

The Impact of Remittance on Economic Growth and Unemployment in Nigeria, An Application Ardl Model

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Abstract

Remittances play an increasingly important role in the economics of many nations, contributing to economic growth and the well-being of less fortunate individuals, so that This study investigates the impact of remittance on economic growth and unemployment in Nigeria. In this study, all the data was collected from World Bank. And the paper is the secondary data together with an annual data from 1991 to 2020 for Nigeria which were used in this analysis. According to the review of the relevant literature, several studies have been used in Autoregressive Distributed Lag (ARDL) to determine the connection between variables. In this study, we analysed the data using the same model. We adopted the Autoregressive Distributed Lag (ARDL) model to determine the connection between the variables in this study. In this paper, we concluded that the unemployment of the explanatory variable has a negative and significant impact on economic growth at 1% significance in the long run. In comparison, the interaction effect of the remittance and unemployment has a positive and insignificant influence on economic growth at a 1% significance level in the long run. Also, there is insignificance and negative effect of Government expenditure on the economic growth in Nigeria. In contrast, the labor force has a negative and significant impact on dependent variables. The blue line in the stability test does not cross the boundary, indicating that the coefficient is stable at 5% based on the CUSUM test. We found that the interaction effect of remittance and unemployment has a positive and insignificant impact on economic growth at a 1% level of significance in the long run, which means that if the interaction of unemployment and remittance increases by 1 percent then economic growth will increase by 11% in the long run.

Keywords: Remittance, Economic Growth, Unemployment, ARDL.

Introduction

Remittances play an increasingly important role in the economics of many nations, contributing to economic growth and the well-being of less fortunate individuals. According to available estimates, the global population of international migrants increased from around 75 million in 1960 to a little over 190 million in 2005 (World Bank, 2006). Global remittances are expected to hit \$514 billion in 2012, up from \$132 billion in 2000. Despite financial crises

and economic downturns, the consistency of remittance flows makes them solid cash resources for developing nations. Remittances may alleviate issues beset developing countries, including credit market failures, income and opportunity disparity, income volatility, and poverty. Since 2000, remittances to underdeveloped nations have more than doubled. According to the World Bank's Migration and Development Brief, officially registered remittances to developing countries increased by 5.3% over 2011 levels, reaching an estimated \$401 billion in 2012. (World Bank, 2013).

Due to its size and significance in the global economic system, remittance is a novel phenomenon in the global financial system. In 2009, remittances accounted for 0.31 percent of the world's gross domestic product, according to data from the World Bank (2011). The effect of remittances on the economic system is more significant in developing nations since they receive around 74 percent, or \$307.1 billion, of the total N416 billion in remittances. In addition, 27 percent of a developing country's gross domestic product is remittances. Due to these factors, academics from over the globe have investigated many aspects of remittances with great interest. The motive for remittance, the cost of remittance, the influence of remittance on inequality and poverty, the impact of remittance on economic development, etc., have all been the subject of research. The entire amount of remittances to Nigeria in 2011 was \$10.681 billion, up from \$1.392 billion in 2001, reflecting an increase of almost 767 percent in ten years. In 2011, remittances accounted for around 5% of Nigeria's GDP.

The above circumstances demanded an investigation into the effect of remittances on Nigeria's economic development. Current papers on remittances pertaining to Nigeria include: (Osili, 2004), which examined remittance and saving among Nigerian migrants in Chicago using a matched sample; (Mbutor, 2010), which examined the impact of monetary policy on remittances in Nigeria; and Oke et al. (2011), which examined the effect of workers' remittances on the financial development of Nigeria (Babatunde and Martinetti, 2010)

Table1

Central Bank of Nigeria

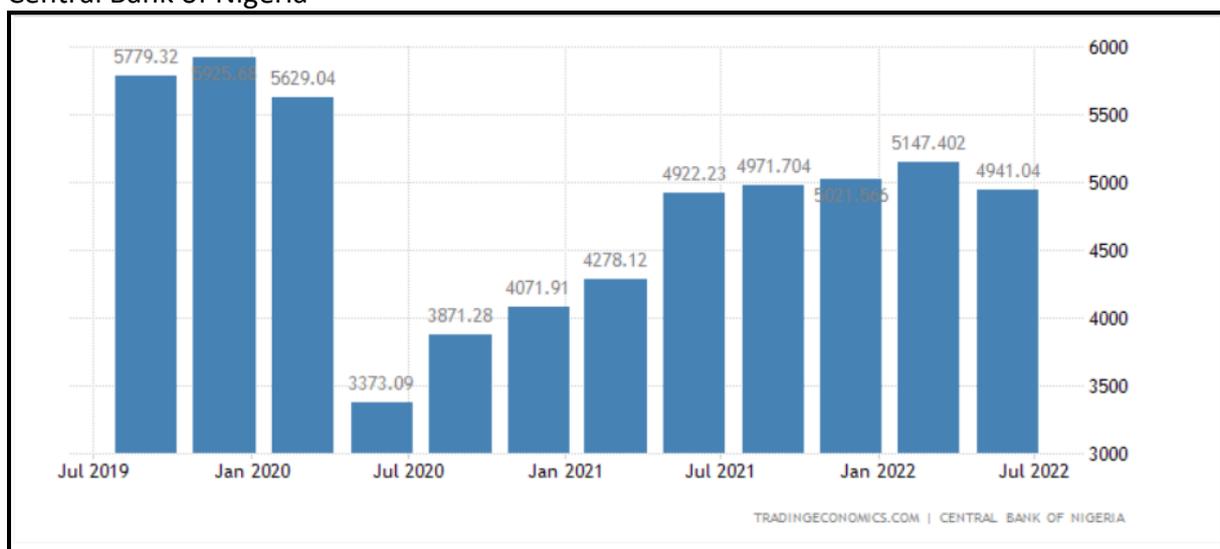


Figure 1. Remittance in Nigeria

In the second quarter of 2022, remittances in Nigeria declined from 5147.40 USD Million in the first quarter of 2022 to 4941.04 USD Million.

Despite the downturn linked to the global financial crisis, remittances to sub-Saharan Africa have been growing. It is anticipated that the area received around \$31 billion in remittances in 2012. Kingdon and Knight (2007) identified several social and economic consequences of unemployment, including the depletion of a nation's human resources, social isolation, strikes, violent crime increases, and death rate. Increasing poverty and economic inequality can also be cited as significant effects of unemployment on a nation. In addition, Akpakpan (1999) pointed out that unemployment insurance might not cover the actual cost of unemployment. Human capital is a significant resource in any country, according to him. Therefore, this resource is lost if the economy fails to create enough employment for those eager to work. Lost are all potential items and services that customers might have loved. Thus, it is crucial to understand the relationship between unemployment and economic growth to formulate and implement policies stimulating economic growth (Ojima and Ojima, 2019). Moreover, several empirical studies have revealed a negative association between unemployment and economic growth; therefore, it is crucial to consider this factor. Therefore, this case study examines the link between unemployment and economic development in a developing country, Nigeria.

The unemployment rate jumped from 23.1% in the third quarter of 2018 to 27.1% in the second quarter of 2020, according to the National Bureau of Statistics (2020). In addition, the proportion of underemployment in Nigeria is anticipated to reach around 28.6% by the year 2020, bringing the overall unemployment and underemployment rate in Nigeria to 55.7%, or over 21.7 million jobless Nigerians. The nation's unemployment rate is high, requiring effective government programs and policies to combat the problem.

Thus, this study discusses the following issue: First, following the introduction, the second section discusses the definitions and categories of unemployment and also the theory of remittance, as well as the objective of the study. In section three, the idea of unemployment and empirical literature is provided. Section four talks about the methodology and source of data are mentioned. Next, the study's findings and, later on, conclusions are generated about the issue based on our understanding.

This research seeks to investigate the impact of remittances on economic growth and unemployment in Nigeria can be framed as follows: Despite being a significant source of foreign income for Nigeria, the relationship between remittances and economic development and unemployment remains unclear. There is a need to examine how remittances contribute to economic growth and reduce unemployment in Nigeria and identify any barriers that may limit their positive impact. The research aims to answer questions such as: What is the relationship between remittances and economic growth and unemployment in Nigeria? How do remittances impact GDP and job creation in Nigeria? What factors affect the relationship between remittances, economic growth, and unemployment in Nigeria?

Literature Review

Most of the present research on workers' remittances follows two major themes. While some researchers have focused on the determinants of remittance inflows (Aydas et al. 2005; Gupta, 2005; Alleyne, 2006; Hagen and Siegel, 2007) have investigated the macroeconomic impact of remittances on economic development (Chami et al., 2003; Siddique et al., 2010). Methodologically speaking, according to Adolfo et al. (2009), there are two types of studies on the growth impact of remittances. Initially, the influence of remittances on growth is explored in the traditional literature on cross-country growth using cross-section or panel

data. The second research category examines mechanisms via which remittance inflows may impact a country's economic development.

However, the net macroeconomic effect of remittances on the economy of recipient nations is uncertain. Even when the emphasis of economic analysis switches from the short term to the long term. Literature on the economic impact of remittances on a host country's long-term economic growth reveals a diversity of views about the effects of workers' remittances, giving inconclusive findings. While some studies have highlighted the positive impact of remittances on economic growth in the home country of expatriate workers (Chami et al., 2003; Fayissa and Nsiah, 2010; Mim and Ali, 2012), others have reported a negligible or even negative impact of remittances on the long-term economic growth of the home country (Jongwanich, 2007; Sufian, 2009; Siddique et al., 2010).

Amassoma and Nwosu (2013) investigated the influence of unemployment on product development in Nigeria using secondary data from 1986 to 2010 using Error Correction Model (ECM) and Cointegration Technique. ECM discovered no significant relationship between Nigeria's unemployment rate and productivity growth. Ozei et al. (2013) used secondary data to evaluate the association between unemployment and economic development in G7 nations from 2000 to 2011. The study discovered a negative and substantial link between economic growth, productivity, and unemployment during the recession. However, following the crisis, it was determined that the influence of productivity on unemployment was negligible, although the impact of economic growth on unemployment remained considerable and robust.

Similarly, Pierdzioch et al. (2011) demonstrate the relationship between unemployment and economic development in G7 nations using secondary data from 1989 to 2007. The study's findings confirmed the unity between these variables and Okun's rule. In other words, a negative correlation was found between economic growth and unemployment. The conclusion was corroborated by Abrams and Wang (2006), who analysed 20 OECD nations from 1970 to 1999.

Recent study in Nigeria on the impact of remittances on economic growth finds significant positive consequences. The study provides empirical evidence that international remittance inflows are one of the most significant macroeconomic variables that significantly boost economic development in a developing nation like Nigeria. Akonji and Wakili (2013) examined the impact of remittances on economic growth utilising the unrelated regression (SUR) method and Error Correction Model. In addition, the analysis revealed a significant relationship between net remittances and economic growth. Using cointegration and causality analyses, Akinpelu et al. (2013) evaluate the impact of remittance inflows on Nigeria's economic development in this study. According to the findings of the study, there is a long-term equilibrium relationship between the variables employed.

Economists and scholars have extensively researched the influence of remittances on Nigeria's economic development and unemployment rate. Multiple studies have determined that remittances have a favorable effect on both economic growth and unemployment in Nigeria.

Muhammad et al. (2019) utilised the autoregressive distributed delay model to analyse the effect of migrant remittances on Pakistan's economic development between 1976 and 2016. (ARDL). Using the ARDL method, workers' remittances to the Pakistani economy were studied. Foreign direct investment, remittance inflow, and gross domestic product all have a positive effect on Pakistan's long-term economic growth, however consumption and inflation have a negative effect. They advocated that politicians encourage migrants to move funds through

appropriate networks and invest in successful ventures to stimulate economic expansion. From 1980 to 2015, Adigun and Ologunwa (2017) evaluated the effect of remittances on Nigeria's economic growth. The result suggests a link between remittances and economic growth, given that they help individuals finance consuming, expenditure, and investment. For the sake of the home economy, their research advised that remittance beneficiaries invest more than they consume.

Sebil and Abdulazeez (2018) analysed the impact of remittances on Nigeria's economic growth between 1981 and 2011. Remittances were used as an indicator of dependent variables, whilst trade openness, foreign aid, and foreign direct investment served as indicators of economic development. The results revealed that remittances had a substantial effect on Nigeria's economic growth. As a growth strategy, they underlined that the government should enact more effective policies that enhance the remittance transfer channel, aid flows, and foreign direct investment.

Nyeadi and Atiga (2014) identified the following when investigating the connection between remittances and economic development in Ghana. In this study, Granger's causality test and cointegration under the auto-regression vector are utilised (VAR). The findings revealed a significant association between remittances and economic growth in Ghana. They observed that remittances had minimal effect on economic growth, whereas economic growth had no effect on remittances. In addition, they admitted that remittances had contributed greatly to the well-being of migrant families. Danmola et al. (2013) examine the remittances and economic growth of Nigeria. In the study, the error correction model was utilized. The outcome demonstrated that remittances strongly correlated with Nigeria's economic growth. They determined that cash should be transmitted through official channels and utilized for investment objectives to support the country's economic growth and development.

For instance, remittances positively influence economic growth in Nigeria by increasing household consumption and investment. In addition, the study discovered that remittances could assist in reducing unemployment by providing jobs and encouraging entrepreneurship. According to the second research by Adelegan (2011), remittances positively affect economic growth and employment in Nigeria. The study indicated that remittances benefit the economy by raising household consumption and investment and creating jobs through entrepreneurship and small company development.

Theory of Remittance

Theory of Remittance, the motivations for sending money home by immigrants may be categorized into two major categories: altruism and self-interest (Lucas and Stark, 1985). These two categories may be subdivided further into altruism, exchange, insurance, investment, inheritance, and strategic motivation. Altruism is the primary reason why immigrants send money home, according to (Lopez – Cordova and Olmedo, 2006). This is a circumstance in which the transfer does not imply any current or future compensation, nor does it include any compensation at all.

Constitute payment for any prior obligation. According to Lucas and Stark (1985), the remitter draws value from the well-being of receivers at home, and both the volume of remittance and the income are adversely affected. Chipeta and Kachaka's (2004) found that generous incentives inspire remittances in Malawi provide weight to this theory. A remitter's generous action may be motivated by a desire to mitigate against poverty, poor earnings, shocks, and drought, all of which negatively impact the family's well-being. The exchange motivation for remittances is sending money for services performed, such as caring for the immigrant's

children, residence, or property, or for the repayment of a loan taken out by the immigrant to finance their migrating expenses or studies, etc. The household survey conducted by (Cox and Cheyne, 1998) showed evidence compatible with trade motivation.

Multiple research projects provide abundant evidence that remittances are used for investing purposes. According to studies done in Mexico (Woodruff and Zenteno, 2001), remittances financed almost one-fifth of the capital invested in 6,000 urban micro firms. Families in the Philippines that received remittances and benefited from exchange shock worked longer hours in self-employment and were more likely to initiate capital-intensive entrepreneurial projects, according to research by Yang (2008). Osili's (2007) analysis of 112 Nigerian migrant households in Chicago and a matched sample of 61 families in Nigeria revealed that one-third of remittances were spent on property investment in the preceding year (2004). Further, she contends that migrant housing investment positively impacts macroeconomic variables such as inflation, the real exchange rate, and political stability.

After the literature mentioned earlier, not many studies have investigated the impact of remittance and unemployment on growth using direct and indirect effect. Therefore, this study attempts to see the interaction effect of remittance on growth through the channel of unemployment. This is because many studies argued that, remittance deteriorate job participation in the receiving countries. People receive free money as remittance, leads them to stop searching for jobs and only depends on the remittance inflow from their relatives.

Materials and Methods

In this study, all the data was collected from World Bank. And the secondary data and annual data from 1991 to 2020 for Nigeria were used in this analysis. According to a review of the relevant literature, several studies have used Autoregressive Distributed Lag (ARDL) to determine the connection between variables. In this study, we analyzed the data using the same model. We adopted the Autoregressive Distributed Lag (ARDL) model to determine the connection between the variables in this study. We list the variables and dates in the following table.

Model Specification

This study has used the following model in order to explain the factors affecting GDP in Nigeria. The model below is augmented from Asad et al. (2016) with some modification as shown below:

$$lGDP_t = \beta_0 + \beta_1 lUNE_t + \beta_2 lLF_t + \beta_3 lGOVE_t + \beta_4 lREM_t + \beta_5 lINT_t + \mu_t \quad (1)$$

While GDP denotes GDP growth of Nigeria, UNE is the unemployment, LF represents labor force, GOVE is government expenditure, REM is remittance, INT is the interaction term between unemployment and remittance, and μ is the error term.

The short run and long run effect of remittance and unemployment on GDP is stated below in Eq(2):

$$\begin{aligned} \Delta \ln GDP_t = & \beta_0 + \beta_1 \sum_{i=1}^p b_i \Delta \ln GDP_{t-1} + \beta_2 \sum_{i=1}^p c_i \Delta \ln REM_{t-1} + \beta_3 \sum_{i=1}^p d_i \Delta \ln UNE_{t-1} \\ & + \beta_4 \sum_{i=1}^p e_i \Delta \ln INT_{t-1} + \beta_5 \sum_{i=1}^p f_i \Delta \ln X'_{t-1} + \beta_6 \ln REM_t + \beta_7 \ln UNE_t \\ & + \beta_8 \ln INT_t + \beta_9 \ln X'_t \\ & + \mu_t \end{aligned} \quad (2)$$

ARDL and Data Source

Two very important tests for stationary are Augmented Dickey Fuller (ADF) test and Philip Perron (PP) test. The ADF test is used to check the stationary of the variables and used for order of integration of the variables. This test uses extra lagged of the time series data to get rid of the autocorrelation in the residuals, and the lag length is determined by Akaike Information Criterion (AIC) or with Schwartz Bayesian Criterion (ABC) (Ahmad, 2012).

The ADF unit root test is based on the below equation of first difference and without intercept and trend:

$$\Delta Y_t = \rho Y_{t-1} + \sum_{i=1}^p B_i \Delta Y_t + \varepsilon_t$$

The below equation is with intercept:

$$\Delta Y_t = \alpha + \rho Y_{t-1} + \sum_{i=1}^p B_i \Delta Y_t + \varepsilon_t$$

Where the following below equation with intercept and trend (T):

$$\Delta Y_t = \alpha + \rho Y_{t-1} + \gamma T_{t-1} + \sum_{i=1}^p B_i \Delta Y_{t-i} + \varepsilon_t$$

This study applies the ARDL approach as proposed by Pesaran and Shin (1999) and extended by Pesaran et al. (2001). There are bunch of reasons for the adoption ARDL. Mainly, the conventional Johanssen cointegration method uses a system of the equation to estimate the long-run relationship, while ARDL employs a single reduced form equation. Therefore, ARDL approach is an estimator that help to avoid the problem associated with the estimation of short time-series data (Enisan & Olufisayo, 2009). In addition, ARDL estimator does not require variables to be stationary at same level. Hence, it is applied regardless of whether the underlying variables are I(0) or I(1). Moreover, the long and short-run parameters of the model are estimated simultaneously.

This study will use different economic datasets retrieved from different source. The data in this study included the period from 1991 to 2020 which depends on the availability of data. The dependents and independents variables of the study with the sources are summarized. GDP is the total monetary or market value of all finished goods and services which are produced within the boundary of a particular country in a specific period of time. The value of the GDP is obtained by multiplying the current period quantity of produced goods and services by the base year 2015 price. The GDP value is expressed in US dollar. Remittances are personal remittances received and are defined as the percentage of GDP, where (LF) is labor force participation rate, total (% of total population ages 15+), government expenditure (GOE) is the general government final consumption expenditure (% of GDP), and UNE is unemployment, total (% of total labor force) and these data are taken from world bank.

Table 1

Data Summary

Variables	Variable types	Code	Data source
Economic growth	Dependent variable	GDP	World bank
Unemployment	Explanatory variable	UNE	World bank
Labor force	Explanatory variable	LF	World bank
Government expenditure	Explanatory variable	GOVE	World bank
Remittance	Explanatory variable	REM	World bank

Results and Empirical Findings

The table below provides a description date that the average GDP for the research was 4.09 percent, while the minimum GDP was 15 percent. The second variable of unemployment has a mean of 4.7, while the minimum unemployment is about 3.7 percent.

Table 2

Descriptive Statistics

	GDP	UNE	LF	GOVE	REM	INT
Mean	4.093	4.707	47364381	4.540	3.492	17.563
Median	4.430	3.994	47728347	4.666	3.910	16.001
Maximum	15.329	9.714	62259271	9.448	8.311	51.757
Minimum	-2.035	3.700	32625016	0.911	0.118	0.482
Std. Dev.	3.907	1.737	9072559.	3.052	2.372	14.924
Skewness	0.439	1.905	-0.025124	0.258	0.166	0.837
Kurtosis	3.544	4.947	1.797218	1.591	1.798	2.712

Based on table 3 below, this correlation matrix revealed a significant positive link between Nigeria's GDP and remittances. In addition, the data indicate a significant correlation between remittances and unemployment, government expenditures, and the labour force, as seen in Table 7. The result reveals that the correlation coefficient between GDP and remittance is 0.10, indicating that GDP and remittance are positively connected with GDP.

Table 3
Correlation Matrix

	GDP	UNE	GOVE	LF	REM
GDP	1.000				
UNE	-0.464	1.000			
GOVE	0.183	0.195	1.000		
LF	0.064	0.621	0.766	1.000	
REM	0.102	0.281	0.764	0.733	1.000

Table 4
Unit Root Tests

Variables	ADF test				
	Intercept		Intercept and trend		
	Level	Diff	level	Diff	
LGDP	-4.610247** (-3.004861)	-1.166201*** (-2.690439)	-1.964956*** (-3.277364)	-4.125782* (-4.886426)	I (0)
LUNE	-1.448844** (-2.998064)	-0.532400** (-2.998064)	2.23034*** (-3.243079)	-0.957719*** (-3.622033)	I (2)
LGOVE	-1.338521*** (-2.622989)	-5.525068*** (-2.625121)	-2.084843*** (-3.221728)	-5.388830* (-4.323979)	I (1)
LLF	-2.627367** (-2.967767)	-3.652382** (-2.976263)	-6.050625* (-4.323979)	-5.748113*** (-3.225334)	I (1)
LREM	-3.054702** (-2.967767)	-5.736618*** (-2.625121)	-3.572269* (-4.309824)	-5.953352*** (-3.225334)	I (1)
LINT	-2.627367* (-3.679322)	-5.683944*** (-2.625121)	-6.050625** (-3.580622)	-5.748113*** (-3.225334)	I (1)

Note: * indicates significance at 1%, ** indicates significance at 5%, and *** indicates significance at 10%. Extracted from E-Views Output.

Table 4 provides the results of unit root tests for six variables (LGDP, LUNE, LGOVE, LLF, LREM, and LINT) using the Augmented Dickey-Fuller (ADF) test. For each variable, the results are shown for four different specifications of the ADF test: with an intercept only, with an intercept and a trend, with the level of the variable, and with the first difference of the level of the variable.

The values in the table represent the t-statistics for the ADF test statistic, and the values in parentheses represent the critical values for the ADF test at different levels of significance

(1%, 5%, and 10%). A star symbol (*) next to the t-statistic indicates the significance level: *** for 1% significance, ** for 5% significance, and * for 10% significance.

The last column of the table indicates the order of integration (I) of each variable, with 0 indicating that the variable is stationary and a positive integer indicating the number of times the variable needs to be differenced to become stationary. Based on the results, LGDP is stationary at level (I (0)), while the other variables are either integrated of order 1 (I (1)) or 2 (I (2)).

The ADF test results indicate that none of the variables, LGDP, LUNE, LGOVE, LLF, LREM, and LINT, are stationary at level (without differencing). However, differencing reduces most variables' unit root (non-stationarity). The number in parentheses shows the critical value for a given significance level. The number after "I" indicates the number of times the variable needs to be differenced to achieve stationarity. For example, LGOVE needs to be differenced once (I(1)) to achieve stationarity at the 5% significance level.

Long-Run Relationship

After checking the long-run relationship, it is found that we have one cointegration equation among our variables. We used the f-bound test to check whether we have a long-term relationship. The result for the cointegration equation is presented as follows.:

Table 5

Long-Run Relationship

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	19.84766	10%	2.08	3
k	5	5%	2.39	3.38
		2.5%	2.7	3.73
		1%	3.06	4.15

According to F-Bound Test, it is shown there is a long-run relationship between our variables. The value of F-statistics (19.84766) is higher than the critical amount of the upper bound, which is (4.15); this means that we have a long-run relationship among our variables at a 1% significance level. So, we interpret the coefficient of each variable based on the output of E-Views as above.

Table 6

Long-Run Estimation

variable	Coefficient	Std.	t-Statistic	Prob.
LUNE	-19.840	6.262	-3.167	0.033
GOVE	0.195	0.152	1.280	0.269
LLF	10.551	1.443	7.311	0.001
LREM	-15.481	6.182	-2.504	0.066
INT	11.375	4.549	2.500	0.066

As it can be seen in the above table. The unemployment of the explanatory variable has a negative and significant impact on economic growth at 1% significance in the long run. It means that if unemployment increases by 1%, economic growth will decrease by 19.8%. And also, there is insignificance and positive effect of Government expenditure on economic growth at a 1% significance in the long run, which means that if government expenditure increases by 1%, then the economic growth will increase by 0.19%. The coefficient value of the labor force can be interpreted that if the labor force increases by 1 percent, the economic growth will increase by 10.5%. Finally, the graph shows that the interaction effect of remittance and unemployment has a positive and insignificant impact on economic growth at 1% significance in the long run, which means that if the interaction of unemployment and remittance increases by 1 percent then economic growth will increase by 11%.

Table 7

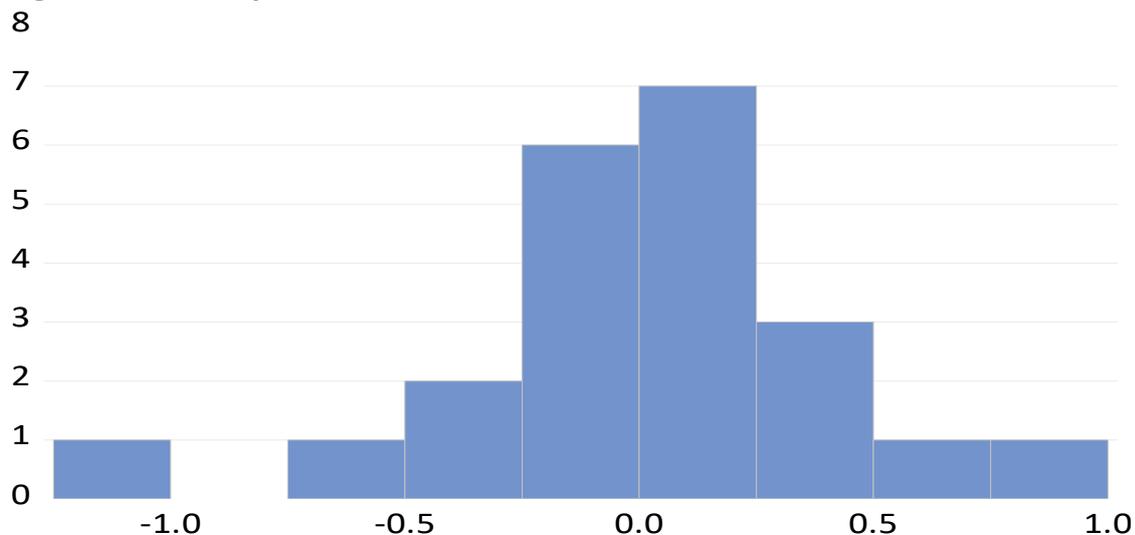
Short run Estimation.

Case 5: Unrestricted constant and Unrestricted trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-21.228	5.084	-4.174	0.0005
@TREND	-0.779	0.169	-4.589	0.0002
D(GOVE)	0.173	0.389	0.445	0.6610
CointEq(-1)*	-0.795	0.178	-4.464	0.0002
R-squared	0.460	Mean dependent var		-0.074
Adjusted R-squared	0.395	S.D. dependent var		3.511
S.E. of regression	2.730	Akaike info criterion		4.974
Sum squared resid	186.376	Schwarz criterion		5.162
Log likelihood	-68.126	Hannan-Quinn criter.		5.033
F-statistic	7.103	Durbin-Watson stat		1.948
Prob(F-statistic)	0.001			

The results of table 7 illustrate that there is no interaction between the variables in the short run. In addition, it is revealed that the adjustment speed from short-run equilibrium to long-run equilibrium is 80%. The coefficient of ECM Term is significant with a negative sign (-0.795160), suggesting that 0.9435 percent of the deviation from the long run is corrected each year.

Figure 2. Normality Test



Based on figure 2, we can see that our null hypothesis is accepted, probability 0.174538, so we conclude that our data have normality.

Table 8

The Serial Correlation

Breusch-Godfrey Serial Correlation LM Test:

Null hypothesis: No serial correlation at up to 2 lags

F-statistic	0.329502	Prob. F(2,8)	0.7286
Obs*R-squared	1.674336	Prob. Chi-Square(2)	0.4329

This table illustrates that there is no serial correlation between variables, as the null hypothesis was accepted.

Table 9

Heteroskedasticity

Heteroskedasticity Test: Breusch-Pagan-Godfrey

Null hypothesis: Homoskedasticity

F-statistic	0.733066	Prob. F (11,10)	0.6918
Obs*R-squared	9.820897	Prob. Chi-Square (11)	0.5466
Scaled explained SS	3.661977	Prob. Chi-Square (11)	0.9788

There is homoskedasticity, as seen in table 8, and the null hypothesis cannot be rejected

Table 10

Model Specification

Ramsey RESET Test

Equation: UNTITLED

Omitted Variables: Squares of fitted values

Specification: LGDP LGDP(-1) LGDP(-2) LGDP(-3) LUNE LUNE(-1)

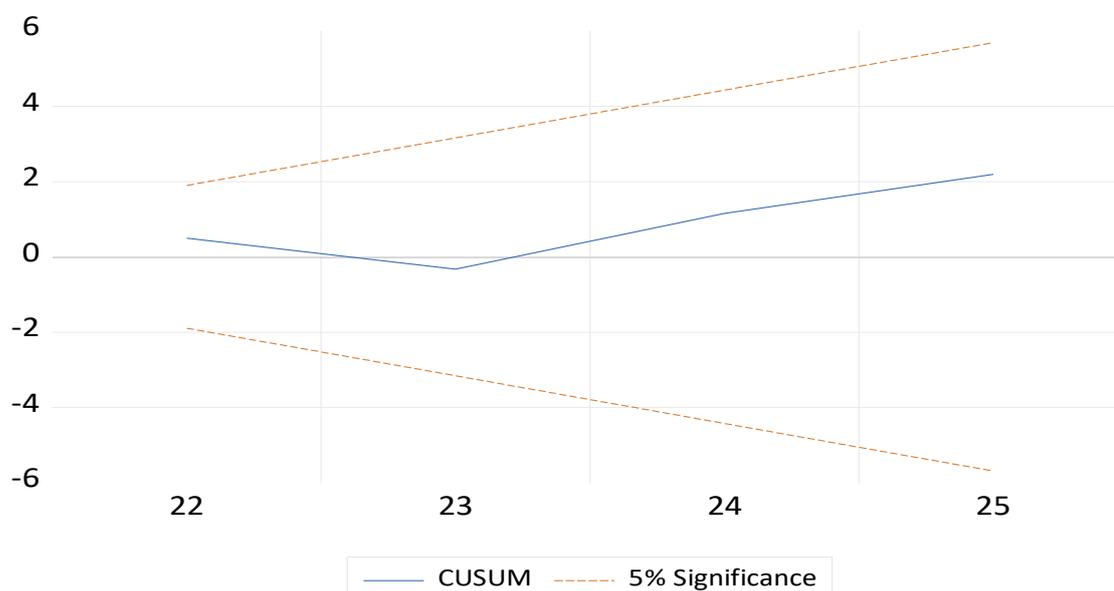
LGOVE LLF LLF(-1) LREM LREM(-1) LINT LINT(-1) C

	Value	df	Probability
t-statistic	0.187080	3	0.8635
F-statistic	0.034999	(1, 3)	0.8635
Likelihood ratio	0.197179	1	0.6570

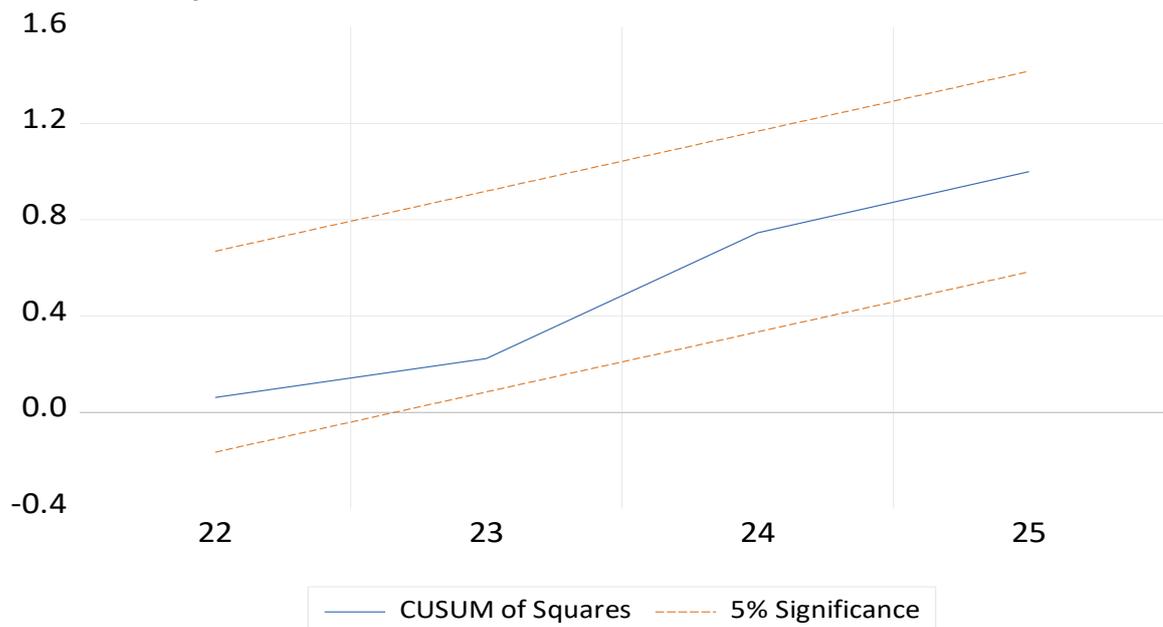
Based on the above table, our model ARDL (3, 0, 1, 3, 3) is well specified.

In addition, we utilized the CUSUM and CUSUM of squares tests on the recursive residuals to examine the coefficients' stability during the specified period for Nigeria. The findings are within the critical bounds at the 5% significance level, showing the model's stability, consistency, and dependability (Figure 3 & 4). The plots of the CUSUM and CUSUMSQ statistics show that the long-run and all short-run coefficients in ECM are constant over the 1991-2020 period.

Figure 3. CUSUM Test.



The graph above shows that the blue line does not cross the boundary, indicating that our coefficient is stable at 5% based on the CUSUM test.

Figure 4. CUSUM Square Test.

Conclusion

This study investigates the impact of remittance on economic growth and unemployment in Nigeria. Based on the study, we can conclude that the unemployment of the explanatory variable has a negative and significant impact on economic growth at 1% significance in the long run. In comparison, the interaction effect of remittance and unemployment has a positive and insignificant influence on economic growth at a 1% significance level in the long run. Also, there is insignificance and negative effect of Government expenditure on the economic growth of Nigeria. In contrast, the labor force has a negative and significant impact on dependent variables. The blue line in the stability test does not cross the boundary, indicating that the coefficient is stable at 5% based on the CUSUM test. We found that the interaction effect of remittance and unemployment has a positive and insignificant impact on economic growth at a 1% level of significance in the long run, which means that if the interaction of unemployment and remittance increases by 1 percent then economic growth will increase by 11% in the long run.

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