GOVERNMENT EXPENDITURE ON INFRASTRUCTURE AND ECONOMIC GROWTH IN NIGERIA, 1981-2014.

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ABSTRACT:
This paper examines the impact of public spending on infrastructure and economic growth in Nigeria during the period 1981 to 2014. A disaggregated public spending on construction, health, general administration and transport and communication was adopted. Ordinary Least Square (OLS) techniques, Philip-Perron, Johansen co-integration test for long-run relationship and Error Correction Model to measure the speed of adjustment towards the long-run equilibrium condition of the equation. The regression results indicate that government recurrent spending on construction, health, general administration and transport and communication impacted positively on economic growth during the period of study. Based on the findings, it is recommended that government should increase total recurrent expenditure by spending more on all the sectors captured as the explanatory variables. Also government should ensure adequate monitoring and supervisions of the funds disbursed to these sectors, in order to stimulate rapid economic growth in Nigeria.

Keywords: Government expenditure, Infrastructures, Disaggregated analysis and Economic growth.

INTRODUCTION:

The basic idea of the Keynesian prescription for overcoming the problems of economic downturns and unemployment was to unbalance the government budget. The government should reduce its tax and increase it spending in the economy. An important principle in the Keynesian economics which challenged one of the neo-classical conclusions, that the forces of the market system would automatically maintain full employment in the economy (Akor, 2010).

Public expenditure, particularly on infrastructure has remained a decisive issue in economic development, most especially in the less developed countries of Sub-

Saharan Africa, where their economies is described by poor infrastructural service delivery, high level of corruption, declining productivity and policy instability. In the advent of Keynes ideas, government at all level both developed and developing economies has adopted a central role in the management of the economy which includes: provision of essential infrastructural facilities, direct investment in production and formulating national plans and programmes for even economic development.

Infrastructure is understood as an important input for industrial and overall economic development, while this is certainly true, infrastructural development involves fundamental structures such as power, transport, telecommunications, provision of water and maintenance of law and internal/external security that are paramount to economic activities and the lack of these services signal barriers to economic growth and development. Besides economic growth, they are many issues that have influenced public expenditure on infrastructure in Nigeria, they includes: openness, rate of urbanization, population density, government revenue, external reserves, type of government regimes and political instability among others.

Abu and Abdullahi (2010), Nworji, I. & Oluwalaiye, O. (2012) have argued and on the stands that increase in government expenditures do not actually promote growth and development, rather reduce overall performance of the economy. Supporting this is the fact that increases in government expenditures many result from increase in taxes or borrowing. If government at all level resort to borrowing to fund infrastructural facilities rather than taxes, then private sector investment will definitely reduce and growth will be prevented. On the other hand, Gregoriou and Ghosh (2007) discovered that countries with large government expenditure tend to experience higher growth, but effect varies across countries. Olugbenga and Owoye (2007) show the existence of a long-run relationship between government expenditure and economic growth and a unidirectional causality from government expenditure to growth for 16 out of the 30 countries considered, 10 countries confirmed Wagner's law and 4 countries had feedback relationship between government expenditure and economic growth.

In Nigeria, evidence showed that the total government expenditure in terms of capital and recurrent spending has continued to increase in the last three decades. Spending on agriculture, construction, transport and communication, health, education, defence, internal/external security is rising over time. For instance, government total capital spending increased from ₦ 24,048.60 Million in 1990 to ₦ 759,323.00 Million in 2007, and further ₦ 2,632,876.50 Million in 2011 and later ₦ 1.10 Trillion in 2014. While government total recurrent spending rose from ₦ 1,032,700.00 Million in 2004 to ₦1, 964,216.00 in 2009. Recurrent expenditure stood at ₦ 2,961,850.00 Million and ₦2.4 Trillion in 2010 and 2014 respectively

(CBN Statistical Bulletin, 2014). The various constituents of both capital and recurrent spending in Nigeria have been raised between 1990 and 2014.

Theoretically, in Keynesian Macroeconomics, government spending either on capital or recurrent in nature can contribute positively to economic growth through multiplier effects on aggregate demand. This implies that government is an exogenous factors and an instrument for increasing national income. Keynes argue that increasing government spending and reducing tax rates are the best ways to stimulate aggregate demand as an essential tool in time of recession or low economic activities, as well as building the framework for a strong economic growth and working towards full employment. The resulting deficits, according to him would be paid for by an expanded economy during the boom that would follow. Keynes then submits that decision taken by profit seeking private sector operators sometimes leads to inefficient macroeconomic result. Hayek (1989) criticized the Keynesian economics policies for what he called their fundamentally collectivist approach, arguing that such theories encourage centralized planning that lead to wrong investment of capital which may also result in business cycles boom and burst.

Despite the rise in government spending in Nigeria over these years, there are still public protests over rotten infrastructural facilities. Also merely few empirical studies have all-inclusive examinations of the impact of government spending on economic growth regardless of its importance for policy decision. Particularly, for Nigeria to be ready in its quest to become one of the largest economies in the world by the year 2020, and footing on her new Sustainable Development Goals programme, examining the impacts of public expenditure on infrastructure is an approach to speed up growth in the nation economy.

The fundamental question that the paper requires earnest answer is whether or not the government disaggregated spending impacted positively on economic growth in Nigeria. The paper attempts to respond to this question by empirically estimating the impacts of disaggregated social and community services and economic services spending on economic growth in Nigeria. The paper comprises section one introduction, section two review of related literature, section three is the methodology and section four is findings, conclusions, and recommendations.

Literature Review

Empirically, there are mixed findings on the relationship between government expenditure and economic growth. A disaggregated approach was employed by Niloy *et al.* (2003) to investigate the impact of public expenditure on economic growth for 30 developing countries. They found that government capital expenditure to gross domestic product (GDP) has a significant positive correlation with economic growth, but the share of government recurrent expenditure to GDP

was shown to be insignificant in explaining economic growth while at the sectoral level, government investment and expenditure on education are the only variables that had significant effect on economic growth, especially when Budget constraint and omitted variables are included.

Mwafaq (2011) investigated the impact of public expenditure on economic growth, using a time series data on Jordan for the period 1990 to 2006 and found that the government expenditure at aggregate level has positive impact on growth of GDP which is in line with Keynesian theory.
Mansouri (2008) revealed, after studying the relationship between fiscal and economic growth in three North African countries, that there is a positive correlation between fiscal policy and economic growth and that 1 percentage rise in public expenditure would raise the real GDP by 1.26 percent in Morocco, 1.15 percent in Tunisia and 0.56 percent in Egypt. However, the result also affirms existence of long-run relationships between all the three countries.

Akpan (2005) made use of disaggregated approach to determine the component (which includes administrative, economic service, social and community services and transfers of government expenditure) that enhances growth and those that do not. The result revealed that there was no significant correlation between most government expenditures on economic growth in Nigeria. Nurudeen and Usman (2010) carried out a study on government expenditure and economic growth in Nigeria and found that both total capital expenditure and total recurrent expenditure on education had negative effect on economic growth, while government spending on transport, telecommunication, and health influenced economic growth.

Abu and Abdullah (2010) studied the relationship between government expenditure and economic growth in Nigeria from the period 1970 to 2008, applied disaggregated analysis in an attempt to resolve the impact of government expenditure on economic growth. Their results reveal that government total capital expenditure; total recurrent expenditure on education has negative effect on economic growth. On the contrary, government expenditure on transport, communication and health result in an increase in economic growth. They recommend that government should increase both capital expenditure and recurrent expenditure including expenditure on education as well as ensure that funds meant for development of these sectors are properly utilized. They also recommended that government should encourage and increase the funding of anti-corruption agencies in order to tackle the high level of corruption found in public offices in Nigeria. Similarly, Mauro (1998) in his examination of the compositions of government expenditure discovered that corruption lowers expenditure on education and perhaps on health.

Maku (2009) evaluated the link between government spending and economic growth in Nigeria by incorporating the model that specifies the effect of government consumption and investment spending, and private investment on real gross domestic product in Nigeria and found that private and public investments have insignificant effect on economic growth during the review period.

Mitchell (2005) evaluated the impact of government spending on economic performance in developed countries. He assessed the international evidence, reviewed the latest academic research, cited examples of countries that have significantly reduced government spending as a share of national output and analyzed the economic consequences of these reforms. Regardless of the methodology or model employed, he concluded that a large and growing government spending is not conducive to better economic performance. He further argued that reducing the size of government spending would lead to higher incomes and improve American's competitiveness.

Ighodaro and Okiakhi (2010) applied Co-integration test and Granger causality test to examine the growth effect of government expenditure, disaggregated into general administration, community and social services in Nigeria. Using time series data for 46 years ending 2007, the results obtained shows negative impact of government expenditure on economic growth.

In the same vein, Vu Le and Suruga (2005) studied the simultaneous impact of public expenditure and foreign direct investment (FDI) on economic growth from a panel of 105 developing and developed countries for the period 1970 to 2001 and adopt threshold regression techniques and fixed effects model. Their major findings were categorized into three: foreign direct investment, public capital and private investment play roles in promoting economic growth. Secondly, public non-capital expenditure has a negative impact on economic growth and finally, excessive spending in public capital expenditure can hinder the beneficial effects of foreign direct investment.

Olopade and Olopade (2010) examined how fiscal and monetary policies influence economic growth and development. The basis of their study was to establish the sections of government expenditure that enhance growth and development, classify those that do not, and recommend that they should be reduced to the barest minimum. The study applies an analytical framework based on economic models, statistical methods encompassing trends analysis and simple regression. They find no significant relationship between most of the constituents of government expenditure and economic growth.

Methodology

Data and Source of Data

The data on the chosen disaggregated government spending were sourced from Central Bank of Nigeria (CBN) statistical bulletin of 2014 and National Bureau of statistics (NBS).

Method of Estimation

The paper adopts the Error Correction Mechanism (ECM) technique of analysis, Unit root test using Philip-Perron to test the Stationarity, Johansen Co-integration test to determine the long-run relationship, and Ordinary Least Square (OLS) techniques model to estimates and analyses the impacts of government recurrent expenditure on infrastructure on the growth of Nigerian economy. The error Correction Model is used to relate co-integrated variables in the short run. The Over-parameterized Error Correction Model captures all the variables including the lagged variables from which the significant variables are selected. The parsimonious error correction model involves selecting the most significant variables from the over-parameterized error correction model. This approach follows the work of Niloy *et al.* (2003) on a disaggregated approach to studies the impact of public expenditure on economic growth for 30 developing countries. Akpan (2005) used of disaggregated approach to determine the component (which includes administrative, economic service, social and community services and transfers of government expenditure) that enhances growth. Other studies closely related include Nurudeen and Usman (2010), Abu and Abdullah (2010), Mitchel (2005) and Ighodaro and Okirikhi (2010).

Model Specifications

The structural relationship between government recurrent expenditure on infrastructure and the factors that influence economic growth consist of regression equation with disaggregated expenditure on the specified infrastructures being the independent and real gross domestic product (RGDP) as the dependent variable.
The structural form of the model is specified as follows:

$$RGDP = \beta_{0+}\beta_1 GECT_{+} \beta_2 GEHT + \beta_3 GEGA + \beta_4 GETC + \mu_1$$

Where:

RGDP = Real gross domestic product as proxy for economic growth, **(₦)**
GECT = Government expenditure on construction; **(₦)**
GEHT = Government expenditure on health; **(₦)**
GEED = Government expenditure on general administration; **(₦)**
GEAG = Government expenditure on transport and communication, **(₦).**
$\mu_{1=}$ the stochastic error term
$\beta_{0,=}$ the intercept
$\beta_{1,}\ \beta_{2,}\ \beta_{3,}\ \beta_4$ are parameters of estimates.

The ECM form is represented as;

$$\ln RGDP_t = \beta 0 + \beta_1 \sum_{t=1}^{n} \Delta \ln GECT_{t-1} + \beta_2 \sum_{t=1}^{n} \Delta \ln GEHT_{t-1} + \beta_3 \sum_{t=1}^{n} \Delta \ln GEGA_{t-1} \sum_{t=1}^{n} \Delta \ln GETC_{t-1} + \sigma_i ECM(-1) + \varepsilon_t$$

Results and Discussion

The Result of Stationarity Test of Variables

Table 1 Philip-Perron Unit Root Test

Variables	Philip-Perron Statistics	Critical Value (5%)	Probability	Order of Integration
RGDP	-5.371355	-2.957110	0.0001	1(1)
GECT	-13.506740	-2.957110	0.0000	1(1)
GEGA	-4.506740	-2.957110	0.0011	1(1)
GEHT	-24.73888	-2.957110	0.0001	1(1)
GETC	-6548419	-2.957110	0.0000	1(1)

Source: Author's Computation using E-views 7

The variables are stationary if the Philip-Perron statistics is greater than the critical value at 5% level. If the variables are non- stationary at levels, they are differenced once to become stationary. If after the first difference, variables still remain non-stationary they will be differenced the second time.

The result of the Philip-Perron test revealed that all the variables, RGDP, GECT, GEGA, GEHT and GETC are stationary after the first difference. Since all the variables were integrated at first difference (1(1)), it requires the co-integration test.

3.1.5 Co-Integration Test

Table 2. Johansen Co-Integration Test

Eigen value	5% Critical value	Trace Statistics	Hypothesized No. of cf(s)	Probability
0.996588	69.81889	425.4106	None *	0.0001
0.976020	47.85613	243.6545	At Most 1*	0.0001
0.942543	29.79707	124.2574	At Most 2*	0.0000
0.610080	15.49471	32.84229	At Most 3*	0.0001
0.081036	3.841466	2.704257	At Most 4*	0.1001

Trace test indicates 4 co integrating equations at the 0.05 level

Source: Author's Computation E.views 7

Table 3. Johansen Co-integration Test (Maximum Eigen Value)

Eigen value	5% Critical value	Maximum Eigen Statistics	Hypothesized No. of cf(s)	Probability
0.996588	33.87687	181.7760	None *	0.0001
0.976020	27.58434	119.3771	At Most 1*	0.0000
0.942543	21.13162	91.41514	At Most 2*	0.0000
0.610080	14.26460	30.13803	At Most 3*	0.0001
0.081036	3.841466	2.704257	At Most 4*	0.1001

Maximum Eigen Value test indicates 3 co-integrating equations at the 0.05 level.
Source: Author's Computation Using E-views 7

From the Johansen co-integration test result, Trace test and the Max-Eigen value test reveals that that there are four co integrating vectors among the variables (GECT, GEHT, GEGA, GETC) at 5 percent level of significance. Therefore, this suggests that there is a long-run relationship among the variables.If at least one variable is co-integrated; it calls for the Error Correction Model (ECM).

Table 4: Result of the Error Correction Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	25.31711	68.93520	0.367260	0.7173
D(RGDP(-1))	2.099788	0.080661	26.03212	0.0000
D(RGDP(-2))	-1.305869	0.092524	-14.11384	0.0000
D(GECT(-1))	0.010964	0.001748	6.272590	0.0000
D(GECT(-2))	0.022406	0.007420	3.019739	0.0068
D(GEGA(-1))	-0.011183	0.001628	-6.870506	0.0000
D(GEGA(-2))	0.008263	0.001963	4.208714	0.0004
D(GEHT(-1))	0.068846	0.000616	111.7467	0.0000
D(GEHT(-2))	-0.064233	0.004525	-14.19464	0.0000
D(GETC(-2))	-0.025689	0.010403	-2.469430	0.0227
ECM(-1)	0.056242	0.016900	3.328010	0.0034

R-Squared	0.999330	S.E of Regression	306.3333
Adjusted R-Squared	0.998995	Durbin Watson Stat.	3.395496
F. Statistics	2982.414	Prob (F. Statistics)	0.000000

Source: Author's Computation using E-views 7

The result in table 4 shows that government recurrent expenditure on infrastructure such as on construction, health, general administration and transport and communication are statistically significant. More explicitly, 1 percent increase in government recurrent expenditure on infrastructures on the average will lead to 2.09 percent increase in Real Gross Domestic Product (RGDP). These conformed to economy theory that an increase in government expenditures will lead to an increase in economic growth.

The value of R^2 is 0.99933 (99.33%) implies that 99.93 percent total variation in the RGDP is explained by the regression equation, while the remaining 0.67

percent is explained by other variables not included in the model and is accounted for by the stochastic error term (μ).
The value of adjusted R^2 used in measuring the goodness-of-fit of the estimated model shows that after adjusting for degree of freedom, about 99.89 percent of the systematic variation in the RGDP is explained by changes in the explanatory variables (GECT, GEHT, GEGA, GETC) while 0.21 percent is accounted for by the stochastic error term (μ).
The F-Statistics 29.82.414 which is used to test the joint significance of the explanatory variables, found to be statistically significant at 5 percent level as indicated by the corresponding probability value 0.000000. The value of calculated F-Statistics is greater than the value of tabulated F-Statistics. This indicates that the regression equation has a strong goodness-of-fit (the model is significant in explaining the variation in RGDP).
The coefficient of the ECM indicates a speed of adjustment of 0.056242, implying that, about 6% of the deviation from equilibrium can be restored in one year.

Conclusion and Recommendations

The paper examines the impact of disaggregated government expenditures on infrastructure and economic growth in Nigeria. Ordinary least square techniques and Error Correction Method were employed in the analyses and to measure the speed of adjustment of the model respectively.
Result shows that government recurrent expenditure on infrastructure on construction, health, general administration and transport and communication are statistically significant. The result agrees with the Keynesian's view that government expenditures enhance economic growth. A great performance of an economy in terms of economic growth may therefore be attributed to proper use of total government recurrent expenditures on infrastructures.
From the findings, the paper recommends that government should increase total recurrent expenditure by spending more on all the sectors captured as the explanatory variables. Also concerted effort should be made by the government to ensure that is should be adequate monitoring and supervisions the fund disburse to these sectors, so as to maintain efficiency in the usage of the funds to boost the level of economic growth in Nigeria.

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