

# Analysis of Impact of Sectoral Government Expenditures on Economic Growth in Nigeria: Bound Test Co-integration Approach

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## Abstract

This study empirically investigated the impact of government expenditures on adjudged critical sectors on economic growth in Nigeria (1984-2013). With the purpose of determining to what extent the government expenditures on these sectors are contributing to the achievement of growth objective. The study employs quantitative analysis by the use of Auto-Regressive Distributed Lag model (Bound Test Co-integration Approach) to determine both short-run and long run impact of Government expenditures on economic growth with the aid of Econometric package E-View 7. The necessary residual tests were conducted and the analysis was found to be reliable. The specific ARDL estimates of the analysis reveals that government expenditure on defence retards the economic growth and government expenditure on agriculture promote the economic growth while government expenditure on education and transport/communication have no impact on economic growth in the long-run. In the short run, none of the government expenditure on these sectors contributes to the growth objective. The study concludes that the reason for the failure of public expenditures to achieve the fiscal objectives is not unconnected to the fact that the level of fiscal indiscipline in these sectors is outrageous to the extent that it serves as drag to the economic growth. Consequently, the study decries policy prescription that the Government expenditures on these sectors should be increased except in the education sector to meet the UNDP recommendation. And, further recommends that fiscal indiscipline in whatever manner among the political office holders and government officials must be mitigated to the barest minimum by ensuring that the fund budgeted are actually spent on the right course. The government should avoid the proliferation of anti-graft agencies but strengthen the available ones (EFCC and ICPC) by necessary legislations to carry out their functions diligently without unnecessary political interference.

**Keywords:** Sectoral Government Expenditures, Economic growth, Auto-Regressive Distributed Lag (ARDL) Model.

## 1. Introduction

The public spending in Nigeria has been rising astronomically due to the quest for economic development it engenders through increasing the growth rate of the economy, providing more employment opportunities, raising income and standard of living and reducing inequality of wealth and income as opined by Jhingan (1997) in one hand, and the increasing in the expansive roles of the government which involve protective functions, welfare functions and provision of social services on the other hand. The volume of public spending has been increasing in Nigeria since the military regime at the slower rate relative to what is obtainable in the current civilian regime. Despite this, the country has not experienced any meaningful development during the Civilian

period as Nigeria still falls among the world poorest which is more pronounced during the democratic period. In spite of the well coordinated structure and policy of the Nigeria public expenditure which is expected to set the economy on course and ensuring that economy is not only at equilibrium but also promoting the growth in the output of the economy. According to Jhingan (2007) government expenditure policy involves decisions which influence the flow of funds from government into private economy with the view of achieving economic stability, employment generation and economic growth. It is expedient to determine the effect of this government expenditure on the adjudged critical sectors of the economy on the economic growth.

Consequently, there are sectors that are seen as being critical and productive like Agricultural, Education, Transport and Communication, defence that have the potentials of contributing to the performance of the economy. (Adesoye et al, 2010). Therefore, the public expenditure that is directed towards increasing the agricultural productivity to meet growing demand for foreign exchange, foods, raw materials, increasing supply of consumer goods and encourage expansion of small industry which will stimulate economic growth in Nigeria. More so, public expenditures on social services like education which is one of the core strategies of human capital development that is necessary to promote and achieve sustainable economic growth. Anyawu et al (2012) argue that defence expenditure contributes to security of lives and property, growth & development. The public expenditure on the defence, maintenance of law and orders which promote serenity, sanity and the conducive atmosphere for viable investment which will stimulate the local investment, foreign direct investment and green-field investment that ultimately promote sustainable growth and development of the nation. In addition the public expenditure on transportation and communication cannot be relegated because of the critical role it contributes to the industrialization and commercial activities of any economy. Hence, public expenditures on these sectors are considered critical by this study.

The government spending on various sectors have different efficacy to the economic growth Mean while, the two divergent views on the discourse of government spending as stipulated in fiscal policy need to be mentioned. The functional finance as advocated by Keynes and Lerner which opined that government has to play the positive role by manipulating public expenditure to produce desirable effects and avoid undesirable effects. This view is generally adopted in Nigeria as the government cannot remain a silent spectator of the miseries of the Nigerians. Contrarily, the traditional thinking (Classical) does not subscribes to this increasing trend of public expenditure because it rated market mechanism as a better guide to promote efficient resources allocation and economic growth. Therefore, government should restrict her activities to the barest minimum. Hence, government should spend little or nothing (Bhatia 2002).

It is noteworthy to observe that government expenditures on various sectors seem to have contributed to the economic growth at the different rate in Nigeria. Owing to the diverse feelings on the above, the argument has been inconclusive on whether or not these critical sectors contribute significantly to the economic growth in Nigeria. To the best of the researchers' knowledge, the analysis of the sectoral impacts of public expenditures on economic growth has many documentations. This is to say, it has been receiving attentions of the scholars and researchers, the studies that focus on the discourse limit their variables of study to one variable e.g. Each one focuses on agriculture expenditure and defence expenditure performance. While, those that focus on the impact of the sectoral public expenditure performance on economic growth do not include in their model the capital which is the fundamental determinant of economic growth. This omission of the conventional variable makes the study to suffer the methodological problem of variable omission bias in a multivariate study like Egbetunde & Fasanya, (2013); Nworji I. D. et al, (2012); Ogbulu, (2012), Ebiringa & Chalse-Anyaogu et a (2012); Okoro (2013); Chude & Chude, (2013); Shengen & Saukar (2010); Adesoye A. B. et al (2010); Adewara and Oloni,(2012); Darma N. A. (2014); Usman A. et al (2011), Adesoye A. B. (2013), Abu & Abdullahi (2010) , Ehiaiamusoe (2012) and Anyawu et al (2013) . In view of the foregoing, this research is unique and differs to others. The objective of this paper is to investigate the impacts of the public expenditures on these critical sectors on economic growth. More so, the paper will draw conclusion and make recommendations that will be useful for policy makers by serving as reference from where they can adopt ideas. All these justified the attention being paid to this paper. The remaining part of this paper is organised as follow; section two reviews the related

literature, section three focuses on methodology, and section four pays attention to empirical analysis (evidence) while the last section concludes the paper and outlined the recommendations.

## 2. Literature Review

This section reviews the relevant literatures ranging from theories to empirical studies that are related to the study.

### 2.1 Conceptual Issues

Government Expenditures are the expenses which a government incurs for (i) its own maintenance (ii) society and the economy (iii) helping other countries (Bhatia 2002). Public Expenditure represents the total government spending to attain the predetermined macro-economic objectives. Governments have recorded a continuous increase over time in almost every country. Despite the fact that there is continuous increase in government expenditure and in spite of its growing role and importance in national economies the area of public expenditure remains relatively unexplored unlike the attention on the theory of taxation. However, the classical have unfavourable thinking towards increasing public expenditure, positing that Governments lack capacity to decide and judge economic interests on behalf of others, hence it should limit its spending. The followings are the kind of Public expenditure: (i) **Productive and Unproductive Expenditures**: - Productive expenditures are in the nature of investment which help the economy in improving its productive capacity while the unproductive versions are expenditures in form of consumption. The productive ones are those that are committed to incur and maintain social overheads. The expenditures on administration, defence, justice, law and order and maintenance of state are unproductive (Bhatia, 2002).

(ii) Government expenditure is usually classified into **Capital and Recurrent Expenditure**:- Recurrent expenditure is the expenditure that is incurred yearly for implementation of the various functions of government. It includes general administrative expenses on defence, social and economic services. Capital expenditure refers to the expenditure earmarked for specific projects that can last for many years. It includes investment in buildings, roads, airport, petrochemical project etc.

(iii) **Transfer and Non-Transfer Expenditures**:- Pigou champions this classification, A transfer expenditure is a payment without corresponding receipt of goods and services by the state e.g. interest payment on the acquired debt, old-age pensions, unemployment benefit and benefit/allowance paid to the disaster displaced people etc. the non-transfer expenditure is that by which the states pays for its purchases or use of goods and services. Expenditures on **Defence, Education, agriculture, transportation and communication** and such like are all of non transfer expenditure.

### 2.2 Theoretical Issues

The following theories of public expenditure are given attention in this study:

#### 2.2.1 Theory of Increasing Public Expenditure: Wagnerian Law of Increasing State Activities.

A German economist, Adolph Wagner propounds the law of increasing state activities. He postulates inherent tendencies of the activities of government to increase both intensively and extensively. The theory emphasized the functional relation between the economic growth and government activities with the effect that government sector grows rapidly relative to the economy. According to Wagner the reasons for the increasing tendency for public expenditure are categorized below: **Administrative and protective Obligations**: under this function defence became increasingly more expensive. Administrative roles kept increasing in coverage and intensity. Justice, law and order, maintenance of state machinery and social overheads continue to be expansive and expensive. **Welfare and equitable income distribution roles**: this covers the activities involve in enrichment of cultural life of the masses and provision of social security to people. Old age pension, subsidies payments direct provision of merit goods items and services feature prominently here with the tendency of expanding and expensive as the economy grows. These above roles bring about distributive justice by mitigating the harsh effects of wealth and income inequalities in the society. **Provision of public goods and services roles**: The

governments also direct its activities to areas where there are market failures which necessitate the expansion of investment activities of the governments (Bhatia, 2002).

### 2.2.2 Wiseman-Peacock (Displacement) Hypothesis.

This hypothesis was put forward by Peacock and Wiseman in their empirical investigation of public expenditure of UK. The quest for increase public expenditure resulting from the unanticipated social disturbance and inadequacy of the available revenue brings about new level of government expenditure which necessitates higher taxation. The phenomenon is known as *displacement effect*. Comparison of inadequate available revenue and public expenditure required to carry out government activities brings about *Inspection effect*. The adaptation of the citizens to this higher level of revenue obtained through taxation to carry out the required public spending is view as *Tax tolerance*. The combination of macro factors like population upsurge, urbanization, administration, welfare roles, defence expenditure and ever increasing awareness of government responsibilities and the micro factors resulting from increasing in price level which tends to increase the cost of public activities in one hand is the cause of ever increase public expenditure.

### 2.2.3 Musgrave Hypothesis: Private Goods, public Goods and Per capita Income Nexus.

Musgrave made attempt to explain the growing public expenditure on the basis of private goods that required public goods in order to be able to put into use. Meanwhile, the private acquired goods depend on the level of per capital income. In view of the foregoing, Musgrave maintained that increasing demand of private goods necessitates a corresponding demand for public goods (Bhatia, 2002). He opined that increase in per capital income leads to increase in privately owned goods which tend to require more provision of public goods i.e. there is *complementarities link* between the two set of goods as there is increase in per capital income. The Nigeria economy is not an exception as there is increasing growth in the economy resulting from the new emerging sectors like communication, entertainment and the political zeal on the part of political office holders to prove their mettle that they are capable of improving the living standard of the citizenry in accord with the yelling of the international polity.

## 2.3 Theoretical underpinning: Public Expenditure as a Component of Fiscal Policy

Classical view: this is laissez-fair oriented economists. They are of the conception that market force can freely operate to achieve desirable objectives in the economy like full employment, optimum allocation of resources, economic growth. They believe that economic objectives can be attained automatically without interference by government. And, they are of strong belief that government is exogenous to the economy, therefore, the government productivity in various services is nil. This school of thought opines that the government should undertake minimum essential functions of protecting life and property. The principle embraces the principle of balance budget by the government. Hence, government should spend little or nothing, because the expenditure by them is unproductive. This is known as principle of Sound finance (Jhingan, 2006). The opinion of this school of thought is not well embraced by the major Nigeria economic actor, as the governments believe that the opinion is only applicable to the unambitious governments that do not take the advancement of his citizenry as serious political business.

Keynesian (Modern Concept) view: this opines that Government must play a positive roles in order to regulate the economy by government spending and revenue in the most desirable manner. This school of thought discredits the belief of classical that supply creates its own demand and the automaticity of the economic system to generate full employment and growth by itself without interference. Keynes believes that the propensity to consume reduces as income increase and the propensity to save increase as income increase. This will bring about disequilibrium in the economy as consumptions (aggregate demands) do not grow proportionally with savings when income is rising. Thus, to maintain income, employment and growth it is necessary to off-set the effects of reducing demand for outputs by a corresponding increase in public expenditure. Hence, if undesirable economic conditions are to be avoided the gap between the income and expenditure must be filled either by

increasing propensity to consume in the economy or by increasing government expenditure. This principle is referred to as functional finance by Prof. Abba and P. Lerner.

## 2.4 Empirical Review

The link between public expenditures and economy performances has attracted the attention of the researchers and scholars. The approaches of the examination of this topic have been taking different dimensions by different scholars. Many scholars examined the discourse on the basis of the structure of public expenditure i.e. capital and recurrent expenditure by the government. Others focus on the government expenditure holistically. However, this study focuses on the impact of public expenditure on economic growth on the sectoral basis. The issue under review is a vital subject that should be subjected to painstaking empirical review in order to keep abreast with the positions of the concerned researchers and scholars on this subject and to determine the gap inherent in the earlier related studies.

Laudau (1986) the modified version of his 1983 study titled government expenditure and economic growth, where the study included human and physical capital expenditure, political, international condition and three year lag on government expenditures which was disaggregated to include investment, education, defence the findings reflect the result of the earlier study.

A Disaggregated Analysis was carried out by Abu and Abdullahi (2010), using the co-integration and error correction methods, the study has its basis on the Keynesian and endogenous growth models. The result reveals that government total capital expenditure, total recurrent expenditure and government expenditure on education have negative effect on economic growth while, government expenditure on transport and communication and government expenditure on health result to an increase in economic growth.

Adesoye A. B. et al (2010) investigated dynamic analysis of government Spending and economic growth in Nigeria used time series data covering 1977-2006 to analyse the RAM model. The study employed three variants of Ram model were developed to regress Real GDP on private investment. The empirical result showed that private and public investments have no significant effect on economic growth. However, the study shows that long run relationship between public expenditure and economic growth.

Usman et al (2011) empirically examined the public expenditure and economic growth in Nigeria. The study adopted augmented Solow model is specified in Cobb-Douglas. The study focuses on sectoral government expenditure which are decomposed to three streams; expenditure on building human capital- public expenditure on education and health, expenditure on building infrastructure-public expenditure on transport and communication, and other social services, and expenditure on administration to study the impact government expenditure on economic growth. The result shows that public spending doesn't have impact on growth in the short run, however there is long run relationship between public expenditure and economic growth.

Ehigiamusoe (2012) in his study titled 'A comparative Analysis of Agricultural Performance between the Military and Civilian Regime in Nigeria' the papers adopt descriptive approach in its study. The research work compares the proportion of public expenditure on agricultural with the allocation to other sectors of the economy such as education, health and transport. The study reveals the agricultural sector received more percentage of public expenditure during civilian regime but the contribution of agriculture to GDP during military regime is greater than the civilian regime.

Adewara and Oloni (2012) in Composition of Public Expenditure and Economic Growth in Nigeria analyzed the relationship between public expenditure compositions from 1960 to 2008 on economic growth using the Vector Autoregressive Model (VAR). The study finds out that expenditure on education has failed to enhance economic growth due to the high rate of rent seeking in the country and high rate of unemployment. The study also recommends that expenditure on health and agriculture should be encouraged due to their positive contributions to growth.



Ben-Caleb and Godwyns (2012) researched on Budget discipline in Nigeria: A critical evaluation of military and civilian regimes. The paper juxtaposes military and civilian regimes with respect to adherence to budgetary estimates. The study employs descriptive statistics, simple variances and percentages with the help of independent T-test of difference of variances. The paper reveals that budget indiscipline under democratic regime is higher than the budget indiscipline under democratic regime by analyzing budget expenditure variances between the two regimes.

Anyanwu et al (2012) in their Comparative Regime Analysis of the Trend and Structure of Military Expenditure in Nigeria, the study covers from 1980 to 2010 where the descriptive statistical tool employed in the analysis ironically shows civilian administrations spend more for defence purposes than military and that recurrent defence expenditure takes a higher proportion of total allocation for defence in Nigeria.

Ebiringa and Chalse-Anyaogu (2012) investigated the Impact of Government Sectoral Expenditure on the Economic Growth of Nigeria. He opined that government expenditures remain the bedrock of Nigeria's economic growth. The work adopted the ECM method to analyse the long run effect of selected macro economic variables on growth. The findings of their work shows that expenditure on telecommunication, defence and security, education and health sectors have positive effect on Nigeria economic growth. But, transportation and agricultural expenditures have impacted negatively on the economic growth.

Ogbulu and Torbira (2012) carried out empirical study on Budgetary Operations and Economic Growth: The Nigerian Perspective. The study adopted the linear OLS mechanism in the analysis of budgetary economic growth model patterned after multivariate regression model of linear formation. The ECM was used to indicate how the departure from the long-run equilibrium is corrected. The study reveals that five budgetary items: non-oil revenue, economic, administrative, social and transfer expenditures exerted a significant effects on the GDP.

Nworji et al (2012) worked on the Effects of Public Expenditure on Economic Growth in Nigeria: An Disaggregated Time Series Analysis from 1970-2009. The study use the OLS multiple regression model. The result of the analysis shows that capital and recurrent expenditure on economic services have insignificant negative effect on economic growth; capital expenditure has insignificant positive effect on growth. While capital and recurrent expenditure on social and community services and recurrent expenditure on on transfers has significant positive effect on economic growth.

Chude and Chude (2013) examine the Impact of Government Expenditure on Economic Growth in Nigeria between the priod of 1977 to 2012. The study focuses on the sectoral expenditures analysis. The study employed Ex post facto design and Error Correction Model in its analysis. The study reveals that total expenditure education is highly and statistically significant and has positive relationship on economic growth in Nigeria in the long run.

Oyinlola and Olusijibomi (2013) investigated public expenditure and economic growth nexus: Further evidence from Nigeria during the period of 1970 to 2009. The study employed disaggregated public expenditure using the structural breaks co-integration technique. The result of the research confirms Wagners law in two models in the long run, the result also shows that economic growth and development are the main objectives of government expenditure, especially investment in infrastructure and human resources all of which falls under social and community services.

Egbetunde and Fasanya (2013) delve into the Public Expenditure and economic Growth in Nigeria: Evidence from Auto-Regressive Distributed Lag Specification during the period 1970-2010. The Bounds approach to cointegration was used in the analysis to examine the long run and short run relationships between public expenditures and economic growth. The ARDL approach signifies that the variables are bound together in the long-run. The study reveals that recurrent expenditure has significant impact on growth; total public spending has negative effect on growth.

Okoro (2013) explores Government Spending and Economic Growth in Nigeria covering 1980 to 2011. The study used Error correction mechanism and Granger causality test in its analysis. The findings reveal that there exist a long run equilibrium relationship between government spending and economic growth in Nigeria.

Nazifi (2014) researched on the capital expenditure and its impact on economic growth in Nigeria: 1980-2010. The multiple regression model of Ordinary Least Square was used to analyse the data. The findings of the study shows that total capital expenditure, capital expenditure on administration, capital expenditure on social community services and capital expenditure on transfers have positive impact on economic growth in Nigeria.

It is evidence from the empirical review carried out that there are diverse result by various studies, where some studies found that public spending has negative and insignificant effect to economic growth (Egbetunde & Fasanya 2013; Chude & Chude, 2013; Adewara and Oloni, 2012; Laudau, 1983;1986). Similiar studies reveal that there exist positive significant relationship between government expenditure and economic growth (Nazifi, 2014; Okoro, 2013; Oyinlola & Olusijibomi, 2013; Ogbulu and Torbira, 2012; Ehigiamusoe, 2012 (reveals that government expenditure on agriculture contribute more to growth during the civilian than military regime). Some studies found out that part of government spending when decomposed have positive, significant effect on economic growth while others have negative and insignificant effect on growth (Nworji et al, 2012; Abu and Abdullahi 2010, Ebiringa and Chalse-Anyoagu, 2012; Usman et al, 2011, Adesoye A. B. et al, 2010 shows that public expenditure has no significant impact on growth in short run but has significant impact on growth in the long run). The reason for these diverse findings are not unconnected to the difference in methodology adopted, diversity in the choice of data used to capture the variables of study, variation in the time period which the study focused on.

## 2.5 Budgetary Procedures during in Nigeria.

In Nigeria, government expenditures on various sectors need to pass through the budgetary procedures to ensure prudent and optimum utilization of scarce public resources through different ministries, departments and agency of the various sectors of the economy. These procedures occur in three phases which are (i) Preparation at Ministerial Phase (ii) Executive Council Phase (iii) Legislative Phase (Afuape, 2013).

*Preparation / Ministerial Phase:* The ministry of Budget and Planning will first receive the budget policy from the presidency. And, then prepare the budget guidelines that would be sent to various ministries. On receiving this guideline in form of circular, the various ministries and extra ministerial would set up departmental committee on budget estimates.

The ministries will submit their estimates to the ministry of budget and planning for approval. The ministry of budget and planning will then set up a committee called draft estimate committee to review the estimates submitted by various ministries. These various ministries would through their representatives defend their proposals. If the ministry of budget and planning satisfies with the proposals of various sectors the department would aggregate and consolidate the estimates of revenue and expenditure. This is would be passed to the presidency for his approval.

*Executive Phase:* on receiving the budget proposals from the ministry of budget and planning by the Presidency, the president presents the draft estimates before his cabinet members for further consideration and approval. The cabinet reviews the proposed estimates according to the socio-economic and political priority of the government. If the cabinet is satisfied with the proposed estimates, the president will give his executive approval of the draft estimate and present it to the national assembly in form of Appropriation Bill.

*National Assembly Phase:* The president in person or by proxy presents the draft estimate in form of Appropriation Bill to the joint session of National Assembly. After thorough scrutiny in the assemblies by the appropriation committee the draft estimate or the bill will be considered and reconciled in line with national economy and sectoral priorities. In case there is disagreement on the Bill the finance committee will be set up to

mediate and its resolution is final. After the final approval by the National Assembly, the appropriation Bill will be presented to the President for his final assent and becomes the Appropriation Act.

Frankly, this budgetary procedure that scrutinizes the estimated government expenditures on various sectors in line with the economic objectives to be achieved is rigorous, hence, nothing unproductive should be expected to come out of these administrative and political routine. Well, at the end of this research, the study will unravel if this routine makes a significant difference and promote the judicious government expenditures towards the accomplishment of the various economic priorities most especially growth objective which this study has as its focus.

### 3. Methodology

#### 3.1 Introduction.

This section discussed the theoretical framework of the study, model specification, sources and characteristics of data, techniques and model estimation procedure, employed in the study of Sectoral Impact of Public Expenditure on Economic Growth.

#### 3.2 Theoretical Framework

This study is anchored on the theoretical framework of Robert Solow who in his celebrated work of the core factors influencing economic growth isolated a key exogenous factor which significantly impact growth potential among economies. However, the Solow version of Neo classical is more suitable for this study due to its dynamism. The Solow model focuses on four variables: Output (Y), Capital (K), labour (L), and “knowledge” or the effectiveness of labour (A). At any point, the economy has some of amount of capital, labour and knowledge Romer (2009). These are combines to produce output. The production function takes the form:

$$Y(t) = f(K(t), A(t), L(t)) \quad (3.1)$$

A Baseline Case: Economic Growth, Government Expenditure on Selected Sectors

The analysis is extended to incorporate the Government expenditure on critical sectors as they affect economic growth.

Thus the production function 3.1, becomes

$$Y(t) = K_{(t)}^{\beta} GeE_{(t)}^{\lambda} GeA_{(t)}^{\theta} GeD_{(t)}^{\delta} GeTC_{(t)}^a \quad (3.2)$$

Note:  $Y_{(t)}$  is economic growth proxy by GDP Per Capita Constant 2000 US Dollar

$K_{(t)}$  is Capital at period  $t$  proxy by Gross Capital Formation.

$GeE_{(t)}$  is Government Expenditure on Education. (Dual purpose in the model)

$GeA_{(t)}$  is Government Expenditure on Agriculture.

$GeD_{(t)}$  is Government Expenditure on Defense and Security.

$GeTC_{(t)}$  is Government Expenditure on Transport and Communication

Log both sides of the equation 3.3

$$\ln Y(t) = \beta \ln K_{(t)} + \lambda \ln GeE_{(t)} + \theta \ln GeA_{(t)} + \delta \ln GeD_{(t)} + a \ln GeTC_{(t)} \quad (3.3)$$

Therefore, the extended version of the Solow growth model indicates that growth rate of Government expenditure on education, Government expenditure on Agriculture, government expenditure on transport and



communication and government expenditure on defense/security are determinants of output with positive relationships.

### 3.3 The Functional Form of the Model

For the purpose of the research work the relationship among the dependent and independent variables is presented as follows:  $PCGDP = f(GCF, GeE, GeA, GeD, GeTC, u)$  (3.4)

### 3.4 Model Specification

Having indicated from the extension version of Solow growth model that the government expenditure on selected sectors are determinant of economic growth, hence in order to determine the long run impact of the variables of interest of the study on the PCGDP and the short run dynamics of the model, the study employed the Bound Test known as Autoregressive Distributed Lag (ARDL). The reason for adopting this technique are not unconnected to the facts that it is simple to estimate because the stationary test is not required; as long as the variables are I(0) and I(1) the Bound test is applicable; it is capable of estimating both long run and short coefficients of the model. The assumption of the time series used in this study is that all the variables are I(1). More so, Schwarz Information Criteria (SIC) is used to select the appropriate lag by the study.

The AutoRegressive Distributed Lag Model (Bound Test Approach) specified the model below:

$$\Delta RGDP_t = \alpha + \delta_i \Delta RGDP_{t-1} + \beta_i \Delta RGCF_{t-1} + \gamma_i \Delta GeE_{t-1} + \lambda_i \Delta GeA_{t-1} + \theta_i \Delta GeTC_{t-1} + \mu_i \Delta GeD_{t-1} + \alpha_1 RGDP_{t-1} + \alpha_2 GCF_{t-1} + \alpha_3 GeE_{t-1} + \alpha_4 GeA_{t-1} + \alpha_5 GeTC_{t-1} + \alpha_6 GeD_{t-1} + \epsilon_t \quad (3.5)$$

Where: RGDP = Real Gross Domestic Product

GCF= Gross Capital Formation.

GeE = Government Expenditure on Education.

GeA = Government Expenditure on Agriculture.

GeTC = Government Expenditure on Transport and Communication.

GeD = Government expenditure on Defence/Security.

$\alpha$  = Constant term,  $\delta$ = RGDP coefficient,  $\beta$  = Capital coefficient,  $\gamma$  = GeE coefficient,  $\lambda$  = GeA coefficient,  $\theta$  = GeTC coefficient,  $\mu$  = GeD coefficient,  $\Delta$  = first difference of the variable,  $\epsilon$  = white noise disturbance error term.

### 3.5 Techniques and Model Estimation Procedure.

The independent variables in the models are integrated of order zero and one i.e. I (0) and I (1). The Bound test is used to determine the existence of co-integration among the variables base on the WALD test (f-stat) by accepting the null hypothesis of no co-integration among the variables which is specified as follows:  $H_0: \pi_1 = \pi_2 = \pi_3 = \pi_4 = \pi_5 = \pi_6 = 0$

If the WALD test calculated (f-stat) is compared with the Peseran & Peseran 1997 tabulated critical value and falls below the lower bound value I (0). Contrarily, if the computed f-stat exceeds the upper bound value of I (1), then the null hypothesis of no co-integration will be rejected. Hence there is long run relationship among the variables. Having confirmed the existence of long-run relationship among the variables, the study will estimate long run and short run parameters by general to specific procedure ARDL model.

### 3.6 Sources of Data

The nature of this study requires that data collection will be based on quantitative secondary data covering 1984 to 2013. The data are sourced from Statistical Bulletin of the Central Bank of Nigeria (CBN). The data of interest here are GDP to proxy Economic Growth, Gross Capital Formation to proxy Capital, Government Expenditures on Agriculture sector, Education sector, Transportation/Communication sector and Defence sector. The Sectoral Government Expenditures were chosen base on its assumption that they are critical to the economic growth and development of the nations and base on the data availability on these adjudged critical sectors.

### 4.1 Empirical Analysis

From the ARDL model, the coefficient of GDP has the expected negative sign, but with the probability value of 36% which indicates that the variable is not significant. To further confirm if the variables are jointly significant. The study conducts the WALD test and compare the f-stat computed value with the upper bound value I (1) of Peseran 2001 ARDL table.

Table 1. Wald Test Result

Test Statistic	Value	Degree of freedom	Prob	'K' number of regressors	Bound Value (Intercept and Trend)	
F-statistic	5.9965	(6, 24)	0.0006		5	1% significant level
				I(0)		I(1)
Chi-Square	35.9792	6	0.0000	4.011		5.331

Source: Author computation (E-view7).

The WALD test is conducted by checking if the levels lag Variables (coefficients) are equal to zero or not.

Base on the probability value of 0.6% which is less than 5% level of significant, the study rejects the null hypothesis that the variables are jointly equal to zero. The computed f-stat of 5.996529 is greater than the Upper Bound table value 5.331 where K =5 at 1% level of significant. This is interpreted as there is long-run relationship among the variables.

To confirm the existence of the long-run and short run effect among the variables the study conducts the specific ARDL model from general ARDL model. The result is normalized below:

Table 2. ARDL short-run and Long run estimates

Holistic Analysis											
GDP	GCF(-1)	EDEX(-1)	AGEX(-1)	DEFEX(-1)	d(TCEX(1))	d(EDEX(-1))	d(AGEX(-1))	d(TCEX(-1))	d(DEFEX(-1))	C	@Trend
Coefficients	-	NLRE	NLRE	-0.62	2.819	NSRE	NSRE	NSRE	NSRE	47854.75	-24582.3
Prob	-	-	-	0.0113	0.0687	-	-	-	-	0.0871	0.0062

Source: Author computation (E-view7).

The above first lagged variables coefficient measures the long-run effects of the variables on the GDP and the difference of first lagged variables measure the short run effect of the variables on the GDP.

The ARDL model reveals that government expenditure on Defence has negative significant long-run effects on the economic growth with the coefficients of -0.62. Meanwhile, Government expenditures on Transport & Communication, Agriculture, and Education have no effect on the economy in the long-run. It is glaring from the above model those government expenditures on Transport & Communication alone has significant little positive

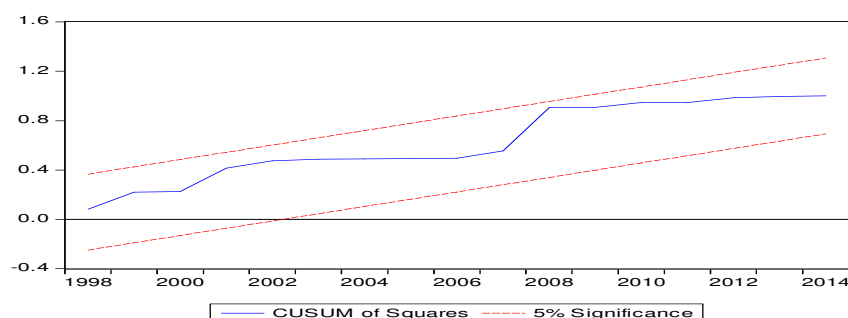
effect in the promotion economic growth in the short run with the coefficients 2.819. The Government expenditures on Defence, Agriculture Education have no impacts on the growth of the economy in the short run.

Summarily, government expenditures on Defence alone has negative and significant impact on the economic growth in the long-run, government expenditures on the Transport and Communication, education and agric have no impact on economy in the long run. Only Government expenditure on Transport & Communication has positive impact on the economic growth in the long-run while government expenditures on Defence and Agriculture, Education have no impact on the economic growth in the long-run.

#### 4.2 Residual Diagnostic Tests

These tests are conducted to determine the efficiency of the model.

Fig. 4.2.1 Stability Test



Source: generated from E-view 7.

The above figure measures the stability of the model of analysis by the cumulative sum residual of squares and it shows that the result of the analysis is stable. This is indicated by the fact that the continuous line doesn't fall outside the dotted lines. This is good for the study.

Table 3. Tabulated Results of Residual Diagnostic Tests

TESTS	Jacque Bera	Probability	
Normality	3.738905	0.154208	
	Prob. Chi-square value	f-stat	Prob. F stat
ARCH Test	0.2881	1.094609	0.3044
Breusch-Godfrey LM Test	0.1433	0.0905	2.831186

#### 4.2.2 Normality Test

$H_0$ : Residual is multivariate normal  $H_1$ : Residual is not multivariate normal

Jacque Bera stat with value 3.738905 and prob. Value of 0.154208 which is greater than 0.05 levels. Hence, the study accepts the  $H_0$  that specified that the residual is normally distributed.

#### 4.2.3 Heteroscedasticity Test

Autoregressive Conditional Heteroscedasticity (ARCH) has autoregressive structure, it may be observed over different periods.

$H_0$ , there is no ARCH effect

From the table above, the prob. chi-square value of 0.2881 which is greater than 0.05 level of significance. Hence, the study accepts the  $H_0$  that there is no ARCH effect.

#### 4.2.4 Test for Residual Auto-Correlation

Breusch-Godfrey Serial Correlation LM Test.

$H_0$ : there is no serial correlation.

From the above table, considering the prob Chi- square value of 0.1433 which is less than 5%. Hence, the study accepts the  $H_0$  which specified that there is no serial auto-correlation.

Conclusively, the above residual tests of the study conducted are all desirable, considering the normality test of the residual, ARCH effect (heteroscedasticity) test and serial correlation test of Breusch-Geofrey. This model can be used for policy making and other economic purposes as the tests conducted indicated that it is highly reliable.

### 5.1 Discussion of Findings

The study revealed that government expenditures on these adjudged critical sectors has no relationship with economic growth in the short-run except government expenditure on Transportation and Communication that contribute significantly to achievement of growth objective in the short run. None of this government expenditure has relationship with the economic growth in the long-run except the government expenditures on Defence that has significant negative impact (drag) on the economic growth in the long-run. The communication sector witnessed an unprecedented growth after the reform that was introduced at the inception of the civilian (Obasanjo's) regime when the sector was given the required attention and ushered in private participants from both the local and foreign investors. This factor supports the reason why the sector has positive impact on the economy. More so, this reform that removed the public monopoly in the sector did not turn the sector to private monopoly as the power sector is currently experiencing in Nigeria. The government expenditure on Defence sector has negative impact on the economic growth in the long run despite the huge budgetary allocation to this sector. The expenditure in this sector is not achieving the fiscal objective it was meant to achieve. This may be due to corruption, other irregular and sharp practices by the government officials and political office holders that are siphoning public fund for personal use. The direct consequence of this is the inability to contain the excesses of the insurgencies which has been destroying lives and property that have potentials of contributing positively to the economic growth of the nation. The Education and Agricultural sectors were not working effectively; this is indicated by their neutral relationships with economic growth both in the short-run and long-run. The various unrest – ASUU and ASUP industrial actions in education sector; clamor for improvement in government investment in education and 26% budgetary allocation recommendation by UNDP that fell into the deaf hear of the Federal Government of Nigeria (Yusuf, 2014) are facts corroborating the failure of these sectors as revealed by the study. Although, various reforms embodied and gave attention to agricultural sector in order to revive the sector to be capable of providing food for teeming Nigeria, raw materials for nation's infant industries, to be able to provide the foreign exchange needs of the nation. In spite of the reforms in the agriculture sector like OFN, DFFRI and current Agriculture Transformation Agenda (ATA) that is proclaiming the achievements of reduction in the fertilizer corruption, salvage of billions of Naira from importation of food items from abroad, introduction of Electronic Wallet System for the farmer (Asu F., 2013), the economy of the nation is still characterized as Mono-culture i.e. the economy chiefly relies on crude oil for its sustenance. Conclusively, The various anomaly in the economic operations of the various parastatals, departments and ministries of government as regards the fiscal indiscipline by the political office holders, like Stella Oduah N255 Million car scandals in aviation - a section in transport sector (Punch 13 Jan., 2014), \$5.7m cash-for- arms scandals – seizures of Nigerian arms money by the South African Authority (Street Journal, 8 Oct. 2014) and other corrupt practices which this civilian regime has been coddling are bane to the fiscal potency to accomplish growth and developmental objectives of the nation.

## 5.2 Conclusion

Base on the on the above analysis, the study reveals that public expenditures have not performed well to the expectation in promoting the economic growth. Contrarily to expectation, government expenditures on the Education, Defence and Agriculture sectors have failed to promote the economic growth. The reasons for this are not unconnected to the fact that the level of corruption of the government officials and political office holders is adversely affecting Nigeria economy. The failure of the government officials to be committed to the course of national interest and welfare through the fiscal indiscipline, embezzlement and diversion of public resources for their personal use have really caused Defence, Education and Agriculture sectors to serve as drag to economic growth in Nigeria.

## 5.3 Recommendations

This study decries a policy prescription that the Government expenditures on these sectors should be increased except in the education sector to meet the UNDP recommendations. The following recommendations are proffer by the study:

The machinery for the independent appraisal functions of the government fund (resources) allocated to be expended on these sectors should be strengthening; evaluation of the budgetary procedure to the point of spending by the government officials and political office holders, deviation in the budgeted spending should be reported and accounted for by the accounting officers without immunity conferred on any accounting officers. Corruption in whatever manner (percentage procurement on public contracts / expenditures, contracts splitting etc) must be mitigated to the barest minimum by value reorientation of the government officials and political office holders on the management of the public resources towards the accomplishment of the objectives. The political office holders must be personalities of high integrity, probity, honesty and accountability that will not compromise any of these while in the office. The government should avoid the proliferation of anti-graft agencies as proposed by the president Jonathan who just realized that corruption is a cancer-worm which has eaten deep into the fabrics of the nation (Sotubo, 2015). The government should strengthen these anti-graft institutions by necessary legislations to carry out their functions diligently without unnecessary political interference. If the aforementioned policy prescriptions are observed, the public expenditures on various sectors will contribute in no small measure to the achievement of fiscal objectives and accelerate the economic growth of the nation.

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