Impact Of Foreign Remittances On Private Domestic Investment In Nigeria

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I. Introduction

The primary objective of every government is to improve the general well-being of the citizenry, which can be achieved through increase in the growth of the economy. To actualize this paramount goal, financial flows into the economy is targeted by government via foreign policies to improve productivity, mitigate unemployment and achieve increased foreign earnings and generate greater foreign earnings, especially the remittance inflows (Joseph, 2017; Adenike (2021).

Foreign remittances are personal transfers from migrants to domestic country of origin. It measures the total sum of money sent to ones country of origin by migrants (World Bank, 2018). International remittances also include cash and non-cash items that were transferred via formal channels, such as transfer from financial institution or informal channels through friends or items transported across borders. The importance of remittances boils down on the role they it plays on receiving economies, as they assist households to actualize their basic needs, finance both monetary and non-monetary investments, create new enterprises, promote economic growth, among others (IMF, 2014). Specifically, remittances are one of the major sources of financial flows to developing countries. It is different from other foreign capital inflows such as foreign aid and foreign direct investment (Khan et al., 2022). Remittances affect economic growth and development via micro and macroeconomic activities.

Thus, foreign remittances consist of the transfers made by the workers abroad to the close ones in their country of origin. According to the International Monetary Fund (IMF, 2009), the remittances take three categories including compensation of employees which represents the incomes and goods or services obtained by non-resident workers, resident workers and migrants in the country of destination (Liviu & Cristian, 2011).

On the other hand, the significance of real private domestic investment cannot be overemphasized. It is an essential tool for economic growth and development of an economy through creation of multiplier effect on other macroeconomic indicators such as gross domestic product, unemployment, industrial output, with international remittances being at centre stage. Investment is one of the main components of aggregate demand and thus plays a critical role in the determination of equilibrium income. For Iyoha (2004), it is a well known fact that an increase in investment leads to a rise in productive capacity of an economy as it reduces unemployment, low poverty and improves living standard of the citizenry. Of course, there is no country in the world without the objective of achieving economic growth and development. Meanwhile, this can be achievable if the country has adequate resources at its disposal. In many developing countries, the resources to finance different enterprises are in short supply, hence, the need foreign capital inflows (Joseph, 2017).

In Nigeria, the increase in migration, especially the skilled emigrants to overseas came immediately after the adoption of the IMF-World Bank supported Structural Adjustment Programme (SAP) in the 1986. A policy which caused the country to experienced stagnation and increased migration including both skilled and unskilled labour force. With the nation return to democracy in 1999, alongside the increase in the population of Nigerians in diaspora and positive attitude of Nigerians towards their country, Nigeria began to experience increased inflows of international remittances. According to World development indicators (WDI, 2017), remittances had out beat foreign direct investment and official development Assistance, occupying second after oil as a foreign exchange earner for Nigeria. World Bank pointed out that as at 2015, Nigeria has shifted into the top five receipts of remittances in the world and received between 77 percent and 82% of the total remittance inflow in West African countries in 2016 and 2017, respectively (World Bank, 2018).

According to Adenike (2021), remittance remains a crucial element for economic growth, especially in developing countries, where there is insufficient savings for private domestic investment in the economy. For World Bank reports, nearly \$160 billion was transferred annually through official channels, which in some economies almost an equivalent amount received via developmental aid or foreign direct investment. The amount of cash transferred by migrants to emerging economies was nearly threefold of the foreign development aid inflows which are very crucial in economic growth and human well-being of the recipient countries (World Bank, 2018). Similarly, United Nations in 2019 upheld that all over the world, the total international migrants were about 272 million in 2019, an expansion of 51 million since 2010. Presently, the total international migrants represent 3.5% of the world's total populace, against 2.8% in 2000.

Since the Nigeria independence in 1960, the nation has enjoyed foreign remittances in various ways, especially in the areas of investment, education, acquisition of houses, development, and among others, which are key determinants of human capital development. According to Henry, Olabanji and Ese (2015), 26% of households across Nigeria spent their remittance receipts on food, while 20% of the households spent their remittance expenditure in the country was health with 17% of households spending their remittance income on health. Again, 9.12% of households invest their remittance receipts in new enterprises.

For about two decades, Nigeria as a developing country has continually struggled to achieve sustainable economic growth and development in the economy. This appears to be associated with the nation's low rates of savings, investments, per capita income, productivity, foreign exchange earnings, high poverty index, high inflation rate and low aggregate demand. Others include balance of payments deficits, persistent depreciation in exchange rate, over dependence on imports of goods and services, among others. These no doubt, have led to economic setback of the nation compared to developed countries in the Western World. These have paved way for ranking of the country as an underdeveloped nation, in spite of its numerous resources endowments (Liviu & Cristian, 2011)

Considering endogenous migration theory, which maintains that foreign remittance is one of the key determinants of economic growth by improving private domestic investment of the nation, it observed using statistical data that the variables are at variance with the theory. This is because, in some years, these variables move in opposite direction, while in some years where they move in the same direction, they are not significant. For instance, it was discovered using trend analysis that foreign remittances of Nigeria was 71% while private domestic investment stood 85% in 1992; in 2002, the growth rate of foreign remittances decreased to 15% and private domestic investment as well declined to 31%. Furthermore, in 2007, remittances increased to 15.9% with private investment falling to 15.1%; and 2017, foreign remittances fell again to 0.96% whereas private investment increased to 34%. Finally, the foreign remittances in 2020, further decreased to 12.3% while private domestic investment recorded fell to 25.31% (CBN, 2020).

The economic implication of this is the country's periodic low rate of savings and investments, unemployment and inflation; and these factors are highly conjectured as factors responsible for mitigating growth and development of the nation. That is why over the observed years, unemployment, inflation and exchange rates have been on increase. For instance, between 1999 and 2000, unemployment, inflation and exchange rates rose from 17.5% to 18.1%, 6.93% to 18.87% and 4.58% to 4.67% respectively, while that of GDP and PDI increased from -1.9% to 2.4% and 2.7% to 3.8% respectively. Again, from 2015 to 2019, unemployment, inflation and exchange rates increased from 9% to 17.67%, 9.02% to 11.4% and 5.28% to 5.72% respectively, that of gross domestic product increased from -0.03% to 0.458% and 11.7% to 16.8 respectively (CBN, 2020). Hence, having observed these growth rate inconsistencies, there is a need to empirically examine the impact of foreign remittance inflows on private domestic investment.

II. Theoretical Framework

New Economics of Labor Migration Theory

The new economics of labour migration theory is associated with the work Stark (1991). The theory perceived as a criticism of the micro version of the Neo-classical theory conceptualizing migration as an individual decision. For Stark (1991), migration is a tool that households employed to maximize income and as well diversify sources of income. By sending a family member away from home to work abroad, a household makes an investment that would be recovered given that the migrant's remit some income thereafter. It posited that if individuals migrate to increase their own income, as suggested by Hay and Co (1980) in Stark, (1991), then they are not expected to send remittances back home. This theory fits into the Nigerian situation where a household pulls resources together to send one member out of the country with the expectation that the migrants would remit income back home to solve some certain problems. This is collaborated by Stark and Lucas (1988) in their argument that there exists an implicit or explicit contractual arrangement between the family and the migrant (Ojapinwa & Odekunle, 2013)

The family angle of migration is also articulated by Taylor (1999) that although individuals migrate, they do not sever ties with their source households. In this case the family seeks to maximize utility instead of the individual. Migration may have significant effects on household economic activities regardless of the theories. Migrant sending households are often recipients of remittances from migrants. Taylor (2001) indicated that migrants are usually attached to their rural homes and as a result of their homeward focus; they have economic incentives to promote and enhance the welfare of those left home beloved ones.

Another point raised by the proponents of the theory was that wage differential is not a necessary condition for making a decision about migration because international migration does not necessarily stop when differences in wages disappear. The theory indicates that migration stems from market failures outside the labour market. It further upheld that missing, inefficient or poorly functioning of markets are conditions necessary for the migration of labour (Ojapinwa & Odekunle 2013)

Optimistic and pessimistic theory

Proponents of the optimistic and pessimistic theory contended that international remittance inflows decrease inequality in the recipient countries (Docquier, Rapoport & Shen, 2007). The optimistic argued that international remittance inflows enable household to relieve budget constraints, and stimulate demand for goods and services, which, in turn, stimulate production and employment (Stark, Taylor & Yitzenaki, 1986, 1988; Taylor & Wyatt, 1996). In the same way, Quibria (1997) and Ratha (2003) contended that international remittance flows provide the much required currency for importing essential inputs that are unavailable in domestic economy.

However, pessimism about the positive effect of remittance flows has two main arguments, including that remittance flows generates a level of domestic demand of goods that exceeds the domestic economy's production capacity, and thus represents a source of higher inflation or increasing unemployment, if cheaper goods were imported to expunge the remittance induced excess of demand for goods (Adams, 1992). Secondly, given the income effect of international remittance flows, recipients of international remittances could afford to work less; resulting in decline in labour supply, which would in turn, somewhat lead to a negative effect on domestic economic growth.

The Neoclassical Growth Theory

The neoclassical growth theory was propounded by Robert Solow in 1956 in which he illustrated the importance of savings and capital formation to economic growth and development. The theory emphasized that savings and capital formation towards real sector, productive and small and medium scale enterprises in an economy act as measures for economic growth and development (Idowu, Ochei & Isibor, 2019). According to Solow (1956), steady state growth path is reached when capital, labour and output are all growing at the same rate, so that the output per worker and capital per worker are constant over time. The theory believed that to improve long term trend rate of growth, there must be an increase in productive finance and labour supply, real sectors as well as increases in the productivity of labour and capital. The neoclassicalists strongly argued that growth cannot be stable, that a sustained improvement in capital investment and financing towards SMEs, real sector and productivity in an economy promotes growth rate and sustainability of the growth mainly to achieve economic development. It was further opined that interest rate result due to marginal efficiency of capital and savings, that is, interaction between demand and supply (Idowu, Ochei & Isibor, 2019). Therefore, it was the theory's conclusion that improving SMEs accessibility to credit facilities is a key driver of economic growth.

Thus, the theory revealed that financing small and medium sized businesses was the utmost tool for economic growth and macroeconomic stability across all economies of the world (Lenon & Dephine, 2019). In the same vein, Keynes (1936) unveiled that money supply determines the level of interest charged on loans. He stated that equilibrium rate of interest was the rate at which money supply was proportional to money demand. The theory shows that accessibility of loan contracts the gap between firms' available and the needed capital. Firm's demand for loans is due to the imbalance between available financial assets and required assets of firms.

Empirical Review

The soundness of any theory whether economic or otherwise, is tested by its behaviour when subjected to empirical analysis (Atuma, Odo & Nweze, 2017). A number of studies have been conducted so far to examine the relationship existing between remittance inflows and private domestic investment. These studies include Edeh, Ijemba and Njeze (2023) that examined the impact of remittance on domestic investment in Nigeria from 1981 to 2020, using the Augmented Dickey-Fuller unit root test, co-integration test, and autoregressive distributed lag (ARDL) model. The result showed that foreign remittances had a positive but not significant impact on domestic investment in the economy.

More so, Chowdhury, Dhar, and Gazi (2022) researched the impact of remittance on economic progress, focusing on low-income Asian frontier countries from 1990 to 2019 using pooled ordinary least

squares (OLS), fixed effect, random effect models, Vector error correction model and granger causality test. The study was explored to determine the contribution of remittances to the economic progress of three lowincome Asian frontier countries such as Bangladesh, Sri Lanka, and Vietnam. The results indicated a significant but negative impact of remittances on the economic progress of the sample countries. In Bangladesh, remittances had neither short-run nor long-run association; while in Vietnam, there exists a short-run association but no long-run association. In Sri Lanka, the short-run causality flew from remittances to GDP per capita and vice-versa. The study further observed excessive consumption and investment in unproductive sectors of transferred money which result in a negative correlation with economic development.

Okeke and Chinanuife (2021) investigated the causal relationship between remittances and private domestic investment in Nigeria from 1981Q1 to 2020Q4 using Philips-Perron test unit root test and Toda and Yamamoto causality test. The results obtained showed that remittances and private domestic investment were both integrated of order one (1) and zero (0). The Toda and Yamamoto causality test carried out revealed that there is a unidirectional causal relationship between remittances and private investment in Nigeria. The study concluded that government should not only be concerned with attracting the maximum amount of remittances into our country but also directing these remittances via formal channels to maximize the benefits for the country as a whole through private domestic investment

Adeseye (2021) examined the effect of migrant remittance on economic growth in Nigeria. Remittance inflow was used as the dependent variable and gross domestic products, inflation, imports, and exports were independent variables. In this study, secondary data were utilized. The study employed annual data obtained from world development and international financial statistics which covers the period of 29 years (1990-2018). Quantitative data collected were evaluated through descriptive statistics; and the hypotheses formulated were tested with the use of multiple linear regressions which includes ANOVA, Correlation, and Coefficient. And it was done with the aid of SPSS version 21. From the findings of the study and the tested hypotheses, it was discovered that a significant relationship exists between remittance and gross domestic product, exports, and imports in Nigeria while inflation has no significant relationship with remittance. The study, therefore, proffers some recommendations for utilizing the influx of remittance for economic growth in Nigeria.

Andrej and Karol (2021) carried out research on the impact of remittances on household savings in the Baltic. The study revealed that proper understanding and monitoring of household savings were crucial to effective macroeconomic policies targeted at balanced and sustainable economic growth. Remittances, as a financial flow of foreign capital, can create a vital part of private savings. This paper is aimed at identifying whether remittances contribute to household savings in the Baltic along with other macroeconomic variables in a post-crisis period, during which the relative smoothing and convergence of economic development of the Baltic countries after the sharp financial distress in 2009 can be observed. The following methods of panel data regression analysis were employed: fixed effects and OLS. The results of the econometric analysis based on both fixed effects and OLS methods reveal that remittances are an essential driver of savings in the Baltic in the long run. Bosede, Ajay and Segun (2021) studied the influence of financial liberalization, remittances and economic growth in Nigeria. The study was motivated by the increase in remittance flows in Nigeria as the highest recipient in West Africa, and the fact that the growth impact of remittances is weak within the country. The financial liberalization index developed by Chinn and Ito (2006) is employed in this study to examine the role of financial liberalization in the remittances-growth nexus in Nigeria over the period 1990–2018.

Anetor, Friday Osemenshan (2019) examined the relationship between remittances, financial sector development, and economic growth in Nigeria over the period 1981 to 2017. The study used the autoregressive distributed lag (ARDL) model. The results revealed that remittances had a negative and significant effect on economic growth. It was also showed that financial sector development had a negative and significant impact on economic growth. Ebenezer and Gbenga (2020) studied remittance income as a source of foreign earnings in Nigeria from 1977 to 2019, through the application of the auto-regressive distributed lag (ARDL) estimation technique. The results indicated that remittance income had negative impact on food importation in the economy. It, therefore, concluded that remittance inflows do not play a crucial role in increasing food import. Nigeria can benefit from it by investing remittance in productive investment that will have a positive effect on domestic agricultural productivity.

Okharedia and Osagie (2019) studied the impact of foreign remittance on economic performance of Nigeria from 1986 to 2018 using Error Correction Model (ECM) technique. The study found that foreign remittances improve the performance of the economy of Nigeria. Ranjan (2020) investigated the impact of remittances on domestic investment in Six South Asian Countries using panel data. Remittances inflow to South Asian countries increased significantly and is now one of the major sources of external finance overtaking traditional capital inflows such as foreign direct investment (FDI), foreign portfolio investment (FPI) and aid. However, the role of remittances in economic development has not been examined extensively, particularly for South Asian countries. This article examines the impact of remittances on domestic investment for South Asia over 1991–2017. Advanced panel estimation methods (unit root, cointegration and causality) are employed to

account for potential country-specific heterogene-ity and the endogeneity problem. Results of this study suggest that remittances increase domestic investment in the short term as well as in the long run for South Asia.

Egbulonu and Chukuezi, (2019) examine the effect of foreign remittances on Nigeria's economic growth from 1990 to 2018, by applying the ADF unit root test and the OLS technique to analyze the data. Results showed a positive relationship between foreign remittances and economic growth. Samuel, Edem and Mensah (2018) studied Capital flows and economic growth in five Sub-Saharan African countries from 1970-2014, using the autoregressive distributed lag methodology. The findings showed that capital flows had different effects on economic growth. FDI had a significant positive effect in Burkina Faso and negative effects in Gabon and Niger whereas the impact of debt is negative in all countries. Aid, however, promotes growth in Niger and Gabon whiles it deters growth in Ghana. Remittances, on the other hand, have a significant positive effect in Senegal. Finally, gross capital formation was significant in most of the countries and the impact of trade is mixed. These results suggest that the benefits of capital flows in SSA have been overemphasized. Okharedia and Osagie (2019) studied the impact of foreign remittance on economic performance of Nigeria for the period 1986-2018. The time-series data was sourced from the World Bank. Error Correction Model (ECM) technique was adopted to determine the impact of foreign remittances on economic performance in Nigeria and how the exchange rate mediates the relationship. From the empirical examination, the paper posited that a reduction in the exchange rate is required for the foreign remittances to effectively influence the performance of the economy of Nigeria. The study, further, concluded that while the foreign remittances improve the performance of the economy of Nigeria, the exchange rate is harming it.

Khan, et al., (2022) carried out a study on the role of remittances, foreign aid, and other foreign capital inflows on the economic growth and poverty alleviation in the Middle East and North Africa (MENA) countries in the period between 1991 and 2019. The authors have determined that remittance inflows rather than foreign aid have had a more profound impact on decreasing poverty in MENA countries. The MENA countries will have significant challenges in the long-run given the pressure for privatization that may hamper recent successes in minimizing the poverty rate. Muhammad and Muhammad (2019) studied the effect of migrant remittances on economic growth in Pakistan between 1976 and 2016 using the autoregressive distributed delay (ARDL). The ARDL method was used to analyze the effect of workers' remittances on the Pakistani economy. The survey results revealed that foreign direct investment, remittance inflow, and gross domestic products have a significant effect on Pakistan's long-term economic growth, while consumption and inflation have a negative effect on the economic growth of Pakistan in the long term. The study recommended that policy makers should motivate migrants to transfer funds through appropriate networks and engage in profitable investments that will stimulate economic growth.

Gap in Empirical Literature

Gap in empirical literature entails the missing element. That is, critical empirical literature review to know what had been done and what the other studies had failed to do in terms of the variables employed, methodology, geography and Time scope.

From the summary of the empirical literature, there is no doubt that there exists a plethora of research works done on remittance inflows in both developed and developing nations. In essence, literature on remittance inflows is quite enormous and it continues to grow by the day. However, most of the studies reviewed dwelt on the economic of foreign countries; while the few carried out in Nigeria, concentrated on remittance inflows and economic growth, without much accentuation of its effects on private domestic investment. Some of these studies include: Muhammad and Muhammad (2019), Anetor, Friday Osemenshan (2019), Chowdhury, Dhar, and Gazi (2022), Ziberi and Alili (2021), Odugbesan, Sunday, and Olowu (2021), Sebil and Abdulazeez (2018), El-Hamma (2017), Iheke (2012), Sebil and Abdulazeez (2015). Hence, this study differs from other studies reviewed by examining the effect of remittance inflows on private domestic investment; since remittances are more of private matter which its contributions to economic growth must not be undermined as a key sector that boosts the growth of the nations' economy.

Moreover, some of the works reviewed made use of OLS techniques without testing for the stationarity status of the time series variables. Some of these studies include Mundaca (2009, Giuliano and Ruiz-Arranz (2009), Bettin and Zazzaro (2012). This might actually lead to a spurious regression result which might equally lead to false conclusion. But this current study would first test for the stationarity of the time series variables used in the study which some of the previous studies reviewed did not do.

Again, many of the reviewed studies were carried out long ago, which did not capture what happened currently in the economy such as Covis-19 pandemic. Hence, the current study is to update the following: Arranz (2009), Iheke (2012), Sebil and Abdulazeez (2015), Giuliano and Ruiz-Arranz (2009), Bettin and Zazzaro (2012), Sibindi (2014), Mundaca (2009), Nyamongo (2012), Sibindi (2014). The findings of these studies may have been outmoded by events, since there have been series of policies such as the COVID-19

pandemic that may have impacted on the economy, Thus, there is need to extend the scope of this study to 2021.

III. Methods

Model Specification

The theoretical model of this study follows the neoclassical growth theories which maintained that savings and capital accumulation in an economy, especially in the developing countries are necessary conditions for growth of an economy with private investment in focus. In order to determine the relationship existing between remittance inflows and private domestic investment in Nigeria, the model used by the Edeh, Ijemba and Njeze (2023) in the examination of remittances and domestic investment nexus in Nigeria is adopted. The study's model was specified as follows:

DINV = f(REM, GDP, INTR DCR)

Where DINV = domestic investment, REM = annual remittances, GDP = gross domestic product, INTR = interest rate and domestic credit to the banking sector by banks.

This model is modified by bringing in foreign aids, trade openness, foreign direct investment and exchange rate. Hence, the modified equation is specified implicitly as thus:

PDI = f(FERM, FAI, TOP, FDI, EXR)

In linear function, the equation is illustrated as:

 $PDI_{t} = \beta 0 + \beta_{1} FERM_{t} + \beta_{2} FAI_{t} + \beta_{3} TOP_{t} + \beta_{4} FDI_{t} + \beta_{5} EXR_{t} + u_{t}$

In logarithm function, the equation is specified thus:

 $LPDI_{t} = \beta 0 + \beta_{1}LFERM_{t} + \beta_{2}LFAI_{t} + \beta_{3}LTOP_{t} + \beta_{4}LFDI_{t} + \beta_{5}LEXR_{t} + u_{t}$

Where; PDI is the private domestic investment, FREM is the foreign remittances, FAI represents the foreign aids proxied by official development assistance, TOP is the trade openness, FDI is the foreign direct investment while EXR is the exchange rate.

A Priori Expectation

Theoretically, the study expects all the independent variables to have positive relationship with private domestic investment (PDI). The a priori expectation behavior expressed as: $\varphi 1>0$, $\varphi 2>0$, $\varphi 3>0> \varphi 4>0$, $\varphi 5>0$.

Sources of Data

The data for this research work are obtained from the Central Bank of Nigeria statistical bulletin, volume 32, 2021.

Estimation Procedure

The estimation procedure utilized in this study includes:

Unit root test

The unit root test is employed to determine the order of integration among the variables by using the Augmented Dickey-Fuller (ADF) unit root test. The ADF test deals on rejecting null hypothesis of unit root, if the ADF statistic is greater than 0.05 critical value. The test would be conducted with or without a deterministic trend. The ADF model is given as:

$$\begin{array}{rcl} \Delta yt &=& n\\ \Delta yt &=& \alpha_0 + \alpha_1 y_{t-1} + \sum \alpha \Delta y; + et \\ \Delta yt &=& \alpha_0 + \alpha_1 y_{t-1} + \sum \alpha \Delta y; \pm \delta t + et \end{array}$$

Where; Y is a time series, \mathbf{i} = linear time trend, Δ = first difference operator in a manner that $\Delta yt-1 = yt - yt-1$, α_0 = constant term, n = is the optimum number of lags, and et is the stochastic variable.

Auto regressive distributed lag (ARDL) model

The autoregressive distributed lag model is utilized to estimate the short-run and long-run coefficients of the variables used in the study. It becomes imperative as the stationarity test indicated mixed order of integration among the variables, that is, order one and order two, as recommended by Pesaran and Smith (2001), among others. The model of the ARDL in generic form is illustrated thus:

$$\Delta PDI_{t} = \beta_{0} + \Sigma \beta_{i} \Delta PDI_{t-i} + \Sigma \gamma_{j} \Delta FERM_{1t-j} + \Sigma \delta_{k} \Delta TOP_{2t-k} + \theta_{0} PDI_{t-1} + \ldots + \theta_{5} EXR_{2t-n} + e_{t}$$
7

In the equation 10, the generic ARDL model showed that the equation is characterized by lags of the dependent variable and as well lags perhaps the current value of the regressors.

IV. RESULTS AND DISCUSSIONS

The results are estimated using the econometric methods are presented and discussed below.

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Unit Root Test

In order to determine the rank of integration among the variables, the unit root test is conducted via the application of the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root tests. The results are shown in Table 1 below.

bilowing Trend and Intercept								
Level				First Difference				
Variables	ADF Statistic	5% CV	ADF Statistic	5% CV	Rank	Remarks		
LPDI	-1.359691	-2.971853	-4.125306	-2.967767	I(1)	Stationary		
LFREM	-1.598255	-2.951125	-9.465749	-2.951125	I(1)	Stationary		
LFAI	-1.925173	-2.948404	-5.638722	-2.954021	I(1)	Stationary		
TOP	-3.720419	-2.948404			I(0)	Stationary		
LFDI	-1.916143	-2.948404	-7.993609	-2.951125	I(1)	Stationary		
LEXR	-2.620183	-2.948404	-5.930449	-2.951125	I(1)	Stationary		

Table 1: ADF Unit Root Estimation Showing Trend and Intercept

Sources: Computation from E-view 9.0

Table 2: PP Unit Root Estimation

Showing Trend and Intercept

Level			First Difference				
Variables	PP Statistic	5% CV	PP Statistic 5%		Rank		Remarks
LPDI	-1.804871	-2.948404	-3.588392	-2.951	125	I(1)	Stationary
LFREM	-1.674675	-2.948404	-13.16347	-2.951	125	I(1)	Stationary
LFAI	-2.063516	-2.948404	5.367367	-2.951	125	I(1)	Stationary
TOP	-3.659586	-2.948404				I(0)	Stationary
LFDI	-2.184478	-2.948404	-8.026143	-2.951	125	I(1)	Stationary
LEXR	-2.803118	-2.948404	-5.949697	-2.951	125	I(1)	Stationary

Sources: Computation from E-view 9.0

The Augmented Dickey Fuller (ADF) and Phillips Perron (PP) unit root test as presented in tables 1 and 2, revealed that the trade openness was stationary at level whereas private domestic investment, foreign remittances, foreign aids, foreign direct investment and exchange rate were stationary at first differencing. This unit root test results therefore revealed the existence of a mixed order of integration among the variables of the study. The mixed order of integration from the unit root test results implies the possibility of long-run relationship among the variables of the study, though further investigations using ARDL - Bound test result will reveal if actually long run relationship exist among the variables of the study.

ARDL Bounds Test

The bound test is used to examine whether the variables are co integrated. The variables are said to be co integrated if the F-statistics is greater than the critical values and otherwise if it is less. The result of Bounds test is presented in the Table 2 as follows:

Null Hypothesis: No long-run relationships exist						
Test Statistic	Value	k				
F-statistic	5.398858	5				
Cri	tical Value Bounds	1				
Significance	I0 Bound	I1 Bound				
10%	2.26	3.35				
5%	2.62	3.79				
2.5%	2.96	4.18				
1%	3.41	4.68				

Sources: Researcher's computation from E-view 9

The results of the ARDL bounds test presented in Table 3 shows that a long-run relationship exists between foreign remittances and private domestic investment in Nigeria within the periods of the study. The result disclosed that the computed F value of (5.39) is greater 3.79 upper critical value at 5% level of significance, the null hypothesis is therefore rejected. That is, the null hypothesis of no long-run relationship existing between remittance inflows and private domestic investment is rejected at a 5% level of significance.

ARDL Short-Run Results

The evidence of equilibrium long-run relationship revealed by ADRL bound test among the variables; prompted the investigation of the coefficients of the short-run and long-run of the variables employed in the study using the ARDL short-run and long-run coefficients test with the objective of ascertaining the elasticity or magnitude of the parameters. The results as estimated are presented in table 3 and 4 of chapter four below.

Variable	Coefficient	Std. Error	t-Statistic	Prob.				
D(LPDI(-1))	0.404097	-0.247106	-1.635322	0.1140				
D(LFREM)	0.298703	-0.121336	-2.461797	0.0226				
D(LFAI)	0.008565	0.011089	0.772415	0.4485				
D(TOP)	0.083891	-0.037600	-2.231149	0.0367				
D(LFDI)	0.480116	0.121862	3.939838	0.0008				
D(LEXR)	-0.229005	0.214191	-1.069164	0.2971				
CointEq(-1)	-0.427715	0.090889	-4.705931	0.0001				
-								

R² = 0.987456; F-stat = 2774.114, Prob(F-stat) = 0.000000, DW stat = 2.181056 Sources: Researcher's computation from E-view 9

Table 4 illustrates the short-run coefficients test results of the ARDL model. The results indicated that foreign remittances (LFREM), with the coefficient of 0.298703 and p-value of 0.0226, has positive impact on private domestic investment in Nigeria and as well, statistically significant in the short-run. In the same vein, the coefficient of foreign aids (LFAI) being 0.008565 with associate p-value being 0.4485, implies positive association between foreign aids and private domestic investment; but statistically not significant in the short-run in Nigeria. Again, the coefficient of trade openness and foreign direct investment being 0.083891 and 0.480116 respectively, with associated p-value of 0.0367 and 0.0008 respectively, equally indicated that both trade openness and foreign direct investment have positive association with private domestic investment and statistically significant in the short-run in Nigeria. On the contrary, exchange rate coefficient being -0.229005 with associated p-value of 0.2971, entails that exchange rate has negative relationship with private domestic investment in Nigeria and statistically not significant.

The results also indicated ECT value of -0.427715 and p-value of 0.0001, which is significant at 5 percent critical value. The ECT result depicts speed of adjustment which is in tandem with the granger representative theorem in which it upholds that a negative and statistically speed of adjustment is a required condition for a significant long-run association while the negative sign of the coefficient satisfies the second-order condition, and the significant status of the ECT satisfies other condition necessary for the utilization of econometric packages in the research.

The above result shows that the R^2 is 0.987456, which implies that the model explains about 98.7456% of the total variations in private domestic investment (LPDI) are explained by the independent variables such foreign remittances, foreign aids, trade openness, foreign direct investment and exchange rate during the period of the study, While the remaining 1.2544% variations are as a result of other explanatory variables not captured in the model. The Prob(F-statistic) being 0.000000, implies that the joint influence of the explanatory variables is statistically significant as it is less that 0.05 at 5% level of significance. Again, Durbin Watson statistic being 2.181056 which is approximately 2 shows the absence of serial auto correlation in the model.

Showing that the coefficient of foreign remittances in the short-run is 0.298703 and its p-value is 0.0226, the results showed that foreign remittances at 5 percent critical value in the short-run, have a positive and significant effect on private domestic investment in the short-run in Nigeria. Thus, the study estimated on the average that 1% rise in foreign remittances resulted to 29.9 increase in private domestic investment in the short-run in Nigeria. The positive sign revealed by the coefficient of the variable satisfied economic theory in the study. The above results are in line with the endogenous migration theory whose pioneers include Elbadawi, Rocha and Wahba . The proponents of this theory postulate that foreign remittance is one of the key determinants of economic growth by improving private domestic investment of the nation. Empirically, the results are in accordance with the discoveries of Ranjan (2020), Okharedia and Osagie (2019), Nneji (2018), Samuel, Edem and Mensah (2018), Onyike, Sixtus Chimezie (2020), Oluwasheyi (2020), Andrej and Karol (2021), etc. These scholars carried out research on the impact of remittances on domestic investment, across the countries of the world including South Africa, Euro area Countries, Kenya, Nigeria, etc. Their studies found that remittance inflows had a positive effect on domestic investment in the various nations of their investigation.

However, the findings contradict the results of Samuel, Edem and Mensah (2016), Ebenezer and Gbenga (2020), Samuel, Edem and Mensah (2016), among others that also studied the influence of remittances, regime durability and economic growth in Sub-Saharan African economies and discovered that remittances do not have a robust impact on economic growth.

Long Run Results

The long run relationship between foreign remittances and private domestic investment in Nigeria is accessed by the lower part of the result of Autoregressive Distributed Lagged (ARDL). The result is presented as following in the Table 4:

Tuble Confidence Test									
Variable	Coefficient	Std. Error	t-Statistic	Prob.					
LFREM	0.084055	-0.026794	-3.137067	0.0037					
LFAI	0.153749	0.064313	2.390638	0.0263					
TOP	0.043961	0.072992	0.602278	0.5534					
LFDI	1.122513	0.141610	7.926810	0.0000					
LEXR	-0.457948	0.203594	-2.249324	0.0353					
С	1.913547	0.826343	2.315680	0.0308					
A D									

Table 5: ARDL Long-run Coefficients Test

Table 5 reveals the long-run coefficients test results of the ARDL model for which the variables under consideration were estimated. From the results, the coefficient of foreign remittances (LFREM), being 0.084055 and p-value of 0.0037, implies that foreign remittances has positive association with private domestic investment and as well, statistically significant in the long-run in the Nigeria. In the same vein, the coefficient of foreign aids (LFAI) being 0.153749 with associate p-value being 0.0263, equally indicate existence of positive connection between foreign aids and private domestic investment in Nigeria, and statistically significant in the long-run. Again, the coefficient of trade openness being 0.043961 with corresponding p-value of 0.5534, shows that trade openness has positive impact on private domestic investment in Nigeria; but statistically not significant in the long-run. However, the coefficient of foreign direct investment being 1.122513 with a corresponding p-value of 0.0000, implies that foreign direct investment significantly and positively impacted on private domestic investment in the long-run in Nigeria. Lastly, exchange rate coefficient being -0.457948 with associated p-value of 0.0353, entails that exchange rate has negative relationship with private domestic investment in and statistically significant in the long-run.

Having indicated that the coefficient of foreign remittances in the long-run is 0.084055, and its p-value is 0.0037, it implies that foreign remittances at 5 percent critical value have a significant and positive effect on private domestic investment in the long-run in Nigeria. Hence, the research estimated averagely that 1% increase in foreign remittances will increase private domestic investment by 8.4 in the long-run in the economy of Nigeria. The positive sign indicated by the coefficient foreign remittances satisfied theoretical postulation in the country. In the same vein, the results of the above are in line with the endogenous migration theory which maintains that foreign remittance is one of the key determinants of economic growth by improving private domestic investment of the nation. Empirically, the results are in line with the findings of Sujahangir (2018), Egbulonu and Chukuezi, (2019), Okharedia and Osagie (2019), Nneji (2018), Samuel, Edem and Mensah (2018), Onyike, Sixtus Chimezie (2020), Oluwasheyi (2020), etc, who examined the effect of remittances on domestic investment, across the countries of the world including South Africa, Euro area Countries, Kenya, Nigeria, etc. Their studies found that remittance influenced domestic investment positively in the various nations of their investigation. However, the findings contradict the results of Samuel, Edem and Mensah (2016), Ebenezer and Gbenga (2020), Samuel, Edem and Mensah (2016), Margaret and Ajibola (2018), etc. among others that also studied the impact of remittances, regime durability and economic growth in Sub-Saharan African economies and found negative association between remittances and economic expansion.

Impulse Response Functions and Variance Decomposition

The impulse response reveals how variables respond to one standard deviation of shock to individual variables in a model while variance decomposition provides information about the relative importance of each random innovation in affecting the variables. This stage of the research provides an insight into the concept and interpretation of impulse response functions. From the figure 1 below, there are five responses to Cholesky one standard deviation (d.f. adjusted) innovations ± 2 S.E, and they are presented and interpreted below:



Response to Cholesky One S.D. Innovations ± 2 S.E.

Figure 1: Impulse Response Analysis

Response of LFREM to LPDI: The blue line explained the impulse response analyses while the two red lines unveil the 95% confidence intervals. From the results, a one standard deviation shock (innovation) from LFREM to LPDI initially has a perceptible effect on LPDI in period one and maintained a steady state till period 2. However, from the 3nd period, the response increases till when it hits negative value state in period 4th, and remains in the negative region. This result indicates that shocks to remittance foreign remittance (LFREM) will have asymmetric impacts on private domestic investment (LPDI) in both the short-run and the long-run in Nigeria.

Response of LFAI to LPDI: The results showed that a one standard deviation shocks LFAI initially has a noticeable impact on LPDI in periods 1 and 2. From period 3, the response sharply increases till 4th periods and maintain positive till 5th period. This result also implies that innovations to foreign aids (LFAI) have asymmetric influence on private domestic investment (LPDI) both in the short-run and the long-run in the economy.

Response of TOP to LPDI: The red lines unveil 95% confidence intervals, but the blue line represents the impulse response functions. The estimation results revealed that a one standard deviation shocks or innovation to TOP declined sharply from period 1. However, the response sharply increases in 3rd period. It maintains a steady state between periods 3nd and 4rd when it increases till period 5th and thereafter, remains in the positive region. The result implies that shocks to trade openness (TOP) will have asymmetric impacts on private domestic investment (LPDI) in both the short-run and long-run in Nigeria.

Response of LFDI to LPDI: The blue line stands for impulse response analysis while the two red lines denote 95% confidence intervals. The results showed that a one standard deviation innovation or shock to LFDI initially decreases in period 1 till when it hits negative value state. The response sharply increases in 2nd period and decreased in 3rd period. However, the response sharply increases in 4th period and maintain a steady

state. This result also implies that innovations to foreign direct investment (LFDI) have asymmetric influence on private domestic investment (LPDI) both in the short-run and the long-run in the economy.

Response of LEXR to LPDI: Again, he red lines indicated the 95% confidence intervals whereas the blue line represents the impulse response functions. The results unveil that a one standard deviation innovations or shocks to LEXR initially have a noticeable impact on LPDI. However, the response sharply increases in 2rd period. Thereafter, it decreased in period 3rd, and fluctuated in rest of the periods. These results, however, showed that shocks to exchange rate (LEXR) will have inverse relation to on private domestic investment (LPDI) in both the short-run and the long-run in the Nigerian economy.

Generally, responses and innovations are consistent with economic theory or a priori expectations. For instance, the above results are consistent because with shocks in foreign remittances, foreign aids, trade openness, foreign direct investment and exchange rate, tends to decrease, it leads to reduction in on private domestic investment in Nigeria

Variance Decomposition of LPDI:							
Period	S.E.	LPDI	LFREM	LFAI	TOP	LFDI	LEXR
1	0.087241	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.141834	70.43322	20.59927	0.267017	4.551085	3.958898	0.190504
3	0.178540	45.86093	31.78982	0.469821	4.287154	16.73865	0.853627
4	0.213017	32.43046	46.58327	0.766832	3.134616	16.46125	0.623577
Variance Decomposition of LFREM:							
Period	S.E.	LPDI	LFREM	LFAI	TOP	LFDI	LEXR
1	1.422371	1.501742	98.49826	0.000000	0.000000	0.000000	0.000000
2	1.453973	2.386548	94.46972	0.627889	0.003147	2.080127	0.432573
3	1.522912	2.480705	86.34631	0.573774	2.855271	2.897520	4.846422
4 N : D ::: (1.569013	3.216954	81.47807	0.616725	3.153775	4.470563	7.063910
LFAI:							
Period	S.E.	LPDI	LFREM	LFAI	TOP	LFDI	LEXR
1	0.433325	20.34447	8.142033	71.51350	0.000000	0.000000	0.000000
2	0.638757	10.78746	51.28103	33.30126	1.427460	1.890724	1.312068
3	0.770148	7.982786	62.11228	24.21884	1.397789	3.136491	1.151814
4	0.821008	8.060882	55.86618	22.75755	2.561100	5.626900	5.127394
Variance Decomposition of TOP:							
Period	S.E.	LPDI	LFREM	LFAI	TOP	LFDI	LEXR
1	7.179850	9.409940	4.12E-05	8.327861	82.26216	0.000000	0.000000
2	8.038446	11.27205	2.860917	6.878631	69.70660	4.723615	4.558194
3	9.107768	10.29712	2.283828	14.45308	55.13056	8.935297	8.900111
4	9.319642	9.834289	2.428703	14.51005	52.65286	9.392912	11.18119
Variance Decomposition of LFDI:							
Period	S.E.	LPDI	LFREM	LFAI	TOP	LFDI	LEXR
1	0.495719	0.050029	0.174036	49.68632	9.299895	40.78972	0.000000
2	0.640003	0.316268	29.24816	30.48103	5.802093	25.38484	8.767614
3	0.694599	0.397983	38.84968	25.90880	5.260408	21.62580	7.957325
4	0.736512	0.518831	43.39873	23.04680	5.432277	20.44410	7.159267
Variance Decomposition of LEXR:							
Period	S.E.	LPDI	LFREM	LFAI	TOP	LFDI	LEXR
1	0.257661	15.98963	0.698381	0.345408	0.190633	5.937168	76.83878
2	0.380046	7.989516	0.321331	3.613331	2.884993	24.37213	60.81870
3	0.440249	6.147791	0.246496	3.785172	2.315026	29.20770	58.29781
4	0.4/5/61	5.853078	0.345396	4.898/38	2.125268	29.00906	57.77046

 Table 7: Variance Decomposition

Sources: Researcher's computation from E-view 9

Variance Decomposition of LPDI

From table 7, the results showed that, in the short-run, that is year 2, shocks to LPDI explained 70.4% changes of the fluctuation in LPDI (own shock). However, innovation to foreign remittance (LFREM) can

trigger 20.6% fluctuation in LPDI. Furthermore, shocks to foreign aids (LFAI), trade openness (TOP), foreign direct investment (LFDI) and exchange rate (LEXR) accounts for 0.27%, 4.55%, 3.94%, and 0.19% changes of the fluctuation in LPDI, respectively. In the long-run, that is year 4, impulse to LPDI accounts for 32.4% variation of the fluctuation in LPDI (own shock), whereas shocks to LFREM, LFAI, TOP, LFDI and LEXR, accounts for 46.6%, 0.8%, 3.1%, 16.5%, and 0.6% variations of the LPDI, respectively.

Variance Decomposition of LFREM

The results in the short-run at year 2, showed that impulse to LPDI explained 2.4% variations in LFREM while innovations to LFREM causes 94.5% changes of the fluctuation in LFREM (own shock). Similarly, shocks to foreign aids (LFAI), trade openness (TOP), foreign direct investment (LFDI) and exchange rate (LEXR) account for 0.63%, 0.003%, 2.1%, 0.4% variations of the variation in LPDI, respectively. In the long-run, that is, year 4, innovation to LPDI accounts for 3.2% changes in LFREM whereas shocks to LFREM causes 81.5% variations of the fluctuation in LFREM (own shock). The results also indicated that shocks to LFAI, TOP, LFDI and LEXR explained 0.6%, 3.3%, 4.5%, and 7.1% variations of the fluctuation in LPDI, respectively.

Variance Decomposition of LFAI

From the results, in the short-run, precisely second year, shocks to LPDI account for 10.8% variation of the fluctuation in LFAI while shock to foreign remittance (LFREM) can cause 51.3% changes of the fluctuation in LFAI. Similarly, impulse to agricultural foreign aids (LFAI) can cause 33.3% variation of the fluctuation in LFAI (own shock), whereas innovation to TOP, LFDI and LEXR accounts for 1.42%, 1.9%, and 1.3%, variation of the fluctuation in LFAI, respectively. In the long-run, that is year 4, shock to LPDI account for 8.1% variation of the fluctuation in LFAI; whereas innovation to LFREM account for 55.9% changes of the fluctuation in LFAI. Furthermore, shock to LFAI can cause 22.8% variation of the fluctuation in LFAI (own shock), while impulse to TOP, LFDI, and LEXR can explain 2.6%%, 5.6%, and 5.1% variations of the fluctuation in LFAI respectively.

Variance Decomposition of TOP

In the short-run, year 2, the results showed that shocks to LPDI cause for 11.3% changes of the fluctuation in TOP while innovation to LFREM explains 2.9% variation of the fluctuation in TOP, and shock to LFAI can cause 6.9% changes in the fluctuation of TOP. Similarly, impulse to trade openness (TOP) causes 69.7% variations of the fluctuation in TOP (own shock); whereas impulses to foreign direct investment (LFDI) and exchange rate (LEXR) accounts for 4.7%, and 4.6% variations of the fluctuation in TOP, respectively. Again, in the long-run, the 4th year, the estimated results indicated that innovations to LPDI account for 9.8% variation of the fluctuation in TOP while impulse to LFREM explains 2.4% changes of fluctuation of TOP; and shock to LFAI can cause 14.5% variations of the fluctuation in TOP. Furthermore, shocks to TOP causes 52.3% variations of the fluctuation in TOP (own shock). In the same vein, innovation to LFDI and LEXR accounts for 9.4%, and 11.2%, variations of the fluctuation in TOP, respectively.

Variance Decomposition of LFDI

The short-run results, that is year 2, indicates that impulse to LPDI causes 0.32% changes of the fluctuation in LFDI while innovation to LFREM, LFAI, and TOP cause 29.2%, 30.5%, and 5.8% variations of the fluctuation in LFDI, respectively. Again, shock to LFDI can cause 25.4% changes in the fluctuation of LFDI (own shock) while shocks to exchange rate (LEXR) accounts for 8.8% variations of the fluctuation in LFDI. The long-run results, that is year 4, showed that innovation to LPDI account for 0.5% variations of the fluctuation in LFDI whereas impulses to LFREM, LFAI, and TOP accounts for 43.4%, 23% and 5.4% changes in the fluctuation of LFDI. Similarly, the results revealed that shocks to LFDI causes 20.4% variations of the fluctuation in LFDI (own shock), whereas impulse to LEXR account for 7.2% changes of the fluctuation in LFDI in the economy of Nigeria.

Variance Decomposition of LEXR

Finally, the short-run results, that is year 2, showed that innovation to LPDI explains 7.9% changes of the fluctuation in LEXR, while shock to LFREM, LFAI, TOP and LFDI accounts for 0.3%, 3.6%, 2.9% and 24.4% variations of the fluctuation in LEXR, respectively. Similarly, innovation to exchange rate (LEXR) can cause 60.8% changes in the fluctuation of LEXR (own shock) in Nigeria as a country. The long-run results, that are year 4, indicated that impulse to LPDI explains 5.8% changes of the fluctuation in LEXR while innovations to LFREM, LFAI, TOP and LFDI accounts for 0/3%, 4.9%, 2.1% and 29% changes in the fluctuation of LEXR, respectively. In the same vein, innovation to exchange rate (LEXR) causes 57.8% variations of the fluctuation in LEXR (own shock) in the economy of Nigeria.

Diagnostic Tests

The diagnostic tests were carried out to test for structural serial correlation, validity and stability in the parameters of the model used in the research; through the applications of LM serial correlation test, ARCH heteroscedasticity and CUSUM test as proposed by Pesaran and Pesaran (1997). The results are shown in Table 5 and the figures below.

Test	F-statistic	DF	p-value					
Breusch-Godfrey Serial Correlation LM Test	8.842844	2,24	0.8099					
Heteroskedasticity Test	1.782564	7,26	0.1337					
Ramsey RESET Test	0.474325	1, 25	0.4973					

Table 8: Post Estimation Test Results

The results of post estimation test in table 6 above revealed that there was no presence of serial correlation, because the probability value of F-statistic is higher than 5 percent level of significant. The Breusch-Pagan-Godfrey test of Heteroskedasticity also revealed that the residual is homoskedastic, because the probability of F statistic is higher than 5 percent level of significant. Similarly, the probability of Ramsey RESET Test is greater than 0.05 suggesting that the residual is normally distributed at 5 percent level of significant.

Policy Implications of the Results

The study evaluated the effect of remittance inflows on private domestic investment in Nigeria from 1986 to 2021, using the ARDL model. From the results, foreign remittances have positive and significant effect on private domestic investment both in the short-run and the long-run. Hence, it is estimated on the average that 1% rise in foreign remittances brought about 0.3% increase in private domestic investment in the short-run and 0.1% rise in private domestic investment in the long-run. In the same vein, the results showed that foreign remittances exert positive and significant impact on private domestic investment in both the short-run and the long-run periods. Similarly, the study averagely estimated that 1% increase in foreign aids brought about 0.01% improvement in private domestic investment of Nigeria in the short-run and 0.2% rise in the long-run in Nigeria.

V. Recommendations and Conclusion

Since the study showed that foreign remittances have positive and significant influence on private domestic investment in both the short-run and the long-run in Nigeria; government should engage in more bilateral agreement policies with the aim of encouraging more emigrants as that will promote foreign remittance inflows into the economy and hence, accelerates private domestic investment in domestic economy both in the short-run and the long-run. In conclusion, this acknowledged the importance of foreign remittances to private investment growth in the economy. As a result, it applied the autoregressive distributed lag (ARDL) model in the estimation of the variables including private domestic investment, foreign remittances, foreign aids, trade openness, foreign direct investment and exchange rate. The results showed that foreign remittances had positive and significant impact on private domestic investment in Nigeria. This study, well research has made it finding and adequate policy recommendations, hence, if this recommendation if adequately implemented, it is the belief of the study that it will go long way promoting the contribution of foreign remittances to private investment in the Nigeria domestic economy.

Sources: Researcher's computation from E-view 9