



REMITTANCES INFLOW AND EXCHANGE RATE MOVEMENT IN NIGERIA

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Abstract

This study analyzes the relationship between remittances and exchange rate movements in Nigeria from 1980 to 2021. It specifically examines the trends in remittances and exchange rates, and investigates the impact of remittance inflows on exchange rate fluctuations in the country. The importance of this research stems from the considerable inflow of remittances relative to the size of Nigeria's economy, which has led to several adverse effects, including the appreciation of the real exchange rate and the loss of competitiveness in the tradable sector. To evaluate the effect of remittances on the exchange rate, the study models the exchange rate as a function of remittance inflows, inflation, and economic growth. Data spanning from 1980 to 2023 was sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin and the National Bureau of Statistics (NBS). Diagnostic tests, including the Jarque-Bera test for normality and tests for multicollinearity, were conducted to assess the time series properties of the data. The analysis utilized the Fully Modified Ordinary Least Squares (FMOLS) technique. The findings reveal that economic growth has a significant positive effect on remittances ($\beta = 5.656290$, $t = 6.511424$, $p < 0.05$), while exchange rate movements ($\beta = -0.119294$, $t = -0.168559$, $p > 0.05$) and inflation ($\beta = 0.024494$, $t = 0.978400$, $p > 0.05$) have negligible and statistically insignificant effects on remittances. Overall, the results highlight that while economic growth significantly boosts remittances, the exchange rate and inflation do not have a meaningful impact on remittance inflows in Nigeria. The study recommends that the Nigerian government focus on reducing the cost of sending remittances to enhance their poverty-reducing potential and encourage a larger proportion of these remittances to flow through formal financial channels.

Keywords: Remittances, Exchange Rate, Economic Growth, Inflation, Nigeria.

Introduction

Remittances, which involve the transfer of funds from international migrants to their families back home, represent a significant source of external capital inflows, alongside foreign direct investment, foreign loans, and aid (Ahmad, Ahmad & Hayat, 2013). In some countries, remittances now surpass foreign direct investment and portfolio flows as a primary source of foreign currency (Keefe, 2014). These financial transfers contribute to poverty alleviation, improved healthcare, and educational access, serving as a catalyst for increased investment

and consumption in recipient economies (Ahmad, Ahmad & Hayat, 2013).

At the microeconomic level, remittances lead to a direct rise in household income, driving higher demand for goods and services. This demand, in turn, exerts inflationary pressure, particularly on the price levels of non-tradables (Roy & Rahman, 2014). Obstfeld and Rogoff (1996) argue that such positive resource transfers appreciate a country's real exchange rate, which diminishes global competitiveness. This dynamic suggests that resource inflows contribute to inflationary effects. The conversion of foreign exchange into local currency increases

the money supply, and if these inflows are not directed into productive investments, they can fuel inflation by stimulating consumption rather than capital investment. Moreover, remittances may also raise inflation through the creation of excess demand, boosted by an increase in real wealth (Roy & Rahman, 2014).

Furthermore, remittances can enhance foreign reserve accumulation, potentially leading to a surplus in the balance of payments. However, if central banks fail to sterilize the increase in foreign reserves, it may result in a monetary base expansion, causing real exchange rate appreciation and further inflationary pressures (Roy & Rahman, 2014). Large remittance inflows relative to a country's economy can lead to the overvaluation of the real exchange rate, reducing the competitiveness of the tradable sector (Hassan & Holmes, 2014). According to Rodrik (2007), this overvaluation, stemming from inflows, can distort long-term economic growth by causing inflationary pressure, a problem particularly prevalent in developing economies with weak institutions and market failures in tradable goods sectors (Roy & Rahman, 2014).

Exchange rate volatility significantly impacts domestic trade and investment, creating uncertainty for risk-averse importers and exporters. The level of development and the degree of dollarization in an economy may explain why some countries are more resilient to capital inflows and global market integration than others. Access to global capital markets is often determined by a country's debt repayment capacity, with institutional quality playing a crucial role (Keefe, 2014). Over the past two decades, developing nations have witnessed a surge in remittance inflows, particularly those that export labor (Ahmad, Ahmad & Hayat, 2013).

In 2019, Nigeria, the largest remittance recipient in sub-Saharan Africa, received \$25.08 billion in remittances (World Bank, 2020). This influx exposes the economy to the risks of exchange rate fluctuations, further contributing to volatility in both real and nominal exchange rates (Keefe, 2014).

In Nigeria, remittances form a significant portion of total foreign inflows. During times of international crisis, when national reserves decline, remittances help stabilize investor confidence and directly stimulate demand for goods and services. However, the disproportionate size of remittance inflows relative to the Nigerian economy has led to some adverse consequences, such as real exchange rate appreciation and a loss of competitiveness in the tradable sector (Hassan & Holmes, 2014).

Existing literature on the effects of remittance inflows primarily addresses issues of inflation, Dutch Disease, and terms of trade (Adedoyin, Alimi & Olanrewaju, 2021; Akhtaruzzaman, Sadeque & Siddique, 2019; Anjum, Aziz & Mushtaq, 2020). Adelman and Taylor (1992) highlighted that remittances affect exchange rates both directly and indirectly through their impact on aggregate demand. The direct effect stems from increased consumption, which generates inflationary pressures. Despite these findings, empirical studies on the relationship between remittances and exchange rate movements in Nigeria remain scarce.

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Objectives of the Study

The broad objective of this study is to examine the effect of remittances on exchange rate movement in Nigeria. The specific objectives are to:

- a. Analyse the trend of remittances and exchange rate in Nigeria.
- b. Examine the dynamic effect of remittances on exchange rate movement in Nigeria.

Understanding how remittances impact the movement in exchange rates is an important step forward in establishing the role remittances play in financial development. In Nigeria economy with high levels of partial dollarization, dependence on both foreign and local currency may translate to greater sensitivity of exchange rates to changes in foreign currency inflows. Thus, this study fosters the understanding of the exchange rate channels through which remittances impact on Nigerian economy and assist in the development of policies maximizing benefits of these income inflows.

Literature Review

Remittances refer to the transfer of funds from international migrants to their families in their home countries, representing a crucial source of external capital inflows, alongside foreign direct investment, loans, and aid (Roland & Mahalia, 2008). These unrequited transfers are distinct from other capital inflows, as they primarily serve the purpose of supporting family members (Barbone et al., 2012). Migrants may remit

funds for both altruistic reasons, helping their families, or for self-interest, diversifying their savings (IMF, 2005). Magnusson (2009) defines remittances as a portion of migrant workers' earnings sent back to their home countries to support families, which is different from other forms of financial transfers like foreign investments or aid (International Organization for Migration, 2011). The two primary approaches to remittance analysis are the portfolio and altruism approaches. The portfolio approach views remittances as a self-interest-driven capital transfer aimed at diversifying a migrant's savings, while the altruism approach focuses on transfers made without expectations from the recipient (IMF, 2005).

Exchange rates, defined as the value of one currency relative to another (Ngerebo & Ibe, 2013), reflect the link between domestic and foreign prices. Ozturk (2006) describes exchange rate movement as the persistent fluctuations in currency values, often resulting in depreciation of the domestic currency, which adds uncertainty to profitability for importers and exporters. Exchange rate volatility, defined as the day-to-day or month-to-month variations in currency values, is an important risk indicator in economic markets (Marston et al., 1988). Higher volatility in exchange rates typically increases the risk associated with foreign trade and investment.

Several migration theories are integral to understanding remittances, with Ravenstein (1889) pioneering the push-pull theory, suggesting that migration is driven by unfavorable conditions in the home country (push factors) and favorable conditions in the destination country (pull factors). The Neo-classical theory, based on Harris and Todaro's (1970) work, posits that migration decisions are made to maximize individual utility, with wage differences between countries being a key driver. In contrast, the segmented labor market theory emphasizes the role of demand-driven factors

within advanced economies for both skilled and unskilled workers, underscoring institutional and social factors (Piore, 1979; Castle & Miller, 2009). The monetary approach, particularly through Purchasing Power Parity (PPP), links exchange rates to shifts in money supply (Gbosi, 2003).

Studies on remittances' impact on exchange rates show varied results. Akhtaruzzaman, Sadeque, and Siddique (2019) found that remittance inflows led to short-term currency appreciation in Bangladesh, though long-term effects were insignificant. Similarly, Anjum, Aziz, and Mushtaq (2020) reported that remittances positively influenced exchange rates in the short run in Pakistan, but with negligible long-term effects. Zilberman et al. (2022) reached similar conclusions for Ethiopia, suggesting that remittances in the short term contribute to currency appreciation. Research by Gazi and Mark (2010) confirmed a modest but significant long-term relationship between remittances and the real exchange rate in less-developed countries, identifying a "Dutch disease" effect where large remittance inflows lead to currency overvaluation. Helena (2014) found that the impact of remittances on exchange rate volatility varied based on the degree of dollarization, with dollarized economies being more vulnerable to exchange rate fluctuations, which could destabilize their financial systems. In contrast, remittances provided a stabilizing effect by buffering the economy against capital flow reversals.

In Nigeria, studies such as those by Adedoyin, Alimi, and Olanrewaju (2021) have shown that remittances significantly reduce exchange rate volatility, while others, like Adeleye, Adeleye, and Adeyemi (2020), found that remittances positively impacted the Nigerian exchange rate in the long run.

Olanipekun and Babalola (2020) also observed that remittances had a positive and significant effect on exchange rates in Nigeria. Studies by Olusanya and Adeniyi (2019) and Ayadi and Ogunjobi (2021) corroborate these findings, showing that remittances alleviate exchange rate volatility in Nigeria. Mbutor (2010) explored the role of monetary policy in enhancing remittances for economic growth, emphasizing that exchange rate depreciation negatively impacted remittances. Akpan, Okon, and Udoka (2014) found that remittances positively correlated with agricultural productivity indices, although there was no significant relationship with agricultural GDP. Similarly, the Granger causality test revealed that agricultural GDP had a unilateral relationship with remittance inflows. These findings illustrate that while remittances contribute to economic growth and stability, their effects on exchange rates and broader economic variables require careful policy consideration to maximize benefits.

Methodology

This study adopts the descriptive survey research design. The choice of this type of research design is because it does not involve experimental manipulation on to groups, as in experimental research. This method requires the description of the phenomenon being studied by addressing the question of what are the characteristics of the phenomenon under study. The description of data was carried-out through graphical presentations, descriptive statistics and the estimated parameters of the model for the study generated from the results.

This study is anchored on flexible exchange rate theory on the co-movements of real exchange rates and long-term real interest rates over the modern (post-March 1973) flexible exchange rate experience. The real exchange rate, qt , can be defined as:

$$q_t = e_t - p_t + p_t^* \quad (1)$$

where e_t is logarithm of nominal exchange rate (domestic currency per foreign currency unit) and p_t and p_t^* are the logarithms of domestic and foreign prices (Meese and Rogoff, 1988). Three assumptions are made: first, that when a shock occurs, the real exchange rate returns to its equilibrium value at a constant rate; second, that the long-run real exchange rate, $\hat{q}_t$ is a non-stationary variable; finally, that uncovered real interest rate parity (UIP) is fulfilled:

$$E_t(q_{t+k} - q_t) = R_t - R_t^* \quad (2)$$

Where R_t^* and R_t are respectively, the real foreign and domestic interest rates for an asset of maturity k . Combining the three assumptions above, the real exchange rate can be expressed in the following form:

$$q_t = -\delta(R_t - R_t^*) + \hat{q}_t \quad (3)$$

where δ is a positive parameter larger than unity. This leaves relatively open the question of which are the determinants of $\hat{q}_t$ that is non-stationary variable. The variables identified in this framework are real exchange rate p_t , domestic and foreign prices p_t^* , real foreign R_t^* and domestic interest rates R_t (Meese and Rogoff, 1988).

To model the relationship between remittances and exchange rate in Nigeria as set out in the objective, the study rely on evidence from the theoretical framework and the study conducted by Mbutor (2010) on the role of monetary policy in enhancing remittances for economic growth where remittance inflow was the dependent variable and Gross Domestic Product, inflation, exchange rate, deposit rate and treasury bills were the explanatory variables. In line with the objective of this study, remittances serves as the dependent variable while exchange rate, inflation and gross domestic product are the explanatory variables. The model is specified as follows:

$$REM = f(EXR, INFL, RGDP) \quad (4)$$

Where: REM is remittances flows; EXR is exchange rate; INFL is inflation, RGDP is economic growth. Putting in linear form, the model can be re-written as;

$$REM = \beta_0 + \beta_1 EXR + \beta_2 INFL + \beta_3 RGDP + \mu_i \quad (5)$$

β_0 = the interception of the model

β_1 , and β_2 , = the coefficient of the independent variables

μ_i = Error term (stochastic term) assumption to be normally distributed in zero and constant variance.

The study utilised annual time series data covering forty two (42) years period from 1980 to 2023. The choice of the base year (1980) and end of period (2023) is premised on the capture the periods of major policy reforms episodes that led to significant changes in exchange rate and the domestic price level. Among these are the oil shocks of the 1970s and recession of the early 1980's, the post-1986 Structural Adjustment Program (SAP) of 1986-1994 aimed at setting the economy on the path of sustainable growth and development and the years of economic reforms: 1999-2023. The data used for analysis are compiled from the Central bank of Nigeria Statistical Bulletin and National Bureau of Statistics.

This study adopts the fully modified ordinary least square method in its estimation (FMOLS). Fully modified least squares (FM-OLS) regression was originally designed in work by Phillips and Hansen (1990) to provide optimal estimates of cointegrating regressions. The method modifies least squares to account for serial correlation effects and for the endogeneity in the repressors that result from the existence of a cointegrating relationship. The resulting FMOLS regressions are shown to have some interesting properties. For example, when there is some cointegration in the system, FMOLS estimation has a limit theory that is normal for all of the stationary coefficients and mixed normal for all of the nonstationary coefficients. Thus,

there are no unit root limit distributions even in the case of the unit root coefficient sub-matrix. Moreover, optimal estimation of the cointegration space is attained in FMOLS regression without prior knowledge of the number of unit roots in the system, without pretesting to determine the dimension of the cointegration space and without the use of

restricted regression techniques like reduced rank regression.

Results

The result of the Jarque-Bera test of normality for the descriptive evaluation of the data to establish the nature of the distribution of the data is presented in Table 1.

Table 1: Descriptive Statistics

	REM	EXR	INFL	RGDP
Mean	6.29E+09	2.240278	19.34444	30237.14
Median	1.11E+09	2.075000	12.21000	22060.99
Maximum	2.14E+10	5.240000	72.73000	69023.93
Minimum	2000000.	1.920000	3.230000	13211.00
Std. Dev.	8.77E+09	0.592759	17.31618	17307.46
Skewness	0.877041	3.945051	1.609073	0.976928
Kurtosis	1.846418	19.64729	4.577906	2.583250
Jarque-Bera	6.611333	509.0787	19.26938	5.986846
Probability	0.036675	0.000000	0.000065	0.050116
Sum	2.26E+11	80.65000	696.4000	1088537.
Sum Sq. Dev.	2.69E+21	12.29770	10494.76	1.05E+10
Observations	42	42	42	42

Source: Author, 2025

The result of the descriptive analysis presented in Table 1 shows that all the variables are positively skewed since their means are greater than their medians. The Table also shows that exchange rate and inflation are not symmetrical because their skewness coefficient is greater than one except for remittances and economic growth. The positive values of the kurtosis of all the variables established the fact that the variables are leptokurtic in nature. The values of the

Jarque-Bera statistic show that all the series are normally distributed since the p-values of each of the variables are statistically significance at 5% level of significant. Hence, the result shows that remittances, exchange rate, inflation and economic growth are not normally distributed.

The result of the multicollinearity tests using correlation matrix to detect whether the variables are multicorrelated is presented as follows:

Table 2: Correlation Analysis Matrix

	REM	EXR	INFL	RGDP
REM	1			
EXR	-0.245270	1		
INFL	-0.342355	-0.066461	1	
RGDP	0.936031	-0.234013	-0.333312	1

Source: Author, 2025

The correlation analysis of the variables of estimates is to detect whether the variables have very strong association which occurs when the result of the correlation coefficient is above 0.95 (Iyoha, 2004). The results of the correlation analysis as presented in Table 2 shows that the correlation coefficients for the relationship among the variables remittances, exchange rate, inflation and economic growth are below 0.95 indicating the absence of the

problem of multicollinearity among the independent variables. The result also shows that the relationship between exchange rate, inflation and remittances are all negative while the relationship between economic growth and remittances is positive.

The trend of remittances and exchange rate in Nigeria as stated in the first objective is presented using the line graph as follows:

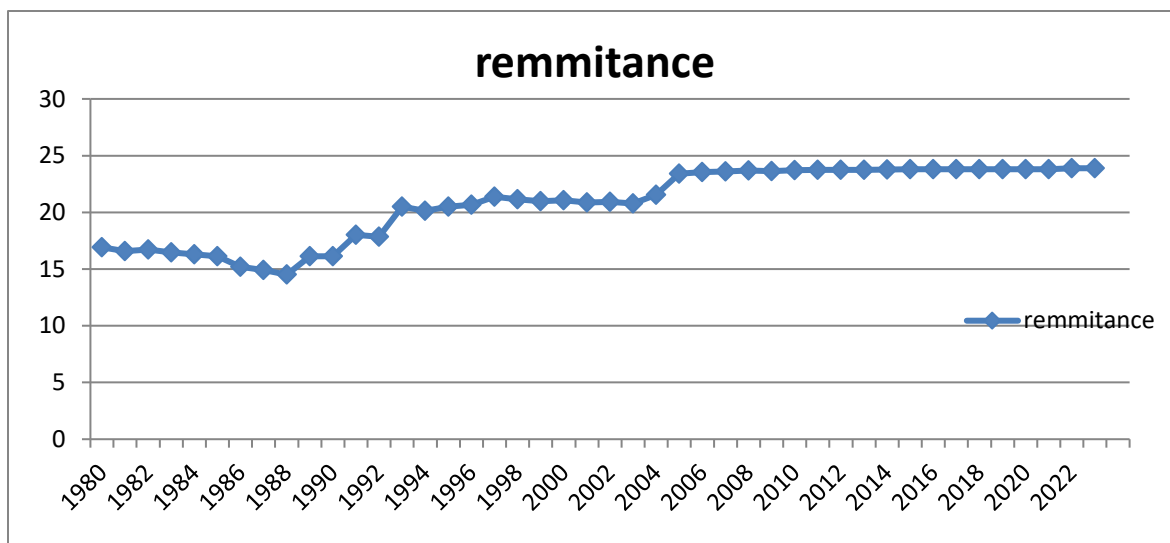


Figure 1: Remittance Received in Nigeria 1980-2023

Source: Author, 2025

The trend analysis of remittances as shown in Figure 1 shows a very poor growth in the amount of remittances flowing into the country. The trend of remittances shows that

between 1980 and 1998 remittances flow decline while the flow increase between 1989 to 2005 but thereafter the trend remains constant from 2006 to 2023.

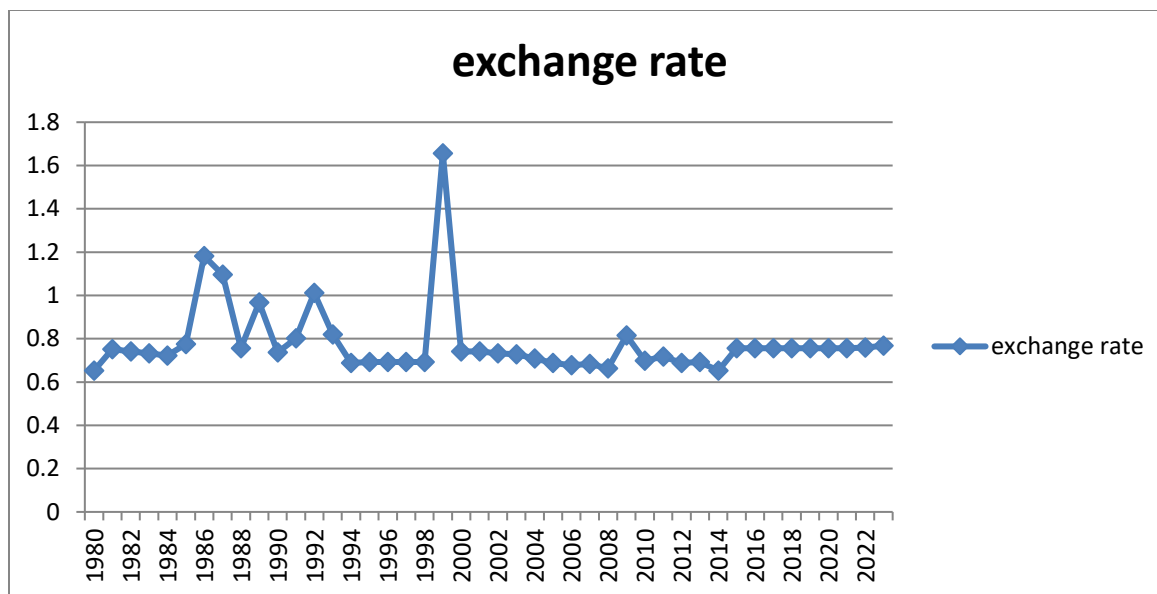


Figure 2: Exchange Rate from 1980-2023

Source: Author, 2025

The trend analysis as shown in Figure 2 shows that exchange rate in Nigeria has been moving upward and downward over the period which confirmed high level uncertainty in foreign exchange market.

The second specific objectives of the study are to determine the effect of exchange rate on remittances in Nigeria. The result of Fully Modified Least Squares (FMOLS) regression is presented in Table 3:

Table 3: Fully Modified Least Squares (FMOLS) Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EXR	-0.119294	0.707727	-0.168559	0.8672
INFL	0.024494	0.025034	0.978400	0.3355
RGDP	5.656290	0.868672	6.511424	0.0000
C	-37.70947	9.671131	-3.899179	0.0005
R-squared	0.809503			
Adjusted R-squared	0.791067			
Long-run variance	5.516060			

Dependent Variable: REM

Source: Author, 2025

The result as presented in table 3 on the basis of student t-test of significance of the parameter estimates indicates that economic growth ($\beta=5.656290$, $t=6.511424$, $p<0.05$) exert a significant positive effect on remittances in Nigeria while exchange rate ($\beta = -0.119294$, $t=-0.168559$, $p>0.05$) showed a negative insignificant effect on remittances. However,

inflation ($\beta=0.024494$, $t=0.978400$, $p>0.05$) showed a positive insignificant effect on remittances.

In line with a priori expectation the effect of economic growth on remittances is positive, that is a unit increase in economic growth bring about 566% increase in remittances in Nigeria respectively. In line with

a priori expectation the effect of exchange rate on remittances was negative, that is a unit increase in exchange rate on the average brings about 12% decrease in remittances in Nigeria. The effect of inflation on remittances was positive against a priori expectation, that is a unit increase in inflation on the average brings about 2% increases in remittances in Nigeria.

Summary, Conclusion and Recommendations

The result of the analysis at using the line graph shows that over the entire period there is a significant variation in the trend of remittances and exchange rate in Nigeria. The Fully Modified Least Squares result shows that economic growth ($\beta=5.656290$, $t=6.511424$, $p<0.05$) exert a significant positive effect on remittances in Nigeria while exchange rate ($\beta=-0.119294$, $t=-0.168559$, $p>0.05$) showed a negative insignificant effect on remittances. However, inflation ($\beta=0.024494$, $t=0.978400$, $p>0.05$) showed a positive insignificant effect on remittances.

By and large the result established that while economic growth exerts a significant positive effect on remittances in Nigeria, exchange rate and inflation do not show any effect on remittances in Nigeria. This result corroborated the findings in the study conducted Gazi and Mark (2010) on the long-run relationship between remittances and the real exchange rate for less developed countries using a panel cointegration approach. The study finds a small inelastic, but significant, long-run relationship which confirms a “Dutch disease” type effect. Short-run confirmation is given by a panel error correction model. Potential asymmetries in this relationship are explored using quantile regression analysis. The result was also in line with the findings of Helena, (2014) on the impact of remittances on exchange rate volatility and inflation volatility in dollarized economies. This study finds that

the impact of remittance inflows on the size of short term movements in exchange rates depend on the level of dollarization and development in the economy. Countries with high levels of partial dollarization are vulnerable to drastic exchange rate fluctuations that can have destabilizing effects on the local financial system and domestic economy.

The result of the analysis which showed that exchange rate does not have a significant effect on remittance indicates that remittances flow to the Nigeria economy is not influence by the volatile Naira exchange rate. This by and large, implies that remittances in Nigeria which is expected to directly stimulates demand for other goods and services has not been able to achieve such objective in the country despite the large inflow of remittances relative to the size of the recipient economy, its flows has come with undesirable consequences including real exchange rate appreciation and loss of competitiveness in the tradable sector of the economy.

By and large the result established that economic growth exerts a significant positive effect on remittances in Nigeria, exchange rate and inflation do not show any effect on remittances in Nigeria. Thus, it implies that remittances in Nigeria which is expected to directly stimulates demand for other goods and services has not been able to achieve such objective in the country despite the large inflow of remittances relative to the size of the recipient economy, its flows has come with undesirable consequences including real exchange rate appreciation and loss of competitiveness in the tradable sector of the economy.

Following the empirical findings, the following recommendations are made for effective policy formulations.

- a) Central Bank of Nigeria (CBN) needs to develop a strategy to maximize the benefits of remittances while minimizing their negative repercussions.
- b) Governments need to reduce the cost of sending remittances. Lowering the transactions costs of remittances will help to increase the poverty-reducing impact of international remittances and will also encourage a larger share of remittances to flow through formal financial channels. There is no doubt that reducing the costs of sending remittances would increase the disposable income of migrants' families and encourage them to use the official banking channels.
- c) There is a need to improve data on remittances, and the regulation of money transfer companies, broaden access of population to financial services by developing new products for households receiving remittances on a regular basis, etc.

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