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DOES GOVERNMENT EXPENDITURE AFFECTS ECONOMIC GROWTH? AN EMPIRICAL EVIDENCE FROM NIGERIA

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Abstract

This study investigates the relationship between government expenditure and economic growth in Nigeria for the period 1981 to 2021, using time series data on Gross Domestic Product, Total Government Capital Expenditure, Government Recurrent Expenditure on Education, Government Recurrent Expenditure on Health, Government Recurrent Expenditure on Economic Services and Government Recurrent Expenditure on Administration. The study employed the Johansen cointegration technique and Vector Error Correction Model in its analysis. After conducting the ADF Stationarity test, a long run relationship was established between GDP and the other explanatory variables. The study found a long run and positive relationship between Recurrent Expenditure on Education, Recurrent Expenditure on Health, Recurrent Expenditure on Economic Services and Total Capital Expenditure with Economic Growth. To boost the economy therefore, the study recommends for increasing government recurrent expenditure on health, education and economic services, as well as total capital expenditure so as provide basic infrastructures.

Key Words: Government Expenditure, Economic Growth, Cointegration,

1. Introduction

Government expenditure consists of recurrent expenditure, capital expenditure and transfer payments. The goal of these expenditures is to maximize welfare of the entire society through the provision of public goods and services. They include security of lives and property, national defense against foreign aggression, health and educational facilities, as well as basic infrastructures of roads, street lights, power supply, water supply and other communication facilities that enhance economic growth and development in a particular country (IMF, 1986).

The history of government expenditure in Nigeria has been showing a rising trend from independence to date. Part of the reason behind the rising trend is the rapid increase in Nigeria's population. The population growth rate has been put at about 2% per annum in 1961 with a total population of 46.06 million. By 1980, Nigeria's population has grown to 73.42 million and to 122.28 million by the year 2000 with a growth rate of 2.54% per annum. In 2021, Nigeria's population reached 211.40 million (NBS, 2022). This rapid growth in population of Nigeria is accompanied by a high increase in demand for basic public utilities and infrastructures by the growing population of the country. Thus government expenditure keeps on increasing with increases in the population of the country. Other sources of government expenditure increase include rising income levels, urbanization of the population, technological and innovative change in political and bureaucratic structures of the country (Danladi, et al, 2015). Others like Jelilov and Musa (2016) have argued that the rapid growth in Nigeria's government expenditure has to do with heavy reliance on oil revenue that the country earns, and as such the higher the revenue from oil the higher the government expenditure.

Total Capital Expenditure in Nigeria rose from N 6.5 billion in 1981, to N 28.3 billion in 1991, N 438.7 billion in 2001, N 918.5 billion in 2011 and N 2,522.5 billion by 2021. Total Recurrent Expenditure also skyrocketed over the same period. It rose from N 4.85 billion in N 1981, to N 38.24 billion in 1991, N 579.30 billion in 2001, N 3,314.53 billion in 2011 and N 9,145.16 billion by 2021 (CBN, 2022).

The importance of government spending or expenditure received much attention during the 1930s through the works of Keynes (1936) who emphasized that increase in government spending boosted growth by injecting purchasing power into the economy.

Government expenditure in Nigeria has been grouped into recurrent and capital expenditure and further disaggregated into different sectors of the economy. Recurrent expenditure comprises of all government expenditure on wages and salaries. While capital expenditure comprises of government spending on new buildings, machines and equipment, as well as new investment projects that will increase the capital stock of the country. Several studies have been conducted over the years in order to investigate the relationship between government expenditure and economic growth in Nigeria which reveals different results. The aim of this paper is to determine whether over the years government expenditure in Nigeria has any impact on economic growth of the country. In addition to the introduction, this paper consists of five sections. Section two is literature review, section three is research methodology, section four is results and discussions, and section five is conclusion and recommendations.

2. Literature Review

Empirical Literature

Empirical studies on the relationship between government expenditure and economic growth over the years has reported different results, such that some showed positive effects, negative effects, mixed effects, and others who could not establish a relationship between government expenditure and economic growth. Such studies include, Abimbola and Akinnibosun (2013), Bappahyaya, Abiah and Bello (2020), Chike, Chukwuemeka and Chinedu (2022), Deinde and Oluwale (2017), Jelilov and Musa (2016), Odubuasi, Ifurueze and Ezeabasili (2020), Okpabi, Ijuo and Akiri (2021), Onifade, Cevic, Erdogan, Asongu and Bekun (2020), Usman and Agbede (2015), Chinodu, Peace and Stanislaus (2022) and Usman (2022). However, according to Monday, Kester and Andrew (2014), empirical studies have found a positive correlation between economic growth and public expenditure on infrastructural facilities.

Chinodu et al (2022) examined the relationship between government capital expenditure and government recurrent expenditure on economic growth in Nigeria, using annual time series data for the period 1981 to 2019. Their study employed the Error Correction Model and Granger Causality Test, and they found a positive relationship between government capital expenditure and economic growth in Nigeria and therefore recommended for an increase in government capital expenditure by 20%.

Deinde and Oluwale (2017) investigated the relationship between government expenditure and economic growth in Nigeria for the period 1981 to 2015 using Dynamic Ordinary Least Squares method. Their findings showed that government expenditure on administration has positive impact on economic growth for the period under study as they disaggregated expenditure into different sectoral components of the economy. Whereas, government expenditure on social and community services, government expenditure on economic services and government expenditure on transfers lowers economic growth over the same period. This negative impact was attributed to rent seeking behavior in the public sector in Nigeria.

In another study Chike *et al* (2022) examined the relationship between government health expenditure and government education expenditure on economic growth in Nigeria, using annual time series data and autoregressive distributive lag model (ARDL) for the period 1988 to 2021. Their results found a positive relationship between government expenditure on education, government expenditure on health and life expectancy at birth with real gross domestic product

(GDP)) for the period under study, though the variables were no statistically significant. They therefore recommended for fiscal discipline in health sector spending in Nigeria.

Monday et la (2014), investigated the empirical relationship between government expenditure and economic growth in Nigeria, using disaggregated approach to public expenditure and their results showed that there is a negative relationship between government expenditure on health sector and economic growth, and on the other hand a long-run relationship between government expenditure and economic growth in Nigeria.

In another related study, Onifade et al (2020), examined the relationship between government expenditure and economic growth in Nigeria for the period 1981 to 2017. Applying the ARDL approach to the time series data on real GDP, recurrent expenditure, capital expenditure, debt, private consumption expenditure and investment over the study period, their results found that government recurrent expenditure have significant negative impacts on economic growth, while capital expenditure has a positive impact on economic growth in Nigeria. Jelilov and Musa (2016) investigated the relationship between government expenditure and economic growth in Nigeria for the period 1981 to 2012. They applied OLS technique to the time series data for the period under review, where they use GDP as a dependent variable and government expenditure, inflation, exchange rate and interest rate as independent variables. Their results showed that there was a positive relationship between government expenditure and economic growth, as well as between interest rate and economic growth. Negative relationship was however reported between interest rate and economic growth, as well as between exchange rate and economic growth.

Usman and Agbede (2015) investigated the relationship between government expenditure and economic growth in Nigeria by using a co-integration and error correction model for the period 1970 to 20210. Their findings from the long run analysis showed a positive relationship between government recurrent expenditure and economic growth, as well as between government capital expenditure and economic growth over the study period.

Jelilov and Musa (2016) examined the relationship between government expenditure, interest rate, inflation rate, and exchange rate and economic growth in Nigeria for the period 1981 to 2012. They used multiple regression technique in their analysis. Their results found a positive relationship between government expenditure and economic growth, as well as between economic growth and inflation rate. They however established a negative relationship between interest rate and economic growth, as well as between exchange rate and economic growth in Nigeria over the study period.

Bappahyaya *et al* (2020), investigated the impact of government expenditure on economic growth in Nigeria for the period 1970 to 2017 using autoregressive distributed lag model (ARDL) on six variables, which include capital stock, labour force, capital expenditure, recurrent expenditure, inflation and trade openness. Their findings showed that capital stock and recurrent expenditure were statistically significant and have positive impact on economic growth over the study period.

Odubuasi *et al* (2020), examined the effect of government expenditure on economic growth in Nigeria for the period 2004 to 2018 using time series data. They used recurrent expenditure, expenditure on highways, safety costs, and education costs as independent variables, and real GDP as the dependent variable. Using regression analysis, autoregressive distributed lagged (ARDL) testing technique and error correction model, their results showed that government expenditure on highways and expenditure on safety has positive significant effect on economic growth in Nigeria over the study period.

Also, in another related study, Usman (2022) found that government expenditure on education has a positive impact on economic growth in Nigeria. The study found that an increase in government expenditure on education by 1% will lead to an increase in GDP by 3.3%, which coincided with the results obtained by Out and Adenugu (2006) and Oluwatoyin (2013).

Okpabi *et al* (2021) investigated the impact of government expenditure on economic growth in Nigeria from 1984 to 2015. Their study used Johansen co-integration and error correction model, and their results indicated that recurrent and capital expenditure has significant positive impact on economic growth in the long run and an insignificant negative effect in the short run, which reinforces the Keynesian and endogenous growth models that public expenditure stimulates economic growth in Nigeria.

Ugochukwu and Oruta (2021) studied the relationship between government recurrent expenditure on agriculture, education, health, public debt servicing, road and construction, as well as capital expenditure on social services and on economic services on economic growth in Nigeria for the period 1981 to 2020 using annual time series data. Their study found a positive relationship between government recurrent expenditure on agriculture, government recurrent expenditure on education and government capital expenditure on social services with economic growth over the study period. The study therefore recommends that government should pay more attention to the development of human capital in Nigeria. Attention must also be given to the agricultural sector that feeds the nation as well as the need for more accountability and transparency in government finances.

One thing that is different from previous studies is that, in this study annual time series data covers up to 2021 period. It is also one of the studies where both disaggregated data on recurrent government expenditure are used together with aggregated government capital expenditure.

Theoretical Review

This study centers on the Keynesian view of demand management that boost output and employment in an economy. Before the great depression of the 1930s the general believe was that market forces can lead to efficient allocation of resources in an economy. Budgets were then balance budgets with fears of a surplus or a deficit budget. However, experience of the 1930s great depression brought out the Keynesian revolution in economic management. Keynes (1936) through his works suggested the idea deficit financing as the classicist were suggesting for a decrease in wages as a way out of the depression. Keynes, for the first time in the history of economics, looked at the economy from the macroeconomic view point and that was the beginning of macroeconomic analysis. In this he suggested the idea of deficit financing so as to boost aggregate demand by government spending more than its revenue.

The Keynesian model is written as Y = C + I + G + (X – M).

3. Research Methodology

Data Sources

Annual time series data on total government capital expenditure, recurrent expenditure on education, recurrent expenditure on health, recurrent expenditure on administration and recurrent expenditure on economic services are obtained from CBN statistical bulletin 2022 for the purpose of this study.

Model Specification

Okpabi *et al* (2021) derives a model from the Keynesian equation Y = C + I + G + (X – M). Their model was specified as:

GDP = f(TCE, TRE, GEE, GEH, GEP, GED, TO, TI) (1)

The above model has been modified for the purpose of this study as follows:

$$GDP = f(TCE, GEA, GEE, GEH, GES,) \quad (2)$$

where

GDP = Gross Domestic Product,

TCE = Total Capital Expenditure,

GEA = Government Expenditure on Administration.

GEE = Government Expenditure on Education,

GEH = Government Expenditure on Health,

GES = Government Expenditure on Economic Services,

This version of the model is telling us that GDP depends on Total Capital Expenditure and Government Recurrent Expenditure on Administration, Government Recurrent Expenditure on Education, Government Recurrent Expenditure on Health, and Government Recurrent Expenditure on Economic Services.

Techniques of Data Analysis

Unit root test will be conducted on the annual time series data in order to determine the Stationarity of the variables. This will allow the researcher to determine whether there is a long run relationship among the variable of interest this work.

Johansen Cointegration:

Cointegration is a technique that is used to determine the existence of a long run equilibrium relationship in a series. This study used the Johansen cointegration test because it is based on a multivariate Vector Auto-regression (VAR). VAR is a stochastic process model used to capture the inter-dependence among multiple time series, i.e VAR-based allow for all variables to be endogenous in the system and there are no exogenous variables. The VAR based model can be written as:

$$LGDP = \beta_0 + \beta_1 LTCE + \beta_2 LGEA + \beta_3 LGEE + \beta_4 LGEH + \beta_5 LGES + U_t \quad (3)$$

4. Results and Discussions:

Time series data on Nigeria's GDP, Government Recurrent Expenditure on Administration, Government Recurrent Expenditure on Education, Government Recurrent Expenditure on Health, Government Recurrent Expenditure on Economic Services and Total Government Capital Expenditure in the economy are all collected from the Central Bank of Nigeria's data base, which is available online.

Table 1: Summary of Statistics of the Variables

	LGDP	LGEA	LGEE	LGEH	LGES	LTCE
Mean	8.795792	4.501930	3.043931	2.268365	3.031053	5.121554
Median	9.016087	5.212963	4.059695	3.199582	3.970451	5.772618
Maximum	12.06409	7.738365	6.471956	6.048152	6.332842	7.832993
Minimum	4.936705	-0.108913	-1.819208	-3.186541	-1.759240	1.411011
Std. Dev.	2.435362	2.646326	2.839911	3.024494	2.772118	2.047638
Skewness	-0.273922	-0.462343	-0.535151	-0.400072	-0.430024	-0.593841
Kurtosis	1.637484	1.773686	1.870611	1.703793	1.744287	1.899360
Jarque-Bera	3.684163	4.029773	4.135987	3.963990	3.957350	4.479249
Probability	0.158487	0.133336	0.126439	0.137794	0.138252	0.106498
Sum	360.6275	184.5791	124.8012	93.00294	124.2732	209.9837
Sum Sq. Dev.	237.2396	280.1216	322.6037	365.9026	307.3854	167.7129
Observations	41	41	41	41	41	41

Source: Researcher's Computation Using E-views 9

Table 1 presents the result of descriptive statistics of the variables employed in the model. It was observed that the mean value of the LGDP is 8.795792 which is the highest among the variables while LGEH has the lowest mean value of 2.268365. The result also shows that all the variables in the series have positive median values,

which shows that the series is evenly distributed. GDP has the highest maximum value of 12.06409, while LGEH has the lowest minimum value of-3.186541. LGEH has the highest standard deviation of 3.024494, while LTCE has the lowest standard deviation of 2.047638. This shows the amount of variation or dispersion of the set of values. A low standard of deviation indicates that the values tend to be close to the mean of the set while a high standard deviation indicates that the values are spread out over a wider range. The skewness of all the variables are negative which indicate that the tail of the distri1bution is longer on the left side and the mode is higher than the median and the mean. The kurtosis of all the variables are less than 3, hence the distribution of the series is platykurtic. The Jarque-Bera probability of the series shows that three variables (GDP, GEH and GEE) are normally distributed based on the null hypothesis at 5% significance level.

4.1 Unit Root Test Results

The results of the Augmented Dickey Fuller test are presented in table 2. The results showed that all the variables are non-stationary at level, therefore, we cannot not reject the null hypothesis at a 5% confidence level. However, the results showed that all of the variables, LGDP, LGEA, LGEE, LGEH, LGES and LTCE are stationary at the first difference at a 5% confidence level. This justifies for us the use of Johansen cointegration techniques, since all the variables are integrated to the same order.

Table 2: Results of Stationarity Test

Variables	ADF t statistics at levels	Mackinnon Critical Values	ADF at first difference	Mackinnon Critical Values	Decision
LGDP	0.222418	0.9974	-3.662503**	0.0372	I(1)
LGEA	-0.273577	0.9886	-6.641727*	0.0000	I(1)
LGEE	-2.909239	0.1705	-6.061272*	0.0001	I(1)
LGEH	0.049159	0.9954	-5.604863*	0.0003	I(1)
LGES	-1.897573	0.6372	-7.759529*	0.0000	I(1)
LTCE	-1.455414	0.8282	-6.767313*	0.0000	I(1)

Source: Researcher's Computation Using E-views 9

Note: *,**, and *** represent 1%, 5% and 10% significant level respectively.

4.2 Lag Selection Criteria:

In VECM analysis, the best lag length should be set to ensure that the residuals are Gaussian (serially uncorrelated, homoskedastic and normally distributed). Thus table 3 reports the VAR Lag Order Selection Criteria. The results in Table 3 indicated that four selection criterion (LR, FPE, AIC, and HQ) selected 3 as the optimum lag length. Only SC selected one lag length. Therefore, the lag length selected for this study is 3 in line with the majority criteria.

Table 3: VAR Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-150.9243	NA	0.000156	8.259172	8.517739	8.351168
1	18.61335	276.6140	1.42e-07	1.230877	3.040840*	1.874848
2	65.60921	61.83667	9.19e-08	0.652147	4.013508	1.848093
3	119.5997	53.99045*	5.42e-08*	-0.294719*	4.618039	1.453203*

Source: Researcher's Computation Using E-views 9

4.3 Johansen Cointegration Test:

The Johansen cointegration test is carried out to determine the existence of long run relationship and co-movement between variables. Its decision rule is to reject the hypothesis about the number of cointegrating equations found if p-values are less than 5% (0.05) and accept if otherwise. The trace and maximum eigenvalues test statistics are used to test cointegration in data series. In table 4, the test statistics indicates that there is one cointegrating equation at 5% significance level. The p-value of none (null hypothesis) is less than alpha, 0.0007 < 0.05. Therefore, we reject the null hypothesis of no cointegration between LGDP, LGEA, LGEE, LGEH, LGES and LTCE at 5% significance level. There is a significant long run relationship between GDP and the independent variables.

Table 4: Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CEs	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.777467	141.5467	117.7082	0.0007
At most 1	0.493828	82.94214	88.80380	0.1229
At most 2	0.417163	56.38786	63.87610	0.1815
At most 3	0.346980	35.33381	42.91525	0.2316
At most 4	0.267202	18.71404	25.87211	0.2980
At most 5	0.155459	6.589530	12.51798	0.3893

Source: **Researcher's Computation Using E-views 9**

Also, in table 5, the maximum eigenvalue test indicates that there is one cointegrating equation at 5% significance level. This means that long run relationship exist between the variables. The p-value of none (null hypothesis) is less than alpha, 0.0008 < 0.05.

Table 5: Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.777467	58.60459	44.49720	0.0008
At most 1	0.493828	26.55428	38.33101	0.5587
At most 2	0.417163	21.05405	32.11832	0.5680
At most 3	0.346980	16.61978	25.82321	0.4902
At most 4	0.267202	12.12451	19.38704	0.4037
At most 5	0.155459	6.589530	12.51798	0.3893

Source: Researcher's Computation Using E-views 9

Therefore, we reject the null hypothesis of no cointegration between LGDP, LGEA, LGEE, LGEH, LGES and LTCE at 5% significance level. There is a significant long run relationship between GDP and the independent variables.

Table 6: Normalized Vector Error (VECM) Correction Coefficients

Variables	Vector Coefficients (β)	Error Correction Adjustment Coefficient (α)
LGDP(-1)	1.000000	0.021854 (0.04991) [0.43785]
LGEA(-1)	2.017940	

	(0.42432)	
	[4.75567]	
LGEE(-1)	-1.111488	
	(0.22750)	
	[-4.88568]	
LGEH(-1)	-1.121555	
	(0.21431)	
	[-5.23333]	
LGES(-1)	-0.456452	
	(0.20602)	
	[-2.21554]	
LTCE(-1)	-0.035229	
	(0.11479)	
	[-0.30690]	
C	-10.39018	

Source: Researcher's Computation Using E-views 9

Table 6 presents the results of long run cointegrating vector coefficients of the model, where log of gross domestic product (LGDP) is used as the dependent variable, while log government expenditure on administration (LGEA), log of government expenditure on education (LGEE), log of government expenditure on health (LGEH), log of government expenditure on economic services (LGES) and log of total government capital expenditure (LTCE) are used as independent variables. The results showed that there is a negative relationship government expenditure on administration and economic growth. A 1% increase in government expenditure on administration will reduce growth by 2.02%. On the other hand government expenditure on education has a positive relationship with the GDP. A 1% increase in government expenditure on education will increase growth by 1.11%. A positive relationship is also found to exist between government expenditure on health, government expenditure on economic services and total government capital expenditure with the GDP. A similar study by Nwaolisa and Chinelo (2017) also found a positive relationship between government expenditure on education and economic growth.

5. Conclusion and Recommendations

This study has adopted the Johansen cointegration technique and Vector Error Correction Model to investigate the relationship between public expenditure and economic growth in Nigeria from 1980 to 2021. Our findings agree with the existence of a long run relationship between public expenditure and economic growth in Nigeria over the study period. The results revealed that recurrent expenditure on health, recurrent expenditure on education, recurrent expenditure on economic services and total capital expenditure have positive impact on economic growth. The study therefore recommends that the government should ensure that the share of recurrent expenditure is kept within a reasonable proportion by blocking all leakages and wastages in the public sector. Also more emphasis should be given to capital expenditure especially given the deficiency of basic infrastructures in most parts of the country.

The Nigerian government should also try to increase its expenditure on health and to ensure that it reaches the citizens in the rural areas. Health services like anti-natal care and maternal care should be made available to rural areas so as to boost the state of health of the rural communities.

There is also the need to increase expenditure on education, so that education is adequately funded and such funds should be monitored and utilized efficiently .Investment in education and health will have the effect of boosting human capital development in Nigeria, thereby moving people out of poverty and

ignorance. According to UNESCO, governments should devote 26% of their budgets to education alone. But in Nigeria, from military eras to date budgets devoted to education sector were between 3% and 6% of the total budget at most.

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