

# Analysis of the effect of Government Expenditure on Per Capita Income in Nigeria

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**Abstract:** The increase on government expenditure over the years may not have translated into meaningful economic development as many Nigerians are still living in poverty. This has led to this study to investigate the effects of government expenditure on per capita income in Nigeria using vector error correction model for its analysis. The study uses secondary data that span from 1986 to 2017. The data are diagnosed with unit root test for stationarity in which per capita income (PCI), population (POP), and government expenditure (GEX) are stationary at second difference while investment (INV) is stationary at first difference. The result of VEC model shows that GEX posits negative relationship in the short-run and 0.85 percent rate of adjustment whenever shock occurs in the economy. The study recommends that government should inject more funds into the economy but ensure all leakages or loopholes are blocked as well as to ensure proper guidelines of policy implementation of fund appropriation so much so that the purposes are achieved.

**Keywords:** Government Expenditure, Per Capita Income, Economic Development, Nigeria.

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## 1. INTRODUCTION

In Nigeria as in most developing countries, the role of government in economic development can be categorized into stabilization, resource reallocation and income distribution. Therefore, government intervenes in the economy using fiscal and monetary policies. Specifically, fiscal policy refers to the manipulation of government revenue and expenditure towards influencing the workings of the economic system. Government revenue sources include different forms of taxes, rents, profits and sales of natural resources to mention but a few. The expenditure includes government spending on infrastructure, education, health as well as subsidies and other basic needs in the economy.

For example, available statistics in Nigeria from CBN (2016) show that federal government expenditure has continued to rise over the years. This is due to receipts from oil and non-oil revenue as well as an increasing demand for public goods such as roads, electricity, education, health and security. Federal government expenditure which stood at N11.42 billion in 1981 increased to N1,018.00 billion in 2001 and N4,194.85 billion in 2010 from which it rose to N4,712.06b, N4,605.39b and N5,185.32b in 2011, 2012 and 2013. In 2014 however, the federal government expenditure fell to N4, 587.39b before rising to N4, 988.86 b and N5, 160.74b in 2015 and 2016 respectively.

However, what has not been resolved among scholars is whether the rising state of government expenditure in Nigeria has gainfully contributed to increase in per capita income of the Nigerian people. An increase in per capita income is expected to lead to development and reduction in poverty. In the same vein, many Nigerians have continued to wallow in abject poverty, while more than 50% live on less than US\$1 per day. For example, despite the Nigerian government interventions through fiscal policies in the form of expenditure increase, the GDP per Capita in Nigeria has continue dwindle which according to Trading Economics (2018) is equivalent to 19 per cent of the world's average, which is considered quite low. According to data from Trading Economics (2018) the Gross Domestic Product per capita in

Nigeria was last recorded at 2457.80 US dollars in 2016. Also, information from African Markets (2016) revealed that the United Nations Industrial Development Organization (UNIDO) ranked Nigeria under the lower income country. The National Bureau of Statistics (NBS) in 2010 stated that in the last decade, poverty has risen in Nigeria, with almost 100 million people living on less than a \$1 a day, despite economic growth (BBC, 2012).

In view of this, for example, Data obtained from World Development Indicator (2014) place about 63.1 percent of Nigeria's total population living below poverty line of \$1.25 a day. Although the Nigerian economy is projected to be growing, the gap between the rich and the poor continues to widen, poverty rate as well as unemployment rate continue to rise, and the per capita income also falls. The question which arises therefore is what has led to the disproportionate or mismatch between government expenditure and economic development in Nigeria? This study however, aims at investigating the effect of government expenditure on economic development in Nigeria from 1986 – 2017.

### **1.1 Objective to the Study**

The major objective of the study is to determine the effect of government expenditure on economic development in Nigeria through the following specific objective:

- i. To determine if there is a relationship between government expenditure and per capita income.

### **1.2 Scope and Delimitation**

The study focuses on the impact of government expenditure on economic development in Nigeria from 1986 to 2017. The period is chosen to capture the major period of economic change in Nigeria. That is, Structural Adjustment Period (SAP) of 1986. Data for this study were sourced from Central Bank of Nigeria (CBN) statistical bulletin for various years. The variables to be used in the study are: government expenditure, investment, economic development, and population. Per capita income is used as proxy for economic development.

## **2. LITERATURE REVIEW**

### **2.1 Economic Development**

In strictly economic terms, development has traditionally meant the capacity of a national economy, whose initial economic condition has been more or less static for a long time, to generate and sustain an annual increase in its Gross National Income (GNI) at rates of 5% to 7% or more. A common alternative index of development has been the use of rates of growth in 'income per capita' to take into consideration the ability of a nation to expand its output at a rate faster than the growth rate of its population (Todaro and Smith, 2009).

Levels and rates of growth of "real" per capita GNI (monetary growth of GNI per capita minus the rate of inflation) are normally used to measure the overall economic well-being of a population – how much of real goods and services is available to the average citizens for consumption and investment.

Economic development in the past has also been typically in terms of the planned alteration of the structure of production and employment so that agriculture's share of both declines and that of the manufacturing and service industries increase. Development strategies have therefore usually focused on rapid industrialization, often at the expense of agriculture and rural development.

With few exceptions, such as in development policy circles in the 1970s, development was until recently nearly always seen as an economic phenomenon in which rapid gains in overall and per capita GNI growth would either "trickle down" to the masses in the form of jobs and other economic opportunities or create the necessary conditions for the wider distribution of the economic and social benefits of growth. Problems of poverty, discrimination, unemployment and income distribution were of secondary importance to "getting the growth job done", (Todaro and Smith, 2009).

The experience of the 1950s and 1960s, when many developing nations did reach their economic growth targets but the levels of living of the masses of people remained for the most part unchanged, signaled that something was very wrong with this narrow definition of development. An increasing number of economists and policymakers clamoured for more direct attacks on widespread absolute poverty, increasing inequitable income distributions, and rising unemployment (Todaro and Smith, 2009).

In short, during the 1970s economic development came to be redefined in terms of the reduction or elimination of poverty, inequality, and unemployment within the context of a growing economy. "Reduction from growth" became a common slogan. Dudley Seers (1969) posed the basic questions about the meaning of development succinctly when he asserted:

"The questions to ask about a country's development are therefore: what has been happening to poverty? What has been happening to unemployment/ what has been happening to inequality? If all three have declined from high levels, then beyond doubt this has been a period of development for the country concerned. If one or two of these central problems have been growing worse, especially if all three have, it would be strange to call the result 'development' even if per capita income doubled".

## 2.2 An Overview of Government Expenditure in Nigeria

The total government expenditure in Nigeria, like most countries, includes the capital expenditure and the recurrent expenditure. The capital expenditures include government expenditures on infrastructures, educational facilities, investment and development expenditure. This kind of expenditure involves physical asset as well as intangibles such as education, research and development and every other expenditure that improves the functionality of the assets, distinct from repairs (Davina, 2009). On the other hand, the recurrent expenditure includes those kinds of government expenditures that the benefits are not expected to be consumed within a year. This kind of expenditure reoccurs on an annual basis, implying that the government is expected to engage in this kind of expenditure on an annual basis.

Government expenditure in Nigeria is a key determinant of output growth and a significant factor in the economic management. The efficiency and the structure of these expenditures emanate from the prevailing desires of the government to provide a favourable business environment through provision of pure public goods that can enhance productivity and output growth in the presence of externalities. In other words, the provision of quality public goods and other related services largely depend on the nature and quality of government expenditure (Idris and Bakar 2017).

The condition of fiscal sustainability and macroeconomic framework of any country depends on the structure and level of government expenditure. For instance, over many years in Nigeria, macroeconomic instability was purely motivated through fiscal imprudence and poor financial management of oil revenue. Budgetary allocated funds became virtually meaningless, as extra allocations became part of the government, in spite of the absent of plan either medium or long term to which the extra budgeted expenditures would be referenced to with a view to ensure long-run growth.

The structure of government expenditure in the Nigerian economy is categorised into capital and recurrent expenditure. The capital expenditure are expenses designed and allocated for capital-intensive projects like construction of airport, accessible roads and railways, telecommunication, education, power and electricity generation and so on. On the other hand, recurrent expenditure is those spending budgeted for the payment of wages and salaries as well as other dividends, maintenance cost and so on. The combination of capital and recurrent expenditure gives the total expenditure of the government (Idris and Bakar 2017).

The total government spending in Nigeria has always been on the increase despite the fluctuating rate of revenue in the recent years. This is, however, complemented by a high demand for public utilities as a result of population growth and creation of more states within the market-oriented economy.

Statistical data from Central Bank of Nigeria's bulletin (2016) reveals that total spending has continued to fluctuate at increasing rate in the last three decades or so. For instance, total government expenditure decreased from ₦14.97 billion in 1980 to an estimated amount of ₦11.41 billion in 1981. This declining trend continues up to the end of 1985. The previous increase in expenditure was the multiplier effects and rollover benefit of the 1970s oil boom era largely motivated by increased in crude oil price.

Unfortunately, the economic recession of 1980s which led to the decrease in oil price compelled the Nigerian economy to reduce its expenditure in order to avoid instabilities of fiscal deficit in the long-run. The value began to increase in 1986 to ₦16.22 billion nearly doubling the values of 1983 to 1984. In 1987 and 1988, it was ₦22.02 billion and ₦27.75 billion, respectively (CBN, 2016). This is certainly not surprising given the introduction and commencement of the Structural Adjustment Programme (SAP). As such, adequate funds are required to finance the development strategy.

Part of the primary aim of the policy reform was to ensure diversification of the economy, reduce public sector dominance in domestic activities, reallocate resources to private sectors and encourage market development. The increasing trend of expenditure continues throughout the adjustment period up to ₦191.23 billion in 1993 which appeared to be the highest spending during the planning era. The value of expenditure stood at ₦248.77 billion in 1995 and further continued to increase at the speed of a horse to an average of ₦947.69 billion in 1999. With the change in leadership style and transition of the economy from military to a democratic system in 1999, the value of public spending stood at ₦1,018.03 billion in 2001. From 2002 onwards, aggregate expenditure continued to increase rapidly by more than 30% annually representing over 20% of the GDP each year, respectively (CBN 2016).

These increases in expenditures are caused by the nature of political instabilities, social and religious vices, in relations to high demand for public goods and services by the growing population. However, despite the significant increase in the volume and share of public expenditure in the Nigerian budgetary allocations over the years, there is little to show in terms of output growth, adequate infrastructure and employment generation. This serves among the essential challenges to fiscal authorities from the inefficient use of public funds. In view of the increasing trend of public sector expenditure given the narrow revenue base of the government, the possible occurrence of deficits in the budget balance becomes more apparent.

An increase in government expenditure without a corresponding increase in revenue could widen the budget deficit. Therefore, the government should explore other sources of nonoil revenue, particularly the solid mineral resources, agricultural sector, as well as information and communication sector, and also reduce the size of large recurrent expenditure and hence reallocate resources in favour of other productive investment spending. Furthermore, expansion of government spending in conjunction with difficulties to raise additional revenue, often causes fiscal instabilities which are mostly finance through external borrowing. These fiscal instabilities, in addition to the accumulation of more external debt are inconsistent with the stable macroeconomic business environment needed to encourage a competitive and vibrant private sector development for sustainable economic development.

### **2.3 Challenges of Government Expenditure in Nigeria**

Productive government expenditure is regarded as an essential element of development process and a significant part of the public sector. As such, any meaningful spending will improve the public sector performance and produce a desirable outcome on the output growth and strengthen the capability of fiscal policy in terms of economic management. The higher level of government expenditure in recent years has produce many undesirable effects, hence the need for the overall spending to be constrained to enable a possible return to the surplus stage and ensure sound fiscal balance within the public finance. The condition of fiscal balance is another major obstacle that produces many undesirable macroeconomic effects.

This is attributed to inability of the public sector to raise sufficient revenue and reduce unnecessary expenditures in favour of productive investment. Given the increasing trend of deficits and the ever-increasing public debt, the additional cost of debt servicing will continue to be a burden on the Nigerian economy due to the accumulated rates of interest, hence resulting in lower output growth within the domestic economy, decrease in savings and investment, and misallocation of resources which are meant to enhance social and sustainable economic development. This scenario became more pronounced when we examine the fluctuating rate of GDP, economic growth rate, as well as poverty and unemployment rates. On several occasions, government was advised by policy makers not only to reduce the size of fiscal deficit, but also to widen the revenue generation capacity in order to augment the contribution from non-oil sectors like information and communication technology, agriculture, solid mineral development, entertainment industry, etc. which have the potentials of reducing poverty than the oil sector, (Idris and Bakar, 2017)

Another challenging factor is not even the accumulation of deficit, but the method of financing these deficits. In Nigeria, the Central Bank of Nigeria (CBN) accounted for the largest share of deficit financing through domestic borrowing. This has implications on the financial sector in terms of share of credit available to the private sectors. The loanable funds which are meant to be available for the private sector investment are loan out to the government; this implies rationing and higher interest rate on the remaining funds. This further discourage investment and suppressed private sector participation in the production process and other related economic activities, which in turn result to higher fiscal dominance within the market oriented economy.

This is regarded as one of the possible reasons for the failure of the Nigerian financial institutions in terms of international competitiveness, because the strength of a financial system is measured in terms of the share of domestic credit available to the private sectors for productive investment. Furthermore, the unanticipated liquidity problems that hit the financial sector and the economy at large resulted to exchange rate difficulties, lower productivity growth and high inflationary pressure on both domestic and international activities. These occur due to the current economic recession, cumulative effects of previous inefficiency in fiscal operations, abuse of public funds and economic mismanagement, as well as irrational policy decision making.

Another challenge of public sector spending in Nigeria is the capability of the government expenditure to address the issue of structural problems and ensure long-run fiscal stability through monitoring, evaluation, and accountability of public resources. Government expenditure through provision of quality infrastructures and other supporting facilities will enhance the activities of private sector and encourage more investment opportunities on the condition that “check and balances” are maintained within the public finance system. This appeared very difficult in view of the current state of infrastructural deterioration in Nigeria. The poor nature and condition of roads and electricity distribution is sufficient to testify the state of infrastructural decay and hence re-examined the disbursement process of the said expenditures (Akpan, 2012).

Further challenges of government spending in Nigeria is the increasing rate of social and religious crises (increase military and defence expenditure) to which a significant portion of the budgetary allocation is designed for. If relative peace is maintained in the economy, expenditures designed for military and defence are now reduced and consequently, reallocated to the provision of critical social and economic facilities that will improve the societal welfare and increase the private sector competitiveness in the production of goods and services.

#### 2.4 Empirical Review

Akpan and Abang (2013), investigated the impact of government expenditure in Nigeria utilizing time series data for the period 1970 to 2010 sourced from CBN statistical bulletin. Employing the OLS analytical technique, their study showed that at the aggregate level, government spending in Nigeria is growth promoting although the impact is very small and less than unity (0.16%). Their study also showed that at the disaggregated level, only recurrent spending is significantly and positively related to growth while the impact of capital expenditure is negative and insignificant. They recommended government expenditure as a veritable fiscal instrument that could be manipulated to stimulate economic growth.

Kimaro, Keong and Sea (2017), examined government expenditure, efficiency and economic growth: a panel analysis of sub-saharan African low income countries. They used panel secondary data of 25 sub-saharan African low income countries spanning 2002 to 2015 which were obtained from World Development Indicators (WDI). Applying the Generalised Methods Moments (GMM), the results demonstrated that increasing government expenditure accelerates economic growth of low income countries in sub-saharan Africa.

Ifarajimi and Ola (2017), investigated the impact of government expenditure on economic growth in Nigeria from 1981 to 2015. The study used time series data sourced from Central Bank of Nigeria (CBN) statistical bulletin. The study employed Dynamic Ordinary Least Squares that incorporated endogeneity in its estimation. The results of the study revealed that government expenditure on administration, economic services and nominal exchange rate were significant and had the expected signs except expenditure on economic services.

Udoffia and Godson (2016), investigated the impact of federal government expenditure on the Nigerian economic growth. Using a time series data for the period 1981 to 2014 obtained from Central Bank of Nigerian (CBN) statistical bulletin, and adopting the Ordinary Least Squares estimation techniques, the results of the findings showed that federal government capital and recurrent expenditure have a positive effect on real GDP.

Gisore, Kiprop and Kalio (2014), conducted a study on the effect of government expenditure on economic growth in East Africa. The study used data obtained from World Bank. Employing Levin-Lin-Chu (LLC), the study tested for panel unit root. The finding s showed that government expenditure on health has a positive and statistically significant impact on economic growth. Therefore, the study suggested that for East Africa, the policy increasing spending on health and defence budget to promote economic growth will be appropriate.

Jumare, Yusuf and Muhammed (2015), examined the impact of government expenditure on economic growth in Nigeria. The study covered the period of 1981 to 2014 using time series data obtained from Central Bank of Nigeria (CBN) statistical bulletin. The Ordinary Least squares (OLS) econometric technique and granger causality test were employed. The study discovered that government expenditure has impact on economic growth.

Nnenna, Stanley and Ijeoma (2017) investigated the effect of government expenditure on human capital development in Nigeria also using a time series data from 1986 to 2015, obtained from Central Bank of Nigeria (CBN) statistical bulletin. The study employed the Vector Autoregression (VAR) analysis as its method of analysis. The result of the VAR model show that Human Development Index (HDI) is significant in the current year but tends to converge insignificantly in the previous years. That what influence human capital development in Nigeria are the nature, pattern and level of governmental expenditure in education and health, and that government policy in the sector could be targeted in these areas.

Urhie (2013) examined the direct effects of both public recurrent and capital expenditure on education and economic growth in Nigeria from 1970 to 2010. The Instrumental Variable Two Stage Least Squares (IV2SLS) estimation technique was employed and the time series data was obtained from CBN statistical bulletin. The regression results suggest that capital expenditure has greater effect on education (proxied by secondary school education) while recurrent expenditure has greater effect on economic growth. However, to maximize the benefits from public education expenditure, strategies that ensure greater efficiency of public education expenditure were suggested.

Ogundipe and Oluwatobi (2014) conducted a study on government spending and economic growth in Nigeria: evidence from disaggregated analysis. The study used time series data for the period 1970 to 2009 gotten from Central Bank of Nigeria (CBN) statistical bulletin. The study applied Vector Error Correction (VEC) model. The study found the component of total expenditure impacting negatively (except education and health) and significantly on growth rate. Notable among the recommendations include proper management of capital and recurrent expenditure.

Okoro (2013), examined the impact of government expenditure on economic growth for the period 1980-2011, with data obtained from CBN statistical bulletin using cointegration and error correction test and found out that there exists a long run equilibrium between government spending and economic growth. Also, in a similar research estimating the impact of government expenditure on economic growth for the period (1961-2010), the research used causality test and cointegration method and found out that governmental capital expenditure translates to higher economic growth and any reduction in capital expenditure would have a negative consequence on economic growth (Nasiru, 2012).

A research paper using empirical data (1970-2008) investigated how government expenditure has impact on economic growth. A disaggregated method was employed using data gotten from Central Bank of Nigeria statistical bulletin, and the study found out that total capital expenditure (TCE), total recurrent expenditure (TRE) and government expenditure on education (EDU) have negative impacts on economic growth. While rising government spending on transport and communication and health have positive impact on economic growth (Nurudden and Usman, 2010).

Chiawa (2012) also used cointegration and causality test in analysing government expenditure effect on growth with a secondary data obtained from CBN statistical bulletin and concluded that government expenditure causes economic growth. In a similar empirical investigation of government expenditure in Nigeria (1960-2010) which was done by employing a single equation estimation approach with a secondary data, he found out that inflow of foreign aid leads to a rise in recurrent expenditure on administration as against capital expenditure (Aregbeyen, 2013).

Ogujuiba (2013) investigated the impact of both government recurrent and capital expenditure on growth performance using an econometric analysis based on Johansen technique for the period of 1970-2009 with a secondary data obtained from CBN statistical bulletin. The results from the study indicated that the components of total expenditure have been impacting negatively (except education and health) and insignificantly on economic growth rate. The study further shows that capital expenditure may likely induce significant impact on growth rate in the long-run

Chude and Chude, (2013), established that total government expenditure has a high and statistically significant effect on economic growth in Nigeria in the long run using time series data spinning from 1977 to 2012 for Nigeria obtained from Central Bank of Nigeria statistical bulletin. According to them, economic growth is influenced by factors both exogenous and endogenous to the public expenditure in Nigeria.

Agbonkhese and Asekhome, (2014) applying a secondary data gotten from CBN statistical bulletin using OLS method of econometric technique, assessed the impact of public expenditure, credit to the economy, private capital formation, exchange rate and lagged values of GDP on current Gross Domestic Product. The result of their assessment showed that with the exception of exchange rate (which had a negative impact on GDP) other explanatory variables have a positive impact on Gross Domestic Product.

Emerenini and Okezie, (2014) analyzed the relationship between Nigeria's total government expenditure and economic growth using a time series data from 1980 to 2012 obtained from CBN statistical bulletin. Their analysis showed a co-integration between GDP and total government expenditure. According to them, the speed of adjustment to equilibrium is 44per cent within a year when the variables wander away from their equilibrium values.

Onakoya and Somoye, (2013) examined the impact of public capital expenditure on economic growth in Nigeria in the context of macroeconomic framework at sectoral levels also using a secondary data from Central Bank of Nigeria (CBN) statistical bulletin. Their study showed that public capital expenditure contributes positively to economic growth in Nigeria. Their study suggested a positive but insignificant relationship to the services sector. Their study recommends privatization of state owned enterprises.

Awomuse, Olorunleke and Alimi, (2013) from their analysis of the effects of federal government expenditure size on economic growth in Nigeria (1961 to 2011), the study used data obtained from CBN statistical bulletin and found out that there exists no long run relationship between government expenditure and economic growth in Nigeria. Their analysis revealed that the Wagner's law does not hold for over the period being tested. Using VAR Granger casualty test, they found out a weak empirical support in the proposition by Keynes that public expenditure is an exogenous factor and a policy instrument for increasing national output in the short run.

Deverajan, et al (1996) focused on the composition of government expenditure and economic growth for a panel of 43 developing countries from 1970 to 1990. Using OLS method with secondary data obtained from CBN, they found that increase in the share of current expenditure has a positive and statistically significant growth effects. By contrast, capital expenditure was found to have a negative effect on per capita growth.

Wu, et al. (1998), in a panel data study that includes 182 countries for the period 1950-2004 examined the relationship between government spending and economic growth by conducting a panel Granger causality test with a panel data obtained from IMF International Financial Statistics (IFS) CD-ROM, 2010. Their result shows that government spending has a positive effect on economic growth. However, when they disaggregated the countries by income levels and the degree of corruption, their results further confirm the bi-directional causality between government spending and economic growth, except for the low income countries.

### 3. RESEARCH METHODOLOGY

The study employed secondary source of data obtained from CBN statistical bulletin for various years for the variables such as; Economic Development proxies by Per Capita Income (PCI), Government Expenditure (GEX), Total Investment (INV) proxies by gross fixed capital formation, and Population (POP). The study covers a sample period from 1986 to 2017.

#### 3.1 Model Specification

To examine the impact of government expenditure on economic development in Nigeria and based on the literature reviewed, the model for this study is adapted from Ogujiuba (2013), Oluwatoyi et al. (2008), and Udoffia and Godson (2016). These previous researchers used model (1).

$$GDP = f (EXEDU, EXHE, CAPBD) \quad (1)$$

Representing expenditure on education, health, and capacity building at primary and secondary levels respectively,

This study modified the model as:

$$PCI = f (GEX, INV, POP) \quad (2)$$

The relationship in equations (2), can be econometrically formulated as thus:

$$\ln PCI_t = \beta_0 + \beta_1 \ln GEX_t + \beta_2 \ln INV_t + \beta_3 \ln POP_t + u_t \quad (3)$$

Where;

PCI = Economic Development proxies by per capita income.

GEX = Government recurrent expenditure;

INV = Total Investment which is proxies by gross fixed capital formation.

POP = Population.

$\beta_0$  = the intercept term

$\beta_1$ ,  $\beta_2$ , and  $\beta_3$  are the coefficients of the government expenditure, investment, and population respectively.

$u_t$  = the disturbance term which captures the effect of other variables not included in the model on economic development.

#### 4. DATA PRESENTATION AND ANALYSIS

Table 1: Unit Root Test

Variable	ADF Statistic		ADF Statistic		ADF Statistic		Order of Integration
	Level	Prob.	1 <sup>st</sup> Difference	Prob.	2 <sup>nd</sup> Difference	Prob.	
PCI	-1.31236	0.6095	-1.309541	0.6108	-9.370132	0.0000	I(2)
POP	17.61419	1.0000	0.690668	0.9897	-7.712501	0.0000	I(2)
INV	2.123763	0.9998	-4.115152	0.0033	-	-	I(1)
GEX	5.481021	1.0000	0.757522	0.9909	-4.157865	0.0038	I(2)

Source: E-views Extract, 2018

Table 1 shows the unit root result of stationarity test. The results depict that the variables are not on same level or order of integration given that the PCI, POP and GEX are stationary at second difference while INV is significant at first difference. This is an indication of the need for series transformation before application. However, further analysis can be applied to know their long run cointegration status. This is shown below.

Table 2: Cointegration Test: PCI GEX INV POP

Hypothesized No. of CE(s)	Trace Statistic	0.05 Critical Value	Remarks	Max-Eigen Statistic	0.05 Critical Value	Remarks
R=0	127.3115	69.81889	Significant	51.46384	33.87687	Significant
R<1	75.84764	47.85613	Significant	45.76341	27.58434	Significant
R<2	30.08423	29.79707	Significant	16.32983	21.13162	Insignificant
R<3	3.124387	3.841466	Insignificant	3.124387	3.841466	Insignificant

Source: E-views Extract, 2018

Test for long run relationship among the variables are carried out and shown in table 2. The result depicts that there are at least two cointegration and existence of long run relationship at 5 percent level of significance. This can easily be observed from comparing the Trace Statistic or Max-Eigen Statistic with the critical values. For instance, the value for R=0 is 127.3115 and greater than its corresponding critical value of 69.81889. While Max-Eigen value gives 51.46 which is above the critical value of 33.88.

Since the variables produce a relationship in the long run, Vector Error Correction Model can be run for dynamism of the effects in the short run.



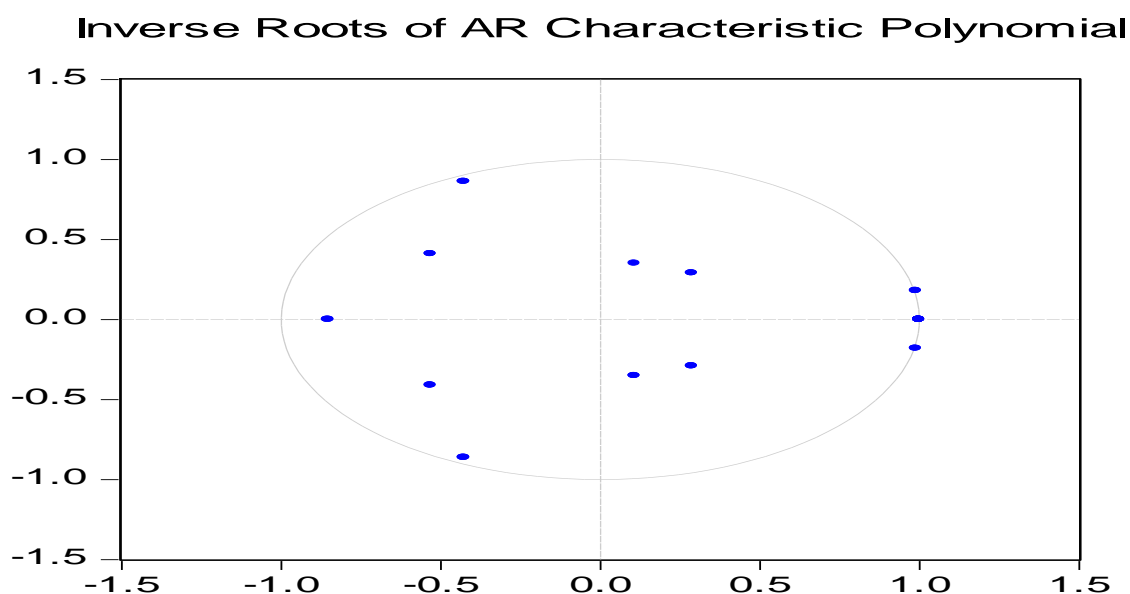
Table 3: Parsimonious Vector Error Correction Model (VECM)

Variable	Coefficient	Standard Error	T-ratio	Goodness of Fit	
Ect	-0.008502	0.00330	-2.57352	R-squared	0.851202
D(PCI(-1))	-0.081723	0.25968	-0.31471	Adj. R-squared	0.776804
D(PCI(-2))	-0.069961	0.36926	-0.18946)	F-statistic	11.44108
D(GEX(-1))	-24.90451	18.2375	-1.36557		
D(GEX(-2))	-21.02525	14.4389	-1.45615		
D(INV(-1))	3.910053	2.35669	1.65913		
D(INV(-2))	3.446570	3.19039	1.08030		
D(POP(-1))	-0.007172	0.00531	-1.35031		
D(POP(-2))	-0.006461	0.00503	-1.28349		
C	73367.35	29250.6	2.50823		

Source: E-views Extract, 2018

Table 3 present the VECM result with the fitness test. The result depicts that Per Capita Income (PCI) has a negative relationship with Government Expenditure (GEX) both in period one and two. At lag one for every one Naira change (increase) in GEX when other variables are kept constant, PCI will change (decrease) by 24.90451 while in period two, the value will fall by 21.02525. This means that the effect on PCI reduces as a year draws by to current period. The coefficient of multiple determination ( $R^2$ ) indicates 85% association of the exogenous variables (PCI, GEX, INV, and POP) explain the variability in the regresand, PCI.

The error correction term (ect) which shows the period of adjustment to equilibrium during shock depicts the require negative sign to show convergence. The value shows that there will be 0.85 percent rate of adjustment whenever there is shock in the economy.



Source: Eviews Output, 2018

Chart 1: inverse root test

The chart 1 presents the inverse root test of stationarity of the Vector Error Correction Model. It indicates that the estimated VEC is stable since all modulus are less than one and lie inside the unit circle.

## 5. DISCUSSION AND CONCLUSION

This study hypothesized the effect of government expenditure (GEX) on economic growth (proxy by Per Capita Income, PCI). The analysis shows that the variables used in this study are cointegrated in the long-run which led to Vector Error Correction Model (VECM) test that shows GEX has negative effect with PCI in the short-run.

This means that in Nigeria, GEX does not produce the expected positive effect within the periods of study. This does not also mean government has not been injecting fund to the economy. From the data of study government expenditure has been on the increase. However, the injections perhaps have not been going to areas they were meant for or misappropriation of resources. We could also attribute it to corruption and mismanagement in the part of policy makers.

Thus, this study recommends the following in order to reverse the sign of the GEX on PCI:

- i. Government should inject more funds into the economy but ensure all leakages or loopholes are blocked.
- ii. Government should encourage and provide grassroots' sensitization of family planning to its citizenry to reduce the rate of birth and population at large.
- iii. Government should ensure proper guidelines of policy implementation on fund appropriation so much so that the purposes are achieved.
- iv. Government should encourage investment (both public and private) to stimulate productivity, employment and per capita income.

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## APPENDIX-A

### Appendix 1: Regression Data

YEAR	GDP(₦ Billion)	PCI	POP	INV (₦ Billion)	GEX (₦ Billion)
1986	202.44	2,381.33	85,009,807.00	11.35	16.22
1987	249.44	2,858.39	87,265,480.00	15.23	22.02
1988	320.33	3,575.36	89,593,265.00	17.56	27.75
1989	419.20	4,557.64	91,976,684.00	26.83	41.03
1990	499.68	5,293.27	94,398,550.00	40.12	60.27

1991	596.04	6,154.22	96,851,391.00	45.19	66.58
1992	909.80	9,158.58	99,338,947.00	70.81	92.80
1993	1,259.07	12,359.73	101,868,776.00	96.92	191.23
1994	1,762.81	16,877.24	104,449,091.00	105.58	160.89
1995	2,895.20	27,035.48	107,088,955.00	141.92	248.77
1996	3,779.13	34,419.98	109,794,737.00	204.05	337.22
1997	4,111.64	36,525.24	112,569,853.00	242.90	428.22
1998	4,588.99	39,759.79	115,417,873.00	242.26	487.11
1999	5,307.36	44,847.10	118,343,461.00	231.66	947.69
2000	6,897.48	56,838.88	121,351,477.00	331.06	701.05
2001	8,134.14	65,362.91	124,445,829.00	372.14	1,018.00
2002	11,332.25	88,789.46	127,630,609.00	499.68	1,018.18
2003	13,301.56	101,605.41	130,913,884.00	865.88	1,225.99
2004	17,321.30	128,967.54	134,307,403.00	863.07	1,426.20
2005	22,269.98	161,584.71	137,822,312.00	804.40	1,822.10
2006	28,662.47	204,102.42	140,431,790.00	1,546.53	1,938.00
2007	32,995.38	227,557.07	144,998,281.00	1,936.96	2,450.90
2008	39,157.88	261,552.54	149,713,264.00	2,053.01	3,240.82
2009	44,285.56	286,486.69	154,581,566.00	3,050.58	3,452.99
2010	54,612.26	342,164.58	159,608,173.00	9,183.06	4,194.58
2011	62,980.40	382,166.70	164,798,232.00	9,897.20	4,712.06
2012	71,713.94	421,457.30	170,157,060.00	10,281.95	4,605.39
2013	80,092.56	455,873.97	175,690,143.00	11,478.08	5,185.32
2014	89,043.62	490,860.36	181,403,148.00	13,595.84	4,587.39
2015	94,144.96	502,637.44	187,301,926.00	14,112.17	4,988.86
2016	101,489.49	524,785.00	193,392,517.00	15,104.18	5,160.74
2017	113,711.63			16,908.13	8,302.10

Source: National Bureau of Statistics, CBN Bulletin, 2017