



Determinants of Economic Growth in Nigeria: A Macro-Econometric Approach

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ABSTRACT

The study examined the determinants of economic growth in Nigeria using the macro-econometric approach for the period 1980 to 2014. Data for the study were sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin and the National Bureau of Statistics (NBS). The macro-economic model formulated used Gross Domestic Product (GDP) as the dependent variable while Foreign Direct investment (FDI), Degree of Openness (DOO), Gross Capital Formation (GCF), Money supply (MS), Interest Rate (INT), Government Expenditure on Education (GEE) and Employed Labour Force (ELF) are the explanatory variables. The data were tested for Stationarity using Augmented Dickey-Fuller (ADF) Unit Root test. The test revealed that all the variables used in the study are stationary at their first difference [i.e. 1(1)]. The data were also subjected to co-integration test in order to know whether using the variables together in the model would produce reliable results. The test revealed that a long run relationship exists between economic growth (GDP) and the macro-economic variables used in the study. We found that all foreign direct investment, degree of openness, gross capital formation, money supply, government expenditure and labour force have positive and direct relationship with economic growth (GDP) while interest rate has a negative relationship with GDP. However, gross capital formation is the only variable that is not significant at 5% level. This led to the conclusion that all the variables specified in the model (except gross capital formation) are important determinants of economic growth in Nigeria. The study recommended that there should be an improvement in investment in major sectors of the economy, especially the agricultural and industrial sectors. Also, Government should adopt an aggressive national investment programme to channel all unexpected and unbudgeted incomes arising from oil windfalls, recovered loots and tie every of such unforeseen gains to specific investment projects. In addition, Foreign direct investors should be given operational terms favourable to the nation's economy, such foreign investors should be made to target idle or new sectors in the economy. Finally, investment in human capital and engaging the huge unemployed labour force in the country should be of high importance to the government.

Keywords: Macro-econometrics, Degree of Openness, Employed Labour Force

1. INTRODUCTION

The need for economic growth in a country cannot be overemphasized. Ever since the inception of systematic economic analysis, the problem of economic growth, its determinants, sources, forms and effects was high on the agenda of economists. Economic growth has remained a paramount objective of all governments in pursuance of a sustainable economic development. Empirical literature on growth has consistently showed that the rates and performance of some key macroeconomic variables are important determinants of economic growth.

Economic growth refers to growth of potential output shown by an upward shift in the production possibility frontier. It involves the increase in real national income overtime and is seen as an increase in the inflation-adjusted market value of the goods and services produced by an economy over time. It is conventionally measured as the percent rate of increase in real gross domestic product (real GDP). In a narrow sense, economic growth can be thought of as a process whereby more goods and services are available to satisfy societal needs through the expansion of the economy's capability to produce required goods and services.

It thus appears to be that economic growth refers to a positive increase in the aggregate level of output within a given period of time in a country. This view has been criticized by some economists as inadequate and unsatisfactory. They posited that total national income may be increasing and yet the standard of living of the people may be falling. This can happen when the population is increasing at a faster rate than total national income. This is so because when population is increasing more rapidly than national income, per capita income will fall. Per capita income will rise when the national income increases faster than population. And a fall in per capita income entails a fall in the standard of living which should not be the case. Lewis (1978) posited that since the main aim of economic growth is to raise the standards of living of the people leading to economic development, economic growth thus means the growth of output per head of population. Lewis further posited that the mere increase in the aggregate level of production of goods and services in an economy tells us nothing about the quality of life of a citizen, given the threats of pollution, unequal distribution of aggregate output and income, environmental degradation, prevalence of chronic and deadly diseases, abject poverty etc. He posited that attention should be placed not only on increase in aggregate output but also on the total quality of living. Hence he posited that there might be growth rate without economic growth.

Overtime, Governments have also employed strategies and policies with the primary objective of achieving economic growth, price stability, full employment etc. This arises due to differed opinion on which policies are most beneficial for long-run economic growth. While the monetarist through Friedman (1970) postulated that monetary policy has greater and faster impact on economic activity thus suggesting that greater reliance be placed on monetary measures than fiscal measures in the conduct of stabilisation policy, Keynes posited the use of government expenditure in maintaining economic growth. He suggested that government expenditure through multiplier effect would raise aggregate demand and thereby get the economy out of recession (Ahuja, 2013). The neoclassical view pioneered by the Solow's growth model, has emphasised the importance of investment in achieving economic growth while the recent theory of endogenous growth developed by Romer (1986) and Lucas (1988) and others draw attention to human capital, research and development innovation capacity etc. Other scholars such as Schultz (1961), Becker (1996), Barro (1990) etc also, argued that the growth of human capital, that is, investment in education and training contributes significantly to long-run growth.

Since Nigeria attained independence in 1960, the economy has experienced varying cycles of growth. History shows that the country is a large oil exporting country with oil export being a major source of revenue and foreign exchange for the government. Oil exports stood at N1.015million in 1969 and reached N22.329 million in 1975, fell to N8,107 million in 1986 and reached N106,155 million in 1993 (Kabir, 2014). It was N390 billion in 2005 and was N2.602 trillion in the second quarter of 2014. The country is a monocultural country relying heavily on crude oil earnings and as such is vulnerable to macroeconomic instability due to external shocks; and was ranked among ten most volatile countries for the years 1961 to 2000 based on real growth rate, price stability, money growth and real GDP, (Ukwu, et al, 2003).

Studies have shown that Nigerian development has been slow characterized by upward and downward trends since 1960, based on her economic development indicators. This is due to macroeconomic volatility which has been a constraint to economic development, as it discourages investment, encourages capital flight and creates negative output to the economy. Between the period 1960 and 1970, Gross Domestic Product (GDP) recorded an annual growth rate of 3.1%. Between 1970 and 1978, GDP grew to an average of 6.2%, this was helped by the oil boom of that period. However, in the 1980s, GDP had negative growth rates due to the slump in oil price in the early 1980s. In the period 1988-1997 which

constitutes the period of structural adjustment and economic liberalization, the GDP responded to economic adjustment policies and grew at a positive rate. After the Structural Adjustment Programme, GDP declined from 8.3% in 1990 to 1.3% and 2.2% in 1994 and 1995 respectively. Since 1999, GDP in the country has been on an average of 6.3%. However, this has not transcended into visible growth and development.

A lot of effort has been put into designing and actualizing appropriate economic objectives through the various National Development Plans and policies of successive governments so as to achieve economic growth with huge investment in industries, social services and infrastructure. This is to accelerate the pace of economic growth undertaken so as to usher in a higher standard of living for her citizens, maintain price stability, attain favourable balance of payments, promote full employment and sustainable development. These development programmes, no doubt focused on launching the country into an economy with high growth rate and development. Currently the Nigerian government has a vision 2020 document which involves summarily ensuring that the country becomes one of the 20 largest economies in the world by the year 2020.

1.2 Statement of the Problem

Available Statistics shows that growth rates over the years have fluctuated, with records of negative and positive growth rates since 1960. Despite the positive growth rate, the sources of this growth have remained controversial among economists in Nigeria.

While rapid growth in China, Malaysia and India for instance, has lifted millions beyond subsistence living, Nigeria on the average has experienced the opposite by recording on the average low rates. Yaqub (2011) asserted that, the real growth of the Nigerian economy is sluggish compared to the emerging economies in the world. Programmes such as Austerity Measures, Structural Adjustment Programme (SAP), the National Poverty Eradication Programme (NAPEP), the National Economic Empowerment and Development Strategies (NEEDS) etc have been implemented to help improve the situation. These policies and strategies have not yielded the desired result of accelerated growth of the real GDP. In 2014, Human Development Index Report of United Nations Development Programmes (UNDP) ranked Nigeria 152 out of 187 countries as she retrogressed from one of the richest 50 countries in the early 1970s to one of the 25 poorest counties in the twenty-first century. The country has a high poverty level while health indicator revealed that 1.9% of the nation's budget is expended on health, mortality rate was put at 158 per 1000 live births while adult illiteracy rate is as high as 61.3%. The country has continued to be a highly monocultural economy with crude oil contributing over 70% of her foreign earning and having a highly limited export of other products while there is also a high saving-investment gap. Underutilization of manpower, high unemployment rate, misemployment of manpower and resources exist and there is high brain drain and income inequality.

Although growth performance in the country improved significantly since the return to civilian rule in 1999 with an average growth rate of about 6 per cent being recorded since then (CBN 2013). Some economists are of the view that an increase in growth rate or sustainable growth rate is a factor in reducing unemployment, improving infrastructural development, improving per capita income etc. Upon achieving a stable growth rate of an average of 6 percent for the last ten years (CBN, 2013), one cannot but ask why the level of unemployment in the country is still increasing and is now to the tune of 24% (CBN, 2013), why is there a decay in infrastructure, what is the contribution of growth variables to the Nigeria economy etc. Against this backdrop, the research was undertaken. It thus becomes necessary to establish the factors actually responsible for economic growth in Nigeria and the nature of their influences on the growth of the Nigerian economy, how the country fared in the face of these macroeconomic variables, which variables have contributed to economic growth?

The objective of the study therefore is to empirically identify factors driving economic growth in Nigeria using variables suggested by economic theories and some empirical studies as well as peculiarities of the Nigerian economy. The study covers the period between 1980 and 2014 and is guided by the hypothesis which states that: There is no significant relationship between Economic Growth and selected macroeconomic variables in Nigeria.

2.1 Theoretical Framework

Several economics scholars have posited series of theories in an attempt to explain economic growth and development worldwide. Several of such theories hold its bedrock from the classical theories.

Classical Theories

Analysis of the process of economic growth was a central feature of the work of the English classical economists as represented mainly by Adam Smith (1776), Thomas Malthus (1820) and David Ricardo (1917). They are regarded as the main precursors to modern growth theory. The classical posited the “Laissez-faire” policy where the economy is free from government intervention, free perfectly competitive market economy with an invisible hand guiding affairs. This they posited would maximize the national income, (Jhingan, 2013). They further regarded labour force and capital accumulation as the key to economic progress and thus laid emphasis on larger savings while advocating for profit making as profit induces investment; hence the larger the profit, the greater the accumulation of capital and investment.

Harrod Domar Growth Model

Developed independently by Roy Harrod in 1939 and Evsey Domar in 1946, the model explains economic growth rate in terms of the level of saving and productivity of capital. Both were interested in discovering the rate of income growth necessary for a smooth and uninterrupted working of the economy (Ahuja, 2013). Though their model differs in detail, yet they arrived at similar conclusion. The theory is framed on the fact that there exist a functional relationship between GDP growth and national net savings. Harrod and Domar asserted that for an economy to grow, it must save a certain proportion of its national income, if only to replace worn-out or impaired capital goods (building, equipment and materials). However in order to grow, new investments representing net additions to capital stock are necessary (Todaro & Smith, 2011). Thus, they suggested that economic growth rate depends on

- Level of Savings (higher savings enable higher investment)
- Capital Output Ratio (Efficiency of Investment)

The theory was of the view that if there is a high level of savings, it provides funds for firms to borrow and invest. Investment can thus increase the capital stock of an economy thereby generating economic growth through the increase in production of goods and services. The capital output ratio (the ratio of capital used to produce an output over a period of time) also, measures the productivity of investment such that if capital output ratio decreases, the economy will be more productive, thus higher amount of output is generated from fewer inputs leading to economic growth.

The theory posits that the growth rate of the GDP is determined by the net national savings ratio and the national capital-output ratio. That is the more an economy saves and invest out of a given GDP, the greater the growth of that GDP and the higher the national capital-output ratio, the lower the rate of GDP growth will be.

The Solow's Neoclassical Growth Model

Inspired by classical authors of the nineteenth century, Solow (1956) posited a neoclassical growth model seen as an improvement of the Harrod Domar model. Solow observed that sustained growth depends largely on technology; hence he introduced it as an independent variable to the growth equation. He posited that with variable technical coefficient there would be a tendency for capital-labour ratio (ratio of quantity of capital to the quantity of labour) to adjust itself through time in the direction of equilibrium ratio.

The basic Solow model shows that capital accumulation alone cannot explain economic growth. Growth in labour force is required. This refers to population growth. Population growth affects capital per worker i.e. the growth in the number of workers will cause capital per worker to fall.

The theory estimates the separate effects on economic growth of technological change, capital, and labour. It postulates that at any given point in time the aggregate output of the economy is determined by the quality and quantity of physical capital employed, the quantity of labour employed and the level of technical progress.

Solow model posited that a rise in capital accumulation and labour force will increase economic growth rate, but only temporarily because of diminishing returns. If an economy has one worker, adding one

more worker will increase output dramatically. But if the economy has thousands of workers, adding one more worker will not cause output to increase as much. Eventually, the economy will grow at a steady rate with GDP growing at the same rate as the increase in labour force and productivity. Once the steady state is reached and the resources in the country are used up, the economic growth rate can only be increased through innovation and improvement in technology. Solow model predicts that with increase in technology, the gap between rich and poor countries will narrow, a concept called the “Catch up growth” or convergence. That is, a tendency for poor economies to catch up with the rich ones. This is because poor countries have less capital to start with, so each additional unit of capital will have a higher return than in a rich country.

Endogenous Growth Theory

The endogenous growth theory explains the long run growth rate on an economy on the basis of endogenous factors. The theory implies that long-run growth is determined within the model rather than by some exogenously increasing variables and traces growth of output per capita to savings and efficiency, with efficiency being a function of education, diversification, privatization, liberalization, stabilization, strong capital market development etc (Grossman & Helpman, 1991). Education makes the labour force more efficient. Trade liberalization increases efficiency, stabilization reduces inefficiency associated with inflation, and privatization reduces inefficiency associated with state-owned enterprises (Uwakaeme, 2015). The theory argues that policy measures can have an impact on the long-run growth rate and countries with high level of efficiency, appropriate economic system, sound, economic policy, tend to grow more rapidly (Romer, 1994).

The theory was propelled by the seminal work of Romer (1986) which modeled technology growth as the outcome of competitive firms that invested in knowledge generation. Innovation here is seen as the driving force of long term economic growth. These innovations are basically a function of ideas that are often generated by investment in Research and Development.

The endogenous theory extends Solow’s theory by introducing endogenous technical progress in growth rate. This is so because in models with exogenous technical change and population growth, it never really mattered what the government did (Romer 1986). Thus, they advocated for endogenous technical progress which will result from the rate of investment, size of capital stock and the stock of human capital.

The theory further posited that investment in human capital; innovation and knowledge are significant contributors to economic growth. It stressed the need for strong government and private sector institutions to nurture innovation and provide incentives for individuals and businesses to be inventive. They posited that growth rate can be raised through government policies, increasing return to scale from capital investment in infrastructure, research and development as a key source of technical progress, investment in human capital (quality of labour force) through investment in education and health.

2.2 Empirical Framework

Khungwa (2007) analysed the determinants of economic growth in Malawi. Using time series data from the period 1970 to 2003, her findings revealed that terms of trade, openness, and human capital all had a significant effect on economic growth in Malawi. Policies and strategies to improve human capital and creating a conducive macroeconomic environment were recommended.

Using Vector Autoregressive (VAR) and cointegration analyses, Teixeira and Fortuna (2003) examined the interaction between human capital, innovation capability and economic growth in the Portuguese economy during the period 1960 to 2001. Their result confirmed that human capital and indigenous innovation efforts were enormously important to the process of Portuguese economic growth during the period.

Benito (2009) analysed the determinants of economic growth, using the Bayesian Model Averaging. The study showed that the most robust growth determinants of the cross-country growth were the price of investment, distance to major world cities, and political rights. He posited policy strategies such as tax reduction, improved access to international markets and promotion of democracy which will enhance institutional reforms.

Using 41 middle income developing countries, Dewan et al. (2001) examined the determinants of economic growth in developing countries. They found out that, apart from labour force growth, investment in both physical and human capital, as well as low inflation and open trade policies were necessary for economic growth.

Hantkovaska and Loayza (2004) in their study investigated the relationship between macroeconomic volatility (inflation) and long run economic growth and found that they were negatively related. The negative link was exacerbated in countries that are poor, undergoing intermediate stages of financial development, institutionally underdeveloped, or unable to conduct countercyclical fiscal policy.

Essien (2002) studied the determinants of economic growth in Nigeria from 1970 to 1998 attempting to establish the contribution of capital stock to economic growth, both in the short run and the long run. The study concludes that there is a long run relationship between capital stock and economic growth. The study further established that the impact of inflation on the GDP was negative because it causes uncertainty leading to a reduction of the effectiveness of price mechanism.

Uwakaeme (2015) examined the nature of relationship between economic growth and some selected growth determinants in Nigeria between 1980 and 2012. The study revealed that government excessive fiscal deficit and inflation had inverse relationship and was impediment to achievement of sustainable economic growth in Nigeria in the long run. However, trade openness, though positively related to GDP, has a weak impact on growth and as such the government should strive to achieve sustainable price stability, stronger capital market with minimized distortions, fiscal discipline that channels funds to productive sectors to encourage private investors.

Ayodele (2004) in his study found out that those countries that participated more in globalization through large increases in actual trade volumes since 1980 had increased growth rate. He found that while developing country's growth rates have slowed down over the years that of the globalizing countries accelerated from the 1970s through 1980s to the 1990s. From the study, he concluded that open trade policy led to faster growth and poverty reduction in poor countries.

3.0 RESEARCH METHODOLOGY

3.1 Study Data and Sources

This study is based on secondary data obtained from the Central Bank of Nigeria (CBN) - Statistical Bulletin (2006, 2013 and 2014) and the International Labour Organization website. The data consists of the annual time series of Nigeria's economic growth output proxied by the gross domestic product (GDP), Foreign Direct Investment (FDI), Money supply (M2), Prime lending rate (INT), Government Expenditure on Education (GEE), Trade Openness (DOO) and Employed Labour force (ELF). The data set was also restricted to the year 2014 because this was the period for which complete data set for the analysis could be obtained.

3.2 Model specification

The model for this study is structured to capture the functional relationship between variables that determine economic growth and how they have impacted on the growth of the Nigerian economy. These variables are selected based on posited economic theories and research findings of scholars so as to check on their effect in the Nigerian context.

A mathematical form of our model is built on a single equation model which involves specifying a multiple regression equation to check the economic relationship between the regressor and regressands.

The explanatory variables chosen in the broader specification below follow the growth models of Dobronogov and Iqbah (2005), Teixeira and Fortuna (2003) and Khungwa (2007).

Following the theoretical framework presented earlier and adopting the general form of the linear production function where $q = f(x_1, x_2, \dots, x_n)$ with q = Output (Dependent Variable) and x_1, x_2, x_n = Inputs (Explanatory variables), our model is specified thus

$$GDP = f (FDI, DOO, GCF, MS, INT, GEE, ELF) \text{ -----(1)}$$

Where

GDP = Gross Domestic Product (Proxy for economic growth)

FDI = Foreign Direct Investment
 DOO = Degree of Openness
 GCF = Gross Capital Formation
 MS= Money Supply
 INT = Interest Rate
 GEE = Government Expenditure on Education (Proxy for Human capital development)
 ELF = Employed Labour Force
 Being a growth model, the variables are transformed to their natural Logarithms thus:

$$\text{LnGDP} = a_0 + a_1\text{LnFDI} + a_2\text{DOO} + a_3\text{LnGCF} + a_4\text{LnMS} + a_5\text{INT} + a_6\text{LnGEE} + a_7\text{LnELF} \text{ ----(2)}$$

$a_1, a_2, a_3, a_4, a_6, a_7 > 0, a_5 < 0$

3.3 Data Analysis Technique

The data analysis technique employed in this study involves the use of the Ordinary Least Square (OLS) regression technique to test for the long run relationship between employed variables. However, the following strategies were also employed.

Economic time series variables most times exhibit trends of non-stationarity. In such situation the result of the model tested becomes spurious leading to a very high R^2 , false signal from the t statistic, suggesting highly significant regression coefficients and a Durbin Watson statistic tending to zero (Onuchuku & Adoghor, 1999). To avoid this, the unit root test using, the Augmented Dickey-Fuller (ADF) is carried out. According to Engel and Granger (1987) the unit root test is required to ascertain the number of times a variable is differenced to achieve stationarity. The stationarity must be achieved in order for the variables to be useful for meaningful analysis and decision making and stationarity can be achieved by differencing once, twice up to the nth order till the variable becomes stationary.

The Johansen Co-integration Test to check if there exist long-run relationship between variables was employed while the Granger Causality Test to the question to whether how much of the current Y can be explained by past values of Y and then see whether adding lagged values of X can improve the explanation. Finally, the stability test to check for stability of the variables were all employed in the study.

4. DATA PRESENTATION AND ANALYSIS

Unit Root Test

Testing the data set used in the study, the Augmented Dickey-Fuller tests reveal that all variables are stationary in their first difference. Below is a tabular presentation of the abridged unit-root tests carried out on the variables.

Variables	GDP	FDI	DOO	GCF	MS	INT	GEE	ELF
1 st order Difference	-4.2180	-4.4663	-5.0437	-2.9829	-3.4997	-5.7124	-3.8262	-4.8153
5% Critical Value	-2.9558	-2.9558	-2.9558	-2.9558	-2.9558	-2.9558	-2.9558	-2.9558
Prob Value	0.000736	0.000000	0.000001	0.000943	0.027481	0.000000	0.000498	0.000006
Remark	Stationary							

Cointegration Test

Eigenvalue	Likelihood Ratio	5 Percent Critical Value	1 Percent Critical Value	Hypothesized No. of CE(s)
0.895670	240.8627	156.00	168.36	None **
0.820721	166.2761	124.24	133.57	At most 1 **
0.698036	109.5553	94.15	103.18	At most 2 **
0.637204	70.03953	68.52	76.07	At most 3 *
0.452123	36.58035	47.21	54.46	At most 4
0.254766	16.72412	29.68	35.65	At most 5
0.181763	7.020252	15.41	20.04	At most 6
0.012058	0.400346	3.76	6.65	At most 7

*(**) denotes rejection of the hypothesis at 5%(1%) significance level

L.R. test indicates 4 cointegrating equation(s) at 5% significance level

The cointegrating result shows that the hypothesis of no cointegration among the variables can be rejected as four cointegrating equations were seen as their likelihood ratios were greater than the 5% critical value. We therefore reject the null hypothesis and conclude that there exists a long run equilibrium relationship among variables employed in the study.

Granger Causality Test

Pairwise Granger Causality Tests

Sample: 1980 2014

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Probability
LNFDI does not Granger Cause LNGDP	33	2.74269	0.08170
LNGDP does not Granger Cause LNFDI		1.07485	0.35502
DOO does not Granger Cause LNGDP	33	0.04282	0.95815
LNGDP does not Granger Cause DOO		6.21920	0.00582
LNGCF does not Granger Cause LNGDP	33	0.18703	0.83045
LNGDP does not Granger Cause LNGCF		0.33725	0.71659
LNMS does not Granger Cause LNGDP	33	2.23294	0.12596
LNGDP does not Granger Cause LNMS		0.00775	0.99228
INT does not Granger Cause LNGDP	33	1.23133	0.30723
LNGDP does not Granger Cause INT		0.34074	0.71415
LNGEE does not Granger Cause LNGDP	33	2.29130	0.11979
LNGDP does not Granger Cause LNGEE		0.21547	0.80748
LNELF does not Granger Cause LNGDP	33	9.65631	0.00065
LNGDP does not Granger Cause LNELF		2.43768	0.10569

The result revealed no bidirectional relationship among the variables, rather unidirectional causal relationship exists running from GDP to DOO and ELF to GDP.

Analysis of Regression Result

Dependent Variable: LNGDP				
Method: Least Squares				
Sample: 1980 2014				
Included observations: 35				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-6.670929	11.25651	-0.592628	0.5584
LNFDI	0.188996	0.053332	3.543777	0.0015
DOO	0.005731	0.010394	2.951404	0.0489
LNGCF	0.087867	0.108565	0.809348	0.4254
LNMS	0.964998	0.155479	6.206596	0.0000
INT	0.016508	0.007558	2.184331	0.0378
LNGEE	0.722944	0.073920	9.780093	0.0000
LNELF	0.787856	0.671368	4.173508	0.0258
R-squared	0.966306	Mean dependent var	12.74401	
Adjusted R-squared	0.957571	S.D. dependent var	0.674293	
S.E. of regression	0.138893	Akaike info criterion	-0.912598	
Sum squared resid	0.520862	Schwarz criterion	-0.557090	
Log likelihood	23.97047	F-statistic	110.6201	
Durbin-Watson stat	1.551416	Prob(F-statistic)	0.000000	

A close inspection of the results shows that foreign direct investment, trade openness, money supply, government expenditure on education and employed labour force are all rightly signed and individually significant at 5% level. However, interest rate was significant but had the wrong sign while gross capital formation was not significant. Hence all the variables specified in the model (except gross capital formation) are important determinants of economic growth in Nigeria.

The R^2 value of 0.966 shows that about 97% of the variations in Economic growth is accounted for by the explanatory variables of the model. The F-statistic value of 110.62 with a p-value of 0.000 indicates that all the seven explanatory variables are joint determinants of economic growth of Nigeria. The DW value of 1.55 indicates no significant autocorrelation in the error term.

From our result, the signs of FDI, DOO MS, GEE and ELF are in line with apriori expectation. According to economic theory, an increase in these variables will bring about increase in economic growth. The estimated coefficients of Foreign Direct Investment (0.189), Trade Openness (0.006), Money Supply (0.96), Government Expenditure on Education (0.72) and Employed Labour Force (0.78) show that a unit increase of these variables, will lead to an increase in economic growth by 18.9%, 0.6%, 96%, 72% and 78% respectively.

Gross capital formation was not significant. This might stem from the fact that investment in the country is still lagging behind. Most investments are government-based and are autonomous investment which must be done irrespective of the situation of the country. Also, there is a large saving investment gap in the country such that Nigerians do not save enough to be reinvested. Nigeria's highest investment profile was between 1975 and 1982. Theoretically since savings is the prime mover of investment, expectedly, the poor performance of investment would have been the direct consequences of low saving rate. Other important factors perhaps held constant or probably were not recognized as responsible for the poor performance of investment could be political instability, unfriendly economic environment and insecurity prevalent within the period.

Interest rate was not significant and did not conform to expectation. This case of interest rate could stem from the relationship between interest rate and investment in the development of Nigeria. Investors in most less developed countries and underdeveloped countries are more interested in profit making irrespective of the cost of capital.

Stability Test

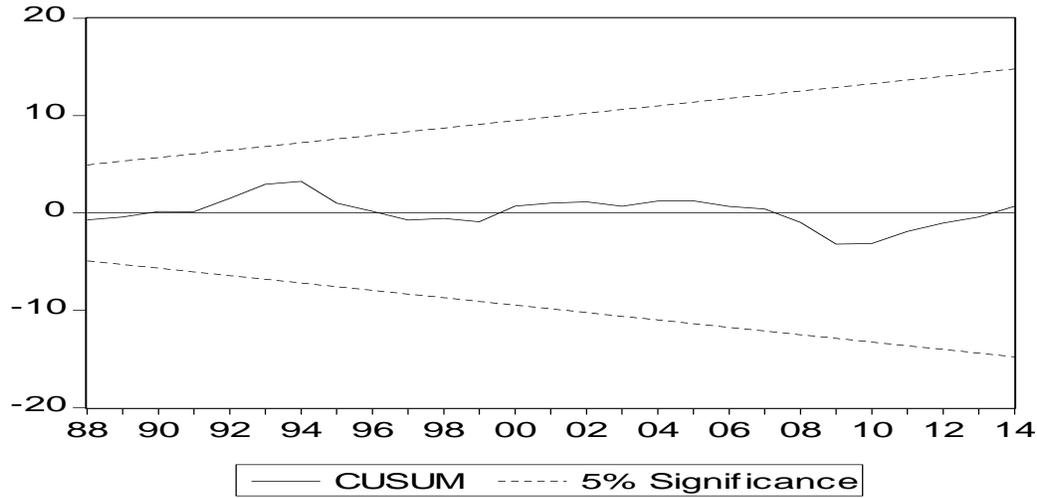


Figure 1: Plot of Cumulative Sum of Recursive Residuals

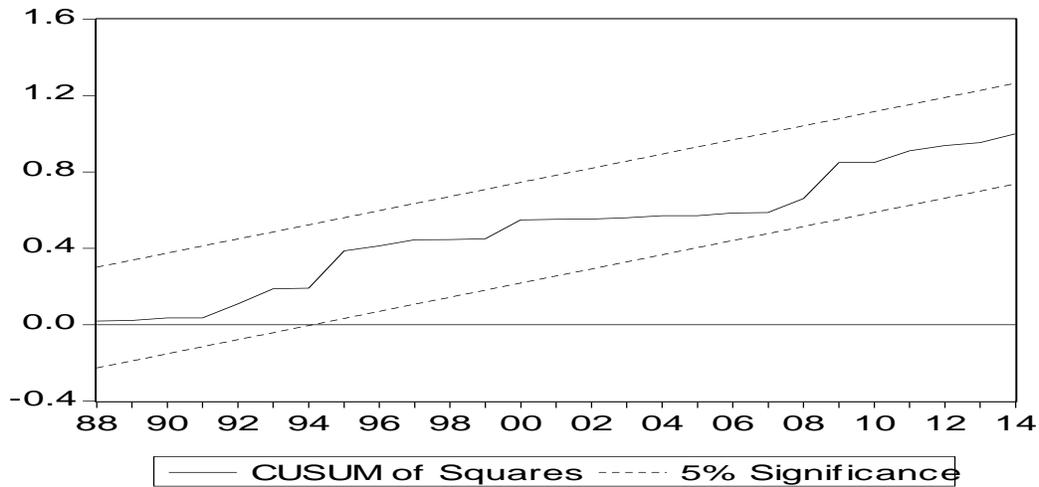


Figure 2: Plot of Cumulative Sum of Squares of Recursive Residuals

The stability test enables us to predict the dependent variables in a regression with a reasonable level of precision given the explanatory variables used in the analysis. The test is conducted using the method of the two bound recursive residuals. This method shows a plot of recursive residuals about the zero line as well as the plus and minus two standard errors shown at each stage. Also the residuals outside the standard error bounds reveal instability in the parameters used in the equations.

The test of stability in figures 1 and 2 above showed that neither the CUSUM nor CUSUMSQ plots crossed the 5 percent critical lines, therefore, one can generally conclude that the estimated parameters for the study are stable and are useful for policy decision.

5. CONCLUSION

The aim of this study was to empirically analyze the determinants of economic growth in Nigeria, covering the period, 1980-2014. In the study, efforts were made to develop linear regression models that

help to explain the study using macroeconomic indices. The unit root test, cointegration test, causality test, stability and the long run analysis among variables were all carried out. The study found that the economic growth and selected variables had a long run relationship and were stable over the period of study. While the economy has recorded a continuous economic growth over the democratic rule, such growth has been evident by the increase in foreign direct investment, labour force participation, human capital development and degree of openness. It is clear that economic policies should be centered on these parameters while avenues to improve on insignificant parameters should be considered. Based on our findings, the following recommendations are proffered.

There should be an improvement in investment in major sectors of the economy, especially the agricultural and industrial sectors as these sectors are the foundation of growth and have lagged behind over the years in Nigeria in comparison with her performance immediately after independence. These investments can activate idle resources, thereby creating more goods which can be exported and improve Nigeria's participation in the international market. Government should also adopt an aggressive national investment programme to channel all unexpected and unbudgeted incomes arising from oil windfalls, recovered loots and tie every of such unforeseen gains to specific investment projects. Also, investors should be highly encouraged by reducing taxes, making raw materials needed available; working tools etc. This will encourage private investors into local investments.

Foreign direct investors should be given operational terms favourable to the nation's economy, such that high remittance abroad, crowding out of local industries and unnecessary retrenchment of workers can be checked. Also, such foreign investors should be made to target idle or new sectors in the economy.

Finally, investment in human capital and engaging the huge unemployed labour force in the country should be of high importance to the government.

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