

PUBLIC SECTORAL ALLOCATION AND ECONOMIC GROWTH IN NIGERIA.

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Abstract

This study investigated empirical analysis of government expenditure and economic growth in Nigeria spanning from 1980 to 2020. Data for the study were obtained from Central Bank of Nigeria (CBN statistical bulletin). The dependent variable of the study is the Real Gross Domestic product (RGDP) as a proxy for economic growth while the independent variables are, education expenditure (EDUC), health expenditure (HLT), defense expenditure (DFC), construction expenditure (COE), water resource (WTR), and transport and communication expenditure (TCE). The variables were subjected to unit root test using Augmented Dickey Fuller unit root test. The ADF unit root test revealed a mixed order of integration. This means that DFC and TCE are stationary at level 1(0) while, RGDP, EDUC, HLT, WTR and COE are stationary after first difference 1(1). Based on this the study adopted Auto-regressive Distributive Lag (ARDL) model to ascertain the long and short-run relationship as well as the speed of adjustment. The auto-regressive distributive lag (ARDL) test showed that there is no long-run relationship among the variables using the bound test but the short-run result reported that except water resource (WTR) expenditure that showed insignificant relationship with RGDP, all other study variables, EDUC, DFC, HLT and TCE are positive and significant either at the current year or previous year period. Based on the findings it is recommended that the budgetary allocation of the country should be increased to enable the citizens have good drinking water.

Keywords: Public sectoral allocation, Government expenditure, Real Gross Domestic Product



1.0 Introduction

Globally, government expenditure has been a great source of interest to both scholars and macroeconomic policymakers due to its effects in the maintenance of a sustainable and equitable economic growth, as a major policy objective. Therefore it is very important for the government of any economy to allocate public spending across different sectors of the economy. Many political philosophers like Hobbes and Locke have considered the hypothetical disadvantages of life without government (Miles, 2003). Studies have shown that investment in infrastructure has tremendous positive impact on a nation's economic growth and development (Aschauer, 1989; Estache, 2006 Agenor and Dodson, 2006; Adenikinju, 2005; Sanchez –Robles, 1998; Caning et al. 1994; Sahoo et al., 2010; Srinivasu & Rao, 2013). Such expenditure are capable of promoting

positive externalities in terms of making available increased production facilities, lowering costs associated with trade transactions and generating employment opportunities for the people, raising growth quality and reducing economic disparity and the poverty level, stimulating or crowding in private investment and opening new markets thereby engendering profits and employment. On the other hand, deficiency in government expenditure may constitute a serious hindrance to sustainable growth and development and possibly worsen poverty levels.

In the context of this study, public sectoral allocation refers to the functional component categorization of public or government expenditure on general services such as expenditure on defense, public order and safety, education, health, social security and welfare,

agriculture, manufacturing and communication, environmental protection otherwise called investment in public good (Heller & Diamond,1990). The need for investment in public goods as a strategy for increasing urban and rural productivity and national economic growth and development has remained a subject of renewed attention in most developing economies particularly Nigeria where the Federal government recently prioritized spending on defense and security, infrastructure and education with the sectors getting a combined ₦5.15 trillion allocation in the 2022 budget proposal. In 2016, ₦653.61 billion was allocated for capital expenditure and this was further increased to a provisional amount of ₦1682.1 billion in 2018 (Central Bank of Nigeria, CBN, 2018).

This rise in allocation did not translate to any meaningful economic growth. The country has been characterized by structural rigidities, weak support services and institutional framework, declining productivity, high level corruption and political instability which have led to tremendous regress in macroeconomic performance considering decrease in the average growth from 6% in 2000-2010, to 2.27% in 2019 (National Bureau of Statistics, NBS, 2020). With the decline in growth experience, the country has also struggled with poor and inadequate supply of infrastructure. Even the amount slated for infrastructure is insignificant because according to Opia-Enwemuhe and Oyeneyin (2016), an infrastructure gap of about 50% exists which is below the international benchmark of 70% of Gross Domestic Product (GDP).

Human Development Index (HDI) remained averagely at 0.53 between 2015 and 2020 (HDI, 2020), while 63% of the population live below \$1 per day, and unemployment rate at 14.2% in 2016 climbed to 23.1% in 2018 and rose to 33.5% in 2020 (NBS, 2020). Also, 73.5% of Nigerians cannot access improved drinking water sources and sanitation facilities (UNICEF, 2020) with only 54.4% accessing electricity supply in 2017 as against 59.3% in 2016 (World Bank, 2020). The country is yet to come on the path of sound growth and

development and is still faced with chronic levels of unemployment, rising rate of inflation, dependence on foreign technology, mono cultural foreign exchange earnings from oil and more (Iyeli, 2012). Based on these ugly trends the study review empirical literature.

Empirical evidence on public sectoral allocation and economic growth present two opposing views. Some of the literature suggest that public sectoral allocation have negative effect on economic growth (Pullah & Francis, 2020; Edmund et al, 2017; Olayungbo & Olayemi, 2018 ;). On the contrast other studies established that public sectorial allocation improve economic growth (Aluthge et al, 2021; Duruibe et al, 2020; Onifade, et al, 2019; Aremu, et al, 2015; Agbonkhesse&Asekome, 2014; Ukwueze, 2014;). Hence, there exists a research gap that this research intends to fill. The conflicting result can be attributed to different methodological focus, scope or set of data.

To achieve this, the study is organized into five sections. Following this introduction, the rest of the paper is designed as follows: section two provides the literature review, theoretical and empirical literature review, section three is the methodology of the work, section four shows analysis of the study and discussion of findings, while section five concluded the study with relevant policy recommendation from the findings.

2.0 Literature Review.

Theoretical Literature Neoclassical Growth Theory

The neoclassical growth theory was propounded by Solow, (1956). The basic proposition of the growth theory is that in order to sustain a positive growth rate of output per capita in the long run, there must be continual advances in technological knowledge in the form of new goods, new markets, or new processes, which was demonstrated by the neoclassical growth model which shows that if there were no technological

progress, then the effects of diminishing returns would eventually cause economic growth to cease (Aghion & Howitt, 1998). Explaining the issue of convergence/divergence, the theory predicts convergence in growth rates on the basis that poor economies will grow faster compared to rich ones. The neoclassical theory predicts that countries with low per-capita incomes grow faster than those with high output (y), so that over time per-capita incomes converge.

The neoclassical growth theory assumes the Cobb-Douglas production function that, in its intensive form, is expressed as: $y = A k^\alpha$ where, y and k are the output-labour ratio and the capital-labour ratio respectively, α is the capital elasticity of output, and A is the total factor productivity (TFP) representing technological capacity of the productive system. Under the model, ' A ' grows either as a purely exogenous process or through exogenous technical innovations which are embodied in capital goods (Solow, 1960). Diminishing returns to capital, combined with assumptions of constant savings rate and constant growth of labour, generate a steady state growth rate depending only on the rate of exogenous technical progress.

Peacock and Wiseman's theory of Public Expenditure

This theory was initiated by Peacock and Wiseman's (1961). The theory holds that public expenditure does not increase in a smooth and continuous manner, but in jerks or step-like fashion. The theory was founded on the political theory of public expenditure determination, 'that governments like to spend more money, that citizens do not like to pay more taxes, and that governments need to pay some attention to the wishes of their citizens'. Peacock and Wiseman opened up the theory that public expenditure is to be influenced at the ballot box.

They viewed the voter as an individual who enjoyed the benefits of public goods and services but who disliked paying taxes. They also saw taxation as setting a constraint on government expenditures. To them, as the economy and incomes grew, tax revenue would rise, thereby

enabling the public expenditure to grow in line with the GNP. In normal times, public expenditure would show a gradual upward trend, even though within the economy there might be a divergence between what people regarded as being desirable level of public expenditure and a desirable level of taxation. During the periods of social upheaval, this gradual upward trend in public expenditure would be disturbed, and would coincide with war, famine, or some large scale social disorder which would require a rapid increase in public expenditures. In order to finance the public expenditure rise, the government would be forced to raise taxation levels, which would, however, be regarded as acceptable to the electorates during the crisis periods.

Empirical literature

Aluthge et al (2021) investigates the impact of Nigerian government expenditure (disaggregated into capital and recurrent) on economic growth using time series data for the period 1970-2019. The paper employs Autoregressive Distributed Lag (ARDL) model. To ensure robustness of results, the study accounts for structural breaks in the unit root test and the co-integration analysis. The key findings of the study are that capital expenditure has positive and significant impact on economic growth both in the short run and long run while recurrent expenditure does not have significant impact on economic growth both in the short run and long run. The study recommends that government should increase the share of the capital expenditure especially on meaningful projects that have direct bearing on the citizen's welfare. Government should also improve the spending patterns of recurrent expenditure through careful reallocation of resources toward productive activities that would enhance human development in the country.

Duruibe et al (2020) investigates the effect of government public expenditures on Nigeria's economic growth and development using the sectoral economic function approach. The real Gross Domestic Product (GDP), which is the outcome variable in this study, was employed as the proxy for economic growth while

government's expenditures on administrative services, economic services, social and community services, and transfers were used as the predictor variables in this study. Surprisingly, the results from the co-integration test and Vector Error Correction Model estimates reveal that all the predictor variables, apart from expenditure on administration, have a positive relationship with economic growth. While expenditures on economic services and social and community services have positive and significant relationship with economic growth, government transfers has a positive but insignificant relationship with economic growth. Emphatically, expenditure on administrative services has a significant negative relationship with economic growth. The result from Wald coefficient diagnostic test reveals that there is short run causality running from the public expenditure aggregates to economic growth. Thus, this study recommends, among others, that efforts should be made to reduce the deadweight aggregate public expenditure on administrative services since it has a significant negative impact on economic growth trend in Nigeria.

Pullah and Francis(2020) investigated the impact of government expenditure on economic growth in Nigeria between 1981 and 2016. Data were collected from CBN (2016) statistical bulletin. To use the Ordinary Least Square (OLS) technique, the data were tested for unit root using the Augmented Dickey-Fuller test, the results showed all the variables became stationary at first difference. The Johansen Co-integration test revealed the existence of long-run relationship among the variables. Thus, our findings showed that GCE was inversely related to RGDP both in short run and in the long run. GRE was positively related to RGDP both in the long run and in the short run and there was inverse relationship between CPS and RGDP both in the short run and in the long run. However, with a low ECM (-1) of approximately 3% speed of convergence to equilibrium in the long run, it is clear that the short run dynamic disequilibrium was slow and statistically insignificant to converging to long run equilibrium, implying that government expenditures have no long run impact on

economic growth in Nigeria. The study thus recommended among others that the government should re-evaluate her capital expenditure component to ensure that funds are utilized on projects with socio-economic impact on the economy, eliminate leakages associated with misappropriation and embezzlement as well as ensure adequacy of funds on capital project in the right proportion in line with global best practices so as to stimulate long run impact of government expenditure on real growth of the Nigerian economy.

Onifade, et al (2019) examined the impact of public expenditures on economic growth. The Pesaran ARDL approach was 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.

Edmund et al (2017) analyzes the impact of government expenditure and efficiency on economic growth of Sub Saharan African low income countries. The paper uses a panel data of 25 Sub-Saharan African low income countries spanning from 2002 – 2015 which are obtained from World Development Indicators (WDI) database. The paper executes panel unit root tests by using Im- Pesaran-Shin and Fisher ADF tests. The paper also uses Pedroni test to accomplish panel co-integration tests. Finally Generalized Methods of Moments (GMM) is applied to answer the two research questions. The results

demonstrate that increasing government expenditure accelerates economic growth of low income countries in Sub Saharan Africa. However, when government expenditure is interacted with government efficiency we find no evidence for government efficiency to boost the impacts of government expenditure on economic growth. Fiscal policy makers in Sub Saharan African low income region should consider the rationale for using their spending to accelerate economic growth.

Magazzino and Forte(2016) access the relationship between government size and economic growth using time series methodologies applied annual data for italy from 1861-2008. The result shows the presence of non-linear relationship between the size of the public sector and the economic growth. The presence of an inverted U shape curve suggests that expenditure cuts might be faster than GDP.

Aremu, et al (2015) examined the impact of sectoral government expenditures on economic growth in Nigeria (1984-2013): Bound Test Co-integration Approach. With the purpose of determining to what extent the government expenditures on these sectors are contributing to the achievement of growth objective. The study employs quantitative analysis by the use of Auto-Regressive Distributed Lag model (Bound Test Co-integration Approach) to determine both short-run and long run impact of Government expenditures on economic growth. The specific ARDL estimates of the analysis reveals that government expenditure on defence retards the economic growth and government expenditure on agriculture promote the economic growth while government expenditure on education and transport/communication have no impact on economic growth in the long-run. In the short run, none of the government expenditure on these sectors contributes to the growth objective.

Agbonkhese and Asekome (2014) assess the impact of public expenditure on the growth of the Nigerian economy, and to ascertain whether there is a relationship between gross domestic product

(GDP) and government expenditure in Nigeria. It covers the period of 1981 – 2011 and the Ordinary Least Square (OLS) method of econometric technique was used. The econometric analysis indicates that although there is a positive relationship between the dependent and independent variables, the adjustment of economic growth or gross domestic product was a fair one which made it difficult to reject the null hypothesis. The study recommended an urgent need to instill fiscal discipline in government expenditure by initiating far reaching effective internal control measures and more proactive economic management coordination and implementation as well as discouraging all non-productive activities and expenditures in all tiers of government forthwith. Also, both the Federal government and Central Bank of Nigeria (CBN) should be more articulate in managing the exchange rate effectively to achieve her macroeconomic objectives. This will stimulate investment surplus thus raising output and enhancing the standard of living of Nigerians.

Ukwueze (2014) examine the impact of public expenditure on output growth in Nigeria. From the results, it was found that the size of revenue, national output growth (national income), external debts and domestic debts are the determinants of the size of public sector in Nigeria. The result also showed that public expenditure has strong (but positive) and significant impact on output growth in the short run but insignificant in the longer period. It was also found that both the recurrent and capital expenditures granger cause output changes, and also that the shocks from them cause fluctuation in output of Nigeria. This research discovered that, in the short run, public expenditures on education, agriculture, all have both positive and significant impact on output growth, while expenditures on health and building and construction have negative and significant relationship and defence has both positive and insignificant link with output growth. In the long run, however, defence, education and agriculture expenditures are positive and significant, whereas health and building and construction are negative and significant. The recommendations in this

research are that public debts should be curtailed, revenue base should be expanded, price moderation is important, more social infrastructures should be provided to create avenues for private investment to increase, restraining from the use of recurrent expenditure because it is inflationary and can worsen the economic situation, policies for the health and building and construction sectors should be reviewed to check why they retard economic growth of Nigeria.

Olayungbo and Olayemi(2018) investigates the dynamic relationships among non-oil revenue, government spending and economic growth in Nigeria for the period of 1981 to 2015. After establishing a long run relationship among the variables, the error correction model, impulse responses were estimated as well as the granger causality test among the variables. The results of the short run and long run showed negative effects of government spending on economic growth while non-oil revenue showed positive effect on economic growth. We also found non-oil revenue to have negative shocks on economic growth while the government spending shock was positive. The Granger causality revealed that government spending granger caused both non-oil revenue and economic growth supporting the Keynesian and spend-tax hypothesis in Nigeria over the period of the study. It was recommended that the economy of Nigeria should be diversified into non-oil sector rather than relying solely on revenue from oil export.

Summary of literature Review

Empirical evidence on public sectoral allocation and economic growth present two opposing views. Some of the literature suggest that public sectoral allocation have negative effect on economic growth (Pullah & Francis, 2020; Edmund et al, 2017; Olayungbo &Olayemi, 2018 ;). On the contrast other studies established that public sectoral allocation improve economic growth (Aluthge et al, 2021; *Duruibe* et al, 2020; Onifade, et al, 2019; *Aremu, et al, 2015; Agbonkhese&Asekome, 2014; Ukwueze, 2014;*). Hence, there exist a research gap that this research intends to fill. The conflicting result can be

attributed to different methodological focus, scope or set of data.

3.0 Methodology

This study used secondary source of data, and were mainly annual time series data that were obtained from World Bank data and Central Bank of Nigeria Statistical bulletin, from 1980 to 2020. The dependent variable of the study is real gross domestic product (RGDP) as a proxy for economic growth while the explanatory variables are education expenditure (EDU), defense expenditure (DFC), health expenditure (HLT), transport and communication expenditure (TCE), water expenditure (WTR) and construction expenditure (COE), as proxy for public sectoral allocation). This study adopts the Ex-post facto research design. The ex-post facto research can be defined as an empirically based investigation which does not involve the researchers' direct control over the independent variables because they have already led to effects which cannot be manipulated.

Model Specification

The general bases for model specification is the neoclassical growth theory which posits that in order to sustain a positive growth rate of output per capita in the long run, there must be continual advances in technological knowledge in the form of new goods, new markets, or new processes, which was demonstrated by the neoclassical growth model which shows that if there were no technological progress, then the effects of diminishing returns would eventually cause economic growth to cease. Therefore, the model of this study is based on the modification of Aremu et al (2015).The authors' model is stated below:

$$PCGDP = f(GCF, GeE, GeA, GeD, GeTC, u).$$

Where:

PCGDP= GDP Per Capita Constant 2000 US Dollar

GCF= Gross Capital Formation

GeE= Government Expenditure on Education.

GeA= Government Expenditure on Agriculture.

GeD=Government Expenditure on Defense and

S e c u r i t y .

GeTC=Government Expenditure on Transport and
C o m m u n i c a t i o n
U= Error term

The model would be modified by introducing government expenditures (recurrent and capital) on health, water and construction while excluding expenditure on agriculture and gross capital formation from the model. The new modified model of this study is specified below;
 $RGDP = f (EDUC, HLT, WTR, T\&C, DFC, CONSTR.)$
 (3.1)

The mathematical form of the model is stated below:
 $RGDP = \beta_0 + \beta_1 EDUC + \beta_2 HLT + \beta_3 WTR + \beta_4 TCE + \beta_5$

$$DFC + \beta_6 COE \quad (3.2)$$

The econometric form of the model is stated below
 $RGDP = \beta_0 + \beta_1 EDUC + \beta_2 HLT + \beta_3 WTR + \beta_4 TCE + \beta_5 DFC + \beta_6 COE + \mu_t$
 (3.3)

Where;
 RGDP = Real Gross Domestic Product
 EDUC = Education expenditure.
 HLT = Health expenditure
 WTR = Water expenditure
 TCE = Transport and communication expenditure
 DFC = Defence expenditure
 COE = Constructions expenditure
 μ = Error Term.

4.0 Empirical Data Analysis Result

4.1.1: Unit Root Test on Public Sectoral Allocation and Economic Growth

The Augmented Dickey Fuller (ADF) unit root test is use to establish the stationarity of the time series data used in the study. The result in table 4-1.1 are shown below;

Variable	Levels			First Difference			Order of integration
	ADF statistics	1% critical value	5% critical value	ADF statistics at First Difference	1% critical value	5% critical value	
RGDP	-1.548223	-4.205004	-3.526609	-5.125550	-4.211868	-3.529758	1(1)
EDUC	-0.740974	-4.205004	-3.526609	-7.020425	-4.211868	-3.529758	1(1)
HLT	0.346274	-4.205004	-3.526609	-7.193968	-4.211868	-3.529758	1(1)
DFC	-4.032962	-4.498307	-3.658446				1(0)
COE	-1.960485	-4.205004	-3.526609	-6.256055	-4.211868	-3.529758	1(1)
WTR	-3.388695	-4.205004	-3.526609	-10.07917	-4.211868	-3.529758	1(1)
TCE	-6.360822	-4.205004	-3.526609				1(0)

Source: Extracts from E-view 10. * Level of significance at 5%

This study employs the Augmented Dickey-Fuller (ADF) unit root tests to check the order of integration of the variables and the results are presented in Table 4-1.1 The results of Augmented Dickey-Fuller (ADF) showed that the variables are integrated in different order or a combination of I(0) and I(1) series. The ADF result revealed that

DFC, and TCE, are stationary at levels 1(0) while, RGDP, EDUC, HLT, WTR and COE are stationary after first differencing 1(1). This condition makes the Autoregressive Distributive Lag (ARDL) Bounds test approach to co-integration appropriate for investigating the long-run relationship among these variable.

Table 4.3.2: ARDL Bound Test

Test Statistics	Value	K
F-statistics	4.753118	6

Significance	I (0)	I(1)
10%	2.12	3.23
5%	2.45	3.61
2.5%	2.75	3.99
1%	3.15	4.43

Source: Authors computation from E-view 10 Output

The bound test is shown in Table 4.3.2, the result compared the F-statistics with the critical bound values. The F-statistic value is 4.753118. The result showed that the F-statistic is greater than the lower bound at 2.45 and the upper bounds at 3.61 of the critical values at 0.05 level of significance.

The implication is that there is levels equation of co-integration between public sectoral allocation and economic growth in Nigeria. Therefore, the Auto-regressive distributive lag (ARDL) result is estimated.

Table 4.3.3: ARDL Long-run Result

Variable	Coefficient	Std. Error	t-statistics	Prob
EDUC	5.222642	6.111197	0.854602	0.4095
HLT	-5.926652	7.106185	-0.834013	0.4206
DFC	-1.13E-06	1.35E-06	-0.835905	0.4195
COE	-0.308165	2.254193	-0.135707	0.4357
WTR	-1.788080	0.637149	-2.806376	0.0357
TCE	0.362642	0.501439	0.723202	0.4834

Source: E-view 10. * Level of significance at 5%

Table 4.3.3 presents the long-run result of the model. It shows that the coefficient of education expenditure (EDUC) has a positive (5.222642) relationship with real gross domestic product (RGDP) as a proxy for economic growth. This means that, a unit increase in education

expenditure (EDUC) will result to 5.2 unit increase in real gross domestic product (RGDP). The result p-value of (0.4095) indicates that education expenditure have an insignificant influence on real gross domestic product (LRGDP).

The coefficient of health expenditure (HLT),

defence expenditure (DFC), construction expenditure (COE) all revealed a negative and insignificant relationship with real gross domestic product (RGDP). Similarly, the coefficient of water expenditure (WTR) is negative (-1.788080) but significant (0.0357) with real gross domestic

product (RGDP). Finally, the coefficient of TCE reported a positive (0.362642) relationship with real gross domestic product (RGDP). This means that a unit increase in TCE will lead to about 36% increase in real gross domestic product (RGDP).

Table 4.3.4: ARDL Short-run Result

Variable	Coefficient	Std. Error	t-statistics	Prob
D(EDUC)	0.070349	0.026784	2.626525	0.0221
D(EDUC(-1))	-0.267734	0.063083	-4.244183	0.0011
D(HLT)	-0.130623	0.054091	-2.414857	0.0326
D(HLT(-1))	0.268077	0.068120	3.935375	0.0020
D(DFC)	-2.76E-08	8.79E-09	-3.133131	0.0086
D(DFC(-1))	9.57E-08	2.23E-08	4.291506	0.0010
D(DCOE)	0.205972	0.130519	1.578099	0.1405
D(DCOE(-1))	0.410154	0.145640	2.816218	0.0156
D(DWTR)	-0.145013	0.076265	-1.901433	0.0815
D(DWTR(-1))	0.165294	0.106258	1.555586	0.1458
D(DTCE)	0.008582	0.004001	2.144853	0.0531
D(DTCE(-1))	-0.014010	0.004296	-3.260961	0.0068
ECM (-1)	-0.115143	0.026837	-4.290424	0.0010
Adj R² = 0.676487, F-statistics = 5.986399 (0.000339), Durbin- Watson = 1.644189				

Source: E-view 10. * Level of significance at 5%

Table 4.3.4 presents the short-run result of the model. It shows that the coefficient of education expenditure (EDUC) has a positive (0.070349) relationship with real gross domestic product (RGDP) as a proxy for economic growth, in the current year period. This means that, a unit increase in education expenditure (EDUC) will result to 7% increase in real gross domestic product (RGDP). The result p-value of (0.0221) indicates that education expenditure have a significant influence on real gross domestic product (LRGDP). The implication of this result is that, as government continue to increase the education expenditure, very sound and innovate graduate would be turned out which will positively

impact the Nigerian economy.

However, the coefficient of health expenditure (HLT), revealed a negative (-0.130623) but significant (0.0326) relationship with real gross domestic product (RGDP), in the current year period. But the ARDL short-run result of HLT in the previous year period is positive (0.268077) with real gross domestic product (RGDP). This implies that a unit rise in health expenditure (HLT) will result to about 27% increase in real gross domestic product (RGDP). The implication of this is that, improvement in the health of the labour force will lead to increase in output growth which will have a positive multiplier effect on the economy.

Similarly, the defense expenditure (DFC) has a negative (-2.76E-08) but significant (0.0086) relationship with real gross domestic product (RGDP). But in the previous year, the coefficient of DFC reported a positive (9.57E-08) relationship with real gross domestic product (RGDP). This means that a unit increase in defense expenditure (DFC) will lead to about 9.57 unit increase in real gross domestic product (RGDP). Increase in defense expenditure will create a peaceful enabling environment which will be conducive for foreign investors and business to thrive in Nigeria because profitable investments can only thrive where security of businesses is assured. This result also conforms to a priori expectation. Furthermore, the coefficient of construction expenditure (COE) has a positive (0.205972 & 0.410154) relationship with real gross domestic product (RGDP), in the current and previous year period. This means that a unit increase in construction expenditure (COE) will result to 21% and 41% both in the current and previous year period. The p-value of (0.1405 & 0.0156) showed that construction expenditure (COE) is statistically significant only at the previous year to influence real gross domestic product (RGDP). This implies that as government budget in constructions in terms of building of bridges and road will be improved as the expenditure increase.

Also, the coefficient of water resource (WTR), is negative (-0.145054) but insignificant (0.0815) with real gross domestic product (RGDP) at 0.05 level of significance, in the current year period. But in the previous year period, the coefficient of WTR is positive (0.165294) but equally insignificant

(0.1458) with real gross domestic product (RGDP). This might be that the budget for water resource (WTR) is insufficient or diverted which has resulted to its significant impact on the economy.

Finally, the coefficient of Transport and communication expenditure (TCE) revealed a positive (0.008582) relationship with real gross domestic product (RGDP) in the current year period. This means that a unit increase transport and communication (TCE) will result to 1% increase in real gross domestic product (RGDP). This means that increase in government budget in terms of Transport and communication will increase, awareness of government policies to the citizens which will lead to increase in economic growth.

The ECM (-1) which is the error correction term has a coefficient estimate which is negative and also significant at 0.05 level of significant. It indicates that the model to adjust toward long run equilibrium at a speed of 12% annually. This implies that the previous year's error can be corrected with an adjustment speed of 12% annually.

The adjusted R-Square (R2) value indicates that 68% of the total variation in the dependent variable (RGDP) is explained by the independent variables (EDUC, HLT, DFC, COE, and WTR & TCE). The F-statistics is statistically significant at 5% level of significance indicating the overall model is significant. The Durbin-Watson statistics of 1.644189 reveals the absence of serial correlation in the model.

Diagnostic Test

Table 4.3.4 : Ramsey Reset Test, Serial Correlation LM Test and Homoscedasticity Test Results for Model One

	F-Statistic	Prob. Value
Ramsey Reset Test	1.426061	0.2575
Breusch-Godfrey Serial Correlation LM Test	0.652830	0.5414
Breusch-Pagan-Godfrey Heteroskedasticity Test	0.159886	0.9998

Source: Author's Computation using E-view 10

From Table 4.3.4 above, the results of the diagnostic test shows that the linearity test using Ramsey reset test indicates that the f-statistic

(1.426061) with computed p-value of 0.2575 which is greater than 5 percent (0.05) critical value, hence the study reject the null hypothesis and

conclude that the model is correctly specified.

The result of the serial or autocorrelation test using Breusch-Godfrey Serial Correlation LM Test shows that the f-statistic is 0.652830, with a Chi-Square probability value is 0.5414. This indicates that the probability value of about 54 percent (0.5414) is greater than 5 percent (0.05) critical value; hence the study confirms no serial correlation in the model.

The result of the heteroscedasticity test using Breusch-Pagan-Godfrey test shows that the f-statistic is 0.159886 with a Chi-Square probability value of 0.9998. The result suggests that there is no evidence of heteroskedasticity in the model since the probability Chi-square value is more than 5 percent ($P > 0.05$). So, residuals do have constant variance which is desirable in regression meaning that residuals are Homoscedastic.

Conclusion/Recommendation

This study investigated empirical analysis of government expenditure and economic growth in Nigeria spanning from 1980 to 2020. The study data were obtained from central bank of Nigeria (CBN) statistical bulletins, 2020. The dependent variable of the study is real gross domestic product (RGDP) as a proxy for economic growth while the independent variables are, EDUC, HLT, DFC, COE WTR, and TCE. Based on the findings it was concluded that in the short-run revealed that except water resource (WTR) expenditure that showed insignificant relationship with RGDP, all other study variables, EDUC, DFC, HLT and TCE are positive and significant either at the current year or previous year period. Based on the findings it is recommended that the budgetary allocation of the country should be increased to enable the citizens have good drinking water.

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