



# **Financial Development, Remittances Inflows and Economic Growth in Nigeria: A Time Series Analysis**

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## **Authors' contributions**

*This work was carried out in collaboration between both authors. Author EOO designed the study, performed the statistical analysis and wrote the first draft of the manuscript. Author SOO managed the literature searches. Both authors read and approved the final manuscript.*

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## **ABSTRACT**

This study examines whether financial development promotes remittances inflows and Nigerian economic growth. Using a time-series data for a period of 1985-2017, the Autoregressive Distributed Lag (ARDL) technique was employed. The results suggest that financial development in Nigeria exerted no significant impact on economic growth. It is an indication that financial development is not a significant variable for promoting remittances inflows into Nigeria. However, the study concludes that remittances inflows are a substitute for promoting individual's financial business opportunities and economic growth. The study therefore recommends that the government should strengthen the Nigeria financial institution, and also institute a financial reform initiative that can enhance financial security as well as ease of accessing remittances inflows.

**Keywords:** *Autoregressive Distributed Lag (ARDL); economic growth; financial development and remittances inflows.*

**JEL Codes:** F24, F41, F63.

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## 1. INTRODUCTION

Remittances inflows constitute the second-largest source of external finance after foreign direct investment (FDI) [1] (Giuliano and Ruiz-Arranz, 2009); [2]. Over the last three decades, the total remittances inflows from Nigerian workers' abroad to the country grew from the modest US\$99 million, US\$9.3 billion and US\$112.6 billion between 1981-1990, 1991-2000, and 2001-2010 respectively. Between 2011 and 2017, remittances inflows went up to over US\$145 billion (World Bank, 2018). This trends correlate with the assertion of [3] that "Since the last quarter of the twentieth century, there has been an accelerated growth in remittance inflows to developing countries".

With the increase in the world's population in searching for better greener pastures and social opportunities across the globes, it is obvious that remittances inflows will continue to be on the growing trends. It is on these points that scholars are motivated to explore the potential gains and added values of remittances inflows to economic growth and development. Previous studies like [3,4] have analysed the relationship between remittances inflows and economic growth of most developing countries such as Kenya, Nigeria, Senegal and among others on a panel data basis as well as development aspects of the nations which encompasses poverty alleviation, income inequality and the development of human capital. However, the nexus between financial development and remittances inflows have not been adequately studied on time series basis, especially in the context of Nigeria.

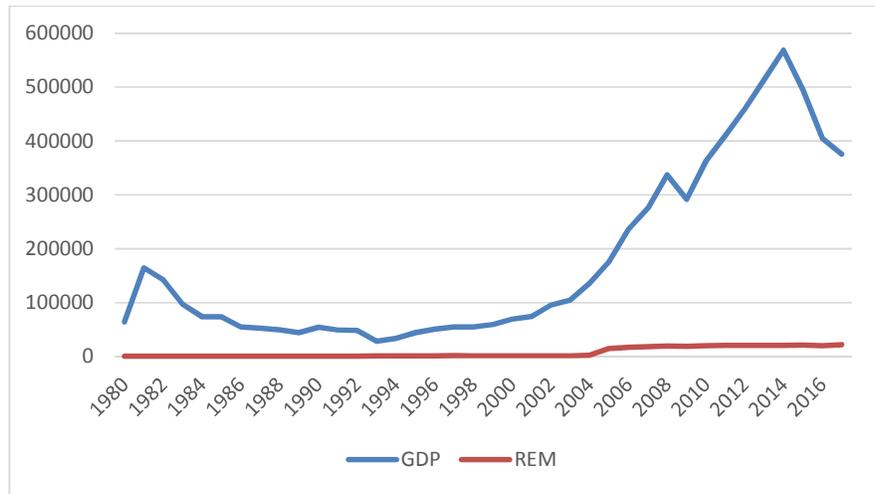
It has been argued in the previous literature that remittances inflows can boost per capita income, and enhance economic growth in developing countries via various channels [5,6]. Firstly, remittances inflows support spending on basic needs and increase the demand for goods and services in the economy. Since consumption is a major component of gross domestic product (GDP), therefore, a positive effect is expected as daily transaction improves within the economy. Many industries benefit from this increase in demand through the so-called multiplier effect, which increases economic growth [7,8]. Secondly, remittances inflows affect growth by increasing productive investments in a nation. If households treat remittances inflows as transitory income, according to the permanent income hypothesis [4] Chowdhury (2016), the

propensity to save out of remittances inflows is much larger than other family income.

Primarily, remittances inflows pass through the financial sector. It is expected that financial sector plays an important role in the financial management of these large savings into productive investments and thereby promoting economic activities. It is imperative to understand the association between remittances inflows and economic growth while considering the development of the financial sector. Both the short and long run effects among remittances inflows, financial sector development and economic growth are yet to reach a conclusion in the literature. As many scholars claimed that remittances inflows through well-functioning financial markets promote economic activities by lowering the costs of business transactions. Consequently, it may help direct remittances inflows to projects that yield positive net present value and thus enhances growth rates. On the other hand, remittances inflows might become a substitute for inefficient or nonexistent credit markets by helping local entrepreneurs bypass lack of collateral or high lending costs and start productive activities [9]. Although with these two notions of [9], yet the existing literatures have not made a clear stance on the link among i.e. remittances inflows, financial development and economic growth, in particular for Nigeria.

Fig. 1 below shows the trend of economic growth proxy by gross domestic product and remittance inflows in Nigeria. In 1981, economic growth increases and started decline until 1994 when Nigerian economy experienced growth till 2008 and slightly fell till 2010. From 2010, Nigerian economic growth picked until 2014 that it experienced decline again. These upwards and downwards movement in the growth of Nigerian economy show that the economy is not fully stable and may be affected by other macro-economic factors at the international level such as exchange rate volatility and quota rate. Surprisingly, from 1980 till 2014, remittance inflows remain constant until 2015 that it slightly increased.

This paper in addition to the existing literatures seeks to analyse the short and long run relationships among remittances inflows, financial development and economic growth in Nigeria. Time series data over the period 1980–2017 is tested using an Augmented Dickey Fuller (ADF) unit root test and Autoregressive



**Fig. 1. Shows economic growth and remittance inflows in Nigeria**

distributed lag (ARDL). The essence of this unit root test is to investigate the stationarity of the series of variables in the study. The bound test of autoregressive distributed lag (ARDL) is carried out to determine the co-integration status among the variables-remittances inflows, financial development and economic growth. The short-run and long-run co-efficient are also investigated using this estimation method-ARDL. Better understanding of the relationship among remittances inflows, financial development and economic growth in this paper would help the policy makers in designing the appropriate policies towards the growth of Nigerian economy.

The balance of the paper is organised as follows. Second section presents the literature review. The third section clearly states the methodology strategy. The fourth section presents the results and analysis. Lastly, the fifth section concludes the study.

## 2. LITERATURE REVIEW

In the existing literature, whether remittances inflows affect economic growth through development of the financial sector appears inconclusive. For instance, [9] noted that remittances inflows contribute to both investment and economic growth if channeled to viable projects. On the other hand, if the activities in the financial markets are inefficient and there is divergent of proceeds of remittances inflows to unproductive ventures, the growth impact of remittances inflows through financial channels may be ineffective. In the studies

of [4] and [10], they found a positive association between remittances inflows and economic growth in developing countries like Kenya, Senegal and Nigeria among others. The author used the level of economic growth measured by real GDP growth and four measures of financial development vis a vis ratio of domestic credit to the private sector to GDP, ratio of total domestic credit provided by the banking sector to GDP, degree of monetization in the economy (M2 to GDP ratio) and liquidity liabilities (M3 to GDP ratio) respectively.

Bhattacharya M, et al. [3] used a dataset of 57 highest recipient economies. The systems generalized method of moment (GMM) was employed. Their findings suggested an institutional as a body that can strengthen the increase of remittances inflows which has the capacity to influence financial development across developing economies. Additionally, they reported that foreign direct investment is a key economic factor in driving economic growth. [11] earlier reported that remittances inflows and financial development are correlated towards influencing economic growth when they tested for a set of 36 Sub-Saharan African countries over 1980–2009. However, the effect of financial development on economic growth failed to demonstrate a very strong result in the study. From the foregoing, it can be asserted that the gravity of the financial system has shown a serious impact on the remittances inflows–growth nexus. More so, improvement in financial development under the financial liberalisation initiative may have had some positive

impacts on the remittances inflows–growth relationships, given all other factors are held constant in the economy. Buttressing further, the study by [4] of 84 countries spanning the period 1986–2005, reported a very that financial reform promotes financial development and this enhances the remittances inflows via the speculative motive (investment). The authors argued that with the granting of greater autonomy for the banking sector in terms of credit ceiling and other credit policies, this could lead to a positive impact in promoting remittances inflows. Furthermore, development of capital markets through banking supervision and removal of restrictions on interest rate determination will engender a negative effect on remittances inflows specifically in the long run.

Similarly, a number of economic experts have challenged the notions that remittances inflows promote investment in financially developed economies compared with developing economies. For example, [4] studied 73 developing countries over the period 1975 to 2002. They employed a General Method of Moment (GMM) technique. Result of the studies suggested that removal of credit constraints assist in boosting allocation of capital which will further promote economic growth in developed countries. The aftermath of this is mitigation of shortage of capital resources in both short run and long run. Divided opinions of some researchers indicate that remittances inflows are not a key factor to enhance economic growth in financially developing economies. For instance, [12] studied a panel of 66 developing countries over the period 1991–2005 and revealed that the overall effect of remittances inflows on economic growth was uncertain. Overtly, remittances inflows from migrants to home countries have a way of enhancing savings on the part of the beneficiaries particularly in the informal financial sector. This why the informal financial sector over time has been recognized to generate more savings compare to formal financial sector in developing countries [4,13] noted that the informal financial sector (curb market) is a more

efficient channel of savings arising from remittances inflows.

In a nut shell, this study hypothesized that financial development and remittances inflows do not contribute to economic growth of Nigeria.

### 3. METHODOLOGY

#### 3.1 Data

The 1985-2017 data on time series macroeconomic variables used in this study were collected from the online database World Development Indicators (WDI) (World Bank, 2019). The real GDP (GDP) is used as a proxy for economic growth. In the case of financial development, [11] argued that there is no single measure of financial sector development existing in the literature. As indicated in [4], the most commonly used indicators that were used are ratio of domestic credit to the private sector to GDP, ratio of total domestic credit provided by banking sector to GDP, degree of monetization in the economy M2 to GDP ratio, and liquidity liabilities M3 to GDP ratio. In the context of this study, the ratio of total domestic credit provided by banking sector to GDP is used.

#### 3.2 Model Specifications

The autoregressive distributed lags (ARDL) model by [13] is used to test both the short-run and the long-run co-integration among the variables. This model is suitable especially when some of the explanatory variables are endogenous [14]. Also, there is no imposition of assumption that all variables must be integrated of the same order [15]. It is also suitable for estimating data with small sample size. In addition, ARDL procedure allows for a combination of level and first difference data to flow together without the traces of spurious result.

Using the bound test procedure, this paper estimated the ARDL equations as follows:

$$\begin{aligned} \Delta RGDP_t = & \alpha_0 + \beta_1 RGDP_{t-1} + \beta_2 REM_{t-1} + \beta_3 FIN_{t-1} + \beta_4 GCF_{t-1} + \beta_5 FDI_{t-1} + \\ & \sum_{t=1}^{\rho} \alpha_{1i} \Delta RGDP_{t-1} + \sum_{t=0}^{\rho} \alpha_{2i} \Delta REM_{t-1} + \sum_{t=0}^{\rho} \alpha_{3i} \Delta FIN_{t-1} + \sum_{t=0}^{\rho} \alpha_{4i} \Delta GCF_{t-1} + \sum_{t=0}^{\rho} \alpha_{5i} \Delta FDI_{t-1} \\ & + \varphi ECT_{t-1} + \varepsilon_{1t} \end{aligned}$$

Where  $\Delta$  is the first difference operator, *RGDP* is the economic growth proxy by real gross domestic product, *REM* indicates remittances inflows, *FIN* is the financial development, *GCF* is gross capital formation, and *FDI* is the foreign direct investment inflows for Nigeria.  $\varphi$  the speed of adjustment coefficient and the ECT is the error correction term. The result of the coefficient  $\varphi$  is expected to be negative and statistically significant to adjust the speed of equilibrium from the short run with the long run.

### 3.3 Objective of the Study

This study seeks to analyse the short and long run relationships among remittances inflows, financial development and economic growth in Nigeria.

## 4. EMPIRICAL RESULTS AND DISCUSSION

### 4.1 Augmented-Dickey Fuller (ADF) Unit Root Test Results

Table 1 reports the ADF unit root results. Except for financial development variable that shows there is no unit root at level, other variables indicate unit root in the level data. At first difference 5% level of significance, the results show there is no unit root. Meanwhile, the guideline to accept or reject the null hypothesis ( $H_0$ ) is that the Mackinnon approximate probability value (p-value) for  $z(t)$  must be less than 5 percent, otherwise, the null hypothesis is rejected.

**Table 1. Augmented-dickey fuller (ADF) unit root test results**

Variable	Levels	1st difference	Order of integration
GDP	-1.411(0.8575)	-4.684(0.0007)	<i>I</i> (1)
REM	-1.693(0.7539)	-4.855(0.0004)	<i>I</i> (1)
FIN	-3.494(0.0400)	-	<i>I</i> (0)
GCF	-3.174(0.0898)	-3.902(0.0121)	<i>I</i> (1)
FDI	-1.990(0.6069)	-7.396(0.0000)	<i>I</i> (1)

Source: Augmented-Dickey Fuller (ADF) unit root test results using Stata 14

**Table 2. Bound test result**

F-statistic value	5.43
<b>Test Statistic at 5% significance</b>	
Lower Bound ( <i>I</i> 0)	2.56
Upper Bound ( <i>I</i> 1)	3.49

Source: Bound test results using E-views9.0

### 4.2 Bound Test Result

Table 2 shows the F-Statistic result of 5.43 that is greater than 2.56 and 3.49 of lower bound value *I*(0) and upper value of *I*(1). The result indicates that there is a long-run co-integration for the variables estimated in this study, this implies that, in the long-run, the macroeconomic variables tested using bound test can move together, hence, this result does not reject  $H_0$  that says: There is co-integration, if the F-statistic value is greater than the [16] critical upper bound value at 5 percent significance level. Otherwise, there is no co-integration.

### 4.3 Error Correction Term (ECT), Short and Long-run Results

From the results in Table 3 below, it is expected that the error correction term (ECT) coefficient is negative and significant, in line with 5 percent significance level, the ECTs is -0.14, this implies that about 14 percent error in the short-run are corrected in the long-run accordingly.

Both in the short-run and long-run results, the values of remittances inflows of 0.05 and 1.51 resulted to a positive and significant impact on the growth of Nigeria economy. For instance, the value of 1.51 results in the long-run implies that a 1 percent increase in the remittance inflows to Nigeria increases the country growth by 1.51 percent. This outcome is not surprising in that it is in line with some scholars in the literature that also had similar results (see, Giuliano and Ruiz-Arranz, 2009; Chowdhury, 2016; and Eggoh, Bangake and Semedo, 2019). Findings also

**Table 3. ARDL co-integrating and long-run results**

<b>Variable</b>	<b>Coefficient</b>	<b>Prob.</b>
D( REM)	0.05	0.01*
D(FIN)	1.64	0.63
D(GCF)	1.08	0.01*
D(FDI)	1.66	0.02*
ECT	-0.14	0.01*
<b>Long-run coefficients</b>		
REM	1.51	0.03*
FIN	8.51	0.18
GCF	5.83	0.02*
FDI	6.82	0.01*

*Note: The values in asterisks are the probabilities of the variables that are significance at 5 percent level*

show that gross capital formation and foreign direct investment demonstrated positive and significant influence on the growth of Nigerian economy in the reference period. The empirical findings are also in tandem with many growth models such as Solow-Swan growth and the new growth models which emphasized the importance of gross capital formation and foreign direct investment as drivers for economic acceleration.

### **5. CONCLUSIONS AND POLICY RECOMMENDATIONS**

This study has empirically determined if financial development and remittances inflows promotes economic growth in Nigeria. To achieve the objective of the study, the autoregressive distributed lag model was employed. The study confirmed the positive association between remittances inflows and economic growth for Nigeria. The inclusion of financial variable in the growth equations shows no significance relationship with economic growth.

This research has added value to the existing literature by focusing on the emerging economy of Nigeria on how remittances inflows drive the economic growth of Nigeria. This study suggests that policy makers in Nigeria should formulate effective economic policy that will promote a robust financial development. Among other policies, a hitch-free to access remittances from Nigerians abroad within the domestic bank in Nigeria should be emphasized by the government. This has the potential advantages of engendering remittances inflows into Nigeria, consequently, improvement on economic activities. In furtherance of this study, it is suggested that the future researchers should empirically examine the implication of remittances inflows on the monetary policy

transmission mechanisms, specifically in the context of inflation and exchange rates in Nigeria and other Sub-Saharan Africa countries.

### **COMPETING INTERESTS**

Authors have declared that no competing interests exist.

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