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Government Expenditure: Impact on the Nigerian Economic Development

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ABSTRACT

The paper examined the impact of government expenditure on economic development in Nigeria, using series from 1960-2013. The study employed secondary data such as Financial Reviews of Central Bank of Nigeria (CBN), and/or National Bureau of Statistics (NBS). The paper explored various econometrics and statistical analytical (.i.e., Eview 8.0) method to examine the relationship between GEXP and economic development. The paper employed various diagnostic tests on Nigeria's time series data from 1960-2013. The entire tests rejected the null hypothesis and/or accepted the alternative hypothesis. From the empirical result findings, it was discovered that there is a significant or direct relationship between GEXP and economic development in Nigeria. The study recommended therefore that government should ensure that budget is well planned to capture every facet or sector of the economy; intensify efforts to strengthening its source of revenue for spending on education, direct link between the government and private individuals in heightening spending on education and/or other viable sectors; budgetary allocation to education, defense, etc should be increased. Hence, economic growth and/or development in Nigeria.

Keywords: Capital expenditure, recurrent expenditure, economic development.

INTRODUCTION

The impact of government expenditure cuts across sectors of the economy, in other words government expenditure has a direct relationship with economic growth and/or development. Hence, the Gross Domestic Product (GDP) and Gross National Product (GNI) have witnessed up surged in recent times. This expenditure led to the formulation of budget at every fiscal year (Shuaib & Peter, 2010: 44). Certain services, the market forces (or private individuals) are unwilling or unable to provide them at all because there are not profit oriented rather maximum social welfare oriented. With this, the government will spread its expenditure tentacle in order to meet up with the demand or ever increasing expenditure of its citizenries (*ibid.,* 45-46).However this ever increasing expenditure could be traded-off either exploring the available resources or through taxation or public debt (.i.e., domestic or external) or increase in aggregate government expenditure (i.e., fiscal policy) (Shuaib & Peter, *loc. cit.*, 47-50).

Government responsibility subsequently covers major area—such as—Defense; Security; Education; Health; Logistics; Arms of Government (Executive; Legislature; & Judiciary); building or constructing of public roads, dams, social & economic infrastructures, etc. These services are termed as pure public goods, because they are nonrivalruos and non-excludability in consumption. In other words, these goods and services are the type once provided—extra resource cost of another person consuming the goods and services is zero. These goods and services are such that the market mechanism is unwilling or unable to offer (Musgrave & Musgrave, 2005; Jhingan 2006; Shuaib & Peter, 2010: 44).

The one of the objectives of the government is to ensure that an average citizen in the country is able to achieve social welfare (or standards of living) (Shuaib & Peter, *op.cit.*, 47-50).

The government expenditure is variable in the model of economic growth and development. Economic growth and development has its components as—(i) increase in per capita income or output; (ii) change in the structure or technological of the economy; (iii) increase in the basic needs of the citizenries (such

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as: housing, clothing, food, education, health, clean drinkable water, access to good road networks); (iv) access to economic and social amenities, (v) poverty alleviation; (v) evenly distribution of national income or wealth; (vi) decline in unemployment; (vii) control of inflation; (viii) zero corruption level; (ix) population control; (x) change in the composition of productivity, wants, goods, consumption, labour force, volume of trade, incentives, institutions, and knowledge or the upward movement of the entire social system (Jhingan 2006: 4-5).

Besides, the capital formation leads to economic development, in the sense that government funds are derived from indigenous savings, though it is low in Nigeria—resulting from lack of information among the citizenries (Shuaib & Dania, 2015). However, economic development may be measured through building of capital equipment on a sufficient scale to increase productivity in agriculture, mining, plantations and/or industry on the one hand. While on the other, capital is required to construct schools, hospitals, roads, railways, standards of living, research and development (R & D), etc. (Jhingan, 2006; Ainabor, Shuaib & Kadiri, 2014: 34). The essence of economic development is the creation of economic and social overhead capitals (or costs), which leads to increase in national output and/or income through creation of employment opportunities and/or reduction of vicious circle of poverty both from the demand side and supply side. Economic development is *sine qua non* and/or is not normally achieved in the short run rather in the long run, where the citizenries of *per se* country could match up with the 21st century trends relatively to economies of the world. The discovered problem (s) that is/are responsible for the emerging economies is/are resulting from low capital formation (or base) (Jhingan, 2006; Ainabor, *et. al.*, 2014).

Most recently, the government expenditure (.i.e., Capital expenditure & Recurrent expenditure) has increased astronomically, this has resulted from the creation of more States, Parastatals and/or being headed by Ministers or Directors or Permanent Secretaries. While every office has its budget allocation, when all these are summed—tantamount to enormous or plethora amount of funds (.i.e., Capital expenditure & Recurrent expenditure).The inability to match up revenue with expenditure results to debt or budget deficit or increase in aggregate government expenditure or taxation or devaluation of currency.This assertion stems an inverse relationship with Nigerian economy growth and development. The reason is that Nigerian economy is monoeconomy, in other words, the source of economic functionality of Nigerian economy is crude oil. Whenever there is crisis in the sector, it translates into all sectors of the economy as witnessed in the 1980s. It was worsened when most recently (i.e., 2015) there was a significant drop of crude oil prices in OPEC. This has had inverse relationship with countries that depended on crude oil or agriculture (monoeconomy)—such as Nigeria. In other words, in Nigeria growth rate has dropped from 7% to 4.2%. This has led to devaluation of currencies and/or other stringent fiscal and monetary policies—such as reduction in taxes and deliberate attempt to make a mismatching of the unit of domestic currency and another currency (most especially American dollar as the commonest currency for exchange for goods and services) (Ainabor, *op.cit.*, 35-40).

Todaro & Smith, (2006) perceived development in terms of the reduction or elimination of poverty, inequality and unemployment that is economic in character must involve change in the composition of an economy's outputs and inputs.

Available statistics show that total government expenditure and its components have continued to rise in the last three decades. In the same manner, composition of government recurrent expenditure shows that expenditure on defense, internal security, education, health, agriculture, construction, transport and communication increased during the period under review. Furthermore, the various components of capital expenditure that is, defense, agriculture, transport and communication, education, power, and health also show a rising trend between 1960 and 2014 (Nurudeen & Abdullahi, *op.cit.*, 25-26).

Most recently, the cost of governance in emerging countries—such as—Nigeria, has increased tremendously resulting from the fact that the institutional and/or relational practices of and responses to such exigencies is referred to as fiscal federalism. However, it refers to the scope and structure of the various tiers of government and/or involvement in the delegation and/or devolution of governmental responsibilities and functions and the allocation of resources and/or means within the nation. These functionalities and/or responsibilities have contributed to the huge capital and recurrent expenditures by government (Shuaib & Peter, 2010:245).

LITERATURE REVIEW

Theoretical and empirical research works carried out by various researchers on capital formation and economic development are found on the schools or academic's archives.

Determining the government expenditure (Capital expenditure and Recurrent expenditure), education, capital formation, corruption, fiscal policy, agriculture, and economic growth and development, Shuaib, Ekeria and Ogedengbe, (2015) examined the impact of fiscal policy on the growth of the Nigerian economy using time series data from 1960-2012. The study explored secondary data from the Central Bank Statistical Bulletin for the period of 1960 to 2012 and used various econometric analyses and/or statistical analytical (E-view 7.2) method to examine the relationship between fiscal policy and growth. The paper tested the stationarity—through Group unit root test, and stationarity found at first differenced at 5% level of significance. Factor method, Goodness-of- fit summary, VAR and its properties were tested. Also, the Co-integration Technique and Pairwise-Granger Causality were employed in this study to test and determine the long-run relationship among the variables examined.

Shuaib, Ahmed & Kadiri, (2015) examined the impact of innovation for 21st century educational sector in Nigerian economic growth. The paper employed the characteristics of each time series by testing their stationarity using Augmented Dickey Fuller (ADF) tests, including co-integration tests and Error Correction model through over-parameterization and parsimonious of the variable to enable the researcher to ascertain both short run and long run equilibria. Shuaib, Ahmed & Kadiri (2015). Examined the impact of innovations and transformations in teaching and learning on educational systems in Nigerian economic growth, The paper employed the characteristics of each time series by testing their stationarity using Augmented Dickey Fuller (ADF) tests, including co-integration tests and Error Correction model through over-parameterization and parsimonious of the variable to enable the researcher to ascertain both short run and long run equiliria. The results of the findings revealed that total government expenditure on education proxied for teaching and learning has direct relationship with economic growth.

Shuaib, Igbinosun and Ahmed, (2015) examined the impact of government agricultural expenditure on the growth of the Nigerian economy. The study employed secondary data sourced from National Bureau of Statistics, and Financial Review of Central Bank of Nigeria. The study employed E-view 7.2 statistical output as a window in exploring the possible links between government agricultural expenditure and economic growth. The results revealed that government agricultural expenditure has a direct relationship with economic growth which statistically significant at 5% level.

Shuaib & Dania, (2015) examined the capital formation: impact on the economic development of Nigeria, using time series data from 1960 to 2013. The paper applied Harrod –Domar model to Nigerian economic development model and tested if it has a significant relationship with Nigerian economy. The paper explored various econometrics and statistical analytical (.i.e., Eview 7.2) method to examine the relationship between capital formation and economic development. The paper tested the stationarity and/or different diagnostic tests of Nigeria's time series data. The entire tests rejected the null hypothesis and accepted the alternative hypothesis. From the empirical findings, it was discovered that there is a significant relationship between capital formation and/or economic development in Nigeria.

Shuaib, Ekeria and Ogedengbe, (2015) examined the impact of corruption on the growth of Nigerian economy using time series data from 1960 to 2012. The paper utilized secondary data and the paper explored various econometrics and/or statistical analytical (Eview 7.2) method to examine the relationship between corruption and economic growth. The paper explored unit root, Cointegration analysis to test for the Nigeria's time series data and used an error correction mechanism to determine the long-run relationship among the variables examined. From the results of the findings, it was discovered that corruption has an inverse relationship with growth of an economy.

Ainabor, *et. al*, (2014) examined the impact of capital formation on the growth of Nigeria using time series data from 1960 to 2010. The paper applied Harrod –Domar model to Nigerian growth model and tested if it has a significant relationship with Nigerian economy. The paper utilized secondary data and the paper explored various econometrics and/or statistical analytical (Eview 4.0) method to examine the relationship between capital formation and economic growth. The paper tested the stationarity, OLS, cointegration of Nigeria's time series data and used an error correction mechanism to determine the long-run relationship among the variables examined. The results of the findings supported the Harrod-Domar model which proved that the growth rate of national income was directly related to saving ratio and capital formation (i.e. the more an economy is able to save-and invest-out of given GNP, the greater will be the growth of that GDP).

Examining the government expenditure (Capital expenditure and Recurrent expenditure), ICT and economic growth and development, Shuaib and Kadiri, (2012) examined the impact of Information and Communication Technology (ICT) on the Growth of the Nigerian Economy using annual time series data from 1970 to 2010. The basic variables of concern derived from the literature review are: real gross domestic product proxied as economic growth, ICT proxied as telecommunications (TELCOM), enrolments into Tertiary (TSE), Secondary (SSSE) and Primary (PSE) on educational institutions was used as proxied for human development. With the aid of statistical package (E-views, version 3.1); the model was estimated using annual time series data from 1970 to 2010. The paper employed stochastic characteristics of each time series by testing their stationarity using Augmented Dickey Fuller (ADF) and Phillip Perron (PP) tests, including cointegration tests and Vector Autoregressive Measure. Empirical results revealed that there is, indeed a long-run relationship among government expenditure on education, human capital development proxied as tertiary school enrolments, Secondary school enrolments and Primary school enrolments and economic growth in Nigeria. All the variables have short and long run relationship with each other as revealed by Johansen cointegration. From the Findings, it was revealed that there is a feedback mechanism between ICT and economic growth in Nigeria (Aluyor & Shuaib, 2012).

Abdullahi (2000) examined the relationship between government expenditure and economic growth and reported that size of government is very important in the performance of economy. He advised that government should increase its spending on infrastructure, social and economic activities. In addition, government should encourage and support the private sector to accelerate economic growth. To corroborate the work of Abdullahi (2000), Devajaran, Swaroop, & Zou, (1996) evaluated the relationship between the composition of government expenditure and economic growth for a group of developing countries. The regression results illustrated that capital expenditure has a significant negative association with growth of real GDP per capita. However, results showed that recurrent expenditure is positively related to real GDP per capita.

The casual link between public expenditure and national income was analysed in detail by Singh and Sahni (1984). Thereon many studies have been conducted in this direction. The findings of these studies produced contradictory results, ranging from 'bi-directional causality' to 'no causality' between both variables. For example Ahsan *et al*., (1989), Ram (1986), Holmes and Hutton, (1990) and Singh and Sahni, (1984) concluded that public expenditure expansion has significant effect on national income growth. On the contrary, Barth, *et al.*, (1990) and Laudau (1983, 1986) found that public expenditure expansion has negative effects on national income growth for both developed and less developed countries. Ram (1986) in his study of 63 countries found no consistent causality between these two variables, while in a recent study conducted between these two variables, while in a recent study conducted by Sakthivel and Yadav, (2005) for India, it was found that bi-directional causality exists between national income and public expenditure.

Examining government-economic growth relationship, Fajingbesin & Odusola, (1999) empirical investigated the relationship between government expenditure and economic growth in Nigeria. Their econometric results indicated that real government capital expenditure has a significant positive influences on real output. However, the results showed that real government recurrent expenditure affects growth only by little. Odedokun (1997) and Shioji (2001) obtain a similar result as they find that infrastructural public investment promotes economic growth. Odedokun concentrated on a sample of 48 developing countries during period 1970-1990, while the latter study focused on 48 states in United States over the period 1963-1967 and on 46 Japan's prefectures during the 1955-1999 periods some researcher however believe the government spending has no or negative effects on economic growth The work of Abu and Abdullahi (2010) in their short-run analysis of recurrent and capital expenditures, as well as government spending on agriculture, education, defense, health and transport communication sectors of the Nigerian economy obtained results that revealed that government total capital expenditure, total recurrent expenditure, and government expenditure have negative effects on economic growth.

On the contrary, the rising government expenditure on transport, communication, and health results to an increase in economic growth.

Abu and Abdullahi (2010) examined rising government expenditure has not translated to meaningful development as Nigeria still ranks among world's poorest countries. In an attempt to investigate the effect of government expenditure on economic growth, we employed a disaggregated analysis. The

results reveal that government total capital expenditure (TCAP), total recurrent expenditures (TREC), and government expenditure on education (EDU) have negative effect on economic growth. On the contrary, rising government expenditure on transport and communication (TRACO), and health (HEA) results to an increase in economic growth.

Olugbenga & Owoye, (2007) investigated the relationship between government expenditure and economic growth for a group of 30 OECD countries during the period of 1970-2005. The regression results showed the existence of a long-run relationship between government expenditure and economic growth. In addition, the authors observed a unidirectional causality from government expenditure to growth for 16 out of the countries, government expenditure in out of 10 countries, confirming the Wagner's law. Finally, the authors found the existence of feedback relationship between government expenditure and economic growth for a group of four countries.

Nworji & Oluwalaiye, (2012) examined the impact of government spending on road infrastructure development on economic growth in Nigeria for the period 1980-2009. The study employed multiple regression analysis model specified on the basis of hypothesised functional relationship between government spending on infrastructure development and economic growth. Indicators used for government spending are values for defense, transport/communication, and inflation rate as the explanatory variables, while gross domestic product constituted the explained variable. The model for the study was estimated using the Ordinary Least Square (OLS) technique, and further evaluation was carried out using the coefficient of determination to explain the variations between the dependent and independent variables. The outcomes showed that transport and communication, including defense, individually exerted statistically significant impact on the growth of the economy; however, inflation exerted positively but statistically in the period reviewed. However, the variables jointly exerted statistically significant impact on the growth of the economy

Samson (2013) examined the relationships and dynamic interactions between government capital and recurrent expenditures and economic growth in Nigeria over the period 1961 to 2010. Real Gross Domestic Product (RGDP) was used as a proxy for economic growth in the study. The analytical technique of Vector Error Correction Model and Granger Causality were exploited. Based on the result findings, it is evident that the Wagnerian and Rostow- Musgrave hypothesis were applicable to the relationship between the fiscal variables used in this study in Nigeria.

Taiwo & Agbatogun, (2011) analyzed the implications of government spending on the growth of Nigeria economy over the period 1980 – 2009. Using Johansen Cointegration, unit root test and error correction model, it was discovered that total capital expenditure, inflation rate, degree of openness and current government revenue are significant variables to improve growth in Nigeria. In the final analysis, future expenditure on capital and recurrent should be managed along with adequate manipulation of other macroeconomic variables to ensure steady and/or accelerate growth.

Ogedengbe, et al, (2013) examined empirically the impact of health sector on the growth of Nigerian economy using annual time series data from 1970 to 2010. The basic macroeconomic variables of concern derived from the literature review are: real gross domestic product as a proxy for economic growth, total government expenditure on education (TGEXPE), total government expenditure on health (TGEXPH), enrolments into Tertiary School enrolments (TSE),Senior Secondary School enrolments(SSSE) and Primary School enrolments (PSE) were used as a proxy for human capital development (HCD). With the aid of statistical package (E-views, version 3.1); the model was estimated using annual time series data from 1970 to 2010. The paper employed stochastic characteristics of each time series by testing their stationarity using Augmented Dickey Fuller (ADF) and Phillip Perron (PP) tests, including cointegration tests and Granger Causality. Empirical results revealed that there is, indeed a long-run relationship between government expenditure on education, government expenditure on health, and human capital development as a proxy for tertiary school enrolments, Secondary school enrolments and Primary school enrolments and economic growth. All the variables have short and long run relationship with each other as revealed by Granger-causality test. From the Findings, it was revealed that there is a feedback mechanism between human capital development and economic growth.

Tajudeen & Ismail, (2013) analysed the impact of public expenditure on economic growth in Nigeria during the period 1970 to 2010 making use of annual time series data. The study employed the bounds testing (ARDL) approach to examine the long run and short run relationships between public expenditure and economic growth in Nigeria. The bounds test suggested that the variables of interest

put in the framework are bound together in the long-run. The associated equilibrium correction was also significant confirming the existence of long-run relationships. Our findings indicated the impact of total public spending on growth to be negative which is consistent with other past studies. Recurrent expenditure however was found to have little significant positive impact on growth.

THEORETICAL AND CONCEPTUAL FRAMEWORK

An endogenous model of economic growth appears to be the most suitable for the study. The model suggests that endogenous factors such as physical capital, human capital, technological advancement etc., can significantly affect economic growth Shuaib (as cited in Romer, 1986).

The model assumes an introduction of endogenous technical progress in growth models. The essence of the model is that GNP (economy growth) is decomposed into technological enhancement, which can be explained in terms of technological production function. Thus:

$$\Delta A = f\,(K_A, H_A, A) \quad (1)$$

Where ΔA is the increasing technology; K_A = the amount of capital invested in producing the new design (or technology); H_A= the amount of human capital (labour) employed in research and development of the new design; A = the existing technology of design; F = the production function for technology.

The production function shows that technology is endogenous when more human capital is employed for research and development of new designs, the technology increases by a larger amount. .

$$\text{i.e. } \Delta A > 0 \quad (2)$$

If more capital is invested in research laboratories and equipment to invent the new design, then technology also increases by a larger amount

$$\text{i.e., } \Delta A > 0 \quad (3)$$

Further, the existing technology, A also leads to the production of new technology, ΔA, since it is assumed that technology is non-rival input and partially excludes, there are positive spillover effects of technology which can be used by other firms. Thus, the production of new technology (knowledge or idea) can be increased through the use of physical capital, human capital and existing technology.

For economic growth to be achieved, Shuaib-type of endogenous growth model is adapted for this paper. Domestic economy (E_d) needs to be developed through human capital for research and development (R & D) of new way (s) of carrying out production (.i.e. scale of operations or economies of scale of production), innovation, knowledge and technical know-how. These are prerequisites to development in Nigerian economy.

This specification can also be expressed in rates of growth. The extended Romer model can easily be used to carry out simple regression-based estimates of the impact of Government Expenditure on the Development of the Nigerian Economy.

Model Specifications

The model of this paper is hinged on the model of Shuaib, Ahmed & Kadiri (2015), which enables the examination of the impact of government expenditure on the development of the Nigerian economy. The model is designed below:

$$RGDP = f(GCF_t, CEXP_t, REXP_t, EDR_t, DDR_t, DSR_t)$$

$$RGDP = \alpha_0 + \alpha_1\Delta GCF_{t-1} \pm \alpha_2\Delta CEXP_{t-1} \pm \alpha_3 REXP_{t-1} \pm \alpha_4 EDR_t \pm \alpha_5 DDR_{t-1} \pm \alpha_6 DSR_t + \mu \quad (4)$$

Where: $RGDP_t$ = Real gross domestic product as a proxy for economic growth; $CEXP_t$ = Capital Expenditure proxied for infrastructural development and establishment of mega projects; $REXP_t$ = Recurrent Expenditure proxied salaries; EDR_t = External debt ratio; DDR_t = Domestic debt ratio; DSR_t = Debt servicing ratio; μ = Stochastic term or error term

For the estimation purposes, we re-specify equation (4) into double logarithm functional form:Thus, this gives:

$$LOGRGDP = \alpha_0 + \alpha_1\Delta LOGGCF_{t-1} \pm \alpha_2\Delta LOGCEXP_{t-1} \pm \alpha_3 LOGREXP_{t-1} \pm \alpha_4 LOGEDR_t \pm \alpha_5 LOGDDR_{t-1} \pm \alpha_6 LOGDSR_t + \mu \quad (5)$$

The a priori expectations are as follows: $\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5 \alpha_6 > 0$

Where: α_0= Intercept, α_1 = Coefficient of gross capital formation; α_2 = Coefficient of capital expenditure; α_3 = Coefficient of Recurrent expenditure; α_4 = Coefficient of External debt ratio; α_5 = Domestic debt ratio; α_6 = Coefficient of Debt Servicing Ratio; and μ = white noise error term.

The contribution of this study to knowledge is in terms of the estimation techniques employed and/or the data used which is extended to 2013. An attempt will be made to empirically examine the relationship between the Government expenditure and economic development of Nigeria for the periods 1960 – 2013 under review. The equation was estimated using a variety of analytical tools, including, Least Square Tests, Robust Least Squares Analysis, Group Unit Roots, Wald Test, Jarque-Bera or Residual Tests, Coefficient Confidence Intervals, and/or Test for Equality of Variance between Series.

The results are discussed below. The time series data used for the study covers the period 1960 and 2013. The study employed secondary data which are derived from various issues of CBN *Annual Report and Statement of Accounts (2013)*, and CBN *Statistical Bulletin (2014).*

SUMMARY OF DIAGNOSTIC TESTS

Table1.*Least Squares*

Dependent Variable: LOG_RGDP_				
Method: Least Squares				
Date: 05/19/15 Time: 14:18				
Sample (adjusted): 1981 2012				
Included observations: 32 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.624059	0.294135	15.72089	0.0000
LOG_CEXP_	0.003051	0.049733	0.061344	Ere is t0.9516
LOG_DDR_	-0.003999	0.056408	-0.070901	0.9440
LOG_DSR_	0.206529	0.031622	6.531268	0.0000
LOG_EDR_	-0.039125	0.035903	-1.089721	0.2862
LOG_GCF_	0.074463	0.047434	1.569805	0.1290
LOG_REXP_	-0.022447	0.015279	-1.469209	0.1542
R-squared	0.938655	Mean dependent var		5.601401
Adjusted R-squared	0.923932	S.D. dependent var		0.173523
S.E. of regression	0.047859	Akaike info criterion		-3.050494
Sum squared resid	0.057261	Schwarz criterion		-2.729865
Log likelihood	55.80791	Hannan-Quinn criter.		-2.944215
F-statistic	63.75469	Durbin-Watson stat		1.185166
Prob(F-statistic)	0.000000			

The least square tests was employed to ascertain the coefficients of each variable and its various probabilities, the R-squared and Adjusted R-squared, F-statistic and its probability, and Durbin-Watson (D-W) stat. The output shows the coefficients with both positive and negative signs and/or their probabilities. All the probability for obtaining the coefficient values are statistically insignificant at 0.05 (or 5%) except the probability of obtaining the coefficient value of DSR, which is statistically significant at 0.05 (5%). The R-squared is .94 (94%) and Adjusted R-squared is 0.92 (92%) both percentages are high. 94% was explained by the explanatory variables in the explained variable. While 6% or (0.06) was unexplained by the explanatory variables due to error term or stochastic term The D-W is 1.19, which states that there is presence of serial correlation or auto-correlation. Though the probability (0.000000) of obtaining the F-statistic value (63.75469) lie between 0 and 5, which is satisfactory for the output globally as shown in table 1 in appendix.

Table2.*Robust Least Squares Analysis*

Dependent Variable: LOG_RGDP_		
Method: Robust Least Squares		
Date: 05/19/15 Time: 14:17		
Sample (adjusted): 1981 2012		
Included observations: 32 after adjustments		
Method: M-estimation		
M settings: weight=Bisquare, tuning=4.685, scale=MAD (median centered),		

H-matrix scaled				
Huber Type I Standard Errors & Covariance				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	4.737065	0.214999	22.03293	0.0000
LOG_CEXP_	0.029444	0.036353	0.809943	0.4180
LOG_DDR_	0.104618	0.041231	2.537332	0.0112
LOG_DSR_	0.083136	0.023114	3.596796	0.0003
LOG_EDR_	-0.039636	0.026244	-1.510293	0.1310
LOG_GCF_	0.018535	0.034672	0.534569	0.5929
LOG_REXP_	-0.026345	0.011168	-2.358987	0.0183
	Robust Statistics			
R-squared	0.836385	Adjusted R-squared		0.797118
Rw-squared	0.970510	Adjust Rw-squared		0.970510
Akaike info criterion	32.58102	Schwarz criterion		48.92822
Deviance	0.033232	Scale		0.036704
Rn-squared statistic	642.4945	Prob(Rn-squared stat.)		0.000000
	Non-robust Statistics			
Mean dependent var	5.601401	S.D. dependent var		0.173523
S.E. of regression	0.100890	Sum squared resid		0.254471

The advent of RLS is as a result of the inability of the OLS to adequately explain the efficiency of the coefficients of sample or model. The coefficients of moving from RLS to OLS are higher.

From table 2 in the appendix, the values of R-squared (.i.e., 0.836385) and Rw-squared (i.e., 0.970510) are goodness-fit and Adjusted R-squared (.i.e., 0.797118) and/or Adjust Rw-squared (.i.e., 0.970510) measure along which indicate that the model accounts for roughly 83% of the variation in the constant only model. The Rn-squared statistic of 642.4945 and corresponding *p-value* of 0.000000 indicating strong rejection of the null hypothesis that all non-intercept coefficients are equal to zero.

Lastly, the output shows the value of the deviance (.i.e., 0.033232), information criteria (.i.e., 32.58102), and the estimated scale (.i.e., 0.036704).

Table3.*Group Unit Roots*

Group unit root test: Summary				
Series: LOG_RGDP_, LOG_CEXP_, LOG_DDR_, LOG_DSR_, LOG_EDR_, LOG_GCF_, LOG_REXP_				
Date: 05/26/15 Time: 11:51				
Sample: 1960 2013				
Exogenous variables: Individual effects				
Automatic selection of maximum lags				
Automatic lag length selection based on SIC: 0 to 3				
Newey-West automatic bandwidth selection and Bartlett kernel				
Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-5.94656	0.0000	7	327
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-7.42260	0.0000	7	327
ADF - Fisher Chi-square	103.775	0.0000	7	327
PP - Fisher Chi-square	134.718	0.0000	7	330
** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.				

Table 3 in appendix shows the summary of the Group unit root test using summary test (.i.e. Levin, Lin & Chu t*; Im, Pesaran and Shin W-stat; ADF-Fisher Chi-square; PP-Fisher Chi-square) with the lag length selection based on SIC: 0 to 1of the variables used for the empirical study. The group unit root test shows that; Real Gross Domestic Product (RGDP); Capital expenditure (CEXP); Recurrent expenditure (REXP); External Debt Ratio (EDR); Domestic Debt ratio (DDR); and/or Debt Servicing Ratio (DSR) were stationary at level at 5 percent level of significance respectively. The probability of obtaining the Group Unit Root is greater than 0 and less than 0.05 (.i.e., $0 \leq 0.05$) which means the null hypothesis has to be rejected—which says there is no significant relationship between external debt ratio and economic growth and the alternative hypothesis is to be accepted, which says there is

significant relationship between government expenditure on education and Nigerian economic growth.

Table4.*Engle-Granger Cointegration Test*

Date: 05/26/15 Time: 11:48							
Series: LOG_RGDP_ LOG_CEXP_ LOG_DDR_ LOG_DSR_ LOG_EDR_ LOG_GCF_ LOG_REXP_							
Sample (adjusted): 1981 2012							
Included observations: 32 after adjustments							
Null hypothesis: Series are not cointegrated							
Cointegrating equation deterministics: C							
Automatic lags specification based on Schwarz criterion (maxlag=7)							
Dependent	tau-statistic	Prob.*	z-statistic	Prob.*			
LOG_RGDP_	-3.420706	0.7098	-18.64521	0.6358			
LOG_CEXP_	-4.881055	0.1652	-47.03239	0.0000			
LOG_DDR_	-5.645540	0.0513	-65.81440	0.0000			
LOG_DSR_	-5.115187	0.1154	-28.29156	0.1247			
LOG_EDR_	-5.665453	0.0477	-30.15684	0.0764			
LOG_GCF_	-3.534403	0.6623	-18.23457	0.6611			
LOG_REXP_	-3.379349	0.7265	-17.00295	0.7339			
*MacKinnon (1996) p-values.							
Warning: p-values may not be accurate for fewer than 35 observations.							
Intermediate Results:							
		LOG_RGDP_	LOG_CEXP_	LOG_DDR_	LOG_DSR_	LOG_EDR_	LOG_GCF_
Rho – 1		-0.601458	-0.982405	-1.160228	-0.912631	-0.972801	-0.588212
Rho S.E.		0.175829	0.201269	0.205512	0.178416	0.171708	0.166425
Residual variance		0.001627	0.022581	0.017178	0.026940	0.049803	0.025652
Long-run residual variance		0.001627	0.057507	0.061415	0.026940	0.049803	0.025652
Number of lags		0	1	1	0	0	0
Number of observations		31	30	30	31	31	31
Number of stochastic trends**		7	7	7	7	7	7
**Number of stochastic trends in asymptotic distribution							

Co-integration test is carried out in order to determine the long-run relationship between the dependent and independent variables when one or all of the variables is/are non-stationary at level which means they have number of stochastic trends in asymptotic distribution. Co-integration tests are conducted by using the reduced procedure developed by Engle and Granger, (1987). They noted that a linear combination of two or more 1(1) series may be stationary, or 1(0), on which case we say the series are cointegrated. Such linear combination defines a cointegrating equation with cointegrating vector of weights characterizing the long-run relationship between the variables. The Engle and Granger, (1987) test results are divided into three distinct sections. *First* portion as shown in table 4, displays the test specification and settings, along with the test values and corresponding *p*-values. *Second (*or the middle) section of the output displays the *estimated coefficients*, *standard error*, *t-statistics*, and *p-value* for the constant, even though they are not strictly speaking valid or intermediate results used in constructing the test statistic that may be of interest. The summary statistics portion is relatively familiar but does require a bit comment MacKinnon (1996). Most entries are self-explanatory, though a few deserve a bit of discussion-such as RHO S.E. and Residual Variance are the (possibly) d.f. corrected coefficient standard error of the regression. The long-run residual variance is the estimate of the long-run variance is the estimate of the long-run of the residual based on the estimated parametric model. The number of stochastic trends entry reports the value used to obtain the *p*-value.

Engle and Granger, (1987) procedure is used to determine the linear combination of two or more series and/or to identify a long-run relationship as shown in table 4 at appendix. The co integration tests include Real Gross Domestic Product (RGDP); Capital expenditure (CEXP); Recurrent expenditure (REXP); External Debt Ratio (EDR); Domestic Debt ratio (DDR); and/or Debt Servicing Ratio (DSR). Which includes Automatic lag specification (lag = 0 based on Schwarz Info Criterion, maxlag = 1).

Table5. *Wald Test*

Wald Test:			
Equation: Untitled			
Test Statistic	Value	df	Probability
F-statistic	6740.785	(2, 25)	0.0000
Chi-square	13481.57	2	0.0000
Null Hypothesis: C(2)=0, C(6)=4			
Null Hypothesis Summary:			
Normalized Restriction (= 0)		Value	Std. Err.
C(2)		0.029444	0.036353
-4 + C(6)		-3.981465	0.034672
Restrictions are linear in coefficients.			

The next stage of estimating residuals is the Wald test, which helps to measure the Chi-square value and/or its probability (*p-value*) and null hypothesis.

From table 5 in appendix, the Chi-square value is 13481.57 and/or the probability to obtain Chi-square value is greater than zero and/or less than five (.i.e., $0 \leq 0.05$). This states that null hypothesis has to be rejected and accepted the alternative hypothesis, which says that there are asymptotic normal distribution residuals in the model.

From the test of analysis of variance test ratio, the research test for series in the time series data from 1960 to 2013.

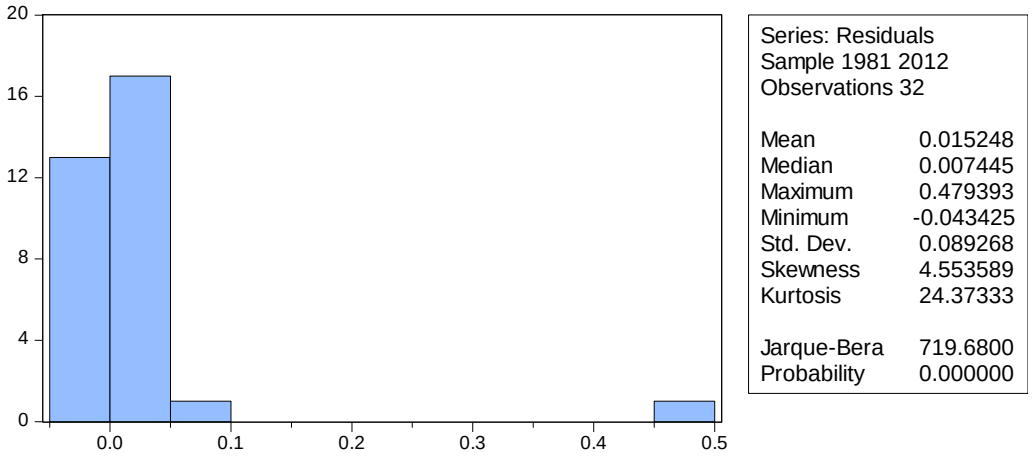

Diagram1. *JARQUE-Bera or RESIDUAL TESTS*

From diagram 1, the output of the series was demonstrated. Though the output present different results, but the keen interest is on Jarque- Bera, which are 719.6800 and the *p-value is* 0.000000. The result reveals that the null hypothesis could be rejected because it clearly stated there is no normal series distribution in the analysis and accepts the alternative hypothesis.

Table6. *Coefficient Confidence Intervals*

Coefficient Confidence Intervals							
Date: 05/19/15 Time: 14:12							
Sample: 1960 2013							
Included observations: 32							
		90% CI		95% CI		99% CI	
Variable	Coefficient	Low	High	Low	High	Low	High
C	4.737065	4.369816	5.104314	4.294265	5.179864	4.137768	5.336362
LOG_CEXP_	0.029444	-0.032652	0.091539	-0.045426	0.104313	-0.071887	0.130774
LOG_DDR_	0.104618	0.034189	0.175047	0.019700	0.189536	-0.010312	0.219548
LOG_DSR_	0.083136	0.043654	0.122618	0.035532	0.130740	0.018708	0.147565
LOG_EDR_	-0.039636	-0.084463	0.005192	-0.093685	0.014414	-0.112788	0.033517
LOG_GCF_	0.018535	-0.040691	0.077760	-0.052874	0.089944	-0.078112	0.115182
LOG_REXP_	-0.026345	-0.045422	-0.007269	-0.049346	-0.003344	-0.057475	0.004785

The coefficient confidence intervals are used to ascertain the trade-off between type 1 and type 11 errors. Confidence coefficient (1-α) is simply one minus the probability of committing a type 1 error.

Thus, a 95% confidence coefficient means that we are prepared to accept at most a 5 percent probability of committing a type 1 error—we do not want to reject the true hypothesis by more than 5 out of 100 times. In short, a 5% level of significance or a 95% level or degree of confidence means the same (Gujarati, 2006: 116).

In estimating hypothesis testing, the 95% confidence interval is also called acceptance region and the area outside the acceptance region is called the critical region, or the region of rejection, of the null hypothesis. The lower and/or upper limits of the acceptance region are called critical values (Gujarati, *loc.cit.*, 117-118).

This confidence interval may be 90%, 95%, & 99%, depending of the sample size under-review.

In table 6 from appendix, the output has shown the critical region (region of rejection) or critical values of the null hypothesis. At some point with different percents (.i.e., 90%, 95%, & 99%) confidence interval or acceptance region or critical region, the null hypothesis is either accepted or rejected or accepted or rejected the alternative hypothesis, when the values of the parameter fallen within the acceptance region or the area outside the acceptance region.

Table7.*Test for Equality Of Variance Between Series*

Test for Equality of Variances Between Series				
Date: 05/19/15 Time: 14:31				
Sample: 1960 2013				
Included observations: 54				
Method		df	Value	Probability
Bartlett		6	72.57731	0.0000
Levene		(6, 283)	16.88076	0.0000
Brown-Forsythe		(6, 283)	14.49831	0.0000
Category Statistics				
			Mean Abs.	Mean Abs.
Variable	Count	Std. Dev.	Mean Diff.	Median Diff.
LOG_RGDP_	0	NA	NA	NA
LOG_CEXP_	53	1.394397	1.173782	1.165230
LOG_DDR_	54	1.523860	1.302323	1.301445
LOG_DSR_	45	1.353500	1.216462	1.197762
LOG_EDR_	53	1.717625	1.578829	1.572893
LOG_GCF_	32	0.318679	0.224435	0.217886
LOG_REXP_	53	1.096094	0.871468	0.848924
All	290	1.377251	1.118360	1.107804
Bartlett weighted standard deviation: 1.358101				

The variance ratio test view allows the research to perform the Lo and Mackinlay variance ratio test to determine whether differences in series are uncorrelated, or follow a random walk or martingale property. In addition, Lo and Mackinlay (1988, 1989) variance test ratio enables for homoskedastic and heteroskedastic random walks using asymptotic normal distribution or wildbootsrap to evaluate statistical significance.

From the table 7, the researchers maintained that since the specified test is more than one test period, there are two sets of test results. Here, the Bartlett statistic value of 72.57731 is associated with the *p-value* of 0.0000. Levene statistic value of 16.88076 is associated with the *p-value* of 0.0000.The Brown-Forsythe statistic value of 14.49831 of 0.0000.

The bottom portion of the output shows the category statistic results for the variance ratio test calculations, including the estimated mean, individual variances, and number of observations used in each calculation.

Summary of Result Findings

The paper empirically examines the impact of government expenditure on education on Nigerian economic development, using annual time series data from 1960 to 2013. The paper employs stochastic characteristics of each time series data by testing their covariance and residuals using OLS, RLS Group unit root, co integration Tests, Wald Test (WT), Jarque-Bera Residual Test, coefficient confidence intervals, and/or Test for Equality Variances Between Series.

From the various diagnostic tests carried out, it was revealed that all the null hypotheses were rejected (.i.e., there is no significant relationship between Government expenditure on education and/or

economic growth) and/or accepted all the alternative hypotheses (.i.e., there is significant relationship between Government expenditure on education and/or economic growth). The results show that Government expenditure on education is *sine qua non* in the train of economic growth and/or development. The benefit (s) of the Government expenditure on education might not be felt by the future generations when the spending is committed to the wrong sector or channels, which will have generated employment opportunities.

The paper discovered that the government spending and/or its components (determinants) have significant relationship with the economic growth and development of Nigeria. Rejecting null hypotheses in the diagnostic tests corroborated the fact that indeed government spending has a direct relationship with Nigerian economic growth.

RECOMMENDATIONS

From the econometric study of the impact of government expenditure on Nigerian economic development, the following recommendations are stated below:

- Government should ensure that budget is well planned to capture every facet of the economy;
- Government should intensify effort to strengthening its source of revenue for spending on education—since it is established by the diagnostic test that spending on education has long-run impact positively on the economy;
- There should be direct link between the government and private individuals in heightening government spending on education and/or other viable sectors;
- Government should ensure the budgetary allocation to education should be high as 26% of the aggregate budget as recommended by the UNESCO;
- Government should increase the budgetary allocation to defense in order to enhance security state of the economy. Hence it encourages inflow of foreign investors and thereby generate fund for the government.
- Government spending should be directed to infrastructural development within Nigeria;
- Government spending should be such that help in building capital or mega companies—which will in turn create job opportunities in the country.

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