Original article

Empirical Investigation into the Long Run Macroeconomic Determinants of Economic Growth in Nigeria

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Abstract - The downward and unsustainable trends in economic growth in Nigeria has been a source of worry over the years not only for government but also policy makers and international communities. This paper was undertaken to empirically investigate the long run macroeconomic determinants of economic growth in Nigeria using annual time series data from 1981 to 2017. The data was sourced from the Central Bank of Nigeria (CBN) statistical bulletin, National Bureau of statistics (NBS), and World Development Index (WDI) from the World Bank data base. To attain the objectives of this study, the Autoregressive Distributed Lag (ARDL) Model was employed to examine the long run relationship between economic growth and its macroeconomic determinants and their influence on economic growth. Findings of the study reveal thatin the long run, the major macroeconomic factors driving the economic growthin Nigeria are human capital, external debt and budget deficits while physical capital and trade openness do not influence economic growth significantly. The study further found a positive relationship between real GDP per capita and human capital while external debt and budget deficits affect economic growth negatively in the long run. Physical capital and trade openness are both negative and statically insignificant in determining economic growth in Nigeria. Based on the findings, the study recommends the following among others; budgetary allocation to education should be increased, there is the need to put the external borrowing to productive sectors of the economy and to developing critical infrastructures, exports should be intensified through diversification in agriculture and manufacturing sectors and reduce importation of goods that can be produced at home more cheaply.

Keywords - Economic Growth, Macroeconomic, Long Run, Nigeria, ARDL

I. INTRODUCTION

Many governments of developing countries are much concerned about the rate of growth of their economies. This is for the fact that, economic growth nowadays has become a phenomenon in our modern civilization. Economists and policy makers have debated and discussed how nations' economies could grow both in developed and less developed countries. The argument is that without economic growth, economies could not grow and the concerned nations would not be unable to provide better economic welfare to their citizens. The sources of economic growth is a question of great importance to many economists who are interested to know and search for factors enabling some countries to grow and develop while others are suffering from abject poverty (Gebru, 2015).

The investigation into the key factors that drive economic growth has been considered as one of the core principles amongst empirical and theoretical growth researchers in the field of development economics, yet to date, little agreement has been reached. Achieving high and sustained rates of growth in output and per capita income and identifying the key factors driving the rate of growth of an economy are considered as two of the most important macroeconomic goals preoccupying policy makers and economists and in both economically advanced and less developed countries (Chirwa and Odhiambo, 2016).

The macroeconomic factors that increase economic growth have captured much attention in both theoretical and applied research. However, the process underlying economic performance is insufficiently conceptualized and poorly understood and sometimes, this can be partly linked to the lack of a generalized or unifying theory, and the myopic way conventional economics approach the issue (Artelaris et al, 2007). The paradigm shift in the economy from static to dynamic has provoked considerable attention from the economists since the 1990s. The idea is that economy is not static, economic structure can change (Mulok et al., 2010). A change in the economy can affect the development of a country. In view of this, economic growth and the factors leading to growth has been a constant area of study.

Nigeria as a developing nation in the world with has estimated population of over 200millions people (UN, Estimates, 2019). The downward and unsustainable trends in the rate economic growth over the years in Nigeria have become a source of worry for economists, policy-makers, professionals, and international communities. Various governments since independence in 1960 have come up with the goal of structural changes without achieving much success (Mohammed and Lawrence, 2015).

The Nigerian economy has flagrantly underperformed compared to her vast resource potential and other nations. The country has the 6th largest gas reserves and the 8th largest crude oil reserves in the world,however, economic performance has been rather unimpressive and does not reflect the country's endowments. For example, compared with the emerging Asian nations such as Malaysia India, China, Thailand and Indonesia that were lagged behind Nigeria in terms of GDP per capita in 1970, these countries have revolutionized their economies and are not only miles ahead of Nigeria, but are also key players on the global economic scene (Udenja and Onyebuchi, 2015). Hence the need to have a closer look into the key factors driving economic growth in Nigeria.

The key macroeconomic factors contributing to the relative decrease in the rate of economic growth in Nigeria include among others: alarming rate of inflation, a rising budget deficit,insufficient foreign demand for Nigerian goods, low investment in human and physical capital,political instability, lack of focused and visionary leadership, economic mismanagement and corruption (Udeja and Onyebuchi, 2015).

One of the areasof challenges that confront many policy decision makers, especially in individual countries, is the insufficient of single country empirical evidence that could assistguide policy making. Studies that are available are often based on pooled data rather than country specific analysis. Anyanwu (2014), pointed out that the empirical evidence on the slow economic growth rate most of African countries is based on the use of an African dummy variable which help provide empirical evidence on the slow growth in Africa, compared to other regions of the world. Notwithstanding such empirical studies are good for policy making at the regional or global level, they may not be equally suitable at the country specific level.

However, most studies conductedon growth in Nigeria have some basic shortcomings. For instance some of these studies disregard the most important policy variables such as budget deficit, human capital, physical capital, trade openness, external debt, and foreign direct investment. Therefore, the present study incorporated these variables to examine their relative effects on economic growth in Nigeria. Previous studies have used ordinary least square methods,

Eagle-Granger and Johansen cointegration approach in their studies, however, this study applied recently developed Autoregressive Distributed Lag Model (ARDL), a superior alternative method to cointegration especially for a small sample study like this one.

It is therefore, the objective of this study to examine and investigate empirically the major macroeconomic determinants of economic growth in Nigeria using the variables embedded in economic theories, some empirical studies within and across nations as well as their peculiarities with the Nigerian economy and data availability to further verify if this study corroborates any of the previous studies or otherwise. Which macroeconomic variable(s) more potent in driving the economic growth of Nigeria? What measures will be put in place to achieve high rate of growth of the economy?

II. EMPIRICAL LITERATURE

A number of researchers have examined and investigated the sources of growth both in developed countries and developing economies. These studies have incorporated a number of explanatory variables, nonetheless onlywidely agreed on results.

Zafar and Zahid (2013) conducted study on the effects of some of the key macroeconomic variables on economic growth in Pakistan using multiple regressions framework and time series data over the periods 1959-60 to 1996-97. The findings of the study showed that primary education to be an important precondition for accelerating growth. Similarly, increasing the stock of physical capital and openness of the economy contribute to growth. The empirical results also revealed that budget deficit and external debt is negatively related to economic growth, implying that depending upon domestic resources is the best alternative to finance growth and reinforce the importance of sensible long-run growth-oriented policies to obtain sustainable growth.

Agwu (2014) investigated the factors that contribute to economic growth in Nigeria between 1981 and 2012 employing Vector Error Correction Mechanism framework. Findings from long run estimation show that, government expenditure and oil revenue spurs economic growth, while interest rate and inflation rate have a significant negative effect on economic growth in Nigeria. Further,short run estimates, however, reveal that oil revenue does not spur economic growth. The result confirms the existence of oil resource curse for Nigeria. Also, both interest rate and inflation rate have a short run negative effect on economic growth in Nigeria, while foreign private investment and foreign exchange rate have neither short-run nor long-run effect on economic growth in Nigeria.

Anyanwu (2014) carried out a study on the factors affecting economic growth in Africa and China using an

empirical growth model. Employing a cross-country panel data for African countries covering the period 1996-2010 along with time series data for the 1984-2010 period for China, the study results revealed for Africa higher domestic investment, net official aid, secondary school enrolment, metal price index, government effectiveness (governance) and urban population were all positively and significantly related with economic growth. For China, using a subset of the regressors, the study results showed that domestic investment and trade openness were positively and significantly related with economic growth, while official development aid, population growth, inflation, credit to the private sector, agricultural material price, and oil price indices were negatively and significantly associated with economic growth.

Biswas and Saha (2014) investigated the short-run as well as long-run macroeconomic determinants of economic growth in India by employing time series analysis. They used Johansen and Juselius multivariateco-integration test and the vector error correction (VEC) model to analyze the annualdata from 1980-81 to 2010-11. The empirical findings confirm that there is a stable long-runrelationship between India's gross domestic product (GDP) and its determinants. The finding of the study suggests that gross domestic capital formation, employment, export, foreign direct investment and money supply have positive effect on India's GDP growth where as inflation and fiscal deficit have negative effect. The GDP is significantly influenced by country's gross domestic capital formation in the short run. The generalized variance decomposition confirms the prudent impact of export and capital formation on GDP in India. Further, the error term is found to be negative and statistically significant.

Mohammed and Lawrence (2015) studied macroeconomics determinants of economic growth in Nigeria. They used time series data from 1986 to 2012 and Johansen's co-integration test to determine short and long run relationship between economic growth and macroeconomics determinants of economic growth. The result reveals six co-integrating equations which establish the existence of long run relationship among the variables. Ordinary Least Square statistical technique was employed to examine the extentof influence the variables have on each other.

Themain determinants of economic growth in Nigeria are; foreign direct investment, fixed capital formation and government expenditure under a stable rate of inflation.

Mbulawa (2015) studied macroeconomic determinants of economic growth in Zimbabwe from 1975-2012, employing the VEC approach. Findings of the study revealed that inflation and openness had a significant negative and positive impact on economic growth respectively. Inflation converged to long run equilibrium with growth and causal relationships were found among other variables in the short

run. Response of economic growth to shocks in gross fixed capital formation, trade openness and foreign direct investment was found to be effective even beyond the 30 year period while shocks from inflation were ineffective. Previous performance and the rate of inflation are the major drivers of growth in the long run. The findings of the study are in line with theory.

Gebru (2015) investigated the determinants of economic growth in Ethiopia for the periods covering 1974-2013. The Autoregressive Distributed Lag (ARDL) Bound Test Approach to Co-integration and Error Correction Model are employed to investigate the long-run and short run relationships between the real GDP and its determinants. The Bounds test results show that there is a stable long run relationship between real GDP, Physical capital, human capital, export, aid, external debt and inflation.

Udenja and Onyebuchi (2015) studied the determinants of economic growth in Nigeria. They applied Johansen cointegration and the vector error correction techniques. The results of the co-integrating technique show that there is long run relationship among domestic savings, expenditures on education and health, trade openness , foreign direct investment, public infrastructure, and financial deepening with growth of real GDP per capita. The results of the VECM shows while domestic savings, expenditure on education, openness, and financial depth are positive determinants of economic growth, foreign direct investment and public infrastructure do not impact on economic growth in Nigeria. It was also revealed that expenditures on health had negative effects on economic growth.

Chirwa and Odhiambo (2016) conducted a study on sources of economic growth in Zambia using the ARDL bounds-testing approach. The study finds the major determinants of economic growth in Zambia include, amongst others, government consumption,investment, human capital development, foreign aid andinternational trade. The results of the study further reveal that in the short run, investment and human capital development are positively related with economic growth, while government consumption, international trade and foreign aid are negatively relatedwith economic growth. In the long run, investment and human capital development are found to be positively related with economic growth, while only foreign aid has a negative effect on economic growth.

Ada et al (2016) conducted a study on the impact of external debt on economic growth in Nigeria. Using the ARDL bound testing approach to cointegration and error correction models covering the period 1970 to 2013. The Granger causality test was also applied to check for the direction of causality among the variables. The study result shows a long-run relationship among the variables. External debt impacts negatively significant on economic growth. The finding further, established a unidirectional causality between external debt and economic growth.

III. METHODOLOGY

A. The Autoregressive Distributed Lag Model (ARDL)

The ARDL modeling of unrestricted error correction model by Pesaran et al. (2001) using Ordinary Least Square (OLS) can be represented as follows.

$$\Delta Y_t = \beta_o + \sum_{i=1}^{p} \beta \Delta Y_{t-i} + \sum_{i=1}^{p} \alpha \Delta X_{t-i} + \delta Y_{t-i} + \delta_2 X_{t-1} + \mu_t \ldots\ldots\ldots\ldots(1)$$

Where Δ denotes for first difference operation, Y_t is for a vector of dependent variables, X_t is a vector of p determinants of Y_t regressors, μ_t is the residual term which is assumed to be white noise. The ARDL approach to cointegration entails estimating of the error correction model (ECM) version of ARDL model for the determinants of economic growth:

$$\Delta \ln GDPPC = \alpha + \sum_{i=1}^{p} \beta_o \Delta \ln GDPPC_{t-i} + \sum_{i=0}^{p} \beta_1 \Delta \ln HC_{t-i} + \sum_{t=0}^{p} \beta_2 \Delta \ln PC_{t-i} + \sum_{t=0}^{p} \beta_3 \Delta TOPN_{t-i} +$$

$$\sum_{t=0}^{P} \beta_4 \Delta ETRD_{t-i} + \sum_{t=0}^{p} \beta_5 \Delta BGD_{t-i} + \phi_0 \ln GDPPC_{t-1} + \phi_1 \ln HC_{t-1}$$

$$+ \phi_2 \ln PC_{t-1} + \phi_3 TOPN_{t-1} + \phi_4 \ln ETRD_{t-1} + \phi_5 BGD_{t-1} + \mu_t \ldots\ldots\ldots\ldots(2)$$

Where GDPPC is the GDP per capita in Billion naira at a time t, HC is Human Capital proxy by expenditures on education, PC is Physical Capital proxy by gross fixed capital formation, TOPN is Trade Openness measured export + import as a percentage of GDP, EXTD is total external debt, BGD is budget deficit, μ is the residual term, which is assumed to be white noise, p denotes optimal lag length and ln denotes natural logarithm..

The ARDL bounds test is based on the F- statistic test. The null hypothesis for no co-integration in the long-run among the variables in equation (2) is as follows: $H_O : \phi_O = \phi_1 = \phi_2 = \phi_3 = \phi_4 = \phi_5 = 0$, which implies no long run relationship among the variables against the alternative one: $H_1 : \phi_1 \neq \phi_1 \neq \phi_2 \neq \phi_3 \neq \phi_4 \neq \phi_5 \neq 0$. If the calculated F statistic is greater than the upper bound critical values, we reject the null hypothesis of no long run relationship among the variables. If the calculated F statistic is less than the lower bound critical values, we can't reject the null hypothesis rather accept the null hypothesis of no cointegration among the variables. However, if the calculated F statistic is between the upper and lower bound critical values, inference is inconclusive and we need to have knowledge on the order of integration of underlying variables before we made conclusive inference (Pesaran et al., 2001).

This study will not use the bound critical value developed by pesaran et al. (2001) because this stydy deals with small sample size while the Pesaran et al. (2001) critical values are based on large sample size of 500 and above. The same size in this study is 37, hence the use of Narayan (2004) critical values. If there is an evidence of long-run cointegration among the variables, the following long-run ARDL ($P_1 P_2 P_3 P_4 P_5 P_6$) model will be estimated.

$$\ln YRGDPPC = \alpha_0 + \sum_{i=1}^{p} \beta_0 \ln RGDP_{t-i} + \sum_{t=0}^{p} \beta_1 \ln HC_{t-1} + \sum_{t=0}^{p} \beta_2 \ln PC_{t-1} + \sum_{t=0}^{p} \beta_3 TOPN_{t-1} + \sum_{t=0}^{p} \beta_4 \ln ETRD_{t-1}$$

$$+ \sum_{t=0}^{p} \beta_5 BGD_{t-1} + \mu_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(3)$$

B. Model Stability and Diagnostic Test

ARDL model requires the estimated long run to undergo stability and diagnostic tests to check the standard property of the model. We conducted a series of stability and diagnostic tests which include serial correlation test, Functional form test, Normality, and Hetroscedasticity test. Also, besides the diagnostic tests, the long run estimates stability has been tested by employing the cumulative sum of recursive residuals (CUSUM) and the cumulative sum of squares of recursive residuals (CUSUMSQ) tests proposed by Brown et al (1975). The tests are also recommended by Pesaran et al. (2001).To reject the

null hypothesis, or otherwise we examine the p-values connected with the test statistics. The null hypothesis is rejected when the p-value are lower than the standard significance level (i.e. 5%).

IV. DATA PRESENTATION AND ANALYSIS

A. Unit Root Tests and Results

To check the degree of integration of the variables employed in the study, unit root tests were conducted using standard Augmented Dickey-Fuller (ADF), Phillips-Perron and Kwiatkowski-Phillips-Schmidt-Shin (KPSS) tests.

Table 4.1 Unit Root Results for ADF, PP and KPSS tests at Level and First Difference.

Variables	ADF Tests (Intercept)		PP Tests (Intercept)		KPSS Tests(Intercept)
	T-Statistics	P Values	T-Statistics	P Values	LM Statistics
LGDPPC	0.0492	0.9520	-0.2454	0.9233	0.5247
LXED	-1.7256	0.4089	-1.2076	0.6601	0.6830
LGFCF	0.1104	0.9621	0.1960	0.9685	0.4082**
TOPN	-1.8880	0.3339	-1.7840	0.3819	0.2021**
LETRD	-1.7129	0.4662	-2.9932	0.0451**	0.3675**
BGD	-2.9340	0.0513***	-3.0076	0.0436**	0.3303**
D(LGDPPC)	-4.4167	0.0013*	-4.4048	0.0013*	0.3739**
D(LXED)	-6.9764	0.0000*	-11.2381	0.0000*	0.1100**
D(LGFCF)	-5.4068	0.0001*	-5.3928	0.0001*	-
D(TOPN)	-8.3449	0.0000*	-8.3536	0.0000*	-
D(LETRD)	-4.5655	0.0008*	-	-	-
D(BGD)	-	-	-	-	-

Source: Researcher's computation using E-Views Version 10.

Notes: *, ** and * show significance and the rejection of null hypothesis at 1%, 5% and 10% for ADF and PP while ** show significance and the acceptance of null hypothesis at 1% and 5% for KPSS.**

Table 4.1 reveals the ADF, PP and KPSS tests conducted for LGDPPC, LXED, LGFCF, TOPN, LETRD and BGD. The tests were conducted at level and first difference. At level ADF test shows only BGD is stationary at 10% level of significance, PP shows LETRD and BGD are stationary both at 5% level of significance while KPSS test indicates LGFCF, TOPN, LETRD are stationary. At first difference, ADF test shows LGDPPC, LXED, LGFCF, TOPN, LETRD are stationary at 1% level of significance, PP test indicates LGDPPC, LXED, LGFCF, TOPN are stationary at1% level of significance while KPSS test confirms LGDPPC, LEXD to be stationary.

B. ARDL Bounds Tests for Co-integration

From the unit root tests carried out, the series are integrated of I(0) and I(1), hence the application of ARDL bound test, to investigate the long run relationship among the variables of the study, Pesaran et al (2001) bound procedure was employed.

We compared the calculated F statistic with two critical bound values provided by Narayan (2004). If the calculated F statistic is greater than the upper bound critical value, the null hypothesis of no long run relationship is rejected, if otherwise the null hypothesis cannot be rejected. Table 4.3 shows the calculated F statistic is greater than the Narayan (2004) upper bound critical values at 1% and 5% level of significance respectively. This indicates that the null hypothesis of no long run relationship is rejected and concluded that there is coingration relationship among the variables in the long run.

Table 4.3 ARDL Bound Test Results

Dependent Variable	Explanatory Variables	F-Statistic Value	Co-integration Status
GDPPC	**XED,GFCF,TOPN,ETRD,BGD**	**5.388**	Co-integarted
Critical Values	Null Hypothesis: No long run relationship exists. Asymptotic critical values for k=5 and n=37 Narayan (2004)		
	Narayan (2004)		
	Lower Bound		Upper Bound
1 %	4.170		5.995
5 %	3.005		4.398
10%	2.505		3.735

Source: Researcher's computation using Eview version 10.

C. Long Run ARDL Model Estimations

Having confirmed the presence of long run relationship among economic growth and its determinants, we move further to estimate ADRL model to find out the long run parameters as reported in table 4.4.

Table 4.4: Results of Long Run Estimates

LGDPPC (Dependent Variable)				
Regressors	Coefficients	Standard Errors	t- statistic	P Values
LXED	0.3606**	0.1587	2.2713	0.0394
LGFCF	-0.3520	0.2743	-1.2831	0.2203
TOPN	-0.0044	0.0027	-1.5886	0.1345
LETRD	-0.3113**	0.1363	-2.2828	0.0386
BUD	-0.1390**	0.0764	-2.2745	0.0313

Source: Researcher's computation using Eviews version 10.
Notes: ** indicates significance at 5%.

Table 4.4 shows the long run coefficients estimate. Human capital proxy by expenditure on education positively contributes to economic growth proxy by GDP per capita and found to be statically significance at 5%. The result shows a one percent change in human capital in the long run, while other factors are held constant, will increase the rate of growth of the economy by 0.36 percent. This result supports similar studies such as Zafar and Zahid (2013), Anyanwu (2014), Udenja and Onyebuchi (2015), Gebru (2015) that found a significant positive relationship between education and economic growth. The finding of this study regarding the long run positive impact of human capital on economic growth is in line with the endogenous growth theory which argues that improvement in human capital leads to increase in workers' productivity leading to increase in output.
Physical capital proxy by gross fixed capital formation shows a negative sign and statistically insignificant in the long run. This result shows a rise in the stock of capital would have a negative and insignificant impact on growth. This result is contrary to our a priori expectation and findings in other previous studies such as Gebru (2015), but consistent with studies results conducted by Mbulawa (2015). The insignificant impact of physical capital might be due to less investment on critical infrastructure like roads, railways, power over long period of time.

Trade openness which measure Nigeria's openness to international trade has a negative sign and is statistically insignificance. This might be due to excess of imports over exports and the dependence on oil revenue as the main source of foreign exchange earnings during the study period. Duasa (2007) noted that, if a nation imports more than what its exports, this will worsen the trade balance. This study result corroborates with studies conducted in Nigeria by Udeaja and Onyebuchi (2015), hence we can conclude that, openness does not improve the Nigerian's terms of trade rather it retards economic growth.

External debt has a negative impact on economic growth and statistically significance at 5%. A one percent increase in external debt reduces the rate of economic growth by about 0.31 percent. The negative sign of this variable is in line with the classical view of debt, that government borrowing will have negative effect on the economic growth. This result further ascertains the existence of the crowding out theory and debt overhang theory of Krugman (1989). This theory postulates that an increase in accumulated debt stock results in higher tax on future output and thus crowds out private investment and deters growth (Ada et al , 2015). This study result corroborates the studies conducted in Nigeria and for developing economies such asAda et al (2015), Zafar and Zahid (2013) and Gebru (2015).

Again, budget deficit is negatively associated with GDP per capita in the long run and statistically significant at 5% level of significance. A one percent increase in budget deficit will bring about a reduction in economic growth by 0.14 percent. This result corroborates with the ones conducted by Zafar and Zahid (2013), Uwakaeme (2015), Aero and Ogundipe (2015), a developing country like Nigeria should not be having a continued fiscal deficit as this will lower the rate of growth of the economy. The rising budget deficit was regarded as one of the major impeding factors to economic growth in Nigeria. Budget deficit affects output grow in many ways, these include: firstly, through distorting effects from high taxation, secondly, crowding out of private investment and finally, budget deficit is also regarded as an indicator of economic uncertainty, which ultimately affects output growth adversely.

Therefore, the benefits of budget deficit cannot be harnessed by an economy that is not properly diversified, as the deficits have to be financed through borrowing which might in turn raise the fiscal deficits (Aero and Ogundipe, 2015).

D. Model Stability and Diagnostic Tests

The study conducted diagnostic tests to check the standard property of the long run estimated model. These include the Breusch and Godfrey LM test for serial correlation test,Breusch-Pagan-Godfrey hetroskedasticity test, Normality test and Ramsey Reset test for functional form. Further, the stability of the long run estimates is tested by employing the cumulative sum of recursive residuals(CUSUM) and the cumulative sum of squares of recursive residuals (CUSUMSQ) tests. Such tests are recommended by Pesaran et al (2001). To reject or accept the null hypothesis, we look into the p values associated with the test statistics. The null hypothesis is rejected if the p-values are smaller than the standard significance level (i.e 5%), if otherwise the null hypothesis cannot be rejected.

**Table 4.6**: **Results for Post-Estimation Diagnostic Tests**

Test Statistic	P Values
Breusch-Godfrey Serial Correlation LM Test: Null hypothesis No Serial Correlation	0.898
Breusch-Pagan-Godfrey Heteroskedasticity Test: Null hypotheisHomoskedasticity	0.567
Normality Test	0.423
Ramsey Reset Test: Functional Form	0.265

Source: Researcher's Computation using Eviews version 10.

Table 4.6 shows that the ARDL Model estimated passed all the diagnostic tests conducted. The null hypothesis of no serial correlation cannot be rejected because the F statistic P- value of 0.898 is greater than 0.05, we can, therefore, conclude that the variables used in the estimation of the model are serially uncorrelated. For heteroskedasticity test, the null hypothesis is that the residuals are homoskedastic, the F statistic p value of 0.567 indicates that we cannot reject the null hypothesis. We therefore conclude the residuals are homoskedastic. The result of normality test shows that the p value connected with Jaque-Berra statistic is greater than p value at 5% level of significance (i. e 0.423> 0.05) The same applies to Ramsey reset test, which test whether the model suffers from omitted variable bias or not. The test result indicates that we cannot reject the Ramsey's test, as the p value of 0.265 is greater than 0.05. This means the selected ARDL model for Nigeria is specified correctly and the estimates parameters are not biased and can be applied for policy recommendation.

Testing of parameter stability using CUSUM and CUSUMSQ
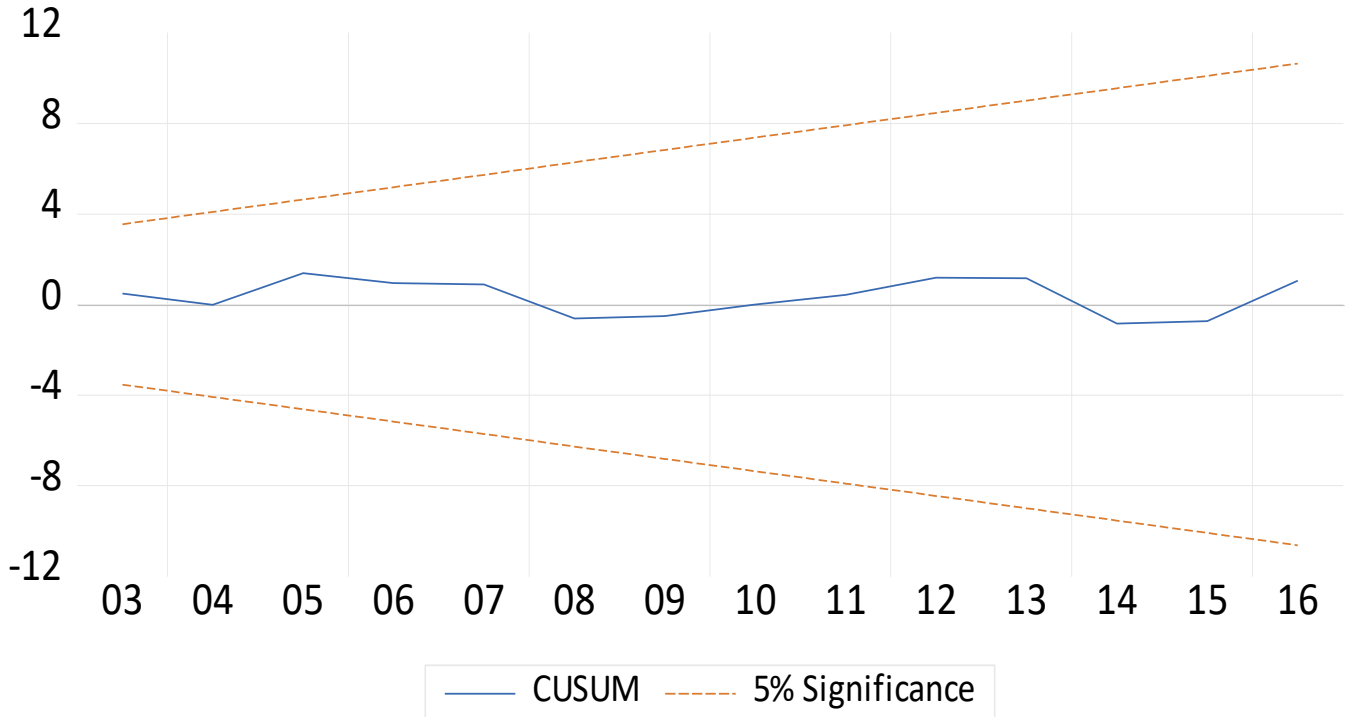
The straight lines represent critical bounds at 5% significance level

Fig. 1 Plot of Cumulative Recursive Residuals (A)
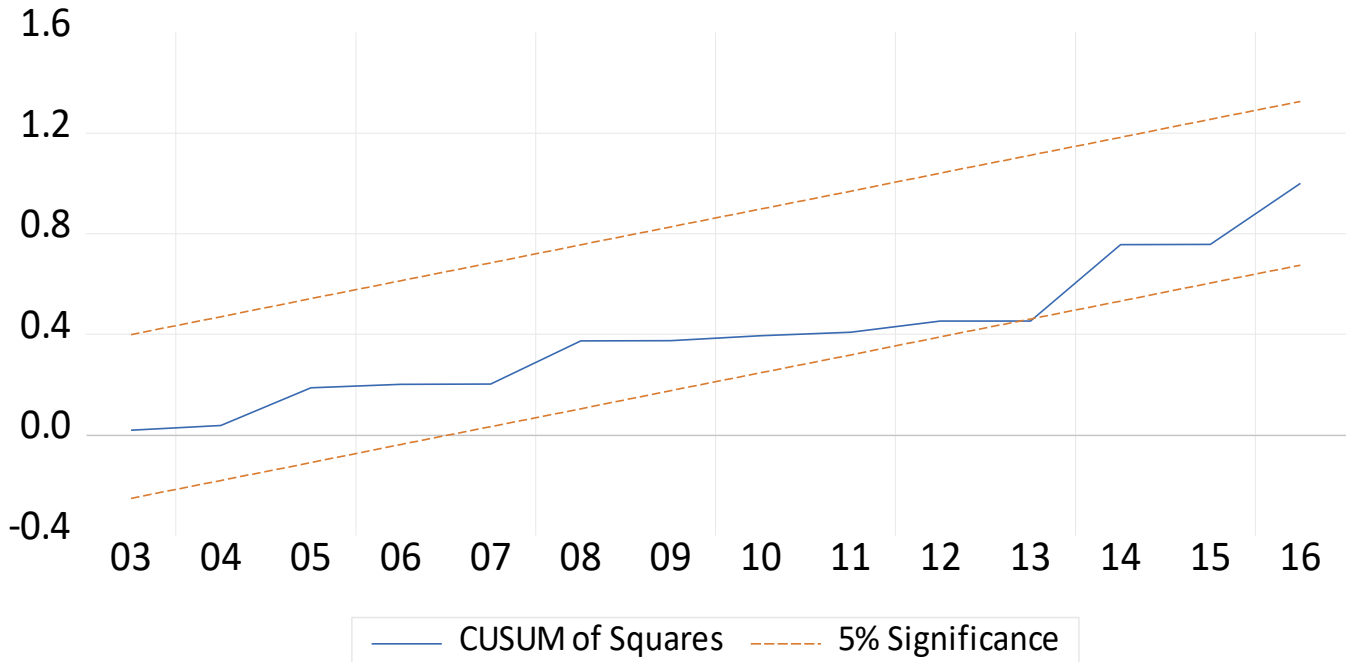
The straight lines represent critical bounds at 5% significance level

Fig. 2 Plot of Cumulative Sum of Squares of Recursive Residuals (B)

The plot of both CUSUM and CUSUMSQ lies within the 5% range of significance level, hence the long run and short run estimates are dynamically stable and the results of the estimated model are reliable and efficient.

V. CONCLUSION AND RECOMMENDATIONS

A. Conclusion

The focus of this study is to investigate the macroeconomic determinants of economic growth in Nigeria for the period 1981 to 2017 and to also identify the major factor or factors which drive the growth of the economy in the long run periods. The empirical results show that in the long run human capital in the form of educational expenditures, external debt and budget deficits significantly influence economic growth while physical capital proxy by gross fixed capital formation and trade openness are statically insignificant in influencing the rate of growth of the economy in the long run.

B. Recommendations

The study offers the following recommendations based on the findings:

i. The study suggested that budgetary allocation to education need to be raised from the current rate of 7% to 15% or more, because an increase expenditure on education will further enhance better and quality education and research, leading to increased workers productivity, innovation and improved production techniques thereby adding more to GDP.

ii. There should be joint efforts between the government and private sectors towards creating an enabling environment that promotes capital investment in Nigeria. Foreign investors should be lured through sound macroeconomic policies and be encouraged to invest in the areas of developing critical infrastructures.

iii. For trade openness, government should strengthen the existing strategies and policies aim at encouraging exports in manufacturing and agricultural sectors. Given the availability of labour and land space in the country, agricultural production should be intensified and exportation agricultural commodities and raw materials to other countries should be encouraged and supported by the government at all levels. Finally bilateral and multilateral agreements aim at restoring the confidence of trade relations and eventually increase the rate of multilateral trade partners to Nigeria.

iv. For external debt, government at all levels should be cautious of their borrowing. The borrowed fund should be directed to economically productive sectors of the economy and to improving the infrastructural deficits especially roads, electricity, railways e.t.c , which can stimulate growth. Government should not borrow for recurrent expenditure but rather for capital expenditure. External borrowing should be seen as a means for long run development rather than for solving short run problems.

v. Budget deficits have become a recurring phenomenon in Nigeria's fiscal policy environment. Government at all levels should improve their internal revenue generating sources, reduce external borrowing and ask for debt reduction or outright cancellation. Each level of government should identify the natural resources or endowments and potentials available in its environment and device a way of harnessing and developing these resources to supplement other sources of revenue available. Private business partners should be invited and encouraged to invest in the areas identified. This will help provide employment and income (revenue) that will further facilitate tax revenue earnings and eventually reduces the appetite for budget deficits financing.

vi. Finally, policies directed at improving the performance of the economy should take into consideration the long run behaviours of these variables.

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