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Government Spending and Economic Growth in Nigeria (1980-2011)

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GJMBR-B Classification : *JEL Code: F43, G18*



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I. Background of the Study

Public expenditure is an important instrument for government to control the economy. It plays an important role in the functioning of an economy whether developed or underdeveloped. Public expenditure was born out of revenue allocation which refers to the redistribution of fiscal capacity between the various levels of government or the disposition of responsibilities between tiers of the government.

Broadly speaking, public expenditure affects aggregate resources use together with monetary and exchange rate. Specifically public expenditure refers to the value of goods and services provided through the public sector.

In the Nigerian economy public expenditure can broadly be categorized into capital and recurrent expenditure. The recurrent expenditure are government expenses on administration such as wages, salaries, interest on loans, maintenance etc., whereas expenses on capital projects like roads, airports, health, education., telecommunication, electricity generation etc., are referred to as capital expenditure (Obinna, 2003).

The size of government expenditures and its effect on economic growth, and vice versa, has been an issue of sustained interest for over decades now. The relationship between government expenditure and economic growth has continued to generate series of debate among scholars. Government performs two major functions- protection (and security) and provisions of certain public good (Al-Yousif, 2000).

Scholars argue that increase in government expenditure on socio-economic and physical infrastructures encourage economic growth. For example, government expenditure on health and education raises the productivity of labour and increase the growth of national output. Similarly, expenditure on infrastructure such as roads, communications, power, etc, reduces production costs, increases private sector investment and profitability of firms, thus fostering economic growth. As observed by Al-Yusuf and Couray (2009), Abdullah (2000), Ranjan, Sharma, (2008) and Cooray (2009) the expansion of government expenditure contributes positively to economic growth.

In Olukoye (2009) the general view is that public expenditure either recurrent or capital expenditure, notably on social and economic infrastructure can be growth-enhancing.

The provision of infrastructure services to meet the demands of business, households, and other users is one of the major challenges of economic development in developing countries like Nigeria.

Developing countries invest about $200billion a year in new infrastructure representing four percent of their national output and a fifth of their total investment. The result has been a dramatic increase in infrastructure services-for transport, power, water, sanitation, telecommunications, and irrigation (World Bank's Development Report 1994).

Government spending in Nigeria has continued to rise due to the huge receipts from production and sales of crude oil, and the increased demand for public (utilities) goods like roads, communication, power, education and health. There is increasing need to provide both internal and external security for the people and the nation. Available statistics show that total

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government expenditure (capital and recurrent) and its components have continued to rise in the last three decades. For instance, government total recurrent expenditure increased from N4, 805.20 million in 1980 to N36,219.60 million in 1990 and further to N1, 589,270.00 2007. On the other hand government capital expenditure rose from N10, 163.40 million in 1980 to N24, 048.60 million in 1990. Capital expenditure stood at N239, 450.90 million and N759, 323.00 million in 2000 and 2007 respectively. The various components of capital expenditure have risen between 1980 and 2011.

However, the rising government expenditure may have not translated to meaningful growth and development, as Nigeria ranks among the poorest countries in the world. In addition, many Nigerians have continued to wallow in abject poverty, while more than fifty percent live on less than US$1per day. Moreover, macroeconomic indicators like balance of payments, import obligations, inflation rate, exchange rate, and national savings reveal that Nigeria has not fared well in the last three decades.

It is disturbing to note that government expenditure seems to have not replicated same level of economic growth in Nigeria, for instance between 1980 and 1990, while the GDP growth rate was decreasing (57.15% down to 2.87%), government expenditure growth rate was increasing (23.2% to 41.24%). Thus, there is an inverse relationship between the two periods. However, it is found that the growth rate of government expenditure in 2000 and 2010 was 15.53% and 2.15% respectively, while GDP growth rate witnessed 8.79% and 1.54% in the same period respectively. Thus, government expenditure growth rate has been greater than GDP growth in the same period.

Due to the mixed feeling on the above the debate has been inconclusive on whether or not increasing government spending induces economic growth or not. Based on the above this paper attempts to investigate whether increasing government spending induces economic growth performance in Nigeria.

The major objective of this study is therefore, to ascertain whether there is a relationship between government expenditure and economic growth in Nigeria. The specific objectives are:

1. To ascertain the impact of government spending on economic growth in Nigeria.
2. To ascertain if there is long-term causal relationship between government spending and economic growth in Nigeria.

II. Theoretical Review

Economic theory has shown how government spending may either be beneficial or detrimental to economic growth. In traditional Keynesian macroeconomics, many kinds of public expenditures, can contribute positively to economic growth through multiplier effects on aggregate demand. On the other hand, government consumption may crowd out private investment, dampen economic stimulus in the short run and reduce capital accumulation in the long run. Studies based on endogenous growth models distinguish between distortionary or non-distortionary taxation and productive or unproductive expenditures. Expenditures are categorized as productive if they are included as arguments in private production functions and unproductive if they are not (Barro and Sala-I-Martin, 1992).

The earliest of all theories of government growth is Wagner's Law of Increasing State Activity. This theory posits a relationship linking industrialization, urbanization and education to the expansion of the public sector (Bird, 1971).

Wagners' posits that increases in public goods are a product of increased demands by organized industrial workers, coming at the costs of growth in the private sector (Gandhi, 1971; Goffman and Mahar, 1971). Bureau Voting Theory rejected the role of industrialization and urbanization, suggesting that the main driver of public sector expansion is an artificial demand for government services created by self-interested government employees (Niskanen, 1971).

In Fiscal illusion theory which tries to explain government growth by linking convoluted tax systems to the masking of the costs of public goods. Also, tax systems can hide the costs of public goods and therefore stimulate their growth (Goetz, 1977). Empirical support for these theories has varied, causing them to loose some of their impetus.

Government spending is usually suggested that the net impact on growth (as measured by aggregate output) of the crowding-out effect of public expenditure clearly depends on the relative marginal productivity of the public and private sectors. The externality effect of public expenditure enhances growth by raising private sector productivity. Here, a higher level of such expenditure could achieve a high growth rate. The opposing natures of the crowding-out and externality effects rest on the proposition that the structure of public expenditure, rather than merely its level, would be of considerable importance.

III. Empirical Literature

Researchers have attempted to examine the effect of government spending on economic growth in different countries and periods.

Ram (1986) studied the linkage between government expenditure and economic growth for a group of 115 countries during the period 1950-1980. Using both cross section time series data in his analysis, and confirmed a positive influence of government expenditure on economic growth.

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Erkin (1988) examined the relationship between government expenditure and economic growth, by proposing a new framework for New Zealand. The empirical results showed that higher government expenditure does not hurt consumption, but instead raises private investment that in turn accelerates economic growth.

Foster and Skinner (1992) studied the relationship between government expenditure and economic growth for a sample of wealthy countries for 1970-95 periods, using various econometric approaches. They submitted that more meaningful (robust) results are generated, as econometric problems are addressed.

Abu-Bader and Abu-Qarn (2003) employed multivariate co-integration and variance decomposition approach to examine the causal relationship between government expenditures and economic growth for Egypt, Israel, and Syria. In the bivariate framework, the authors observed a bi-directional (feedback) and long run negative zrelationships between government spending and economic growth. Moreover, the causality test within the trivariate framework (that include share of government civilian expenditures in GDP, military burden, and economic growth) illustrated that military burden has a negative impact on economic growth in all the countries. Furthermore, civilian government expenditures have positive effect on economic growth for both Israel and Egypt.

Loizides and Vamvoukas (2005) employed the trivariate causality test to examine the relationship between government expenditure and economic growth, using data set on Greece, United Kingdom and Ireland. The authors found that government size granger causes economic growth in all the countries they studied. The finding was true for Ireland and the United Kingdom both in the long run and short run. The results also indicated that economic growth granger causes public expenditure for Greece and United Kingdom, when inflation is included.

Komain and Brahmasrene (2007) examined the association between government expenditures and economic growth in Thailand, by employing the Granger Causality Test. The results revealed that government expenditures and economic growth are not co-integrated. Moreover, the results indicated a unidirectional relationship, as causality runs from government expenditures to growth. Lastly, the results illustrated a significant positive effect of government spending on economic growth.

Olugbenga and Owoye (2007) investigated the relationships between government expenditure and economic growth for a group of 30 OECD countries during the period 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, thus supporting the Keynesian hypothesis. However, causality runs from economic growth to government expenditure in 10 out of the 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.

Liu and Hsu and Younis (2008) examined the causal relationship between GDP and public expenditure for the US data during the period 1947-2002. The causality results revealed that total government expenditure causes growth of GDP. On the other hand, growth of GDP does not cause expansion of government expenditure. Moreover, the estimation results indicated that public expenditure raises the US economic growth. The authors concluded that, judging from the causality test Keynesian hypothesis exerts more influence than the Wagner's law in US.

In Nigeria, many authors have also attempted to examine government expenditure - economic growth relationship.

Oyinlola (1993) examined the relationship between the Nigeria's defence sector and economic development, and reported a positive impact of defence expenditure on economic growth.

Fajingbesi and Odusola (1999) empirically investigated the relationship between government expenditure and economic growth in Nigeria. The econometric results indicated that real government capital expenditure has a significant positive influence on real output. However, the results showed that real government recurrent expenditure affects growth only by little. Also, study by Ogiogio (1995) revealed a long-term relationship between government expenditure and economic growth. Moreover, the author's findings showed that recurrent expenditure exerts more influence than capital expenditure on growth.

Akpan (2005) used a disaggregated approach to determine the components (that include capital, recurrent, administrative, economic service, social and community service, and transfers) of government expenditure that enhances growth, and those that do not. The author concluded that there was no significant association between most components of government expenditure and economic growth in Nigeria.

Ighodaro and Okiakhi (2010) used time series data for the period 1961 to 2007 and applied Cointegration Test and Granger Causality test to examine government expenditure disaggregated into general administration and community and social services in Nigeria. The results revealed negative impact of government on economic growth.

Loto (2011) investigated the impact of sectoral government expenditure on economic growth in Nigeria for the period 1980-2008 and applied Johansen cointegration technique and error correction model. The

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results inferred that in the short run expenditures on agricultures and education were negatively related to economic growth. However, expenditures on health, national security, transportation, and communication were positively related to economic growth, though the impacts were not statistically significant.

Studies in Nigeria, like Nurudeen and Usman (2010) showed mixed results.

Therefore, this study is an improvement on the previous studies on economic growth and government expenditure relationship in Nigeria. It considers government spending only in two categories - capital and recurrent expenditure as important variables that affects economic growth. Secondly, it extends the study period to 2011 and finally employed the Error Correction Mechanism (ECM) in the study.

IV. Methodology

To empirically examine the impact of government expenditure on the economic growth in Nigeria, the researcher subjected the data collected to Unit Root, Cointegration, and Error Correction test. The ADF test is used to test whether the variables are non stationary (unit root). If the results indicate that all series are stationary in the first difference or all series are generated by 1(1) process, condition of stationarity is established or confirmed (Gujarati, 2004). An Error Correction Mechanism is employed to ascertain the speed of adjustment from the short run equilibrium to the long run equilibrium state.

V. Data Sources

To investigate how government spending could affect economic growth in Nigeria, a number of variables have been taken into consideration in this study. These variables consist of Real Gross Domestic Product (RGDP), Government recurrent expenditure (GREXP) Government capital expenditure (GCEXP) for the period of 1980-2011 and are defined in our model specification. All the variables were sourced from Central Bank of Nigeria's (CBN) statistical bulletin for various years. And are all expressed in million Naira.

VI. Model Specification

This study is aimed at establishing the dynamics properties of the relationship between government spending and RGDP in Nigeria over the years (1980-2011). The functional form, on which our model was based, employed a multiple regression equation in the analysis of this work.

In an attempt to capture our essence of this study, and based on previous studies. The Real Gross Domestic Product (RGDP), Government recurrent expenditure (GREXP), Government capital expenditure (GCEXP) were used to formulate our model. Thus, the model is represented in a functional form shown below:

$$RGDP = F(GCEXP, GREXP) \quad \ldots \quad (1)$$

Where

RGDP = Real Gross Domestic Product (Dependent variable)

GCEXP = Government Capital Expenditure (Independent variable)

GREXP = Government Recurrent Expenditure (Independent variable)

In a linear function, it is represented as follows:

$$RGDP = \beta_0 + \beta_1 GCEXP + \beta_2 GREXP + U_t \quad \ldots \quad (2)$$

Where: β_0 = Constant term, β_1 = Regression coefficient of GCEXP, β_2 = Regression coefficient of GREXP and U_t = Error Term.

For usual statistical reasons the above model will be transformed into log linear model as specified below:

$$LRGDP = \beta_0 + \beta_1 LGCEXP + \beta_2 LGREXP + U_t \quad \ldots \quad (3)$$

VII. Results and Discussion

a) Unit Root Test

Considering the ADF and PP test statistics at 5% and10% critical values, it is observed that test statistics are greater than the critical values. Thus, the series are said to be stationary at that level. The unit root test shows that the variables- RGDP, GCEXP and GREXP are integrated of order one. They are integrated of the same order; 1(1). The level of their integrations indicates the number of time series have to be differenced before their stationarity is induced. From the tables (see appendix), it was found that both ADF and PP Test with trend and intercept indicated that time series are integrated of the same order. The linear combination of series integrated of the same order are said to be cointegrated.

b) Co-integration Test

The result shows that there is a long run relationship between the RGDP and the explanatory variables; GCEXP and GREXP. The Johansen Cointegration Test is shown in the appendix. The model with lag 1 was chosen with the linear deterministic test assumption. Johansen cointegration test for the series; D(RGDP,1),D(GCEXP,1) and D(GREXP,1).

Under the Johansen Cointegration Test, there is one cointegrated vectors. In Johansen's Method, the trace statistic is used to determine whether cointegrated variables exist. The trace statistics are found as 0.837326, 0.211942 and 0.043031. The critical values of RGDP, GCEXP and GREXP at both 5% level of significance are 29.79, 15.49 and 3.84 respectively. The trace test indicates one cointegrating equation. In other words, the null hypothesis of no cointegration among the variables is rejected. The test result shows the existence of a long-run equilibrium relationship in

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equations at 5% significance level. The normalized cointegrating coefficients for one cointegrating equation given by the long-run relationship is RGDP = 0.6104 GCEXP + 1.316 GREXP.

From the above equation, it is found that ₦1 increase in government capital expenditure (GCEXP), on the average will lead to increase by ₦0.61k in the gross domestic product (RGDP). More so, N1 increase in the government recurrent expenditure (GREXP) on the average, will lead to increase by ₦1.32k in the gross domestic product (RGDP).

The computed coefficient of multiple determination (R^2 = 0.82460) shows that 93.46% of the total variation in Gross Domestic Product (RGDP) is accounted for, by the independent variables; Government Capital Expenditure (GCEXP) and Government Recurrent Expenditure (GREXP) while 6.54% of the total variation is attributable to the influence of other factors which are not included in the regression function. The value of Durbin Watson (DW) is 0.78. Using 5% level of significance, and k^1=2 (two) and N= 31 degrees of freedom, the tabulated lower (dL) and upper limits of Durbin Watson statistics are 1.297 and 1.570 respectively. Since the computed Durbin Watson statistics (0.86) is less than the lower limit (1.297), there is evidence of autocorrelation in the model.

c) Granger Causality Results

In examining the pair-wise (bi-directional) relationship among the variables, 5% level of significance and 2 and 25 degrees of freedom, the f-tabulated value is 3.39. Considering the f-calculated value of GCEXP and RGDP, the p-value is 0.0017 while the p-value for RGDP/GCEXP is 0.0476. in this case, there is one way causation between GCEXP and RGDP. This implies that the causality runs from GCEXP to RGDP and not from RGDP to GCEXP. The same is applicable to GREXP and RGDP. The causality runs from GREXP to RGDP too. This result is in conformity with the Keynesian theory on government expenditure which stipulates that Gross Domestic Product is a function of government expenditure.

In any case, the existence of a long-run cointegrating equilibrium also provides for short-term fluctuations. In order to straighten out or absolve these fluctuations, an attempt was made to apply the Error Correction Mechanism (ECM).

VIII. The VECM Result

As noted, the VECM is meant to tie the short-run dynamics of the cointegrating equations to their long-run static dispositions. In order to absolve the short-run dynamics of the relationships, the Vector Error Correction Mechanism was adopted. Comparing the result of the OLS, government capital expenditure was bearing a negative sign. However, introducing VECM, it became positive. On the hand, government recurrent expenditure was positive while in this model, it became negative. This result implies that there is a change from the short run dynamics to their long run dispositions. In the long run equilibrium, should the disequilibrium is corrected, Real Gross Domestic Product (RGDP) will increase by 78kobo owing to ₦1 increase in Government Capital Expenditure (GCEXP) while N1 increase in Government Recurrent Expenditure (GCEXP) will bring about decrease by 26kobo in RGDP.

The total variation of 96.03% in Gross Domestic Product is accounted for by the changes in Government Capital Expenditure (GCEXP) and Government Recurrent Expenditure (GCEXP). The joint influence of the explanatory variables on the dependent variables is statistically significant.

IX. Summary/ Conclusion

This research work investigates the impact of public spending on economic growth in Nigeria from 1980 to 2011. None of the variables was stationary at zero level. This means they all have unit roots. The three variables became stationary at first difference by ADF and PP application. There exists a long-run equilibrium relationship between government spending and economic growth in Nigeria; The VECM model negates the OLS model which indicates a change from the short run dynamics to their long run dispositions.

The co-integration test employed revealed that there is a long run relationship between the Real Gross Domestic Product (RGDP) and the explanatory variables; Government Capital Expenditure (GCEXP) and Government Recurrent Expenditure (GREXP). The normalized cointegrating coefficients for one cointegrating equation given by the long-run relationship indicated that the constant value is negative which means that the proportion in the real gross domestic product (RGDP) in Nigeria tends to decrease, keeping other variables constant in the long-run. It is found that N1 increase in government capital expenditure (GCEXP), on the average will lead to increase by N0.19k in the gross domestic product (RGDP) while N1 increase in the government recurrent expenditure (GREXP) on the average, will lead to increase by N0.31k in the gross domestic product (RGDP). In the long run equilibrium, capital expenditure will contribute more to the economic growth of Nigeria.

X. Recommendations

Based on the findings, the following recommendations are suggested;

- Government capital spending in industries and agriculture if properly managed will raise the nation's production capacity and employment, which in turn will increase economic growth in Nigeria.

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- Government should increase its expenditure on rural roads and electricity as this will accelerate the productive sectors as well as raise the standard of living of poor citizens in Nigeria.
- Anti-graft or anti-corruption agencies like the Economic and Financial Crime Commission (EFCC), and the Independent Corrupt Practices Commission (ICPC) should be practically independent to enable them to be more forceful in their actions.
- Those who divert and embezzle public funds should be treated as terrorists in Nigeria.

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Appendices

Augmented Dickey Fuller Unit Root Test

Trend and Intercept

Series	ADF Test Statistic	5% critical values	10% critical values	Order	Remarks
RGDP	-9.532332	-3.5742	-3.2217	1(1)	Stationary
GCEXP	-5.208931	-3.5742	-3.2217	1(1)	Stationary
GREXP	-7.020660	-3.5742	-3.2217	1(1)	Stationary

Phillips-Perron Unit Root Test

Trend and Intercept

Series	PP Test Statistic	5% critical values	10% critical values	Order	Remarks
RGDP	-9.532332	-3.5742	-3.2217	1(1)	Stationary
GCEXP	-5.457266	-3.5742	-3.2217	1(1)	Stationary
GREXP	-7.020660	-3.5742	-3.2217	1(1)	Stationary

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistics	0.05 Critical Value	Prob**
None	0.837326	59.72914	29.79	0.0000
At most 1	0.211942	8.524974	15.49	0.4111
At most 2	0.043031	1.245292	3.84	0.2645

Trace test indicates 1 cointegrating equation(s) at 5% significance.
Normalized Cointegrating Coefficients: 1 cointegrating Equation(s)

RGDP	=	GCEXP	GREXP
		0.6104	1.3146

Ordinary Least Square (OLS)
Regression Result of the GCEXP and GREXP on RGDP
RGDP = f (GCEXP, GREXP)
Dependent Variable: RGDP
Method:Least Squares
Sample:1980-2011

No of observations 32

Variable	Coefficient	St.Error	t-Statistic	Prob.
C	222812.5	10993.83	20.26705	0.0000
GCEXP	-0.04377	0.069161	-0.63282	0.5320
GREXP	0.270971	0.039792	6.809680	0.0000

Source : Eviews' Output

R^2 = 0.82460
F- Stat = 201.08
Durbin Watson (0.68)

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Vector Error Correction Mechanism (ECM)

RGDP = f {GCEXP, GREXP}
Dependent Variable:RGDP
Method: Least Squares
Sample:(Adjusted) 1980-2011
No of observation 30 [Afterdjusting Endpoints]

Variable	Coefficient	St.Error	t-Statistic
C	4786.01	0.20249	0.38822
D(GCE(-1))	0.78611	0.22910	0.63850
D(GRE(-1))	-0.26344	0.18322	-1.43785

R^2 = 0.860271
F Statistics = 135.002

Source : E-views 7.1

DATA

YEAR	RGDP (₦'Million)	GCEXP (₦'Million)	GREXP (₦'Million)
1980	31546.8	10,163.30	4,805.20
1981	205222.1	6,567.00	4,846.70
1982	199685.3	6,417.20	5,506.00
1983	185598.1	4,885.70	4,750.80
1984	183563	4,100.10	5,827.50
1985	201036.3	5,464.70	7,576.40
1986	205971.4	8,526.80	7,696.90
1987	204806.5	6,372.50	15,646.20
1988	219875.6	8,340.10	19,409.40
1989	236729.6	15,034.10	25,994.20
1990	267550	24,048.60	36,219.60
1991	265379.1	28,340.90	38,243.50
1992	271365.5	39,763.30	53,034.10
1993	274833.3	97,079.40	136,727.10
1994	275450.6	70,918.30	89,974.90
1995	281407.4	121,138.30	127,629.80
1996	293745.4	212,926.30	124,291.30
1997	302022.5	269,651.70	158,563.50
1998	310890.1	309,015.60	178,097.80
1999	312183.5	498,027.60	449,662.40
2000	329178.7	239,450.90	461,608.50
2001	356994.3	438,696.50	579,329.10
2002	433203.5	321,378.10	696,777.70
2003	477533	241,688.30	984,277.60
2004	527576	351,300.00	1,032,800.00
2005	561931.4	519,500.00	1,223,700.00
2006	595821.6	552,385.80	1,290,201.90
2007	634251.1	759,323.00	1,589,273.70
2008	674889	1,123,456.00	2,117,362.50

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2009	716949.7	1,325,019.40	2,131,906.00
2010	820749.3	1,694,825.60	2,482,617.80
2011	9,33123.2	1,934,524. 20	2.632,876.50

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