



Original Research Article

Linkage between Economic Growth and Public Expenditure in Developing Country: Evidence from Nigeria

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ABSTRACT

This study examined linkage between economic growth and public expenditure in developing country, using Nigeria as a case study. Ordinary Least Square (OLS) regression method and the Co-integration test to were used to test the propositions of the subject matter. The results indicated that both government recurrent and capital expenditure have significant positive effect on Nigeria's economy in the period of study and they are both important factors of economic growth in Nigeria. It was further observed that government's recurrent expenditure exceeded the capital expenditure. Based on the findings of the empirical analysis, the study recommended that capital expenditure should exceed recurrent expenditure and higher budgetary allocations which has always been made should be put into utilisation, closely monitored and accountable for by those in charge so as to bring to a minimal the siphoning and embezzlement of public funds in order to steer the country to sustainable growth.

Key words: Ordinary Least Square, Co-integration, recurrent expenditure, capital expenditure, budgetary allocation.

INTRODUCTION

The economy of a state is being determined to a larger extent by the policy or policies adopted and managed through political party and institutions. The policies usually employed are monetary policy and fiscal policy. Monetary policy deals with the supply of money in the economy while on the other hand fiscal policy has to do with the use of taxation and government spending usually termed public expenditure.

Public expenditures are expenses incurred by the governments for its own maintenance, preservation and welfare of the economy as a whole. In another way, it refers to the expenses of public of public authorities - central, state and local

governments in a federation for the satisfaction of collective needs of the citizens or for the promotion of economic and social welfare. The proxies for development are education, public health, roads, buildings, etc. Hence, public expenditure deals with the principles and problems relating to the allocation of public spending. Therefore, public expenditure plays four main roles: it contributes to current effective demand; it expresses a coordinated impulse on the economy, which can be used as stabilization, business cycle inversion and growth purpose; it increases the public endowment of goods for everybody, and it gives to positive externalities to economy and society as a

whole. The major cause of increase in the public expenditure is nothing but these proxies of development.

A cursory look at the government budget each year showed absolute increase in total budget. However, it is very sad that this has not translated into economic growth as expected. Logically, it is expected that as government budget increases each year, there should be a corresponding increase in the level of economic growth.

The general objective of this work is to examine the linkage between economic development and public expenditure. The specific objectives are to examine the impact of government capital expenditure on Nigeria's economic growth and determine if Nigeria's government recurrent expenditure as any significant relationship on economic growth. Emanating from the objectives are the following questions fundamental to the study: To what extent is the linkage between economic growth and public expenditure? What is the relationship between capital expenditure and economic growth in Nigeria? And what is the association between recurrent expenditure and economic growth in Nigeria? In line with the objectives of this study, the research questions above were transposed into the following hypotheses which are stated in null form:

H₀: There is no significant linkage between economic growth and public expenditure.

H₀: There is no significant relationship between economic growth and capital expenditure

H₀: There is no significant relationship between economic growth and recurrent expenditure

ECONOMIC GROWTH AND PUBLIC EXPENDITURE

Expenditure can be divided into two viz-a-viz recurrent expenditure and capital expenditure. Recurrent expenditure is expenses incurred on general administration of the affairs of the government on yearly basis because the benefits associated with the expenses are exhausted in that year when it is incurred. Examples are salaries,

maintenance of law and order, repairs and maintenance of government vehicles, etc. capital expenditures on the other hand are for acquisition of goods and services intended to create future benefits like building of schools, hospital, dam for irrigation, roads, etc. these are non-recurring expenditure and the benefits derived from it spans more than a fiscal year. Finally, this type of expenditure is expected to improve the productive capacity of the economy (Alayemi and Nworji, 2014).^[1]

Alayemi and Nworji 2014 as quoted by Hugh, 1967 classified public expenditure in the following ways: ^[1-2]

Expenditure on political executives: this has to do with maintenance of central heads of state like the president.

Administrative expenditure: this is for the general administration of the country like government department and offices.

Security expenditure: this is to main armed forces and other security agents.

Expenditure on the administration of justice: this includes maintenance of courts, judges and public prosecutors.

Development expenditure: this type of expenditure is designed to promote growth and development of the economy, like expenditure infrastructure, irrigation, etc

Social expenditure: this is on public health, community welfare, social security.

Public Debt Charges: this includes payment of interest and repayment of principal amount.

Economic theory shows how public expenditure may either be beneficial or detrimental to economic growth. In traditional Keynesian macroeconomics, many kinds of public expenditures, can lead to economic growth through multiplier effects on aggregate demand. On the other hand, government consumption may private investment to grow or develop, which invariably lead to dampness of economic stimulus and reduction of capital accumulation in the short run and long run respectively. Folster and Henrekson, 1997 postulated that endogenous growth theory highlighted the fact that if productivity was

to increase, the labour force must continuously be provided with more resources. [3] Resources in this case consist of physical capital, human capital and knowledge capital (technology). Therefore, growth was propelled by accumulation of the factors of production, while accumulation in turn was the result of investment in the private sector. The implication is that the only way a government can affect economic growth, at least in the long run, was through its impact on investment in capital, education and research and development. Reduction of growth in these models occurred when public expenditures prevent investment by creating tax wedges beyond necessary to finance their investments or taking away the incentives to save and accumulate capital. Wagner is an economist from Germany who wrote at the tail end of nineteenth century. [4] In his work he propounded the law of increasing expansion of public and particularly state activities which was termed the law of 'increasing expansion of fiscal requirements'. His prediction is that there is a causal effect between state activities and growth of public expenditure. Wagner further argued that social progress brought about increasing state activities in return meant more public expenditure. According to Wagner hypothesis of increasing state activities, public expenditure can be divided into two namely: (i) expenditure for internal, external security and (ii) culture and welfare.

In the work of Peacock and Wiseman, 1967 the role of emergency such as war, as reason for raising the level of public expenditure was considered. [5] The duo developed the hypothesis that the reason for the growth in expenditure was as a result of growth in revenue rather than the other way. In normal time, size of public expenditure is limited by the level of taxation which the general public is prepared to tolerate, but this tolerable level cannot be high. However, during the period of disturbance, for instance during the time of war; this tolerable limit changes. Once

the war is over, the tax ratio does not return to the pre-war level. Hence, there is upward movement of revenue and expenditure permanently. This movement is called 'displacement effect'.

The third theory that explains government expenditure is the Leviathan theory. The proposition of this theory is that the aggregate government's intervention in the economy will be reduced as the taxes and expenditures are reduced, *ceteris paribus*. Rodden (2003) asserted that the Leviathan theory emanates from the fact that the central government is viewed as a 'revenue maximizing' that seeks to maximize her revenue by fiscal decentralisation of the central government monopoly on taxation. [6] This theory maintains that the more decentralised the central government, the lower the government spending in the economy because the decentralised unit will be responsible for revenue generation and expenditure disbursement. By this, the pressure on the central government brings about reduction and it is transferred to the sub-units. There had been various researches on the economic growth and government expenditure with various findings. [7-24]

MATERIALS AND METHODS

A sample size of 16 years was examined (2000 to 2015) for the purpose of this research work. Secondary data was used and they were obtained from the Central Bank of Nigeria Statistical Bulletin, IMF, World Bank, UN, OECD, and CIA World Fact book, Internet World Statistics, the Heritage Foundation and Transparency International. The adoption of this common source is to enhance the empirical analysis, to provide relevant answers to the research questions and to achieve the objectives of the study (Alayemi, 2013, Owolabi and Alayemi, 2013, Alayemi and Akintoye, 2015). [25-27]

DATA ANALYSIS TECHNIQUES

The data used for this research work are the annual real gross domestic product,

total capital expenditure, total recurrent expenditure, federal government budgets and total government expenditure. The trend of the annual federal government budgets and total government expenditure (spending) is presented using a line graph and a comparison is made between the two variables.

The statistical tools employed for the purpose of this work are the OLS regression method and the Co-integration test. The choice of the econometric technique is borne out of the fact that the data used is a time series data that is prone to autocorrelation. Once the causal relationship between the dependent variable and its determinants is established, the issue of stationarity or otherwise of the data will be determined by conducting a unit root test. The E-Views statistical software is used to analyze the various data assembled.

MODEL SPECIFICATION

The model for the purpose of this research work is specified to show the impact of government capital expenditure and recurrent expenditure on Nigeria's economic growth. The models are therefore expressed as follows:

$$RGDP = f(TCE, TRE)$$

Where;

RGDP = Real Gross Domestic Product

TCE = Total Capital Expenditure

TRE = Total Recurrent Expenditure

The model is further expressed in a logarithm econometrics form as:

$$\ln RGDP = \ln \beta_0 + \beta_1 \ln TCE + \beta_2 \ln TRE + \mu$$

Where:

$\ln RGDP$ = Natural log of Real Gross Domestic Product

$\ln TRE$ = Natural log of Total Recurrent Expenditure

$\ln TCE$ = Natural log of Total Capital Expenditure

β_0 = intercept

$\beta_1 - \beta_2$ = coefficients

μ = stochastic or error term.

Apriori Expectation: $\beta_0 > 0$, $\beta_1 > 0$, $\beta_2 > 0$

DISCUSSION OF RESULTS

Descriptive Statistics

Federal expenditure in Nigeria is classified into expenditures in government

functions such as administration, social and community services, economic services and transfers. Expenditure on administration includes general administration, defense, internal security and national assembly. Expenditures on social and community services include those on education, health and other social and community services. Expenditures on economic services include those on agriculture, construction, transport and communication and other economic services. Government transfers include public debt servicing, pensions and gratuities, contingencies/subventions, etc. (CBN Statistical Bulletin, 2011). With the exception of government transfers, other classes or categories of government expenditure have capital and recurrent components. The trends in Nigeria's federal government recurrent and capital expenditure in the year 2000-2015 are discussed below.

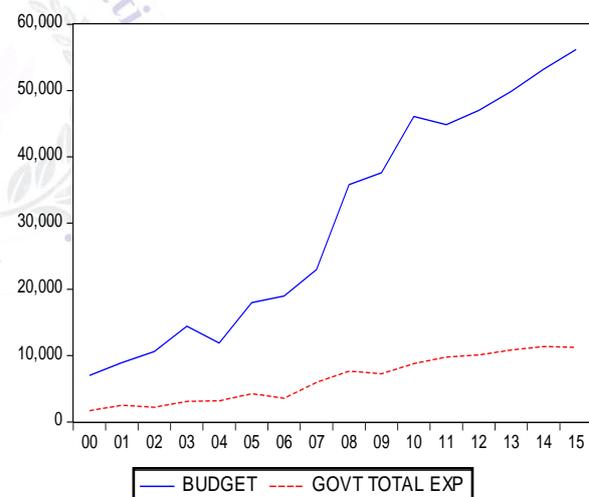


Figure 1: The Trend in Nigeria's Federal Government Budget and the Total Government Expenditure (2000-2015)

non- It is observed in Figure 1 above that Nigeria's federal government's budget and her total expenditures trends upwards in most of the years from 2000 to 2015 and obviously, the estimated budget for the years is higher than the expenditures for each years. Data obtained from the CBN Statistical Bulletin (2016) shows that government yearly approved budgets exceed its total expenditures by over seventy percent for each period. Specifically, the budgeted amount in the years 2000-2003

and 2005-2015 was way more than the actual total expenditure in each year. The margin between government budgeted amount and its total expenditure on a yearly basis became very wide beginning from year 2005 till 2015. This could be attributed to various factors, such as diversion or siphoning of fund, corruption and embezzlement, misuse of fund, accountability in government spending, etc. Obviously, the federal government budget is hardly implemented 100%.

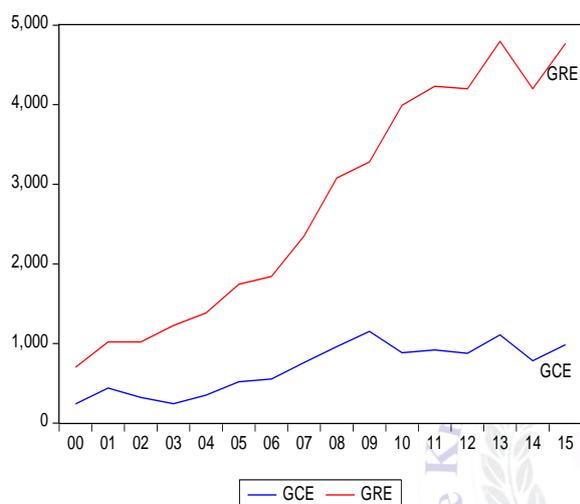


Figure 2: The Trends in Nigeria's Federal Government Recurrent and Capital Expenditure (2000-2015)

It is observed in Figure 3 that Nigeria's federal government's capital and recurrent expenditures trends upward in most of the years 2002 to 2013, with recurrent expenditures increasing rapidly than the capital expenditures. The data sourced for shows that recurrent expenditures is higher than the capital expenditures with about fifty five percent on the average for the periods under study. It is noted that, the recurrent expenditure in the years 2002-2015 was way higher than the capital expenditure in each year. The gap between the recurrent and capital expenditure became very wide right from year 2009, just after the country returned to a democratic system of government on May 29, 2009 as opined by Oziengbe (2013) which he sees as an indication that the country's democratic government has tended to favour recurrent spending more

that capital spending. [28] This could be as a result of increasing purchase of goods and services, payment of wages and salaries and settlement of depreciation on fixed assets. On the other hand, the capital expenditure decreased in the years 2009-2012 as well as in the year 2014. The federal government capital expenditure is obviously less than the recurrent expenditure.

INFERENCE STATISTICS

The Unit Root Test

In order to avoid a spurious regression result, it is important to determine the time series property of variables. The variables for the analysis are subjected to one basic test of unit root as a measure to determine whether there are unit root (stationary) or not. The test method adopted for this study is the Augmented Dickey Fuller (ADF test statistics)

Table 1: Augmented Dickey Fuller for Unit Root Test (1990-2010)

Variables	At levels	First Difference	Order of Integration
LnGDP	-3.04917	-4.07940	I(0)
LnTCE	-0.59391	-3.31307	I(0)
LnTRE	-3.40026	-3.59807	I(0)

Source: Author's Computation 2016 using E-Views 9

Critical values at 1%, 5% and 10% respectively are -3.21991, -3.0601 and -2.70110

*Significance at 1%, **Significance at 5%, ***Significant at 10%

From table 1, all the variables have unit roots. The variables were, however, made stationary by differencing at first difference and were integrated of order 0. It can therefore be concluded that a linear combination of the variables was however stationary.

Co-integration Test

Having established the existence of unit root in the variables and given the result of the unit root test, it implies that the variables are co-integrated and tends towards an equilibrium (or long-run) value, that is, a long-run (equilibrium) relationship exists between them. The Co-integration tests was further conducted on the models using the Johansen co-integration test and the result shows that co-integrating relationship can be established between the variables because there was at least one co-

integrating factor. It was however confirmed that all three variables are co-integrated.

Table 2: Ordinary Least Square Regression Result

Dependent Variable: C				
Method: Least Squares				
Date: 08/26/16 Time: 03:19				
Sample: 2000 2015				
Included observations: 16				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LnRGDP	1.905718	0.250492	6.135075	0.0000
LnTCE	0.021808	0.297486	4.350222	0.0200
LnTRE	2.005009	2.480273	5.965361	0.0003
R-squared	0.944781	Mean dependent var		4.085000
Adjusted R-squared	0.930194	S.D. dependent var		0.833814
S.E. of regression	0.177303	Akaike info criterion		-0.669531
Sum squared resid	1.000693	Schwarz criterion		-0.826396
Log likelihood	7.267051	F-statistic		247.3668
Durbin-Watson stat	1.271188	Prob (F-statistic)		0.000000

Source: E-views 9 Output (2016)

The above result can be expressed as:

$$\ln \text{RGDP} = 1.906\beta_0 + 0.021\beta_1 + 2.005\beta_2 + \mu$$

(6.135075) (4.350222) (5.965361)

$$(R^2) = 0.944, (\bar{R}^2) = 0.930, F\text{-Stat.} = 247.37, \text{DW-Statistics} = 1.27$$

From table 2, the result, the estimated value of β_0 is 1.906 which conform to Apriori expectation of $\beta_0 > 0$. This result implies that if all the independent variables are held constant, it will propel an increase of 1.906 in real GDP. The p-value of β_0 is 0.0000 which is less than the alpha value (0.05). This therefore implies that the estimate of β_0 is statistically significant at 5% level of significance, in which case the alternative hypothesis is therefore accepted while the null hypothesis is rejected.

The estimated value of β_1 is 0.021 which conform to the Apriori expectation of $\beta_1 > 0$. This result implies that if all the independent variables are held constant, it will propel an increase of 0.021 in real GDP. The p-value of β_1 is 0.0200 which is less than the alpha value (0.05). This therefore implies that the estimate of β_0 is statistically significant at 5% level of significance, in which case the alternative hypothesis is therefore accepted while the null hypothesis is rejected.

The estimated value of β_2 is 2.005 which conform to the Apriori expectation of $\beta_2 > 0$. This result implies that if all the

independent variables are held constant, it will propel an increase of 2.005 in real GDP. The p-value of β_2 is 0.0003 which is less than the alpha value (0.05). This therefore implies that the estimate of β_2 is statistically significant at 5% level of significance, in which case the alternative hypothesis is therefore accepted while the null hypothesis is rejected.

The R squared which is the explanatory power of the model is highly robust at 94 per cent. This means that 94 per cent of the variations in RGDP are explained by the systematic variations in the independent variables. Supporting this result is the highly robust R-Bar squared of 93 per cent. This means that only about 7 per cent of the systematic variations in the dependent variable (RGPD) is not explain by the model but attributed to the errors or disturbance term.

Reported in parenthesis are the t-statistics of the explanatory variables which of course are significant both at 5 per cent and 1 per cent level of significance going by the t- statistic (calculated) greater than 1.72 and 2.53 respectively. Although the Durbin-Watson is at 1.27, which only confirms the existence of a positive serial correlation which had been taken care of in the unit root test above and which does not affect the consistency of the estimated regression coefficients nor the ability to conduct a valid statistical test. The F statistic is

equally good at 247.37, with a degree of freedom of $df_1=1$, $df_2= 14$, which suggests that all the independent variables put together explain the significant of the model. In other words, the F-value of 217.89 is greater than the tabulated value of 4.60 and 8.86 at 5% and 1% level of significance. This indicates that the hypothesis of a non-significant simultaneous relationship between the dependent variable and the independent variables combined is rejected at both 5 and 1 per cent level. Thus the model has a high goodness of fit test.

The above results showed that the both government recurrent and capital expenditure has significant positive effect on Nigeria's economy in the period of study and they are both important factors of economic growth in Nigeria. However, even though both expenditures conform to the positive Apriori expectation and has a positive effect on economic growth, it was however noted that Nigeria's Federal Government's recurrent expenditure exceed her capital expenditure and its coefficient result has higher values than that of the capital expenditure. This is however seen as absurd, because a developing country like Nigeria should spend more on capital development in order to improve her economic growth.

CONCLUSION

This study showed the linkage between economic growth and public expenditure in developing country, using Nigeria as a case study. It reveals that government expenditure is a significant factor that contributes to the growth of developing countries. Though at a slow pace, government expenditure in Nigeria is a significant drive to her growth. However, it was further observed from the findings that excessive recurrent expenditures over capital expenditure are slowing down the growth of the economy. Even though the study showed that government expenditure contributes significantly, the dominance of recurrent expenditure over capital expenditure has inclined a decrease in its

efficiency and effectiveness.

Based on the empirical findings, the following are therefore recommended:

Capital expenditure should exceed recurrent expenditure, considering the current situation of Nigeria's economy so as to move towards a workable economy and progressive growth.

In addition, higher budgetary allocation which has always been made should be put into utilization, closely monitored and accountable for by those in charge so as to bring to a minimal the siphoning and embezzlement of public funds in the country. However, whosoever is found guilty of misappropriation of public funds should face the full weight of the wrath of the law without any prejudice.

Furthermore, transparency, accountability, prudence, receptiveness, justice, efficiency and obedience to the rule of law irrespective of the status or position, should be the guiding philosophies and ideologies in the use of public funds. If these are considered priority, the goals, objectives and purpose of government spending will be accomplished. Finally, welfare of the people should be a priority to the government as welfare also contributes significantly to the growth of an economy. It should be ensure that everyone benefits from government expenditures.

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