

# An Empirical Analysis of the Effect of Government Expenditure on Economic Growth in Nigeria (1981-2013)

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## Abstract

The study adopted the *ex-post facto* research design using the ordinary least square regression analysis to estimate the model specified. Real Gross Domestic Product (RGDP) was adopted as the dependent variable while government capital expenditure (CAPEXP) and government recurrent expenditure (RECEXP) represent the independent variables. Two hypotheses which flowed from the research questions were tested with the application of Granger Causality Test, Johansen Rank Cointegration Test and Error Correction Mechanism. There is a confirmation of the existence of a long run relationship and an indication that 2 cointegrating vectors exist at 5% level of significance. From the results, RECEXP Granger Cause RGDP while RGDP Granger Cause RECEXP. CAPEXP Granger Cause RGDP while RGDP Granger Cause CAPEXP. CAPEXP Granger Cause RECEXP while RECEXP does not Granger Cause CAPEXP. Thus, the study recommends amongst others, increased investment on the productive sectors of the economy, such as infrastructure, education and health. However, government should plug all leakages that have hitherto hindered effective and commensurate results from government spending in the past.

**Keywords:** Government expenditure; Economic growth; OLS; Nigeria.

## 1. Introduction

The subject of government involvement in resource allocation stems from the failure of market mechanism to effectively and efficiently perform this task. From the very inception, government is not to be involved in the day-to-day running of an economy as propounded in the doctrine of *laissez-faire* by Adam Smith, but to provide an enabling environment for the economy to operate, while maintaining law and order and protecting the nation from external aggression. The market mechanism could to a greater extent cater for the allocation of private goods based on exchange and competition but certainly not reliable for public goods.

Following the model of Musgrave (1959), governmental activity can be broken into three parts or branches, namely allocation, distribution and stabilization and growth. Broken down further, directly or indirectly, the various governments provide education, health care, national defence, police and fire protection, and provide or support a substantial amount of housing, recreation facilities, and parks. They set health standards and ensure adequate water supplies, transportation and other public facilities. They seek to attain a reasonably equitable distribution of income, to stabilize the economy, and to ensure adequate rate of growth. Therefore, they affect innumerable decisions of individuals by the large amount of revenue they collect in oil proceeds and taxes to finance these various activities. Huge amount of resources are required to fund these activities of government.

The size of government expenditures and its effect on long-run economic growth, and vice versa, has been an issue of persistent interest, analysis and debate for decades. Lopzides & Vamvoukas (2005) identified two levels of empirical literature on the subject matter. One set of studies has explored the principal causes of growth in the public sector while the other has been directed towards assessing the effects of the general flow of government services on private decision making and, more specifically, on the impact of government spending on long-run economic growth.

Evidences from Nigeria show that the total government expenditure in terms of capital and recurrent expenditures have continued to rise in the last three decades. Expenditures on defence, internal security, education, health, agriculture, construction, transport and communication are rising over time. For instance, government total recurrent expenditure increased from ₦4,846.70 million in 1981 to ₦36,219.60 million in 1990 and further to ₦461,600.00 in 2000 and later to ₦3,310,343.38 in 2010 while government capital expenditure rose from ₦6,567.00 million in 1981 to ₦24, 048.60 million in 1990. Capital expenditure stood at ₦239, 450.90 million and ₦883,874.50 million in 2000 and 2010 respectively and by 2011, it was ₦1,934,524.20 (Central Bank of Nigeria Statistical Bulletin, 2012).

However, following the Keynesian's view that government expenditures boost economic growth and supported by (Ram, 1986; Kormendi & Meguire 1986; Akpan 2011; Olabisi & Funlayo 2012); it is expected that the rising government expenditure in Nigeria should translate into significant growth and development. That would not be, rather the country is still ranked among the poorest countries in the world, with human development index (HDI) of 0.504 (UNDP, 2013), about 63.1 per cent (in 2004) and 68 per cent (in 2010) citizens living on less than US\$1.25 a day (Poverty & Equity Databank and PovcalNet, [povertydata.worldbank.org/poverty/country/NGA](http://povertydata.worldbank.org/poverty/country/NGA)). Even when GDP grew from 4.3 per cent in 2012 to 5.4 per cent in 2013 less than 2 per cent are super rich.

In view of the forgoing, this study sets to investigate empirically the effect of public expenditure on economic growth in Nigeria. The variables of public expenditure are total capital expenditure and total recurrent expenditure at disaggregated level. Other variables considered in the review of related literature are human capital (education and health) and expenditure on national defence (Mann 1994; Usman, Mobolaji, Kilishi, Yaru & Yajuku 2011). Economic growth is measured by real gross domestic product (GDP). The study which covers a period of 33 years (1981-2013) is carried out to compliment the work of other researchers who have not considered the variable combination considered in this work. Another reason for focusing this study on Nigeria is because of the impressive growth rate of real gross domestic product that has averaged 5.15 per cent (IMF World Economic Outlook, October 2013).

## 2. Research Objectives

The main focus of this paper is to examine the effect of public expenditure on economic growth in Nigeria. The specific objectives, however, include:

1. To investigate whether a cointegrating relationship exists between government expenditure and economic growth
2. To find out the direction of causality between government expenditure and economic growth in Nigeria.

## 3. Literature Review

### 3.1 Conceptual Framework

#### 3.1.1 Public Expenditure

Public expenditure is the expenditure incurred by public authorities like Federal, state and local governments for the provision of public goods to satisfy the collective social wants of the people. It can be referred to as the funds expended by local, state and federal government and its agencies and distinct from that of households and firms. Accordingly, Anyafor (1996) referred to expenditure as an actual payment or the creation of obligation to make a future payment for some benefits, items or service received. Expenditure can be classified into two broad groups: Capital Expenditure and Recurrent expenditure.

Capital expenditure are expenses on capital goods/projects like roads, airports, education, telecommunication, electricity generation, etc., while recurrent expenditure are government payments on administration in the form of wages and salaries, interest on loans maintenance, transfer payments and so on. In the opinion of Begg, Fischer & Dornbusch (2003) public expenditure is important in the process of macroeconomic stability because it is an important fiscal tool and can be used to manipulate or manage the economy.

#### 3.1.2 Economic Growth

Economic growth is a long-term expansion of the productive potential of the economy. It means an increase in Real GDP, in other words, an increase in national output and national income. The real GDP is the market value of all goods and services produced in a nation during a specific time period. Real GDP measures a society's wealth by indicating how fast profits may grow and the expected return on capital. It is labelled "real" because each year's data is adjusted to account for changes in year-to-year prices. The real GDP is a comprehensive way to gauge the health and well-being of an economy.

#### 3.1.3 Theoretical Framework

Emerenini & Ihugba (2014) saw the theoretical issue of the relationship between government expenditure and economic growth as hinged on contrasting views of classist's model and that of the neoclassists. According to the classists, government fiscal policy does not have any effect on the growth of national output. On the other hand, the Keynesian model argues that increase in government expenditure will lead to higher economic growth. This implies that government fiscal policy (through intervention) will improve the failure that might arise from the inefficiencies of the market.

Theoretically, public expenditure is broadly classified into four major groups namely, general services, economic services, social and community services, and transfer payments (Akpan 2011). General services include government expenditures on maintenance of governmental machineries such as administrative expenses, payment of staff salaries, defence and internal expenditures, among others. Economic services consist of expenses incurred by the government for the provision of social and economic infrastructure as well as the establishment of industries. Precisely, they include government expenditures on Agriculture, Transportation, Construction and Manufacturing. Social and community services include expenditure on health and educational services; while transfer payments include public debt charges, pensions and gratuities as well as non-statutory allocations to the state such as grants. Usually, economic growth theory deals with long-run growth trend of the economy, or potential growth path (Branson 2002). The emphasis is on factors that lead to economic growth over time and analysis of the forces that allow economies to grow at different rates.

### 3.2 Empirical Review

A collection of studies has explored the primary causes of growth in the public sector. Wagner's Law -the "Law of increasing expansion of public and particularly state activities" (Wagner 1893) - is one of the earliest efforts that emphasises economic growth as the fundamental determinant of public sector growth. Empirical tests of this hypothesis, either in the form of standard regression analysis (Ganti & Kolluri 1979; and Georgakopoulos & Loizides 1994) or in the form of error-correction regression (Kolluri, Panik, & Wanab 2000, and the literature cited therein), have yielded results that differ significantly from country to country. However, there is no consensus on the precise nature of the relationship. Hence, to date, the evidence remains mixed and sometimes controversial and inconclusive.

The important work of Barro (1991) inspired research into the impact of fiscal policy (government expenditure) on economic growth. In the same vein, Barro & Sala-I-Martin (1992), Easterly & Rebelo (1993) and Brons & Njikamp (1999) stressed that government activity influences the course of economic growth. Dar & AmirKhalkhali (2002) also indicated that in the endogenous growth models, fiscal policy is very crucial in shaping future economic growth. Many researchers have attempted to examine the effect of government expenditure on economic growth (Egbetunde & Fasanya, 2013) and according to Akpan & Abang (2013) has continued to generate intense debate among scholars. There is however no general consensus on the exact nature of the relationship between government spending and economic growth. As such, to date, the evidence is varied and at times inconclusive and controversial. In another development, Moreno-Dodson and Bayraktar (2011) considering the full government budget constraint, empirically found that public spending, especially its "core" components, contributes to economic growth only in countries that are capable of using funds for productive purposes. Furthermore, those countries must have an adequate economic policy environment with macroeconomic stability, openness, and private sector investments that are conducive to growth. Ariyo & Raheem (1991) reported that the size and mix of government expenditure as a major determinant of the overall performance of an economy.

### 3.3 Public Expenditure and Economic Growth: Evidence Pointing Towards a Negative Relationship

Notwithstanding results varied from one study to another (Chude & Chude, 2013), Alexander (1990) applied OLS method for sample of 13 Organization for Economic Cooperation and Development (OECD) countries panel during the period ranging from 1959 to 1984. The results show, among others, that growth of government spending has significant negative impact on economic growth. Reinforcing this finding, Barro (1991) in a cross section study of 98 countries for a period spanning from 1960 to 1985, using average annual growth rates in real per capita GDP and the ratio of real government consumption to real GDP concluded that the relation between economic growth and government consumption is negative and significant. Additional evidence suggested that growth rates were positively related to measures of political stability and inversely related to a proxy for market distortions.

Domiciling research with the US economy, Knoop (1999) using time series data from 1970 to 1995 found that a reduction in the size of the government would have an adverse impact on economic growth and welfare. In another empirical study, Ghura (1995), using pooled time-series and cross-section data for 33 countries in Sub-Saharan Africa for the period 1970-1990 produced evidence that points towards the existence of a negative relationship between government consumption and economic growth. In that study the sample countries were classified into four groups: high-growth countries with growth rates above 2.0%; medium-to-low-growth countries, with growth between 0% and 1.9%; weak-growth countries, with growth between -1.0% and -0.01%; and very-weak-growth countries, with growth below -0.9%. During his investigation it transpired that, the fact that higher growth countries experienced higher investment ratios, higher export volume growth, higher life expectancy at birth, lower inflation rates, and lower standard deviations of inflation did not necessarily imply better terms of trade outcome. In a related, Lindauer & Velenchik (1992) concluded that there is no significant direct relation between government expenditure and economic growth. However, they argue that government spending may positively affect economic growth indirectly through its influence on the efficiency of the private sector allocation of inputs.

Earlier, Saunders (1989) tested the impact of government expenditure on the economy by regressing the percentage change in real GDP on the share of the total government spending in GDP. Using data from OECD countries, he found negative relation between average economic growth and average share of total government expenditure in GDP.

In a latter study, Verma & Arora (2010) examined the validity of Wagner's law in India over the period from 1951 to 2008. Empirical evidences regarding short-run dynamics refuted the existence of any relationship between economic growth and the size of the government expenditure. About the same time, Jafari, Nademi & Zoberi (2010) applied a two-sector production function developed by Ram (1986) to estimate the threshold regression model for Islamic countries, regarding the effect of government size on economic growth. The ratio of final government consumption on GDP was used to find out the threshold points. Their empirical results indicate

that there is a nonlinear relationship between government size and economic growth in the selected Islamic countries under consideration.

Adopting a Granger causality approach earlier, Conte & Darrat (1988) investigated the causal dimension between public sector growth and real economic growth rates for the OECD countries using one-sided Granger-causality analysis. Special emphasis was put on the feedback effects from economic growth to government growth that resulted from macroeconomic policy. On the basis of the yielding evidence, government growth has had mixed effects on economic growth rates, positive for some countries and negative for others. For the bulk of the OECD economies however, no discernible impact of government growth on the rate of real economic growth was perceived.

Jong-Wha (1995) found further evidence on the relationship between government consumption and economic growth. Specifically, by using an endogenous growth model of an open economy, it was found that government consumption of economic output was associated with slower growth. In addition, the composition of investment and the volume of total capital accumulation were also thought to significantly condition economic growth. In a similar vein, estimates got by Fölster & Henrekson (1999, 2001) when conducting a panel study on a sample of rich countries over the period 1970-1995 provided support to the perception that large public expenditures affect growth negatively. In another development, Schaltegger & Torgler (2007) conducted various studies on the relationship between government size and economic growth between 1981 and 2001, using Switzerland as a test case and found a negative relationship between government size and economic growth.

In an attempt to investigate the relationship between government size and the unemployment rate Burton (1999) using a structural error correction model for twenty OECD countries from 1970 to 1999, found that government size, measured as total government outlays as a percentage of GDP, played an instrumental role in affecting the steady-state unemployment rate, i.e. unemployment rises. Further evidence obtained using disaggregated government expenditure pointed towards a significant relationship between transfers, subsidies and the steady-state unemployment rate while government expenditure on goods and services was found to be insignificant. Khan & Reinhart (1990) had earlier developed a growth model that examines separately the effects of public sector and private sector investments. Using cross-section data from a sample of 24 developing countries, they find that public investment has no direct effect on economic growth.

While adopting pooled cross-section/time-series data on 113 countries, Grier & Tullock (1989) investigated empirical regularities in post-war economic growth. Among other results, they found that government consumption was negatively associated with economic growth. Furthermore, Grier & Tullock define the government variable as a growth rate in the share of government consumption in GDP and tested the model using 30-year data from 24 OECD countries and 20-year data from developing countries. They reported negative and significant relation between the share of government consumption in GDP and the growth in GDP in both samples. From the same study it also emerged that political repression was negatively correlated with growth in Africa and Central and South America. Schaltegger & Torgler (2007) also confirmed a negative relationship between current expenditure and economic growth.

Guseh (1997) in an earlier study on the effects of government size on the rate of economic growth used time-series data over the period 1960-1985 for 59 middle-income developing countries and OLS estimation. The yielding evidence suggested that growth in government size has negative effects on economic growth, but the negative effects are three times as great in non-democratic socialist systems as in democratic market systems. This is an indication that a relationship exists between fiscal decisions and the type of governance existing in a country. Further estimates provided by Engen & Skinner (1992) for 107 countries over the period 1970-1985, suggested that a balanced-budget, increase in government spending and taxation is predicted to reduce output growth, whilst Carlstrom & Gokhale (1991) reported simulation results according to which increase in government expenditure caused a long-run decline in output.

Furthermore, Vu Le & Suruga (2005) examined 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 applied fixed effects model and threshold regression techniques. Their main findings were categorized into three: FDI, 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 FDI.

Josaphat & Oliver (2000) investigated the impact of government spending on economic growth in Tanzania using time series data over 1965-96 and found that increased productive expenditure (physical investment) has a negative effect on growth while consumption expenditure stimulates growth. Henrekson (1993) also tested for Wagner's law in Sweden using Swedish data for the period 1961-1990. His results showed that there is no long-run positive relationship between national income and government expenditure as suggested by Wagner even though casual observation of the raw data seems to indicate such scenario. He thus concluded that the support of Wagner's law found by many early researchers may have been spurious.

Gemmell & Kneller (2001) provided empirical evidence on the impact of fiscal policy on long-run growth for European economy. Their study required that at least two of the taxation/expenditure/deficit effects must be examined simultaneously and they employ panel and time series econometric techniques, including dealing with the endogeneity of fiscal policy. Their result among other findings, indicate that consumption and social security spending have zero or negative growth effects. Also Landau (1983), in a cross-section study of over 100 countries in the period 1961-76, reported evidence of a negative relationship between the growth rate of real per capita GDP and the share of government consumption expenditure in GDP. Uwatt (2006), in another study also discovered a negative relationship between government size and economic growth.

Nademi, Abounoori, & Kalmarzi (2010) applied modified Ram (1986) model by Chen and Lee (2005) to estimate the threshold regression model for OECD countries, concerning the effect of government size on economic growth. The results showed a non-linear relationship of the Armey curve in OECD countries, in which the threshold effect corresponding to final government expenditure share in GDP of about 20%.

Ighodaro & Okiakhi (2010) used time series data for the period 1961 to 2007 and applied cointegration test and Granger causality test to examine government expenditure disaggregated into general administration and community and social services in Nigeria. The results revealed negative impact of government expenditure on economic growth. Similarly, Taban (2010) examined government spending and economic growth for the period 1987:Q1 to 2006:Q4 and applied bounds testing approach and MWALD Granger causality test. The author found that the share of government spending and share of investment to GDP have negative impact on economic growth in the long-run. Other studies (Romer 1990; Alexander 1990; Folster & Henrekson 1999) concluded that total government expenditures seem to have a negative effect on economic growth.

Ariyo (1996) found that the nature of government expenditure can crowd-in or crowd-out the private sector. Ramayandi (2003) reviewed the relationship between government size and economic growth in the context of Indonesia and identified that government size tends to have a negative impact on growth. By regressing GDP on capital and recurrent expenditure (after deflating data on all variables by the consumer price index, CPI), Sharma (2012) finds an insignificant negative relationship between the capital expenditure and recurrent expenditure, and the real GDP for the Nepalese economy, attributed to mismanagement and embezzlement of public funds by government officials and political appointees.

In the United States, Razzolini & Shughart (1997) present evidence that growth in the relative size of government is responsible for a decrease in the US growth rate. Moreover, Mitchell (2005) argued that the American government expenditure has grown too much in the last couple of years and has contributed to the negative growth in GDP. The author suggested that government should cut its spending, particularly on projects/programmes that generate least benefits or impose highest costs. Similarly, Husnain, Khan, Padda, Akram, & Haider (2011) averred that public spending is negatively correlated with economic growth due to inefficiency of the public sector especially in the developing countries where large proportion of public spending is attributed to non-developmental expenditure like defence and interest payments on debt. Likewise in Sweden, Peter (2003) examined the effects of government expenditure on economic growth during 1960-2001 periods. The author emphasized that government spending was too much and it might slowdown economic growth.

### 3.4 Public Expenditure and Economic Growth: Evidence Pointing Towards a Positive Relationship

Contrary to the negative association between government spending and economic growth established by most studies a growing body of literature attempts to redress the balance by suggesting that the state can actually, through implementing appropriate policies, nurture productive activities and reduce unproductive ones (Amsden 1989; Burton 1991; Epstein & Gintis 1995). More specifically, Kelly (1997) by exploring the effects of public expenditures on growth among 73 countries over the period 1970-1989 found that the crowding-out and rent-seeking concerns might have been overstated in the literature. According to the evidence obtained the contributions of public investment and social expenditures to growth is rather significant. In an earlier study, Barth & Bradley (1987) found a negative relation between the growth rate of real GDP and the share of government consumption spending for 16 OECD countries in the period 1971- 1983. They also found that the share of government investment in GDP had a statistically insignificant effect on growth, although the point estimate was positive. Engen & Skinner (1992) examined the relationship between government expenditure and economic growth for a sample of rich countries for 1970-95 periods, using various econometric approaches. They submitted that more meaningful (robust) results are generated, as econometric problems are addressed. Furthermore, Alexiou (2007) in a study for the Greek economy, after disaggregating government spending, reported evidence on the basis of which there is a positive association between the growth in the components of government spending and GDP growth. Aschauer (1990) also documented a positive and significant relationship between government spending and the efficiency of the private sector allocation of inputs might be a potential channel through which government spending might affect economic growth in a positive way.

Herath (2010) examined the relationship between public expenditure and economic growth in Sri Lanka for the period from 1959 to 2003. The study found that government expenditure has a positive effect on

economic growth; further his study suggested that openness is beneficial for Sri Lanka as it increases economic growth. Abu Al-Foul & Al-Khazali (2003) found using data from the Jordanian economy, that the growth in the economy granger causes the growth in the government sector. Thus, the Wagner's law applies to the case of Jordan. Using cointegration technique and the VAR model, the study suggests that there is a unidirectional relationship between the economic growth and the growth in the government expenditures.

Loizides & Vamvoukas (2005) employed the trivariate causality test to examine the relationship between government expenditure and economic growth, using data set on Greece, United Kingdom and Ireland. The authors found that government size granger causes economic growth in all the countries they studied. The finding was true for Ireland and the United Kingdom both in the long-run and short-run. The results also indicated that economic growth granger causes public expenditure for Greece and United Kingdom, when inflation is included. Cooray (2009) had a cross sectional study of 71 countries with respect to government expenditure and quality of governance using an econometric model involving developing and transition countries for the 1996-2003 period, which were also grouped according to the distribution of the income from the respective countries. The results revealed that both size and quality of government are associated with economic growth. The study showed that the influence upon the economic development varies from one country to another, as the author found that only the countries with a very good government ensure an efficient use of the public funds, with a positive effect upon the national economy. The article points the need for a good government, which along with the increase in the public spending determines a sustainable economic growth.

Using different regression models for time series data covering the period 1990-2006 on Jordan, Dandan (2011) found that government expenditure at the aggregate level has positive impact on the growth of GDP. He also finds that interest payment (a control variable in the model) has no influence on GDP growth.

Ghali (1998) used multivariate cointegration techniques, and examined the dynamic interactions between government size and economic growth in a five-variable system, consisting of the growth rates of GDP, total government spending, investment, exports, and imports. Using data from ten OECD countries, Ghali's study shows that government size Granger-causes growth in all countries of the sample. In a latter study, Kolluri et al. (2000), using a bivariate framework, estimated the long-run relationship between gross domestic product and government spending in the G7 countries for the period 1960-1993. Most of their empirical findings confirm Wagner's Law for the G7 countries; that is, government spending tends to be income elastic in the long-run. This dissimilar evidence calls for a re-examination of the differences in the causality results.

Kireyev (1998) investigated the relationship between growth in non-oil GDP and government spending using annual data for 1969-97. His empirical evidence suggests a significant and positive relationship between government spending and growth in the non-oil sector GDP. Lamartina & Zaghini (2008) in a multi-country study, applied a panel cointegration analysis to test for Wagner's prognosis in 23 OECD countries from 1970 to 2006. Countries involved in the study were Australia, Austria, Belgium, Canada, Denmark, Finland, France, Great Britain, Germany, Greece, Iceland, Ireland, Italy, Japan, South Korea, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland and USA. Their study provided empirical evidence supporting the existence of a long-run positive correlation between public spending and GDP growth in 23 OECD advanced economies.

Similarly, Niloy, Emranul, & Denise (2003) examined growth effects of government expenditure for a panel of thirty developing countries over 1970-80. They found that the share of government capital expenditure in GDP is positively and significantly correlated with economic growth, but current expenditure is insignificant. In another study, Al-Obaid (2004) examined the long-run relationship between total government expenditure and real GDP, and his empirical findings show a positive long-run relationship between the share of government spending in GDP and GDP per capita. Olukoyede (2009) informed that the general view is that public expenditure either recurrent or capital expenditure, notably on social and economic infrastructure can be growth-enhancing.

The study by Jiranyakul & Brahmasrene (2007) investigated the relationship between government expenditures and economic growth in Thailand for the period 1993 to 2006 and employed Standard Granger Causality test and Ordinary Least Square (OLS) method. The results showed a unidirectional causality from government to economic growth without feedback. Furthermore, estimation from the ordinary least square confirmed the strong positive impact of government expenditure on economic growth during the period of investigation. During the same period, Komain & Brahmasrene (2007) examined the association between government expenditures and economic growth in Thailand, by employing the Granger Causality Test. The results revealed that government expenditures and economic growth are not cointegrated. Moreover, the results indicated a unidirectional relationship, as causality runs from government expenditures to growth. Lastly, the results illustrated a significant positive effect of government spending on economic growth.

Al-Zeaud (2009) examined the dynamic import of fiscal policy on the Jordanian economy over the period 1992-2009, using the vector auto regressive (VAR) model, the result show that one positive structural shock in exports and government spending will have a positive significance on real gross domestic product

(GDP) in the medium- and long-term. However, such shock in government spending and export result in inflationary pressure in the short term and long term. Bohl (1996) applied tests of integration, cointegration and Granger causality in a bivariate context, and found support to Wagner's law for only the United Kingdom and Canada, out of the G7 countries, during the post-World War II period. Hondroyannis & Papapetrou (1995), and Chletsos & Kollias (1997), applied the same methodology in Greece, and found mixed results. Cooray (2009) had a cross sectional study of 71 countries with respect to government expenditure and quality of governance using an econometric model. The results revealed that both size and quality of government are associated with economic growth.

Gemmell & Kneller (2001) provided empirical evidence on the impact of fiscal policy on long-run growth for European economy. Their study required that at least two of the taxation/expenditure/deficit effects must be examined simultaneously and they employ panel and time series econometric techniques, including dealing with the endogeneity of fiscal policy. Their results indicate that some public investment spending impacts positively on economic growth. Benos (2009), using 14 European Union countries, shows that reallocation of the components of government spending, especially towards infrastructure and human capital, can enhance growth. Specifically, Benos (2009) found: a) public expenditures on infrastructure (economic affairs and general public services) exert a positive impact on growth; b) government outlays on property rights protection (defence, public order-safety) have a positive effect on per capita growth; c) distortionary taxation depresses growth; d) government expenditures on human capital enhancing activities (education, health, housing-community amenities, environment protection, recreation-culture-religion) and social protection do not have a significant effect on per capita growth.

Furthermore, Segura-Ubiergo, Simone, Gupta, & Cui (2009) presented a positive impact of fiscal adjustment on growth in transition economies. Similarly, Moreno-Dodson (2008) shows that the link between total public spending and growth is positive overall with some components of public spending being particularly significant in affecting growth. Unproductive components of public expenditure are less significant – or even have negative impact on growth – while that productive component of public spending is statistically significant. Using time series data of 32 years period (1980-2011) and applying the Granger Causality test, Johansen Cointegration Test and Error Correction Mechanism, Okoro (2013) found that there exists a long-run equilibrium relationship between government spending and economic growth in Nigeria. The policy implication is that both the short-run and long-run expenditure has significant effect on economic growth of Nigeria.

In another contribution, Olukayode (2009) investigated the impact of government expenditure on economic growth in Nigeria using time series data from 1977 to 2006 and adapting Ram (1986) model in which government expenditure is disaggregated in private investment, human capital investment, government investment and consumption spending at absolute levels. The results showed that all the expenditures have positive effect on economic growth.

In a study to examine the relative effectiveness of monetary and fiscal policies in Nigeria, Aigheyisi (2011), employed the method of cointegration and error correction using quarterly data spanning the period 1981 Q3 to 2009 Q4 and found that total government expenditure (acting as proxy for fiscal policy) positively affected real gross domestic product (RGDP) in the short-run.

Despite the fact that even the crowding-out literature has recognized a limited but significant effect of public investment on growth; social programmes have been rendered unproductive, with the exception of education. Thereby, most of the studies conducted have exclusively focused on education as a significant factor which impacts growth through its effect on human capital (Barro 1991; Roubini, & Sala-I-Martin 1991; Birdsall, Ross, & Sabot 1995).

However, Nelson & Singh (1994), when they examined the relationship between the overall government size, proxied by the central government revenue as a percent of GDP, and the average growth rate of GDP arrived at inconclusive evidence as no significant relationship was established. Moreover, Dilrukshini (2002) analysed the relationship between public expenditure and economic growth in Sri Lanka over the period 1952 to 2002 and applied Johansen cointegration technique and Granger causality test. The findings suggest that the growth of public expenditure in Sri Lanka is not directly dependent and determined by economic growth.

### 3.5 Public Expenditure and Economic Growth: Evidence Pointing to Mixed Results

Yu, Fan, & Saurkar (2009) considered the impact of the composition of public expenditure on economic growth in developing countries. They used a dynamic generalized method of moment (GMM) model and a panel data set for 44 developing countries between 1980 and 2004. The results indicated that the various types of government spending had different impact on economic growth. In Africa, human capital expenditure contributes to economic growth whereas, in Asia, capital formation, agriculture, and education expenditure had strong growth promoting effect. In Latin America, none of the public expenditure items had significant impact on economic growth. Earlier, Cashin (1995) estimated a positive relationship between government transfers, public investment and growth and a negative one between distortionary taxes and growth from panel data for 23

developed countries between 1971 and 1988.

Poot (2000) in a survey of published articles in 1983-1998 did not find conclusive evidence for the relationship between government consumption and growth, while he found empirical support for the negative effect of taxes on growth. Also, he reported a positive link between growth and education spending, while the evidence on the negative growth impact of defence spending is moderately strong. Finally, Poot presented evidence of a robust positive association of infrastructure spending and growth. Later, Dilrukshini (2004) studied the relationship between public expenditure and economic growth in Sri Lanka from 1952 to 2002 using time series data to test the validity of Wagner's law and found that there is no empirical support either for the Wagner's law or Keynesian hypothesis, in the case of Sri Lanka.

A study for Turkey in the period from 1963 to 1999 by Ismihan, Metin-Oczan, & Tansel (2005) found a significant impact of both public and public core investment on growth in the medium- but not in the long-term. Using Nigeria data, Modebe, Okafor, Onwumere, & Ibe (2012), investigated the impact of recurrent and capital expenditure on Nigeria's economic growth using multiple regression analysis for data covering the period 1987 to 2010 and find that the impact of both components of expenditure was statistically insignificant, though the impact of recurrent expenditure was positive and that of capital expenditure, negative. However, in the opinion of Aigheyisi (2013), the findings cannot be relied upon as the diagnostic statistics prove the estimated model to be invalid. For example, the DW-statistic of 1.413043 points to the problem of positive autocorrelation, which could render policies formulated on the basis of such models impotent.

Arabia & Turrini (2003) investigated both the long- and the short-run relationships between government's expenditure and potential output in EU countries by means of pooled group estimation. Result show that, over a sample comprising EU-15 countries over the 1970-2003 periods, it cannot be rejected the hypothesis of common long-term elasticity between cyclically-adjusted primary expenditure and potential output close to unity. However, the long-run elasticity decreased considerably over the decades and is significantly higher than unity in catching-up countries, in fast-ageing countries, in low-debt countries, and in countries with weak numerical rules for the control of government spending. The average speed of adjustment of government expenditure to its long-term relation is 3 years; there are significant differences across countries. Anglo-Saxon and Nordic countries exhibit in general a faster adjustment process, while adjustment in Southern European countries appears somehow slower.

#### 4. Data Analysis/Findings

**Table 1 Descriptive Statistics of the Dependent and Independent Variables on Level Series**

	RGDP	CAPEXP	RECEXP	TOTALEX
Mean	9866.918	334.1152	827.4545	1158.539
Median	4032.300	239.5000	158.6000	428.1000
Maximum	42396.80	1152.800	3689.100	4797.500
Minimum	94.30000	4.100000	4.800000	9.700000
Std. Dev.	13037.91	369.9092	1138.831	1488.928
Skewness	1.339698	0.903646	1.352015	1.210726
Kurtosis	3.514886	2.485516	3.526371	3.113759
Jarque-Bera	10.23587	4.855118	10.43465	8.080004
Probability	0.005988	0.088252	0.005422	0.017597
Sum	325608.3	11025.80	27306.00	38231.80
Sum Sq. Dev.	5.44E+09	4378651.	41501929	70941001
Observations	33	33	33	33

**Source: Researcher's Computation (2015)**

Table 1 above shows basic aggregative averages namely mean, median, and mode for all the observations. Maximum and minimum show the maximum and minimum values of the series in the current sample. For the period under consideration, the minimum RGDP was ₦94.3bn and maximum stood at ₦42.4tn. The least capital expenditure was ₦4.1bn spent in 1984 with maximum expenditure of ₦1.2tn in 2009. Furthermore, government recurrent expenditure was at its lowest in 1981 and 1983 (₦4.8bn) while the highest expenditure was made in 2013 (₦3.7tn). Government recorded the highest expenditure of ₦4.8tn in 2013 with the least at ₦9.7bn in 1983.

The respective standard deviations of each parameter are as follows: RGDP ₦13tn; capital expenditure ₦370bn; recurrent expenditure ₦1.1tn; and total government expenditure ₦1.5tn.

Skewness is a measure of symmetry of the distribution of the series around its mean while kurtosis measures the peakedness or flatness of the distribution of the series. The Jarque-Bera (JB) is a test statistic for

testing whether the series is normally distributed. In other words, the test statistic measures the difference of the skewness and kurtosis of the series with those from the normal distribution. Table 1 above shows that all the distributions are not normally distributed as skewness range between 0.9 and 1.3, and kurtosis, all but one parameter is less than, but close to 3; all the others are greater than 3.

Consequently, there is a very strong evidence to reject the null hypothesis that the variables are normally distributed. The variables have JB statistics with staggering p-values ranging 0.005422-0.088252. However, with three out of the four variables having kurtosis in excess of 3, a confirmation that most financial times series are leptokurtic (Brooks, 2014).

#### 4.1 Test of Hypothesis One

**H<sub>01</sub>:** Aggregate government expenditure did not have a cointegrating relationship with economic growth in Nigeria.

**H<sub>a1</sub>:** Aggregate government expenditure have a cointegrating relationship with economic growth in Nigeria.

##### 4.1.1 Presentation and Analysis of Result

The Johansen Cointegration Rank Test is used to confirm the existence of cointegration and at the same time establish the number of cointegrating factors.

**Table 2 Johansen Rank Cointegration Test (Trace Test)**

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.616809	35.92996	15.49471	0.0000
At most 1 *	0.181112	6.194059	3.841466	0.0128

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

From Table 2 above, there is a confirmation of the existence of a long-run relationship and an indication that 2 cointegrating vectors exist at 5% level of significance and we can reject the null hypothesis at almost 1 in the Trace Test table.

**Table 3 Johansen Rank Cointegration Test (Maximum Eigenvalue Test)**

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.616809	29.73590	14.26460	0.0001
At most 1 *	0.181112	6.194059	3.841466	0.0128

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

**Source: Researcher's Computation (2015)**

The position of Trace Statistics is further confirmed by Maximum Eigenvalue Test which did not only show evidence of cointegration but also confirmed the existence of two cointegrating vectors. Rejection of the hypothesis at the 0.05 level is further confirmed while the MacKinnon-Haug-Michelis (1999) p-values reinforced the same position.

In view of the compelling and strong evidence in favour of cointegration (long-run relationship), we conclude that there is a long-run relationship between aggregate government expenditure and economic growth in Nigeria thereby rejecting the null hypothesis.

#### 4.2 Test of Hypothesis Two

**H<sub>02</sub>:** Capital expenditure and recurrent expenditure did not have a causal relationship with economic growth in Nigeria.

**H<sub>a2</sub>:** Capital expenditure and recurrent expenditure have a causal relationship with economic growth in Nigeria.

#### 4.2.1 Presentation and Analysis of Result

**Table 4 Test Statistics Granger Causality Test**

Pairwise Granger Causality Tests

Date: 09/30/15 Time: 13:27

Sample: 1981 2013

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
RECEXP does not Granger Cause RGDP	31	7.90516	0.0168
RGDP does not Granger Cause RECEXP		5.80845	0.0039
CAPEXP does not Granger Cause RGDP	31	6.06111	0.0069
RGDP does not Granger Cause CAPEXP		3.42918	0.0477
CAPEXP does not Granger Cause RECEXP	31	12.0553	0.0002
RECEXP does not Granger Cause CAPEXP		0.92247	0.4102

**Source: Researcher's Computation (2015)**

Following the Granger Causality Test result in Table 4 done with a lag of 2, public expenditure is unbundled into two variants and the causal relationship with RGDP tested. The choice of a lag of 2 is aimed at not sacrificing greater degree of freedom which may be prejudicial to the outcome of the test. In determining the existence and direction of causality, the p-value of the F-statistic is used with a 5% level of significance to either accept or reject the null hypothesis as stated. From the results, RECEXP granger cause RGDP while RGDP granger cause RECEXP. CAPEXP granger cause RGDP while RGDP granger cause CAPEXP. CAPEXP granger cause RECEXP while RECEXP does not granger cause CAPEXP.

From the foregoing, there is evidence in support of causal relationship between the various classifications of government expenditure and economic growth which empowers us to accept the alternate hypothesis.

#### 5. Conclusion

This study examined the effect of public expenditure on economic growth in Nigeria, 1981-2013 using the OLS technique. There is cointegrating (a long-run) relationship between aggregate government expenditure and economic growth in Nigeria. There is causal relationship between the various classifications of government expenditure and economic growth. Government should monitor spending more closely to check diversion and embezzlement of funds. It should employ better financial management and endeavour to fight graft more seriously. There should be a high degree of transparency and accountability in government spending. The study reveals that total government expenditure had not impacted adequately on economic growth; there is need for public-private partnership in the funding and management of public projects. In some cases, there could be outright private operations.

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