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Government Expenditure and Economic Growth: Evidence from the Nigeria Economy (1981 – 2016)

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Authors' contributions

This work was carried out in collaboration between both authors. Authors SEJA and SNI diligently collaborated in carrying out this study. Author SNI conceptualized the study and sourced the necessary literatures. Author SEJA wrote the first draft of the manuscript, critically reviewed it thereafter, sourced the data of interest, performed the analysis and interpreted the results. Both authors read and approved the final version of the manuscript.

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ABSTRACT

The effect of government expenditure on economic growth in Nigeria for a period of thirty-six (36) years that is, from 1981 to 2016 was the focus of this study. This study was inspired by two leading controversial issues in theoretical literature and empirical studies regarding the effect of government expenditure on economic growth for emerging economies. First, within the theoretical claim, Keynesian school of thoughts assert the presence of positive linkage between government expenditure and economic growth and development, while neoclassical economists refute this assertion and posited a negative association between government expenditure and economic growth and development. Identifying the side of these two arguments that is akin to all economies remains a puzzle among scholars as validation of either theory across the globe is still in vain. Secondly, the direction of relationship/causality between government expenditure and economic growth and development over the years is still not clear, especially for developing countries. Specifically, this study ascertained the effect of government recurrent and capital expenditure on the

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growth rate of real gross domestic product. We applied the Autoregressive Distributive Lag (ARDL) Co-integration and Granger causality test using secondary data from the Central Bank of Nigeria. We found that Nigeria's economic growth is independent/not affected by government recurrent and capital expenditure. We are of the opinion that the Federal Government through its appointed ministers in collaboration with the legislature review the composition of Federal Government of Nigeria total expenditure by ensuring that capital expenditure takes at least 50% of annual total expenditure. Measures such as reducing foreign training and bogus allowances for political office holders should be tailored towards reducing government consumption expenditures.

Keywords: Economic growth; government expenditure.

1. INTRODUCTION

The societies we are privileged to enjoy today unarguably depend on the reality of constituted authorities – governments. Without that, provision of essential public goods such as national defence, education, health, transport and communication, police and fire protection among others owing to market failure would be practically complicated. As such, the conduit to assuaging the needs of the citizens by governments is to embark on expenditure through the allocation of funds to various sectors of the economy. According to Mohammadi et al. [1], from economists' point of view, the government strongly consider the health and education of her citizens in order to attain the desired level of growth and development thus has to intervene in these sectors owing to a market failure that may characterize the macroeconomic environment. From the perspective of Iheanacho [2], to mitigate the issue of fluctuation in oil prices in the international oil market, depreciation in exchange rate, disparity in income, inflationary tendency and unemployment, government relies on fiscal policies tools to ensure that there stability in price system, balance of payment, creation of job opportunities which in turn lead to growth and development of the economy. In [3], the government can facilitate economic growth through the provider for defence, social security, judiciary, property rights, regulations, infrastructure development, workforce productivity, community services, economic infrastructure, regulation of externalities, and pleasure marketplace. The standard of living of people in economies that consistently experience economic growth is preferred to economies with volatility in growth rate consequent to coherent progress in basic infrastructures and development in human capital.

The nexus between government expenditure and economic growth has received considerable

attention in recent years, especially for developing countries owing to the relevancy of government expenditure in accelerating growth and development, and the liquidity challenges befalling developing economies is a resultant effect of underdeveloped nature of the financial system. The expenditure pattern of the government tends to determine the pace of growth and development a country can attain at any point in time. Government expenditure on critical areas such as real sector, health, infrastructures and education among others will cause an upsurge in a country's aggregate productive capacity. Earnings from the foreign exchange would be enhanced in the long term provided that government gives agriculture a priority in her spending [4]. Lwanga and Maweje [5] stated that government can create jobs and improve productivity in the economy if it spends more on human capital development: education and health but would be considered wasteful if government expenditure is centred on excessive travelling and conference participation by government officials which is usually the case in most government parastatals in Nigeria. These would not result in accelerated growth and development of the economy, especially for a developing country like Nigeria hence, governments are faced with the task of appropriately allocating expenditure to different segments of the economy to sustain growth.

Depending on the level of development in the financial system and the economy in general, if the appropriate mix of recurrent and capital expenditure is not sustained, the government would find it difficult to achieve its long term growth goal. However, how the government source fund to finance her expenditure should not be ignored too as this would also affect growth. Government relying substantially on tax from citizens' income to finance expenditure may deter the culture of savings which ultimately affects investments, shifting to fiscal deficit results in higher debt burden and crowding out of

private investments. In Nigeria, studies on the economic effect of government expenditure have been well documented in the literature. Owing to the different methodology applied in these studies, there exist mixed results. From the outcome of these studies, there was evidence that using government expenditure and real gross domestic product in its' monetary term accounted for the disparity in their findings. With this scenario, this study utilized the percentage changes in components of government expenditure and real gross domestic product to determine how government spending has affected economic growth in Nigeria.

We divided this study into five sections. The background to the study was presented in section one; review of relevant literature in section two; methodology in section three; analysis, findings and discussion in section four, whereas the conclusion and policy implication will be presented section five.

2. REVIEW OF RELEVANT LITERATURE

2.1 Concept of Government Expenditure and Economic Growth

Government expenditure is the expenditure of the government on amenities and services for the growth and development of the economy usually on an annual basis. Government expenditure has been on the forefront of macroeconomic policies in Nigeria owing to the increasing public needs of the increasing population. Okoro [6] disclose that it was out of the allocation of revenue that the term "government expenditure" was born. The allocation of revenue, in this case, defines the responsibility of the three-tier of the government that is, capacity of fiscal redistribution that prevails between the three-tier of the government (federal, state and local governments). How the expenditure of the government will affect growth would be dependent on the mix of recurrent and capital expenditure [7]. Productivity in labour will be enhanced if the government improves her education and health expenditures on one hand, whereas on the other hand, there would be magnificent appreciation in domestic investment if there would be sustainability in infrastructural expenditure (roads, communication, etc. [8].

The concept of economic growth is seen from different angles based majorly on the level of development experience in the country at that particular point in time. Economic growth is the

monetary value of goods and services produced in a country over a particular period of time. The growth of the economy is usually measured using various criteria and yardsticks. The gross domestic product is the traditional measure of economic growth, however, some scholars measured economic growth with per capita income. The rise in the probable gross domestic product which differs from country to the country aimed at reducing the level of poverty in developing economy would be considered as economic growth [9].

2.2 Relationship between Government Expenditure and Economic Growth

Economic growth as mostly represented by the growth in the real gross domestic product is an indicator of the health of a country over a given period of time. A significant change in the pattern of government expenditure ultimately affects national output for an emerging economy like Nigeria thus a positive relationship between government expenditure and economic growth. In [10], there is a possible relationship between the share of government spending to GDP and the growth rate of per capita real GDP, and also there is a constant return to capital that broadly includes private capital and public services. Following the Keynesian school of thought, government expenditure stimulates economic growth increase in government expenditure raises aggregate demand which results in more productive economic activities to meet the demands of the population.

When considering the appropriate policy measures that stimulate growth, policymakers are usually interested in. The management of the supply of money and expenditures of the government as well as supply-side policies are the focus of demand management policies of the government thus the determination of the amalgam between these policies to propel growth in the economy is the interest of policymakers [11]. However, the poor level of growth and development attained in the economy over the years compared to its continuous increase in public expenditure raises concern to the role of government expenditure in accelerating economic growth and development [12]. According to Udoka and Anyingang [13], there is a direct relationship between government expenditure which is the provision of necessary services to the citizens and growth of the economy.

2.3 Theoretical Background

The nexus between government expenditure and economic growth has been discussed using different theories. The Keynesian theory, Wagner's law of government expenditure and the Peacock and Wiseman's Hypothesis were discussed in this paper based on their popularity in literature. This study was anchored on the Keynesian Theory of Public Expenditure.

2.4 Keynesian Theory of Public Expenditure

The Keynesian theory of public expenditure believes that money is all that matter in economic growth and development and as such, it is the government that can effectively and efficiently provide such magnitude of money via public expenditure. According to the assumption of the Keynesian theory, depression can be avoided in an economy through increasing expenditure which results in a rise in aggregate demand. The [14] opines that expenditure as a fiscal policy would bring stability in the economy in the short run. However, caution should be taken by the government when increasing her expenditure to avoid inflationary tendency associated with too much money in circulation. The Keynesian school of thought are on the tent that market failures exist thus needed government interventions. The view of the Keynesian theory is against the classical economists which are of the opinion that government intervention is not beneficial to the economic growth and development as the private sector can articulate and manage the activities of the state to attain a desired level of growth.

2.5 Wagner's Law of Government Expenditure

Wagner's law of government expenditure was named after Adolph Wagner, a German political economist that published a book titled "law of increasing state activity" following his research in Western Europe at the end of the 19th century. Adolph Wagner analysed the linear relationship between government expenditure and economic growth and empirical envisage a fundamental cause and effect relationship between government expenditure and economic growth. Wagner's law of government expenditure provides the existence of a positive linkage between the expenditure of the government and the growth rate of the economy. This would be put differently that the functions or along with

socio-economic development government functions and responsibility increase what leads to higher spending.

2.6 Peacock and Wiseman's Hypothesis

Following the criticism that greeted the Wagner's law of government expenditure with respect to its universal application, the Peacock and Wiseman's Hypothesis was developed by T. Peacock and Jack Wiseman in their study in the British economy for the period 1890 to 1955 in an affirmation of the validation of the Wagner's assentation. Although the study of T. Peacock and Jack Wiseman in 1961 validated the Wagner's assentation in the British economy, the growth rate of the British economy was in a "step-like" basis against "continuous growth" [15,16]. Peacock and Wiseman hypothesis in Neog et al. [15] has three major concepts: Displacement, inspection and concentration effect. With regard to the displacement effect, the government could increase the tax paid by the citizens in order to generate more revenue to finance the defence expenditure. However, after the war, the tax rate may remain the same as the city would get used to the tax structure. While revenue remains on the high, the government may be forced to increase the spending.

2.7 Empirical Studies

In examining the long run and short run nexus between government expenditure and economic growth in Nigeria from 1970 to 2015, [17] applied the SVAR technique. The VECM analysis suggested that Nigeria would achieve a steady level of growth if the preference is giving to capital expenditure over recurrent expenditure. Economic growth was found to have been significantly affected by variation in government recurrent and capital expenditure.

In Saudi Arabia, the effect of government spending on the growth of the economy was ascertained by Alshahrani and Alsadiq [8]. The short and long-run dynamics were estimated using yearly data from 1969 to 2010. It was discovered that health care expenditure, private and public investments of the government stimulated economic growth in the long run, whereas housing sector expenditure and trade openness stimulated growth in the short run.

The real GDP growth effect of government spending through recurrent and capital expenditure in Nigeria from 1970 to 2008 was

investigated by Alshahrani and Alsadiq [8] with the application of the Ordinary Least Square (OLS) technique. The authors found the existence of a long run relationship between government spending and the growth rate of the real GDP and this was positive and statistically significant.

Using data from 1970 to 2009 and applying multiple regression [9] determined how economic growth in Nigeria has been influenced by the continuous rise in government expenditure. The result of the study showed that transfers, recurrent and capital expenditure have an insignificant negative effect on Nigeria's economic growth. Furthermore, economic growth was positively influenced by recurrent and capital expenditure on social and community services.

The alleged connection between government expenditure and economic growth in Barbados from 1976 to 2011 was studied by [19]. The authors employed Unrestricted Error Correction Model and Dynamic Ordinary Least Square. Generally, the findings suggested that total government spending produces stimulates economic growth, particularly in the short-run, with a much smaller impact over time. The expenditure of the government on health and social security have little effect on the growth of the economy. On the contrary, Barbados economic growth was negatively and significantly affected by government spending on education both in short and long term basis.

Following the ARDL approach [20] disaggregated government expenditure into recurrent and capital expenditure and estimated its effect on Nigeria's real GDP from 1961 to 2010. There was evidence of a co-integrated relationship between government expenditure and economic growth. The positive influence of government expenditure on economic growth could not be verified from the output of the data analysis.

Economic growth effect of government expenditure in Nigeria was explored by Abu and Abdullahi [21]. The study utilized the OLS technique using data from 1970 to 2008. The study established that economic growth was negatively affected by total government recurrent and capital expenditure and education expenditure, whereas health, transportation and communication expenditure impacted positively on economic growth.

From 1970 to 2012 in Nigeria, the growth impact of public expenditure was explored by Adamu

and Hajara [22]. Having determined the stationarity properties of the data, the authors proceeded with OLS and pairwise Granger causality test. Evidence was that economic growth was insignificantly and positively related to capital expenditure, while recurrent expenditure significantly and positively affected economic growth. The Granger causality analysis provided the existence of a one-way/unidirectional relationship with causality running government expenditure to economic growth.

Alexiou [23] used panel data analysis to analyse the effect of government spending on the economic growth of seven transition economies of South Eastern Europe. Findings disclosed that capital expenditure, private investment expenditures, trade openness and development assistance significant affect the growth rate of the seven transition economies of South Eastern Europe.

Employing multiple regression using data set from 1980 to 2011 in Nigeria, the impact of government expenditure on economic growth was evaluated by Okoro [6]. The author observed the existence of a long run relationship between government expenditure and economic growth. However, there was no evidence of the significant effect of recurrent and capital expenditure on economic growth.

Guided by the postulation of the endogenous growth theory and applying multiple regression, [24] proved the economic growth effect of government expenditure was mixed depending on the type of expenditure. Government expenditure in agriculture exerted no significant effect on Nigeria's economic growth in long and short runs.

The degree of influence of government expenditure on economic growth in Nigeria from 1992 to 2011 was looked into by Nwaeze et al. [25] using the Ordinary Least Square (OLS) technique. Findings divulged that the recurrent and capital expenditures of the government have an insignificant positive effect on economic growth.

Cochrane-Orcutt and ECM approach was employed by Ebiringa and Charles-Anyoogu [26] to evaluate the effect of government expenditure on economic growth in Nigeria. The authors established that telecommunication, defence and security, healthcare and education expenditure have a positive effect on economic growth,

whereas government expenditure on transportation and agriculture negatively affect economic growth.

In Pakistan economy during the period 1974 to 2008, a study by Asghar et al. [27] using multiple regression approach provided evidence of a positive relationship between government expenditure and economic growth. Expenditure on human capital development and economic and community services was positively related to economic growth, while expenditure by government on law and order and subsidies related negatively with economic growth.

Agbonkhese and Asekome [28] applied Ordinary Least Square (OLS) in evaluating whether or not there exists a relationship between government expenditure and economic growth in Nigeria from 1981 to 2011. Empirical evidence proved that government expenditure spurs economic growth.

How economic growth in Nigeria has been affected by government expenditure from 1980 to 2011 was looked into by Oni et al. [29]. With the aid of Ordinary Least Square (OLS), they found that recurrent and capital expenditures of the government positively affect economic growth. Recurrent expenditure was stronger in stimulating the growth rate of the economy when compared with capital expenditure.

An investigation on the effect of government revenue, recurrent and capital expenditure on Nigeria's economic growth from 1981 to 2011 was modelled by Ayinde et al. [30]. The output of the estimated model disclosed that it was capital expenditure and revenue of the government that significantly and positively affect economic growth rather than a recurrent expenditure.

Mushtaq et al. [31] applied Pedroni panel co-integration test for co-integration relationship and IPS test for unit root to explore the long-run relationship between government expenditure, exports, imports and economic growth in eight countries. Results of Pedroni cointegration test implied the presence of co-integration between variables. As unveiled by the fixed effect estimation, economic growth is positively influenced by government expenditure, exports and domestic private investments, while imports have a negative effect on the growth of the economy of the eight countries.

A study by Egbetunde and Fasanya [32] employed the bounds test to determine the extent to which government expenditure has

impacted on Nigeria's economic growth from 1970 to 2010. There was evidence of a long run relationship between the expenditure of the government and economic growth. Recurrent expenditure has a little significant positive impact on economic growth, whereas total government spending negatively affects the economy.

Hamzah [3] ascertained the linkage that exists between Malaysian government expenditure and economic growth from 1970 to 2007. The study employed OLS regression for the empirical analysis and found that the rising of the total government development expenditure negatively affects economic growth, and the result applies to economic services with respect to total government development expenditure.

In Bolivia, with respect to the nexus between government spending and economic growth, [33] using SVAR unveiled expenditures in Santa Cruz Department, defence and security expenditures and decentralized government expenditure in local and regional provinces remain the best way to boost economic growth in Bolivia. Spending by the government in education and in Departments like Beni and Oruro have the potential to stimulate economic growth.

Chamorro-Narvaez [34] identified the effects of capital and current spending on the growth rate of per capita income of selected Latin American countries from 1975 to 2010. The results emanating from the analysis suggested that the growth rate of per capita income of the selected Latin American countries were affected by neither government capital nor current expenditures.

Using the Johansen co-integration and error correction approach, the short term and long term association Nigeria's government expenditure and economic growth from 1986 to 2014 was looked into by Iheanacho [2]. While the study controlled the probable effect on shocks in non-oil revenue, recurrent expenditure, in the long run, would have no positive effect on economic growth.

In Economic Cooperation Organization Countries (ECO) for the period 1995-2009, [1] used the dynamic panel data method and generalized method of moments (GMM) to determine how public spending has influenced development in the economy. According to the findings, economic growth is significantly affected by government health expenditure, educational expenditure by governmental statistically has a

significant and positive effect, governmental defence expenditure has significant & statistically has positive effect on the economic development of ECO countries.

Using a disaggregated approach, [35] assessed the effect of government expenditure on economic growth in Nigeria from 1977 to 2009 via the OLS technique. They found that economic growth was negatively influenced by total recurrent and capital expenditure of government on power and education. The economy felt better with increased government spending on health, transportation and communication.

Udoka and Anyingang [13] used the OLS estimation in the framework of an ex-post facto research design to evaluate how economic growth and development in Nigeria have been affected by government spending from 1980 to 2012. In aggregate, growth and development of the economy were influenced by government spending with capital expenditure leading the trend relative to recurrent expenditure.

In the Ethiopian economy within the period 1970 to 2011, [10] using descriptive and econometric technique analysed the relationship between government expenditure and economic growth. The study showed that human capital development expenditure is growth inducing, while recurrent expenditure retards growth. Trade openness and real private investment are a great tool for boosting economic growth.

Using a time series data for Jordan economy from 1990-2010, [36] showed that at the aggregate level, economic growth would be greatly be influenced by government expenditure in line with the Keynesian theory.

Onakoya and Somoye [12] applied the Three-Stage Least Squares (3SLS) technique to address the effect of government expenditure on Nigeria's economic growth. The output of the data covering the period 1981 to 2011 depicted that capital expenditure significantly affects economic growth.

3. METHODOLOGY

The methodology followed the approach of the Autoregressive Distributed Lag (ARDL) model. The direction of causality was ascertained using the Granger causality technique. The stationarity features of the data sourced from the Central Bank of Nigeria (CBN) were tested via

Augmented Dickey-Fuller (ADF) and Philip Peron (PP). Economic growth was defined in terms of Growth Rate of Real Gross Domestic Product (GRRGDP), while government expenditure was measured using also the percentage changes in the components of government expenditure: Recurrent Expenditure (REXP) and Capital Expenditure (CEXP). The model of Alshahrani and Alsadiq [8] was followed and stated as:

$$y_t = \beta_0 + \beta_1 \left(\frac{IP}{Y}\right)_t + \beta_2 \left(\frac{IG}{Y}\right)_t + \beta_3 Open_t + \sum_{i \in \mathbb{E}} \beta_i \Delta EXP_t^i + \varepsilon_t \quad (1)$$

where:

- y is the growth rate of the real non-oil per capita GDP in the period t,
- IP is real private domestic investment,
- IG is real government investment,
- Y is real non-oil GDP,
- (Open) is openness to trade calculated as the sum of real exports and imports over real non-oil GDP, (EXPⁱ) represents various components of government expenditure in the subset,
- βs are unknown parameters to be estimated,
- and ε is the usual random disturbance term.

The model (Equ.1) was, however, modified based on the peculiarity of the Nigeria government expenditure pattern thus:

$$RGDPGR = f(PCREXP, PCCEXP) \quad (2)$$

Econometric transformation of Equ.2 results as thus:

$$GRRGDP_{it} = \beta_0 + \beta_1 PCREXP_{it} + \beta_2 PCCEXP_{it} + \varepsilon_{it} \quad (3)$$

4. ANALYSIS, FINDINGS AND DISCUSSION

4.1 Stationarity Characteristic of the Data

The stationarity characteristic of the data in Tables 1 – 4 report mixed order of integration that is, either as 1(0) or 1(1). That not with standing, the data were found to free from stationarity issues. The mixed integration necessitated the adoption of the Autoregressive Distributed Lag (ARDL) model of estimation.

4.2 Descriptive Properties of the Data

Table 5 details the descriptive statistics of the data. The mean, median, maximum, standard deviation and number of observations are clearly seen. The skewness reveals GRRGDP as not

positively skewed toward normality. From the p-values of the Jarque-Bera statistics, the data were normally distributed thus free from any outlier that may likely affect the result of the regression estimates.

4.3 Model Sensitivity Test

The model was subjected to sensitivity analysis via serial correlation LM test, heteroskedasticity test and Ramsey RESET test. The serial correlation (Table 6), heteroskedasticity test (Table 7) and Ramsey RESET (Table 8) disclose that the model passed the above stated preliminary test on the argument that the p-values for serial correlation LM test, heteroskedasticity test and Ramsey RESET test are insignificant at 5% level of significance. Furthermore, the disaggregation of government expenditure into recurrent and capital expenditure resulted in the correlation matrix in Table 8 which envisages no multicollinearity problem. The correlation between recurrent and capital expenditure is 0.177.

4.4 ARDL Co-integration Relationship

The result of the ARDL co-integration reveals that there is a long run relationship between the

growth rate of real gross domestic product and government total recurrent and capital expenditure. This assertion has arrived on the fact that the f-statistics of the bound test of 8.77 is greater than the upper and lower bound critical values of 4.85 and 3.79 at 5% level of significance. On these premises, the null hypothesis of no co-integration relationship between the dependent and explanatory variables are rejected at a significance level of 5%.

4.5 Nature of Long Run Relationship/ ARDL Error Correction Model

The determination of the nature of the long run relationship and the speed of the adjustment to equilibrium is presented in Table 10. From the result in 10, government recurrent and capital expenditure have an insignificant negative relationship with the gross domestic product growth rate. In terms of the speed of adjustment, Table 10 reveals that the model moves toward equilibrium following disequilibrium in the explanatory variables. The ECM is negatively signed with a coefficient of -0.73, a suggestion that 73% of error generated in the previous period is corrected in the current period.

Table 1. Result of ADF test at level

Variables	Intercept	Trend and intercept	None	Remark
GRRGDP	-4.512011 (0.00)*	-4.641949 (0.00)*	-1.382897 (0.15)	Stationary
PCREXP	2.348498 (0.99)	-0.667090 (0.97)	3.933926 (0.99)	Not Stationary
PCCEXP	-1.142910 (0.69)	-2.395787 (0.38)	-0.253794 (0.59)	Not Stationary

Source: E-views 9.0 version data output

Table 2. Result of ADF test at first difference

Variables	Intercept	Trend and intercept	None	Remark
GRRGDP	-7.943588 (0.00)*	-7.931819 (0.00)*	-8.080538 (0.00)*	Stationary
PCREXP	-5.733958 (0.00)*	-3.842017 (0.02)**	-4.775142 (0.03)**	Stationary
PCCEXP	-7.475509 (0.00)*	-7.347241 (0.00)*	-7.361155 (0.00)*	Stationary

Source: E-views 9.0 version data output

Table 3. Result of PP test at level

Variables	Intercept	Trend and intercept	None	Remark
GRRGDP	-4.512011 (0.00)*	-4.613723 (0.00)*	-3.444175 (0.00)*	Stationary
PCREXP	2.535525 (1.00)	-0.530805 (0.98)	4.153049 (1.00)	Not Stationary
PCCEXP	-1.026842 (0.73)	-2.395787 (0.38)	-0.080579 (0.65)	Not Stationary

Source: E-views 9.0 version data output

Table 4. Result of PP test at first difference

Variables	Intercept	Trend and intercept	None	Remark
GDPGR	-12.43864 (0.00)*	-16.49997 (0.00)*	-12.53437 (0.00)*	Stationary
GREXP	-5.915199 (0.00)*	-7.678769 (0.00)*	-4.871698 (0.00)*	Stationary
GCEXP	-7.475509 (0.00)*	-7.347241 (0.00)*	-7.239692 (0.00)*	Stationary

Source: E-views 9.0 version data output

Table 5. Data descriptive features

	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	P-value	Obs
GDPGR	3.148611	4.540000	12.74000	-13.13000	5.782879	-1.078232	3.969616	8.385746	0.015103	36
GREXP	1068568.	313880.0	4178590.	4750.000	1375246.	1.077378	2.635110	7.164181	0.027817	36
GCEXP	368005.3	255670.0	1152800.	4100.000	372270.1	0.655318	2.061156	8.898791	0.042360	36

Source: E-views 9.0 version data output

Table 6. Serial correlation LM test

Regression estimates	F-statistic	Prob. F(2,31)
GRRGDP →PCREXP + PCCEXP	0.735537	0.4874

Source: E-views 9.0 version data output

Table 7. Harvey Heteroskedasticity test

Regression estimates	F-statistic	Prob. F(2,33)
GRRGDP →PCREXP + PCCEXP	1.074769	0.3530

Source: E-views 9.0 version data output

Table 8A. Ramsey reset specification

Estimates	t-statistic	df	P-value
GRRGDP →PCREXP + PCCEXP	1.440067	32	0.1596

Source: E-views 9.0 version data output

Table 8B. Correlation matrix

	GDPGR	GREXP	GCEXP
GRRGDP	1.00000	0.2614	0.3955
PCREXP	0.2614	1.0000	0.1770
PCCEXP	0.39555	0.1770	1.0000

Source: E-views 9.0 version data output

Table 9. Bound test for economic growth and government expenditure

T-test	5% Critical value bound		Remark
F-statistic	Lower bound	Upper bound	
8.772020	3.79	4.85	Null Hypothesis Rejected

Source: E-views 9.0 version data output

Table 10. ARDL co-integrating and long run form for GRRGDP→PCREXP+PCCEXP

Co-integration form				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(PCREXP)	-0.000001	0.000001	-1.118030	0.2721
D(PCCEXP)	0.000007	0.000005	1.617873	0.1158
CointEq(-1)	-0.729290	0.154858	-4.709417	0.0000
Long run equation				
PCREXP	-0.000002	0.000002	-1.101176	0.2793
PCCEXP	0.000010	0.000006	1.681375	0.1027
C	1.869904	1.596175	1.171490	0.2503

Source: E-views 9.0 version data output

4.6 Short Run ARDL Relationship

The short run nexus between the government expenditure and economic growth is detailed in Table 11 shows that there is an insignificant positive relationship between government capital expenditure and gross domestic product growth rate in Nigeria, while recurrent expenditure of the government depicted a negative insignificant relationship with the gross domestic product growth rate. When the two components of government expenditure: recurrent and capital

are held constant, the growth rate of the gross domestic product would be 0.69%. Percentage rise in recurrent expenditure decreases the growth rate of gross domestic product by 1.56%, whereas a unit increase in capital expenditure causes 1.12% appreciation in gross domestic product growth rate.

The adjusted R-squared reveals that only 13.89% changes in the growth rate of the gross domestic product as a result of fluctuation in both recurrent and capital and capital expenditure of

the government. From the p-value of the coefficient of the f-statistic (0.03), components of government expenditure significantly explained the changes in the growth rate of gross domestic product. There is no autocorrelation in the estimated output (Watson statistic of 2.01).

4.7 Variance Decomposition

From the result in Table 12, it is observed that government recurrent and capital expenditure have been contributing to gross domestic product growth rate in Nigeria from period 1 – 10. Capital expenditure of the government was seen to have influenced gross domestic product compared to recurrent expenditure. Nevertheless, the variation in gross domestic product growth rate was better explained by itself.

4.8 Impulse Response Function

The impulse response function analysis was performed and the result summarized in Table 13. From the impulse response function, economic growth responds negatively to government recurrent expenditure both in short and long run but positively to capital expenditure.

4.9 Granger Causality Analysis

The effect of government expenditure on economic growth in Nigeria was ascertained with the aid of the Granger causality analysis and presented in Table 14. There is no empirical evidence that the growth rate of gross domestic product is affected by government recurrent and capital expenditure because there is no presence of either unidirectional or bidirectional causal relationship between government expenditure

and economic growth. Causality does not flow from any direction at the 5% significance level.

4.10 Discussion of Findings

The ARDL co-integration result depicts that government expenditure is related in the long run with economic growth in Nigeria. By implication, Nigeria will achieve considerable growth and development if the expenditure is properly utilized. This supports the works of Egbetunde and Fasanya [32] and [6]. From the result in Table 11, capital expenditure has a positive relationship with economic growth, while recurrent has a negative relationship with economic growth. Capital expenditure associating positively with economic is inconsistency with previous works of many researchers [32,29,9,18] and [25] and but disagrees with [6] who established a negative link between capital expenditure and economic growth. With respect to the negative relationship between recurrent expenditure and economic growth, an earlier study by Abu and Abdullahi [21] is hereby affirmed. The result in Table 14 showed that recurrent and capital expenditure has no significant effect on economic growth and industrial development in Nigeria. This could be attributed to the fact that fund allocated for government expenditure are mismanaged or siphon by politician and those in corridors of power. In Nigeria implementation of government, expenditure is not up to 50%, the annual budget is usually passed in according to the law in the second quarter of a fiscal year. This findings are in unison with [29,9] and [32] but could not confirm the significant effect of government expenditure on economic growth as documented by Okoro [6].

Table 11. ARDL regression: Gross domestic product growth rate and government expenditure

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.694949	1.277780	0.543872	0.5902
GREXP	-1.56E-06	1.37E-06	-1.134139	0.2649
GCEXP	1.12E-05	5.07E-06	2.206492	0.0344
R-squared	0.188105	Mean dependent var		3.148611
Adjusted R-squared	0.138899	S.D. dependent var		5.782879
S.E. of regression	5.366252	Akaike info criterion		6.277792
Sum squared resid	950.2898	Schwarz criterion		6.409752
Log-likelihood	-110.0003	Hannan-Quinn criter.		6.323849
F-statistic	3.822826	Durbin-Watson stat		2.019909
Prob (F-statistic)	0.032118			

Source: E-views 9.0 version data output

Table 12. Variance decomposition of GRRGDP

Period	S.E.	GRRGDPGR	PCREXP	PCCEXP
1	4.890485	100.0000	0.000000	0.000000
2	5.274506	93.52377	0.278587	6.197642
3	5.498145	86.85555	0.762643	12.38181
4	5.692862	81.52427	1.237592	17.23814
5	5.852702	77.58183	1.737020	20.68115
6	5.981210	74.65633	2.234525	23.10915
7	6.078678	72.56429	2.739418	24.69629
8	6.148406	71.12915	3.237537	25.63331
9	6.194468	70.20487	3.722306	26.07282
10	6.222400	69.64734	4.178986	26.17368

Source: Data output via E-views 9.0

Table 13. Impulse response function of GDPGR

Period	GDPGR	GREXP	GCEXP
1	4.890485	0.000000	0.000000
2	1.449780	-0.278395	1.313092
3	0.487221	-0.391203	1.420831
4	0.406019	-0.412969	1.357822
5	0.392477	-0.440356	1.223721
6	0.365011	-0.452103	1.087714
7	0.323308	-0.461330	0.926332
8	0.275936	-0.460064	0.751514
9	0.223029	-0.452128	0.560698
10	0.166180	-0.435578	0.359829

Source: Data output via E-views 9.0

Table 14. Granger causality result for economic growth and government expenditure

Null Hypothesis:	Obs	F-Statistic	Prob.	Remarks
PCREXP does not Granger Cause GRRGDP	35	0.17077	0.6822	No Causality
GRRGDP does not Granger Cause PCREXP		1.43811	0.2392	No Causality
PCCEXP does not Granger Cause GRRGDP	35	1.63321	0.2105	No Causality
GRRGDP does not Granger Cause PCCEXP		1.03363	0.3169	No Causality

Source: Data output via E-views 9.0

5. CONCLUSION AND POLICY IMPLICATION

In developing countries like Nigeria which have resource constraint due to the underdeveloped nature of the stock market, government expenditure is vital to accelerate the pace of economic growth and development. The level of economic growth achieved in the country so far is poor when compared to the drastic and magnificent rise in government expenditure which calls for the need for government to re-organise its fiscal policy to better the lives of the citizens.

Recurrent expenditure/government consumption expenditure constitutes over 70% of total expenditure, yet no commensurate influence on

economic growth and development. Consequently, there need for policymakers to review its composition by ensuring capital expenditure takes at least 50% of annual total expenditure. With this, more jobs will be created and infrastructural project completed. This, in turn, leads to an expansion in productive economic activities hence, reduction in the level of poverty. Measures such as reducing foreign training, bogus allowances for political office holders, etc. should be tailored towards reducing government consumption expenditures.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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