2), 1-9.

Dinh Su, T., & Phuc Nguyen, C. (2022). Foreign financial flows, human capital and economic growth in African developing countries. *International Journal of Finance & Economics*, *27*(3), 3010-3031.

Falade, A. O. O., Aladejana, S. A., Okeowo, I., Adeniyi, O., & Abosede, F. (2021). Migrants' Remittances, Financial Development and Economic Growth in Nigeria: The Interaction Effect. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, *11*(1), 271-284.

Falade, A. O. O., Aladejana, S. A., & Oluwalana, F. A. (2018). External debt in Nigeria: How sustainable using Heavily Indebted Poor Countries (HIPC) indicators. *AAU Anal of Accounting, Educational and Social Research*, *5*(2), 34-43.

Fayissa, B., & Nsiah, C. (2010). The impact of remittances on economic growth and development in Africa. *The American Economist*, *55*(2), 92–103. https://doi.org/10.1177/056943451005500210

Garba, K., Adekunle, W., & Adeniyi, O. (2020). Nexus between foreign remittances and economic growth in Nigeria: Role of the Financial Sector. *Asian Journal of Economics and Empirical Research*, *7*(1), 15–24. https://doi.org/10.20448/journal.501.2020.71.15.24

Giuliano, P., & Ruiz-Arranz, M. (2009). Remittances, financial development, and growth. *Journal of development economics*, *90*(1), 144-152.

Hagan, E., & Amoah, A. (2019). Foreign Direct Investment and Economic Growth Nexus in Africa. *African Journal of Economic and Management Studies*, *11*(1), 1–17.

Hamma, I. E. (2016). Linking remittances with financial development and institutions: A study from selected MENA countries. *Topics in Middle Eastern and African Economies*, 1, 113-135.

Ibukun, C. O. (2017). Foreign Remittances, Foreign Aids, Foreign Imports and Economic Growth in Nigeria. *Ife Social Sciences Review*, *25*(1), 48-63.

Iheanacho, E. (2016). The contribution of government expenditure on economic growth of Nigeria disaggregated approach. *International Journal of Economics and Management Sciences*, *5*(5), 1-8.

Iheke, O. R. (2012). The effect of remittances on the Nigerian economy. *International Journal of Development and Sustainability*, *1*(2), 614-621.

Imoagwu, C. P., & Ezeanyeji, C. I. (2019). Financial development and economic growth nexus in Nigeria. *International Journal of Business and Management Invention (IJBMI)*, *8*(3), 50-63.

International Monetary Fund (2011). *International Encyclopedia of Political Science*. https://doi. org/10.4135/9781412959636.n288

Islam, T. (2021). Workers' Remittances and Economic Growth: Evidence from Bangladesh. *International Journal of Financial Research*, *12*(2), 233-241.

Kapur, D. (2003). Remittances: the new development mantra? United Nations Conference on Trade and Development (UNCTAD).

Kumar, R. R., Stauvermann, P. J., Kumar, N. N., & Shahzad, S. J. (2017). Revisiting the threshold effect of remittances on total factor productivity growth in South Asia: A study of bangladesh and India. *Applied Economics*, *50*(26), 2860–2877. https://doi.org/10.1080/00 036846.2017.1412074

Loto, M. A., & Alao, A. A. (2016). Remittances and the Growth of the Nigerian Economy. *Ethiopian Journal of Business and Economics (The)*, *6*(2), 209-232.

Maduka, A. C., & Onwuka, K. O. (2013). Financial market structure and economic growth: evidence from Nigeria data. *Asian economic and financial review*, *3*(1), 75-98.

Matuzeviciute, K., & Butkus, M. (2016). Remittances, development level, and long-run economic growth. *Economies*, *4*(28), 1-20. https://doi.org/10.3390/economies4040028

Michael, A., Effah, N. A., Joel, T. N., & Nkwantabisa, A. O. (2021). Stock market development, financial deepening and economic growth in Africa. *Journal of Financial Risk Management*, *10*(01), 1–24.

Mohammed, U. (2021). Remittances, institutions and human development in Sub-Saharan Africa. *Journal of Economics and Development*, *24*(2), 142–157.

Mohammed, A. S. M., Guo, P., Haq, I. U., Pan, G., & Khan, A. (2019). Do government expenditure and financial development impede environmental degradation in Venezuela? *Plos One*, 14(1), 1-13.

Muriel, A. A. (2015). Impact of Remittances on Economic Growth: Evidence from Selected West African Countries (Cameroon, Cape Verde, Nigeria and Senegal). *Institute for Social Development, Faculty of Economic & Management Science, University of the Western Cape (UWC)*, 161-183.

Nkoro, E., & Uko, A. K. (2013). Financial sector development-economic growth Nexus: Empirical evidence from Nigeria. *American International Journal of Contemporary Research*, *3*(2), 87-94.

Nyamongo, E. M., Misati, R. N., Kipyegon, L., & Ndirangu, L. (2012). Remittances, financial development and economic growth in Africa. Journal of Economics and Business, 64(3), 240–260.

Odeniran, S. O., & Udeaja, E. A. (2010). Financial sector development and economic growth: Empirical evidence from Nigeria. *Economic and Financial Review*, *48*(3), 91-124.

Odugbesan, J. A., Sunday, T. A., & Olowu, G. (2021). Asymmetric effect of financial development and remittance on economic growth in Mint Economies: An application of panel NARDL. *Future Business Journal*, *7*(1), 1-9.

Ofori, I. K., Gbolonyo, E. Y., Dossou, T. A., & Nkrumah, R. K. (2022). Remittances and income inequality in Africa: Financial development thresholds for economic policy. *Research in Globalization*, *4*, 100084. https://doi.org/10.1016/j.resglo.2022.100084

Okodua, H., Ewetan, O. O., & Urhie, E. (2015). Remittance expenditure patterns and human development outcomes in Nigeria. *Developing Country Studies*, *5*(2), 70-80.

Okorie, G. C., Nwabufoh, E., & Oriaku, E. C. (2022). Remittances and Economic Growth of Nigeria. *GOUni Journal of Faculty of Management and Social Sciences*, *9*(1), 168-175.

Olaniyan, T. O., Ijaiya, M. A., & Kolapo, F. T. (2020). Remittances, financial sector development, institutions and economic growth in the ECOWAS region. *Migration Letters*, *19*(2), 207-234.

Olayungbo, D. O., Olaniyi, C. O., & Ojeyinka, T. A. (2020). Asymmetric effects of remittances on economic growth in Nigeria: Evidence from non-linear ardl analysis. https://doi.org/10.21203/rs.3.rs-126145/v1

Olayungbo, D. O., & Quadri, A. (2019). Remittances, financial development and economic growth in sub-Saharan African countries: Evidence from a PMG-ARDL approach. *Financial Innovation*, *5*(1), 9-34. https://doi.org/10.1186/s40854-019-0122-8

Olusuyi, A. E., Adedayo, A. O., Agbolade, G. B., & Ebun, A. F. (2017). Dynamic Impact of Remittance on Economic Growth in Nigeria. *Journal of Accounting and Financial Management*, 3 (3), 26-36.

Omankhanlen, A. E., Samuel-Hope, D. C. & Ehikioya, B. (2022). The effect of financial development on economic growth in Nigeria. *Academy of Strategic Management Journal*, 21(4), 1-13.

Oriavwote, V. E., & Eshenake, S. J. (2014). An empirical assessment of financial sector development and economic growth in Nigeria. *International Review of Management and Business Research*, *3*(1), 139.

Osakwe, C., & Ananwude, A. (2020). Stock market development and economic growth: A comparative evidence from two emerging economies in Africa – Nigeria and South Africa. *Archives of Current Research International*, *11*(1), 1–15.

Osuji, C. C., & Chigbu, E. E. (2012). An evaluation of financial development and economic growth of Nigeria: A causality test. *Kuwait Chapter of the Arabian Journal of Business and Management Review,* 1(10), 27-44.

Peia, O., & Roszbach, K. (2015). Finance and growth: Time series evidence on causality. *Journal of Financial Stability*, 19, 105–118.

Ratha, D., Mohapatra, S., & Scheja, E. (2011). Impact of migration on economic and Social Development: A review of evidence and emerging issues. *PsycEXTRA Dataset*. https://doi.org/10.1037/e602302012-001

Shelton, A. C. (2021). Migrants' remittances, financial development, and economic growth. (Doctoral dissertation, KDI School).

Solow, R. M. (1956). A contribution to the theory of economic growth. *Quarterly Journal of Economics*, 70(1), 65–94.

Taofeek, O. A., & Olumuyiwa, G. Y. (2016). Financial development and inclusive growth in Nigeria: A threshold analysis. *Acta Universitatis Danubius*, *12*(5), 166-189.

Sambo, N., Farouq, I., Ahmad, A., Hassan Jakada, A., Danmaraya, I., & Sanusi, S. (2021). Financial development and economic growth in Nigeria: New evidence from a threshold autoregressive and asymmetric analysis. *International Journal of Business, Economics and Management*, *8*(3), 207–218. https://doi.org/10.18488/journal.62.2021.83.207.218

Uddin, M. N., Uddin, M. J., Uddin, J., & Ahmmed, M. (2020). Remittances and economic growth tie in selected South Asian countries: A panel data analysis. *International Journal of Financial Research*, *11*(1), 197-205.

Ukeje, E. U., & Obiechina, M. E. (2013). Workers' remittances–economic growth nexus: Evidence from Nigeria, using an error correction methodology. *International Journal of Humanities and Social Science*, *3*(7), 212-227.

World Bank (2013). *Migration and remittances factbook 2013*. The World Bank

World Bank (2021a). *Remittances–A Gateway to Sustainable Development: Lessons Learned from the Implementation of Project Greenback in Albania*. World Bank.

World Bank (2021b). *World Development Indicators*. https://databank.worldbank.org/source/world-development-indicators