

Analysis of Government Expenditure and Economic Growth in Nigeria: Application of Co integration Methodology

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Authors' contributions

This work was carried out in collaboration between all authors. Author OSI designed the study, wrote the protocol, wrote the first draft of the manuscript and reviewed both theoretical and empirical literature including the econometric analysis. Authors NJO and EAP edited the final manuscript while Author OTO supervised the research process. All authors read and approved the final manuscript.

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ABSTRACT

This study analyzed the long run relationship between government expenditure and economic growth in Nigeria from 1980 – 2015 using the Johansen co integration technique, Error correction mechanism and Pair wise Granger causality econometric tool of analysis. The results of the study indicate negative relationship among government capital expenditure, unemployment and economic growth. A positive correlation was found among government recurrent expenditure, inflation and economic growth. The results showed unidirectional causality running from GKEX to gross domestic product and bi directional causality from GREX to gross domestic product. The causality result also indicated a unidirectional causality running from unemployment to RLGDP and government capital expenditure to unemployment. The authors recommends that the Nigerian

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government should ensure the full implementation of her minimum wage law across states and private sectors of the economy to take full advantage of the impact of salaries and wages in the performance of the economy. Secondly, efforts should also be made to address all negative issues associated with full implementation of capital projects in the economy beginning with strengthening the procurement process, adequate oversight function by the legislative arm and prosecution of fraudulent officers involved in any form of corrupt practices.

Keywords: Government expenditure; economic growth; co integration, Wagner's Law, Keynes hypothesis.

1. INTRODUCTION

Government expenditure is an exogenous variable according to Keynes which can be applied as policy to stimulate growth. Wagner in the other hand argues that public expenditure is an endogenous variable or an outcome not a cause of growth in national income. The knowledge of the direction of causality between government expenditure and economic growth is imperative for policy formulation. If causality runs from expenditure to growth as provided by Keynes the government expenditure becomes important instrument for economic policy formulation. However, if causality runs from national income to expenditure as defined by Wagner, then the influence of public expenditure as a tool for efficient policy to stimulate economic growth will decline [1].

The principal view between scholars as well as public policy makers, however, is that government can contribute significantly in increasing the level of economic growth through fiscal policy as an essential instrument because it enables the government to intervene in realizing full employment and other macro economic agenda. This is in line with the Keynesian theory of public expenditure. The achievement of this fiscal policy objective however depends on the ability of the government to allocate her resources efficiently through the budget process and also ensure full implementation of the budget.

In spite of huge government expenditure on the agricultural, health, road construction, power, telecommunication and transportation sectors, it is evident that this rising expenditure is yet to translate into economic growth and possibly manifest in increased employment, reduction of poverty and inequality. This development has attracted more interest and empirical examination on the possible impact of government spending in the economy.

Analysis of the trend of government expenditure in Nigeria shows that the share of recurrent expenditure to the total expenditure stood at 68%, 60% and 70% in 2007, 2008 and 2009 respectively while an insignificant part is committed to capital expenditure. This appalling expenditure management style is seen to be responsible for high rate of unemployment, high incidence of poverty and misery and sustained high infrastructural gap in the economy. Economists are divided along the ideological lines of Wagner's hypothesis and Keynesian theory and the contention has remained whether government expenditure contribute to growth or hinder economic growth. Adolph Wagner asserts that causality runs from national income to government expenditure while Keynes maintained that causality runs from government expenditure to national income. There is limited combined research on the relationship between government expenditure and economic growth in Nigeria and the outcome of this few empirical research are conflicting, more so the trends of government expenditure and economic growth is not consistent with economic theory just as incidence of poverty in the country does not reflect the consistent rise in government spending.

For instance, while [2] established absence of causation between government spending and productivity in Nigeria, [3,4,5,6] claimed they exist causal relationship between government spending and national output in Nigeria.

Regardless of these empirical and theoretical postulations and the mounting volume of government expenditure in Nigeria and its insignificant development outcome, the determinants of government expenditure in the country has not received in depth empirical assessment in the light of these theories. Few studies have made attempts but with varying conclusions concerning the effect of expanding government expenditure with regard to economic growth in the country.

It is evident also, that theoretical postulations sometimes conflict with economic realities in the country. Taking the case of the Wagner's law; there are instances where the value of government expenditure increased but accompanied by a negative economic growth. For instance, from 1966 to 1968, the Nigerian economy growth rate fluctuated between -4.25% and -1.25%, while government expenditure growth rate increased from 1.12% to 58.96%. Equally, during the Structural Adjustment Programme (SAP) of 1986, the Nigerian economy witnessed a reduction in growth rate of 2.51% (1986) and 0.9% (1994), while the government expenditure growth rate increased from 35.72% to 54.62% [7]. These divergent views among economists motivated this study.

Where G is nominal total government expenditure, GDP is nominal Gross Domestic Product, $GDPR$ is real Gross Domestic Product, N is the total population size, and C is government consumption expenditure. The authors adopted the traditional version of Peacock and Wiseman in the model specification and estimation.

The term government expenditure is defined as a spending on assets. It is the purchase of items that will last and be used time and time again in the provision of goods or services. [8] states that government expenditure is always focused on public goods such as building of a new hospital purchase of new computer equipment or networks and constructing new roads, among other objectives. Also, [9] states that government expenditure is the money spent on goods that are classified as investment goods. This means spending on things that last for a period of time and include investment in hospitals, schools, power sector, telecommunication, agriculture, and road construction. The rising unemployment rate in Nigeria has been a growing concern, despite the fact that the government had embarked on several policies aimed at improving the growth of the economy through the increase in government expenditure.

2. REVIEW OF RELATED LITERATURE

2.1 Keynes Theory of Government Expenditure

Our overview of the public expenditure theory of John Maynard Keynes will be anchored on its applicability to the underdeveloped economies,

taking Nigeria as a point of reference. It has been suggested that the Keynesian theory is not applicable to every socio economic set up rather to advanced democratic capitalist economies. It is the opinion of some economists that practical Keynesianism is a seed which is difficult to be transplanted in a different soil without either destroying it or making it poisonous to the receiving economy, even though in the English soil it thrives with both fruit and shade.

The Keynesian hypothesis is based on the presence of cyclical unemployment which occurs during a depression. It is as a result of ineffective demand in an economy; hence any increase in demand will help to reduce unemployment through deficit financing. Deficit financing involves a deliberate attempt to make budgetary provisions in excess of available resources leading to borrowing in order to fund the deficit budget. The additional resources borrowed will consequently increase government expenditure. It is necessary to note that the Keynesian economic prescription seems to apply to the kind of unemployment in advanced economies. The nature of unemployment in developing countries like Nigeria is chronic rather than cyclical hence some economist express doubts on the capacity of the Keynesian government expenditure theory to effectively impact growth in developing countries. It is also necessary to note that apart from chronic unemployment, developing economies also suffer from disguised unemployment. It is suggested that the economic problem of the developing economies contrary to Keynes position is not due to lack of effective demand but shortage of capital resources.

John Maynard Keynes obviously devoted his analysis on the short run in which the existing skill and quantity of available labour, the current number and value of equipment, the prevailing technique, the extent of competition, the tasks and attitudes of the consumer, the disutility of different intensities of labour and the organization as well as social structures were taken as given while on the contrary all the basic factors assumed by Keynes as given change over time casting doubt on the applicability of these assumptions and its relevance to contemporary fiscal policy management in developing countries like Nigeria and south Africa. Some economist has also argued that the Keynesian proposition is based on the concept of a closed economy. The economies of developing nations are not closed economies as Nigeria for instance exports crude oil, agricultural products and also import all

manner of manufactured goods from Asian, American and EU countries. South Africa in the other hand also export gold and import all sorts of materials from other countries of the world. In this regard, one wonders the possible relevance of the Keynesian hypothesis. Keynes theory of government expenditure presumes that human labour and other complementary resources are in excess supply in the economy. This implies a depressed economy where the industries, machines, managers and workers including consumers' attitude are available only waiting to resume their temporarily suspended functions and roles. This does not match the economic situation in developing countries which is not characterized by suspension of economic activity nor is static. Capital, skills, factor supplies and economic infrastructure are seriously in short supply or none existent. Nigeria and South African economies for instant is not a depressed economy rather a developing nation with shortage of physical and human capital and infrastructure accompanied by an inefficient institutional framework that promotes corruption and deficient service delivery system. Hence, it can be deduced from the foregoing discussion that labour and capital are simultaneously unemployed in developing nations ie when labour is not engaged, capital and equipment are also not fully utilized or there is excess capacity in them. But in Nigeria and South Africa as a developing country, there is acute shortage of capital and equipment and attempt to bridge this infrastructural gap through public expenditure programme in these countries has not yielded a positive result. It is the opinion of this study that Keynes policy initiatives are difficult to apply under the prevailing conditions in the developing nations. This is because; an attempt to increase investment spending induces rise in prices rather than increase in economic growth. We are also of the opinion that government spending in developing countries like Nigeria and South Africa if directed to funding capital formation does not lead to inflation since it is used for increasing the capacity of the economy to produce more goods and services.

2.2 Theory of Allocative Efficiency in Government Expenditure

The Keynesian theory of government expenditure pre supposes that government expenditure as a fiscal policy is an instrument to generate demand for goods and services in the economy during deficit financing. This is made possible through the budget process which

involves the sharing of the government resources into sectors of the economy based exclusively on the subjective opinion of the government in power who allocates the resources to preferred sectors and withholds it from other sectors not based on any established rules or scientific methodology. The success of every administration and her ability to effectively provide social and infrastructural services for the populace depends on this unscientific discretionary resource allocation style. A major role of contemporary government expenditure management is to develop institutional settings that can guarantee allocative efficiency in government spending. In specific terms, allocative efficiency means the ability of government expenditure authorities to share government resources on the grounds of objective public programs in attaining set development goals. This involves the ability to move state resources from unpreferred sectors to choice sectors of the economy, setting her priorities and goals very clearly and mobilizing resources to ensure such goals are met. To be seen to have allocated efficiently, the government expenditure management authorities must be calculative and instructive, looking ahead to define the actual result that is intended to be achieved and subsequently coming back to reexamine the outcome to ensure the set goals has either been achieved or not. Here a link must be established between strategic planning and evaluation in public expenditure management and budget procedures. It is instructive to note that allocative efficiency cannot be attained under the current incremental budgeting system in Nigeria and South Africa. Incremental budgeting matched the times but it is an unacceptable way of allocating resources. It promotes wastefulness and has the propensity to bloat the volume of the public sector. Incremental budget does not support fiscal discipline by supposing that spending will grow per annum and thereby increasing the totals as such budgeting principle calls to question due process assumption in public finance. Consequently, recent developments in the field of public finance tend to favour planning-programming-budgeting systems (PPBS) and Zero based budgeting (ZBB) instead of incremental budgeting. PPBS give budgeting a longer time period to grow its investigative competence while zero based budgeting seeks to redistribute resources within the context of initial programs and expenditure. Even though the duo are procedurally different, both PPBS and ZBB seek to intensify competition for budget resources while PPBS

provides information on the cost effectiveness of alternative means of realizing government goals, ZBB strives to have every spending unit prepare alternative budgets each with incremental resources and output. It is the opinion of this study that if the objective of public expenditure programmes is to be realized in the developing economies (Nigeria and South Africa in this instance), and allocative efficiency attained with increase in economic growth, then Zero based budgeting must be embraced as against the practice of incremental budgeting.

2.3 Rostow's Stages of Economic Growth

Professor W.W. Rostow approached economic development from a historical angle. He identified the traditional society, the pre conditions for take – off, the take – off, the derive to maturity and the age of high mass consumption. It is suggested from this theory that level of government expenditure in any economy must reflect any of these stages. For instance, the expenditure pattern of an economy in the traditional stage cannot be the same with another economy at the drive to maturity stage or the age of high mass consumption.

2.3.1 The traditional stage

Jhingan [10] explained a traditional society as one whose structure is within constrained production capacity based on pre Newtonian science and technology as the social structure of the traditional society was based on social order where the relationship in the clan plays a major role. At this stage, there was a concentration of political power in the regions in the hands of owners of properties supported by military strength and technocrats. A greater number of the populations were engaged in agriculture. Obviously, agriculture is the main stay of such economy and contributes significantly to the resources of the traditional society. These resources are usually committed to non economic projects and programmes like temple building's and monuments, funeral ceremonies, marriage ceremonies and paying for war expenses.

2.3.2 The pre condition for take – off

This is the second stage as identified by a situation where the pre conditions for steady growth in the economy are created. Rostow

suggests that the pre condition for take – off from traditional society flows from certain lines. The first is the understanding that economic progress is achievable and is a pre condition for overall economic development. This understanding triggers new sets of economic agents and enterprising investors both in the public and private sector of the economy interested in mobilizing savings in the economy. This new orientation for growth and development also stimulate activities in the financial sector encouraging the establishment of financial institutions and capital markets as necessary condition for the ultimate take – off.

Rostow posits that this pre condition for steady industrial growth comes with sudden changes in three non industrial sectors. There will in the first place be a growth in social overhead capital aimed at increasing market activities and to enlarge the productive base of the economy to enable the political classes have an effective grip of the economy. Secondly, the new idea must trigger a technological revolution in agriculture that can make agricultural productivity to increase in order to meet the growing need of the new urban population. Finally, growth of imports especially, capital goods funded by the new developments in the productive sector and market enterprise including the rise in exportable materials in the economy. The basis of the transition to take off is anchored on the increase in the rate of investment to a level that is greater than the population growth rate.

2.3.3 The take off

This stage is presumed the starting point in reaching the desired destination and economic growth becomes a normal condition and powers of modern transformation conflicts with institutions and habits. This stage marks the realization of the expectations of the traditional stage and general interest in development gets built into the interest of the society. According to Rostow, the take off stage is synonymous with an industrial revolution associated with the radical changes in production method. Rostow believes this stage is supposed to be short, ranging from one to two decades. Rostow identified three conditions for takeoff;

- A change in the rate of productive investment from about 5% to 10%

- A substantial growth in industrial development coupled with high rate of economic growth.
- An emergence of a social political and institutional frame work that will take advantage of the new order to stimulate growth.

2.3.1.1 The drive to maturity

The drive to maturity stage follows the take off stage and represents a time period when a society has adopted modern technology across her resources. This time represents a period of sustained economic growth spanning across four decades. This entails the replacement of old technique of production with new ones and creation of new sectors in the economy with rate of investment growing above 10% of national output. Rostow believes that at this stage of technological maturity, the following changes can take place. There will be a change from unskilled to skilled manpower growth in the economy with majority of the populace preferring to live in the urban centers. There will be growth in real wages and the development of trade union to cater for the needs of the labour force. This stage also promotes a change in the disposition of entrepreneurs replacing rugged and hard working masters to polished and efficient administrators. The society feels bored by the trends in technological advancement leading to the yearning for new order.

2.3.1.2 The age of high mass consumption

This stage is usually noted for extensive growth in the urban population, mass use of automobile and durable consumer goods and household gadgets. At this stage, emphasis is shifted from supply to demand, from issues associated to production challenges to matters of consumption and welfares. The increases in welfare are encouraged by the conscious promotion of national policy to promote power and control beyond national boundaries. Progressive taxation is encouraged in order to protect and promote the welfare of the working class coupled with the desire to create additional commercial centers. As earlier suggested, the contemplation of this study is that growth in public expenditure must reflect at each stage a commensurate commitment from government as the challenge in the provision of social and infrastructural sciences will differ correspondingly.

2.3.4 Concept of fiscal illusion

Fiscal illusion is a concept of government expenditure that suggests that when revenue sources are not transparently disclosed, the cost of government is perceived to be less expensive than it actually is. The benefit that comes from these unknown government revenue sources increases the public desire for more government spending, hence instigating the political class to expand the size of government.

Buchanan and Wagner [11] suggests that complicated tax system tend to support fiscal illusion and consequently increases the scope of government spending that it would have been if every tax payer understands fully how much they contribute through the tax system to sustain the cost of governance. Some economists also believe that deficit spending with pretentious tax cuts are unrealistic as they believe that there is a significant negative correlation between the level of government expenditure and tax revenues.

Reduction in tax rate and adjustment in tax structure while sustaining deficit financing makes government spending appear cheaper than it actually is. The concept of fiscal illusion presupposes that the actual cost and benefit of government may be misunderstood by the populace depending on how the fiscal policy tools are administered. Some economists believe that the way and manner government revenue are raised influences the perception of tax payers hence direct taxation causes less fiscal illusion than indirect taxes. Since direct taxes imposes more burdens on the tax payers and will cause them to resist further government costs resulting in an increase in taxation. Indirect tax does not impose much burden on the tax payer hence its contribution to government spending is difficult to measure hence government benefits may be applauded without understanding the actual source of funding.

The bedrock of this theory is that the tax system or structure makes the actual cost of governance to be underestimated with tax payers not truly informed of the actual cost of taxation and its relative contribution in government total expenditure. It is necessary to note that the extent of the operation of fiscal illusion in Nigeria and South African can only be determined empirically. This is true especially in Nigeria where the impact of the proceeds from crude oil is seen as the determinant of government

spending and not really based on proceeds from taxes.

3. REVIEW OF EMPIRICAL LITERATURE

Using time series statistics covering 1970 to 2005, [12] investigated the link between government spending and national output in Nigeria. Omoke employed co integration and granger causality econometric tool to examine the variables in the model. The variables were first tested using both the Augmented Dickey-Fuller (ADF) test and the Phillip-Peron (PP) test to know the stationary properties of the data and the order of integration, the result indicate the variables were integrated at the same order after first difference while the co integration results reveal absence of long run relationship among the variables in the model. The author found support for Keynes theory based on the Granger Causality test indicating that government expenditure granger causes national output, with government spending having significant impact on national productivity. The economic implication of this study by Omoke is that fiscal policy instruments should be applied towards boosting government spending and that where available government resources cannot match government budgetary proposal, deficit financing options can be adopted to bridge the revenue/expenditure gap in the economy.

The causal link between government spending and national output was the subject of research in Turkey by [13] in the year (2003) adopting co integration and granger causality tool of econometric analysis on time series statistics spanning from 1965 to 2000. Empirically, the study found no support for either Wagner or Keynes hypothesis in public spending, implying that the use of predetermined fiscal policy tool in the management of fiscal policy should not be applicable in the Turkish economy, rather a discretionary fiscal policy approach should be adopted to address any fiscal policy challenge as they arises. Ironically, the authors noted that government spending should be an outcome and not a cause, insisting that causality must run from national output to government spending.

Maku [14] used time series data spanning from 1977-2006 to estimate the probable impact of government expenditure on national output in Nigeria. The implications of the empirical result is that, government policies should be directed

towards boosting private and public investment in the Nigeria economy so as to enhance national development.

Mutui and Olusijibomi [6] investigated the possible correlation between government costs and national output in Nigeria from 1970-2009. The result agrees with postulations in Wagner's hypothesis that as the activities of government increases, government spending has the propensity to rise proportionately. Based on the result of the estimation, attainment of growth targets constitute major reasons for government expenditure especially capital investment in domestic stock and improvement in social capital. Consequently, there should be deliberate attempts to sustain adequate levels of investment in social and economic infrastructure.

Shantayanan [15] undertook a study of forty three developing nations in 1996 for a period of 20 years to ascertain the relationship between government expenditure and economic growth in those economies. The study adopted the ordinary least square econometric tool of analysis in the estimation of the variables incorporated in the model. The findings, according to the authors indicate that a rise in the share of current expenditure in those economies has positive significant impact on economic growth, however, the relationship between the capital component and economic growth was negative. The implication of this result is that likely productive ventures can turn out unproductive if they are not managed effectively. This implies that developing countries studied has been misallocating public expenditures in favour of capital and, at the expense of recurrent spending. This study, however notes that a panel data analysis would have been more appropriate to study these forty three economies, instead of the OLS the authors adopted.

Efobi and Osabuohian [7] looked at the position of national spending in Nigeria context with regards to Leviathan and Peacock-Wiseman Displacement theories rather than Wagner. They used the ARDL method of analysis to show that national spending is mostly affected by economic devolution and political volatility. They therefore suggest that offices and leaderships should be fortified in order to achieve productivity which in turn gears growth in the economy. These findings also entail that, there is more of discretionary fiscal policy

application in Nigeria than fiscal policy and government expenditure management by rules for the actualization of government desired objectives. The use of discretionary fiscal instruments also demands that the fiscal authorities be transparent in the management of fiscal operations.

Kaakunga [16] investigated the implication of applications of fiscal policy tools on economic growth of Namibia. The opinion of the author is that the essence of fiscal management is to realize among other things an increase in per capita income. The study demonstrated how a change in the composition of government spending at the advantage of the productive sector, can be used to stimulate the growth rate of gross domestic product in the Namibia economy. The result of the OLS econometric estimation, indicate that capital expenditure, terms of trade and income from taxation all have positive impact on growth, while all other explanatory variables incorporated in the model exhibit negative relationship with national output. The ADF unit root test showed a mix order of integration among the variables. It is the opinion of this study that based on the mix order of integration as revealed by the ADF unit root result, the author should have adopted auto regressive distributed lag model as the preferred option for further analysis and not ordinary least square. However, the implication of the result is that, fiscal policy tools should be applied to increase capital spending and boosting of international trade, since these variables has positive impact in the economy.

Danmola et al. [17] in an attempt to verify the applicability or otherwise of Wagner's hypothesis in Nigeria, used co integration, error correction model and granger casualty tools of econometric analysis to estimate the time series data specified in the model. Both ADF and Philip Peron unit root test result indicate mixed order of integration, while the co integration test show evidence of two co integrating vectors, and indication of long run equilibrium relationship among the variables. The ganger causality results reveal that causality runs from national income to capital expenditure and bidirectional causality from national income to recurrent expenditure. This means that fiscal policy instruments must be used to stimulate sources of growth of national income, and the trimming down of capital spending in the economy. We note that the mixed order of integration

as indicated by the unit root test requires that the appropriate econometric tool of further analysis is the auto regressive distributed lag model and not co integration test as adopted by this study.

The case of foreign aid, public expenditure and economic growth in Nigeria was the subject of research carried out by, [18] in the year 2011, using co integration and error correction mechanism to estimate the variables in the model. The authors assert that, foreign aid is a crucial source of funding in most Sub-Sahara Africa, Nigeria not an exception, where it is used to bridge the resource gap arising from poor savings, insufficient proceeds from export and absence of a well developed tax structure. In Nigeria, donor fund has come to be seen as significant part of government source of revenue to fund her annual budgets. The findings from the econometric estimation indicate that resources from donor agencies and indeed overall government spending have positive impact on the economy. The implication of this finding is that Nigeria must continue to improve on her foreign relations by adopting progressive foreign policies that can engender confidence from the international community to continue to attract more donor collaboration. Nigeria must also strive to make her fiscal and public expenditure policies to be both transparent and people friendly.

Emmanuel and Olagbaju [19] investigated the relationship between government spending and manufacturing sector output in Nigeria. Government expenditure is disaggregated into capital and recurrent with a view to analyze the relative effect of these categories of government expenditure with emphasis on the capital component. The study employed time series data from 1970 to 2013. Data on manufacturing sector output, capital and recurrent expenditure, nominal and real Gross Domestic Product (GDP), exchange rate and interest rate were used in the estimation. The findings of the study revealed stationary of the variables of interest at their first difference while the Johansen co integration approach also confirms the existence of one co integrating vector at 5 percent level of significance. Error correction estimates revealed that while government capital expenditure has positive relationship with manufacturing sector output in Nigeria, recurrent expenditure exerts negative effect on manufacturing sector output. The results showed

that one per cent increase in government capital expenditure resulted in an increase of 11.2 per cent in manufacturing sector output while recurrent expenditure decreases it by 26.9 per cent. This according to the study reveals that government capital expenditure has positive impact on manufacturing sector output. The study therefore suggests that larger percentage of government expenditure in the annual budget should be on capital component coupled with improved implementation of expenditure policies rather than recurrent expenditure which does not really have a significant impact on the manufacturing sector.

3.1 Trends of Government Expenditure and Economic Growth in Nigeria

The pattern of government expenditure in Nigeria has been on consistent increase over the years. [20] reveals that the rate of poverty in Nigeria has been rising due to factors such as; increased number of school graduates with no matching job opportunities; a freeze on employment in many public and private sector institutions; and mismanagement of capital budget by the government. Thus given the persistent level of

economic growth in the country, remedial measures such as improving fiscal measures in government finances and implementing appropriate actions to attract foreign direct investment among others are considered imperative towards stemming the surge [21].

Sustainable economic development measured in this study by gross domestic product, means a rate of growth which a country can maintain without creating other significant economic problems, especially for future generations [22]. There is clearly a trade-off between rapid economic growth today, and growth in the future through government expenditure. Sustainable economic growth and development are macroeconomic objectives pursued competitively by all nations of the world irrespective of their differences in history, natural resources endowment, economic and political systems, as well as geographical locations [12]. These goals are indeed pursued by all nations even though the extent to which each country attains growth and development may differ from that of another. This perhaps, is linked with different approaches adopted in managing and monitoring government programmes through the budgetary process.

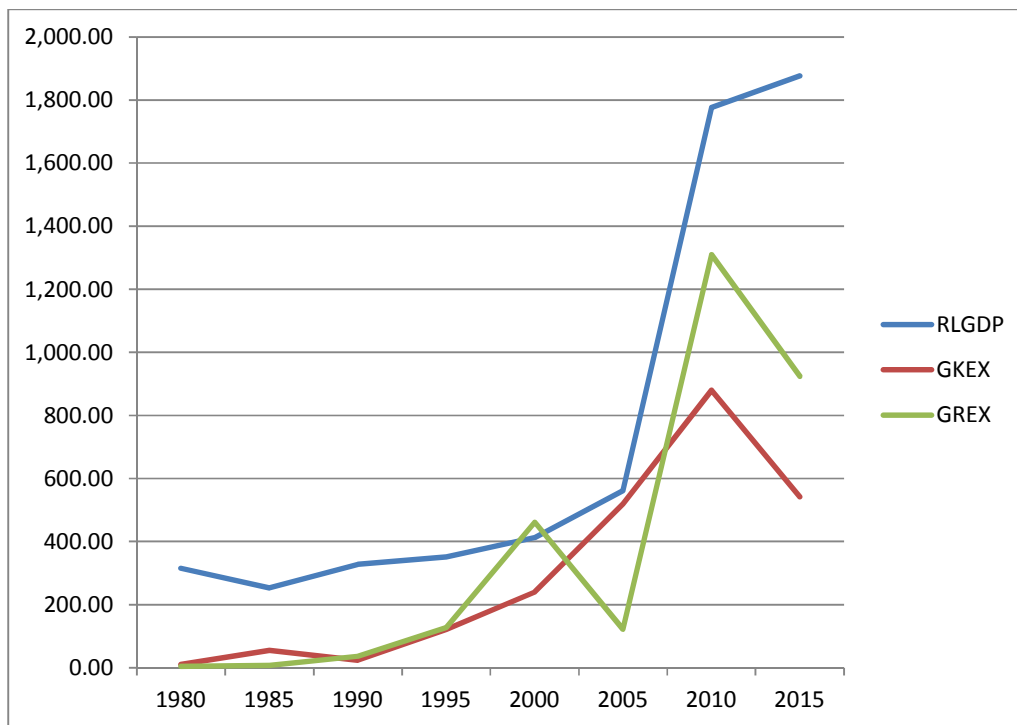


Fig. 1. Relationship between government spending and national income (RGDP)

In the past, government increasing resources influenced greatly the direction of government spending, especially during the oil boom period. However, with the attendant global recession and subsequent fall in government revenue sources mainly from sales of crude oil, there have been mounting pressures on how to effectively utilize scarce government resource to attain significant economic progress in the economy. This scenario has brought back into the government finance discourse the issue of correlation between national income and government expenditure in an attempt to find appropriate policy prescriptions in the management of fiscal policy. It is the opinion of the authors that the outcome of this study will improve fiscal policy administration in Nigeria.

The table below and graph above depict the relationship between government spending and national income (RGDP) in Nigeria, at a five (5) year interval from 1980 – 2015.

Table 1. Relationship between government spending and national income (RGDP)

Year	RLGDP	GKEX	GREX
1980	315.00	10.20	4.80
1985	253.00	55.00	7.80
1990	328.00	24.00	36.20
1995	352.00	121.10	127.60
2000	412.30	239.50	461.60
2005	561.90	519.50	122.40
2010	1,776.30	880.00	1,310.00
2015	1876	541.6	923.4

The trend above indicate that recurrent expenditure in Nigeria takes a larger part of total government spending within the period of the study contrary to conventional practice in global fiscal policy management due to the believe that capital spending should be more beneficial to the economy than recurrent spending.

4. DATA AND METHOD OF ANALYSIS

4.1 Data

The data for this study covered the period of 1980 -2015 and were sourced from Central Bank of Nigeria Statistical Bulletin and online source from data.worldbank.org/indicators, all within the period under consideration.

4.2 Model Specification

This study adopts the classical theory model of growth represented in the Cobb-Douglas model by introducing government expenditure factor to investigate the effect of government spending on economic growth in Nigeria. Classical theory identified the sources of growth to include capital, labour and technology and the proportion of each variable can be identified through the Cobb-Douglas production function as stated below:

$$Y = AK^{\alpha}L^{1-\beta} \quad (1)$$

In the light of the above model, it is hereby adopted and modified. It is specified as below;

$$RLGDP = f(GKEX, GREX, INFL, UNEMP) \quad (2)$$

This function is transformed in a linear equation as;

$$RLGDP_t = \alpha_0 + \alpha_1 GKEX_t - 1 + \alpha_2 GREX_t - 1 + \alpha_3 INFL_t - 1 + \alpha_4 UNEMP_t - 1 + \epsilon_t \quad (3)$$

Where RLGDP = Real gross domestic product (measure of national income)

GKEX = Government capital expenditure (measure of state activity)

GREX = Government recurrent Expenditure (measure of state activity)

INFL = Measure of effect of government spending in the economy

UNEMP = Measure of impact of government spending in the economy

ϵ_t = Error term and $\alpha_0 - \alpha_3$, are estimation parameters.

4.2.1 Estimation procedure

The researchers first carried out a unit root test on the variables in this model. This is because most macroeconomic time-series have unit root and the regression of a non-stationary time series on another non-stationary time series would produce a spurious regression. So to produce a meaningful estimate, the researcher conducted a unit root test. Thus, this study tested the nature of the time series first to determine if they are stationary or not and if stationary of what order are they integrated. The order of integration helped the researcher in determining the long-run relationship or otherwise of the variables. To carry out this, the Augmented Dickey Fuller and test was used.

A non-stationary series which can be transformed to a stationary series by difference d time is said to be integrated of the order d. A series X_t integrated of order d is conventionally denoted as:

$$X_{t-1} (d) \quad (4)$$

If X_t is stationary, then there is no need for differencing; that is integration order of zero denoted as:

$$X_t (0) \quad (5)$$

These series with time variant mean and covariance function is said to be integrated of order zero. While series that are differenced once to achieve stationarity, is said to be integrated of order one, that is

$$X_{t-1} (1) \quad (6)$$

The Augmented Dickey-fuller (ADF) and the Saragn-Bahrgv Dub-Watson (SBDW) test used is in this general format

$$X_t = a + \beta x_{t-1} + \beta T + \sum t \quad (7)$$

Where the β 's are large enough to guarantee white noise residuals and T is trend.

The relevant test statistics for PP and ADF test is the ratio of β over its OLS standard error. The Null hypothesis is

$$H_0: X_{t-1}(1) \quad (8)$$

The test statistic has no t-distribution under the null hypothesis because of the theoretical

$$\Delta \ln RLGDP_t = \theta_0 + g\delta t - 1 + \sum \theta_{ij} \beta_{ij} \Delta \ln RLGDP_{t-1} + \sum \theta_{ij} \beta_{ij} \Delta \ln GKEX_{t-1} + \sum \theta_{ij} \beta_{ij} \Delta \ln GREX_{t-1} + \sum \theta_{ij} \beta_{ij} \Delta \ln INFL_{t-1} + \sum \theta_{ij} \beta_{ij} \Delta \ln UNEMP_{t-1} + \epsilon_t \quad (11)$$

$$\Delta \ln GKEX_t = \theta_0 + g\delta t - 1 + \sum \theta_{ij} \beta_{ij} \Delta \ln GKEX_{t-1} + \sum \theta_{ij} \beta_{ij} \Delta \ln RLGDP_{t-1} + \sum \theta_{ij} \beta_{ij} \Delta \ln GREX_{t-1} + \sum \theta_{ij} \beta_{ij} \Delta \ln INFL_{t-1} + \sum \theta_{ij} \beta_{ij} \Delta \ln UNEMP_{t-1} + \epsilon_t \quad (12)$$

$$\Delta \ln GREX_t = \theta_0 + g\delta t - 1 + \sum \theta_{ij} \beta_{ij} \Delta \ln GREX_{t-1} + \sum \theta_{ij} \beta_{ij} \Delta \ln GKEX_{t-1} + \sum \theta_{ij} \beta_{ij} \Delta \ln RLGDP_{t-1} + \sum \theta_{ij} \beta_{ij} \Delta \ln INFL_{t-1} + \sum \theta_{ij} \beta_{ij} \Delta \ln UNEMP_{t-1} + \epsilon_t \quad (13)$$

$$\Delta \ln INFL_t = \theta_0 + g\delta t - 1 + \sum \theta_{ij} \beta_{ij} \Delta \ln INFL_{t-1} + \sum \theta_{ij} \beta_{ij} \Delta \ln GKEX_{t-1} + \sum \theta_{ij} \beta_{ij} \Delta \ln GREX_{t-1} + \sum \theta_{ij} \beta_{ij} \Delta \ln RLGDP_{t-1} + \sum \theta_{ij} \beta_{ij} \Delta \ln UNEMP_{t-1} + \epsilon_t \quad (14)$$

$$\Delta \ln UNEMP_t = \theta_0 + g\delta t - 1 + \sum \theta_{ij} \beta_{ij} \Delta \ln UNEMP_{t-1} + \sum \theta_{ij} \beta_{ij} \Delta \ln GKEX_{t-1} + \sum \theta_{ij} \beta_{ij} \Delta \ln GREX_{t-1} + \sum \theta_{ij} \beta_{ij} \Delta \ln RLGDP_{t-1} + \sum \theta_{ij} \beta_{ij} \Delta \ln INFL_{t-1} + \epsilon_t \quad (15)$$

Where $\delta t-1$ are the error correction terms.

variance of X_t , though; Fuller in 1976 reports tables and critical values for those t- ratios.

The next step is to evaluate the order of integration of the residual generated from the static model. We can apply the Unit root to check their stationarity.

The unit root test of the DF and ADF are respectively as follows:

$$\rho U_t = \Phi U_{t-1} + dT \quad (9)$$

$$\rho U_t = \Phi U_{t-1} + \sum \delta_i \rho U_t + dT \quad (10)$$

In a case where co integration does not exist, it means the linear combination is not stationary and the variable does not have a mean to which it returns. The presence of co integration however implies that a stationary long-run relationship among the series is present. This study employed the error correction mechanism based on Engle-Granger (1987) two-step error correction model (ECM) approach. This procedure involves the estimation of static or long-run relationship using the Johansen multivariate co integration test. A statistically significant ECM indicates the speed of adjustment in the short-run of an economy when disequilibrium occurs.

4.2.2 Error correction model

The error correction mechanism (ECM), assume that some variable y has an equilibrium path. If the variables are co integrated, there must exist an error-correction representation that may take the following form:

4.2.3 Granger causality model

In the short-run, there are adjustments to deviations from the long-run path which are defined by long-run causality. Short-run causality is ascertained by a test on the joint significance of the lagged explanatory variable. The study tries to find the causality direction between the two variables, income and domestic private savings by using Granger type causality methodology, i.e., standard Granger causality test. The test relies on estimating two basic equations as follows:

$$Y_t = \alpha_0 + \sum_{i=1}^n \alpha_i Y_{t-i} + \sum_{j=1}^n \beta_j X_{t-j} + \varepsilon_{1t} \tag{16}$$

$$X_t = \lambda_0 + \sum_{i=1}^n \lambda_i Y_{t-i} + \sum_{j=1}^n \theta_j X_{t-j} + \varepsilon_{2t} \tag{17}$$

5. PRESENTATION OF RESULTS

Observing the variables; RLGDP, GKEX, GREX, INFL and UNEMP, all series are not stationary at levels. However, the series became stationary at first difference that is 1(1). The results showed that the time series are integrated of the same order; I (1), with the application of both ADF test.

The non existence of unit root in the model as explained by the ADF test above prompted the investigation of long run influence of the independent variables on the dependent variable. The Johansen co integration table above reveals two (2) co integrating vectors, which depict a long term equilibrium relationship between government spending and other explanatory variables. This also means that the pre test (unit root test) is not spurious.

Table 2. Augmented dickey fuller unit root test

Trend and Intercept @ Levels

Series	ADF test statistic	5% critical values	10% critical values	P.val	Rmks
RLGDP	-0.721299	-3.544284	-3.204699	0.9634	NS
GKEX	-2.433328	-3.544284	-3.204699	0.3572	NS
GREX	-1.342441	-3.544284	-3.204699	0.8601	NS
INFL	-3.118696	-3.544284	-3.204699	0.1178	NS
UNEMP	-2.592739	-3.544284	-3.204699	0.2857	NS

Sources: Researcher's compilation from E-view (version 7.0)

Table 3. Augmented dickey fuller unit root test

Trend and Intercept @ 1st Diff

Series	ADF test statistic	5% critical values	10% critical values	P.val	Rmks
RLGDP	-8.748622	-3.548490	-3.207094	0.0000	ST
GKEX	-5.970119	-3.548490	-3.207094	0.0001	ST
GREX	-7.042070	-3.548490	-3.207094	0.0000	ST
INFL	-5.653651	-3.548490	-3.207094	0.0003	ST
UNEMP	-5.573528	-3.548490	-3.207094	0.0003	ST

Sources: Researcher's compilation from E-view (version 7.0)

Table 4. Co integration test

Hypothesized No. of CE(s)	Eigenvalue	Trace statistics	0.05 critical value	Prob.
None	0.768113	102.6357	69.81889	0.0000
At most 1	0.638537	54.40601	47.85613	0.0107

Trace test indicates 2 co integrating equations at the 0.05 level, * denotes rejection of the hypothesis at the 0.05 level, ** Mackinnon – Haug – Michel (1999) P – value

Table 5. Vector error correction mechanism

Error correction	Coefficient	Std. error	T – statistics	P – values
ECT (-1)	-0.122322	0.046656	-2.621790	0.0159
D(RLGD(-1)) = C(2)	0.049528	0.201504	0.245792	0.8082
D(GKEX (-1)) = C (4)	-0.127187	0.064966	-1.957751	0.0637
D(GREX (-1)) = C(6)	0.036625	0.028761	1.273412	0.2168
D (INFL (-1)) = C(8)	290.6902	294.2938	0.987755	0.3345
D (UNEMP (-1)) = C(10)	-2880.711	1847.733	-1.559052	0.1339
C = C (12)	28491.67	8909.722	3.197818	0.0043

$R^2 = 0.505351$, F statistics = 3.950393, $Prob (F\text{-statistic}) = 0.000594$, $DW = 2.217438$

The Error correction term met the required conditions. The significance of rule of ECM holds that negative and statistical significant error correction coefficients are necessary conditions for any disequilibrium to be corrected. In light of this, the coefficient of ECM(-1) is -0.122322 The negative sign of the coefficient satisfied one condition while the fact that its P-value [0.0159] is less than 5% [0.05] level of significance satisfied the second condition of statistical significance. The coefficient indicated that the speed of adjustment between the short run dynamics and the long run equilibrium is 12.2%. Thus, ECM will adequately act to correct any deviations of the short run dynamics to its long-run equilibrium by 12.2% annually.

The computed coefficient of multiple determination (R^2) value of 0.505351 indicated that the model satisfied the requirements for goodness of fit. The computed statistics showed that 50.5% of the total variation in gross domestic product is accounted for by the explanatory variables: government capital expenditure, government recurrent expenditure, inflation and unemployment while 45.5% of the changes in stock market growth are attributable to the influence of other factors not included in the regression equation.

The F – statistics of 3.950393 with p value of 0.000594 which is less than 0.05 shows that the influence of explanatory variables on the dependent variables is statistically significant. This implies that all the independent variables have a joint influence on the dependent variable as explained by R^2 coefficient of 0.505351. The DW has the value of 2.217438 which indicates the absence of auto correlation among the residuals.

The causality result in the above table indicates unidirectional causality running from government capital expenditure to gross domestic product

and bi directional causality from government recurrent expenditure to gross domestic product. Another unidirectional causality was found to run from unemployment to gross domestic product and government capital expenditure to unemployment, this is validated by their p values as seen above.

Table 6. Pair wise granger causality

Null hypothesis:	Obs	F-statistic	prob.
GKEX does not Granger Cause RLGDP	35	5.94410	0.0205
RLGDP does not Granger Cause GKEX		3.13703	0.0861
GREX does not Granger Cause RLGDP	35	14.7725	0.0005
RLGDP does not Granger Cause GREX		4.79310	0.0360
UNEMP does not Granger Cause RLGDP	35	7.68423	0.0092
GKEX does not Granger Cause UNEMP	35	17.3086	0.0002

6. CONCLUSION

$$RLGDP = -96861.20 - 1.343669GKEX + 0.145129GREX + 1779.704INFL - 1908.801UNEMP \text{ (See Appendix)}$$

The above regression equation from both the normalize co integration table and upper chamber of the ECM indicates that government capital expenditure and unemployment has negative relationship with economic growth in the long run. This is contrary to appriori expectation as suggested by Keynesian economic theory which states that increase in government capital expenditure will stimulate the economy in the long run. The reasons for this negative relationship might be due to the endemic corruption associated with procurement procedures, capital project implementation in the economy and recurrent cases of non release or

outright diversion of capital vote. This is also applicable to negative relationship between unemployment and economic growth. A reduction in unemployment is expected to stimulate growth in the economy as the increased number of workers will lead to rise in production. However, since the impact of increase in capital expenditure is not felt in the economy, it means that the rise in employment do not translate to increase in production because workers are not adequately engaged.

On the other hand, government recurrent expenditure and inflation have positive relationship with economic growth, implying that both variables contribute to the growth of the economy. It is the opinion of this study that recurrent spending contributes more to the growth of the Nigeria economy than capital spending. This is because salaries and wages of workers are hardly diverted out of the economy as is the case of capital expenditure. The positive relationship between inflation and economic growth agrees with economic theory that certain rate of inflation especially within the single digit is considered necessary in any economy.

The result of the pair wise Granger causality shows a one way causality moving from government capital expenditure to economic growth and two way causality from government recurrent expenditure to RLGDP and vice versa. This means that Wagner's law is not supported in Nigeria within the study period rather the result validates the applicability of Keynes hypothesis in Nigeria. This implies that fiscal policy measures should emphasize the role of capital expenditure in the growth of the economy, while discretionary policy management should be adopted by the fiscal authorities in the management of recurrent spending. A unidirectional causality was found from UNEMP to RLGDP indicating that a reduction in unemployment rate will increase the growth of the economy, while increase in capital expenditure reduces unemployment rate and consequently leads to economic growth.

In view of the above, the study concludes that recurrent expenditure is beneficial to the Nigeria economy within the period under review and consequently makes the following recommendations; first, the Nigerian government should ensure the full implementation of her minimum wage law across states and private sectors of the economy. Secondly, effort should also be made to address all negative issues

associated with full implementation of capital projects in the economy beginning with strengthening the procurement process, adequate oversight function by the legislative arm and prosecution of fraudulent officers involved in any form of corrupt practices in the course of project implementation.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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APPENDIX

Co integration test

Date: 09/01/16 Time: 10:55
 Sample (adjusted): 1983 2015
 Included observations: 33 after adjustments
 Trend assumption: Linear deterministic trend
 Series: RLGDP GKEX GREX INFL UNEMP
 Lags interval (in first differences): 1 to 2

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.768113	102.6357	69.81889	0.0000
At most 1 *	0.638537	54.40601	47.85613	0.0107
At most 2	0.275245	20.82533	29.79707	0.3686
At most 3	0.234901	10.20191	15.49471	0.2655
At most 4	0.040554	1.366180	3.841466	0.2425

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.768113	48.22965	33.87687	0.0005
At most 1 *	0.638537	33.58068	27.58434	0.0075
At most 2	0.275245	10.62342	21.13162	0.6847
At most 3	0.234901	8.835730	14.26460	0.3001
At most 4	0.040554	1.366180	3.841466	0.2425

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by b*S11*b=I):

RLGDP	GKEX	GREX	INFL	UNEMP
1.09E-05	-1.47E-05	1.58E-06	0.019420	-0.020829
1.63E-05	8.37E-06	-3.95E-06	-0.099493	-0.551776
2.45E-05	-5.53E-08	-5.79E-06	-0.002931	0.214829
-4.10E-06	-8.20E-06	2.64E-06	-0.075260	0.077636
3.11E-06	4.77E-07	1.06E-06	-0.026690	-0.166806

Unrestricted Adjustment Coefficients (alpha):

D(RLGD)	-11209.73	-8601.947	6250.359	1800.983	1736.292
D(GKEX)	43971.20	35058.99	27868.87	-6477.061	8291.238
D(GREX)	-67270.52	36313.69	43869.39	-11847.61	-8832.688
D(INFL)	0.867650	3.364998	0.617705	5.908620	-0.679047
D(UNEMP)	-0.687655	1.397198	-0.445493	-0.313426	0.212349

1 Cointegrating Equation(s): Log likelihood -1417.921

Normalized cointegrating coefficients (standard error in parentheses)

RLGDP	GKEX	GREX	INFL	UNEMP
1.000000	-1.343669	0.145126	1779.704	-1908.801
	(0.20627)	(0.05103)	(1350.66)	(6615.14)

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