

Components of Government Spending and Economic Growth in Nigeria: *An Error Correction Modelling.*

Amassoma Ditimi (Corresponding Author)

Joseph Ayo Babalola University, Ikeji – Arakeji, Osun State, Nigeria.

College of social and Management Science, Economics department.

Email: amassoma.dit@gmail.com

Nwosa Philip.

The Bells University of Technology, Otta, Abeokuta, Ogun State, Nigeria,

Department of Economics.

Email: philipngazi@yahoo.co.uk

Ajisafe Rufus.Adebayo

Obafemi Awolowo University, Ile – Ife, Osun State, Nigeria

Email:aoluwatoyin@yahoo.com

Abstract

This paper examined the linkage between the components of government spending and economic growth in Nigeria. In contrast to existing studies, this study examines the relationship between the components of government expenditure (that is, agriculture; education; health and transport and communication) and economic growth with data spanning from 1970 to 2010. The result of the study showed that expenditure on agriculture had a significant influence on economic growth while expenditure on education, health and transport and communication had insignificant influence on economic growth. Based on the findings, this study suggests the need for a reversal in declining budgetary allocation to the educational and health sector in order to provide the sectors with the needed revenue which is necessary in influencing aggregate output of the economy. In addition, this study recommends the need to redirect the excessive expenditures of government on its officials in both the house of senate and house of representative to these pivotal sectors that is capable of stimulating economic growth of the Nigerian economy. In addition, it is highly recommended that the government and relevant stake holders should ensure that funds which are meant for development of the aforementioned sectors should be properly managed. However, the foregoing can be achieved by increasing funds that are meant for anti – corruption in order to enhance economic growth and sustainable development in Nigeria.

Keywords: Public Expenditure, Economic Growth, Education, Inflation, Error correction modeling and Budget Constraint.

1.0 Introduction

Over the past three decades, there had been increased contention among development economists as to the relationship between public expenditure and economic growth nexus in Nigeria. While some scholars are of

the belief that increasing public expenditure enhances economic growth, others are of the view that, increase in government spending have the tendency to slower the performance of an economy in both developing and developed countries.

The foregoing is owing to the problem of determining the actual size of growth that could be encountered in public expenditure. These among others has preoccupied the attention of many researchers and theorists in both developed and developing countries For example, (Ezirim & Ofurun, 2003) argued that, the size of a government spending in a country can be measured in terms of the total public spending expended on it. From the above, it can be deduced that the growth in size can be represented by the index of growth in the size of government expenditure all things being equal. It is however not wrong to presume that public expenditure is a significant variable that can be used to explain economic growth of a country. The question that now comes to mind is that what variable can one use to measure the indicators of public expenditure appropriately in developing and developed countries respectively? However, the answer to the above question is not far-fetched from the factor that has been stated earlier.

(Abdulliah 2000) and (Al-Yusuf 2003), argues that government performs two major functions, which are namely; the function of protection and that of provision of public goods respectively. For instance, the role of protection encompasses the creation of rule of law and enforcement of property right which would reduce the risks of criminality, protect life, prosperity; and protection from external aggressions. On the other hand, the government ensures that the provisions of public goods are adequate. These among others are as follows; good roads education, health and power to mention few. No wonder, some scholars posited that increase in government expenditure on say, socio-economic and physical infrastructure has the tendency to induce economic growth.

Frankly speaking, it should be adduced that government spending on say health and education respectively can help enhance productivity of labour by means of increasing growth in form of induced national output. In the same vein, spending on infrastructure such as road, communication, power etc. reduces cost of production of both small and large scale industries which in turn increases private sector investment and profitability of firms thereby raising economic growth of the nation as observed by (Ranjan 2008; Al-Yusuf & Couray 2009) respectively – who postulated that government expenditure contributes positively to economic growth.

Particularly in Nigeria government expenditure has continuously increased due to factors such as persistent rise from huge receipt in production and sales of crude oil and the increased demand for public goods such as; roads, communication, power, education and health. In addition, it is pertinent to pinpoint that there is need to ensure both internal and external security so as to avoid external invasion in the country.

Despite the above premises, the debate has been inconclusive. This is due to the mixed feeling above depicting whether or not increasing government spending induces economic growth or not, hence, the need for this current research. More specifically, the major thrust of this paper is to pin down which specific component of government expenditure significantly impact on economic growth in Nigeria. That is to determine whether increasing government spending induces economic performance as stipulated by the past studies or not.

The objective of this paper therefore is to *examine the relationship between the components of government expenditure* and economic growth in Nigeria. The remaining part of the paper is structured as follows: Section 2 presents relevant literatures and theoretical framework on the study. Section 3 encompasses the model specification. Section 4 focuses on the empirical analysis and discussion of results while section 5 concludes and proffers policy measures or options for the study or future studies.

2.0 Literature Review and Theoretical Framework

2.1 Literature Review

As a matter of fact, in the underdeveloped countries public expenditure has played an active role in reducing regional disparities through development of social overheads, creation of infrastructure in the form of transport and communication facilities, education and training, growth of capital goods industries, basic and key industries to mention few as opined by (Bhatia 2002) . For instance, the Keynesian model indicates that during recession a policy of budgetary expansion should be undertaken to increase the aggregate demand in the economy thus boosting the Gross Domestic Product (GDP). It is presumed that increase in government spending translates into increased employment in public sector and firms in the business sector. In other words, employment rises, income and profits of suppliers and firms increase, and this would result in the firms to hire more employees to produce the goods and services ordered by the government. In consonance to the above, the work of (Barro 1990), has stipulated a new perspective in which the investigation of the impact of fiscal budgetary expansion via government expenditure can enhance economic growth. No wonder, (Barro & Sula-i-martin 1992) opined that government activity influences the direction of economic growth.

It should be noticeable that an important way in which public expenditure can accelerate the pace of economic growth is by means of narrowing down the difference between social and private marginal productivity of certain investments.

2.2. Empirical Review

Many researchers have attempted to investigate the relationship between government expenditure and economic growth. For instance, (Ram 1986) study made a rigorous attempt to incorporate a theoretical basis for tracing the impacts of government expenditure on economic growth through the use of production function specified for both public and private sectors. The data spanned 115 countries to derive broad generalizations for the study. The results revealed that government expenditure has a significant positive externality effect on growth particularly in developing countries (LDC) sample but when looked at critically, total government spending has a negative effect on growth. In contrast, the study of (Lin 1994) using a sample of 62 countries finds out that investment in non – productive spending has no effect on growth in the advanced countries but a positive impact in LDC's.

(Junko & Vitali 2008) investigated the impact of government expenditure on economic growth in Azerbaijan due to temporarily oil production boom between (2005-2007) which caused expectationally large expenditure increases aimed at improving infrastructure and raising: from the study it was discovered that Azerbaijan's total expenditure increased by a cumulative 160 percent in nominal value from 2005 to 2007 with an increase of 41% of non-oil GDP to 74 percent. Similarly, in their research reference were

made to Nigeria and Saudi Arabia (1970-89) who have also experienced oil boom and increased government expenditure over the years. After simulating the neo-classical growth model tailored to the Azeri conditions; it was revealed by their result that the evaluated fiscal scenario poses significant risks to growth sustainability and historical experience which indicates that initial growth performance largely depends on the efficiency of scale-up expenditure.

In line with the above, (Komain & Brahmasrene 2007) examined the association between government expenditures and economic growth in Thailand, by employing the Granger causality test. Their result revealed that government expenditures and economic growth are not co-integrated. More definitely, the result indicated a unidirectional relationship as causality runs from government expenditure to growth. Also the results depicted that a significant positive effect of government spending on economic growth. Furthermore, (Olugbenga & Owoeye 2007) investigated the relationships between government expenditure and economic growth for a group of 30 OECD countries during the period 1970-2005. The results of the regression showed the existence of a long run relationship between government expenditure and economic growth. In addition, the results revealed that there was a unidirectional causality from government expenditure to growth for 16 out of the total countries supplied, thus supporting the Keynesian hypothesis. However, causality was said to run from economic growth to government expenditure in 10 out of the countries; confirming the Wagner's law.

(Ezirim & Muoghalu 2006) are of the view that the demand effect of government expenditure would become quite strong even in the presence of balanced budget. The implication of such estrangement between demand and supply has the tendency to rear inflationary helixes in the economy as a net result. Similarly; (Baumo 1967), explained the rise in government expenditure in terms of unbalanced growth between public and private sectors. This further paved way for dividing the economy into progressive private sector and non-progressive public sector, by explaining that productivity rises only in the private sector, whereas wage rate rises in both, and as a result public expenditure would rise in the long run. The outcome of the above is that as public services are more labour intensive, and hence makes employees to have no motivation to improve productivity, the increase in public expenditure becomes acceleratory. No wonder (Rastow 1971) pinpointed that public expenditure is better explained in terms of the changes in the development level of the country's economy. For example less developed countries at their foundation of development regime higher level of investment in order to create necessary infrastructure for gainful economic growth.

(Adamu 2003) posited that special human capacity can be acquired and developed through education, training, health promotion as well as investment in all social services that influences men's productive capacities.

In the work of (Foister and Henrekson 2001) which studied the relationship between government expenditure and economic growth using a sample of some selected wealthy countries spanning from 1970-1995 by employing various econometrics techniques. The author's finds out that more robust results are generated as econometric problems were addressed. Similarly, in India and Saudi Arabia respectively, the effect of government development expenditure was examined as it was discovered that there exist a significant positive impact of government expenditure on economic growth as opined by (Ranjan 2008) and

(Al-Yusuf 2000)

In support of the above, (Liu-Chin, Hsu & Younis, 2008) examined the relationship between public expenditure and economic growth by performing the causality test. From the causality result it was revealed that total government expenditure causes growth of GDP. While it was contrary or the other hand due to the fact that GDP does not granger cause expansion of government expenditure. It was further revealed from their results that public expenditure raises the US economic growth and as such concludes from the above shown by the causality test that the Keynesian hypothesis exerts more influence than the Wagner's law in US. In Zealand (Frkin 1988) examined the relationship between government expenditure and economic growth by proposing a new framework for New Zealand. The results revealed that higher government expenditure does not upset consumption, but that it instead raises private investment which in turn accelerates economic growth.

It is pertinent to observe from the studies carried out by (Nili & Nafisi 2003; Mohammed 2006) and (Komijani & Memerjad 2004) in Iran that the contribution of education towards growth in real output has proven to be higher than the contribution of physical capital. This is because educational enterprises and institutions serves as power houses for the production of progressive work force in the country as put by (Saint, 2009). In Nigeria, many researchers have proven in their studies that government spending has a causal relationship with economic growth. For instance studies like that of (Oyinlola 1993) opined that defense expenditure has a positive impact on economic growth in Nigeria. Contrary to the above, (Akpan 2005) used a disaggregated approach to determine the components of government expenditure which includes; capital, recurrent, administrative, economic service, social and community service and transfers) goes a long way to enhance growth and from the results the researchers concluded that there is no significant association between most components of government expenditure and economic growth in Nigeria.

Although this study is not first of its kind using Nigeria data, however it shall go a little further than earlier works to correctly capture all identified composition of public expenditure during the years under review to be able to assess the impact of public expenditure on economic growth. This relation is very important for developing countries which Nigeria is inclusive due to increasing government expenditure that is currently experienced. However, this is tended to be associated with rising fiscal deficits suggesting their limited ability to raise deficit revenue to finance higher levels of expenditure. In particular, it is noticeable that raising deficit tends to retard economic growth in developing countries like Nigeria because of their inability to check inflation during deficit years. Thus, this study gives a good insight into problems created by rising government expenditure and how the same impacts on growth.

Over and above all, from the array of several literatures it could be deduced that government spending has both positive and negative significant effect on economic growth in both developing and developed countries. But this current study asserts that this assumption cannot be fully believed except if it can be validated empirically. More so it is also the thrust of this paper to ascertain the component of government spending that enhances growth better and why? However, this current study is among many other studies that have investigated the relationship between government spending and economic growth is different. Though, the difference between this and others is that it has included inflation and the level of openness as

one of the factors that can influence the components of government expenditure among others and growth at large.

2.3 Theoretical Underpinning.

Over the years, numerous theoretical hypotheses have been offered to explain the size of government expenditure on economic growth. These theories became more substantial since the advent of welfare economics which focuses on the expansion of the role of the state especially in the area of providing infrastructures which has in turn given birth to the theory of public expenditure attracting an increasing attention. This current study focuses on three among the theories of increasing public expenditures. The first theory is the Wagner's theory, followed by wise man-peacock hypothesis and thirdly the median voter hypothesis.

2.3.1 Wagner's Law of increasing public expenditure

The theory first was associated to a German economist who based his law of increasing state activities on historical facts, primarily of Germany. To him, there are inherent tendencies for the activities of different layers of a government to increase both intensively and extensively thereby pinpointing that, there is a functional relationship between the growth of an economy and government activities with the result that the government sector grows faster than the economy in a more specific term, (Wagner 1893) argued that government spending increases more than proportionately with income, that is, the income elasticity of demand for government services is positive and greater than unity through empirical test of this hypothesis. This hypothesis, often tries to find either a positive relationship between government spending and income and/or a unidirectional causality running from government spending to income.

In particular, Musgrave believes that Wagner was thinking of proportion of public sector in the economy. In support of the above (Nitti 1903) concluded that Wagner's thesis is not only applicable to Germany but that it can also be applied to other government which differs largely from each other because it has the tendency to induce growth.

2.3.2 Wiseman and Peacock Hypothesis

The second thesis dealing with the growth of public expenditure was put forth by Wiseman and Peacock in their study of public expenditure in UK for the period 1890-1955. The main resent of this thesis is that public expenditure does not increase in a smooth and continuous way but that it changes like fashion, this is because at times, some social or other disturbance takes place thereby creating a need for increased public expenditure which the existing public revenue cannot meet. It should be noted that the earlier insufficiency pressure for public expenditure introduces a constraint on revenue which result to restraining and expansion in public expenditure which in turn results to increased public expenditure and thereby make the inadequacy of the present revenue quite clear to everyone. Hence, the movement from the older level of expenditure and taxation to a new and higher level which is known as the *Displacement Effect*. Hence, the government and the people review the revenue position and the need to find a solution to the important problems that have come up and agree to the required adjustments to finance the increased expenditure. Considering the foregoing they now attain a new level of tax tolerance which makes them to be ready to tolerate a greater burden of taxation and as a result the general level of expenditure and revenue goes up. In

this way, the public expenditure and revenue get stabilized at a new level till another disturbance occurs to cause a displacement effect. Thus, each major disturbance leads to the government assents a larger proportion of the total national activity. In other words, there is a concentration effect. The concentration effect can also be referred to as the apparent tendency for central government economic activity to grow faster than that of the state and local level government as opined by (Adesoye et al, 2010)

2.3.3. The Median Voter Hypothesis

The median voter hypothesis states that (under some conditions) government officials choose the level of government spending selected by the median voter according to (Bowen 1943) and (Black 1958). However, the outcome of such a choice is a demand for public services by the median voter that depends upon such things as the median voter's income and such tax price where this price depends in turn on the voter's tax share and the relative unit cost of the public good as given by the technology of public provision.

(Borchering & Deacon 1972) and (Bargstorm & Goodman 1973) are among the first to develop formally and test empirically the median voter's model focusing on the spending of local government in the United States. In a similar view, (Niskaren 1978) extends that such empirical test on the spending behaviour of the federal government and its aggregate money market behaviour. In light of the above this current study integrates the above three reviewed theoretical underpinnings.

3.0 Specification and Estimation of The Model

The model for this study follows the work of (Abu and Abdulahi 2010) in their paper titled "Government expenditure and its impact on economic growth in Nigeria".

In this current study we shall use additional two variables which include inflation and level of openness in the economy. For instance, from Wagner's cost over – run argument, it could be deduced that inflation positively and significantly influences the size of public expenditure; however, this assertion was further buttressed by (Ezirim and Muoghalu 2006). On the other hand (Rodrik 1998) pinpoints that openness has the tendency to affect government spending.

3.2 Specification of Model

This paper investigates the relationship between components of government spending and economy growth. The study would also take a step further to investigate if causation runs between the size of the government expenditure and growth or not. To achieve the above objective, this study would employ Co-integration and Error correction modeling. However, the theoretical framework that the study would be based on is the Keynesian and endogenous growth models. This is sequel to the fact that, the Keynesian model states and opines that expansion of government expenditure accelerates economic growth. The growth model is thus specified as a function of public expenditure. However, inflation and openness were also included to capture growth in the size of the components of government spending as shown below.

$$Rgdp = f(\text{opn}, \text{inf}, \text{torep}, \text{tcap}, \text{eagr}, \text{etac}, \text{eexp}, \text{hexp}) \dots\dots\dots (1)$$

Operationalising equation 1 in its linear form gives:

$$Rgdp = \beta_0 + \beta_1\text{opn} + \beta_2\text{inf} + \beta_3\text{torep} + \beta_4\text{tcap} + \beta_5\text{eagr} + \beta_6\text{etac} \\ + \beta_7\text{eexp} + \beta_8\text{hexp} + u_1 \dots\dots\dots (2)$$

Assuring a log – linear model the above becomes;

$$\ln rgdp = \beta_0 + \beta_1 \ln opn + \beta_2 \ln inf + \beta_3 \ln torep + \beta_4 \ln tcap + \beta_5 \ln eagr + \beta_6 \ln etac + \beta_7 \ln eexp + \beta_8 \ln hexp + U_1 \dots\dots\dots (3)$$

In order to estimate the short-run relationship among the variables, the corresponding error correction equation is estimated as:

$$\begin{aligned} \Delta \ln rgdp_t = & \beta_0 + \sum_{i=1}^p \beta_1 \Delta \ln rgdp_{t-i} + \sum_{i=1}^p \beta_2 \Delta \ln opn_{t-i} + \sum_{i=1}^p \beta_3 \Delta \ln inf_{t-i} + \sum_{i=1}^p \beta_4 \Delta \ln torep_{t-i} \\ & + \sum_{i=1}^p \beta_5 \Delta \ln tcap_{t-i} + \sum_{i=1}^p \beta_6 \Delta \ln eagr_{t-i} + \sum_{i=1}^p \beta_7 \Delta \ln etac_{t-i} + \sum_{i=1}^p \beta_8 \Delta \ln eexp_{t-i} \\ & + \sum_{i=1}^p \beta_9 \Delta \ln hexp_{t-i} + \psi ECM_{t-1} + u_t \dots\dots\dots (4) \end{aligned}$$

The ECM_{t-1} is the error correction term. The coefficient of the ECM_{t-1} measures the speed of adjustment toward the long run equilibrium.

3.3. Description of Variables

The variables are measured as follows. Economic growth refers to the changes in real GDP. Real GDP in turn is obtained by dividing GDP at current market price by the consumer price index (CPI). TOREP is measured as total recurrent expenditure divided by the CPI. TCAP is captured by the total capital expenditure divided by the CPI. EAGR is captured by government expenditure on agriculture divided by CPI. HEXP is measured as government expenditure on health divided by CPI. EEXP is captured by government expenditure on education divided by CPI. ETAC is measured as government expenditure on transport and communication divided by CPI. OPN is the level of openness in the economy. While, INF is the inflation rate which is used to measure instability of price in the economy. U refers to the error term. Prior to estimation of the growth model above, standard econometric tests like stationarity test and co-integration test were conducted in order to avoid the generation of spurious regression results.

3.4. Sources of Data

This research work employed basically the secondary data sources from central bank of Nigerian publication i.e. the CBN statistical bulletin from various series which includes; 2006 , 2008 and 2009 respectively.. The empirical implementation of the model made use of macroeconomic data covering 39 years (1970 – 2010). Our model encompasses the classical, the Keynesian as well as more recent and less conventional models. The equation specified for the study assisted us to determine the T – Value, F – statistics and Durbin Watson test respectively which were used to test for the significance of the equation specified. However the co-efficient of determination (R^2) was used to measure the rate at which the dependent variable is explained by independent variables.

4.0 Empirical Result

4.1 Unit Root Test

An empirical analysis of the relationship between economic growth, components of government expenditure and other macroeconomic variables requires appropriate estimation techniques for both the long run and short run analysis. Thus, this study takes the first step to examine the properties of the time series and the extent of co-integration between the variables before proceeding to analysing the long run and short run estimate of equation (3) and (4) respectively. Using the Augmented Dickey-Fuller (ADF) test, table 1 revealed that all the variable were non-stationary at levels at 5 per cent level of significance, thus leading to test at first differences, which revealed that all the variables are stationary at first difference, that is, integrated of order one I(1).

Table 1: Unit Root Test

Augmented Dickey-Fuller (ADF) Test			
Variables	Level	1 st Difference	Status
Ltcap		-1.6576	-6.5956* I(1)
Leagr		-0.5900	-9.1668* I(1)
Lhexp		-0.2125	-5.9558* I(1)
Linf		-0.0022	-6.4782* I(1)
Ltorep		0.0373	-7.8005* I(1)
Lrgdp		-2.3272	-5.8304* I(1)
Opn		2.8091	-7.0663* I(1)
Leexp		-0.7949	-7.5094* I(1)
Letac		0.3164	-9.1250* I(1)

Note: * implies stationarity at one percent level.

4.2 Co-integration Estimate

As evident from the unit root test, all variables are integrated of order one, thus the linear combination of one or more of these variables might exhibit a long run relationship. In order to capture, the extent of co-integration among the variables, the multivariate co-integration methodology proposed by (Johansen 1990) and Johansen and (Juselius 1991) was utilized. The maximum eigenvalue and the trace test from this technique were used to establish the numbers of co-integration vectors and the results are presented in table 2 below. Both the results of the trace and maximum eigenvalue tests indicated that, there is one co-integrating vectors at 5% level of significance. This result suggests that there exist a long run relationship among the variables in the model.

Table 2: Co-integration Test Result

Trace Test				Maximum Eigen value Test			
Null	Alternative	Statistics	95% critical values	Null	Alternative	Statistics	95% critical values
$r=0$	$r \geq 1$	233.426	197.37	$r=0$	$r=1$	61.524	58.434
$r \leq 1$	$r \geq 2$	174.902	189.52	$r \leq 1$	$r=2$	49.667	52.363
$r \leq 2$	$r \geq 3$	126.236	127.62	$r \leq 2$	$r=3$	42.701	46.231
$r \leq 3$	$r \geq 4$	83.445	95.734	$r \leq 3$	$r=4$	29.384	40.078
$r \leq 4$	$r \geq 5$	54.061	69.819	$r \leq 4$	$r=5$	20.415	33.877

Source: Author's Computation

4.3 Regression Estimate Result

With respect to the estimated model specified in equation (3), the long run relationship among the variables was examined. A cursory look at the Ordinary Least Square (OLS) estimate presented in Table 3 revealed that the explanatory power of the model (R-Squared (89.9 per cent) is very high; this implies that the explanatory variables in the model explained about 90 per cent of the variations in economic growth while the remaining 10 per cent of variations in economic growth is accounted for by other factors not included in the model. With respect to the variables of interest, it was observed that among the components of government expenditure, only expenditure on agriculture had a very significant influence on economic growth given the value of the t-statistic at 4.9081. This result is in line with our a priori expectation. In contrast to the above, the contribution of other components of government expenditures (which include expenditure on education, health and transport and communication) were observed to be statistically insignificant.

Table 3: Long-Run Regression Estimate

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.008429	1.858511	0.542600	0.5912
Linf	0.005938	0.005432	1.092999	0.2826
Ltcap	0.474740	0.181323	2.618207	0.0134
Leagr	0.726164	0.147953	4.908067	0.0000
Leexp	0.164863	0.182737	0.902190	0.3737
Lhexp	0.098120	0.217217	0.451714	0.6545
Letac	0.044041	0.162734	0.270634	0.7884
Ltorep	1.255800	0.356925	3.518391	0.0013

Opn	-0.085294	0.027331	-3.120827	0.0038
-----	-----------	----------	-----------	--------

R-Squared = 0.8991; F stat = 35.63(0.000); DW = 1.07916

Source: Author's Computation

Table 4: Residual Stationarity Test

Variable	Augmented Dickey Fuller (ADF) Test	Order of Integration
ECM	-0.5551 (-3.8856)	I(0)

Source: Author's Computation

NOTE: The values in parentheses are t-statistics for the stationarity test for the residual term.

As shown in table 2, the null hypothesis stipulates that there is “a random walk” which was rejected at one percent level of significance, indicating that economic growth and the various components of government expenditure were co-integrated.

Following the residual stationarity test, we over parameterized the first differenced form of the variables in equation (4) and used Schwarz Information Criteria to guide parsimonious reduction of the model. This helps to identify the main dynamic pattern in the model and to ensure that the dynamics of the model have not been constrained by inappropriate lag length specification.

With respect to the parsimonious regression estimate capturing the short run analysis, it is observed from table 4 that there are significant improvement in the parsimonious model of the over parameterized model (see appendix). The Adjust R^2 , F-stat, and the D.W improved significantly. Overall, the model could be considered to be reasonably specified based on its statistical significance and fitness.

An examination of the results for the parsimonious error correction model in table 5 showed that the explanatory power (R^2) of the model is relatively high (70%). This implies that the model explained at least 70% of variations in economic growth. Furthermore, the F-statistics 3.11 (0.008) indicated that the model fit the data relatively well while the Durbin Watson statistics (1.96) indicates absence of autocorrelation. The error correction coefficient of the model had the expected negative sign and was significant at one per cent.

In addition to the above the coefficient of individual variables is examined to determine the relative contribution of each component of government expenditure to economic growth in Nigeria. The co-efficient of the first lagged value of gross domestic product was positive (0.5565) and significant. The positive effect of the value of previous year's gross domestic product to current output is inconsistent with a priori expectation, implying that a one per cent increase in the first lagged value of gross domestic product is capable of stimulating current economic growth by 56 per cent. The co-efficient of current inflation rate and the second lagged value of inflation rate were observed to be positive and significant. The positive effect of both the current and second lagged value of inflation is consistent with a prior expectation,

because an increase in commodity price enhances investment and output growth in the current period. Thus, a one per cent increase in current and second lagged value of inflation rate would result in economic growth by 1.0 and 1.4 per cent respectively.

The co-efficient of the first and the second lagged value of expenditure on agriculture were observed to be positive and very significant. The positive effect of both the first and second lagged values of expenditure on agriculture is consistent with a prior expectation, given the immense contribution of the agricultural sector to economic growth in Nigeria. Thus, a one per cent increase in first and second lagged values of expenditure on agriculture would stimulate economic growth by 37.8 and 40.3 per cent respectively. The co-efficient of the first and the second lagged values of expenditure on education were observed to be positive and insignificant. The positive effect of both the first and second lagged values of expenditure on education is consistent with a priori expectation, but the insignificant effect of the contribution of both the first and the second lagged values of expenditure on education can be attributed to the continuous decline in the budgetary allocation of the government to the educational sector in recent years. Similarly, the co-efficient of current and the second lagged values of expenditure on health were observed to be positive and insignificant. The positive effect of both the first and second lagged values of expenditure on health is consistent with a priori expectation, but the insignificant effect of the contribution of both the first and the second lagged values of expenditure on health can also be attributed to the continuous decline in the budgetary allocation of the government to the health sector in recent years.

Furthermore, the co-efficient of current and the first lagged value of recurrent expenditures were observed to be positive and insignificant while the coefficient of the second lagged value of the recurrent expenditure was observed to be positive and significant. Finally, the coefficient of trade openness was observed to be negative and significant. This implies that an increase in the openness of an economy is capable of retarding the growth of the economy, thus as observed from table 5, an increase in trade openness by one per cent would bring about a decline in economic growth by 6.9 per cent.

Table 5: The Parsimonious Error Correction Regression Estimate

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.258486	0.088699	2.914194	0.0080
ecm(-1)	-0.534233	0.111152	-4.806340	0.0001
Δ lrgdp(-1)	0.556488	0.152309	3.653678	0.0014
Δ linf	0.010428	0.003190	3.268988	0.0035
Δ linf(-2)	0.013863	0.004064	3.411522	0.0025
Δ leagr(-1)	0.377952	0.094894	3.982902	0.0006
Δ leagr(-2)	0.402920	0.102078	3.947188	0.0007
Δ leexp(-1)	0.030239	0.061266	0.493570	0.6298
Δ leexp(-2)	0.010180	0.009862	1.032292	0.3208
Δ lhexp	0.255979	0.170045	1.505359	0.1561

Δ lhexp(-2)	0.487454	0.261150	1.866565	0.0847
Δ ltorep	0.367678	0.206337	1.781928	0.0886
Δ ltorep(-1)	0.496243	0.285333	1.739172	0.0960
Δ ltorep(-2)	0.718498	0.261166	2.751116	0.0117
Δ opn	-0.068575	0.026954	-2.544098	0.0185

R-Squared = 0.6797; F-Stat = 3.11 (0.0078); DW=1.9636.

Source: Author's Computation

5. Conclusion and Policy Recommendation

This paper investigated the relationship between the components of government expenditures (that is, education, agriculture, health and transport and telecommunication) on economic growth in Nigeria for the period spanning 1970 to 2010. The results of the long run and short run regression estimate confirmed that expenditure on agriculture was the most significant component of government expenditure which impacted on economic growth. However, this contradicted the findings of (Abu, N and, Abdullah, U 2010) which states that expenditures on defense and agriculture are not significant in explaining economic growth. The impact of the other components (education, health and transport and telecommunication) was observed to be insignificant in both the long run and the short run. Specifically, the outcomes of the result suggest that government educational spending has been relatively low which is expected to affect the nation's level of human capital in the long run. On the other hand, such annual educational spending has the potential to be influenced by economic fluctuations in such economy. However, this is consistent with the study of (Akpan 2005). Based on these findings, this study offers the following policy recommendations. First, there is the need for an increase in the budgetary allocation to the agricultural sector and also initiate incentives that can promote the activities of rural farmers in promoting output growth of the sector. Also, the study recommends that the monetary authorities should bridge the widened gap existing between lending rate and deposit rate to enhance agricultural output in Nigeria. Secondly, the continuous decline in budgetary allocation to the education and health sector should be reverse as this would act as a catalyst to improve performance of the sectors and ultimately impact on the aggregate economy. Thirdly, there is the need for the government to redirect their excessive government revenue in the maintenance of government official both in the house of senate and house to representative to these pivotal sectors of the economy. Such redirection of fund would bring about improve performance of the sectors.

References

Abdulahi, H. (2000) "The relationship between government expenditure and economic growth in Saudi Arabia" *Journal of Administrative Science*. 12(2):173 -191.

Abu, N and Abdulahi (2010): "Government expenditure and economic growth in Nigeria" A disaggregated

Analysis. *Business and Economic Journal*, volume 4 (5), 41 – 52

Adesoye et al (2010) “Dynamic analysis of government spending and economic growth in Nigeria.” *Journal of management and society*, vol. 1, No 2, pp. 27-37, December Edition 2010.

Akpan, M.I. (2005). “Government Expenditure and Economic Growth in Nigeria: A Disaggregated Approach” *CBN Economic and Financial Review*, 43(1).

Al – Yousif (2000) “Does government expenditure inhibit or promote economic growth some empirical evidence from Saudi Arabia”. *India Economic Journal*, 48(2). 34 – 45

Al-yousif and Cooray (2009) “Government expenditure, governance and economic growth” *Comparative Economic Studies* 51 (3) ,401 – 418.

Barro R.I. and Sala -I- Martin (1992) “Public finance in models of economic growth” *Review of Economic Studies*. 59: 645-661.

Barro R.J (1991) “Economic growth in a cross – section of countries”, *Quarterly Journal Of Economics*; (12) 6, 407 – 444.

Barro, R.J. and Sala – I – Martin, X, (1990) “Government spending in a simple model endogenous growth” *Journal Of Political Economy* 98(5), 103 – 125.

Baumol, N and William J. (1967) “Macroeconomics of unbalanced growth” The Anatomy of the Urban crisis. *The American economic Journal*

Black Duncan (1958) “*The Theory Of Committees and Election*”s. Cambridge, U.K: Cambridge University Press.

Borgston and Goodman (1973) “Private demand for public goods” *The American Economic Review*. 63(2), 280 --296.

Bowen Howard, R. (1943). “The interpretation of voting in the allocation of economic resources, the quality” *Journal of Economics* 28(1), 27-48.

Butcher and Deacon (1972) “The Demand for the Services of Non-Federal Governments” *The American Economic Review* 62(4): 891-901.

Folster, S. and Henrekson, M. (2001) “Growth Effects of Government Expenditure and Taxation in rich countries”. *European Economics Review* [http://ssrn.com/abstract=998262].

Engen and Skinner (1992) “Fiscal policy and economic growth” *NBER working paper* 4223.

Erkin B, 1988. “Government Expenditure and Economic Growth” Reflections on Professor Ram’s Approach, A New

Framework and Some Evidence from New Zealand Time Series Data. *Keio Economic Studies*, 25(1): 59-66.

Ezirim and Ofurun (2003) “Public expenditure growth and Inflation in Developed and developing countries” *Nigeria Business and Social Review*, Vol. 2 No1 Jan. Pg. 75 -94

Ezirm and Muogbalu (2006) “Explaining the size of public expenditure in less developed countries; Theory

- and empirical evidence from *Nigeria ABSU Journal Of Management Sciences*, vol 2, No 2 sept, Pp 134- 154.
- Junko and Vital IMF (2007) “Impact Of Government Expenditure On Growth” The Case Of Azerbaijan *International Monetary Fund Working Paper* wp/08/115.
- Komain and Brah Masrene (2007) “The relationship between government expenditure and economic growth in Thailand” *Journal of Economic and Economic Education Research*.
- Komijami and Mernernjad (2004), “Importance of human capital and R and D in economic growth of Iran” *Journal of Economics volume 31.16 – 23*
- Laudau D, (1983). “Government Expenditure and Economic Growth”: A Cross Country Study. *Southern Economic Journal*, 49(2): 783-792.
- Liu –Chin Hsu and Youmis (2008) “The Association between Government Expenditure and Economic Growth” The Granger Causality Test of the US data, 1947-2002. *Journal Of Public Budgeting, Accounting and Financial Management* 20 (4):439-452.
- Lin, S. (1994) “Government spending and economic growth”. *Journal of Applied Economics*, Volume 26. 43 – 51
- Mohammad .A. (2006) “The role of Education in Iran economic growth far province education” volume 22(4), pp 57- 84.
- Nili M and S.H. Nafisi (2003) “Relationship between Human Capital and Economic Growth” *Quarterly Journal of Economic Research of Iran*, 17(2), 32 - 41
- Niskanen and Willigm A. Detiats, “Government Spending and Inflation”: What is the evidence. *Journal Of Monetary Economics*, 4(4) 591-602
- Olugbenga and Owoeye (2007) “Public Expenditure and Economic growth” New evidence from OECD Countries.
- Oyinlola (1993) “Nigeria national Defense and Economic Development” An impact analysis *Scandinavian Journal of Development Alternative* 12(3). 123 – 142
- Ram R and Biswas (1986). “Military expenditures and economic growth in less developed countries” An augmented model further evidence: *Economic development and cultural change*, vol 34 (January) p 362-372.
- Ranja and Shanma (2008) “Government expenditure and economic growth” Evidence from India Icfai University, *Journal of public finance* 6 (3):60-69[<http://ssrn.com/abstract=1216242>].
- Rodrik and Dani (1998): “Why do more open economies have bigger governments?” *The journal of political economy* 106(5) 997 – 1032
- Ram, R (1956) Government size and economic growth. A new framework and some evidence from cross section and time series Data. *American economic review*, 76, 191 – 203.
- Rostow (1971) *Politics and the Stages of Growth* Cambridge University Press | 1971 | ISBN: 0521081971 | 424 pages | djvu | 2 mb

Saint (2009) Tertiary Education and Economics Growth in sub-saharan Africa. *The World Bank report*
retrieved April 29, 2009 from ww.bc.edu/bc-org/avp/soe/cihe/newsletter/number54/p14-saint.htm.

Wagner and Adolph (1983) *Grundlegung des Politician Okonomie* Leipzig . Germany: C.F winter.

APPENDIX

Parameterized error correction model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.322409	0.158763	2.030765	0.0697
e _{cm} (-1)	-0.569766	0.222828	-2.556980	0.0285
Δlrgdp(-1)	0.567417	0.299071	1.897266	0.0870
Δlrgdp(-2)	0.080010	0.208067	0.384536	0.7086
Δl _{inf}	0.012055	0.005023	2.399991	0.0373
Δl _{inf} (-1)	0.002746	0.005108	0.537458	0.6027
Δl _{inf} (-2)	0.016177	0.007396	2.187233	0.0536
Δltcap	0.194122	0.299698	0.647726	0.5318
Δltcap(-1)	0.103572	0.293437	0.352961	0.7314
Δltcap(-2)	0.213132	0.245461	0.868292	0.4056
Δleagr	0.037537	0.176990	0.212082	0.8363
Δleagr(-1)	0.415821	0.290357	1.432102	0.1826
Δleagr(-2)	0.399465	0.205907	1.940021	0.0811
Δleexp	0.009816	0.196633	0.049919	0.9612
Δleexp(-1)	0.218813	0.211173	1.036179	0.3245
Δleexp(-2)	0.415746	0.196697	2.113631	0.0607
Δlhexp	0.138868	0.254415	0.545835	0.5971
Δlhexp(-1)	0.129786	0.317292	0.409042	0.6911
Δlhexp(-2)	0.436711	0.252862	1.727075	0.1149
Δletac	0.101504	0.151815	0.668605	0.5189
Δletac(-1)	0.066926	0.176947	0.378227	0.7132
Δletac(-2)	0.039085	0.162217	0.240941	0.8145
Δltorep	0.438164	0.438741	0.998684	0.3415
Δltorep(-1)	0.518347	0.514179	1.008107	0.3372
Δltorep(-2)	0.916383	0.466844	1.962933	0.0781
Δopn	-0.089374	0.050306	-1.776615	0.1060
Δopn(-1)	-0.019711	0.054487	-0.361757	0.7251
Δopn(-2)	0.020272	0.059065	0.343214	0.7385

R-squared	0.751515	Mean dependent var	0.133409
Adjusted R-squared	0.080605	S.D. dependent var	0.348189
S.E. of regression	0.333861	Akaike info criterion	0.782500
Sum squared resid	1.114633	Schwarz criterion	1.989142
Log likelihood	13.13250	Hannan-Quinn criter.	1.211814
F-statistic	1.120143	Durbin-Watson stat	1.986966
Prob(F-statistic)	0.447989		

This academic article was published by The International Institute for Science, Technology and Education (IISTE). The IISTE is a pioneer in the Open Access Publishing service based in the U.S. and Europe. The aim of the institute is Accelerating Global Knowledge Sharing.

More information about the publisher can be found in the IISTE's homepage:

<http://www.iiste.org>

The IISTE is currently hosting more than 30 peer-reviewed academic journals and collaborating with academic institutions around the world. **Prospective authors of IISTE journals can find the submission instruction on the following page:**

<http://www.iiste.org/Journals/>

The IISTE editorial team promises to review and publish all the qualified submissions in a fast manner. All the journals articles are available online to the readers all over the world without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. Printed version of the journals is also available upon request of readers and authors.

IISTE Knowledge Sharing Partners

EBSCO, Index Copernicus, Ulrich's Periodicals Directory, JournalTOCS, PKP Open Archives Harvester, Bielefeld Academic Search Engine, Elektronische Zeitschriftenbibliothek EZB, Open J-Gate, OCLC WorldCat, Universe Digital Library, NewJour, Google Scholar

