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GOVERNMENT EXPENDITURE AND ECONOMIC GROWTH

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Abstract

This study examines the impact of government expenditure on economic growth in Nigeria using a time series data for the period 1981-2014. The study took a sectorial approach into government expenditure by relating total government expenditure (i.e. capital and recurrent) on agriculture with economic growth. The Ordinary Least Squares (OLS) regression technique was employed on the time series data in order to study the impact of government expenditure on economic growth in Nigeria. Data were sourced from CBN 2014 Statistical Bulletin (Real GDP & government expenditure on agriculture) and Index Mundi (Inflation Rate & Interest Rate).

From the regression result, government expenditure on Agriculture (AGEXP) was found to have a positive impact on economic growth (RGDP) in Nigeria with a coefficient and t-statistic values of (0.028011) and (0.54473) respectively. Inflation rate (INFL) also had a positive significant impact on economic growth with a coefficient and t-statistic values of (0.12145) and (2.0829) respectively. However, Interest rate (INTR) was found to exert a negative but insignificant impact on economic growth with a coefficient and t-statistic values of (-0.052587) and (-0.19919) respectively.

This study concludes that government expenditure accelerates economic growth as supported by the Keynesian theory which explains that government expenditure can contribute positively to economic growth. The study therefore recommends that government should increase its effort on the agricultural sector and it should also compel non-governmental financial institutions most especially Banks to supplement its efforts at financing agriculture through the disbursement of loans at low interest rate. Generally, the government should increase its expenditures since public expenditure has a positive impact on economic growth. Besides increasing its expenditures, the government should ensure that capital and recurrent expenditures are properly managed in a manner that will increase the nation's production capacity and accelerate economic growth.

Keywords: Government expenditure, Real GDP, Inflation Rate, Interest Rate, Ordinary Least Squares.

1.0 INTRODUCTION

The impact of government expenditure on economic growth has continued to generate series of debate among scholars. Economic growth can be viewed as the ability of an economy to improve its production of goods and services over a period of time using the factor of production within

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the economy (Popkova, Shakhovkaya, & Mitrakhovich, 2008). Consequently, the economy has witnessed many shocks and disturbances both within and outside over the years (Audu, 2012). Over the years, Nigerians have been facing problems in relation to government expenditures; in the sense that there has been a stable rise in the expenses incurred by the government without a significant increase in economic growth and development. However, despite the huge amount incurred on public expenditures, the level of development witnessed in the country is still negligible (Mobede, Regina, Onwumere, & Imo, 2012). According to Sevitenyi (2012), Nigerian government expenditure has been on the increase due to the huge receipts from production and sales of crude oil, and the increased demand for public (utilities) goods like roads, communication, education, power and health. Unfortunately, this rising government expenditure has not culminated into significant growth and development, as Nigeria still ranks among the world's poorest nations. This problem is perhaps traceable to how fund is sourced in order to meet up with capital expenditure, how it is managed and allocated to very important capital projects, how it is monitored to ensure execution of capital projects, etc. These problems most of the time brings to interrogation the activeness and the general performance of one regime/tenure of government to another.

The contribution of agricultural sector to the economy cannot be overemphasized when putting into consideration its roles in sustainable development, in terms of employment capabilities, as well as export and financial impacts on the economy. In the Nigerian economy, Agriculture is an important sector. In the world today, agricultural sector acts as the catalyst that quickens the pace of structural transformation and diversification of the economy, thus, enabling the nation to entirely employ its factor endowment, relying less on foreign supply of agricultural product or raw materials for its economic growth and development as well as its sustainability (Ebere & Osundina, 2012). Government expenditure is probably the single most important policy instrument available to governments of most third world nations for promoting growth and equitable distribution of income. Notwithstanding the fact that government expenditure is used to improve technology, human capital and infrastructure development essential for economic growth, it also offers the incentives and enabling environment to support private sector investments in order to advance growth. An important problem faced by most nations is the low growth of government revenue being inconsistent with rapid growth of public expenditure inspired by the rise in demand for an enhanced economic welfare by the people.

Currently, in Nigeria, there has been conflicting opinion about government spending on agriculture; and the performance of the agricultural sector now and before independence. Theoretically, there is need to examine the extent to which government expenditure on agriculture enhance economic growth. How then government expenditure on agriculture does affect economic growth in Nigeria? It is against this backdrop that this paper seeks to examine the impact of government spending on the growth of the Nigerian economy.

The remaining part of this paper is sectioned as follows: Section two contains the Literature review and theoretical framework, Section three is the Methodology, and Section four is Estimation results and discussion. Lastly, Section five is Conclusion and Policy implication.

2.0 LITERATURE REVIEW

2.1 Concept of Economic Growth

Economic growth can be seen as the ability of an economy to improve its production of goods and services over a period of time using the factors of production within the economy (Popkova *et al.*, 2008). Dwivedi (2004) stated that economic growth is a sustained increase in per capita national output or net national product. Economic growth is the numerical increase in the monetary value of goods and services produced in an economy within a given year (Olu & Idih, 2015). Kanu and Ozurumba (2014) on their part described Economic growth as a positive change in the level of production of goods and services by a country over a certain period of time. In other words, economic growth is the increase in the value of goods and services produced by an economy. It can also be referred to as the increase in the Gross Domestic Product (GDP).

2.2 Concept of Government Expenditure

Government expenditures play key roles in the operation of all economies. Government expenditures are generally classified into expenditures on administration, defense, internal securities, health, education, foreign affairs, etc. and they have both capital and recurrent components (Aigheyisi, 2013).

Muritala and Taiwo (2011) in their study ‘Government Expenditure and Economic growth in Nigeria’ classified government expenditure as capital and recurrent expenditure. Their study

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revealed that there exist positive relationship between government expenditure and economic growth in Nigeria. They recommended continuous increase in government spending as it positively affects economic growth in Nigeria.

Recurrent expenditure on goods and services is expenditure which does not result in the creation or acquisition of fixed assets. It is mainly made up of expenditure on wages, salaries, purchases of goods and services as well as the consumption of fixed capital (Sevitenyi, 2012). Recurrent expenditure in other words refers to expenditure on purchase of goods and services, wages and salaries, operations as well as current grants and subsidies (usually classified as transfer payments).

Capital expenditure on the other hand, refers to the amount spent in the acquisition of non-current assets as well as expenditure incurred in the upgrade/improvement of existing non-current assets such as lands, building, roads, machines and equipment, etc., as well as intangible assets. Capital expenditure is usually seen as expenditure whose benefits can be seen in the future, as there could be some gaps between when it is incurred and when it starts affecting the economy positively (Aigheyisi, 2013).

2.3 Agriculture Expenditure and Economic Growth

Loto (2011), employs the method of Co-integration and Error Correction Mechanism to investigate the impact of government expenditures in various sector of the economy and finds that government expenditure on agriculture and education had negative impact on economic growth, though the impact of expenditure on education is observed to be insignificant.

Adewara and Oloni (2012) studied the ‘Composition of Public Expenditure and Economic Growth in Nigeria’; their study applied the Vector Auto Regressive (VAR) model. They considered expenditure on Health, Education, Defense, Investment, Agriculture, Water and Transportation and their effect on the economic growth of Nigeria. The results show discrepancies in the impacts of government expenditure in several sectors on economic growth in the country. However, government expenditure on agriculture and transportation were positively and significantly related to economic growth.

Okezie, Nwosu and Njoku (2013) investigated the impact of Nigerian government agricultural expenditure on economic growth for the period 1980-2011. The study employs the Engle-

Granger two step modeling (EGM) procedure to Co-integration based on unrestricted Error Correction Model and Pair wise Granger Causality tests. The results from the test indicate that there exists a long-run relationship between government expenditure on agriculture (capital and recurrent), and agricultural contribution to GDP (output). In addition, the causality results reveal that up to four lag lengths at 5% level of significance, there was no causality between the variables. However, at 10% level of significance and 2 lag lengths TGA (total government expenditure on agriculture) is found to granger cause AGDP with no reverse causality from AGDP to TGA (no feedback). Similarly, at 10% level of significance and 3 lag lengths, a unidirectional causality running from AGDP to TGA with no reverse causality from TGA to AGDP was found. According to empirical findings of this study, one may tentatively suggest that the growth of government expenditure on agriculture in Nigeria is not directly dependent on and determined by economic growth as Wagner's Law indicates. However, causality results reveal that reduction in total government expenditure on agriculture (TGA) would have a negative repercussion on agricultural contribution to GDP (output) in Nigeria.

Ebere and Osundina (2014) empirically investigated the impact of government expenditure on agriculture on economic growth in Nigeria over the years. The study used time series data of 33 years (1980-2012) sourced from the Central Bank of Nigeria. In analyzing the data gathered, the study employed the Ordinary Least Square (OLS) regression technique. Gross Domestic Product (GDP) was used as a proxy for economic growth, while agricultural output and government expenditure on agriculture were used as proxy of government expenditure on agriculture. From the result of the analysis, agricultural output, government expenditure and GDP were found to be related positively. It was also found that there exist a significant relationship between government expenditure in the agricultural sector and economic growth in Nigeria.

Njoku, Chigbu, and Akujuobi (2015), took a Granger Causality Approach in investigating the impact of government expenditure on the Nigerian economy for the period 1983 - 2012. Expenditures on Health, Education, Defense, Agriculture and Transportation and Communication were government expenditure components used as explanatory variables in the model. GDP was used as a proxy for economic growth. The Johansen Co-integration test result revealed that there exists a long run relationship between the Gross Domestic Product (GDP) and government expenditure on Health, Education, Defense, Agriculture and Transportation and

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Communication. The t-stat. values reveal that Agriculture expenditure t- stat. 3.315 (prob. 0.0047), Education expenditure t-stat. 8.378648 (prob. 0.000), Health expenditure t-stat. 5.523520 (prob. 0.000) and Transport and communication expenditure t-stat. 0.009453 (prob. 0.0026) are statistically significant and have significantly contributed to economic growth in Nigeria. While Defense expenditure t-stat. -2.125380 (prob. 0.0546) is statistically insignificant and have not significantly contributed to economic growth in Nigeria.

2.4 Interest Rate and Economic Growth

According to Keynes (as cited in Jelilov & Maiga 2015), interest rate is the reward for not hoarding but for parting with liquidity for a specific period of time. Interest rate is seen as a reward for accumulating financial assets and foregoing current consumption. From the early 1970s, the relationship between interest rate and economic growth has been an issue of great argument both theoretically and empirically. It is believed that low interest rate would stimulate investment spending and economic growth in both developing and developed nations in relation to the Keynesians and Neoclassical theories (Odhiambo, 2008).

Obamuyi (2009) investigated the relationship between interest rate and economic growth in Nigeria using time series data covering 1970-2006.

Jelilov and Maiga (2015) conducted a study on the impact of interest rate on economic growth in Nigeria for the period 1990-2013. however the growth can be improved by lowering the interest rate which will increase the investment.

2.5 Inflation Rate and Economic Growth

Inflation is the persistent rise in the general price level in an economy which affects the value of the local currency (Fatukasi, 2012).

Erbaykal and Okuyan (2008) established relationship between inflation and economic growth for Turkey within the period of 1987 to 2006 and found out that there exists a negative and significant relationship in the short run but no significant relationship was found between the two variables in the long run. They further carried out causal relationship between the two variables with the results establishing a causality relationship from economic growth to inflation.

Omoke and Oruta (2010) used the data covering the period of 1970 to 2005 to establish possible relationship between inflation and economic growth in Nigeria. He employed Johansen-Juselius Co-integration technique which is considered superior to Engle and Granger (1987) in assessing co-integration properties of variables in a multivariate context. The results showed a no co-integrating relationship between inflation and economic growth for Nigeria. They further employed VAR-Granger causality at two lag periods and established unidirectional causality running from inflation to economic growth and he therefore concluded that inflation indeed has an impact on growth.

Kasidi and Mwakanemela (2013) carried out a study on the impact of inflation on economic growth in Tanzania for the period 1990-2011. Using Correlation coefficient and Co-integration technique, the results revealed that inflation has a negative and statistically significant impact on economic growth. The study also showed that inflation and economic growth had no co-integration during the period of study.

Olu and Idih (2015) investigated the impact of inflation rate on economic growth in Nigeria between 1980 and 2013. The main aim of the study was to examine the nature of relationship that exists between inflation rate and economic growth. The data used for the study were sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin and the National Bureau of Statistics (NBS). The Ordinary Least Square (OLS) logged multiple regression was used to analyze the data gathered with Gross Domestic Product (GDP) as the dependent variable and Inflation Rate (INFR), Exchange Rate (EXCHR), Input of Labour and Input of Capital served as the independent variables. Their results showed that inflation rate in line with *a priori* expectations had a negative but non-significant relationship with economic growth in Nigeria.

Chude and Chude (2015) examined the impact of inflation on economic growth in Nigeria for the periods 2000-2009. In the study, Consumer price index (CPI) was used as a proxy for inflation and the GDP as proxy for economic growth, to examine the relationship. Employing the Ordinary Least Squares (OLS) regression technique on the data gathered, the result shows that there is a strong positive relationship between inflation and economic growth in Nigeria. Also,

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exchange rate impacted economic growth positively, while high interest rate dampens investment and hence hinders economic growth.

2.6 Theoretical Framework

The Keynesian Theory

Of all Economists who deliberated on the relation between government expenditure and economic growth. From the Keynesian thought, government expenditure can impact economic growth positively. Hence, a rise in the government consumption will probably lead to an increase in employment, profitability and investment. Thus, government expenditure enhances the aggregate demand, which stimulates an increased output depending on expenditure multipliers.

The Wagner's Law

Wagner's law was named after the Economist from Germany, Adolph Wagner (1835-1917). Wagner had advanced his 'law of rising public expenditures' by investigating trends in the growth of government spending and in the size of public sector. Wagner's law assumes that: (i) the extension of the functions of the nation leads to a rise in public expenditure on administration and regulation of the economy; (ii) the development of contemporary industrial society would result in growing political pressure for social development and call for augmented allowance for social deliberation in the conduct of industry (iii) the growth in government expenditure will be more than proportional rise in the national income and will therefore result in a relation of expansion of the public sector.

3.0 METHODOLOGY

3.1 Data and Data Source

Data were sourced from Central Bank of Nigeria (CBN) 2014 Statistical Bulletin (Real GDP & Government expenditure on agriculture) and Index Mundi (Inflation rate & Interest rate).

3.2 Model Specification

The regression model for this study was a modification of the model used by Okezie et al. (2013) using the model below:

$$AGDP = \emptyset TGA_t + u_t$$

Where:

AGDP represents the natural log of agricultural contribution to real gross domestic product.

TGA represents the natural log of total Government expenditure on agriculture.

u represents the error term.

Therefore, for the purpose of this study, the above model is modified thus:

$$\ln RGDP = \beta_0 + \beta_1 \ln AGE_{\text{Exp}} + \beta_2 \ln INFL + \beta_3 \ln INTR + \varepsilon$$

Where:

lnRGDP represents Log of Real Gross Domestic Product (a proxy for Economic growth).

lnAGE_{Exp} represents Log of Government Expenditure on Agriculture.

lnINFL represents Log of Inflation rate

lnINTR represents Log of Interest Rate

ε represents the stochastic error term.

β_0 represents the intercept

$\beta_1 - \beta_3$ represent the parameters.

3.3 *A priori* Expectation

According to theoretical and empirical evidences, government expenditure and interest rate are expected to affect economic growth positively. However, inflation is expected to retard growth.

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3.4 Data Estimation Technique

The Ordinary Least Squares (OLS) regression technique was used to analyze the data gathered for the period under review.

4.0 ESTIMATION AND DISCUSSION OF RESULTS

4.1 Estimation Results

Table 1: Ordinary Least Squares Estimation

```

*****
Dependent variable is LNRGDP
34 observations used for estimation from 1981 to 2014
*****
Regressor      Coefficient    Standard Error    T-Ratio[Prob]
C              5.1217        .73765            6.9432[.000]
LNAGEXP       .16162        .063622           2.5403[.017]
LNINFL        .14929        .071504           2.0878[.046]
LNINTR        -.31968       .22499            -1.4208[.166]
TECH          .18610        .016721           11.1298[.000]
*****
R-Squared      .98917        R-Bar-Squared     .98767
S.E. of Regression .24984      F-stat. F( 4, 29) 662.0239[.000]
Mean of Dependent Variable 7.9479      S.D. of Dependent Variable 2.2503
Residual Sum of Squares 1.8101      Equation Log-likelihood 1.6164
Akaike Info. Criterion -3.3836     Schwarz Bayesian Criterion -7.1995
DW-statistic   .88728
*****
    
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From the table above, in relation to *a priori* expectation, the result shows that only the coefficient of Government expenditure on agriculture (AGEXP) is of the correct sign. While the coefficients of inflation rate (INFL) and Interest rate (INTR) were not of the correct sign. Statistically, the significance of the estimated coefficients of all the variables were tested at five per cent (5%) level. Using t-statistics, AGEXP exerted a positive and statistically significant relationship with economic growth in Nigeria. Inflation rate also had a positive and significant impact on economic growth having reported a coefficient of 0.14929 and a t-stat of 2.0878. However, interest rate was found to have a negative impact on economic growth in Nigeria, although the impact was statistically insignificant.

The computed R^2 represents a very good fit since approximately ninety-nine per cent (99%) of the total variation in Economic growth during the period under review is explained by the explanatory variables (Real GDP, Inflation rate, and Interest rate) in the model; while 1% of the total variation is attributable to the influence of other factors which are not included in the model. Also, from the result, the F-statistic indicates that the model was generally significant. However, the result also reveals significant auto-correlation having reported a D.W statistic value of 0.88728. This generally made this result not fit for policy implication.

Table 2: Cochrane-Orcutt Method AR (2) converged after 5 iterations

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*****
Dependent variable is LNRGDP
34 observations used for estimation from 1981 to 2014
*****
Regressor      Coefficient      Standard Error      T-Ratio[Prob]
C              3.7920           .90428              4.1934[.000]
LNAGEXP       .028011          .051422            .54473[.590]
LNINFL        .12145           .058311            2.0829[.046]
LNINTR        -.052587         .26401             -.19919[.844]
TECH          .22373           .016992            13.1667[.000]
*****
R-Squared      .99338           R-Bar-Squared      .99179
S.E. of Regression .19461         F-stat. F( 6, 25) 625.1372[.000]
Mean of Dependent Variable 7.9479         S.D. of Dependent Variable 2.2503
Residual Sum of Squares .94687         Equation Log-likelihood 10.9192
Akaike Info. Criterion 3.9192         Schwarz Bayesian Criterion -1.4231
DW-statistic   1.9200
*****

```

As a result of the presence of auto-correlation in Table 1 above, the ‘Cochrane-Orcutt Method AR (2)’ was carried out as shown in Table 2 above. The estimation reveals that AGEXP has a positive but insignificant impact on economic growth in Nigeria having reported a coefficient and a t-stat value of 0.028011 and 0.54473 respectively. Against *a priori* expectation, inflation had a positive and significant impact on economic growth in Nigeria. Interest rate also against *a priori* expectation exhibited a negative but insignificant impact on economic growth.

The reported R^2 represents a very good fit since approximately ninety-nine per cent (99%) of the total variation in economic growth is explained by the explanatory variables in the model; while the remaining 1% of the variation is attributable to the influence of other factors which are not

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included in the regression model. The Adjusted R^2 value of approximately 0.99 implies that the model is 99% goodness fit. The F-statistic value of 625.14 which is significant at 5% level of significance implies that there exist a significant impact of the explanatory variables (Government expenditure on agriculture, Inflation rate, and Interest rate) on the dependent variable (Real GDP). The estimation also reveals a DW statistic value of 1.9200 which implies the absence of auto-correlation.

It should be noted that the slight difference between the estimation result in Table 1 and Table 2 above precipitated the Researcher to make conclusion based on Table 2. This is essentially because the DW Statistic in Table 1 i.e. 0.88728 shows the presence of auto-correlation as against 1.9200 reported in Table 2 which indicates the absence of auto-correlation and as such more suitable for policy implication.

4.2 Discussion of Findings

In line with *a priori* expectation, Government expenditure on agriculture (AGEXP) was found to have a positive impact on economic growth, although not statistically significant, as it reported a coefficient value of 0.02811 and a t-stat value of 0.54473. This implies that 1% increase in Government expenditure on agriculture will lead to a 0.028% increase in economic growth. This finding is in tandem with the findings of Adewara and Oloni (2012), Ebere and Osundina (2014), and Njoku et al. (2015) who all found Government expenditure on agriculture to positively impact economic growth. However, this finding is at variance with the findings of Loto (2011), and Okezie et al. (2013) who found a negative impact of Government expenditure on agriculture on economic growth.

Against *a priori* expectation, Inflation rate was found to exert a robust positive impact on economic growth having reported a coefficient of 0.12145 and a t-stat value of 2.0829, thus, implying that a 1% increase in inflation rate will lead to a 0.12% increase in economic growth. This result will not be far from the activities of the Government to devalue the Naira over the years. This finding is in agreement with the findings of Chude and Chude (2015) who also found inflation to exert a strong positive impact on economic growth. However, the finding is at logger-heads with the findings of Erbaykal and Okuyan (2008), Kasidi and Mwanemela (2013), and Olu and Idih (2015) who all found negative impact of inflation on economic growth.

Lastly, from the estimation, Interest rate was found to have a negative but insignificant impact on economic growth in Nigeria having reported a coefficient and t-stat values of -0.052587 and -0.19919 respectively, thus, implying that a 1% increase in Interest rate will lead to a reduction in economic growth by 0.05%. This finding is in line with the findings of Chude and Chude (2015) who also found a negative impact of interest rate on economic growth. This finding is however at variance with the findings of Obamuyi (2009), and Jelilov and Maiga (2015) who both found a positive impact of Interest rate on economic growth.

5.0 CONCLUSION AND POLICY IMPLICATION

5.1 Conclusion

The main objective of this study is to empirically analyze the impact of government expenditure on economic growth in Nigeria owing to the fact that there has been conflicting thoughts as to whether increase in government expenditure actually leads to increase in economic growth. From the research findings above, government expenditure on agriculture was found to have a positive impact on economic growth in Nigeria. Thus, confirming Keynesian Theory on government expenditure in relation to economic growth.

5.2 Policy Implication

From the regression results above, government expenditure and Inflation rate were found to have a positive impact on economic growth, thus, implying that the higher the government expenditure, the higher the economic growth. The study therefore recommends that government should increase its effort on the agricultural sector and it should also compel non-governmental financial institutions most especially Banks to supplement its efforts at financing agriculture through the disbursement of loans at low interest rate. Generally, the government should increase its expenditures since public expenditure has a positive relationship with economic growth. Outside increasing its expenditures, the government should ensure that capital and recurrent expenditures are properly managed in a manner that will increase the nation's production capacity and accelerate economic growth.

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APPENDICES

Appendix 1: Parameters of the Autoregressive Error Specification

$$U = .78738*U(-1) + -.13346*U(-2) + E$$
 (3.9270)[.001] (-.66929)[.509]
 T-ratio(s) based on asymptotic standard errors in brackets

Appendix 2: Diagnostic Tests

*	Test Statistics	*	LM Version	*	F Version	*

*	A:Serial Correlation	*	*CHSQ(1)= 10.9822[.001]	*	*F(1, 28)= 13.3593[.001]	*
*	B:Functional Form	*	*CHSQ(1)= 2.3242[.127]	*	*F(1, 28)= 2.0545[.163]	*
*	C:Normality	*	*CHSQ(2)= 2.6451[.266]	*	Not applicable	*
*	D:Heteroscedasticity	*	*CHSQ(1)= .31927[.572]	*	*F(1, 32)= .30334[.586]	*

- A:Lagrange multiplier test of residual serial correlation
- B:Ramsey's RESET test using the square of the fitted values
- C:Based on a test of skewness and kurtosis of residuals
- D:Based on the regression of squared residuals on squared fitted values

Appendix 3: Test of Serial Correlation of Residuals (OLS case)

 Dependent variable is LNRGDP
 List of variables in OLS regression:
 C LNAGEXP LNINFL LNINTR TECH
 34 observations used for estimation from 1981 to 2014

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
OLS RES(- 1)	.63669	.18794	3.3878[.002]
OLS RES(- 2)	-.093704	.20661	-.45352[.653]

 Lagrange Multiplier Statistic CHSQ(2)= 11.1562[.004]
 F Statistic F(2, 27)= 6.5930[.005]

Appendix 4: Autoregressive Conditional Heteroscedasticity Test of Residuals (OLS Case)

Dependent variable is LNRGDP

List of the variables in the regression:

C LNAGEXP LNINFL LNINTR TECH

34 observations used for estimation from 1981 to 2014

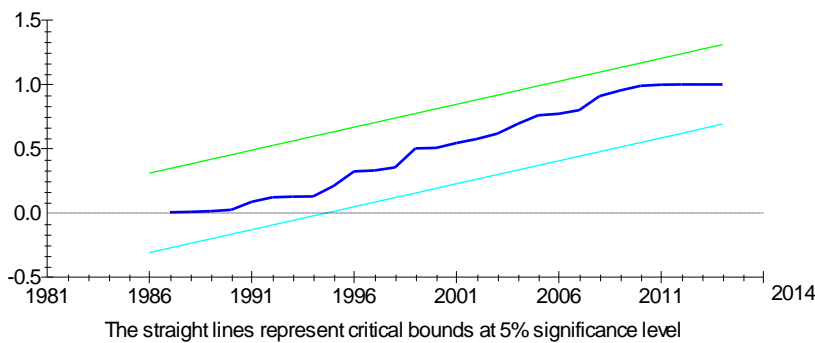
Lagrange Multiplier Statistic CHSQ(2)= 10.2452[.006]

F Statistic F(2, 27)= 5.8224[.008]

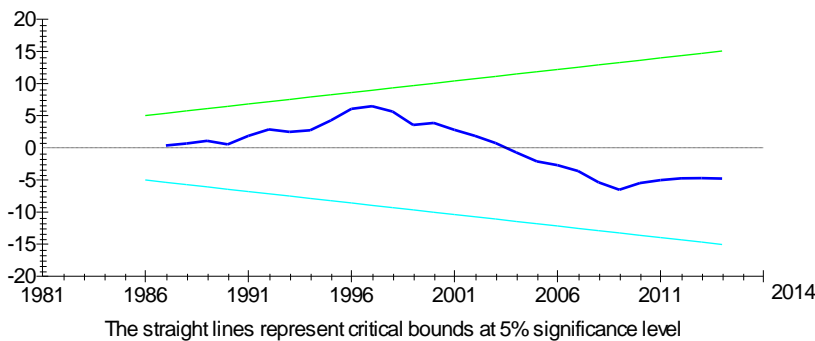
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Appendix 5:

Plot of Cumulative Sum of Squares of Recursive Residuals



Plot of Cumulative Sum of Recursive Residuals



Growth

Appendix 6: DATA

YEAR	RGDP(₦ Billion)	AGExp (₦ Billion)	INFL (%)	INTR (%)
1981	94.33	0.01	20.81	8.92
1982	101.01	0.01	7.7	9.54
1983	110.06	0.01	23.21	9.98
1984	116.27	0.02	17.82	10.24
1985	134.59	0.02	7.44	9.43
1986	134.6	0.02	5.72	9.96
1987	193.13	0.05	11.29	13.96
1988	263.29	0.08	54.51	16.62
1989	382.26	0.15	50.47	20.44
1990	328.61	0.26	7.36	25.30
1991	545.67	0.21	13.01	20.04
1992	875.34	0.46	44.59	24.76
1993	1,089.68	1.80	57.17	31.65
1994	1,399.70	1.18	57.03	20.48
1995	2,907.36	1.51	72.84	20.23
1996	4,032.30	1.59	29.27	19.84
1997	4,189.25	2.06	8.53	17.80
1998	3,989.45	2.89	10.00	18.18
1999	4,679.21	59.32	6.62	20.29
2000	6,713.57	6.34	6.93	21.27
2001	6,895.20	7.06	18.87	23.44
2002	7,795.76	9.99	12.88	24.77
2003	9,913.52	7.54	14.03	20.71
2004	11,411.07	11.26	15.00	19.18
2005	14,610.88	16.33	17.86	17.95
2006	18,564.59	17.92	8.24	16.90
2007	20,657.32	32.48	5.38	16.94
2008	24,296.33	65.40	11.58	15.48
2009	24,794.24	22.44	11.54	18.36
2010	54,612.26	28.22	13.72	17.59
2011	62,980.40	41.17	10.84	16.02
2012	71,713.94	33.30	12.22	16.79
2013	80,092.56	39.43	8.48	16.72
2014	89,043.62	30.85	8.06	16.55

Source: The above data were sourced from CBN 2014 Statistical Bulletin (RGDP & AGExp) and Index Mundi (INFL & INTR).