



Impact of Government Infrastructural Expenditure on Economic Growth: Evidence from Nigeria

Jude Ofili Ikubor¹, Richard Chinye Osadume² Adamu Jibir³ & Aisha Adamu Hassan⁴

¹Department of Economics,
Nigerian Defence Academy, Kaduna.

²Department of Marine Economics and Finance,
Nigeria Maritime University, Okerenkoko,
Delta-State.

^{3,4}Department of Economics,
Gombe State University, Gombe-Nigeria

Abstract

The need for infrastructural development cannot be over emphasized. It serves as a key to growth and development for many countries in world today. Developments of sectors in the economy particularly the health sector, education sector, transport and construction bring even development. This paper attempts to examine government infrastructural expenditure on economic growth in Nigeria covering a period 1981-2019. Time series data was used and analysed using descriptive statistics and ARDL model. The results show that in the short-run, government expenditure on health was found to be significant though negatively related to economic growth while government expenditures on education, gross fixed capital formation, and transport and construction were all insignificant in relation to economic growth. Similarly, in the long-run, government expenditure on health showed a significant relationship to economic growth while the other explanatory variables; government expenditure on education, gross fixed capital formation as well as government expenditure on transports and construction were insignificant in explaining the nexus between government expenditure on infrastructure and economic growth in Nigeria. Thus the paper recommends that government should allocate more funds towards developing the health sector through increase in budgetary allocation.

Keywords: Government Expenditure, Gross Capita Formation, Economic Growth, Infrastructure.

JEL Code: O40, O14, H11, H50

Contribution/Originality:

This study contributes to the body of knowledge in Public Economics by specifically analysing the effect of public spending on infrastructure on the performance of Nigerian economy. This is because majority of the previous studies studied public expenditure without aggregating it to various components like infrastructure. Thus, the findings of this study provide specific policy recommendations on public policy choices.

1.0 Introduction

The public sector has a role to play in society to ensure the smooth running of economic activities. Infrastructure is a key to economic growth; it serves as a catalyst for public development in the entire government agenda. Infrastructure expenditure grows the economy because it affects most human endeavours in various fields of life such as production, construction, technology and procurements. Infrastructures are those socio-economic amenities that promote or facilitate economic growth. The need for infrastructural development cannot be over emphasized.

Amadi and Amadi (2020) see government expenditure on infrastructure as enormous because it is capital-intensive. Many countries give infrastructure expenditure an utmost priority because of its role in the country's economic development. Infrastructure can bring about even development. Its potentials

¹ Corresponding Authors' e-mail & phone No.: ojikubor@nda.edu.ng; +234806 285 3953



are numerous; Infrastructure such as road, communication, transportation and education are amongst the basic requirement for economic development. Infrastructure level affects the developmental ratings of a nation. Infrastructure contributes to the score of Nigeria's economic growth.

However, economic growth is determined by these social amenities both for advanced and less developed countries today. Most developed nations such as Britain, United State of America and France have been classified as developed nation because of the level of infrastructural development in their countries. As observed by Babatunde (2018), Nigeria is currently experiencing an economic downturn due to dwindling oil revenue, upon which the country relies for its sustenance.

Though, high level of mismanagement of the resources affects infrastructural development. Nigeria government has continued to intensify efforts to increase spending on infrastructure with a view to gain economic growth in the country in order to ease the hardship of the citizens. Meanwhile, advanced economies provided efficient transportation, communication, basic healthcare facilities, standard education etc. But, ironically this is not the case in Nigeria. This is evident from the annual or quarterly growth rate recorded in the present times which was not impressive due to bad leadership, particularly corruption that bedevilled the country's economic performance.

Hence, investment in infrastructures and productive activities is assumed to positively contribute to the growth of the economy whereas spending on consumption by the government retard growth. It is argued that the country will benefit socially and economically from government investment (spending) in health, roads, education, communication etc. Nigeria economy is challenged with poor infrastructural facilities, ranging from poor roads networks, lack of educational facilities and healthcare facilities, unstable power supply to mention a few (Jibir & Aluthge, 2019a). These complex problems affected the economic growth of the nation. The few basic government infrastructures available in the country are depreciated especially with regards to the road networks.

In addition, Nigeria government seems to be wasting fund over the years because there is no remarkable achievement on the level of infrastructural development. This is because despite all the money spent on infrastructure, Nigeria still remains backward in infrastructural development. There is still darkness in the land, poor road network, no portable drinking water, the resultant effect are high level of poverty rate and unemployment situation. This is because of the fact that adequate infrastructure can bring about increase in industries as well as employment opportunities and therefore reduce poverty. Nigeria is currently experiencing an economic downturn due to dwindling oil revenue, upon which the country relies for its sustenance.

Though high level of mismanagement affects the development governments continue to increase spending on infrastructure with a view toward economic growth to ease the burden of citizens. Specifically, efficient transportation and communication should be available, people should enjoy basic healthcare delivery with minimal effort and there should be food security; but, ironically, this is not the case in Nigeria. The problem is that the economic growth recorded has not translated into improved welfare as expected in some nations (Babatunde, 2018; Jibir & Babayo, 2015).

It is against this backdrop that this paper attempts to examine the effects of government infrastructural expenditure on economic growth in Nigeria. The paper is divided into five sections, section one covers the introduction, sections two and three consist of the literature review and methodology respectively. Sections four and five report the results and discussion respectively while section five contains conclusion and policy recommendations.



2.0 Literature Review

2.1 Theoretical Framework

Several theories are available in the economic literature that seeks to explain the relationship between government expenditure and economic growth. After a careful review of the related literatures concerning the objective of the paper, three different theories were found to be useful in explaining the link between government infrastructural expenditure on economic growth in Nigeria.

2.1.1 Stakeholder Theory

Stakeholder theory is based on the assumptions that morals and values in managing an organization, originally is the premise for which stakeholders provide infrastructure. Edward Freeman's view on the stakeholder theory recognizes that there are parties involved in management, such as employees, customers, contractors, communities, public agencies, political groups, trade associations, competitors and trade unions, who sometimes scrutinize government spending (Parmer, Freeman, Harrison & De colle, 2010).

Stakeholder theory is used in this study as a critical-diagnostic tool to identify the points at which stakeholders are vulnerable to breakdown in the spending process in the absence of moral constraints on the part of government spenders. For example, stakeholder in a country include; electorates, tax payers or citizens who are interested to know how government's officials spend country's money. They expect a business-like approach to governance in the areas of utmost good faith, transparency and accountability, as enshrined in new public management law.

2.1.2 Public Expenditure Theory

The public sector has a role to play in the society to ensure the smooth running of economic activities. Also, the goals of government are sometimes numerous and have several stakeholders involved. Therefore, to avoid chaos, efficiency and equity should guide public spending (Hindrizia & Myles, 2005). Theories of the public sector explain that efficiency concerns the smooth running of public activities. Efficiency has to do with the coordination, collection and monitoring of government revenue and expenditure towards the provision of services to the stakeholders.

Equity is about the fair sharing of public gains among stakeholders. The applicable public expenditure theory in this study is based on Wagner's law, known as the law of increasing state spending. Wagner's law was formulated by Adolph Wagner (1835–1917). The theory states that in any country, public expenditure constantly rises as income growth expands.

The law is based on the promise of four principles, that growth results in increased complexity because there are increases in public expenditure; that public expenditure increase as a result of urbanization and externalities; that the goods supplied by the public sector should have a huge income elasticity of demand; and that growth results in an increase in demand with a resultant increase in public expenditure. This study expects that if growth in expenditure matches economic growth, it should also translate into economic development. However, this has not been the case in reality in developing nation like Nigeria because sometimes there are elements of fiscal illusion in government activities.

2.1.3 The Keynesian Perspective on Government Expenditure

Following the 1929-30 Great Depression, the classical economists that opposed government intervention argued that, strong trade unions prevented wage flexibility which resulted in high

unemployment. The Keynesians, on the other hand, favoured government intervention to correct market failures. Keynes (1936) in his work “General Theory of Employment, Interest and Money” criticized the classical economists for putting too much emphasis on the long run. According to Keynes, “we are all dead in the long run”. Keynes believed depression needed government intervention as a short term cure. Increasing saving will not help but spending. Government should increase public spending giving individuals, purchasing power and producers would produce more, creating more employment. This is the multiplier effect that shows causality from public expenditure to national income.

Keynes categorized public expenditure as an exogenous variable that can generate economic growth instead of an endogenous phenomenon. Keynes believed the role of government to be crucial as it can avoid depression by increasing aggregate demand and thus, switching on the economy again by the multiplier effects. In Government spending is a tool that brings stability in the short run but need to be done cautiously as too much of public expenditure would lead to inflationary situation while too little of it would lead to unemployment. From the Keynesian thought, public expenditure can contribute positively to economic growth.

Hence, an increase in the 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 multiplier.

2.2 Empirical Literature

Over the years researchers had extensively dwell on public sector in aggregate structure, capital and recurrent expenditure as a link to economic growth rate in Nigeria, in spite of the debates and controversial argument, the issue still remain a major concern to public sector economist and practitioners. The ambiguity arising from the result post a major challenge to contemporary economist as it is expected to make this more interesting viewing the argument from disaggregating structure in which capital expenditures are used as linkage to economic growth rate in Nigeria.

For example, Okoro (2013) investigated the impact of government spending on the Nigerian economic growth from 1980 to 2011, using basic econometric tools to estimate the model specified. Real Gross Domestic Product (RGDP) was adopted as the dependent variable while government capital expenditure (GCEXP) and government recurrent expenditure (GREXP) represents the independent variables. With the application of Granger Causality test, Johansen Co-integration Test and Error Correction Mechanism, the result shows that there exists a long-run equilibrium relationship between government spending and economic growth in Nigeria.

Tajudeen and Fasanya (2013) examined the impact of public expenditure on economic growth in Nigeria during the period 1970 to 2010 making use of annual time series data. The study employs the bounds testing (ARDL) approach to examine the long run and short run relationships between public expenditure and economic growth in Nigeria. The bounds test suggested that the variables of interest put in the framework are bound together in the long-run. The associated equilibrium correction was also significant confirming the existence of long-run relationships. The outcome indicate the impact of total public spending on growth to be negative which is consistent with other past studies. Recurrent expenditure however was found to have little significant positive impact on growth.

Furthermore, Oni (2014) empirically analyzed the growth impact of health expenditure in Nigeria, the result shows that gross capital formation, total health expenditures and the labour force productivity are important determinants of economic growth in Nigeria while life expectancy rate has negative impact



on growth. Chris and Anyingang (2015) investigated the effect of public expenditure on the growth and development of Nigerian economy, using aggregate expenditure, capital expenditure and recurrent expenditure on economic growth and development in Nigeria. The findings revealed that aggregate expenditure had a positive impact on economic growth and development of the Nigerian economy and recurrent expenditure had a significant relationship on the growth and development of the Nigerian economy.

In another study conducted by Ebong (2016) examines the impact of government capital expenditures on economic growth in Nigeria during 1970 and 2012. A multiple regression model based on a modified endogenous growth framework was utilized to capture the interrelationships among capital expenditures on agriculture, education, health economic infrastructure and economic growth. Government capital expenditures had differential effects on economic growth. Capital expenditures on Agriculture did not exert any significant influence on growth both in the long and short runs. Similarly, the corresponding short-run and long-run impacts on growth of capital expenditures on Education were 0.45 and 0.48, respectively.

These results were positive and statistically significant at the 5% level. The short-run impact of health capital expenditures on economic growth was 0.21, while the long-run impact was 0.16. These impacts were negative and insignificant. Expenditures on economic infrastructure had significant positive impacts on growth of 0.28 in the short-run and 0.32 in the long-run. Moreover, these expenditures do not crowd-out private investment. These results indicate that government expenditure on human capital development through the social services sector tended to promote economic growth unlike that on Agriculture.

Driton and Lani (2017) evaluated the impact of public expenditure on economic growth of Kosovo for the period (2000-2016). The structure of the econometric model is built by two economic theories, Wagner and Keynesian, where these two economic concepts support the results of the paper, that public expenditure and economic growth have a positive relation, but public expenditure does not have a direct impact on economic growth, but can have a stimulate effect on the economic growth process. The results of the econometric model showed that none of the public expenditure categories in Kosovo had any impact on economic growth of Kosovo over the period 2000-2016.

The general conclusion is that public expenditure in Kosovo has been characterized by an unproductive public expedition, for the period 2000-2016, the effect of public expenditure on economic growth has not had the necessary and reasonable impact on achieving the economic target in Kosovo. The findings of the paper can be used by Kosovo's own government to orient the fiscal policies in Kosovo. Furthermore, Felix and Ifeoma (2017) examined the impact of government expenditure on Nigeria growth, using disaggregate approach, the result shows 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 economic growth, expenditure on health has a positive but insignificant impact on economic growth

More so, Babatunde (2018) examined the government spending on infrastructure and economic growth in Nigeria using primary and secondary data for the study. The study indicate that government spending on transportation and communication, education and health infrastructure has significant effect on economic growth, spending on agricultural and natural resources infrastructure recorded a significant inverse effect on economic growth in Nigeria. The study conclusively argued that an element of fiscal illusion was observed in the government spending on agriculture and natural resources indicating that government is contributing as much as the private sector in spending on agriculture and natural



resources infrastructure in Nigeria. Meanwhile, Ewubere and Maeba (2018), explained the effect of public expenditure in construction and transportation on employment in Nigeria. The results show that there exists a long run relationship among the variables. The result of analysis showed that in the long run, government expenditure will address the pitfalls in the country employment.

Amadi and Amadi (2020) examine the effects of government infrastructural expenditure on economic development in Nigeria. Secondary data sourced from reported annual spending on selected infrastructure and annual Gross Domestic Products were statistically analyzed. The pre-testing was carried out using Augmented Dickey–Fuller and Phillip–Perron model. Weighted least square was also used to test the sample of 37-year annual time series using vector error correction model. The data analysis was done with descriptive statistics. Findings from the study revealed that government spending on transportation, communication, education and health infrastructure has significant effects on economic growth; spending on agriculture and natural resources infrastructure recorded a significant inverse effect on economic growth in Nigeria.

Stanley (2020) investigates the effect of government public expenditures on Nigeria's economic growth and development using the sectorial economic function approach. The real Gross Domestic Product (GDP), which is the outcome variable in this study, was employed as the proxy for economic growth while government's expenditures on administrative services, economic services, social and community services, and transfers were used as the predictor variables in this study. The results from the co-integration test and Vector Error Correction Model estimates reveal that all the predictor variables, apart from expenditure on administration, have a positive relationship with economic growth. expenditures on economic services and social and community services have positive and significant relationship with economic growth, and government transfers has a positive but insignificant relationship with economic growth. Emphatically, expenditure on administrative services has a significant negative relationship with economic growth. The result from Wald coefficient diagnostic test reveals that there is short run causality running from the public expenditure aggregates to economic growth.

Onifade (2020) evaluated the impact of government expenditures on economic growth: new evidence from the Nigerian economy, using capital expenditure, recurrent expenditure variables, and the result shows the existence of a long 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.

More so, Owui (2020) investigated the link between government capital expenditure and economic growth, using annual time series data for the period from 1972-2018. The result of the co-integration test showed that the variables are co-integrated and hence there is a long run relationship among them. The granger causality test revealed that there were bi-directional relationship between gross domestic product and capital expenditure on social and community services, expenditure on administration, expenditure on economic services and expenditure on transfers.

The empirical results showed that previous one and two period values of gross domestic product have positive and significant impact on the current value of gross domestic product in Nigeria. The results also showed that public capital expenditures on administration have positive and significant impact on economic growth. Further examination of the results showed that capital expenditure on economic

services has positive impact on economic growth in Nigeria. Meanwhile the results showed that capital expenditure on social and community services has positive impact on economic growth. Lastly, the results revealed that capital expenditure on transfer has negative relationship with economic growth. The study recommended that government should increase its spending in capital projects and also reduce expenditure on consumption in Nigeria.

It can be seen from the above empirical studies that most of them did not attempt to find the effect of investment, as it relates to infrastructural development on economic growth rate in Nigeria. Keynes (1936) categorized public expenditure as an exogenous variable that can generate economic growth instead of an endogenous phenomenon, which can be made possible through a buildup of investment, that stimulate aggregate demand, that is a crucial tool for economic growth in Nigeria.

3.0 Methodology and Sources of Data

3.1 Sources of Data and Variable Measurement

The paper used annual time series data covering the period 1981-2019. The data of all variables were sourced from annual report on selected infrastructure. The real gross domestic product (RGDP) is used as the proxy of economic growth which is the dependent variable in the paper. While gross fixed capital formation is used as a proxy of investment which is the independent variable and expenditure on health, education, expenditure on transport and communication were used as the control variables.

3.2 Model Specification

The model is built in line with theoretical framework of Keynesian perspective on government expenditure, which argues that increase in government spending on infrastructure leads to an increase in employment, profitability and investment through multiplier effect on aggregate demand. The main objective is to have an overview of government infrastructural expenditure on economic growth in Nigeria. Therefore, the model used was adopted from Amadi and Amadi (2020) who examined government expenditure as a driver for economic growth in Nigeria. The first step is to state the functional relationship between the dependent and independent variables.

$$\text{Economic growth} = f(\text{Government expenditure infrastructure}) \quad (1)$$

Equation (0.1) above can be expanded to incorporate the dependent and independent variables. Economic growth could be replaced by Real Gross Domestic Product while independent and control variables are; gross fixed capital formation, government expenditure on health, government expenditure on education, government expenditure on transportation and construction.

$$RGDP = f(GEH, GEE, GFCF, GETC,) \quad (2)$$

RGDP = Real Gross Domestic Product proxy for economic growth rate as dependent variable, while other variables are; GFCF = Gross fixed Capital Formation, GEH= Government expenditure on health, GEE= Government expenditure on education, GETC = Government expenditure on transportation and construction and f shows a functional relationship

Model (2) can be written in econometric form to include the constant term β_0 , the coefficients of the independent variables (i.e $\beta_1 \dots \dots \beta_4$) and the error term (ε_t). Therefore, model (2) can be expressed as:

$$\ln RGDP_t = \beta_0 + \beta_1 \ln GEH_t + \beta_2 \ln GEE_t + \beta_3 \ln GFCF_t + \beta_4 \ln GETC_t + \varepsilon_t \quad (3)$$

All the explanatory variables remained as previously defined above.

3.3 Tools of Analysis

In every time series analysis test of stationarity has become paramount. This is because the results obtained from the test will help the researcher to confidently select the best model of the study. In view of this, this paper has three important steps; the first step is the stationarity test; the second step is the co-integration test and the third step is the diagnostic test.

3.3.1 Stationarity Test

The first step is the stationarity test which is among pre-testing stage. However, knowing the stationarity properties of the variables will help in several ways. First, it helps in selecting the correct model to be used. Second, it helps to ascertain whether previous values of the explanatory variables determine their present values which may give a spurious result. In this paper, Augmented Dickey Fuller (ADF) test developed by Dickey and Fuller was used to test for the stationarity.

3.3.2 Co-integration Test

The second step is the co-integration test of autoregressive distributive lag (ARDL) bounds testing approach to co-integration developed by Pesaran and Shin (1995) to examine the long-run relationship between the dependent and explanatory variables. The use of this technique has many advantages over other techniques. This is because ARDL model can be used even when there is a combination of 1(1) and 1(0) as against Johansen test which requires all variables to be stationary at 1(1) for it to be applicable. Secondly, it can also be applied even when the sample size small.

In the line with the above, the ARDL model is specified as a real gross domestic variable (RGDP) as a function of lagged value of itself and the current lagged values of the explanatory variables. In ARDL model, the first step is to estimate conditional ARDL and the model is stated as:

$$\begin{aligned} \Delta \ln RGDP_t = & \beta_0 + \beta_1 \ln RGDP_{t-1} + \beta_2 \ln GEH_{t-1} + \beta_3 \ln GEE_{t-1} + \\ & \beta_4 \ln GFCF_{t-1} + \beta_5 \ln GETC_{t-1} + \sum_{i=1}^n \theta_{i1} \Delta \ln RGDP_{t-1} + \sum_{i=1}^n \theta_{i2} \Delta \ln GEH_{t-1} + \\ & \sum_{i=1}^n \theta_{i3} \Delta \ln GEE_{t-1} + \sum_{i=1}^n \theta_{i4} \Delta \ln GFCF_{t-1} + \sum_{i=1}^n \theta_{i5} \Delta \ln GETC_{t-1} + \varepsilon_t \end{aligned} \quad (4)$$

Having stated the conditional ARDL model, to obtain the long-run coefficient, Equation (5) is specified as:

$$\begin{aligned} \ln RGDP_{t-1} = & \beta_0 \sum_{i=0}^p \beta_0 \ln RGDP_{t-1} + \sum_{i=0}^{p1} \beta_2 \ln GEH_{t-1} + \\ & \sum_{i=0}^{p2} \beta_3 \ln GEE_{t-1} + \sum_{i=0}^{p3} \beta_4 \ln GFCF_{t-1} + \sum_{i=0}^{p4} \beta_5 \ln GETC_{t-1} + \varepsilon_i \end{aligned} \quad (5)$$

Since long-run co-integration has been stated in equation (5) above, the short-run model of the ARDL can be specified in the following equation:

$$\Delta \ln RGDP_{t-1} = \beta_0 \sum_{i=0}^p \beta_1 \ln \Delta RGDP_{t-1} + \sum_{i=0}^p \beta_2 \ln \Delta GEH_{t-1} + \sum_{i=0}^p \beta_3 \ln \Delta GEE_{t-1} + \sum_{i=0}^p \beta_4 \ln \Delta GFCF_{t-1} + \sum_{i=0}^p \beta_5 \Delta GETC_{t-1} + \theta ECM_{t-1} + e_t$$

(6)

Where β_1 – β_5 remain as defined in the previously above. While Δ represents coefficients of short-run dynamic to be estimated, θ represents the speed of adjustment, ECM is the error correction term.

4.0 Results and Discussion

4.1 Descriptive Statistics

This section captures the analysis and interpretation of results. It begins with a summary statistics. The result of the descriptive statistic in table 1 below shows that the average (i.e. mean and median) of each series showed a good degree of consistency with the dependent variable (RGDP). This was evidenced by the fact their values lied between the maximum and minimum values. With regard to level spread of the series around its average, all the series were relatively evenly spread. This was evidenced by the consistent values of standard deviation that each of the series had, with the exception of gross capita formation (GFCF), proxy as investment that exhibited negative exceptional shock

TABLE 1: Descriptive Statistic

	RGDP	GEH	GEE	GFCF	GETC
Mean	3.130505	71.22897	120.0264	2177095.	14.82462
Median	3.444667	16.64000	43.61000	1464300.	8.040000
Maximum	33.73578	296.4400	465.3000	4331250.	90.03000
Minimum	-13.12788	0.040000	0.160000	11.96524	0.030000
Std. Dev.	7.435373	96.63299	154.1304	1444845.	19.85018
Skewness	1.340412	1.166512	1.076703	0.131216	1.928468
Kurtosis	9.072537	2.885867	2.638720	1.732458	7.207093
Jarque-Bera	71.60161	8.866042	7.747485	2.722740	52.93532
Probability	0.000000	0.011879	0.020780	0.256309	0.000000
Sum	122.0897	2777.930	4681.030	84906708	578.1600
Sum Sq. Dev.	2100.821	354841.5	902735.1	7.93E+13	14973.13
Observations	39	39	39	39	39

Source: Researcher's computation using E-views 10

The first two descriptive statistics are the mean and median which measure the central tendency for all the variables. Specifically, the mean shows the arithmetic average of the distribution, while the median

shows the middle value for the entire distribution, with GFCF having the highest value. The standard deviation shows the level of volatility in the variables, it displays the rate at which each variable deviates from the mean value. From the descriptive statistics, GFCF is the most volatile (1444845) among the variables. This expresses the desire to grow gross fixed capita formation (GFCF) proxy as investment as medium of reducing government spending on capital expenditure in Nigeria. All the series are positively skewed less than 3, which imply that they are normally distributed. Also, the result of the Jarque-Bera test of normality shows that all the variables are normally distributed with probability values less than 0.05 levels of significance, with the exceptional behavior of gross capita formation (GFCF) which implies 5% level of insignificance. Sum and Sum Square are normal with the except gross capita formation proxy as investment, this is ugly behavior of gross capita formation variable is a great call for concern in Nigeria as it relates to public expenditure as linkage to economic growth rate in Nigeria.

4.2 Unit Root Test

TABLE 2: Results of Augmented Dickey Fuller (ADF) Unit Root Test.

Variable	ADF calculated value in level	ADF Calculated Value at 1 st Difference	Mckinnon 5% Critical Value	Order of Integration
RGDP	-4.855660	-	-2.941145	1(0)
GEH	2.604933	-6.607377	-2.945842	1(1)
GEE	1.102679	-5.246934	-2.943427	1(1)
GFCF	-0.581629	-8.950802	-2.943427	1(1)
GETC	-2.860769	-4.989097	-2.943427	1(1)

Source: Researcher's computation using E-views10

The unit root test in table 2 a shows that Real Gross Domestic Product (RGDP) was stationary at level while explanatory variables, Government expenditure on health (GEH), Government expenditure on education (GEE), Gross Fixed Capita Formation (GFCF), Government expenditure on transport and construction (GETC) were found to be stationary at first difference since the ADF is greater than the Mckinnon 5% critical values.

4.3 Bounds Test Approach to Co-integration (table 3)

In order to test the existence of long run relationship between the dependent and independent variables, F test (bounds test) is used to test for co-integration in the model.

Table 3: Result of Bounds Test for the Presence of Co-integration

Result of bound test for co-integration				
Bound test for model 1 (1,0,1,0,1,0,0)				
Test statistics	Value	Significance	I(0)	I(1)



F-statistics	7.4482	10%	2.45	3.52
K	K= 4	5%	2.86	4.01
		1%	3.74	5.06

Source: Researcher's Computation using E-views 10.0.

From table 3, it can be seen that the value of the computed F. Statistic which is 7.4482, which is greater than the upper and lower critical values at all levels of significance. This means that there is co-integration between the dependent and independent variables over the period of the study. Having established the existence of the long run relationship in the model, the next step is to estimate the long- and short-run relationship between the variables.

4.4 Long Run and Short-Run Relationships

Since the model is found to be co-integrated, the long run and short-run parameters of the ARDL models are estimated and the results are presented in Table 4.

Table 4: Estimated long-run and short-run Coefficient using ARDL Approach

Long-run Model			Short-run Model		
Dependent variable: RGDP			Dependent variable: RGDP		
Regressor	Coefficient	P.value	Regressor	Coefficient	P.value
InGEH	-0.6305	0.0396	Δ GEH	-0.3709	0.0061
InGEE	0.3724	0.0806	Δ GEE	0.1731	0.0637
InGFCF	0.0005	0.2652	Δ GFCF	-4.1670	0.3481
InGETC	-0.2505	0.4072	Δ GETC	-0.0247	0.8328
C	-3.2122	0.5352	ECM(-1)	-0.7745	0.0030
-	-	-	R-Squared	0.7812	-
-	-	-	Adjusted R-Squared	0.5868	-

Notes: InGEH, InGEE, InGFCF, InGETC indicates log of government expenditure on health, log of government expenditure on education, log of gross fixed capital formation and log of government expenditure on transport and construction

Source: Researchers' computation using E-views 10.0.

Table 4 reported both long-run and short run coefficients. It is clearly seen that, government expenditure on health (GEH) is found to be negatively related with economic growth in Nigeria but found to be significant according to the probability value both in the long-run and short-run. This implies that a 1% unit increase in economic growth rate brings about 0.6305% and 0.3709% unit corresponding decrease in government expenditure on health in the long-run and short-run respectively. This signifies that the

amount of money allocated for the development of health sector in the country is very minimal. For instance, the current covid-19 pandemic exposes the inadequacy of the public health sector to cater for the urgent need of the disease in the country. It is imperative to grow our health sector as well as reduce capital flight in the sector, through adequate provision of funds to manage this sector. Health sector development is a major component of public sector development of any nation, it is one of the indices that is used to determine the economic growth of nation; a healthy nation is a wealthy nation.

In addition, government expenditure on education (GEE) is positively related to economic growth both in the long-run and short-run, though insignificant. One percent (1%) unit increase in economic growth rate brings about a corresponding increase of 0.3724% and 0.1731% unit of government expenditure in educational sector in the long-run and short-run respectively. It is a clear indication of government not given educational sector an enabling environment to perform optimally. Furthermore, Inconsistency and poor implementation of educational policy had over time hindered the performance of the institution

More so, gross fixed capital formation (GFCF) is positively associated with economic growth in the long-run but have a negative relationship with economic growth in the short-run but found to be insignificant. This finding provide support for a study conducted by Jibir et al, (2018). Finally, government expenditure on transport and construction (GETC) is negatively related with economic growth both in the long-run and short-run. For example, a 1% unit increase in economic growth rate brings about 0.2505% unit corresponding decrease in government expenditure on transportation and construction. The development of infrastructure on road, railway network will create human capital development, technology transfer, commercialization, as a nexus to economic growth in Nigeria. The poor road, railway network had made economic growth difficult, internal, external, bilateral trade had become impossible, at the long retarding economic growth processes.

Again, the goodness of fit statistics was impressive with R^2 value of 0.7812. The ECM (-1) must be negative and significant for it to perform the role of adjustment. As observed from table 4, the ECM (-1) had the expected negative sign and was significant at the 5% level. It shows that the coefficient of ECM (-1) is -0.7745 with the probability value 0.0030. The coefficient of ECM (-1) in the model indicates that the speed of adjustment of any past deviation to long run equilibrium is 77%. This captures the rate of adjustment of the dependent variable with respect to the independent variables.

5. Conclusion and Policy Recommendations

Government spending on infrastructures is considered as a catalyst for economic growth and development. Many countries today place more emphasis on the development of key areas of the economy such as; education, health, transports, communication to mention a few that will help to boost the economic performance. This paper attempts to examine the nexus between government expenditure on infrastructures and economic growth. The data is analyzed using both descriptive and inferential statistics. The model adopted is ARDL, the model is chosen because of the stationarity properties of the variables (combination of 1(1) and 1(0)). The findings of the paper indicate that among the four explanatory variables included in the model, only one variable that is government expenditure on health (GEH) is found to be significant in both short-run and long-run periods, while the other variables such as government expenditure on education, gross fixed and capital formation and government expenditure on transport and construction, in explaining the relationship between economic growth and government expenditure on infrastructures, were all found to be insignificant in both the short-run and long-run periods. Development of health sector is acknowledged as the development of other sectors of the economy because poor health facilities have many microeconomic and macroeconomic implications



for the government, society and individuals. The finding is similar to those of Ebong (2016); Jibir and Babayo (2015), Babatunde (2018) and Amadi (2020) and contradicts with Chris and Anyingang (2015).

In line with the above findings, the paper recommends that Nigeria government should be highly committed in developing the health sector through increase in budgetary allocation. This perhaps can be achieved if national cake is managed judiciously without siphoning government funds.

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