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Public Finance: Impact on the Growth of the Nigerian Economy

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ABSTRACT
This paper examined the public finance: impact on the growth of the Nigeria economy, using time series data from 1960 to 2013. The paper employed secondary data sourced from National Bureau of Statistics, Journals and Financial Review of Central Bank of Nigeria. The study employed E-view 8.0 statistical output as a window in exploring the possible links between public finance and/or economic growth. The results revealed that public finance has a direct relationship with economic growth which statistically significant at 5% level as discovered from the results of the various diagnostic tests. From the result of the findings, the study recommended that government should ensure that funds are internally generated for running government in Nigeria; intensify effort to strengthening its source of public revenue; the citizens of Nigeria should be encouraged strictly to adhere to the payment of taxes, fees and/or fines; government should ensure that the internally generated funds are expended judiciously in Nigeria; the last resort of the government when the entire sources of the funds were explored is borrowing; in case there are macroeconomic variable disequilibria, the government should opt for proactive policy (.i.e., fiscal policy or monetary policy in order to adjust the trend (s) in the economy; there is the need for the government to sky-up its capital expenditure in Nigeria; and/or corruption is a menace in any economy, therefore, government should wedge a war against it all its ramifications; and/or hence economic growth.
***KEYWORD**: Capital expenditures; Recurrent expenditures. Economic growth*

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INTRODUCTION

The impact of public fiancé (i.e., public revenue & expenditure) cuts across all sectors of the economy, in other words government revenue and/or expenditure has a direct relationship with economic growth and/or development. Hence, the Gross Domestic Product (GDP) and Gross National Product (GNI) have witnessed up surged in recent times. This expenditure led to the formulation of budget (.i.e., fiscal policy) at every fiscal year (Shuaib & Peter, 2010:44).

Public finance is a branch of macroeconomics that plays numerous germane roles in the economy of the developed and emerging countries (Shuaib & Peter, 2010: 4-5). In the sense that it promotes economic growth and development—such way as eradicating abject poverty, unemployment level and/or income inequality distribution, though this could be achieved through the introduction of fiscal policy and/or tight budgetary measure; to correct any balance of payment disequilibrium through fiscal and/or monetary measures; to identify sources of revenue as such diversify the monotonically revenue base of government; to positively influence the level of desired aggregate demand by preventing the downtrodden or uptrodden inherent in it; to possibly raise revenue for financing government *ex ante* (desired) expenditure; to correct income inequality distribution or unequal distribution of marginal gains in the economy—this may be tackled by adopting progressive tax which helps to redistribute income from the rich to the poor in the economy; to ensure price stability—in case of periods of depressions and/or recessions; to strike a balance the poor and the rich classes in term of national dividend; and/or to provide certain goods or amenities which the market forces (capitalists) would be unwilling or unable to offer to the citizenries (Shuaib & Peter, *loc.cit.,* 5) . Certain services, the market forces (capitalists) are unwilling or unable to provide them for the consumption of the citizenries because these goods are not profit oriented rather social welfare oriented. With this development, the government needs to spread its expenditure tentacle in order to meet up with the demand or ever increasing expenditure of its citizenries (Shuaib & Peter, *op.cit.,* 45-46). However this ever increasing expenditure could be traded-off either exploring the available resources or through taxation or public debt (.i.e., domestic or external) or

increase in aggregate government expenditure (i.e., C + I + G, fiscal policy or monetary policy) (Shuaib & Peter, *loc.cit.,* 47-50).

Government responsibility subsequently covers major area—such as—Defense; Security; Education; Health; Logistics; Arms of Government (Executive; Legislature; & Judiciary); building or constructing of public roads, dams, social & economic infrastructures, etc. These services are termed as pure public goods, because they are nonrivalruos and non-excludability in consumption. In other words, these goods and services are the type once provided—extra resource cost of another person consuming the goods and services is zero. These goods and services are such that the market mechanism is unwilling or unable to offer (Musgrave and Musgrave, 2005; Jhingan 2006; Shuaib & Peter, 2010: 44).

Government needs to financing these essential services, for this to be done government has to source funds from public revenue (.i.e., taxes, fees, fines, levies, special assessment and/or commercial revenues from public services); public expenditure (.i.e., this is the reason why government revenue is collected, which needs to be expended in certain or essential goods and services the capitalist would be unwilling or unable to offer to citizenries); public debt (.i.e., fall short of the available funds to match the expected expenditure) (Shuaib & Peter, loc.cit., 7). Because of the climbing the importance government involvement in a nation's development process, the modern public finance is preoccupied with the study of resource allocation, and problem of economic growth and development, price stability, employment rates, income equitable distribution and social welfare. It also accentuates the impact of different taxes upon work, save and invest (Shuaib & Peter, 3). Public finance as a government deals with the development, design, and analysis of such fiscal and monetary policies with various attendant finances in organized government institution (*ibid.,* 3).

The one of the objectives of the government is to ensure that an average citizen in the country is able to achieve social welfare (or standards of living) (Shuaib & Peter, *op.cit.,* 47-50).

The government expenditure is a variable in the model of economic growth and development. Economic growth and development has its components as—(i) increase in per capita income or output; (ii) change in the structure or technological of the economy; (iii) increase in the basic needs of the citizenries (such as: housing, clothing, food, education, health, clean drinkable water, access to good road networks); (iv) access to economic and social amenities, (v) poverty alleviation; (v) evenly distribution of national income or wealth; (vi) decline in unemployment; (vii) control of inflation; (viii) zero corruption level; (ix) population control; (x) change in the composition of productivity, wants, goods, consumption, labour force, volume of trade, incentives, institutions, and knowledge or the upward movement of the entire social system (Jhingan, 2006: 4-5).

Besides, the capital formation leads to economic development, in the sense that government funds are derived from indigenous savings, though it is low in Nigeria—resulting to lack of information among the citizenries (Shuaib & Dania, 2015). However, economic development may be measured through building of capital equipment on a sufficient scale to increase productivity in agriculture, mining, plantations and/or industry on the one hand. While on the other, capital is required to construct schools, hospitals, roads, railways, standards of living, research and development (R & D), etc. (Jhingan, 2006; Ainabor, Shuaib & Kadiri, 2014). The essence of economic development is the creation of economic and social overhead capitals (or costs), which leads to increase in national output and/or income through creation of employment opportunities and/or reduction of vicious circle of poverty both from the demand side and supply side. Economic development is *sine qua non* and/or is not normally achieved in the short run rather in the long run, where the citizenries of *per se* country could match up with the 21st century trends relatively to economies of the world. The discovered problem (s) that is/are responsible for the emerging economies is/are resulting from low capital formation (or base) (Jhingan, 2006; Ainabor, *et. al*., 2014). Most recently, the government expenditure (.i.e., Capital expenditure & Recurrent expenditure) has increased astronomically, this has resulted from the creation of more States, Parastatals and/or being headed by Ministers or Directors or Permanent Secretaries. While every office has its budget allocation, when all these are summed—tantamount to enormous or plethora amount of funds (.i.e., Capital expenditure & Recurrent expenditure).The inability to match up revenue with expenditure results to debt or budget deficit or increase in aggregate government expenditure or taxation or devaluation of currency. This assertion stems an inverse relationship with Nigerian economy growth and development. The reason is that Nigerian economy is monoeconomy, in other words, the source of economic functionality of Nigerian economy is crude oil. Whenever there is crisis in the sector, it translates into all sectors of the economy as witnessed in the 1980s. It was worsened when most recently (i.e., 2015) there was a

significant drop of crude oil prices in OPEC. This has had inverse relationship with countries that depended on crude oil or agriculture (monoeconomy)—such as Nigeria. In other words, in Nigeria growth rate has dropped from 7% to 4.2%. This has led to devaluation of currencies and/or other stringent fiscal and monetary policies—such as reduction in taxes and deliberate attempt to make a mismatching of the unit of domestic currency and another currency (most especially American dollar as the commonest currency for exchange for goods and services) (Ainabor, *et.al*, 2014).

Todaro & Smith, (2006) perceived development in terms of the reduction or elimination of poverty, inequality and unemployment that is economic in character must involve change in the composition of an economy's outputs and inputs.

Most recently, the cost of governance in emerging countries—such as—Nigeria, has increased tremendously resulting from the fact that the institutional and/or relational practices of and responses to such exigencies is referred to as fiscal federalism. However, it refers to the scope and structure of the various tiers of government and/or involvement in the delegation and/or devolution of governmental responsibilities and functions and the allocation of resources and/or means within the nation. These functionalities and/or responsibilities have contributed to the huge capital and recurrent expenditures by government (Shuaib & Peter, 2010:245).

Government employs two most effective weapons (.i.e., fiscal and monetary policies) to control the economy when there disequilibrium. Or when the economy is experiencing either recession or depression on the one hand. Or when the public revenue is lower than public expenditure or macroeconomic variables (.i.e., inflation, balance of payment, unemployment, debts, price instability, interest rate, exchange rate, corruption, etc) instability on the other. There is crowding-out effect in using either fiscal policy or monetary policy to regulate the economy. Though difficulty is experienced when making a choice between the two policies on which to adopt and/or its consequence.

In this paper, we shall discover how the government policies have regulated the activities in the economy to economic growth and/or development in Nigeria.

LITERATURE REVIEW

Plethora theoretical and/or empirical research works carried out by various researchers on public finance: the impact on the growth of the Nigerian economic is found on the schools or academic's archives.

Examining the public finance (public revenue, public expenditure & public debts) through the impact on education, capital formation, corruption, fiscal policy, agriculture, and economic growth and development, Shuaib, Ekeria and Ogedengbe, (2015) examined the impact of fiscal policy on the growth of the Nigerian economy using time series data from 1960-2012. The study explored secondary data from the Central Bank Statistical Bulletin for the period of 1960 to 2012 and used various econometric analyses and/or statistical analytical (E-view 7.2) method to examine the relationship between fiscal policy and growth. The paper tested the stationarity—through Group unit root test, and stationarity found at first differenced at 5% level of significance. Factor method, Goodness-of- fit summary, VAR and its properties were tested. Also, the Co-integration Technique and Pairwise-Granger Causality were employed in this study to test and determine the long-run relationship among the variables examined. From the result of the empirical findings, it was discovered that fiscal policy has a direct relationship with growth. Dar Atul Amir Khalkhali, (2002) also pointed out that in the endogenous growth models, fiscal policy is very crucial in predicting future economic growth. Many researchers have attempted to examine the effect of government expenditure on economic growth.

Shuaib, Ahmed & Kadiri, (2015) examined the impact of innovation for 21st century educational sector in Nigerian economic growth. The paper employed the characteristics of each time series by testing their stationarity using Augmented Dickey Fuller (ADF) tests, including co-integration tests and Error Correction model through over-parameterization and parsimonious of the variable to enable the researcher to ascertain both short run and long run equilibria. Shuaib, Ahmed & Kadiri (2015). Examined the impact of innovations and transformations in teaching and learning on educational systems in Nigerian economic growth, The paper employed the characteristics of each time series by testing their stationarity using Augmented Dickey Fuller (ADF) tests, including co-integration tests and Error Correction model through over-parameterization and parsimonious of the variable to enable the researcher to ascertain both short run and long run equiliria. The results of the findings revealed that total government expenditure on education proxied for teaching and learning has direct relationship with economic growth.

Shuaib, Igbinosun and Ahmed, (2015) examined the impact of government agricultural expenditure on the growth of the Nigerian economy. The study employed secondary data sourced from National Bureau

of Statistics, and Financial Review of Central Bank of Nigeria. The study employed E-view 7.2 statistical output as a window in exploring the possible links between government agricultural expenditure and economic growth. The results revealed that government agricultural expenditure has a direct relationship with economic growth which statistically significant at 5% level.

Shuaib & Dania, (2015) examined the capital formation: impact on the economic development of Nigeria, using time series data from 1960 to 2013. The paper applied Harrod –Domar model to Nigerian economic development model and tested if it has a significant relationship with Nigerian economy. The paper explored various econometrics and statistical analytical (.i.e., Eview 7.2) method to examine the relationship between capital formation and economic development. The paper tested the stationarity and/or different diagnostic tests of Nigeria's time series data. The entire tests rejected the null hypothesis and accepted the alternative hypothesis. From the empirical findings, it was discovered that there is a significant relationship between capital formation and/or economic development in Nigeria.

Shuaib, Ekeria and Ogedengbe, (2015) examined the impact of corruption on the growth of Nigerian economy using time series data from 1960 to 2012. The paper utilized secondary data and the paper explored various econometrics and/or statistical analytical (Eview 7.2) method to examine the relationship between corruption and economic growth. The paper explored unit root, Cointegration analysis to test for the Nigeria's time series data and used an error correction mechanism to determine the long-run relationship among the variables examined. From the results of the findings, it was discovered that corruption has an inverse relationship with growth of an economy.

Ainabor, *et. al*,(2014) examined the impact of capital formation on the growth of Nigeria using time series data from 1960 to 2010. The paper applied Harrod –Domar model to Nigerian growth model and tested if it has a significant relationship with Nigerian economy. The paper utilized secondary data and the paper explored various econometrics and/or statistical analytical (Eview 4.0) method to examine the relationship between capital formation and economic growth. The paper tested the stationarity, OLS, cointegration of Nigeria's time series data and used an error correction mechanism to determine the long-run relationship among the variables examined. The results of the findings supported the Harrod-Domar model which proved that the growth rate of national income was directly related to saving ratio and capital formation (i.e. the more an economy is able to save-and invest-out of given GNP, the greater will be the growth of that GDP).

Ascertaining the public finance through ICT and economic growth and development, Shuaib and Kadiri, (2012) examined the impact of Information and Communication Technology (ICT) on the Growth of the Nigerian Economy using annual time series data from 1970 to 2010. The basic variables of concern derived from the literature review are: real gross domestic product proxied as economic growth, ICT proxied as telecommunications (TELCOM), enrolments into Tertiary (TSE), Secondary (SSSE) and Primary (PSE) on educational institutions was used as proxied for human development. With the aid of statistical package (E-views, version 3.1); the model was estimated using annual time series data from 1970 to 2010. The paper employed stochastic characteristics of each time series by testing their stationarity using Augmented Dickey Fuller (ADF) and Phillip Perron (PP) tests, including cointegration tests and Vector Autoregressive Measure. Empirical results revealed that there is, indeed a long-run relationship among government expenditure on education, human capital development proxied as tertiary school enrolments, Secondary school enrolments and Primary school enrolments and economic growth in Nigeria. All the variables have short and long run relationship with each other as revealed by Johansen cointegration. From the Findings, it was revealed that there is a feedback mechanism between ICT and economic growth in Nigeria (Aluyor & Shuaib, 2012).

Ranjan and Sharma (2008) examined the effect of government development expenditure on economic growth during the period 1950-2007. The authors discovered a significant positive impact of government expenditure on economic growth. They also reported the existence of co-integration among the variables. In the literatures some studies disentangled government expenditures and used a multivariate co-integration analysis to examine the effect of each sector on economic growth. It was evidenced that in long run, government spending on education had a positive effect on economic growth, while government spending on defence and health had negative effects on economic growth. Thus, concluded that the allocation of government resources towards the education sector should be favoured in order to enhance growth.

Abdullahi (2000) examined the relationship between government expenditure and economic growth and reported that size of government is very important in the performance of economy. He advised that government should increase its spending on infrastructure, social and economic activities. In addition, government should encourage and support the private sector to accelerate economic growth. To corroborate the work of Abdullahi, Shuaib, Ekeria and Ogedengbe, (2015) examined the impact of

inflation rate on the economic growth in Nigeria. The study explored secondary data for the period of 1960 to 2012 and used E-view 7.2 statistical window in processing and analyzing the time series data. The empirical result of the test showed that for the periods, 1960-2012, there was no co-integrating relationship between Inflation and economic growth for Nigeria data. Furthermore, we examined the causality relationship that exists between the two variables by employing the Pairwise-Granger causality at two lag periods. The result of the findings revealed that inflation rate has an inverse relationship with economic growth.

Shuaib, Ekeria and Ogedengbe, (2015) examined balance of payments: Nigerian Experience: 1960-2012 using time series data from 1960-2012. The study explored secondary data from the Central Bank Statistical Bulletin for the period of 1960 to 2012 and used various econometric analyses and/or statistical analytical (E-view 7.2) method to examine the relationship between balance of payments and economic growth. The paper tested the stationary—through Group unit root test. The co-integration technique employed in this study is Engle and Granger, (1987) approach in assessing the co-integrating properties of variables, especially in a multivariate context to determine the long-run relationship among the variables examined. Further effort was made to check the causality relationship that exists between the two variables by employing the Pairwise-Granger causality at one lag period. The result of the findings revealed that balance of payments has an inverse relationship with economic growth.

Shuaib & Dania, (2015) examined the impact of Nigerian external debt: Nigerian experiences from 1960-2013, using time series data from 1960 to 2013. The study employed secondary data such as Financial Reviews of Central Bank of Nigeria (CBN), and/or National Bureau of Statistics (NBS). The paper explored various econometrics and statistical analytical (.i.e., Eview 7.2) method to examine the relationship between NED and economic growth. The paper employed various diagnostic tests on Nigeria's time series data from 1960-2013. The entire tests rejected the null hypothesis and/or accepted the alternative hypothesis. From the empirical result findings, it was discovered that there is a significant relationship between NED and/or economic growth in Nigeria.

Suleiman (2012) Examining the empirical relationship between government revenues and expenditures, expenditures and economic growth is a fundamental step in understanding the behavior of Nigerian public expenditure and the economy on the basis of Wagner's law or the Keynesian theory and Friedman (1978) or Peacock and Wiseman's (1979) revenue-spend and spend-revenue hypotheses. The study tests for the stationarity properties of the time series public finance data of the Federal Government of Nigeria (1979-2008) using the Augmented Dickey-Fuller (ADF) test. The Johansen's cointegration test is conducted to determine whether a group of non-stationary time series variables used for this study is cointegrated or not. The VAR-based Error Correction Model is used as test for causality. The study has found that growths in both real gross domestic and government revenue causes growth in government expenditure. The implication is that government expenditure is not employed as a fiscal instrument and the revenue growth drives the government expenditure for the study period. The work of Abu and Abdullahi (2010) in their short-run analysis of recurrent and capital expenditures, as well as government spending on agriculture, education, defence, health and transport communication sectors of the Nigerian economy obtained results that revealed that government total capital expenditure, total recurrent expenditure, and government expenditure have negative effects on economic growth.

Nworji & Oluwalaiye, (2012) examined the impact of government spending on road infrastructure development on economic growth in Nigeria for the period 1980-2009. The study employed multiple regression analysis model specified on the basis of hypothesised functional relationship between government spending on infrastructure development and economic growth. Indicators used for government spending are values for defence, transport/communication, and inflation rate as the explanatory variables, while gross domestic product constituted the explained variable. The model for the study was estimated using the Ordinary Least Square (OLS) technique, and further evaluation was carried out using the coefficient of determination to explain the variations between the dependent and independent variables. The outcomes showed that transport and communication, including defence, individually exerted statistically significant impact on the growth of the economy; however, inflation exerted positively but statistically in the period reviewed. However, the variables jointly exerted statistically significant impact on the growth of the economy.

Abu and Abdullahi (2010) examined rising government expenditure has not translated to meaningful development as Nigeria still ranks among world's poorest countries. In an attempt to investigate the effect of government expenditure on economic growth, we employed a disaggregated analysis. The results reveal that government total capital expenditure (TCAP), total recurrent expenditures (TREC), and government expenditure on education (EDU) have negative effect on economic growth. On the contrary,

rising government expenditure on transport and communication (TRACO), and health (HEA) results to an increase in economic growth.

Olugbenga & Owoye, (2007) investigated the relationship between government expenditure and economic growth for a group of 30 OECD countries during the period of 1970-2005. The regression results showed the existence of a long-run relationship between government expenditure and economic growth. In addition, the authors observed a unidirectional causality from government expenditure to growth for 16 out of the countries, government expenditure in out of 10 countries, confirming the Wagner's law. Finally, the authors found the existence of feedback relationship between government expenditure and economic growth for a group of four countries.

Nworji & Oluwalaiye, (2012) examined the impact of government spending on road infrastructure development on economic growth in Nigeria for the period 1980-2009. The study employed multiple regression analysis model specified on the basis of hypothesised functional relationship between government spending on infrastructure development and economic growth. Indicators used for government spending are values for defense, transport/communication, and inflation rate as the explanatory variables, while gross domestic product constituted the explained variable. The model for the study was estimated using the Ordinary Least Square (OLS) technique, and further evaluation was carried out using the coefficient of determination to explain the variations between the dependent and independent variables. The outcomes showed that transport and communication, including defense, individually exerted statistically significant impact on the growth of the economy; however, inflation exerted positively but statistically in the period reviewed. However, the variables jointly exerted statistically significant impact on the growth of the economy.

Shuaib, Mohammed & Igbinosun, (2015) examined the impact of government expenditure on economic development in Nigeria, using time series data from 1960 to 2013. The paper explored various econometrics and statistical analytical (.i.e., Eview 8.0) method to examine the relationship between GEXP and economic development. The paper employed various diagnostic tests on Nigeria's time series data from 1960-2013. The entire tests rejected the null hypothesis and/or accepted the alternative hypothesis. From the empirical result findings, it was discovered that there is a significant or direct relationship between GEXP and/or economic development in Nigeria. Taiwo & Agbatogun, (2011) analyzed the implications of government spending on the growth of Nigeria economy over the period 1980 – 2009. Using Johansen Cointegration, unit root test and error correction model, it was discovered that total capital expenditure, inflation rate, degree of openness and current government revenue are significant variables to improve growth in Nigeria. In the final analysis, future expenditure on capital and recurrent should be managed along with adequate manipulation of other macroeconomic variables to ensure steady and/or accelerate growth.

Ogedengbe, et al, (2013) examined empirically the impact of health sector on the growth of Nigerian economy using annual time series data from 1970 to 2010. The basic macroeconomic variables of concern derived from the literature review are: real gross domestic product as a proxy for economic growth, total government expenditure on education (TGEXPE), total government expenditure on health (TGEXPH), enrolments into Tertiary School enrolments (TSE),Senior Secondary School enrolments(SSSE) and Primary School enrolments (PSE) were used as a proxy for human capital development (HCD). With the aid of statistical package (E-views, version 3.1); the model was estimated using annual time series data from 1970 to 2010. The paper employed stochastic characteristics of each time series by testing their stationarity using Augmented Dickey Fuller (ADF) and Phillip Perron (PP) tests, including cointegration tests and Granger Causality. Empirical results revealed that there is, indeed a long-run relationship between government expenditure on education, government expenditure on health, and human capital development as a proxy for tertiary school enrolments, Secondary school enrolments and Primary school enrolments and economic growth. All the variables have short and long run relationship with each other as revealed by Granger-causality test. From the Findings, it was revealed that there is a feedback mechanism between human capital development and economic growth.

Tajudeen & Ismail, (2013) analysed the impact of public expenditure on economic growth in Nigeria during the period 1970 to 2010 making use of annual time series data. The study employed the bounds testing (ARDL) approach to examine the long run and short run relationships between public expenditure and economic growth in Nigeria. The bounds test suggested that the variables of interest put in the framework are bound together in the long-run. The associated equilibrium correction was also significant confirming the existence of long-run relationships. Our findings indicated the impact of total public spending on growth to be negative which is consistent with other past studies. Recurrent expenditure however was found to have little significant positive impact on growth.

Theoretical and Conceptual framework

The model that captures the main objective of this study is Harrod–Domar model. Harrod–Domar model describes the economic mechanism by which more investment leads to more growth. For a country to develop and grow, it must divert part of its resources from current consumption (or save) and invest them in capital formation. Diversion of resources from current consumption is called saving. While saving is not the only determinants of growth, the Harrod Domar model suggests that it is an important ingredient for growth. Its argument is that every economy must save a certain proportion of its national income if only to replace worn-out of capital goods. The model shows mathematically that growth is directly related to saving and indirectly related capital output ratio. Suppose we define national income as Y, growth as G, capital output ratio as K, saving as S, and investment as l, and average saving ratio as s and incremental capital output ratio as k, then we can construct the following simple model of economic growth.

S = sY……1

i.e. saving (S) is some proportion of (s) of national income (Y)

I= Δk……2

i.e.net investment (I) is defined as the change in capital stock K

G = ΔY……3

ΔY i.e. growth is defined as change in National income ΔY divided by the value of the National income.

But since the total stock, K, bears a direct relationship to total national income, or output Y, as expressed by the capital/output ratio k, then it follows that:

$K = \frac{K}{Y}$……4

or $K = \frac{\Delta K}{\Delta Y}$

or, finally,

$$\Delta K = K\Delta Y$$

Finally, since total national saving, S, must equal total investment, I we can write this equality as

S = I……5

But from Equation (I) above we know that S = sY and from Equations (2) and (3) we know that:

I = ΔK = kΔY.

It therefore follows that we can write the identity of saving equalling Investment shown by Equation (6) as

S = sY = kΔY = Δk = I……6

or simply as

sY = kΔY ……7

ΔY = G = sY K……8

Now by dividing both sides of Equation (8) by Y and later by K, we derive the growth Model ΔY/Y which represents the rate of change of national income or rate of GDP (i.e., It is the percentage change in GDP)

Equation (8), which is a simplified version of the famous Harrod –Domar equation in the theory of economic growth, implies that the rate of growth of GDP (ΔY/Y) is determined jointly by the national saving ratio, s, and national capital/output ratio, k. More specifically, it says that in the absence of government, the growth rate of national income will be directly or positively be related to saving ratio (i.e. the more an economy is able to save-and- invest-out of given GDP, the greater will be the growth of that GDP) and inversely or negatively; relate to the economy's capital/output ratio (i.e., the higher the k is, the lower will be the rate of GDP growth).

The economy logic of equation (8) is very simple. In order to grow, economies must save and invest a certain proportion of their GDP. The more an economy can save, and invest, the faster they can grow, for any level of the rate of growth depends on how productive the investment is.

Model Specifications

The model of this paper is hinged on the model of Shuaib & Dania (2015), which enables the examination of the impact of government expenditure on the development of the Nigerian economy. The model is designed below:

$RGDP = f(CPI_t, CEXP_t, REXP_t, EDR_t, DDR_t, DSR_t, INFL_t)$ $RGDP = \lambda_0 + \lambda_1 \Delta CPI_{t-1} \pm \lambda_2 \Delta CEXP_{t-1} \pm \lambda_3 REXP_{t-1} \pm \lambda_4 EDR_t \pm \lambda_5 DDR_{t-1} \pm \lambda_6 DSR_t \pm \lambda_7 \Delta INFL_t + \mu$ (4)

Where: $RGDP_t$ = Real gross domestic product as a proxy for economic growth; CPI = Corruption Perception Index; $CEXP_t$ = Capital Expenditure proxied for infrastructural development and establishment of mega projects; $REXP_t$ = Recurrent Expenditure proxied salaries; EDR_t = External debt ratio; DDR_t = Domestic debt ratio; DSR_t = Debt servicing ratio; $INFL_t$ = Inflation; μ = Stochastic term or error term

For the estimation purposes, we re-specify equation (4) into double logarithm functional form: thus, this gives:

$$LOGRGDP = \lambda_0 + \lambda_1 \Delta LOG CPI_{t-1} \pm \lambda_2 \Delta LOG CEXP_{t-1} \pm \lambda_3 LOGREXP_{t-1} \pm \lambda_4 LOGEDR_t \pm \lambda_5 LOGDDR_{t-1} \pm \lambda_6 LOGDSR_t \pm \lambda_7 \Delta LOG INFL_t + \mu \quad (5)$$

The a priori expectations are as follows:

$$\lambda_1, \lambda_2, \lambda_3, \lambda_4, \lambda_5, \lambda_6, \lambda_7, \lambda_8 <> 0$$

Where:

α_0= Intercept, λ_1 = Coefficient of corruption perception index; λ_2 = Coefficient of capital expenditure; λ_3 = Coefficient of Recurrent expenditure; λ_4 = Coefficient of External debt ratio; λ_5 = Coefficient of domestic debt ratio; λ_6 = Coefficient of Debt Servicing Ratio; λ_7 = coefficient of inflation; and μ = white noise error term.

The contribution of this study to knowledge is in terms of the estimation techniques employed and/or the data used which is extended to 2013. An attempt will be made to empirically examine the relationship between the public finance and/or economic growth of Nigeria for the periods 1960 – 2013 under review. The equation was estimated using a variety of analytical tools, including, Switching Least Square Tests, Transition Matrix test, Group Unit Roots, Wald Test, Jarque-Bera or Residual Tests, Coefficient Confidence Intervals, and/or Switching Variance Inflation Factors (SVIFs).

The results are discussed below. The time series data used for the study covers the period 1960 and 2013. The study employed secondary data which are derived from various issues of CBN *Annual Report and Statement of Accounts (2013)*, and CBN *Statistical Bulletin (2014).*

SUMMARY OF THE DIAGNOSTIC TESTS

Table 1: Markov Switching Regression Models—Linear regression models Test

Dependent Variable: LOG_RGDP_
Method: Switching Regression (Markov Switching)
Date: 06/03/15 Time: 11:44
Sample (adjusted): 1997Q1 2013Q4
Included observations: 68 after adjustments
Number of states: 2
Initial probabilities obtained from ergodic solution
Ordinary standard errors & covariance using numeric Hessian
Random search: 25 starting values with 10 iterations using 1 standard deviation (rng=kn, seed=971182416)
Convergence achieved after 91 iterations

Variable	Coefficient	Std. Error	z-Statistic	Prob.
		Regime 1		
C	2.348850	0.738616	3.180067	0.0015
LOG_CEXP_	1.139751	0.092275	12.35172	0.0000
LOG_CPI_	-2.497659	0.382721	-6.526058	0.0000
LOG_DDR_	-0.919702	0.088723	-10.36600	0.0000
LOG_DSR_	0.975920	0.080792	12.07944	0.0000
LOG_EDR_	-0.107045	0.075758	-1.412983	0.1577
LOG_INFL_	-1.079695	0.113882	-9.480803	0.0000
LOG_REXP_	0.001344	0.028207	0.047631	0.9620
		Regime 2		
C	1.236300	0.195079	6.337417	0.0000
LOG_CEXP_	0.932827	0.067097	13.90274	0.0000
LOG_CPI_	-0.145547	0.211147	-0.689314	0.4906
LOG_DDR_	-0.919417	0.068063	-13.50839	0.0000
LOG_DSR_	0.904451	0.052302	17.29297	0.0000
LOG_EDR_	0.152614	0.052496	2.907131	0.0036
LOG_INFL_	-0.879354	0.098637	-8.915012	0.0000
LOG_REXP_	0.035552	0.014745	2.411142	0.0159
		Common		

AR(1)	1.393045	0.169853	8.201482	0.0000
AR(2)	-0.680848	0.271693	-2.505947	0.0122
AR(3)	0.301301	0.228419	1.319071	0.1871
AR(4)	-0.095507	0.108238	-0.882378	0.3776
LOG(SIGMA)	-3.319008	0.106809	-31.07415	0.0000
Transition Matrix Parameters				
P11-C	-12.28622	242.6071	-0.050642	0.9596
P21-C	-2.138784	0.583773	-3.663725	0.0002

Mean dependent var	5.578389	S.D. dependent var	0.665472
S.E. of regression	0.112282	Sum squared resid	0.592540
Durbin-Watson stat	1.133301	Log likelihood	113.0405
Akaike info criterion	-2.648251	Schwarz criterion	-1.897535
Hannan-Quinn criter.	-2.350794		

Inverted AR Roots	.86	.52	.01+.46i	.01-.46i

The Markov Switching Regression Models—Linear regression models test with nonlinearities arising from discrete changes regime. We assume settings with both independent and Markov switching where the sample separation into regimes is not observed. Dynamic specifications are permitted through the use of lagged dependent variables as explanatory variables and through the presence of auto-correlated errors (GoldFed & Quandt, 1973; Hamilton, 1994).

The Markov switching regression model extends the simple exogenous probability frame work by specifying a first-order Markov process for the regime probabilities. This has been termed the Markov switching autoregressive (MSAR) (Fruhwirth-Schnatter, 2006) or Markov Switching Mean (MSM) model (Krolzig, 1997).

The results or outputs of the estimation had shown in three portions: (i) The top portion of the output describes the type of switching model and basic sample information, along with information about the computation of the computation of the coefficient covariance and the method of producing coefficient estimates. (ii) The middle section displays coefficient estimates (as the table 1 in appendix shown). Regime specific coefficients are presented in blocks at the top, followed by any common coefficients, and then the logistic coefficients for the regime probabilities. And (iii) the bottom section shows the standard descriptive statistics for the equation. Most are self-explanatory. Of note are the residual-based statistics which employ the expected value of the residuals obtained by taking the sum of the regime specific residuals weighted by the one-step ahead (unfiltered) regime probabilities (Maheu & McCurdy, 2000).

The output shows the coefficient values with both positive and negative signs and/or their probabilities. All the probability for obtaining the coefficient values are statistically significant at 0.05 (or 5%) except the probability of obtaining the coefficient values of EDR and REXP, which is statistically insignificant at 0.05 (5%) in regime 1. All the probability for obtaining the coefficient values are statistically significant at 0.05 (or 5%) except the probability of obtaining the coefficient values of EDR and REXP, which is statistically insignificant at 0.05 (5%) in regime 2. The *p-values* of obtaining the auto-correlation coefficient values is statistically significant at 0.05 (5%) except at AR (3) in common. The D-W is 1.13, which states that there is presence of serial correlation or auto-correlation in model as shown in table 1 in appendix.

Table 2: REGIME RESULTS OR TRANSITION RESULTS

Equation: UNTITLED
Date: 06/03/15 Time: 11:47
Transition summary: Constant Markov transition probabilities and expected durations
Sample (adjusted): 1997Q1 2013Q4
Included observations: 68 after adjustments

Constant transition probabilities:
P(i, k) = P(s(t) = k | s(t-1) = i)
(row = i / column = j)

	1	2
1	4.61E-06	0.999995
2	0.105384	0.894616

Constant expected durations:

	1	2
	1.000005	9.489107

In furthering the diagnostic test, the below output was obtained as shown in table 11 in appendix.
We may see from the results the Markov switching and/or its probabilities. Since the model assumes Markov switching, the probabilities of being in Regime 1 and/or Regime 11 (approximately 4.61E-06 and/or 0.90 respectively) do not depend on the origin state.
These probabilities imply that the expected duration is regime is roughly 1.37 quarters in regime 1and/or 9.49 quarters in regime 2.

DIAGRAM 1: MARKOV SWITCHING REGRESSION GRAPH

The result shows that the predicted probabilities of being in the economic growth state coincide nicely with the commonly employed definition of public finance (or components of public revenue generations and/or public expenditure) as shown in the diagram 1 below.

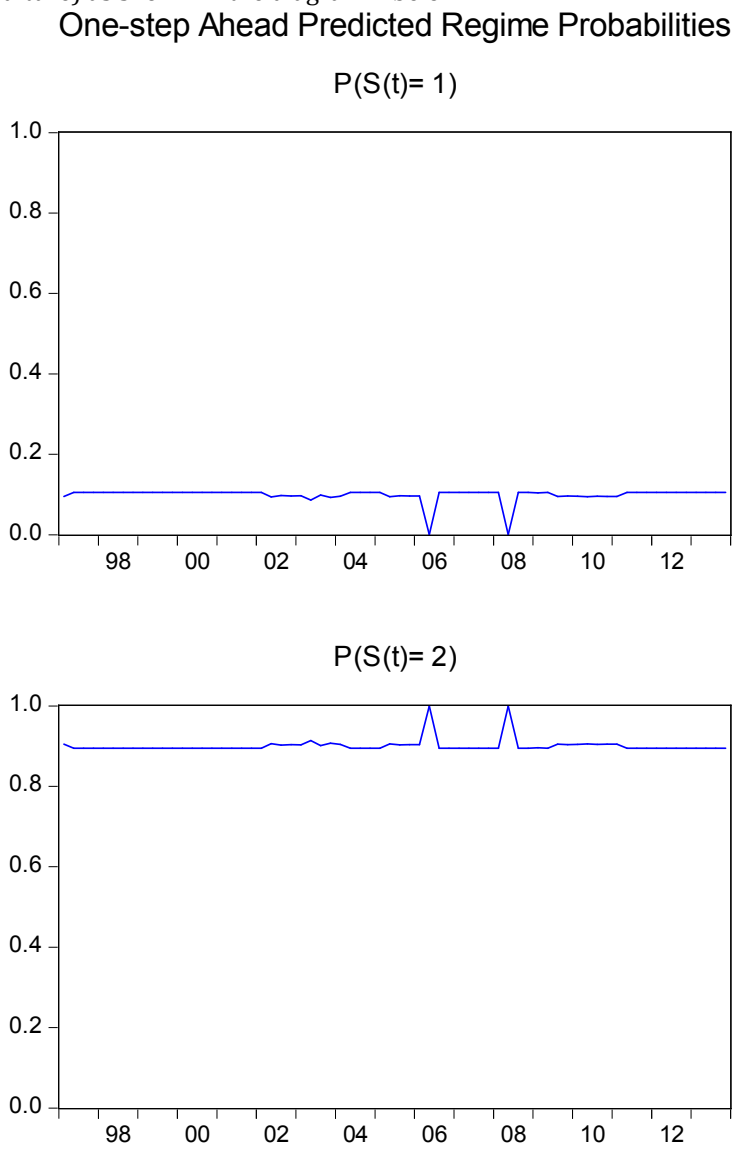


DIAGRAM 2: SWITCHING INVERSE ROOTS OF AR/MA POLYNOMIAL (*S*)

SAR approaches are widely discussed through the Cochrane-Orcutt, Prais—Winsten, Hatanaka, and Hildreth—Lu procedures, which are multi—step approaches designed so that estimation can be performed using Standard Linear regression (Greene, 2008:648-652). This approach has the pros on being easy to understand, generally applicable, and/or models that contain endogenous right—hand side variables. Note that the nonlinear least squares estimates are *asymptotically* equivalent to maximum likelihood estimates and/or *asymptotically* efficient.

The graph view plots the roots in the complex plane where the horizontal axis is the real and/or the vertical axis is the imaginary part of each root. The estimated SAR is stable (stationary) if all roots have modulus less than one and/or lie inside the unit circle. If the SAR is not stable, certain results (such as impulse response, standard errors) are not valid. There will be kp roots, where k is the number of endogenous variables and p is the largest lag.

From the output as shown in diagram 2 all the roots have modulus less than one and lie inside the unit circle.

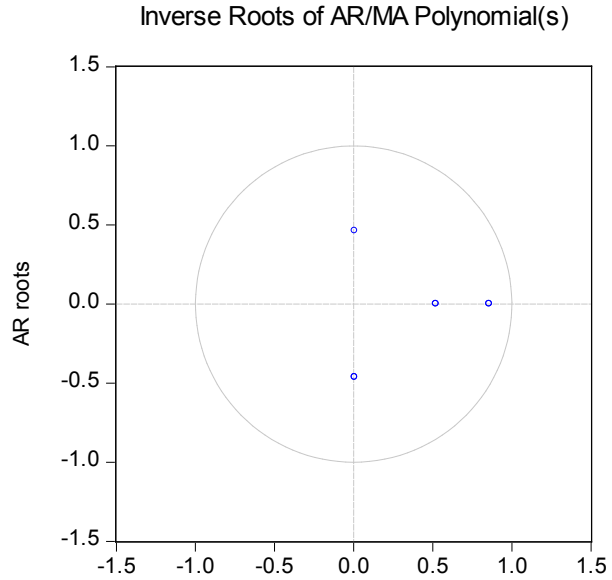


Table 3: GROUP UNIT ROOTS

Group unit root test: Summary
Series: LOG_RGDP_, LOG_CEXP_, LOG_CPI_, LOG_DDR_, LOG_DSR_, LOG_EDR_, LOG_INFL_, LOG_REXP_
Date: 06/03/15 Time: 04:33
Sample: 1960Q1 2013Q4
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 7
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-42.8662	0.0000	8	1484
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-36.7360	0.0000	8	1484
ADF - Fisher Chi-square	719.806	0.0000	8	1484
PP - Fisher Chi-square	778.804	0.0000	8	1504

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Table 3in appendix shows the summary of the Group unit root test using summary test (.i.e. Levin, Lin & Chu t*; Im, Pesaran and Shin W-stat; ADF-Fisher Chi-square; PP-Fisher Chi-square) with the lag length selection based on SIC: 0 to 1of the variables used for the empirical study. The group unit root test shows that; Real Gross Domestic Product (RGDP); Capital expenditure (CEXP); Recurrent expenditure (REXP);

External Debt Ratio (EDR); Domestic Debt ratio (DDR); Corruption Perception Index (CPI); Inflation (INFL); and/or Debt Servicing Ratio (DSR) were stationary at level at 5 percent level of significance respectively. The probability of obtaining the Group Unit Root is greater than 0 and less than 0.05 (.i.e., 0 ≤ 0.05) which means the null hypothesis has to be rejected—which says there is no significant relationship between external debt ratio and economic growth and the alternative hypothesis is to be accepted, which says there is significant relationship between government expenditure on education and Nigerian economic growth.

Table 4: SWITCHING WALD TEST

Wald Test:
Equation: Untitled

Test Statistic	Value	df	Probability
F-statistic	93.33746	(2, 45)	0.0000
Chi-square	186.6749	2	0.0000

Null Hypothesis: C(2)=0, C(4)=3*C(8)
Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(2)	1.139751	0.092275
C(4) - 3*C(8)	-0.923732	0.121134

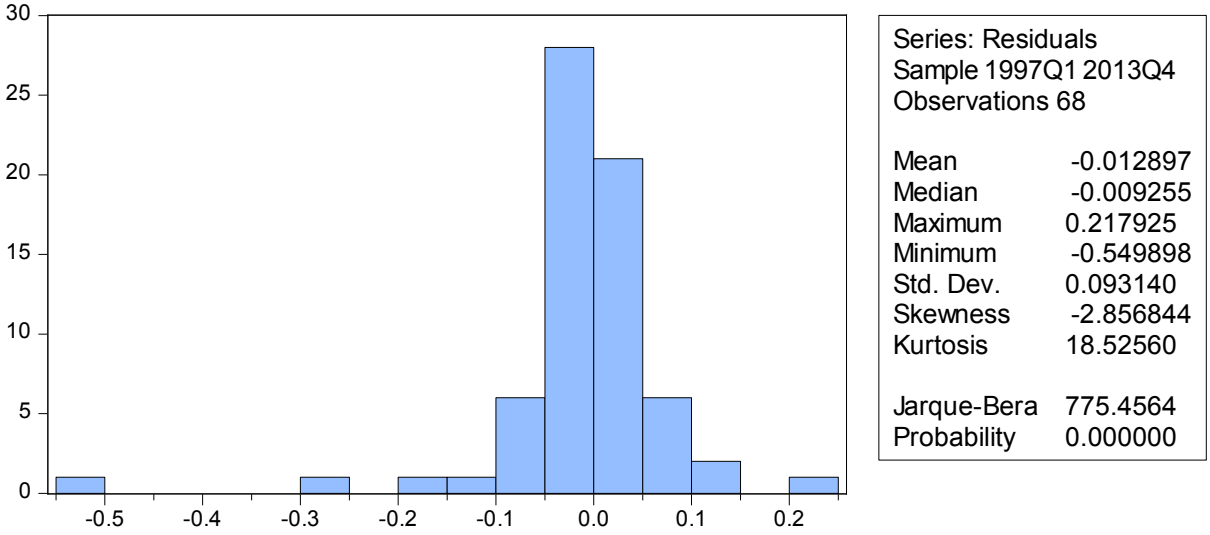
Restrictions are linear in coefficients.

We focus on the *p-values* for the statistics which show that we fail to reject the null hypothesis. We are to note that the Eviews reports that it used the delta method (with analytical derivatives) to compute the switching Wald restriction variance for the non linear restriction. Switching Wald test is estimated through the F-statistic value and/or its probability (*p-value*), Chi-square value and/or its probability (*p-value*) and null hypothesis summary.

From table 5 in appendix, the F-statistic value is 93.33746 and/or the probability to obtain Chi-square value is greater than zero and/or less than five (.i.e., 0 ≤ 0.05), the Chi-square value is 186.6749 and/or the probability to obtain Chi-square value is greater than zero and/or less than five (.i.e., 0 ≤ 0.05). This states that null hypothesis has to be rejected and accepted the alternative hypothesis, which says that there are asymptotic normal distribution residuals in the model.

Diagram 3: SWITCHING JARQUE-Bera or RESIDUAL TESTS

From the test of analysis of variance test ratio, the research test for series in the time series data from 1960 to 2013.



From diagram 3, the output of the series was demonstrated. Though the output present different results, but the keen interest is on Jarque- Bera, which is 775.4564 and/or the *p-value is* 0.000000. The model or variables are *asymptotic*. The result reveals that the null hypothesis could be rejected because it clearly stated there is no normal distribution of the residuals among the variables and/or accepts the alternative hypothesis, which lucidly stated that there is normal distribution of the residuals among the variables.

Table 5: SWITCHING COEFFICIENT CONFIDENCE INTERVALS

Coefficient Confidence Intervals
Date: 06/03/15 Time: 11:53
Sample: 1960Q1 2013Q4
Included observations: 68

		90% CI		95% CI		99% CI	
Variable	Coefficient	Low	High	Low	High	Low	High
			Regime 1				
C	2.348850	1.108397	3.589302	0.861200	3.836499	0.362278	4.335421
LOG_CEXP_	1.139751	0.984782	1.294720	0.953900	1.325602	0.891570	1.387932
LOG_CPI_	-2.497659	-3.140411	-1.854907	-3.268499	-1.726819	-3.527020	-1.468298
LOG_DDR_	-0.919702	-1.068706	-0.770698	-1.098399	-0.741005	-1.158330	-0.681074
LOG_DSR_	0.975920	0.840236	1.111604	0.813197	1.138643	0.758624	1.193217
LOG_EDR_	-0.107045	-0.234275	0.020185	-0.259630	0.045540	-0.310803	0.096713
LOG_INFL_	-1.079695	-1.270951	-0.888438	-1.309065	-0.850324	-1.385990	-0.773399
LOG_REXP_	0.001344	-0.046028	0.048715	-0.055469	0.058156	-0.074522	0.077209
			Regime 2				
C	1.236300	0.908678	1.563921	0.843389	1.629210	0.711617	1.760982
LOG_CEXP_	0.932827	0.820143	1.045511	0.797688	1.067967	0.752365	1.113289
LOG_CPI_	-0.145547	-0.500153	0.209060	-0.570819	0.279726	-0.713445	0.422352
LOG_DDR_	-0.919417	-1.033723	-0.805110	-1.056502	-0.782331	-1.102477	-0.736356
LOG_DSR_	0.904451	0.816615	0.992288	0.799110	1.009792	0.763782	1.045121
LOG_EDR_	0.152614	0.064450	0.240778	0.046881	0.258347	0.011420	0.293807
LOG_INFL_	-0.879354	-1.045009	-0.713700	-1.078020	-0.680688	-1.144648	-0.614060
LOG_REXP_	0.035552	0.010789	0.060315	0.005854	0.065249	-0.004106	0.075209
			Common				
AR(1)	1.393045	1.107789	1.678300	1.050944	1.735146	0.936211	1.849878
AR(2)	-0.680848	-1.137137	-0.224559	-1.228066	-0.133630	-1.411589	0.049893
AR(3)	0.301301	-0.082312	0.684914	-0.158759	0.761361	-0.313052	0.915654
AR(4)	-0.095507	-0.277284	0.086271	-0.313509	0.122496	-0.386622	0.195608
LOG(SIGMA)	-3.319008	-3.498386	-3.139630	-3.534133	-3.103883	-3.606281	-3.031735
			Transition Matrix Parameters				
P11-C	-12.28622	-419.7273	395.1548	-500.9221	476.3496	-664.7987	640.2263
P21-C	-2.138784	-3.119188	-1.158379	-3.314563	-0.963005	-3.708891	-0.568677

The switching coefficient confidence intervals are used to ascertain the trade-off between type 1 and type 11 errors. Confidence coefficient (1-α) is simply one minus the probability of committing a type 1 error. Thus, a 95% confidence coefficient means that we are prepared to accept at most a 5 percent probability of committing a type 1 error—we do not want to reject the true hypothesis by more than 5 out of 100 times. In short, a 5% level of significance or a 95% level or degree of confidence means the same (Gujarati, 2006: 116).

In estimating hypothesis testing, the 95% confidence interval is also called acceptance region and the area outside the acceptance region is called the critical region, or the region of rejection, of the null hypothesis. The lower and/or upper limits of the acceptance region are called critical values (Gujarati, *loc.cit.,* 117-118).

This confidence interval may be 90%, 95%, & 99%, depending of the sample size under-review.

In table 6 from appendix, the output has shown the critical region (region of rejection) or critical values of the null hypothesis. At some point with different percents (.i.e., 90%, 95%, & 99%) confidence interval or acceptance region or critical region, the null hypothesis is either accepted or rejected or accepted or rejected the alternative hypothesis, when the values of the parameter fallen within the acceptance region or the area outside the acceptance region. In the actual fact the result is estimated in regime 1, regime 2, Common and/or Transition Matrix Parameters.

Table 6: SWITCHING VARIANCE INFLATION FACTORS

Variance Inflation Factors
Date: 06/03/15 Time: 12:18
Sample: 1960Q1 2013Q4
Included observations: 68

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
	Regime 1		
C	0.545554	5424.367	NA
LOG_CEXP_	0.008515	2821.257	5.047487
LOG_CPI_	0.146475	159.3493	20.87826
LOG_DDR_	0.007872	3021.254	7.813848
LOG_DSR_	0.006527	1791.441	12.83660
LOG_EDR_	0.005739	2008.515	6.237037
LOG_INFL_	0.012969	157.5911	4.959222
LOG_REXP_	0.000796	139.0481	9.481449
	Regime 2		
C	0.038056	388.2788	8.799557
LOG_CEXP_	0.004502	1535.323	55.54788
LOG_CPI_	0.044583	44.40181	9.120357
LOG_DDR_	0.004633	1852.127	63.71509
LOG_DSR_	0.002735	792.5077	33.02347
LOG_EDR_	0.002756	1031.292	38.49908
LOG_INFL_	0.009729	110.4433	5.766064
LOG_REXP_	0.000217	40.49058	4.774455
	Common		
AR(1)	0.028850	13.55000	13.51580
AR(2)	0.073817	42.76316	42.19120
AR(3)	0.052175	36.41431	36.36494
AR(4)	0.011715	9.557492	9.526613
LOG(SIGMA)	0.011408	1.004749	1.004746
	Transition Matrix Parameters		
P11-C	58858.22	1.000002	1.000002
P21-C	0.340791	1.004609	1.004210

SVIFs are method of measuring the level of collinearity between the regressors in an equation. SVIFs show how much of the variance of a coefficient estimate of regressor has been inflated due to collinearity with the other regressors. They can be calculated by simply dividing the variance of the coefficient had other regressors not been included in the equation.

SVIFs could be centered and/or uncentered. The centered SVIFs are the ratio of the variance of the coefficient estimate from the original equation divided by the variance from a coefficient estimate from an equation with only that regressor and/or constant. While, the uncentered SVIFs is the ratio of the variance of the coefficient estimate from the original equation divided by the variance from a coefficient

estimate from an equation with only one regressor (and/or no constant). If you original equation did not have a constant only the uncentered SVIFs will be displayed.
The centered SVIFs is numerically identical to $^{1}/_{(1-R^2)}$ where R^2 is the R- Squared from the regression of that regressor on all of the other regressors in the equation. Since the VIFs are calculated from the coefficient variance-covariance, matrix, any robust standard error options will be presented in the VIFs as it showed in the table 7 in appendix.
In table 7 in appendix, the output of SVIFs is shown. Where the result as estimated in variable, coefficient variance, Uncentered VIF and/or Centered VIF in regime 1, regime 2, Common and/or Transition Matrix Parameters.

SUMMARY OF RESULT FINDINGS

The paper empirically examines the public finance: impact on the growth of the Nigerian economy, using annual time series data from 1960 to 2013. The paper employs stochastic characteristics of each time series data by testing their covariance and residuals using Switching Least Squares (SLS), regime results or transition results, Group unit root, Switching Wald Test (SWT), Switching, Jarque-Bera Residual Test, coefficient confidence intervals, and/or Switching Variances Inflation factors (SVIFs).
From the various diagnostic tests carried out, it was revealed that all the null hypotheses were rejected (.i.e., there is no significant relationship between public finance and/or economic growth) and/or accepted all the alternative hypotheses (.i.e., there is significant relationship between public finance and/or economic growth). The results show that public finance is *germane* in the train of economic growth and/or development. The benefit (s) of the public finance might not be felt by the future generations when there is mispriority among sectors, in other words, government generated funds are committed to importation of consumable goods and/or not invested in the sectors, which will generate employment opportunities in Nigeria *per se*.
The paper discovered that the public finance and/or its components (determinants) have a direct relationship with the economic growth and development of Nigeria. Rejecting null hypotheses in the diagnostic tests corroborated the fact that indeed public finance has a significant relationship with Nigerian economic growth.

RECOMMENDATIONS

From the econometric study of public finance: impact on the growth of the Nigerian economy, the below recommendations are stated:

- Government should ensure that funds are internally generated for running government in Nigeria;
- Government should intensify effort to strengthening its source of public revenue—since it is established by the diagnostic test that public finance has long-run impact positively on the economy;
- The citizens of Nigeria should be encouraged strictly to adhere to the payment of taxes, fees and/or fines, since these funds are used on building of capital projects and/or maintenance of the government properties;
- Government should ensure that the internally generated funds are expended judiciously in Nigeria, in order to ensure marginal benefits are accrued for all members of the economy;
- The last resort of the government when the entire sources of the funds were explored is borrowing. Borrowing has marginal pros when the borrowed funds are used in construction of roads or building of mega or capital or white elephant projects, which will perhaps create jobs for the teeming unemployed youths and/or has marginal cons when the borrowed funds are used on imported consumable goods, which exogenously creates drain in the Nigerian external reserve coffer;
- In case there are macroeconomic variable disequilibria, the government should opt for proactive policy (.i.e., fiscal policy or monetary policy) measures in order to regulate or control or adjust the trend (s) in the economy;
- There is the need for the government to sky-up its capital expenditure in Nigeria, since it has a direct relationship with economic growth;
- Corruption is menace in any economy; therefore, government should wedge a war against it in all its ramifications—since it has an inverse relationship with Nigerian economic growth.

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