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Impact of government expenditure on economic growth in Nigeria: Econometric approach of error correction model

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Abstract
Despite the rise in government expenditure in Nigeria over these years, there are still public outcries over decaying infrastructural facilities, the Nigerian economy is still described as underdeveloped. It seems that rising government expenditure has not translated to meaningful growth and development of Nigerian economy as Nigeria ranks among the poorest in the world. Therefore, the study examined the impact of the impact of government expenditure on economic growth in Nigeria over a period of 1981 to 2019. Specifically, the study sought to: determine the impact of government expenditure on economic growth in Nigeria and evaluate the causality relationship among government capital expenditure, government recurrent expenditure and economic growth in Nigeria. The methods of data analysis were Error Correction Model and Granger Casuality Test. The following are the major findings of the study: government expenditure (GE) has 24 percent positive and insignificant impact on economic growth in Nigeria (t – statistics (0.021831) < critical value (1.694). It implies that a percent increase in government capital expenditure results to 8 percent insignificant increase in economic growth in Nigeria and there is bilateral cause-effect relationship between government expenditure and economic growth in Nigeria, there is bilateral cause-effect relationship between government expenditure and economic growth in Nigeria. The study recommended that government should increase government expenditure by 20 percent as against 8 percent increase in 2018 to investment in infrastructural development especially electricity supply in order to transform effective and efficient growth of the Nigerian economy. Likewise, nation's resources need to be well managed and properly channeled towards execution of projects that will promote development and growth of the economy.

Keywords: Government Expenditure, Economic Growth, Error Correction Model and Granger Casuality Test

Introduction

Government expenditure is an important instrument for managing the economy of a nation by the government. Economists believe that government expenditure, notably on social and economic infrastructure, can enhance growth (Olukayode, 2009) [13]. In almost all economies today, the role of government occupies a position of paramount importance. One reason for this is that it directs the process of achieving a country's macroeconomic objectives such as full employment, economic growth and development, price stability and poverty reduction. By means of appropriate economic policies, the government is expected to promote the economic well-being and general welfare of the citizens. In addition to maintaining law and order, the government is expected to play an important role in economic affairs (Udabah, 2002) [17].

In Nigeria, the federal government's expenditures are broadly divided into capital and recurrent expenditure. The recurrent expenditure consists of government expenditure on administration such as wages, salaries, interest on loans, maintenances whereas the capital expenditure is on projects like roads, airport, health, education, electricity generation, telecommunication, water etc.

Capital expenditures are investments with multiplier effects on the economy in terms of public benefits. In most cases, government intervention has brought stability in income and employment in the economy (Obinna, 2003) [6]. The size of government expenditures and its effect on economic growth, and vice versa, has been an issue of sustained interest for over decades now. The relationship between government expenditure and economic growth has continued to generate series of debate among scholars. Government performs two major functions- protection (and security) and provisions of certain public good (Al-Yousif cited in Olorunfemi, 2008) [9]. Scholars argue that increase in government expenditure on socio-economic and physical infrastructures encourage economic growth. For example, government expenditure on health and education raises the productivity of labour and increase the growth of national output. Similarly, expenditure on infrastructure such as roads, communications, power, etc, reduces production costs, increases private sector investment and profitability of firms, thus fostering economic growth (Al-Yousif cited in Olorunfemi, 2008) [9].

There are important sectors of the economy of which Government expenditure could channel to promote economic growth. The sectors like defense Agriculture, transportation and communication, health and education could have essential potential to move an economy forward. Defense government expenditure could help to protect an economy from external attack, agriculture government expenditure could help to provide food security for citizenry and raw material for industrial use. Transportation and communication government expenditure could enhance business activities (Olajide, Akinlabi, & Tijani 2013) [8]. Health and education government expenditure could help to keep workforce healthy, have knowledge and information, creative skills and good conduct to promote business activities. The growth of education sector in the development process of any economy cannot be over-emphasized because only well-educated and healthy people produce optimally and contribute to national output. The importance government places on education in Nigeria has led to the increase in public expenditure allocation to education sector over the years with the aim that this would in turn generate returns that will further enhance the growth and development of the country (Olajide, Akinlabi, & Tijani 2013) [8]. Therefore, the concern of this study is to verify the relationship between government expenditure and economic growth, the direction of relationship between government expenditure and economic growth if any exist and the type of government expenditure that contributes most to economic growth in Nigeria.

Statement of the Problem

In the last decade, Nigerian economy has metamorphosed from the level of millions of naira to billions naira and postulating to trillion naira on the expenditure side of the budget (Aladejare, 2013) [1]. Despite the rise in government expenditure in Nigeria over these years, there are still public outcries over decaying infrastructural facilities. It seems that rising government expenditure has not translated to meaningful growth and development of Nigerian economy as Nigeria ranks among the poorest in the world. In addition, many Nigerians have continue to wallow in abject poverty, while more than 50 percent live on less than US $2 per day and couple with this is dilapidated infrastructure (especially roads and power) that has led to the collapse of many industries, including high level of unemployment (Nurudeen & Usman, 2010).

Nigeria is currently undergoing a recession and there are calls from some citizens for increased government expenditure in order to end the recession and bring about positive turn-around of the economy. It is believed that Government expenditure has the potential to stimulate the economy and restore economic growth. The existing theoretical literature such as Wagner's theory of government expenditure, Keynes' theory of public expenditure, and Musgrave-Rostow's theory showed that government expenditure enhances economic growth but this seems to be at variance with empirical findings in Nigeria (Echekoba & Amakor, 2017) [4]. Moreover, macroeconomic indicators like balance of payments, import obligations, inflation rate, exchange rate, and national savings reveal that Nigeria has not fared well in the last couple of years. (Olugbenga & Owoye, 2008) [11]. A crucial question that requires an urgent answer is whether the government aggregated, disaggregated expenditures impact positively on economic growth in Nigeria.

Objectives of the Study

The main objective of the study is to examine the impact of the impact of government expenditure on economic growth in Nigeria. The specifically the study sought to:

1. Determine the impact of government expenditure on economic growth in Nigeria.
2. Evaluate the causality relationship between government expenditure and economic growth in Nigeria.

Conceptual Literature

Government Expenditure

Government expenditure, according to Nnamocha (2008), is the expenditure of the public sector (government). It includes such expenditure on the maintenance of government itself and also for the society and the economy. The rising trend in the growth of public expenditure is a worrisome development to the traditional Economist like the classical theorist who believed that government roles in the economy should be minimal because the extolled the virtue of the "invisible hand" through the working of market mechanism

Government Expenditures are the expenses which a government incurs for (i) its own maintenance (ii) society and the economy (iii) helping other countries (Bhatia 2002). Public expenditure represents the total government spending to attain the predetermined macro-economic objectives. Governments have recorded a continuous increase over time in almost every country. Government spending as a fiscal instrument serves useful roles in the process of controlling inflation, unemployment, depression, balance of payment equilibrium and foreign exchange rate stability. In the period of depression and unemployment, government spending causes aggregate demand to rise and production and supply of goods and services follow the same direction. As a result, the increases in the supply of goods and services couple with a rise in the aggregate demand exalt a downward pressure on unemployment and depression.

Economic Growth

Generally, the concept of economic growth is semantically the mixture of "economic" and "growth". Economics is the management of the factors of production. And growth is an increase in size, number, value, or strength. But from an economic perspective, "economic" and "growth" are jointly

used together to mean a positive change in the standard or quality of life of the people. Balami, (2006) postulates growth is a steady process which involves raising the level of output of goods and services in the economy. Jhingan, (2003) further explained that growth is related to a quantitative sustained increase in a country's per capita output accompanied by an expansion in manpower and volume of trade. This implies that economic growth is the sustained increase in an economy's output followed by other factors that influence growth such as infrastructural development, technological advancement as well as human capital development.

Economic growth is the increase in the inflation-adjusted market value of the goods and services produced by an economy over time; it is measured as the percentage rate of increase in the real gross domestic product (IMF, 2012). In the same vein the World Bank (1993), identified economic growth as more rapid output and productivity in growth; and by growth, it, therefore, implies the expansion of a country's potential GDP.

Theoretical Literature

The Keynesian Theory by John Maynard Keynes (1936)

John Maynard Keynes (1936), in his theory, believes that expenditure can contribute positively to economic growth; Keynes discussed the relation between public expenditures and economic growth, he regarded public expenditures as an exogenous factor that can be utilized as a policy instrument to promote economic growth. From the Keynesian thought, public expenditure can contribute positively to economic growth. Hence, an increase in government consumption is likely to lead to an increase in employment, profitability, and investment through multiplier effects on aggregate demand. As a result, government expenditure augments the aggregate demand, which provokes an increased output depending on expenditure multipliers. Keynes postulates that:

1. The extension of the functions of the state leads to an increase in public expenditure on administration and regulation of the economy;
2. The development of modern industrial society would give rise to increasing political pressure for social progress and call for increased allowance for social consideration;
3. The rise in public expenditure will bring about more than proportional increase in the national income (income elastic wart) and thus results in a relative expansion of the public sector

Empirical Literature

Osuji, Ehirim, Ukoha, and Anyanwu, (2017) [15] conducted a study that examined the effect of government expenditure on economic growth and development in Nigeria for the period of 1990–2012. Time series data for twenty-two years were sourced from secondary data such as the CBN statistical bulletin and other relevant publications using the desk survey method. Ordinary Least Square (OLS) multiple regression technique was used to estimate the effect of government expenditure on economic growth and development in Nigeria. Gross Domestic Product, proxy for economic growth and development was adopted as the dependent variable while Total Recurrent Expenditure and Total Capital Expenditure constitute the independent variables. The results of this study showed that the Federal Government Expenditure on Education, Health, General Administration, and Road Construction for the period; 1990–2012 has a positive and significant impact on the economic growth and development of Nigeria. The result further showed that government expenditure on Agriculture for the period investigated had been undulating and this resulted in an inverse relationship with GPD. It therefore follows that Government should put in place adequate control measures/techniques to ensure that funds allocated to the different sectors of the economy especially the agricultural sector are judiciously used for the projects for which they are allocated.

Echekoba, and Amakor, (2017) [4] conducted a research work to explore the impact of government expenditure such as expenditure on General administration, Defense, Education and Health on GDP of Nigeria (1983-2016). Time series data were generated from the Central Bank of Nigeria (CBN) statistical bulletins of various years spanning from 1983 to 2016. The Ordinary Least Square (OLS) method of estimation was used in the multiple regression analysis. The variable used for the study were expressed econometrically as GDP = Gross Domestic Product; DFE = Defense Expenditure; GADM = General Administration; EDUT = Education expenditures; HTH = Health expenditures. The result showed that expenditure on General Administration has a positive impact and significant relationship with economic growth; Expenditure on Defense has a negative impact but significant relationship with GDP; Expenditure on Education has a positive and highly significant relationship with economic growth; and Expenditure on Health has a positive but insignificant impact on GDP. Among the recommendations were that government should ensure that her expenditure whether capital and recurrent should be managed and monitored at the implementation stage to enhance comparable achievement viz-a-viz on economic growth.

Salami, Olabode, Atoyebi, Lawal and Danmola, (2017) [16] conducted a study that empirically examines the relationship between health and education expenditure on economic growth in Nigeria between 1917 and 2013. The study adopted ordinary least square to determine the relationship between health and education expenditure on economic growth in Nigeria. Contrary to our expectation our result did not conform with our apriori expectation where all the variables are expected to be positively related to economic growth but rather capital expenditure and recurrent expenditure showed a negative sign which implies that as more of the variables increase, economic growth reduces. The study also observed that little attention was paid to health sector as the percentage of budgetary allocation to the sector ranged from the 1.07% 1980 to 5.24% in 2007 compared with education. However, Government commitment to education fluctuated within the period. It reaches the peak in 2013. Upon all this observations, the study therefore recommended that Government should devoted more resources to the sector.

Gupta, (2017) [5] investigated the impact of government expenditure on economic growth in Nepal. Annual series data between 2002/03 to 2015/16 is used for the study. Economic growth is dependent variable whereas total capital expenditure, total recurrent expenditure, agriculture, non-agriculture, industry, service and inflation are independent variables. Data are collected from economic survey of Nepal. The tools of analysis are the regression model between the variables, DW Test and for multicollonearity between the variables, VIF test is used. The empirical result shows that there is positive correlation between the dependent variable

economic growth and the predictors like agricultural, non-agricultural, industry and service sector. The total current and recurrent expenditure and inflation are negatively related to economic growth. The beta coefficient is positively significantly for agricultural, non-agricultural, industry, and service sector, it implies that higher the investment in agricultural and non-agricultural sector higher would be economic growth. Similarly, higher the investment on industry and service sector of the country, higher would be economic growth.

Ogunjimi, and Adebayo, (2018) [7] conducted a study that examined the relationship among health expenditure, health outcomes and economic growth in Nigeria for the period between 1981 and 2017. This study adopted the Toda-Yamamoto causality framework to examine these relationships. The Augmented Dickey Fuller unit root test and Autoregressive Distributed Lag (ARDL) Bounds test approach was used for data analysis. The results of the Toda-Yamamoto causality tests showed a unidirectional causality running from health expenditure to infant mortality while there is no causality between real GDP and infant mortality; a unidirectional causal relationship running from health expenditure and real GDP to life expectancy and maternal mortality; and a unidirectional causal relationship running from real GDP to health expenditure. This study therefore recommended that the Nigerian government should make concerted efforts geared towards increasing the health expenditure at least to meet up with the WHO's recommendation that all countries should allocate at least 13 per cent of their annual budget to the health sector for effective funding.

Yusuf (2018) [20] conducted a study that empirically examined the relationship between government health expenditure on economic growth in Nigeria, using Gross Domestic Product (GDP) as a proxy to economic growth which is the dependent variable and the independent variables are Capital Expenditure on Health (CAPEXP) and Recurrent Expenditure on Health (RECEXP). The Error Correction Mechanism results showed that the system corrects to equilibrium at a speed of 43.40%. The study also employed the OLS regression analysis to estimate the model and the R2 showed a 94% significant relationship between government health expenditure and economic growth. The regression analysis results showed that the dependent variable (GDP) has; a positive and significant relationship with all the independent variables; every 1% unit increase in CAPEXP and RECEXP will increase economic growth by 140.1217 units and 190.7144 units respectively. Good public health is vital in any country, not only to maintain a healthy populace but also as a matter of national security. Given these findings, to ensure sustainable economic growth, it is recommended that there is the need for the Nigerian government to double its budgetary allocation to the health sector.

Udeorah, Obayori, Joseph and Onuchuku, (2018) [18] conducted a study to examine the impact of health care expenditure on economic growth in Nigeria for the period of 1980 to 2016. The data used in the study were sourced from Central Bank of Nigeria (CBN) statistical bulletin. The study adopted expost facto research method. The study used Real Gross Domestic Product (RGDP) as proxy for economic growth as the dependent variable; health care expenditure (HE) as the major independent variable while education expenditure (EE) as a check regressor to enhance the explanatory power of the model. The study used descriptive statistics and Generalized Method of Moments (GMM) test as the estimation techniques of data analysis. The GMM result revealed that the coefficient of health care expenditure with positive sign which conformed to economics theory is not statistically significant at 5% level. The coefficient of education expenditure conformed to economics theory (i.e. positive) and statistically significant at 5% level. The study concluded that health care expenditure had no significant impact on economic growth while education expenditure had positive significant impact on economic growth in Nigeria during the period of study. The study recommended that the government should redesign her policy toward health care expenditure in particular and human capital development in general and put in place machineries for implementing and monitoring this policy for effective implementation.

Onifade, Çevik, Erdoğan, Asongu, and Bekun, (2020) [14] The impacts of public expenditures on economic growth 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. Pesaran's 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.

2.5 Gap in Literature

There are limited studies on impact of government expenditure on economic growth in Nigeria covering 38 years number of observations ranging from 1981 to 2019. Scholars have paid less attention on area of our research interest taking cognizant of 38 years number of observations. There is no clear consensus till date in the literature as to whether government expenditure stimulates economic growth or hinders economic growth as empirical result varies from region to region, country to country. This study will bridge the gap by providing clear explanation as regards to cause-effect relationship between government expenditure and economic growth in Nigeria.

Our study covered literature gaps by extending existing variables in government expenditure up to five explanatory variables by incorporating government capital expenditure, government recurrent and also examined the impact of other control variables like government health expenditure, government education expenditure and government agriculture expenditure.

Methodology

This study made use of ex post-facto research. These variables of this study consist of real GDP (RGDP), GCE (government capital expenditure), GRE (government recurrent expenditure), GEE (government education

expenditure), GAE (government Agriculture expenditure) and GHE (Government Health expenditure) for a period of 1981 to 2019 as defined in our model specification. All the variables were sourced from Central Bank of Nigeria's (CBN) statistical bulletin for various years. The study employed e-view version (9) statistical application software to analyse the data because it is user- friendly software. The data collected was subjected pre-estimation and post estimation test such as Augmented Dickey-Fuller Unit Root test statistic, Johansen co-integration test statistic, Ramsey Reset, Jarque Bera, Breuch-Godfrey Serial Correlation LM Test. The data analytical techniques were Error Correction Model and Granger Casuality Test.

Model Specification

This study specifically adopts the model of Echekoba, and Amakor, (2017) [4]; Ogunjimi, and Adebayo, (2018) [7] to study of the impact of government expenditure on Economic Growth. The model was chosen because the similarity of the data analytical technique Thus, the model is represented in a functional form as shown below:

RGDP = F (GCE, GRE, GEE, GAE, GHE, GE) (3.1)

Where RGDP is real GDP proxy for economic growth, GCE is government capital expenditure, GRE is government recurrent expenditure, GEE is government education expenditure, GAE is government Agriculture expenditure, GHE is government health expenditure and GE is government expenditure.

In a linear function, it is represented as follows

$RGDP = \beta_0 + \beta_1 GCE + \beta_2 GRE + \beta_3 GEE + \beta_4 GAE + \beta_5 GHE + \beta_5 GE + \mu t$ (3.2)

Where: $\beta 0$ = Constant term, β_1 to β_6 = Regression coefficient and μt = Error Term.

To reduce the outliers among the variables, all variables will be expressed in logarithmic form.

$RGDPPC = \beta_0 + \beta_1 LogGCE + \beta_2 LogGRE + \beta_3 LogGEE + \beta_4 LogGAE + \beta_5 LogGHE + \beta_6 LogGE + Ut$

4.1 Descriptive Statistics of the Variables

Table 1

	RGDP	GEE	GHE	GAE	GCE	GRC	GE
Mean	228209.4	324474.1	1074216.	21624.18	298181.1	705880.1	1004061.
Median	206450.4	59744.70	18181.80	11840.50	269651.7	353126.5	719146.9
Maximum	795499.2	1613579.	4430132.	90798.20	720109.1	1987842.	2707952.
Minimum	37474.95	394.3000	223.9000	285.3000	4100.100	4846.700	10164.50
Std. Dev.	171543.0	535990.1	1699971.	22262.00	258209.5	702275.0	931345.2
Skewness	1.115477	1.478713	1.088588	0.928767	0.137777	0.343853	0.252311
Kurtosis	4.414432	3.491463	2.311483	3.554248	1.363128	1.459364	1.413350
Jarque-Bera	11.33888	14.60535	8.472989	6.106137	4.477329	4.625562	4.504663
Probability	0.003450	0.000674	0.014458	0.047214	0.106601	0.098986	0.105154
Sum	8900168.	12654488	41894421	843343.2	11629063	27529326	39158389
Sum Sq. Dev.	1.12E+12	1.09E+13	1.10E+14	1.88E+10	2.53E+12	1.87E+13	3.30E+13
Observations	39	39	39	39	39	39	39

***Source*:** e-view's Result

5% level = -2.943427

The table shows descriptive statistics of the variables. In the model established in the study, there is one dependent variable and five independent variables. The descriptive statistics of the variables showed the mean, maximum, minimum, and sum of the variable.

Unit Root Test

Table 2: Results of Stationarity (unit root) test

Variables	ADF- Statistics	Critical Value	Lag Value	Remark
RGDP	-3.113429	5% level = -2.943427	0	1(1)
GHE	-5.349946	5% level = -2.943427	0	1(1)
GEE	-5.696796	5% level = -2.943427	0	1(1)
GAE	-8.703238	5% level = -2.943427	0	1(1)
GCE	-11.06843	5% level = -2.943427	0	1(1)
GRE	-4.283689	5% level = -2.943427	0	1(1)
GE	-6.700889	5% level = -2.943427	0	1(1)

***Source*:** Author's computation e-view 9

In the table 2, the variables that were tested with unit root are shown, the values for Augmented Dickey Fuller (ADF) statistics was presented, the lag level of each variable was identified. The Mackinnon critical values at 5% level of significant were pointed out. The order of integration of each variable was enumerated, and finally the stationarity position of each variable was also stated. The unit root test was based on the level of Augmented Dickey Fuller (ADF) statistic was stationary or not stationary on 5 percent significance level. When Augmented Dickey Fuller statistic is greater than Mackinnon 5 percent critical value in absolute term, it is concluded that the variable is stationary. All the variables were stationary at first difference, it is now referable to use error correction model to estimate the parameters.

Johansen Co-integration Test
Ho = There is no co-integration (no long run relationship among Variable)

Table 3: Co-integration Test Results

Date: 11/15/21 Time: 09:58				
Sample (adjusted): 1983 2019				
Included observations: 37 after adjustments				
Trend assumption: Linear deterministic trend				
Series: RGDP GEE GHE GAE GCE GRC GE				
Lags interval (in first differences): 1 to 1				
Unrestricted Cointegration Rank Test (Trace)				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.714752	124.3855	95.75366	0.0001
At most 1 *	0.587545	77.97284	69.81889	0.0097
At most 2	0.435492	45.20458	47.85613	0.0869
At most 3	0.295067	24.04798	29.79707	0.1984
At most 4	0.222992	11.11084	15.49471	0.2048
At most 5	0.046855	1.775558	3.841466	0.1827
Trace test indicates 3 cointegrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

***Source*:** E-view Results

The co-integration results in table 3 for the model (RGDP, GHE, GEE, GAE, GCE, GE and GRE), the trace statistic shows two cointegrating equation, thus there is a long-run relationship among the variables (RGDP, GHE, GEE, GAE, GCE, GE and GRE). We therefore reject the null hypothesis of no co-integration amongst the variables and accept the alternative hypothesis.

Estimation of Regression Model
Empirical Results of the Error Correction Model (ECM)

Table 4

Dependent Variable: D(RGDP,1)				
Method: Least Squares				
Date: 11/15/21 Time: 11:54				
Sample (adjusted): 1982 2019				
Included observations: 38 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-291.4794	25770.62	-0.011311	0.9911
D(GEE,1)	0.804491	0.232360	3.462261	0.0059
D(GHE,1)	0.044331	0.036064	1.229224	0.2282
D(GAE,1)	3.073639	1.237841	2.483065	0.0186
D(GCE,1)	0.080437	0.135338	0.594345	0.5566
D(GRC,1)	0.639394	0.292646	2.814871	0.0048
D(GE,1)	2.417543	110.7398	0.021831	0.9827
ECM-1	-0.901983	0.176373	-5.114062	0.0000
R-squared	0.831115	Mean dependent var		-4449.590
Adjusted R-squared	0.410463	S.D. dependent var		162870.2
S.E. of regression	125053.9	Akaike info criterion		26.49554
Sum squared resid	4.69E+11	Schwarz criterion		26.84030
Log likelihood	-495.4153	Hannan-Quinn criter.		26.61820
F-statistic	5.852382	Durbin-Watson stat		2.024736
Prob(F-statistic)	0.001218			

***Source*:** E-view Results

The error correction model was carried out to examine parameters estimates. In testing this hypothesis, government capital expenditure (GCE), government education expenditure (GEE), government agriculture expenditure (GAE), government health expenditure (GHE), and government expenditure (GE), government recurrent expenditure (GRE) are regressed against real GDP (RGDP). The result of the regression analysis represented the model for the impact of government expenditure on economic growth in Nigeria. The empirical result showed that the coefficient of government capital expenditure (GCE) had positive and insignificant impact on real GDP (RGDP) because observed values of t – statistics (0.594345) is less than its critical value (1.694). The empirical result showed that the coefficient of government education expenditure (GEE) had positive and insignificant impact on real GDP (RGDP) because observed values of t –

statistics (3.462261) was less than its critical value (1.694). The empirical result showed that the coefficient of government agriculture expenditure (GAE) had positive and insignificant impact on real GDP (RGDP) because observed values of t – statistics (2.483065) was less than its critical value (1.694). The government health expenditure (GHE) had positive and insignificant impact on real GDP (RGDP) because the observed values of t – statistics (1.229224) was greater than its critical value (1.694). The government recurrent expenditure (GRE) had negative significant impact on real GDP (RGDP) because the observed value of t-statistics (2.814871) was greater than its critical value (1.694). The empirical result showed that the coefficient of government expenditure (GE) had positive and insignificant impact on real GDP (RGDP) because observed values of t – statistics (0.021831) is less than its critical value (1.694). The result of the F – statistical test shows that the overall regression of the variables was statistically significance because the observed values of the F – statistics (5.852382) was greater than its critical value (1.864251). Again, our empirical result shows that the R-squared (R^2) is 0.831115. The ECM statistics was (-5.114062). The ECMt-1 result indicates that 90% numbers of errors have been corrected from short run adjustment to the long run. In other words, ECM statistics shows that the model has 90 percent degree of adjustment from short-run to long-run equilibrium.

Granger Causality Test

Table 5

Pairwise Granger Causality Tests			
Date: 11/15/21 Time: 13:34			
Sample: 1981 2019			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
GE does not Granger Cause RGDP	37	3.37521	0.0192
RGDP does not Granger Cause GE		4.47893	0.0230
GCE does not Granger Cause RGDP	37	1.92286	0.1627
RGDP does not Granger Cause GCE		0.44336	0.6458
GRC does not Granger Cause RGDP	37	2.49304	0.0986
RGDP does not Granger Cause GRC		0.03262	0.9679
GCE does not Granger Cause GE	37	1.42054	0.2564
GE does not Granger Cause GCE		1.99865	0.1521
GRC does not Granger Cause GE	37	1.42086	0.2563
GE does not Granger Cause GRC		10.8501	0.0003
GRC does not Granger Cause GCE	37	1.99777	0.1522
GCE does not Granger Cause GRC		10.8486	0.0003

***Source*:** E-view Results

The pairwise Granger causality tests is carried out to examine parameters estimates. In testing the null hypothesis, government expenditure (GE) does not granger cause real GDP (RGDP). The result of the F-statistic causality analysis shows that government expenditure (GE) granger cause-effect on real GDP (RGDP) because its p-value (0.0192) is less than 0.05 while the null hypothesis, real GDP (RGDP) does not granger cause expenditure (GE). The result of the F-statistic causality analysis shows that government expenditure (GE) granger cause-effect on real GDP (RGDP) because observed its p-value (0.0230) is less than 0.05.

In testing the null hypothesis, government capital expenditure (GCE) does not granger cause real GDP (RGDP). The result of the f-statistic causality analysis shows that government capital expenditure (GCE) does not granger cause-effect on real GDP (RGDP) because the p-value (0.0986) is not less than 0.05 while the null hypothesis, government real GDP (RGDP) does not granger cause capital expenditure (GCE). The result of the F-statistic causality analysis shows that real GDP (RGDP) does not granger cause-effect on capital expenditure (GCE) because its p-value (0.9679) not is less than 0.05.

In testing the null hypothesis, government recurrent expenditure (GRE) does not granger cause real GDP (RGDP). The result of the f-statistic causality analysis shows that government recurrent expenditure (GRE) does not granger cause-effect on real GDP (RGDP) because its p-value (0.0986) is not less than 0.05 while the null hypothesis, government real GDP (RGDP) does not granger cause government recurrent expenditure (GRE) because its p-value (0.9679) is not greater than 0.05. The result of the F-statistic causality analysis shows that real GDP (RGDP) granger cause-effect on government recurrent expenditure (GRE) because its p-value (0.0009) is less than 0.05.

In testing the null hypothesis, government recurrent expenditure (GRE) does not granger cause government capital expenditure (GCE). The result of the F-statistic causality analysis shows that government recurrent expenditure (GRE) does not granger cause-effect on government capital expenditure (GCE) because its p-value (0.1522) is not less than 0.05 while the null hypothesis, government real GDP (RGDP) does not granger cause government recurrent expenditure (GRE). The result of the F-statistic causality analysis shows that government capital expenditure (GCE) granger cause-effect on government recurrent expenditure (GRE) because observed its p-value (0.0003) is less than 0.05.

Econometric /Second Order Test
The null hypothesis; there is Autocorrelation.

Table 6: Result of Breuch-Godfrey Serial Correlation LM Test

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.360196	Prob. F(2,29)	0.6906
Obs*R-squared	0.221081	Prob. Chi-Square(2)	0.7039
Test Equation:			
Dependent Variable: RESID			
Method: Least Squares			
Date: 11/15/21 Time: 10:36			
Sample: 1982 2019			
Included observations: 38			
Presample missing value lagged residuals set to zero.			

***Source*:** E-view Results

The Breuch-Godfrey Serial correlation LM Test was used to identify whether the model suffers from autocorrelation problem. The autocorrelation problem violates of ordinary least square assumption that says there is no correlation among error terms of different observation. Breuch-Godfrey Serial correlation LM Test was a statistic that ensures that the assumption of ordinary least square was not violated. The null hypothesis; there is autocorrelation problem. The result of Breuch-Godfrey Serial correlation LM Test (0.360196) and it P-value was (0.6906). Because Breuch-Godfrey Serial correlation LM Test (0.360196) was less than its P-value was (0.6906), we conclude that the model is free from Autocorrelation problem. This denotes that prediction base of the Ordinary Least Square estimates were efficient and unbias.

Result of Ramsey Reset Test
The null hypothesis; there is specification Error

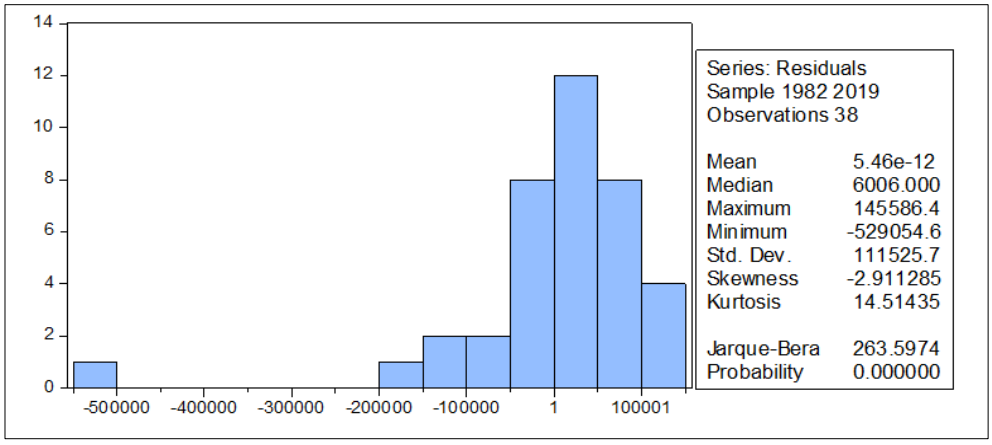
Table 7

Ramsey RESET Test			
Equation: UNTITLED			
Specification: D(RGDP,1) C (GEE,1) D(GHE,1) D(GAE,1) D(GCE,1)			
D(GRC,1) D(GE,1) ECM-1			
Omitted Variables: Squares of fitted values			
	Value	df	Probability
t-statistic	0.063152	29	0.9501
F-statistic	0.003988	(1, 29)	0.9501
Likelihood ratio	0.005226	1	0.9424
F-test summary:			
	Sum of Sq.	df	Mean Squares
Test SSR	64510564	1	64510564
Restricted SSR	4.69E+11	30	1.56E+10
Unrestricted SSR	4.69E+11	29	1.62E+10
LR test summary:			
	Value	df	
Restricted LogL	-495.4153	30	
Unrestricted LogL	-495.4127	29	

***Source*:** E-view Results

This second order test checks whether the model of the study suffers model specification error. The null hypothesis; there is model specification error. The Ramsey reset test showed that there was no specification error because F-statistics (0.063152) is less than Probability value (0.9501). It means that model include core variables in the model, does not include superfluous variables, the functional form of the model was very well chosen, there is no error of measurement in the regress and regressor.

Histogram Normality Test



***Sources*:** E-view 9.0 Version

Fig 1

The null hypothesis is that there is no skewness and Kurtosis in the model. We reject the null hypothesis because the Jarqua-Bera statistics (263.5974) is greater than probability value (0.0000). We reject null hypothesis and accept the alternative that there is no skewness and Kurtosis in the model. The skewness is normal because the value was -2.911285. The model of the study produced positive skewed distribution meaning that it has a long tail in the positive direction. The kurtosis was 14.51435 meaning that the degree of peakedness was high that normal value of three (3). This implies that the standardized residuals from the estimated model in the regression framework is normally distributed, which is consistent with the OLS assumption.

Test of Hypotheses

The results for the various hypotheses testing are presented in the section.

Test of Hypothesis one

H_{01} Government expenditure has no significant impact on economic growth in Nigeria

In testing this hypothesis, government expenditure (GE) was regressed against real GDP. The empirical result shows that the coefficient of government expenditure (GE) had positive and insignificant impact on real GDP (RGDP) because observed values of t – statistics (0.021831) was less than its critical value (1.694). The empirical finding reveals that government expenditure has no significant impact on economic growth in Nigeria.

Test of Hypothesis two

H_{O2} There is no causality relationship among government expenditure and economic growth in Nigeria.

In testing this hypothesis, the causality relationship between government expenditure and economic growth in Nigeria are determined. The empirical finding reveals that there is bilateral cause-effect relationship between government expenditure and economic growth in Nigeria, there is bilateral cause-effect relationship between government expenditure and economic growth in Nigeria.

Summary of the Findings

The following are the major findings of the study**:**

1. Government expenditure (GE) has 24 percent positive and insignificant impact on economic growth in Nigeria (t – statistics (0.021831) < critical value (1.694). It implies that a percent increase in government capital expenditure results to 8 percent insignificant increase in economic growth in Nigeria.
2. There is bilateral cause-effect relationship between government expenditure and economic growth in Nigeria, there is bilateral cause-effect relationship between government expenditure and economic growth in Nigeria.

Conclusion

This study concludes there was impact of government expenditure on economic growth in Nigeria. It is discovered that enhanced government expenditures will increase inflow of better living, inflow of foreign and local businessmen and relevant capital that will enhance growth and development of an economy. The work equally discovered that there is inverse relationship between government expenditures on health sector and economic growth in Nigeria. This implies that the expenditures of the Nigerian government on the health sector are not enough to transform the gross domestic product of the Nigerian economy. It is also discovered that there exists a long-run relationship between government expenditures and economic growth in Nigeria.

Government expenditure has a significant impact on economic growth though the significance is form dependent. i.e. the form of government expenditure considered. It was seen economic growth in Nigerian over the years has been significantly affected by both capital and recurrent expenditure but the level of their effect varies in degree and extent. This study found that capital expenditure would have really positively impacted the level of economic growth but for the issue of corruption and institutional oddity though the intended capital expenditure is indirectly converted to recurrent expenditure somehow which has its own effect on the Economic growth.

Recommendations of the Study

Based on the findings of this study, the following recommendations were made.

1. The government should increase government expenditure by 20 percent as against 8 percent increase in 2018 to investment in infrastructural development especially electricity supply in order to transform effective and efficient growth of the Nigerian economy. Likewise, nation's resources need to be well managed and properly channeled towards execution of projects that will promote development and growth of the economy.
2. The government should judiciously and religiously manage government recurrent expenditure to reflect employee productivity in such a manner that it will boost nations production base and promote economic growth of the country. The government should to tackle the menace of leakages in the expenditure channel, government need to strengthen her institutions most importantly those anti-graft agencies through improved funding, capacity building and orientation so as to combat corruption and corrupt practices.

Appendix A

Year	Real Gross Domestic Product (Millions)	Govt. Expenditure on Education	Govt. Expenditure on Health	Government Agriculture Expenditure	Government Capital Expenditure	Government Recurrent Expenditure	Government Expenditure
1981	229014.3	925.40	344.9	468.10	6567.1	4846.7	11413.8
1982	154554.2	394.30	234.21	809.00	6417.3	4859.5	11276.8
1983	206450.4	650.00	502	1069.20	4885.7	5278.8	10164.5
1984	795499.2	1062.60	678.12	1214.50	4100.1	11331.7	15431.8
1985	185598.10	850.2	223.9	285.30	5464.7	11237.8	16702.5
1986	183563.10	1094.8	360.4	1018.10	8526.8	5635.9	14162.7

1987	201036.30	653.5	236.4	925.40	6372.5	10749.2	17121.7
1988	205971.40	1084.1	444	394.30	8340.1	13708.6	22048.7
1989	204806.50	1941.8	452.7	650.00	15034.1	20810.1	35844.2
1990	219875.60	2294.3	658.2	1062.60	24048.6	27208.4	51257
1991	236729.60	1554.2	757	1966.60	28340.9	25580.5	53921.4
1992	267550.10	2060.4	1025.5	672.30	39763.3	36060.2	75823.5
1993	265379.10	7999.2	2684.5	924.50	54501.8	93500.5	148002.3
1994	271365.50	10283.8	3027.9	2835.30	70918.3	79201.2	150119.5
1995	274833.30	12728.7	5060.9	3719.10	121138.3	108936.6	230074.9
1996	275450.60	15352	4851.7	6927.70	158678.3	141000.1	299678.4
1997	281407.40	15944.7	5803	5574.00	269651.7	160733.2	430384.9
1998	302022.50	26721.4	11984.3	7929.60	309015.6	182542.1	491557.7
1999	310890.10	31563.8	16180	11840.50	498027.6	221119.3	719146.9
2000	312183.70	67568.1	18181.8	38259.80	239450.9	353126.5	592577.4
2001	356994.30	59744.7	44652.4	10595.90	438696.5	579329.1	1018025.6
2002	433203.50	109455.3	63172.1	64943.90	321378.1	867336.5	1188714.6
2003	477533.00	79436.1	39685.8	44803.50	241688.6	984268.7	1225957.3
2004	477533.00	93768	59788.3	16045.20	351259.9	908655.5	1259915.4
2005	527576.00	120035.5	71685.4	59773.40	519510.1	1093054.9	1612565
2006	527576.00	165213.7	105590	90798.20	552385.8	1343045.2	1895431
2007	37474.95	106857.37	1122914.3	33916.60	532566.7	1378801.3	1911368
2008	39995.50	135185.3	1271189.6	33956.60	546190.9	1384663.2	1930854.1
2009	42922.41	123111.1	242167.2	35485.60	548011.3	1399200.4	1947211.7
2010	46012.52	248900.1	3396182	35529.60	538990.8	1399400.3	1938391.1
2011	49856.10	601303.3	3284009.6	35740.60	629817.9	1488921.9	2118739.8
2012	54612.26	950710.6	3686013.3	34705.60	654110.8	1480021.5	2134132.3
2013	57511.04	1489476.6	3633141.7	34804.80	610255.8	1402387.3	2012643.1
2014	59929.89	1141395	3986643	35243.30	610032.4	1503876.4	2113908.8
2015	63218.72	1497243.7	4004319.4	36456.30	629800.4	1630021.6	2259822
2016	67152.79	1548018.7	3991258.2	37952.30	623980.8	1773673.3	2397654.1
2017	69023.93	1613579.3	4401542.2	38953.80	720109.1	1987842.4	2707951.5
2018	67931.24	1226931.7	4430132.3	39848.80	71001.21	1903482.8	1974484.01
2019	59929.89	1141395	3986643	35243.30	610032.4	1503876.4	2113908.8

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