



INFRASTRUCTURAL DEVELOPMENT AND ECONOMIC GROWTH OF NIGERIA

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Abstract

This study examined the relationship between Infrastructure Development Expenditure and Economic Growth of Nigeria for twenty one (21) years period ranging from 2000-2020. The study employed secondary data extracted from Central Bank of Nigeria (CBN) Annual Reports and Statement of Accounts and Statistical Bulletins of various issues, National Bureau of Statistics (NBS) bulletin, Budget Office of the Federation, World Economic data base, United Nations statistical bulletin, International Monetary Fund (IMF) Government Finance Statistics Year Book (various issues) of Nigeria for the study period. The study adopted Longitudinal (Ex-post facto) research design via E-Views 10.0. The result revealed that a significant and positive relationship exist between infrastructure development expenditure (t -Statistic = 2.908787 < 0.05) and RGDP at 5% level of significance. It was recommended inter alia that Government should diversify and develop economic infrastructure such as roads, social and community services, transport and communication to boost trade openness and economic growth in Nigeria.

Keywords: Infrastructure Development Expenditure, Economic Growth and GDP

Introduction

Government Spending refers to public expenditure on goods and services. Government spending policies like setting up budget targets, adjusting taxation, increasing public expenditure and public works are very effective tools in influencing economic growth. Public expenditure is an important instrument for government to control the economy. It plays an important role in the functioning of an economy whether developed or developing economy. Public expenditure was borne out of revenue allocation which refers to the redistribution of fiscal capacity between the various levels of government or the disposition of responsibilities between tiers of the government. Broadly speaking, public expenditure affects aggregate resources use together with monetary and exchange rate. Specifically public expenditure refers to the value of goods and services provided through the public sector. In the Nigerian economy public expenditure can broadly be categorized into capital and recurrent expenditure. The recurrent expenditure is government expenses on administration such as wages, salaries, interest on loans, maintenance etc., whereas expenses on capital projects like roads, airports, health, education., telecommunication, electricity generation etc., are referred to as capital expenditure.

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 (Razzolini & Shughart, 2017). 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. As observed by Ahsan, Kwan and Sahni (2012), Kolluri, Panik and Wahab (2016) and Ghali, (2018), the expansion of government expenditure contributes positively to economic growth. The general view is that public expenditure either recurrent or capital expenditure, notably on social and economic infrastructure can be growth-enhancing.

Over the years, the size, structure and growth of government expenditure in the form of health insurance, social security, social welfare, national defense, interest on national debt, expenditure on education, housing, roads, transportation, agriculture, infrastructure and industrial development and so on, have increased tremendously and become increasingly complex. Not only has recent political developments engendered expenditure growth, the challenge of raising additional and identifying alternative sources of revenue to meet the ever increasing needs of governance have made it more imperative to take a more focused look at government activities, especially its expenditures. In developing countries like Nigeria, less attention had been given to examining the productiveness of the various components of public spending. This was borne out of the observation that the primary objective of fiscal policy was aggregate demand management (Aladejare, 2013). By and large, this view placed prominence on aggregate government expenditure and appeared unenthusiastic to differentiate between or among the various components of public expenditures. This study evaluates the relationship between infrastructure development expenditure and real gross domestic product of Nigeria.

Literature Review

Public expenditure is spending made by the government of a country on collective needs and wants such as pension, provision, infrastructure, etc (Singh, 2016). Public expenditure refers to Government expenditure i.e. Government spending. It is incurred by Central, State and Local governments of a country. Public expenditure can be defined as, the expenditure incurred by public authorities like central, state and local governments to satisfy the collective social wants of the people is known as public expenditure. Throughout the 19th Century, most governments followed laissez faire economic policies & their functions were only restricted to defending aggression & maintaining law & order. The size of public expenditure was very small. But now the expenditure of governments all over has significantly increased. In the early 20th Century, John Maynard Keynes advocated the role of public expenditure in determination of level of income and its distribution. In developing countries, public expenditure policy not only accelerates economic growth & promotes employment opportunities but also plays a useful role in reducing poverty and inequalities in income distribution (Gaurav, 2012).

Infrastructure is the term for the basic physical systems of a business or nation - transportation, communication, sewage, water, and electric systems are all examples of infrastructure. These systems tend to be high-cost investments and are vital to a country's economic development and prosperity. Projects related to infrastructure improvements may be funded publicly, privately, or through public-private partnerships. In economic terms infrastructure often involves the production of public goods or production processes that support natural monopolies (Chappelow, 2019). Infrastructure is the foundation upon which the structure of the economy is built. U.S. National Research Council adopted the term "public works infrastructure" to refer to functional modes including highways, airports, telecommunications, and water supplies, as well as the combined systems that these elements comprise. Applicable to large- and small-scale organizational frameworks, infrastructure can include a variety of systems and structures as long as there are physical components required. For example, the electrical grid across a city, state or country is infrastructure based on the equipment involved and the intent to provide a service to the areas it supports. Similarly, the physical cabling and components making up the data network of a company operating within a specific location are also the infrastructure for the business in question, as they are necessary to support business operations (Jorgenson & Landefeld, 2019).

Because infrastructure very often involves the production of either public goods or goods that lend themselves to production by natural monopolies, it is very typical to see public financing, control, supervision, or regulation of infrastructure. This usually takes the form of direct government production or production by a closely regulated, legally sanctioned, and often subsidized monopoly. At smaller scales, infrastructure can also often take on the characteristics of club goods or goods most readily produced by localized monopolies, and can be provided within the context of a private firm producing infrastructure for use within the firm or provided by localized arrangements of formal or informal collective action (Pierre-Richard & Alpaslan, 2018). Economic infrastructure refers to the facilities, activities and services which support operation and development of other sectors of the economy. In addition, infrastructures are such basic requirements like railways, roads, ships, airways, communication, etc. Infrastructure development is the construction and improvement of foundational services with the goal of sparking economic growth and improvements in quality of life (Faremo, 2015).

Economic growth is an increase in the amount of goods and services produced per head of the population over a period of time (Lee, 2018). Economic growth is the increase in the inflation-adjusted market value of the goods and services produced by an economy over time. It is conventionally measured as the percent rate of increase in real gross domestic product, or real GDP (Berg & Ostry, 2017). Growth is usually calculated in *real* terms - i.e., inflation-adjusted terms – to eliminate the distorting effect of inflation on the price of goods produced. The "rate of economic growth" refers to the geometric annual rate of growth in GDP between the first and the last year over a period of time. This growth rate is the trend in the average level of GDP over the period, which ignores the fluctuations in the GDP around this trend. An increase in economic growth caused by more efficient use of inputs (increased productivity of labor, physical capital, energy or materials) is referred to as *intensive growth*. GDP growth caused only by increases in the amount of inputs available for use (increased population, new territory) is called *extensive growth* (Herzer & Vollmer, 2013). Development of new goods and services also creates economic growth (Breton, 2015). The economic growth rate is calculated from data on GDP estimated by countries' statistical agencies. The rate of growth of GDP per capita is calculated from data on GDP and people for the initial and final periods.

Infrastructural Development Expenditure and Economic Growth

The importance of infrastructure to the industrial sector of any economy cannot be overlooked, thus making its development key to the survival of the sector (Faremo, 2015). The contribution of infrastructure to an economy, especially its industrial sector, cannot be over-stressed; this is because, it makes productivity more of a breeze through promotion of investment, movement of products, people and services, and facilitation of information and communication, all these, being salient factors for economic diversification (Ighodaro, 2010). However, the deplorable situation of most of the infrastructural facilities in Nigeria (as well as their lack of maintenance) especially of the roads, electric power, and water, tend to go against these values of infrastructure, mostly due to inadequate funding from government for maintenance of these facilities, careless use, vandalization, corruption, and delays in construction. Poor infrastructure leads to low productivity because producers of goods and services are discouraged because of higher cost of production, and sometimes, overall inability to get goods to the points of sale. This further leads to lower generation of income (Adeosun, 2016).

The relationship between economic growth and government expenditure is an important subject of analysis. A central question is whether or not government expenditure increases the long run steady state growth rate of the economy (Ugur, 2014; Yan & Gong, 2019). The growth retardation is experienced because of disincentive effects associated with taxation (Nketiah-Amponsah, 2019). Government expenditure may directly or indirectly increase total output through its interaction with the private sector. Khan and Bashar (2015) posited that government expenditure can increase growth through the provision of public goods and infrastructure, social services and targeted intervention such as export subsidies. The nature of the impact of government expenditure on growth depends on its form. According to Hausmann, Pritchett and Rodrik (2015), expenditure on investment and productive activities including state-owned production should contribute positively to growth, whereas government consumption expenditure is expected to be growth-retarding. Several analytical and empirical studies have focused on the traditional and new channels through which different types of government expenditure can affect growth (Carter, Craigwell & Lowe, 2013; Barro, 2013; Baldacci, Clements, Gupta, & Cui, 2014; Beraldo, Montolio & Turati, 2019). A direct effect relates to an increase in the economy's capital stock (physical or

human) reflecting higher flows of government funds, especially when they are complementary to those privately financed. Government expenditure on education and health, for example, contribute to an increase in the stock of human capital. Similarly, to the extent that they trigger an accumulation of physical capital, most government expenditure on infrastructure falls in the category of having a direct impact on growth (Devarajan, Swaroop & Zou, 2016). Muritala and Taiwo (2011) examined the trend as well as effects of government spending on the growth rates of real GDP in Nigeria over the period (1970-2008) using econometrics model with Ordinary Least Square (OLS) technique. The study tested for presence of stationarity between the variables using Durbin Watson unit root test. The result revealed absence of serial correlation and that all variables incorporated in the model were non-stationary at their levels. In an attempt to establish long-run relationship between public expenditure and economic growth, the result revealed that the variables are co integrated at 5% and 10% critical level. Iganiga and Unemhilin (2011) examined the effect of federal government agricultural expenditure on the value of agricultural output in Nigeria from 1997-2017. The Cobb Douglas Growth Model, Descriptive Statistics and Econometrics Model were used to analyze the data. Co-integration and Error Correction methodology were employed to draw out both long-run and short-run dynamic impacts of these variables on the value of agricultural output. Federal government capital expenditure was found to be positively related to agricultural output. With a one-year lag period, it showed that the impact of government expenditure on agriculture is not instantaneous. The policy import of the study is that investment in the agricultural sector is very imperative and this should be complemented with monitored credit facilities. River basins and irrigation facilities should be provided to have all-year round agricultural product food importation should be banned to encourage local producer and population control should be intensified in the rural setting to avoid the Malthusian prediction of pestilence and strife. Wang (2011) used international total health care expenditure data of 31 countries from 1986 to 2007 for exploring the causality between an increase in health care expenditure and economic growth. The empirical procedure was divided into two parts. The first is the panel regression analysis and the second is the quantile regression analysis. The estimation of the panel regression revealed that, expenditure growth will stimulate economic growth; however, economic growth will reduce expenditure growth. Modebe, Okafor, Onwumere and Ibe (2012) examined the impact of government expenditure (disaggregated into recurrent and capital expenditure) on economic growth in Nigeria from 1987 to 2010. Multiple regressions model was adopted while recurrent expenditure and capital expenditure were used as independent variable and gross domestic product growth rate as dependent variable. The result emanating from this study revealed that while recurrent government expenditure had positive and non-significant impact on economic growth, capital expenditure had negative and non-significant impact on economic growth thus re-echoing the need for increase and encouragement of private sector investment while have proven over the years as a more efficient utilization of resources compared to public sector. Okoro (2013) investigated the impact of government spending on the Nigerian economic growth. The study used time series data of 32 years period (1980-2011). The study employed the ordinary least square multiple regression analysis 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) represented the independent variables. With the application of Granger Causality test, Johansen Co-integration Test and Error Correction Mechanism, the result showed that there exists a long-run equilibrium relationship between government spending and economic growth in Nigeria. The short-run dynamics adjusts to the long-run equilibrium at the rate of 60% per annum. Boussalem, Boussalem and Taiba (2014) investigated the causality and co-integration relationships between public spending on health and economic growth in Algeria during

1974-2014 using annual data. The study concentrated on time series co-integration and causality in ECM framework. The findings revealed that there is a long-run causality from public spending on health to economic growth while it is not observed any short-run causality from public spending on health to economic growth. Olanipekun, and Benjamin (2015) examined the relative effectiveness of fiscal and monetary policy instruments on economic growth sustainability in Nigeria in order to determine the appropriate mix of both policies. The study employed error correction mechanism whereby the time series properties of fiscal and monetary variables were first examined using Augmented Dickey-Fuller and Philip Perron unit root tests, followed by Johansen cointegration test among the series using annual data for the period 1970-2013. Data were sourced mainly from Statistical Bulletin published by the Central Bank Nigeria. The unit root test results revealed that all fiscal and monetary policy variables are non-stationary and attained stationarity at first difference. The result also showed that all the fiscal and monetary variables of interest cointegrated with the economic growth series in the country. This suggests that there is a long run relationship among fiscal and monetary variables and economic growth.

Shuaib and Ahmed (2015) examined the impact of public finance on the growth of the Nigeria economy, using time series data from 1960 to 2013. The study employed secondary data sourced from National Bureau of Statistics, Journals and Financial Review of Central Bank of Nigeria. The study employed E-view 8.0 statistical output as a window in exploring the possible links between public finance and/or economic growth. The results revealed that public finance has a direct relationship with economic growth which statistically significant at 5% level as discovered from the results of the various diagnostic tests. Alper and Demiral (2016) investigated the effects of governments' social expenditure proxies namely education, health and social spending on economic growth performances presented by the changes in the gross domestic product (GDP) per capita. Using the feasible generalized least squares (FGLS) estimators based on a balanced panel dataset covering 2002-2013 periods of 18 OECD countries, the study concluded that social expenditures in all three dimensions significantly contribute to the economic growth. Overall results underlined that public expenditures can be productive as an investment in the case of selected OECD countries Nweze and Edame (2016) examined the effect of oil revenue and economic growth in Nigeria between 1981 to 2014. Secondary data on gross domestic product (GDP), was used as a proxy for economic growth; oil revenue (OREV), and government expenditure (GEXP) which represented the explanatory variables were sourced mainly from CBN publications. In the course of empirical investigation, various advanced econometric techniques like Augmented Dickey Fuller Unit Root Test, Johansen Cointegration Test and Error Correction Mechanism (ECM) were employed and the result revealed among others: that all the variables were all stationary at first difference, meaning that the variables were not integrated of the same order justifying cointegration and error correction mechanism test. The cointegration result indicated that there is long run relationship among the variables with three cointegrating equation(s). The result of the error correction mechanism (ECM) test indicates that all the variables except lag of government expenditure exerted significant impact on economic growth in Nigeria. Amal and Siham (2017) investigated the impact of fiscal policy on economic growth in Algeria over the period 1970-2015, by using Johansen cointegration test and vector error correction model (VECM). The main results revealed that both indirect taxes and productive current expenditures have a significant long-term positive impact on real GDP, while direct taxes, capital and unproductive recurrent expenditures negatively and significantly affect economic growth in the long run. Based on these findings, it could be concluded that sustainable economic growth requires serious policy measures aimed at diversifying the Algerian economy. Maingi (2017) studied the impact of

government expenditure on economic growth in Kenya. The specific objectives of the study were to: investigate the relationship between the components of government expenditure and economic growth; examine the effects of components of government expenditure on GDP growth rate; analyze the effects of government expenditure reforms on economic growth; and to draw policy implications from the findings. The data used were government expenditure components that included expenditure on government investment, physical infrastructure, education, health care, public debt servicing, economic affairs, general administration and services, defense, public order and national security, and government consumption. Sources of data were Kenya government documents and international financial statistics publications. Nwakoby, Ajike and Ezejiofor (2017) assessed the impact of Nigerian government financial incentives on SMEs and growth of the economy between 1999 and 2015. Simple regression analysis was used to ascertain the significant effect of SMEs output on economic growth of the country. The variables used were Gross Domestic Product and Loan to Small/medium Businesses. The study revealed that government expenditure, loan and other credit facilities have significant impact on SMEs output in Nigeria the growth of the economy. Okegbe, Ezejiofor and Ofurum (2019) ascertained the extent to which Foreign Direct Investment (FDI) has contributed to the Gross Domestic Product (GDP) in Nigeria from 2000 to 2017. Ex-Post Facto research design was employed for the study. Regression analysis technique was adopted with the aid of E-view version 9.0 in testing the hypotheses. The study revealed that foreign direct investment on financial sector has positive and significantly affected Gross Domestic Product in Nigeria. It also showed that Foreign Direct Investment on oil sector has positive and significantly affected Gross Domestic Product in Nigeria. Okeke, Mbonu ana Amahalu (2018) ascertained the relationship between tax revenue and economic development in Nigeria during the period 1994 -2016. Data were obtained from the Central Bank of Nigeria, Office of the Federal Inland Revenue Service and Annual Abstract of statistics of the National Bureau of Statistics. This study was based on time series data. The Augmented Dickey Fuller test, Multiple linear regression, Multicollinearity test, Granger Causality test, Johansen cointegration test and Error correction model were employed in the analysis of the data. The findings of this study showed that tax revenue has a statistically significant relationship with infant mortality, labour force and gross fixed capital formation in Nigeria at 5% level of significance respectively. Chinedu, Daniel and Ezekwe (2018) ascertained the impact of sectorial spreads of government expenditure on economic growth in Nigeria. The specific objectives were to: examine the impact of sectorial government expenditure on economic growth in Nigeria and ascertain if there is long-term relationship between sectorial government spending and economic growth in Nigeria. The study made use of *Ex Post-Facto* research design using time-series secondary data from 1980 to 2017. The data were subjected to Unit Root, Johansen Cointegration, and Error Correction test and Durbin-watson test. The study concluded that there was positive impact of sectorial spreads of government expenditure on economic performance in Nigeria. Three variables on sectorial Government expenditure among five sectorial Government expenditure variables have long-run relationship with real GDP. Ebaid and Bahari (2019) tested the causal relationship between government expenditure and economic growth is tested by conducting the Granger non-causality and by employing time-series data over the period from 1970 to 2015 in Kuwait. The empirical results supported the unidirectional causality running from government spending to economic growth. This occurred only when real government expenditure per capita is a proxy for state activity and real gross domestic product (GDP) per capita is a measure of economic growth. This implies that Wagner's law does not apply for Kuwait's economy, and the Keynesian proposition of government spending as a policy instrument that encourages and leads economic growth is supported by the data used. Adamu & Aluthge (2019) examined the effect of oil revenue, trade openness, public debt, exchange rate, oil

price, taxation and inflation on government expenditure size. The study used time series data for Nigeria spanning between 1970 and 2017. Time series data were analyzed using Autoregressive Distributed Lag (ARDL) model. The findings of the study revealed that oil revenue, GDP, population, trade openness, oil price, taxation and inflation are important determinants of the size of Nigeria's government expenditure. The study recommended among others that the revenue base of the country should be diversified beyond oil sector, strengthening of fiscal and monetary policies to ensure stability in price level and exchange rate, the use of fiscal rule through excess crude oil account should also be strengthened to create buffer against fluctuation in oil price and as well appropriate population reduction policies should be undertaken to curtail rapid population growth. Onuoha and Okoye (2020) explored the effects of aggregate public expenditure, recurrent government expenditure and capital government expenditure on economic growth, and the effect of economic growth on aggregate public expenditure. Using a time series data set from Nigerian context for the period between 1981 and 2018 and analyzing same with OLS regression model after a pre-estimation unit root test, an impressive result emerged. First, the study found that whereas aggregate public expenditure positively affects economic growth, recurrent government expenditure and capital government expenditure have insignificant effects on economic growth. Second, the study found that economic growth positively affects government spending. Onifade, Çevik, Erdoğan, Asongu and Bekun (2020) examined the impacts of public expenditures on economic growth of Nigeria with respect to capital expenditure, recurrent expenditure and the government fiscal expansion. Pesaran's ARDL approach was applied to carry out the impact analysis using annual time-series data from 1981 to 2017. Empirical findings supported 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. Ibekwe and Ibekwe (2021) investigated the effects of government expenditure on small and medium scale enterprises in Nigeria. The specific objectives were to examine the effect of capital expenditure on road on small and medium scale enterprises in Nigeria; assess the effect of capital expenditure on agriculture on small and medium scale enterprises in Nigeria; investigate the effect of capital expenditure on education on small and medium scale enterprises in Nigeria; determine the effect of recurrent expenditure on small and medium scale enterprises in Nigeria. Econometric techniques, including Unit Root Test, Granger Causality Test, and the Ordinary Least Square Regressions were used for the data analysis. The result of the study indicated that capital expenditure on roads, capital expenditure on agriculture, capital expenditure on education, recurrent expenditure have positive and significant effect on small and medium scale enterprises in Nigeria while government borrowing has negative and insignificant effect on small and medium scale enterprises in Nigeria.

Overtime, government has been involved in fiscal policy measures such as provisions of public goods such as defense, road, education, health and power to mention but the few. Some scholars such as Abu and Abdullahi (2010) among others had argued that increase in government expenditure on social-economic and physical infrastructures encourages economic growth. By implication then, it can be said that government expenditure on health and education raises productivity of labour and increase the growth of national output. Also, scholars such as Abu and Abdullahi (2010), Olugbenga and Owoye (2007), Nworji, Okwu, Obiwuru and Nworji (2012) were of the opinion that; government expenditure on infrastructural amenities such as road, communication, power and soon reduces production cost, increases private sector investment and profitability of firms and, hitherto fosters

economic growth. Other scholars on the hand totally objected the above claims and submitted that increasing government expenditure tend to slow down the overall performances of the economic. Magazzino (2011), Paternostro (2017) were of the opinion that higher government expenditure leads to a disaggregated economy. They were of position that increase taxes and/or borrowing by governments may discourage individual from working as higher income taxes discourages individual from working for long hours or being motivated to work. This may consequently reduce aggregate national income and output vis-à-vis investment level. They also contended that increased government expenditure will lead to more borrowings by government and crowd out private sector leading to lesser investment and national output.

Methodology

The research is a causal design based on an in-depth analysis of the relationship between public expenditure and economic growth in Nigeria. Consequent upon this, longitudinal research design (*Ex-post Facto* research design) was adopted. An ex-post facto investigation seeks to reveal possible relationships by observing an existing condition or state of affairs and searching back in time for plausible contributing factors.

Population of the Study

The thirty-six (36) states of the Federal Republic of Nigeria including the Federal Capital Territory, Abuja, constituted the population of this study.

Time series data were extracted from the publications of Central Bank of Nigeria (CBN) Annual Reports and Statement of Accounts and Statistical Bulletins of various issues, National Bureau of Statistics (NBS) bulletin, Budget Office of the Federation, World Economic data base, United Nations statistical bulletin, International Monetary Fund (IMF) Government Finance Statistics Year Book for twenty one (21) years spanning from 2000 to 2020.

Research Variables

Independent Variables

The independent variable in this study is Public Expenditure, which was captured with:

- i. Infrastructure Development Expenditure: was sourced from the Budget Office of the Federation, World Economic data base, United Nations statistical bulletin, International Monetary Fund (IMF) Government Finance Statistics Year Book (various issues).

Dependent Variables

The dependent variable is economic growth, which is proxied by:

- i. Real Gross Domestic Product: was sourced from Central Bank of Nigeria Statistical Bulletin, World Bank Statistical Bulletin and National Bureau of Statistics (several issues).

Method of Data Analysis

Descriptive and Inferential statistics of the data to be used in this study were conducted via the aid of E-View 10.0 statistical software, using:

- i) Descriptive statistics: is a good measure of central tendency that provides information on the mean, standard deviation, skewness, kurtosis, minimum and maximum values of the variables observed during the period under investigation.
- ii) Regression analysis: predicts the value of a variable based on the value of the other variable and explains the effect of changes in the values of variable on the values of the other variables. Ordinary Least Square regression analysis would be used for this study.

Interpretation of Regression Result

Table 1 reveals an adjusted R^2 value of 0.333715. The adjusted R^2 , which represents the coefficient of multiple determinations imply that 33.37% of the total variation in the dependent variable (RGDP) of Nigeria economy is jointly explained by the explanatory variable (IDEXP.). The adjusted R^2 of 33.37% did not constitute a problem to the study because the F- statistics value of 3.379079 with an associated $\text{Prob.} > F = 0.036810$ indicates that the model is fit to explain the relationship expressed in the study model and further suggests that the explanatory variables are properly selected, combined and used. The value of adjusted R^2 of 33.37% also shows that 66.63% of the variation in the dependent variable is explained by other factors not captured in the study model. This suggests that apart from IDEXP, there are other factors that mitigate RGDP of Nigeria economy. The results in table illustrated that IDEXP has a positive and significant relationship with RGDP considering the beta coefficient (β_3) = 0.323239, t- value = 2.908787, p-value = 0.0108; DAGEXP positively but non-significantly relate with RGDP at a beta coefficient (β_4) = 0.113229, t-statistic = 0.801900, p-value = 0.4351.

In addition, Durbin-Watson test is implied to check the auto correlation among the study variables. The Durbin-Watson value is 1.947272 which is less than 2 provide an evidence of no auto-correlation among the variables.

Decision

Based on the empirical evidence, this study upholds that a significant and positive relationship exist between national defense expenditure (t-Statistic = 2.828368 < 0.05), infrastructure development expenditure (t-Statistic = 2.908787 < 0.05) and RGDP at 5% level of significance, hence H_1 is accepted.

Conclusion and Recommendation

This study examined the relationship between infrastructural development and economic growth of Nigeria from 2000 to 2020. The time series data were extracted from the publications of Central Bank of Nigeria (CBN) Annual Reports and Statement of Accounts and Statistical Bulletins of various issues, National Bureau of Statistics (NBS) bulletin, Budget Office of the Federation, World Economic data base, United Nations statistical bulletin, International Monetary Fund (IMF) Government Finance Statistics Year Book for twenty one (21) years spanning from 2000 to 2020. In conclusion, the findings of this study upholds that a significant and positive relationship exist between infrastructure development expenditure (t-Statistic = 2.908787 < 0.05) and RGDP at 5% level of significance.

Based on findings of the study, it is recommended that there is need to diversify and develop economic infrastructure such as roads, social and community services, transport and communication to boost trade openness and economic growth in Nigeria.

References

- Adamu, J., & Aluthge, C. (2019). Modelling the determinants of government expenditure in Nigeria. *Journal of Cogent Economics & Finance*, 7(1), 283-292.
- Adeosun, K. (2016). Budget implementation. *Thisday newspapers* (November, 20- 2016). Thisdaylive.com
- Ahsan, S.M., Kwan, A.C. & Sahni, B.S. (2012). Public expenditure and national income causality: Further evidence on the role of omitted variables. *Southern Economic Journal*, 58(3), 623-634.
- Alper, F.O., & Demiral, M. (2016). Public social expenditures and economic growth: Evidence from selected OECD countries. *Research in World Economy*, 7(2), 44-51.
- Amal, M., & Siham, M, A. (2017). Does fiscal policy spur economic growth? Empirical evidence from Algeria. *Theoretical and Applied Economics*, 24(3), 125-146.
- Baldacci, E., Clements, B., Gupta, S., & Cui, Q. (2014). Social spending, human capital and growth in developing countries: Implications for achieving the MDGs. *IMF Working Papers*, WP/04/217, 1-40.
- Barro, R.J. (2013). Health and economic growth. *Annals of Economics and Finance*, 14(2), 329-366.
- Beraldo, S., Montolio, D. & Turati, G. (2019). Healthy, educated and wealthy: A primer on the impact of public and private welfare expenditures on economic growth. *The Journal of Socio-Economics*, 38(1), 946-956.
- Berg, A., & Ostry, J. (2017). Inequality and unsustainable growth: Two sides of the same coin. *IMF Economic Review*, 65 (4), 792–815.
- Boussalem, F., Boussalem, Z. & Taiba, A. (2014). The relationship between public spending on health and economic growth in Algeria: Testing for Co-integration and Causality. *International Journal of Business and Management*, 2(3), 25-39.
- Breton, T.R. (2015). Higher test scores or more schooling? Another look at the causes of economic growth. *Journal of Human Capital*. 9(2), 239–63.
- Carter, J., Craigwell, R., & Lowe, S. (2013). Government expenditure and economic growth in a small open economy: A disaggregated approach. *CBB Working Papers*, WP/13/15.
- Chappelow, J. (2019). *Infrastructure.* <https://www.investopedia.com/terms/i/infrastructure.asp>. Retrieved 21/05/2019.
- Chinedu, U. A., Daniel, O. C., & Ezekwe, U. C. (2018). Sectoral spreads of government expenditures and economic growth in Nigeria (1980-2017): An approach of error correction model. *International Journal of Academic Research in Economics and Management Sciences*, 7(4), 180–195
- Devarajan, S., Swaroop, V., & Zou, H. (2016). The composition of public expenditure and economic growth. *Journal of Monetary Economics*, 37(2), 313-344.
- Nwakoby, N. P., Ajike A. K., & Ezejiofor, R. A. (2017). SMEs financing and economic development: Nigerian government incentives (1999-2015). *Scholars Journal of Economics, Business and Management*. 4(8B):548-554.e-ISSN 2348-5302.
- Ebaid, A., & Bahari, Z. (2019). The nexus between government expenditure and economic growth: Evidence of the Wagner's law in Kuwait. *Review of Middle East Economics and Finance*, 15(1), 274-282.
- Faremo, G. (2015). Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation. *UN Chronicle*, 51(4), 21–22.
- Gaurav, A. (2012). What is public expenditure? Meaning and classification. <http://kalyan-city.blogspot.com/2011/02/what-is-public-expenditure-meaning-and.html>. Retrieved 15/07/2018.

- Ghali, K.H. (2018). Government size and economic growth: Evidence from a multivariate cointegration analysis. *Applied Economics*, 31, 975-987.
- Hausmann, R., Pritchett, L., & Rodrik, D. (2015). Growth accelerations. *Journal of Economic Growth*, 10(4), 303-329.
- Herzer, D., & Vollmer, S. (2013). Rising top incomes do not raise the tide. *Journal of Policy Modeling*, 35 (4), 504-519.
- Iganiga, B.O., & Unemhilin, D.O. (2011). The impact of federal government agricultural expenditure on agricultural output in Nigeria. *Journal of Economics*, 2(2), 81-88.
- Ighodaro, C. (2010). Transport infrastructure and economic growth in Nigeria. *Journal of Research in National Development*, 7(2), 267-274.
- Jorgenson, D.W., & Landefeld, J.S. (2019). Implementation of a new architecture for the U.S. national accounts. *American Economic Review: Papers and Proceedings*, 99(2), 64-68.
- Khan, H., & Bashar, O. (2015). Social expenditure and economic growth: Evidence from Australia and New Zealand using cointegration and causality tests. *The Journal of Developing Areas*, 49(4), 285-300.
- Kimaro, E.L., Keong, C.C., & Sea, L.L. (2017). Government expenditure, efficiency and economic growth: A panel analysis of sub Saharan African low income countries. *African Journal of Economic Review*, 5(2), 34-54.
- Kolluri, B.R., Panik, M.J., & Wahab, M.S. (2016). Government expenditure and economic growth: Evidence from G7 Countries. *Applied Economics*, 32, 1059-1068.
- Lee, Y.S. (2018). Government guaranteed small business loans and regional growth. *Journal of Business Venturing*, 33, 70-83.
- Magazzino. C. (2011). The nexus between public expenditure and inflation In the Mediterranean countries at Ttp://Mpra.Ub.Uni-Muenchen.De/28493/
- Maingi, J.N. (2017). The impact of government expenditure on economic growth in Kenya: 1963-2008. *Advances in Economics and Business* 5(12), 635-662.
- Modebe, N.J., Okafor, R.G., Onwumere, J.U., & Ibe, I.G. (2012). Impact of recurrent and capital expenditure on Nigeria's economic growth. *European Journal of Business and Management*, 4(19), 66-75.
- Muritala, T.A., & Taiwo, A. (2011). Government expenditure and economic development: Empirical evidence from Nigeria. MPRA Paper, 37293,1-10.
- Nketiah-Amponsah, E. (2019). Public Spending and Economic Growth: Evidence from Ghana. *Development Southern Africa*, 26(3), 477-497.
- Nweze, P.N., & Edame, G.E. (2016). An Empirical investigation of oil revenue and economic growth in Nigeria. *European Scientific Journal*, 12(25), 24-31.
- Okegbe, T. O., Ezejiofor, R. A. & Ofurum, D. I. (2019). Foreign direct investment (FDI) and Nigerian economic growth. *International Journal of Accounting, Finance and Risk Management*. 4(1), pp. 15-23. doi: 10.11648/j.ijafm.20190401.12.
- Okeke, M.N., Mbonu, C.M., & Amahalu, N.N. (2018). Tax revenue and economic development in Nigeria: A Disaggregated Analysis. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, 8(2), 178-199.
- Okeke, M.N., Mbonu, C.M., & Amahalu, N.N. (2018). Effect of tax revenue on economic development in Nigeria. *International Journal of Research in Business, Economics and Management*, 2(4), 25-61.
- Okoro, A.S. (2013). Government Spending and Economic Growth in Nigeria (1980-2011). *Global Journal of Management and Business Research Economics and Commerce*, 13(5), 20-30.

- Olanipekun, E.F., & Benjamin, A.F. (2015). Fiscal and monetary policy instruments and economic growth sustainability in Nigeria. *American Journal of Economics*, 5(6), 587-594.
- Paternostro, S. (2017). How does the composition of public spending matter? *Oxford Development Studies*, 35(1), 47- 82.
- Pierre-Richard, A., & Alpaslan, B. (2018). *Infrastructure and industrial development with endogenous skill acquisition*. *Bulletin of Economic Research*, 70(4), 25-27.
- Razzolini, L., & Shughart, W.F. (2017). On the (relative) unimportance of balanced budget. *Public Choice*, 90, 215-233.
- Shuaib, I. M., & Ahmed, L.E. (2015). Public finance: Impact on the growth of the Nigerian economy. *International Journal of Educational Research and Technology*, 6[2], 53-69.
- Singh, S.K. (2016). *Voluntary exchange theory of lindhal for determination of public expenditure*. S. Chand and Company Ltd. 57–59.
- Ugur, M. (2014). Corruption direct effects on per-capita income growth: A meta-analysis. *Journal of Economic Surveys*, 28(3), 472-490.
- Wang, K.M. (2011). Health care expenditure and economic growth: Quantile panel-type analysis. *Economic Modelling*, 28(4), 1536-1549.
- Yan, C., & Gong, L. (2019). Government expenditure, taxation and long-run growth. *Frontiers of Economics in China*, 4(4), 505-525.