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An Empirical Retrospect of the Impacts of Government Expenditures on Economic Growth: New Evidence from the Nigerian Economy [1]

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Abstract

The impacts of public expenditures on economic growth have been revisited in this paper with respect to capital expenditure, recurrent expenditure and the government fiscal expansion in line with support for the budgetary allocations to various sectors in the context of the Nigerian economy. The Pesaran ARDL approach has been applied to carry out the impact analysis using annual time series data from 1981 to 2017. Empirical findings support the existence of a level relationship between public spending indicators and economic growth in Nigeria. Incisively, recurrent expenditures of government were found to be significantly impacting on economic growth in a negative way while the positive impacts of public capital expenditures were not significant to economic growth over the period of the study. Further results from the granger causality test reveal that fiscal expansion of the government that is hinged on debt financing is strongly granger causing public expenditures and domestic investment with the latter also granger causing real growth in the economy. We, therefore, provide some important policy recommendations following the results of the empirical analysis.

Keywords**:** Nigeria; Fiscal policies; Economic Growth; Debt to GDP ratio; ARDL Models

1. Introduction

Following the aftermath of the Great Economic Depression of the 1930s that culminated in the birth of the Keynesian Economics School of thought, the attention of a significant number of nations has been drawn to the relevance of government involvement in stabilizing and regulating aggregates of the general economy. That development was in contrast to the prevailing classical view about the working principles of the invisible hands of demand and supply that interplay to create necessary adjustments in relation to output determination and employment (Johnson et al. 2001; Shaikh, 2009; Backhouse, 2015).

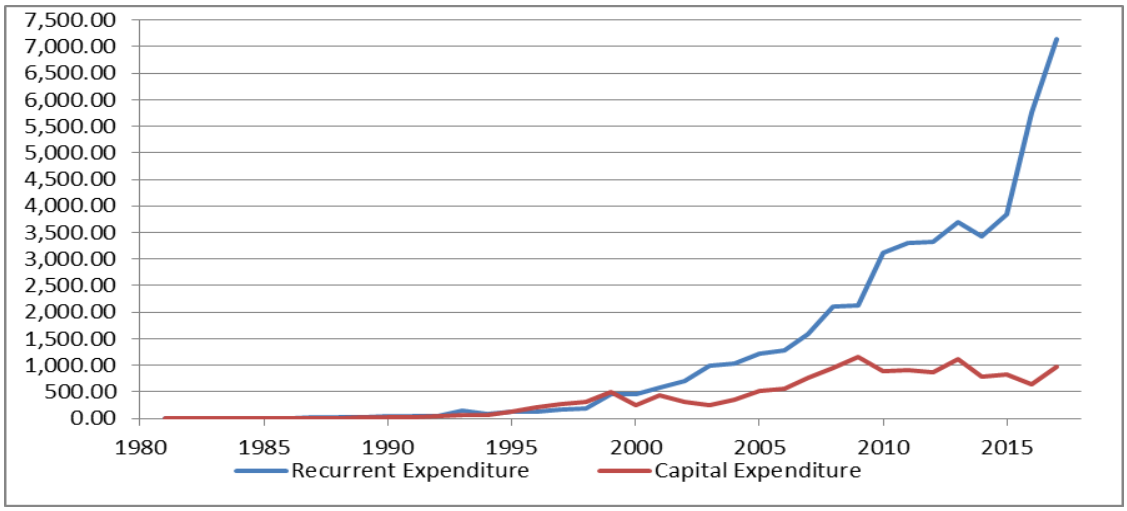
There are two major categories of economic policies that have been widely utilized over a vast period of time for the general purpose of economic stabilization and for the achievement of some essential macroeconomic goals and objectives in specific terms. These policies are fiscal and monetary. Although the two policies are different in terms of their structure and the application of their fundamental instruments, however, they are generally targeted at achieving similar goals and objectives of maintaining economic stability in most nations (Beetsma & Jensen, 2005; Claeys, 2006). While the latter is generally a formidable instrument in the hand of the apex bank of various nations, the former exists as an important economic instrument in the hand of the government of various nations.

Fiscal policies are government policies that are strategically designed to regulate or stabilize the economy through various forms of taxes and expenditures. They are economic policies that integrate government strategies for generating revenue basically via taxation and its subsequent strategies for making decisions on how the corresponding revenue that is generated would be allocated for attaining targeted economic goals. According to Jhingan (1997), fiscal policy aims at ensuring long-run economic stability by the adjustments of short-run economic fluctuations in such a way that a government uses its expenditure and revenue programs to generate desirable effects while avoiding those effects that are undesirable on a nation's income production, and employment levels.

There are various factors that might be contributing to incremental public expenditures in many nations based on empirical evidences. Hong & Nadler (2015) identified growing sources of government revenue as one major factor that could contribute to incremental public expenditures. Some other studies like Remmer (2004), Ouattara (2006) and Asongu and Jellal (2016) have also

shown that factors like access to foreign aid and grants could as well promote incremental public expenditure and this is often witnessed in the majority of low-income countries.

The role of the Nigerian government in economic activities has grown enormously and the challenges that public policymakers face are increasing day by day. Public expenditures have been growing continuously over the years and more especially in the last two decades. The total of both capital and recurrent expenditure of the government grew sporadically from about ₦60.25 billion (about $7.49bn) in 1990 to about ₦3.99 trillion ($39.07bn) in 2010(CBN, 2017).



SOURCE: Authors computation from CBN data (2017)

Huge chunks of the Nigerian federal government expenditure have been channeled into recurrent expenditure over the years due to some factors such as expansion in size of the civil service and disproportionate emoluments for political office holders among others. Recurrent expenditure grew from ₦36.21 billion (about $4.5bn) in 1990 to about ₦3.109 trillion (about $20.68bn) by the year 2010. Capital expenditures also witnessed some changes during these periods as the total capital expenditure grew at a decreasing rate from ₦24.04 billion (about $2.9bn) in 1990 to ₦234.45 billion (about $2.29bn) in 2000 and as at 2010, capital expenditure has risen to₦883.87 billion (about $5.88bn). However, as of 2010, recurrent expenditures alone accounted for over 75% of the total government expenditures (CBN, 2017).

There is no doubt with regards to the pattern of transformation that public spending has witnessed over the years in Nigeria. However, the question of whether these increments in public spending have translated into desired economic growth and prosperity of the people is still yet to be answered. Cases of corruption and mismanagement of public funds have stalled the chances of

making adequate budget appropriation and execution of capital projects and this has left the country in a state of huge infrastructural gaps thereby, creating a cog in the wheels of the nation's economic growth. Furthermore, there have been changes in the dynamics of the demand for public services with respect to the demographic explosion that has generated more pressure on the available insufficient social amenities. Shelton (2007) noted that growing population and problems associated with urbanization often exacerbate the pressure for the government to increase public expenditures.

Earning revenue is very important, at the same time; we are of the opinion that channeling the revenue to create the right impact on the economy by achieving desirable macroeconomic goals and objectives is a more paramount matter that needs to be addressed. Thus, this study re-examines the impacts of government spending on economic growth in the Nigerian economy context while considering the divergent opinions from the existing literature. Furthermore, this study also provides more insight into the government expenditure led-growth literature that hinges partly on debt financing in relation to private sector spending effect in the economy.

The rest of the study is structured as follows. Section 2 provides insights into expansionary and contractionary fiscal policies while the attendant literature is covered in Section 3. The methodology and data are discussed in Section 4 whereas Section 5 the empirical results. Section 6 concludes with implications are future research directions.

2. Efficiency of fiscal policies: the expansionary and contractionary approaches

Fiscal policies often come in either of expansionary or contractionary forms when the government wishes to effectively regulate or manage the level of aggregate demand in any economy. The expansionary fiscal policy is applied when the government wishes to stimulate aggregate demand and this is often visible when the government increases expenditures on projects in the various sectors of the economy or when it lowers tax burdens while paving the way for higher disposable income for its citizens in additions to some transfer payments. The major rationale behind this is the multiplier effect which holds that public spending could help to stimulate private spending and tackle the challenges associated with economic recession thereby boosting economic growth has popularly demonstrated by the Keynesian economic school of

thought as outlined by Cwik and Wieland (2010), Auerbach and Gorodnichenko (2012) and Jaramillo and Cottarelli (2012).

However, there are concerns about the opinion that the expansionary fiscal policy could exacerbate inflationary pressure and in some situations, higher government spending may not create the desired stimulus on economic growth but rather lead to an undesirable or negative impact on growth: a scenario often referred to as the crowding-out effect. The public sector can exercise undue advantage over the private sector in capital accumulation and when the government aims at expanding expenditure by boosting tax revenue via higher taxes, this may become a disincentive to private sector investment (Barro, 1990; Afonso & Sousa, 2011). Furthermore, expansionary policies may also pave the way for excessive deficit financing since experiences have shown that several nations resort to borrowing in order to sustain the execution of various public projects. Shonchoy (2010) noted that higher public debt could reduce private sector confidence due to the need for debt servicing which might exacerbate tax burden on the private sector and thus creating a detrimental effect on economic growth and productivity in the long run. Sawyer (2012) noted that future generations should be prevented from the burden of unsustainable debt by tackling the deficit in public finance and strengthening private sector confidence thereby helping to sustain growth and employment in the medium term. In the interest of these related views on debt financing, various studies have focused on determining optimum debt levels vis-à-vis the economic sizes of nations and have come out with different ratios. These include the work of Reinhart and Rogoff (2010) with the finding that a debt to GDP ratio that exceeds 90% can slow down growth and the work of Cecchetti et al. (2011) which suggests a Debt to GDP ratio of 85% for eighteen Organisation for Economic Co-operation and Development (OECD) member countries.

On the other hand, the contractionary fiscal policies are geared towards downsizing and regulating excess in aggregate demand. They are often applied when inflationary pressure is seen to be posing a dangerous threat to economic stability and in some circumstances when prevailing levels of public expenditures have risen to the point of crowding-out the private sector efficiency. In such situations, government expenditures are generally scaled-down with the implementation of various austerity measures especially to reduce the overall recurrent expenditures and transfer payments with a possible increase in tax revenue. However, there are also arguments indicating

that some contractionary fiscal policies may not produce the expected results as they could also exacerbate economic crisis by creating more disruptions on the growth path (Jaramillo & Cottarelli, 2012; Dellepiane-Avellaneda, 2015).

3. Literature review

Available empirical evidence on the impacts of government spending on growth have revealed that the subject matter is still very open to more discussion as existing results vary from one place to another. The variation in the evidence could be explained by various factors ranging from the peculiarity of the series of fiscal policy reforms that each country implemented over a period of time to the choice of the methodology that researchers adopt in their studies.

Cooray (2009) identified government size which is a function of public expenditure as an important factor that affects economic growth. Günalp and Gür (2002) noted that the size of government is positively associated with economic growth and that the overall impacts of government spending are positive and quite large especially in the case of developing nations. Empirical findings from Bose et al. (2007) and Baldacci et al. (2008) have found a significant positive impact of public capital expenditures on the economic growth of some developing economies within a disaggregated analysis framework. Yasin (2000) using panel data estimation techniques obtained a significant positive impact of government expenditures on the economic growth of some group of Sub-Saharan African countries. Alexiou (2009) obtained a significant positive impact of government spending on capital formation combined with some other factors like private investment and trade openness on economic growth in the case of countries in Southeast Europe.

Although there are overwhelming empirical evidences supporting the positive effect of government spending on economic growth, nevertheless, there are other empirical findings that have testified on the contrary about the same relationship. Guseh (1997) obtained a result that is an indication of the case where government spending can negatively affect economic growth in an empirical study that was carried out on some middle-income countries. Growing public expenditures on some specific sectors of an economy may also serve as a disincentive to economic growth. For instance, Abu-Bader and Abu-Qarn (2003) have obtained a result showing that larger government spending on the military slows down economic growth in the case of Syria, Egypt, and Israel. In addition, some studies have also come up with the findings that no

causal relationship exists between government spending and economic growth such as the work of Oteng-Abayie (2011) for some West African countries.

Usman et al. (2011) from their study obtained a result showing that public expenditure has no impact on economic growth in Nigeria. However, their findings further support the existence of a long-run relationship between public expenditure and economic growth in the country. Egbetunde and Fasanya (2013) working on data from 1970 to 2010, concluded that the total expenditure of the government has a negative impact on growth in Nigeria with only recurrent expenditures showing some little positive impacts. Okoro (2013) noted that there is an existence of dynamic changes in the nature of the impacts of government expenditure on economic growth in Nigeria with respect to capital and recurrent expenditure on the short-run and long-run bases. Fölster and Henrekson (2001) have noted that a proper address of methodological process helps in providing a better understanding of the public expenditure and economic growth relationship. Thus, this present study re-examines the subject matter by considering the divergent opinions from the existing literature within a framework that allows more dynamic adjustment in estimation procedures in contrast to the methodological approaches that have been used in extant studies.

4. Methodology and data

The Auto-Regressive Distributed Lag (ARDL) approach was applied for the empirical analysis of this study using annual time series data from 1981 to 2017 covering a period of 37 years. Economics growth was proxied by real gross domestic product of the country over the period of the study. Government expenditurein Nigeria comprises of government capital and recurrent expenditures which can further be brokendown into all public spendings on administrations, economic & social services, and other transfers. The breakdown of government expenditures is often reported in the annual statistical bulletin of the Central Bank of Nigeria (CBN).Over the years, government revenue has remained grossly insufficient to support adequate budget implementation due to various factors includingfluctuations or plunge in oil prices and low tax revenue at all tiers of government. Consequently, we factor-in government debt into the analysisas significant components of the expansionary government expenditures have been augmented to a large extent by borrowings and this is evident by the rise in public debt from both domestic and external sources over the years.One of the common arguments that is often made in

support of continuous expansionary fiscal policies in many nations is that government expenditures do not only have the capacity to stimulate economic growth but in addition, they often create somemultiplier effects on private spendings and domestic investment which ultimately help in boosting economic growth.A simple model representation to capture the relationships among our variables is as follows:

$$\text{RGDP} = \beta_0 + \beta_1\text{RECEXP} + \beta_2\text{CAPEXP} + \beta_3\text{DEBT} + \beta_4\text{PRIEXP} + \beta_5\text{INVEST} + \mu_t(1)$$

Where:

RGDP: Real Gross Domestic Product
RECEXP: Total Government Recurrent Expenditures as a percent of GDP
CAPEXP: Total Government Capital Expenditures as a percent of GDP
DEBT: Total Public Debt as a percent of the GDP
PRIEXP: Private Consumption Expenditure
INVEST: Gross Domestic Investment as measured by annual growth of gross capital formation.

All variables are in natural logarithm form except the gross domestic investment. From equation (1)the $\beta_0$represents the intercept parameter and $\beta_1, \beta_2, \beta_3, \beta_4, and\ \beta_5$represent the slope parameters that measure the impacts of the independent variables on the dependent variableand the error term is denoted by μ_t. Data were sourced from the statistical bulletin of the CBN, World Development Indicators (WDI, 2018) and International Monetary Fund data (IMF, 2019).

The auto-regressive distributed lag (ARDL) model as developed by Pesaran and Shin (1999) and further extended by Pesaran et al. (2001) is known to be widely applicable for the analysis of time series data regardless of the order of integration provided that none of the underlying variables are integrated order of twoas denoted by I(2).

5. Empirical results

As a precautionary measure and in order to ascertain the suitability of our choice of methodology based on the nature of each data, building on contemporary lierature (Asongu, 2014; Asongu et al., 2019) a stationarity testwas conducted on each variable using the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root tests and the results are provided in Table 1 below:

Table 1: Unit Root Test

(LEVEL)	**RGDP**	**RECEXP**	**CAPEXP**	**DEBT**	**PRIEXP**	**INVEST**
G_E (ADF)	0.7938	0.3268	0.5196	0.2849	0.7673	0.2114
C_E (ADF)	0.9096	0.4686	0.8847	0.3998	0.1381	0.0208 **
N_E (ADF)	0.9996	0.2510	0.2807	0.4998	1.0000	0.0060 ***
G_E (PP)	0.3562	0.3276	0.5196	0.4138	0.6993	0.0016 ***
C_E (PP)	0.9911	0.5014	0.7210	0.5110	0.1381	0.0004 ***
N_E (PP)	1.0000	0.2101	0.1969	0.5915	1.0000	0.0000 ***
(1^{st} Diff)	**Δ RGDP**	**Δ RECEXP**	**Δ CAPEXP**	**Δ DEBT**	**Δ PRIEXP**	**Δ INVEST**
G_E (ADF)	0.0196**	0.0000 ***	0.0000 ***	0.0430 **	0.0007 ***	0.0000 ***
C_E (ADF)	0.0018***	0.0000 ***	0.0000 ***	0.0083 ***	0.0003 ***	0.0000 ***
N_E (ADF)	0.0250 **	0.0000 ***	0.0000 ***	0.0004 ***	0.0037 ***	0.0000 ***
G_E (PP)	0.0192 **	0.0000 ***	0.0000 ***	0.0616 *	0.0007 ***	0.0000 ***
C_E (PP)	0.0018***	0.0000 ***	0.0000 ***	0.0121 **	0.0003 ***	0.0000 ***
N_E (PP)	0.0250**	0.0000 ***	0.0000 ***	0.0007 ***	0.0042 ***	0.0000 ***

Note: The superscripts ***, ** and * represents the rejection level at 1%, 5% and 10% levels of significance respectively. Δ denotes first difference operator. Also labels **RGDP means**Real Gross Domestic Product. **RECEXP is** Total Government Recurrent Expenditures as a percent of GDP. **CAPEXP represents** Total Government Capital Expenditures as a percent of GDP.**DEBT** is Total Public Debt as a percent of the GDP. **PRIEXP** denotes Private Consumption Expenditure and **INVEST** Gross Domestic Investment as measured by annual growth of gross capital formation.Also,G_E represents the unit root test model for a random walk variable with both drift and trend parameters; C_E is the model with a drift parameter only while N_E is a very restricted model to conduct unit root test without a drift and trend. The t-statistics values of the ADF and PP tests were reported.

From the unit root results,real gross domestic product (RGDP), total government recurrent expenditures as a percent of GDP (RECEXP), total government capital expenditures as a percent of GDP (CAPEXP), total public debt as a percent of the GDP (DEBT), and private consumption expenditure (PRIEXP) are non-stationary variables at level but at first difference implying that they are I(1) variables while gross domestic investment(INVEST) was stationary at level meaning that it is an I(0) variable.The ARDL representation of the relationship among our variables is provided in equation (2) as follows:

$$\begin{aligned}\Delta RGDP_t = {} & \gamma_0 + \gamma_1 RGDP_{t-1} + \gamma_2 RECEXP_{t-1} + \gamma_3 CAPEXP_{t-1} + \gamma_4 DEBT_{t-1} + \gamma_5 PRIEXP_{t-1} + \gamma_6 INVEST_{t-1} \\ & + \sum_{i=1}^{p} \alpha_1 \, \Delta RGDP_{t-i} + \sum_{i=0}^{q} \alpha_2 \, \Delta RECEXP_{t-i} + \sum_{i=0}^{q} \alpha_3 \, \Delta CAPEXP_{t-i} + \sum_{i=0}^{q} \alpha_4 \, \Delta DEBT_{t-i} \\ & + \sum_{i=0}^{q} \alpha_5 \, \Delta PRIEXP_{t-i} + \sum_{i=0}^{q} \alpha_6 \, \Delta INVEST_{t-i} \\ & + \varepsilon_t \qquad (2)\end{aligned}$$

Where all the variables remained as earlier defined. The $(\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5, \alpha_6)$ represent theshort-run parameters while the $(\gamma_1, \gamma_2, \gamma_3, \gamma_4, \gamma_5, \gamma_6)$ represent the long-run parameters.

In order to examine the existence of a long-run relationship between our variables and real gross domestic product, we applied the ARDL bound test approach to co-integration. The test is conducted using the critical values of the bound test for both the upper and lower bounds as provided by Pesaran et al. (2001). The null hypothesis (H_0) that $(\gamma_1 = \gamma_2 = \gamma_3 = \gamma_4 = \gamma_5 = \gamma_6 = 0)$ is tested against the alternative hypothesis that $(\gamma_1 \neq \gamma_2 \neq \gamma_3 \neq \gamma_4 \neq \gamma_5 \neq \gamma_6 \neq 0)$. The result of the bound tests for the ARDL(2, 2, 0, 2, 1, 0) as selected by the AIC is provided in Table 2 as follows:

TABLE 2: Bounds Test to Co-integration

Equations	**Lags (AIC)**	**F-Statistics**	**Decision**
(2)	2	6.57	Cointegration
Critical Values for (F-Statistics)	Lower bound at 5% = 2.62	Upper bound at 5% =3.79	

From the bound test results, the estimated F-statistic lies above the critical values of the upper bound at the 5% level of significance indicating the existence of a long-run relationship among our variables and economic growth. We, therefore,proceed to present the long-run coefficients in table 3 as follows:

TABLE 3: Long-run Estimates

Variables	**Coefficients**	**t-statistics**	**P-Values**
C	0.4096	3.8612***	0.0008
RECEXP	-0.2807	-3.6848***	0.0013
CAPEXP	0.0461	0.5802	0.5677
DEBT	-0.1495	-4.0708***	0.0005
PRIEXP	0.1544	16.2248***	0.0000
INVEST	0.0013	3.5736***	0.0017

Note: The superscripts ***, ** and * represents the rejection level at 1%, 5% and 10% levels of significance respectively. The labels **RGDP means**Real Gross Domestic Product. **RECEXP is** Total Government Recurrent Expenditures as a percent of GDP. **CAPEXP represents** Total Government Capital Expenditures as a percent of GDP. **DEBT** is Total Public Debt as a percent of the GDP. **PRIEXP** denotes Private Consumption Expenditure and **INVEST** Gross Domestic Investment as measured by annual growth of gross capital formation

From the long-run coefficients, government recurrent expenditures have significant negative impacts on economic growth over the period of the study such that if all other factors are held constant, a percent increase in the recurrent spending of government is expected to reduce

economic growth by about 0.28%. This result has demonstrated that real economic growth cannot be sustained by excessive recurrent expenditure.

On the other hand, capital expenditure of the government follows the expected sign as it has a positive impact on economic growth however the impact is found to be insignificant over the period of the study. Furthermore, expansionary fiscal policy that is hinged upon public debt has a significant negative impact on economic growth in the long-run such that a percentage rise in public debt in relation to the size of the economy is expected to reduce economic growth by an approximate 0.15% if all other factors are held constant. Ordinarily, public debt may not necessarily create a negative impact on economic growth provided that it is well managed and more importantly if it is directly or indirectly channeled into improving the real sector of an economy. However, in the case of Nigeria, ourfindings have not come to us as a shock but rather as an indication of the prevailing misappropriation of public funds. There are occasions where loans were taken and the bulk of such loans were used to finance recurrent expenditures coupled with cases of corruption that involve diversion of public funds that are meant for various developmental projects.

Private consumption expenditures have positive and significant impacts on economic growth in Nigeria over the period of the study such that a percent increase in private consumption expenditures is expected to stimulate real economic growth by about 0.15% when all other factors are held constant.Similarly, gross domestic investment has a significant positive effect on economic growth in the long-run such that a percent growth in capital accumulation is expected to stimulate growth by about 0.13% holding all other factors constant.

We set up the error correction model that is associated with our long-run estimates and subsequently obtain the short-run estimates from equation (3) as follows:

$$\Delta RGDP_t = \gamma_0 + \sum_{i=2}^{p} \alpha_1 \Delta RGDP_{t-i} + \sum_{i=2}^{p} \alpha_2 \Delta RECEXP_{t-i} + \sum_{i=0}^{p} \alpha_3 \Delta CAPEXP_{t-i} + \sum_{i=2}^{p} \alpha_4 \Delta DEBT_{t-i} + \sum_{i=1}^{p} \alpha_5 \Delta PRIVEXP_{t-i} + \sum_{i=0}^{p} \alpha_6 \Delta INVEST_{t-i} + \pi ECM_{t-1} + \mu_t \quad (3)$$

Where the (ECM) represents the error correction term that measures the speed of adjustment of our model to the long-run equilibrium. The estimated short-run coefficients are provided in Table 4 as follows:

TABLE 4: Error Correction Estimates

Variables	Coefficients	t-statistics	P-Values
C	0.4096	7.1395	0.0000
Δ(RGDP(-1))	0.4071	3.7658	0.0011
Δ(RECEXP(-1))	0.0503	3.5436	0.0018
Δ(DEBT)	-0.0105	-0.5948	0.5580
Δ(DEBT(-1))	0.1049	4.5514	0.0002
Δ(PRIVEXP)	0.0969	3.6453	0.0014
ECM(-1)	-0.3382	-6.9568	0.0000
R2 Adjusted R2 F-statistic DW-stat P-Value	0.80 0.75 15.61 1.90 0.0000		

Note: The superscripts ***, ** and * represents the rejection level at 1%, 5% and 10% levels of significance respectively. The symbol Δ denotes difference operator. The labels **RGDP means**Real Gross Domestic Product. **RECEXP is** Total Government Recurrent Expenditures as a percent of GDP. **CAPEXP represents** Total Government Capital Expenditures as a percent of GDP. **DEBT** is Total Public Debt as a percent of the GDP. **PRIEXP** denotes Private Consumption Expenditure and **INVEST** Gross Domestic Investment as measured by annual growth of gross capital formation. ECM means Error correction term that depicts the speed of adjustment term to the equilibrium path.

The error correction model shows that the short-run disequilibrium will be reconciled with the long-run at an adjustment rate of an approximate 34% annually.Estimates from the error correction model also reveal that recurrent expenditures of the government have a positive impact on the economy in the short-run.In order to understand the nature of thecausal relationship among our variables, a Granger Causality Test was conducted and the results are provided in Table 5 as follows:

TABLE 5: Pairwise Granger Causality Tests Results

	F-Statistics						
Dependent Variables	**RGDP**	**RECEXP**	**CAPEXP**	**DEBT**	**PRIVEXP**	**INVEST**	**DECISION**
RGDP	_	0.21844	0.05868	0.36665	2.62276 *	0.65548	$PRIVEXP \rightarrow RGDP$
RECEXP	2.27588	_	0.67959	5.9557 ***	1.08213	0.09020	$DEBT \rightarrow RECEXP$
CAPEXP	2.35789	0.63222	_	4.56949***	0.85755	0.21113	$DEBT \rightarrow CAPEXP$
DEBT	2.64269*	2.25369	0.95126	_	2.75143 *	1.43641	$RGDP \rightarrow DEBT$ $PRIVEXP \rightarrow DEBT$
PRIVEXP	1.51849	0.19057	2.57333 *	0.11816	_	1.17110	$CAPEXP \rightarrow PRIVEXP$
INVEST	6.34559 ***	1.43587	1.47908	3.71925 ***	1.93285	_	$RGDP \rightarrow INVEST$ $DEBT \rightarrow INVEST$

Note: The superscripts ***, ** and * represents the rejection level at 1%, 5% and 10% levels of significance respectively. The variable labels **RGDP means**Real Gross Domestic Product. **RECEXP is** Total Government Recurrent Expenditures as a percent of GDP. **CAPEXP represents** Total Government Capital Expenditures as a percent of GDP. **DEBT** is Total Public Debt as a percent of the GDP. **PRIEXP** denotes Private Consumption Expenditure and **INVEST** Gross Domestic Investment as measured by annual growth of gross capital formation

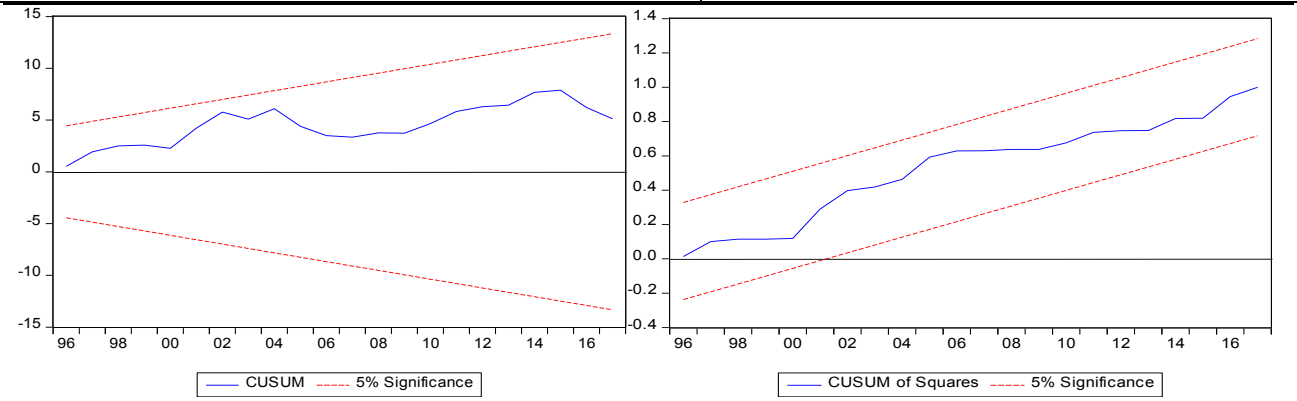
The F-statistics column shows the long-run granger causality test and *,** and *** represent the rejection of the null hypothesis of no Granger causality among variables at 10%, 5% and 1% levels of significance respectively, based on their corresponding p-values.

From the Granger Causality result as shown in Table 5, capital expenditure of the government granger causes gross private consumption expenditures in the country over the period of study. If we relate this finding with our long-run estimates thatshow a positive impact of private consumption expenditures on economic growth in Nigeria, thisgranger causality test result has provided moresupports for possible multiplier effects that public spending can create on economic growth. In addition to this, the private consumption spendingwas also found to be granger causing real economic growth in the country.

Furthermore, fiscal expansion of the government as supported by public debt strongly unilaterally granger causes capital and recurrent expenditures of the government in addition to domestic investment in the country.There is no causality between government expenditures (capital and recurrent) and real GDP, our results have further shown that the size of the Nigerian economy granger causes its public debt over the period of the study.Finally, various diagnostic tests have been carried out to ensure that our estimated model is free from autocorrelation, heteroscedasticity and structural instability as reported in Table 6:

TABLE 6: Residual Diagnostic Test Results

Test Statistics	F-Stat (P-value)
Breusch-Godfrey Serial Correlation LM Test:	1.3362 (0.2853)
Breusch-Godfrey Test Heteroscedasticity	1.1515 (0.3723)
Jarque-Bera Normality Test	2.6989 (0.2593)



Note: The fitted model satisfactory pass all the residual diagnostic test. Thus, the model is suitable for policy direction

6. Concluding implications and future research directions

This study has adopted the auto-regressive distributed lag models to examine the impacts of public spending on economic growth in the context of the Nigerian economy from 1981 to 2017. Our findings support the existence of a long-run relationship between economic growth and public expenditures in Nigeria over the period of the study. The results revealed that both recurrent expenditures of the government and public debt have significant negative impacts on economic growth while capital expenditure of the government has a positive but insignificant impact on the economic growth of the nation in the long-run. The finding is an indication that real economic growth cannot be sustained by humongous recurrent expenditures and fiscal

expansion through debt without fiscal discipline and adequate investment in capital projects considering the level of infrastructural deficit in the country. Our result buttresses the findings of Presbitero (2012) that debt and economic growth are significantly and negatively related in developing countries given a certain threshold level which is presently applicable to the Nigerian economy. Further results from the granger causality test reveal that fiscal expansion of the government that is hinged on debt financing is strongly granger causing public expenditures and domestic investment with the latter also granger causing real economic growth in Nigeria over the period of our study.

We recommend that the government should ensure that the share of recurrent expenditure in its total expenditures is kept within a reasonable proportion by blocking all leakages and wastages in public financing in the country. Some weighty steps that can be taken include merging of some public agencies that have similar functionalities and the review of the disproportionate emoluments given to political public officers to cut down the huge cost of governance among others.Furthermore, in order to adequately harness the expectedreturns of public capital spending in the economy, the Nigerian government has to be decisive and more transparent in its fight against financial corruption and diversion of public funds especially those that are allocated for the execution of capital projects across the country.Lastly, we cannot but re-emphasize the importance of fiscal discipline in the utilization and disbursement of borrowed funds. We recommend that debt should not be taken by government for the main purpose of financing recurrent expenditures as our findings clearly reveal that public debt granger causes recurrent expenditures in Nigeria over the period of the study.

Future studies can focus on assessing how the established linkages can be complemented with other policy variables in order to engender positive outcomes on economic growth. The suggested future inquiries can be analyzed within the framework of interactive regressions as in contemporary economic development literature (Asongu & Odhiambo, 2020a). Moreover, quadratic estimations can also be used to assess specific thresholds at which the engaged variables in the conditioning information set positively affect economic growth (Asongu & Odhiambo, 2020b).

Declarations

Availability of data and materials

The data for this present study are sourced from the database of the statistical bulletin of Nigeria CBN (https://www.cbn.gov.ng/) World Development Indicators (https://data.worldbank.org/) and International Monetary Fund data (www.inf.org)[2].

Competing interests

The authors wish to disclose here that there are no potential conflicts of interest at any level of this study.

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Authors' contributions

The first author (Stephen Taiwo Onifade) was responsible for the conceptual construction of the study's idea. The second author (Savaş Çevik) handled the literature section while the third author (Savaş Erdoğan) managed the data gathering, preliminary analysis and simulation alongside the fourth author (Simplice Asongu) that proceeded to interpretation of the simulated results and finally the fifth author (Festus Victor Bekun) was responsible for proofreading and manuscript editing.

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[2] The current data can be made available upon request but all available and downloadable at the earlier mentioned database and web link

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