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Government Expenditure on Construction, Transport and Communication and Economic Growth in Nigeria

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Abstract

Construction, transport and communication sectors have been identified by scholars as very important sectors in an economy. This is because they have the potential for promoting and stimulating economic growth, reduce poverty and creating employment for a large number of people especially in developing countries. Thus, the objective of this paper was to investigate empirically the impact of government expenditure on construction, transport and communication on economic growth in Nigeria between 1980 and 2016. Time series data were sourced from secondary sources on Economic growth proxied by Gross Domestic Product (GDP), Government Expenditure on Construction (CNS), Government Expenditure on Transport and Communication (TRC) and state of infrastructure proxied by electricity availability (SIF). The data sets were analyzed using the Engle-Granger co-integration and Error Correction Modeling techniques. The result of the analysis reveals that both government expenditure on construction, transport and communication have a negative relationship with economic growth and also do not impact on it. Based on these findings, the paper recommends that the government should ensure that the construction, transport and communication sectors are adequately funded so as boost economic growth. Also, there should be proper implementation of the fiscal responsibility laws to ensure greater accountability, fiscal discipline and prudence in the use of funds allocated to these sectors.

Key words: Government Expenditure, Construction, Transport, Communication,

Economic Growth.

I. Introduction

The construction, transport and communication sectors are very important sectors in an economy. This is because they have the prospective for inspiring economic growth; reduce poverty and creating employment for a large number of people especially in developing countries. Arising from the above, Amadi, Amadi and Nyenke (2013) and Author (2016) opined that the significance of construction, transport and communication sectors in growth and poverty reduction has not be overemphasized. Similarly, Ighodaro (2009) opined that not only does these sectors (construction, transport and communication) facilitate the direct provision of services to consumers, it also provides intermediate inputs for other productive sectors and raise factor productivity, Thus,

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construction, transport and communication sectors adds value to an economy.

Consequently, the Nigerian government has tried to increase the expenditures in these sectors due to the aforementioned significance of the sectors. Available statistics from CBN (2016) showed that increased government expenditure on construction sector and transport and communication sector has been on the increase in Nigeria over time. For instance, average government expenditure on construction sector increased from 0.26 billion naira in 1980/1989, to 3.24 billion naira in 1990/1999, to 33.59 billion naira 2000/2009 and to 14189.95 billion naira in 2010/2016 while government expenditure on transport and communication sector increased from 0.11 billion naira in 1980/1989, to 2.13 billion naira in 1990/1999, to 30.45 billion naira 2000/2009 and later fell to 22.95 billion naira in 2010/2016.

Despite the increased government expenditure in these sectors, their contributions to GDP have not been very impressive. For instance, the contribution of construction sector to GDP decreased from 0.07 percent in 1980/1989 to 0.03 percent in 1990/1999 and remained 0.03 percent in 2000/2009 and in 2010/2016 while the contribution of transport and communication sector to GDP decreased from 0.24 percent in 1980/1989 to 0.07 percent in 1990/1999 and later increased slightly to 0.11 percent in 2000/2009 to 0.12 percent in 2010/2016.

According to Author (2016), poor planning, corruption, management, personnel, manpower over machines, bureaucracy, foreign exchange fluctuations, insecurity and more are some factors affecting the development of the construction, transport and communication sectors in Nigeria.

It is in the light of the above; that this paper is aimed at investigating empirically how government expenditure on construction, transport and communication sector impact on economic growth in Nigeria from 1980 to 2016. Thus, the paper is structured into five segments. First, is the introduction, following is the review of literature. Third is the methodology. The results were discussed in section four, and lastly, conclusion and recommendations were made.

II. Literature Review

Theoretical Framework and Empirical Review of Literature

The theoretical basis of this paper centers on public expenditure theory as put forward by the 20th century revolutionary economist John Maynard Keynes. Keynes advocated strong support for government spending to create jobs and to allow utilization of unutilized capital at a time of economic downturn when employment of capital and labour was high.

Moreover, scholars have engaged in research exercise overtime, attempting to investigate the long term possible relationship between public expenditure and the growth rate of the economy. For instance, Abu and Abdullahi (2010) used a disaggregated analysis of government expenditure having total capital expenditure on education, government expenditure on transport and communication and government expenditure on health as measure of expenditure. They found that total capital expenditure, total recurrent expenditure and government expenditure on education have negative effect on economic growth.

Amassoma, Nwosa, and Ajisafe (2011) used Error Correction Modeling to determine the linkage between components of government spending and economic growth in Nigeria. They found that expenditure on education, health and transport and communication had

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insignificant effect on economic growth. Also, Nenbee and Medee (2011) investigated the impact of fiscal policy variables on Nigeria's economic growth between 1970 and 2009, adopted VAR methods and Error Correction Mechanism. They found a long- run equilibrium relationship between economic growth and fiscal policy variables such as government expenditure.

Leigh and Neill (2011) examined the effect of a federally-funded local infrastructure spending programme on unemployment rate across all district in Australia in the period 2001 to 2004 using OLS. The empirical evidence showed that higher government spending on roads substantially reduces local unemployment, underscoring the relevant of infrastructure expenditure to employment. Similarly, Adewara and Oloni (2012) examined the connection between the structure of public expenditure and economic growth in Nigeria between 1960 and 2008 using the Vector Autoregressive Model. Their findings showed that expenditure on education has failed to improve growth and employment rate due to the high rate of rent seeking in the country. They also found that expenditure on health and agriculture contributed positively to growth.

Estache and Garsous (2012) used content analysis to examine the impact of government expenditure on infrastructure sector and job creation in developing economies. They revealed that investment on infrastructure can create jobs across sectors, and such job creation can be direct, within the industry and indirect in other sectors of the economy.

Nworji and Oluwalaiye (2012) examined the impact of government spending on road infrastructure development on economic growth in Nigeria for the period 1980-2009. The model for the study was estimated using the Ordinary Least Square (OLS) technique. The outcomes showed that transport and communication, including defence, individually exerted statistically significant impact on the growth of the economy. Also, Arewa and Nwakahma (2013) examined the relationship between government expenditures and a set of macroeconomic variables (GDP), consumer price index and unemployment for the period of 1981 to 2011 in Nigeria. The study adopts Johansson multivariate co-integration for its estimation procedure and found that there is long-run relationship between government expenditure and the specified macroeconomic variables. Further, the study found that an increase in capital expenditure improves economic bliss, while recurrent expenditure is detrimental to growth.

Oktayer and Oktayer (2013) analyzed the relationship between government expenditure and economic growth in Turkey for the period 1950-2010. Data were analyzed with autoregressive distributed lag Cointegration technique in order to test for validity of Wagner's law. The results indicate that there was a long run relationship between non-interest government expenditure and economic growth. Bustan (2015) studied the effects of government spending on transportation sector against economic growth and income distribution. The study used cointegration and ECM for the analysis. The results showed that there is significant relationship between government spending in the transport sector and economic growth as well as income distribution.

Iheanacho (2016) used Johansen co-integration and Error Correction approach to analyze the relationship between public expenditure and economic growth in Nigeria. He found that recurrent expenditure is the major driver of economic growth in Nigeria. For the capital expenditure, this study documents negative and significant effect on economic growth in Nigeria.

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III. METHODOLOGY

Data Sets and Estimation Techniques

For the study, time series data on Gross Domestic Product (GDP), government expenditure on Construction (CNS), government expenditure on Transport and Communication (TRC) and State of Infrastructure proxied by Electricity availability (SIF) were gathered from various issues of Central Bank of Nigeria statistical bulletin between the periods 1980 to 2016. Thereafter, the data were analized using the Error Correction Modeling techniques. Also, the techniques adopted in the study were descriptive statistics, unit root test, co-integration and Error Correction Mechanism (ECM).

Model Specification

The specified equation for the model was stated in a log-linear form as follows:

$LogY_t = \beta_0 + \beta_1 Log(CNS) + \beta_2 Log(TRC) + \beta_3 Log(SIF) + \epsilon$ (1)

Where;

$LogY_t$ = Gross Domestic Product

β_0, β_1, β_2, and β_3 = Parameters

CNS = Government expenditure on Construction

TRC = Government expenditure on transport and communication

SIF = State of Infrastructure proxied by electricity availability

It is expected that increase in these variables (CNS, TRC and SIF) will promote economic growth. Thus, a priori expectations are β_1, β_2, and $\beta_3 > 0$

IV. Results and Discussions

The empirical analysis of data was conducted in five phases. It begins with the descriptive statistics analysis of the data and thereafter the unit root test. Furthermore, co-integration, the Error Correction mechanism and diagnostic tests were conducted.

4.1 Descriptive Statistics

The result of the descriptive statistics is presented in Table 1 below.

Table 1: Descriptive Statistics

	LNGDP	LNCNS	LNTRC	LNSIF
Mean	8.039676	1.579724	0.692132	4.609607
Median	8.340277	1.607436	0.727549	4.559179
Std. Dev.	2.396457	2.959826	2.569565	0.275529
Skewness	-0.150078	0.889310	-0.286843	-0.088636
Kurtosis	1.726887	4.415569	1.683937	2.431969
Jarque-Bera	2.637651	7.966288	3.177588	0.545880
Probability	0.267449	0.018627	0.204172	0.761138
Observations	37	37	37	37

Source: *Author's Computation (2018)*

Table 1 showed that the standard deviation calculated for government expenditure on construction was the most volatile in the series with a value of 2.96 while state of infrastructure proxied by electricity availability was the least volatile variable with a value of 0.28. The calculated values for the skewness statistic for the variables – GDP, TRC and SIF were negatively skewed, suggesting that their distributions have a long left tail while CNS was positively skewed, meaning that the distribution has a long right tail. Again, the

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kurtosis statistic of GDP, TRC and SIF were platykurtic, meaning that their distributions were flat relative to normal distribution while CNS was leptokurtic, meaning that the distribution was peaked relative to normal distribution. Again, the Jarque-Bera statistic (J-B) for CNS variable rejected the null hypothesis for normal distribution while those of GDP, TRC and SIF variables accepts the null hypothesis of normal distribution at 5 percent level of significance. Based on these observations, it concluded that there is unit root (non-stationarity) in the series. Thus, estimating these variables at level might not give good results, hence, the need to conduct the unit root test.

4.2 Unit Root Test

The result of the unit root test using the ADF are reported in Table 2. The result shows that all the variables GDP, CNS, TRC and SIF were stationary in their 1st difference.

Table 2: Unit Root Test Results

Augmented Dickey Fuller (ADF) Test					
Variables	Level	5% Critical Values	1st Diff.	5% Critical Values	Status
LNGDP	-1.183397	-2.945842	-6.109542	-2.948404	I(1)
LNCNS	0.970380	-2.945842	-3.870177	-2.948404	I(1)
LNTRC	-1.236619	-2.945842	-7.912967	-2.948404	I(1)
LNSIF	-2.478867	-2.945842	-8.123896	-2.948404	I(1)

Source: *Author's Computation (2018)*

4.3 Co-integration Test Result and Analysis

Since the series are integrated of order one, that is, I(1) we then proceed to conduct the co-integration test using the Engle-Granger two step procedure. The result of the Engle-Granger Co-integration test is presented in Table 3 below.

Table 3: Engle and Granger Co-integration Test Result

Variable	Level	5% Critical Values	Order of Integration	Remarks
RESID(ECM)	-3.648876	-2.945842	I(0)	Co-integrated
Stationary at both 1%, 5% and 10% Level of Significance				

Source: *Author's Computation (2018)*

From Table 3, the Engle and Granger two stage co-integration procedure of the model depicts that the residual from the regression result are stationary at 5 percent level of significance. This means that all the explanatory variables (CNS, TRC and SIF) are co-integrated with economic growth (GDP) in Nigeria within the period under consideration (1980-2016). In order words, there is a long run relationship between the dependent and independent variables.

4.4 Parsimonious ECM test result and Analysis

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In order to confirm the existence of a co-integrating vector among the variables, the ECM is employed. This is based on the general-to-specific rule and the results are presented on Table 4.

Table 4: Parsimonious ECM Result

Dependent Variable: D(LNGDP)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.262322	0.032991	7.951355	0.0000
D(LNCNS(-1))	-0.085066	0.054784	-1.552744	0.1317
D(LNTRC(-1))	-0.062049	0.040213	-1.542989	0.1341
D(LNSIF)	-0.373931	0.242510	-1.541917	0.1343
D(LNSIF(-2))	-0.474826	0.201995	-2.350680	0.0260
ECM(-1)	-0.190153	0.053188	-3.575094	0.0013
R-squared	0.359265	Durbin-Watson stat		2.086727
F-statistic	3.139956	Prob(F-statistic)		0.022516

Source: Author's Computation (2018)

Table 4 shows that the calculated Adjusted-R square is 0.244847, suggesting the regressors in the model account for about 24 percent of the total variation in the GDP. The remaining 76 percent are due to factors exogenous to the model but covered by the error term. Also, the overall regression result of the dynamic model is significant at 5 percent level as shown by the F-calculated of 3.139956 which is greater than the table value of 2.92. The ECM is rightly signed and is also significant. It shows about 19 percent disequilibrium in GDP in the previous year is corrected in the current year since the data used are annual. Also, the Durbin-Watson (D-W) statistics value is 2.087, meaning that there is no serial autocorrelation in the model.

Furthermore, Table 4 shows that the coefficient of past lag (1) of government expenditure on construction (CNS) is negative, that is -0.085066. This implies that one percent increase in government expenditure on construction reduces economic growth by about 0.09 percent. The coefficient of past lag (1) of government expenditure on construction does not conform to a priori in line with economic theory and is not statistically significant at 5 percent level. This finding agrees with the works of Amadi et al (2013).

Furthermore, the results indicate that the coefficient of government expenditure in transport and communication (TRC) is negative, that is -0.062049. The implication of this result is that one percent increase in government expenditure in transport and communication reduces economic growth in Nigeria by about 0.06 percent within the period under review. The coefficient of government expenditure in transport and communication does not conform to a priori in line with economic theory and is statistically significant with GDP in Nigeria. These finding corroborate with Amadi et al (2013).

Again, the coefficients of current and past lag (1) of electricity availability are negative, that is -0.373931 and -0.474826. This implies that one percent increase in current and past lag (1) of electricity availability reduces economic growth (GDP) in Nigeria over the period under review. The coefficient of current electricity availability does not impact significantly on GDP while past lag (1) of electricity availability impacts significantly on GDP at 5 percent level.

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4.5 Diagnostic Testing Results

The result of the diagnostic or post estimation test results is presented in Table 5 below. Table 5 shows the Normality test (using Jarque-Bera Statistic), Serial Correlation test (using Breusch-Godfrey Serial Correlation LM Test), Heteroscedasticity test (using Breusch-Pegan-Godfrey Test) and Stability test (using CUSMSQ test). The study reveals that the model passes the entire post estimation test as presented in Table 5 below. Also, the model passes the stability test as shown in figures 1 below. This is so because s the plots of the CUSUM and CUSUMSQ remained within the critical 5 percent limit.

Table 5: Diagnostic Test Results

Test	Result	Prob.
Normality Test	2.588021	0.274168
Breusch-Godfrey Serial Correlation LM Test	1.482802	0.4764
Heterosckedasticity Test	9.668953	0.0852

Source: *Author's Computation (2018)*

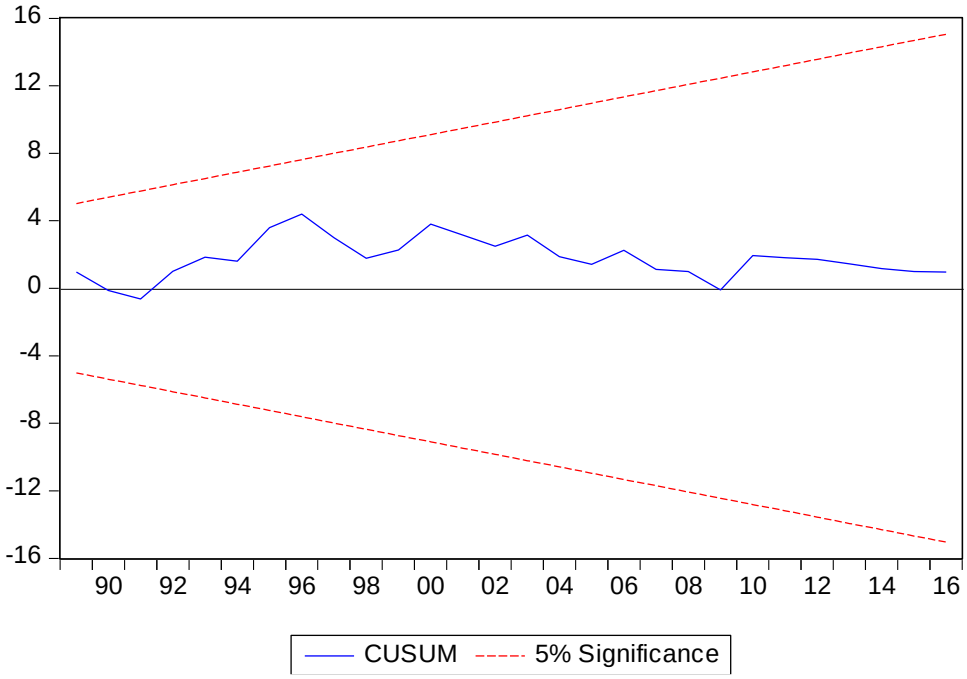

Figure 1: Stability Test Result based on CUSUM

5. Conclusion

This paper empirically examined the effect of government expenditure on construction, transport and communication in Nigeria from 1980 to 2016. The study adopts the Engle-Granger Co-integration and Error Correction Modeling techniques for the analysis. Data for the empirical analysis were sourced from secondary sources like CBN Statistical Bulletin (Various- Issues). The results of analysis indicated that a long run relationship exists among the variables (i.e. government expenditure on construction, transport and communication and electricity availability and economic growth) based on the Engle-Granger co-integration test. Furthermore, the paper revealed that both government

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expenditure on construction, transport and communication have a negative and insignificant relationship with economic growth. Again, current and past (lag 2) of Electricity availability had a negative relationship with economic growth.

In the light of the empirical evidence, the following are recommended for policy considerations:

i. That the government should ensure that the construction, transport and communication sectors are adequately funded so as to boost economic growth;

ii. The transportation and communication sector of Nigeria needs total overhauling because an increase in government spending in this sector will boost economic growth in the country. This can be achieved through strengthening regulatory agencies such as Nigerian Communication Commission (NCC), Federal Airport Authority of Nigeria (FAAN), Nigerian Ports Authority (NPA), Nigerian Maritime Administration and Safety Agency (NIMASA) and other government regulatory agencies in this sector.

iii. There should be proper implementation of the fiscal responsibility laws to ensure greater accountability, fiscal discipline and prudence in the use of funds allocated to these sectors. This would not only improve the sectors, but also boost economic growth and development in Nigeria.

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