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THE IMPACT OF GOVERNMENT EXPENDITURE EFFICIENCY ON NIGERIA ECONOMIC GROWTH

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Abstract
Using time series data of 34years period (1981-2014), this study investigated the impact of government expenditure efficiency on the Nigerian economic growth. Employing revenue-expenditure differential technique to determine spending efficiency among the explanatory variables also 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 economic service sectors such Agricultural government expenditure efficiency (AGGEEFF), transport & communication government expenditure efficiency (TRCOMGEEFF) and road & construction government expenditure efficiency (RCGEEFF) represents the independent variables. With the application of Enger-Granger 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. The short-run dynamics adjusts to the long-run equilibrium at the rate of 46% per annum. The independent variables show economic and statistical insignificant in the long run which proves inefficiency of government expenditure on economic sectors. This work therefore recommend that government should take economic service sectors serious to be profit oriented and further strategize, formulate and implement effective/good policy measures as well as make sure that all expenditures will be used properly and should achieve what they are made for.

Keywords: Government revenue, expenditure efficiency, economic growth and Nigeria.

Introduction

The role and size of Government expenditures (spending) arouses a great deal of controversy in macroeconomics and its impact on economic growth has emerged also as a major public choice issue facing economies in transition. While some countries have moved toward economic freedom and open market, government expenditures have also increased more and more. Chete et al (2003), In Nigeria over the past decades, the public sector spending has been increasing geometrically through government various activities and interactions with its Ministries, Departments and Agencies (MDA's), while the general view is that public sector spending either recurrent or capital expenditure, notably on social and economic infrastructure can be growth enhancing. The structure of Nigerian public expenditure can broadly be categorized into capital and recurrent expenditure. The recurrent expenditure are government expenses on administration such as wages, salaries, interest on loans, maintenance etc., whereas expenses on capital projects like roads, airports, education, telecommunication, electricity generation etc., are referred to as capital expenditure. One of the main purposes of government spending is to provide infrastructural facilities (Olukayode, 2011).

Abu and Abdulahi, (2010) added that, in Nigeria, government expenditure has continued to rise due to the huge receipts from production and sales of crude oil, and the increased demand for public (utilities) goods like roads, communication, power, education and health. Besides, there is increasing need to provide both internal and external security for the people and the nation. Available statistics, according to CBN (2014), show that total government expenditure (capital and recurrent) and its components have continued to increase, For instance, government total recurrent expenditure increased from N4.85 billion in 1981 to N25.99 billion in 1989 to N461.60 billion in 2000 and further to N2,530.34 billion in 2014, respectively. In the same manner,

composition of government recurrent expenditure shows that expenditure on defense, internal security, education, health, agriculture, construction, and transport and communication increased during the period under review. Moreover, government capital expenditure rose from N6.57 billion in 1981 to N15.03 billion in 1989 to N239.45 billion in 2000 and further to N2, 681.08 billion in 2014, respectively. Furthermore, the various components of capital expenditure (that is, defense, agriculture, transport and communication, education and health) also show a rising trend during the period under review.

The effect of government spending on economic growth is still an unresolved issue theoretically as well as empirically. Although the theoretical positions on the subject are quite diverse, the conventional wisdom is that a large government spending is a source of economic instability or stagnation. Empirical research, however, does not conclusively support the conventional wisdom. A few studies report positive and significant relation between government spending and economic growth while several others find significantly negative or no relation between an increase in government spending and growth in real output. This unresolved issue mainly empirically could be as a result of the common misconception that government is meant to provide essential services which has lead the government to finance deficits of the different sectors of the economy including the sectors that should ordinarily be efficient and report profits and sustain the economy such as economic services i.e. agriculture, construction, transport & communication and other economic services etc. the question of "how efficient are the sectors in which the government is spending on" is silent in literature, specially economic service sectors. In the light of the above, this study intends to examine the impact of government expenditure efficiency on economic growth of Nigeria.

Statement of the Research Problem

Nigerian economy has a trend of budget and expenditure increase which has been consistent and continuous overtime, metamorphosing from millions of naira into billions of naira and postulating into trillions of naira on the expenditure side of the budget. This will not be surprising if the economy is experiencing surplus or equilibrium on the records of balance of payment. This awakened the enthusiasm of Nigerian scholars to research on the impact and/or the effect of government expenditure on economic growth of Nigerian economy; the findings of this research works were inconclusive as stated above, these researchers hold it that Nigerian economic growth is a function of government expenditure. To explain government spending, macroeconomic variables such as capital expenditure and recurrent expenditure were considered this indicates that these studies considered aggregate government expenditure and were not sector specific, the few that were sector specific did not measure efficiency of government spending on output growth of the Nigeria economy rather they captured causality and the effect and/or impact of government spending on output growth of the Nigeria economy. To this point it is glaring that there are stock of literatures with respect to relationship between government spending and economic growth yet there exist gaps on the above subject matter. The efficiency gap which previous studies did not capture will be the core call of this study, secondly economic service sectors will be the sectors of interest such agriculture, construction and transport & communication etc. the measurement of sustainability, profitability and efficiency includes the application of Net Present Value (NPV), Internal Rate of Return (IRR), Profitability Index (PI), Pay Back Period (PBP), Input-Output Ratio, Cost-Revenue Ratio and Revenue-expenditure differential etc. this study will apply Revenue-Expenditure differential technique in order to capture efficiency of government expenditure across the selected economic service sectors, the larger Revenue-Expenditure differential the more efficient is the economy and vis-a-vis. Against this backdrop, the following research questions are raised:

Research Questions

1. Is there significant relationship between government expenditure efficiency and economic growth of Nigeria?
2. To what extent is the relationship between government expenditure efficiency and economic growth of Nigeria?

Objectives of the Study

1. To determine if there is significant relationship between government expenditure efficiency and economic growth of Nigeria.
2. To examine the extent of the relationship existing between government expenditure efficiency and economic growth of Nigeria.

Research Hypotheses

The following null hypotheses will be tested in the course of this study.

H_{01}: There is no significant relationship between government expenditure efficiency and economic growth of Nigeria.

H_{02}: There is no co-integration relationship between government expenditure efficiency and economic growth of Nigeria.

Scope of the Study

This study is undertaken to examine the impact of government expenditure efficiency on economic growth. In term of time series, a period of thirty-four years is used (i.e. 1981 to 2014) as means of assessing the impact of government expenditure efficiency on the growth of Nigerian economy. It is hoped that this will help to achieve the stated objective of the study.

Significance of the Study

It is expected that this study would consolidate existing literature on the issues surrounding the relationship between government expenditure and economic growth mainly on the area of sectors performance and efficiency. The study would also facilitate the examination of the effects of government expenditure and economic growth in Nigeria and thus boosting the empirical evidence from Nigeria. Furthermore, given the empirical nature of the study, the outcome of this study would aid policy makers and regulatory bodies and policy simulation with respect to the selected variables examined in the study. The result of the study would be of benefits to education analysts, and institutions in examining the effectiveness of government expenditure and economic growth. It will also be useful in stimulating public discourse given the dearth of empirical researchers in this area from emerging economies like Nigeria. Finally, it would also add to the available literature on the areas of study while also providing a platform for other researchers who may want to further this study.

Literature Review

Economic theory has shown how government spending may either be beneficial or detrimental to economic growth. In traditional Keynesian macroeconomics, many kinds of public expenditures, can contribute positively to economic growth through multiplier effects on aggregate demand. On the other hand, government consumption may crowd out private investment, dampen economic stimulus in the short run and reduce capital accumulation in the long run. Studies based on endogenous growth models distinguish between distortionary or non-distortionary taxation and productive or unproductive expenditures. Expenditures are categorized as productive if they are included as arguments in private production functions and unproductive if they are not (Abdullahi Usman, 2013). The earliest of all theories of government growth is Wagner's Law of Increasing State Activity. This theory posits a relationship linking industrialization, urbanization and education to the expansion of the public sector (Chude, Nkiru Patricia 2013). Wagners' posits that increases in public goods are a product of increased demands by organized industrial workers, coming at the costs of growth in the private sector (Akpan, 2008; Olorunfemi, 2008).

Bureau Voting Theory rejected the role of industrialization and urbanization, suggesting that the main driver of public sector expansion is an artificial demand for government services created by self interested government employees (Loto, 2011). In Fiscal illusion theory which tries to explain government growth by linking convoluted tax systems to the masking of the costs of public goods. Also, tax systems can hide the costs of public goods and therefore stimulate their growth (Olopade et al, 2010).

Empirical support for these theories has varied, causing them to lose some of their impetus. Government spending is usually suggested that the net impact on growth (as measured by aggregate output) of the crowding-out effect of public expenditure clearly depends on the relative marginal productivity of the public and private sectors. The externality effect of public expenditure enhances growth by raising private sector productivity. Here, a higher level of such expenditure could achieve a high growth rate. The opposing natures of the crowding-out and externality effects rest on the proposition that the structure of public expenditure, rather than merely its level, would be of considerable importance.

Methodology

Research Design

The Ex-post factor research design was adopted for this study. Secondary source of data was used for this study, and the data were sourced from Central Bank of Nigeria's statistical bulletin. The data is annual data that covers the period 1981 - 2014. The key variable of interest is real gross domestic product, which will constitute the dependent variables. While economic service sectors such Agricultural government expenditure efficiency (AGGEEFF), transport & communication government expenditure efficiency (TRCOMGEEFF) and road & construction government expenditure efficiency (RCGEEFF) represents the independent variables. The Enger-Granger Co-integration Test and Error Correction Mechanism were adopted as the technique of data analysis. This study is geared toward investigating the impact of government expenditure efficiency on economic growth of Nigeria with core interest on economic service sectors. In order to achieve the objectives of this study Revenue-Expenditure differential technique will be adopted, and the model can be expressed as thus;

$ARV_{it} = N\sum_{J=1}^{3} \beta^{i}{}_{J} RV_{it}$ .....(1)

where ARV_{it} = Aggregate revenue generated by three sectors of interest; N = number of sectors; β^{i}_{j} RV_{it} = vector parameter of the revenue generated by the sectors of interest.

This can be decomposed as thus;

$ARV_{it} = f(AGRV_{it} + RCRV_{it} + TRCOMRV_{it})$.....(2) where AGRV = Revenue Generated By Agricultural Sector; RCRV = Revenue Generated By Road And Construction; TRCOMRV = Revenue Generated By Transport And Communication Sector.

$AEXP_{it} = N\sum_{J=1}^{3} \psi^{i}{}_{J} EXP_{it}$ .....(3)

Where AEXP = aggregate government expenditure on the sectors of interest, which can be decomposed into

$AEXP_{it} = f(EXPAG_{it} + EXPRC_{it} + EXPTRCOM_{it})$ .....(4) where EXPAG = Government Expenditure On Agriculture; EXPRC = Government Expenditure On Road And Construction; TRCOM = Government Expenditure On Transportation And Communication.

Applying Revenue-Expenditure differential technique we then subtract equation (3) from equation (1), we have;

$RGDP_{it} = N\sum_{J=1}^{3} \beta^{I}{}_{J} RV_{it} - N\sum_{J=1}^{3} \psi^{I}{}_{J} EXP_{it}$.....(5)

This can also be expressed as equation (2) minus equation (4), and then we have;

$RGDP_{it} = f(AGRV_{it} - EXPAG_{it} + RCRV_{it} - EXPRC_{it} + TRCOMRV_{it} + EXP\ TRCOM_{it})$ .....(6)

Model Specification

$RGDP_{it} = f(AGGEEFF + RCGEEFF + TRCOMGEEFF)$ .....(7)

Where

RGDP = Real Gross Domestic Product as a proxy of Economic Growth; AGGEEFF = Agricultural Government Expenditure Efficiency;

RCGEEFF = Road and Construction Government Expenditure Efficiency; TRCOMGEEFF = Transport and Communication Government Expenditure Efficiency.

Applying Ordinary Least Square (OLS) regression in order to estimate the coefficient of the variables above equation (7) displays the growth regression and is formulated as

$RGDP = \alpha_0 + \alpha_1 AGGEEFF + \alpha_2 RCGEEFF + \alpha_3 TRCOMGEEFF$ .....(8)

Where $\alpha_1 > 0; \alpha_2 > 0; \alpha_3 > 0$

Unit Root Test

This is as a result that most economic time series have proved empirically to be non-stationary in nature. Augmented Dickey-Fuller (ADF) will be adopted, which is specified below; $\Delta Y_t = \beta_0 + \beta_2 t +$

$\psi Y_{t-1} + \alpha_1 \sum_{i=1}^{p} \Delta Y_{t-1} + \varepsilon_t$ .....(9)

Augmented Engle-Granger (AEG) Co-Integretion Test

After establishing the existence of unit root and their order of integration identified, if the variables are integrated in the same order then the presence of co-integration is established as well as their linear combination (Enders, 1995). Equation below represents the unit root and co-integration tests.

$\Delta Y_t = \alpha_1 \Delta Y_{t-1} + x_t\psi + \beta_1 \Delta Y_{t-1} + \beta_2 \Delta Y_{t-1} + \beta_p \Delta Y_{t-p} + \varepsilon_t$ .....(10)

Once the existence of a long run co-integration relationship has been established, the Error Correction Model (ECM) for energy use determinants and output growth can be specified as:

$(RGDP) = \alpha_0 + \alpha_1 \sum_{i=1}^{p} (AGGEEFF)_t + \alpha_2 \sum_{i=1}^{p} (RCGEEFF)_t + \alpha_3 \sum_{i=1}^{p} (TRCOMGEEFF)_t$ ..... (11)

Finally, we obtain the short run dynamic parameters by estimating an error correction model associated with the long run estimates. This is specified as follows:

$(RGDP) = \alpha_0 + \alpha_1 \sum_{i=1}^{p} (AGGEEFF)_t + \alpha_2 \sum_{i=1}^{p} (RCGEEFF)_t + \alpha_3 \sum_{i=1}^{p} (TRCOMGEEFF)_t + \alpha_4 ECM$ .. (12)

Where equation (12) is the ECM equation, which indicates the speed of adjustment of variables that were in disequilibrium state into equilibrium.

Estimation Procedure

The results from the model shall be examined based on economic criteria and econometric criteria. Batteries of econometric test relevant to the study will be explored and economic theory will be justified by the signs and magnitude of the coefficients of estimated parameters.

Source of Data

Data's will be generated from Central Bank of Nigeria (CBN) Statistical Bulletin, and National Bureau of Statistics (NBS) etc.

Data Analysis and Discusion of Findings

The results below were gotten from the model specified in the method of study. The long-run estimation procedure follows thus;

Table 1

Dependent Variable Log (RGDP)

VARIABLES	COEEFICIENT	STD.ERROR	T-STAT	PROBABILITY
C	1.719730	0.134228	1.181201	0.7000
LOG(AGGEEFF)	-0.057236	0.050200	-0.127966	0.8300
LOG(TRCOMGEEFF)	-0.032771	0.069300	0.285946	0.6927
LOG(RCGEEFF)	-0.034491	0.080158	-0.430282	0.6702

The result above shows that all the economic service sectors of Nigeria understudy are inefficient which means that revenues generated by these sectors are not enough to offset the expenditures made by government into these sectors. Again Our result shows that a percentage increase in government spending in agricultural sector will reduce national output (RGDP) by 5%, and a percentage increase in government spending on transport & communication will reduce RGDP by 3%, while a percentage increase government spending on road & construction will reduce RGDP by 3%, and this is in line with the conventional wisdom is that a large government spending is a source of economic instability or stagnation.

Evaluation of Research Hypothesis

Here the empirical results will be evaluated in order to verify if the variables under study meet the necessary criteria for a good regression model. The evaluation will base on the following,

Economic criteria (a priori signs)

Table 2

Variables	Coefficient	Expected signs	Obtained signs	Conclusion
LOG(AGGEEFF)	-0.057236	Positive	Negative	Did not Conform to a priori
LOG(TRCOMGEEFF)	-0.032771	Positive	Negative	Did not Conform to a priori
LOG(RCGEEFF)	-0.034491	Positive	Negative	Did not Conform to a priori

Statistical (first order) test

The statistical criteria will take into account of the following; coefficient of determination (R^2), probability. A test of significance is a procedure by which sample results are used to verify the true nature of the null hypothesis (H_0).

The coefficient of multiple determinations (R^2)
From the empirical analysis, it was observed that the coefficient of determination value is 0.86, and this implies that about 86% of the fluctuations in Nigeria output growth RGDP are caused by the regressors such as AGGEEFF, TRCOMGEEFF, RCGEEFF.

Test of significance (probability)
The probability test shows that all the explanatory variables are statistically insignificant therefore accept H_0 of no statistical relationship between government spending efficiency and economic growth in Nigeria.

Table 3

VARIABLES	probability	DECISION	Conclusion
LOG(AGGEEFF)	0.8300	ACCEPT H_0	STATISTICALLY INSIGNIFICANT.
LOG(TRCOMGEEFF)	0.6927	ACCEPT H_0	STATISTICALLY INSIGNIFICANT.
LOG(RCGEEFF)	0.6702	ACCEPT H_0	STATISTICALLY INSIGNIFICANT.

Econometric criteria (Second order test)
The second order test is based on the satisfaction of econometric batteries of test below are;

Cointegretion test
Since the variables are integrated at the same order then the presence of co-integration is established as well as their linear combination (Enders, 1995).

Table 4

Variable	ORDER OF DIFFERENCE	maxlag	ADF-stat	Critical value @ 5%	ASSESSMENT
RESID01	D(RESID01(-1))	8	-12.90984	-2.957110	CO-INTEGRATED

Conclusion; Since the saved residual are integrated at order one d(1) then we conclude that variables are co-integrated implying that there exist a short run stability among the variables under study.

Error Correction Model (ECM) Short-run

Dependent Variable: DLOG (RGDP)

VARIABLES	COEEFICIENT	STD.ERROR	T-STAT	PROBABILITY
DLOG(AGGEEFF,1)	0.315088	0.285060	2.105337	0.2791
DLOG(TRCOMGEEFF)	2.517600	0.552233	2.558944	0.0001
DLOG(RCGEEFF)	0.118255	0.213059	0.544530	0.8401
(ECM)	-0.468564	5.445609	8.200349	0.0000

R^2 = 0.756737; Prob(F-statistic) = 0.000001

Variable	COEFFICIENT	T-VALUE	PROB.	ASSESSMENT
(ECM)	-0.468564	8.200349	0.000	It will take 46% speed to adjust from disequilibrium to equilibrium.

Discussion of Findings
The short run result reveals that All the explanatory variables Agricultural government expenditure efficiency (AGGEEFF), transport & communication government expenditure efficiency (TRCOMGEEFF) and road & construction government expenditure efficiency (RCGEEFF) conform to a priori, and therefore are economically significant and the probability tests of statistical significant reveals that all the variables

understudy are statistically significant accept RCGEEFF, indicating that huge government expenditure on economic service sector were recovered by the activities of the sectors which means that the spending is efficient and also a sign of economic sustainability but in the short-run. While the long run result reveals that All the explanatory variables AGGEEFF,TRCOMGEEFF and RCGEEFF did not conform to a priori, and therefore are economically insignificant and the probability tests of statistical significant reveals that all the variables understudy are statistically insignificant, indicating that huge government expenditure on economic service sector were not recovered by the activities of the sectors which means that the spending is inefficient and also a sign of economic non-sustainability.

Summary of Findings

The AGGEEFF,TRCOMGEEFF and RCGEEFF did not conform to a priori expectation and are also statistically insignificant given the long run result, while the short run result stated the otherwise for RCGEEFF that was statistically insignificant. In summary, government expenditures are inefficient in Nigeria given available data. Our empirical estimate via co-integration and Error Correction Model shows long and short-run relationship between the variables under study; finally the overall probability test statistics indicates that there is insignificant relationship between government expenditures efficient and growth of output in Nigeria.

Conclusions/ Recommendations

The negative signs shown by the explanatory variables in the long run indicate that despite the huge and continuous increase in government expenditure, the economic service sectors have proved to be inefficient in their activities as revenue generated by this sectors cannot offset the expenses (cost) incurred by this sectors. This work therefore recommend that government should take economic service sectors serious to be profit oriented and formulate, implement good policy measures to make sure that all expenditures will be used properly for what they are made for.

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