



## Public Expenditure and Nigeria's Economic Growth (1970 – 2015)

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### ABSTRACT

The study examined the relationship between public expenditure and Nigeria's economic growth using time series data collected from 1970 to 2015. The variables considered in the study are GDP, total expenditure on Administration, total expenditure on economic services, total expenditure on social and community services, and total expenditure on transfers. The model was subjected to unit root, cointegration, and granger causality tests and then analyzed using the Error Correction Model (ECM) technique. The results of the analysis showed that all the variables of public expenditure had positive and significant relationship with GDP except the total expenditure on economic services (TEES) which had negative and insignificant relationship with GDP, while the joint test showed that all the variables had positive and significant impact on GDP. The results also showed bi-directional causality between public expenditure and GDP. We therefore, recommended that the federal government should continue to increase its budgetary allocations to defence and internal security in order to build more conducive and attractive environment for business to thrive. Also, the Nigerian government should invest more in human capital development which is part of social and community services, which is capable of leading to higher productivity and economic growth; government should look into the anomalies in the dispensing of funds allocated to other sectors like economic services in order to check possible misappropriation of public funds.

**Keywords:** Public Expenditure, Economic Growth, Economic Service, Granger Causality

### 1.0 INTRODUCTION

Down the ages, there has been a continuous argument among scholars as to the acceptable relationship between public expenditure and economic growth. This relationship has continued to occupy series of debates among scholars and policy makers. The renewed interest in growth theory in recent times has also contributed to the rising interest among scholars in investigating and understanding the right relationship between public expenditure and economic growth especially in developing countries like Nigeria. It is widely believed that increased Public expenditure is capable of boosting productivity in an economy but at the same time this rising expenditure has been viewed as impediment to development because of the way it is financed. These arguments notwithstanding, it is a common consensus among researchers and policy makers that public expenditure is an important instrument which the government uses to influence the performance of the economy. For instance, in this period of great economic recession there has been series of recommendations from Economists and policy makers to the Nigerian government to radically increase its expenditure so as to arrest the situation from degenerating into great and avoidable economic depression.

The evolution of public expenditure in Nigeria has revealed some basic trends over the years with regards to the patterns of capital, recurrent, and total public expenditure. This trend shows that the federal

government expenditure has continued to increase since 1970 and even before. Over the past four decades, the expenditure of the federal government has been increasing in geometrical proportion through different activities of the government and her interactions with ministries, departments, and agencies.

The volume of public expenditure in Nigeria has been on the increase over time mainly due to the increasing functions of the state and other public organs in several sectors of the economy. It is observed that “since the twentieth century, the development of the functions of the state in social matters such as education, public health, commercial and industrial undertakings and so on has increased public expenditure to a large extent” (Egbetunde and Fasanya, 2013).

Prior to 1970, that is, before the period in review, the federal government expenditure was not so high. This could be as a result of the fact that oil had not been discovered in commercial quantity then. The revenue of the government sprang mainly from agriculture. The expenditure trend showed that recurrent expenditure almost doubled capital expenditure between 1960 and 1969. For instance a total of ₦163.86 million was spent in 1961 with ₦96.86 million spent on recurrent while ₦67.0 million was spent on capital expenditure. In 1965, a total of ₦236.40 million was spent with ₦156.84 million going to recurrent expenditure alone while capital expenditure received only ₦79.6 million. The federal government expended a total of 556.22 million in 1969 with ₦433.42 going to recurrent and ₦122.8 going to capital expenditure.

Statistical evidence from the CBN bulletin shows that total public expenditure in Nigeria stood at ₦903.9 million in 1970, but further increased to ₦5942.6 million in 1975 before reaching ₦14968.5 million in 1980. It is argued that the increase in total expenditure during this period was largely due to increased revenue from the oil boom of the period. At about ₦11413.7 million in 1981, it increased to ₦13041.1 million in 1985, and then to ₦60268.2 million in 1990. The increase in this period was attributed to increased government activities following austerity measures implemented by the federal government. The trend continued on the increase from ₦99584.40 million in 1991 to ₦248768.1 million in 1995, ₦2450.9 billion in 2007, and ₦3240820.0 billion in 2008. Having spent a total of ₦3456925.40 in 2009, the federal government went ahead to increase its expenditure to ₦3541.90 billion in 2011 while it dropped to ₦3469.16 billion in 2015.

Government expenditure in Nigeria and some oil exporting developing economies has remained the major propeller of economic activities such that whenever there is a shock in the oil sector the entire economy suffers. This implies that even when other sources of revenue apart from oil are discovered in these economies, the debate on the relationship between public expenditure and economic growth still continues.

This research therefore, examines the relationships existing between public expenditure and the Nigerian economy in order to ascertain whether or not this expenditure has really transformed the economy positively, deterred it, or is indeterminate of economic growth in the country.

### **1.1 Statement of the Problem**

Different trends in Nigeria’s public expenditure in the past four decades showed increasing or rising pattern of expenditure. Could this rising trend be said to have impacted positively on the growth of the economy? Recent and previous studies on the relationship between public expenditure and economic growth gave conflicting results on this as opinions are much divided. Although the common consensus is that increased public spending leads to growth of the economy in line with Keynes, notable scholars of high repute have come up with opposing or contradictory opinions, while others reported that the expenditure cannot predict economic growth.

For instance, some scholars have argued that government expenditure on health and education raises the productivity of labour and thus increases the growth of national output while expenditure on infrastructure such as roads, communication, power etc. reduces production costs and increases private sector investment and profitability of firms, thus fostering economic growth. Other scholars are of the opinion that increasing government expenditure does not promote economic growth rather slows down the overall performance of the economy. They argue that in the bid to finance rising expenditure, further increase in

income taxes may discourage individuals from working for long hours and also increase production costs and reduce investment expenditure thereby impeding the growth of the national output.

Even in the midst of this rising expenditure, available statistics shows that Nigeria still falls among the poorest countries of the world as many of her citizens continue to live in abject poverty. Thus, it becomes increasingly worrisome that this rising public expenditure may not have translated to the desired growth and development in the country.

Furthermore, there has been this argument as to the right flow of causality between public expenditure and economic growth. While some scholars like Wagner maintain that causality flows from economic growth to public expenditure, others like Keynes argue that it flows from public expenditure to economic growth.

Thus, from the foregoing, it could be concluded that from the numerous studies conducted on this problem there has not been any consistent evidence for a significant relationship between public expenditure and economic growth whether in the positive or negative way. Based on the problems and arguments identified above, this research therefore examines the true relationship between public expenditure and economic growth in Nigeria from 1970 to 2015 in order to take a stand.

The general objective of this study is to examine the relationship between public expenditure and economic growth in Nigeria from 1970-2015. Specifically, the study aims at determining the impact of government public expenditures on administration, economic services, social and community services and transfers on the economic growth of Nigeria. A peculiar question arising from the objectives stated above is: To what extent has government public expenditure impacted on Nigeria's economic growth?

This research work is limited to the study of the relationship between public expenditure and the Nigerian economy with particular reference to some components of public expenditure like administration, economic services, social and community services, and transfers. The study concentrates only on the funds allocated to these various components without investigating any misappropriation or misuse of the funds. It covers a period of 46 years (1970-2015). The period is considered long enough to appreciate the long-run causal relationship between Nigeria's economic growth, increase in total public expenditure, and various components of expenditure within the period of study.

## **2.0 LITERATURE REVIEW**

Public expenditure refers to all expenses made by the government of any country on the satisfaction of the needs of her citizens. Ajie *et al.*, (2014) defines it as the expenditure incurred by public authorities like central, state, and local governments to satisfy the collective social wants of the people. Emerenini (2005) defines it as the expenses the government incurs in own maintenance; helping other countries and in regulating the activities in the country. It includes all expenditure by the government but excludes inter government transfers, thus limiting it to government expenditure on goods and services and transfers to the non-government sector of the economy (Nnamocha, 2002).

In developing countries like Nigeria, public expenditure policy not only accelerates economic growth and promotes employment opportunity, it also plays a useful role in reducing poverty and inequalities in income distribution (Ajie et al 2014). It can be financed through taxes, public debt, money emission, international aid and so on. In a democratic economy like Nigeria, Public expenditure is expected to express the will of the people as managed through political parties and government institutions, even though in reality, it is sometimes characterized by high degree of legislature which tampers the will of the current majority of the populace.

Through its continuous involvement and intervention in the economy, the government through its public expenditure policies contributes to current effective demand of goods and services, and also expresses a coordinated impulse on the economy, which can be used for stabilization, business cycle inversion, and for growth purposes. Through its capital components, public expenditure also gives rise to positive externalities in the economy and society at large.

## 2.1 Composition of Public Expenditure In Nigeria

Composition of public expenditure means the systematic arrangement of items on which the government makes expenditure in Nigeria. It is discussed here under the following sub headings:

**Administration:** This refers to the federal government's expenditure on general administration, maintaining internal security, and defending the nation.

**Economic Services:** This is the total expenditure the federal government incurs in running and maintaining the agricultural sector and water resources in the country, as well as expenditure incurred in construction, manufacturing, mining and quarrying, and transport and communications.

**Social and Community Services:** This represents the government's total expenditure in human capital development (Health and Education), Housing, and other related areas.

**Transfers:** All expenditures of the government on external financial obligations, capital repayment, internal and external loan servicing, outstanding domestic liabilities, public debt charges and so on fall under transfer expenditure.

This composition has been viewed by different economists from different point of view but Nnamocha (2002) citing inference from CBN (2016) and considering the Nigerian economy in particular breaks the classification into recurrent and capital expenditure with the following subheads:

### Recurrent Expenditure

1. Administration
  - a. General Administration
  - b. Defence
  - c. Internal security
2. Economic Services
  - a. Agriculture
  - b. Construction
  - c. Transport and Communication
  - d. Others
3. Social and Community Services
  - a. Education
  - b. Health
  - c. Others
4. Transfers
  - a. Public Debt Charges
    - i. Internal
    - ii. External
  - b. Pension and Gratuities
  - c. Others

### CAPITAL EXPENDITURE

#### 1. Administration

- a. General Administration
- b. Defence
- c. Internal Security

#### 2. Economic Services

- a. Agriculture and Water Resources
- b. Construction
- c. Manufacturing, Mining and Quarrying
- d. Transport and Communication
- e. Others

#### 3. Social and Community Services.

- a. Education
- b. Health

c. Housing

d. Others

**4. Transfers**

a. External Financial Obligation

b. Capital Repayment

i. Internal Loan

ii. External Loan

c. Outstanding Liabilities (domestic)

d. Public Debt Charges

e. Special profits

f. Others

**2.2 Economic Growth:** Economic growth refers to the steady process by which the productive capacity of the economy is increased over time to bring about increases in the output of goods and services and rising levels of national income. Kanu (2001) simplifies it as meaning growth in the output of goods and services (i.e. growth in GNP).

Samuelson (2001) defined economic growth as an expansion of a country's potential GDP or national output. This means that economic growth occurs when a nation's production possibility frontier shifts outward. Supply, demand and efficiency factor all interest.

**2.3 Public Expenditure and Economic Growth**

In Nigeria and most countries of Africa, the compelling need for rapid development has led to ever increasing government spending, which in most cases out-strips real and/or potential revenues. Adawara (2012) notes that this has created public expenditure trends that look expansionary. However, the extent to which this expansionary expenditure profile of government has translated into real socioeconomic development has remained an unresolved issue in most countries.

Public expenditure maintains a smooth growth rate in developed countries through economic stabilization, stimulation of investment activities and so on.

According to Bhatia (2002), public expenditure has an active role to play in developing countries by reducing regional disparities, developing social overhead, creation of infrastructure in the form of transport and communication facilities, education and training, growth of capital goods industries, basic and key industries, research and development and so on.

When the government incurs expenditure by itself, it may be channelled to particular investment which may bring about reallocation of the investible resources in the private sector of the economy. This reallocation takes the form of moving resources from less desirable line of investment to more desirable ones. This accelerates the pace of economic growth by narrowing down the difference between social and private marginal productivity of certain investments.

Public expenditure on infrastructure facilities has a great role to play in stimulating economic growth. The rate at which public expenditure on infrastructure is expected to affect the pace of economic growth largely depends on the actual size of total public expenditure allocated to economic and social development projects in the economy. Thus, public expenditure on social and economic infrastructure like health, communication, transport, and education etc. has the potentials of contributing to the performances of the economy.

**2.4 Theoretical Literature Review**

Traditionally, the theory of public expenditure received only a scanty attention until recently. This is partly explained by a general acceptance of the philosophy of laissez-faire in the efficacy of free market mechanism. But this has changed with the advent of welfare economics which expanded the role of the state especially in the area of infrastructural provision and thus giving increasing attention to and public expenditure.

With this, a lot of economists have propounded many theories on public expenditure. According to Edame and Akpan (2013), “theories of public expenditure are traditionally into economic, bureaucratic and political.” Since no single theory can explain all the issues involved in the study, a broad review of the theories would be carried out.

Notable theories of public expenditure include:

- i. The Wagner’s theory of increasing State activities.
- ii. The Wiseman-Peacock Hypothesis
- iii. Keynesian theory
- iv. Rostow-Musgrave theory.

#### **Wagner’s Law of Increasing State Activities**

Most notable of the theories of public expenditure is Wagner’s law of increasing state activities. Adolph Wagner was a German economist who lived in the period 1815-1917. He based his law of increasing state activities on historical facts in Germany. According to him, different layers of government tended to increase their activities both intensively and extensively. A functional relationship between the growth of an economy and government activities is observed, showing that the government sector grows faster than the economy. This means that as the economy developed, government tended to spend more in the quest for industrialization and social development as observed by Bhatia (1966), Rocktenwald (1978), and Ghandi (1971).

This was the crux of Wagner’s law which posited expenditure to be positively correlated to the level of economic growth and development. The theories try to find out a positive relationship between government spending and national income and or a unidirectional growth.

The Wagner’s theory is appreciated because in many ways it attempts to explain the relationship between public expenditure and economic growth. Its short coming is in the inherent assumption of viewing the state as separate entity capable of making its decisions ignoring the constituents populace who in actual fact can decide against the situations of the Wagner law. (Muthui et al, 2013)

#### **Wiseman-Peacock Hypothesis**

The Wagner’s law was not challenged until Wiseman and Peacock put forward an alternative hypothesis from their study of public expenditure in the United Kingdom for the period (1890-1955). The hypothesis emphasizes the recurrence abnormal situations, which causes sizeable jumps in public expenditure and revenue. They argued that public expenditure does not increase in a smooth and steady manner, but rather in spasmodic and step-like manner. This is because sometimes some social or other disturbances like national disaster, wars, epidemics etc. occur thereby creating a need for more public expenditure which the current revenue cannot meet. The government and the citizens would review the revenue position which is inadequate and the need to find a solution to the problem, and agree to the required adjustments to finance the increased expenditure. A higher level of tax has to be imposed thus creating a displacement effect seen from the movement of the older level of expenditure and taxation to a new and higher level. This movement from older level of taxation to a new and higher level is the Displacement effects. Thus, a new level of tax is attained and they are willing to tolerate this greater burden of taxation and as a result of the general level of expenditure and revenue increases. The public expenditure and revenue become stabilized in a new level till another disturbance occur and cause a displacement effect. This displacement effect was produced because people appeared to accept the higher level of taxes associated with every disturbance and still tended to remain on that level even after the disturbance. Thus each major disturbance leads to the government assuming larger proportion of the total national economic activities resulting in the concentration effect. This theory can explain how public expenditure in Nigeria has assumed unending upward trajectory.

One important shortcoming of this hypothesis is that it sidelines the fact that government can finance an upward displacement in public expenditure using other sources of finance such as donor funds, external borrowing or even sale of government fixed asset which may not affect taxes in an upward trend. (Muthui et al, 2013).

### **Keynesian Theory**

After the First World War, a problem known as the great depression arose. It was during this period that John Maynard Keynes advocated for government intervention in the economy through the use of fiscal policy to stimulate aggregate demand since the market forces of demand and supply could no longer check economic depression that was not foreseen in the period of the classical economists. Keynes posited that the forces of demand and supply would not achieve full-employment condition because the aggregate demand structure has shown up periodic deficiencies and decline in production and employment thus, arguing that such decline can only be stimulated through government interventions. He therefore called for a policy of budgetary expansion during recession in order to increase the aggregate demand in the economy thus boosting the Gross Domestic Product (G.D.P). This is with the view that increase in government expenditure would lead to increase in employment in the public sector and firms in the business sector. With this, employment rises, also do income and profits of the firms, thus resulting in firms employing more workers. Therefore, increase in government expenditure leads to higher economic growth.

One great limitation of this theory according to Muthiu et al (2013) is that it fails to adequately consider the problem of inflation which might be brought about by the increase in government spending.

### **Rostow-Musgrave Theory**

Another notable theory is the Rostow-Musgrave development models. Here, Rostow presented a political theory of the states of growth and the role of public finance in the process while Musgrave provided a macro-economic view point of public expenditure policy for industrialization and development. The public sector is seen to provide social overhead capital in the form of roads, bridges, air, sea ports, transport and communication system, human capital in health and nutrition which is necessary to gear up the economy. The theory opines that in early stage of economic growth, public expenditure in the economy should be encouraged. It further asserts that during the early stages of growth there exists market failures and thus the government should massively be involved to deal with these market failures. However, Musgrave argues that as total investment which is a proportion of the GNP rises, their relative share of the public sector investment falls. Rostow on his part claims that once the economy reaches the matured stage, the mix of public expenditure will shift from expenditure on infrastructure to increase on education, health and welfare. Muthui et al (2013) again faults this theory because it ignores the contribution to development by the private sector by assuming the government expenditure is the only driver of economic growth.

### **The Critical Limit Theory**

As observed by Emerenini (2005), this theory, which was more or less popularised by Colin Clark cannot be said to be properly called theory of growth of public expenditure. Colin Clark has it that if government share in the economic activities reaches a limit which he puts at 25%, then inflation follows. That this is so because the increased government activities meant increased taxation which reduces peoples' incentive to work hard. Reduced work effort leads to reduced productivity and hence introduction of demand-pull inflation in the economy.

The theory was faulted by Emerenini (2005) on the grounds of placing a 25% tag as the critical limit. What of some economies that their governments have exceeded the 25% of economic activities, yet there is no inflation?

## **2.5 Empirical Review**

Many empirical studies have examined the effect of public expenditure on economic growth. In the Keynesian model, increased public expenditure leads to increase in the growth of the economy. Some economists and Researchers have contrary opinions and thus argue that government fiscal policy does not have any effect on the growth of national output.

Josephat and Oliver (2000) examined the impact of public expenditure on economic growth in Tanzania within 1965-1996 using time series data for 32 years. They formulated a simple growth accounting model, adapting Ram (1986) model which disaggregated total public expenditure into expenditure on

physical investment, consumption spending and human capital investment. The results revealed that expenditure on human capital investment was insignificant, and also that increased productive expenditure (physical investment) has a negative impact on growth while consumption expenditure has positive impact on growth.

Olugbenga and Owoye (2007) studied the relationship between government expenditure and economic growth for a select group of 30 OECD countries for the period 1970-2005. Their findings showed a long run relationship between government expenditure and economic growth. The findings also supported the Keynesian hypothesis as they observed a unidirectional causality from government expenditure to economic growth in 16 out of the 30 countries. In support of the Wagner's law, their study reveals that causality runs from economic growth to government expenditure in 10 of the 30 countries while in the remaining 4 countries, there was a feedback relationship between government expenditure and economic growth.

Ranjan and Sharma (2008) studied the effect of government development expenditure on economic growth in India between 1950 and 2007. They discovered a significant positive impact of government expenditure on economic growth. Their findings also showed the existence of co-integration among the variables.

Maingi (2010) conducted a study on the impact of public expenditure on economic growth in Kenya and reported that improved Government expenditure on areas such as physical infrastructure development and in education enhance economic growth, while areas such as foreign debts servicing, government consumption and expenditure on public order and security, salaries and allowances were growth retarding.

Using the Error Correction Model, Loto (2011) studied the effects of public expenditure on security, health, education, transport, communication and agriculture economy. His results revealed that only the expenditure on agriculture has a negative impact on the economy. Expenditure on education was not only insignificant but also had a negative impact on the economy.

Muthui et al (2013) studied the impact of public expenditure components on economic growth in Kenya from 1964 to 2011 using time series data. The model adopted had the GDP as a function of all government expenditure components (expenditure on education, infrastructure, health, defence, and public order). The result of their study showed that though government expenditure on education is positively related to economic growth it does not spur any significant change to growth.

In Nigeria, which is our country of study, many researchers have also studied the relationship that exists between government expenditure and economic growth. Akpan (2005) used a disaggregated approach in investigating the components (that include capital, recurrent, administrative, economic service, social and community services, and transfers) of Government expenditure that enhance growth and those that do not. He found no significant relationship between economic growth and most of the components of government expenditure

Ighodaro and Okiakhi (2010) examined the impact of public expenditure on economic growth in Nigeria between 1961-2007 using time series data and also applying co-integration test and Grange causality test. The results of their study revealed negative impact of public expenditure on economic growth.

Abu and Abdullahi (2010) observed in their empirical investigation that rising government expenditure has not really impacted meaningfully to the development of the Nigeria economy. Just like Akpan (2005), they employed a disaggregated analysis approach in studying the relationship between public expenditure and the Nigerian economy between 1970 and 2008. They disaggregated the expenditure into: total capital expenditure, total recurrent expenditure, total expenditure on education, total expenditure on defence, total expenditure on agriculture, total expenditure on transport and communication, total expenditure on health with overall government fiscal balance as additional variable and regressed them against the real GDP. Their results showed that total capital expenditure, total recurrent expenditure, and expenditure on education have negative effects on economic growth while public expenditure on transport and communication, and health has positive effect on economic growth.

Iheanacho (2016) studied the contribution of government expenditure on economic growth of Nigeria using disaggregated approach for the period 1986-2014 using Johansson cointegration and error correction approach. His result showed recurrent expenditure is the major driver of economic growth in Nigeria. Controlling for the influence of non-oil revenue, the study showed a negative and significant long run relationship between economic growth and recurrent expenditure co-exist with a positive short run relationship, highlight the dual effects of recurrent expenditure on economic growth in Nigeria. For the capital expenditure, the study reported negative and significant long-run effect of capital expenditure on economic growth in Nigeria.

### 3.0 METHODOLOGY

This study made use of the econometric approach in estimating the impact of public expenditure on the Nigerian economy. The data used were sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin (2015 Edition). Gross Domestic product (GDP) is used as the proxy for economic growth (dependent variable) while the independent variables are total expenditure on administration, total expenditure on economic services, total expenditure on social and community services, and total expenditure on transfers. A multi stage methodology was adopted in this study using e-views7. Thus, we examined the data for stationarity using Augmented Dickey Fuller (unit root) test, and then the Johansen co-integration test was conducted. This was followed by the Granger causality test, after which the ordinary least square estimation was done. The period for estimation is 1970-2015.

#### 3.1 Model Specification

This work adopted the model specified by Nworji et al (2012) with a little modification. The adopted model has GDP as a function of total expenditure on economic services, total expenditure on social and community services and total expenditure on transfers.

Total expenditure on administration which was not considered relevant by Nworji et al (2012) is included in the model specified in this research since it is part of the components of total public expenditure as recorded in the CBN statistical bulletin (2016), and therefore necessary to determine the joint effect of total expenditure on economic growth.

Since theoretically,

Aggregate income (Y) is equal to aggregate expenditure (E) i.e.

Expenditure (E) = income (Y) = value of output

Our model therefore follows suit, thus equating expenditure with income which also equals value of output (GDP). Thus we have, total value of output (GDP) equalling total expenditure, thereby expressing GDP as a function of expenditure comprising total expenditure on administration, (TEAD), total expenditure on economic services (TEES), total expenditure on social and community services (TESCS), and total expenditure on transfers (TETRANSF).

The functional form becomes:

$GDP = f(TEAD, TEES, TESCS, TETRANSF)$

Which in econometric format, becomes

$GDP = a_0 + a_1 TEAD + a_2 TEES + a_3 TESCS + a_4 TETRANSF + U_t$

Or more formally;

$Y_i = b_0 + b_1 X_{1i} + b_2 X_{2i} + b_3 X_{3i} + b_4 X_{4i} + U_i$

Where:

Y = Gross Domestic Product (GDP)

X<sub>1</sub> = Total Expenditure on Administration (TEAD)

X<sub>2</sub> = Total Expenditure on Economic Services (TEES)

X<sub>3</sub> = Total Expenditure on Social and Community Services (TESCS)

X<sub>4</sub> = Total Expenditure on Transfers (TETRANSF)

U = error term

b<sub>0</sub>, b<sub>1</sub>, b<sub>2</sub>, b<sub>3</sub>, b<sub>4</sub> are parameters to be estimated.

A priori,  $b_1 > 0$ ,  $b_2 > 0$ ,  $b_3 > 0$ ,  $b_4 > 0$ , for any increase in the public expenditure components i.e. an increase in any of the public expenditure variables would lead to increase in economic growth.

### 3.2 DATA ANALYSIS AND DISCUSSION

**Unit Root Test:** This test is done to establish the stationarity of the data or the order of which they are integrated to make sure that the results obtained from the econometric regression are not spurious. The Augmented Dickey Fuller (ADF) was used to test for unit roots and the following results were obtained.

**Table 1: Unit Root Test Results at Level ( $\alpha = 5\%$ )**

| Variables | ADF test statistics | Critical values at 5%: | Probability | Order of integration |
|-----------|---------------------|------------------------|-------------|----------------------|
| GDP       | -0.892018           | -2.928                 | 0.7818      | Nil                  |
| TEAD      | -0.002595           | -2.928                 | 0.9532      | Nil                  |
| TEES      | -1.006903           | -2.928                 | 0.7430      | Nil                  |
| TESCS     | -0.287296           | -2.928                 | 0.9186      | Nil                  |
| TETRANSF  | -0.877623           | -2.928                 | 0.7861      | Nil                  |

The unit root test result above shows that the variables GDP, Total Expenditure on Administration (TEAD), Total Expenditure on Economic Services (TEES), Total Expenditure on Social and Community Services (TESCS) and Expenditure on Transfers are all non-stationary at level. This implies that the variables are not integrated at level I(0) therefore we conduct the first difference stationarity test on the variables to determine their order of integration.

**Table 2: Unit Root at First Difference ( $\alpha = 5\%$ )**

| Variable | ADF Test Statistics | Critical value at | Probability | Order of integration |
|----------|---------------------|-------------------|-------------|----------------------|
| GDP      | -6.805705           | -2.9297           | 0.0000      | I(1)                 |
| TEAD     | -8.215637           | -2.9297           | 0.0000      | I(1)                 |
| TEES     | -7.270517           | -2.9297           | 0.0000      | I(1)                 |
| TESCS    | -9.006935           | -2.9297           | 0.0000      | I(1)                 |
| TETRANSF | -8.241470           | -2.9297           | 0.0000      | I(1)                 |

Source: Extracted from e-view7 Output

The unit root test result above indicates that all the variables entered above i.e. GDP, TEAD, TEES, TESCS and TETRANSF, attained stationarity at first difference. This implies that the variables are integrated of order one I(1). We next test for long run relationship amongst the variables using the Johansen Cointegration test.

**Co-Integration Test:** The results of the unit root test conducted earlier shows that all the variables were not stationary at level but needed further differencing to attain stationarity at first difference. Thus, the linear combination of one or more of these variables might exhibit a long run-relationship. To capture the extent of co-integration among the variables, the multivariate co-integration methodology proposed by Johansen was utilized. The test result is presented in Table 3 below:

**Table 3: Co-integration Test Results at 5% Critical Value.**

Unrestricted Cointegration Rank Test (Trace)

| Hypothesized<br>No. of CE(s) | Eigenvalue | Trace<br>Statistic | 0.05<br>Critical Value | Prob.** |
|------------------------------|------------|--------------------|------------------------|---------|
| None *                       | 0.674281   | 82.40128           | 69.81889               | 0.0036  |
| At most 1*                   | 0.571655   | 33.04553           | 27.85613               | 0.0143  |
| At most 2                    | 0.270573   | 19.09837           | 29.79707               | 0.4859  |
| At most 3                    | 0.104657   | 5.216538           | 15.49471               | 0.7854  |
| At most 4                    | 0.007977   | 0.352403           | 3.841466               | 0.5528  |

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

The co-integration results above show that there is a long run relationship among the variables since there exist at least 1 cointegrating equation at 0.05 level. This is deduced from the rejection of the null hypothesis as evident from the higher trace statistics at “None” and “At most 1” over the critical values in each variable at 0.05 level.

**Granger Causality Test:** Having established that the data used in the study is stationary and co-integrated, the study as part of its objectives needed to know the direction of causality between GDP and public expenditure. The Granger Causality test was therefore conducted and the results are tabulated in Table 4 below.

**Table 4: Granger Causality Test**

Lags: 2

| Null Hypothesis:                    | Obs | F-Statistic | Prob.  |
|-------------------------------------|-----|-------------|--------|
| TEAD does not Granger Cause GDP     | 44  | 3.36462     | 0.0168 |
| GDP does not Granger Cause TEAD     |     | 3.94931     | 0.0274 |
| TEES does not Granger Cause GDP     | 44  | 6.60515     | 0.0110 |
| GDP does not Granger Cause TEES     |     | 2.65628     | 0.0829 |
| TESCS does not Granger Cause GDP    | 44  | 11.5176     | 0.0000 |
| GDP does not Granger Cause TESCS    |     | 4.17972     | 0.0127 |
| TETRANSF does not Granger Cause GDP | 44  | 3.99767     | 0.0015 |
| GDP does not Granger Cause TETRANSF |     | 2.20440     | 0.1239 |

From the table above, it is observed that all components of public expenditure granger cause GDP. With the exception of TEES and TETRANSF, GDP also granger causes public expenditure. This is deduced from the following observation:

- There is a bi-directional causality between TEAD and GDP since both probabilities are less than 5%
- There is uni-directional causality between TEES and GDP. Thus, causality here runs from TEES to GDP alone.
- There is a bi-directional causality between TESCS and GDP.
- There is uni-directional causality between TETRANSF and GDP. Causality only flows from TETRANSF to GDP.

**Error Correction Model (ECM) Estimation:** The results of the Error Correction Model are summarized in Table 5 below

**Table 5: Ordinary Least Squares Test Result.**

Error Correction Model

| Variable           | Coefficient | Std. Error            | t-Statistic | Prob.    |
|--------------------|-------------|-----------------------|-------------|----------|
| C                  | -1.805379   | 0.381684              | -4.730032   | 0.0000   |
| D(TEAD)            | 0.088045    | 0.010221              | 8.614128    | 0.0000   |
| D(TEES)            | -0.033671   | 0.101735              | -0.330972   | 0.7425   |
| D(TESCS)           | 0.230957    | 0.055779              | 4.140573    | 0.0173   |
| D(TETRANSF)        | 0.855741    | 0.123829              | 6.910685    | 0.0000   |
| ECM(-1)            | -0.343730   | 0.076077              | -4.518186   | 0.0185   |
| R-squared          | 0.988661    | Mean dependent var    |             | 14.07332 |
| Adjusted R-squared | 0.987129    | S.D. dependent var    |             | 2.801431 |
| S.E. of regression | 0.317826    | Akaike info criterion |             | 0.674164 |
| Sum squared resid  | 3.737501    | Schwarz criterion     |             | 0.919913 |
| Log likelihood     | -8.494523   | Hannan-Quinn criter.  |             | 0.764788 |
| F-statistic        | 64.52188    | Durbin-Watson stat    |             | 1.815484 |
| Prob(F-statistic)  | 0.000000    |                       |             |          |

Fitting in a regression equation from Table 5 above, we have:

$$GDP = -1.8054 + 0.0880*TEAD - 0.0337*TEES + 0.2309*TESCS + 0.8557*TETRANSF - 0.3437*ECM(-1)$$

**Interpretation of Regression:**

**Total Expenditure on Administration:** Total expenditure on administration has a coefficient of 0.0880. This implies that a unit rise in this expenditure would result in 0.0880 unit increase in the gross domestic product (GDP). This is in agreement with our a priori expectation which states that an increase in any of the explanatory variables is expected to yield a corresponding increase in the economic growth (GDP). Also, this variable is significant having a p-value of 0.0000 indicating that government expenditure on administration has a significant impact on economic growth in Nigeria.

**Total Expenditure on Economic Service (TEES):** This has a negative sign which shows an indirect relationship with the GDP. Thus, an increase in TEES would lead to a decrease in GDP which is not in line with our a priori expectation. The coefficient of -0.03367 implies that a unit increase in TEES will decrease GDP by 0.03367 unit. The p-value of 0.7425 indicates that Expenditure on Economic Services has not impacted significantly on economic growth in Nigeria.

**Total Expenditure on Social and Community Service (TESCS):** The TESCSCS has a positive sign indicating that as the TESCSCS increases; the GDP increases by 0.2309 unit. This conforms to our a priori expectation. Also, the p-value of 0.0173 is an indication that expenditure on Social and community Services is a significant determinant of economic growth in Nigeria.

**Total Expenditure on Transfer (TETRANS):** The total expenditure on transfers is positively signed showing that as the TETRANS increases, the GDP also increases. This is in agreement with our a priori expectation. The coefficient of 0.8557 implies that a unit increase in the expenditures on Transfers would increase GDP significantly by 0.8557 unit. The significant impact of Transfers on economic growth is evident in the p-value (0.0000) which is less than 0.05 critical value.

**Error Correction Coefficient (ECM):** The coefficient of the Error Correction Model ECM(-1) is negative and significant; thus it is acceptable in our model. The coefficient of -0.3437 means that the speed of adjustment of the model to long run equilibrium state is 34% estimated annually.

**Test for Autocorrelation:** The Durbin – Watson statistics was used in testing for the presence of autocorrelation. From the regression results, the Durbin-Watson value is 1.815 which is closer to 2 than 0. Therefore, we conclude that there is no autocorrelation in the model.

### 3.3 DISCUSSION AND IMPLICATION OF FINDINGS

The study investigated the impact of public expenditure on the Nigerian economy from 1970-2015. The findings of the various tests conducted revealed that out of the four variables of public expenditure analysed; only the total expenditure on economic services had a negative coefficient which is not consistent with expectations about the relationship between public expenditure and economic growth. This is so because improvement in agriculture, manufacturing, mining, transport and communication which fall under this component should as a matter of fact boost economic growth as against the reports of our findings. This goes to show that there may be bottle-necks in the form of corruption and diversion of funds meant for these sectors. Nevertheless, those of total expenditure on administration (TEAD), total expenditure on social and community services (TESCS), total expenditure on transfers (TETRANSF) are consistent with our expectations. This implies that while public expenditure on economic services has inverse relationship with and, thus, exerts negative effect on economic growth during the period in review, Public expenditure on administration, social and community services, as well as transfers have direct relationship with, and thus exert positive effects on economic growth. The intercept has a negative coefficient, suggesting that in the absence of government intervention in economic activities, the economy would, perhaps, be experiencing a negative growth thus supporting the Keynesian (1936) view of government's active intervention in the economy using various policy instruments.

The t-statistics indicates that at 5% level of significance, public expenditure on economic services has negative and insignificant impact on economic growth while other components of expenditure like administration, social and community services, as well as transfers have positive and statistically significant impacts on economic growth. This is in agreement with Nworji et al (2012) which reported that public capital and recurrent expenditure on economic services had negative but insignificant effect on economic growth, while capital and recurrent expenditure on social and community services, as well as transfers had positive and statistically significant relationship with economic growth.

Considering the joint effect of all the components of public expenditure studied as revealed by the F-test, there is a positive and statistically significant relationship between public expenditure and economic growth within the period in review. This proves that indeed, there is a relationship between public expenditure and Nigeria's economic growth showing that public expenditure impacts positively on the growth of the economy.

With a very high coefficient of determination ( $R^2$ ) of 98% and adjusted  $R^2$  of 98% also, we can conclude that about 98% of the variations in the GDP are well explained by the explanatory variables (components of public expenditure) included in the model. It, thus, gives a very good fit.

Our Granger causality test shows bi-directional causality between public expenditure and GDP, putting to rest the argument of which causes the other. Therefore, the study justifies the Keynesian argument that public expenditure causes growth of the economy while at the same time upholding the Wagner's argument that it is economic growth that spurs public expenditure.

### 4.0 CONCLUSION

The relationship between economic growth and public expenditure has continued to be a controversial point of study to researchers. This is evident from the non-consensus among scholars carrying out researches on the controversial study. Some argue that for the economy to grow the government must increase its public spending while others see increase in public spending as not impacting meaningfully on the economy.

This work has thoroughly investigated the above problem, and it is concluded that indeed, there exists a relationship between the level of public expenditure and the growth of the economy. However, it is

important to note that key public expenditure components like administrations, social and community services, and transfers are the major drivers of economic growth. Expenditure on economic services was reported to exert negative but insignificant impact on the growth of the economy. The possible explanation as to why public expenditure on economic services contributes negatively to economic growth in Nigeria could be that the huge decline in commercial and even subsistence agriculture in Nigeria has left the sector forsaken for a long period with attention shifted to oil exploration and revenue from it. It could comfortably be concluded then, that fund set aside for this sector could probably have been siphoned into private hands and also for other uses leaving the sector to suffer. Poor transportation and communication network could also be reasons for this negative impact.

Finally, it can be concluded that while it is correct to uphold the argument that increase or decrease in public expenditure determines the level of economic growth in line with Keynes, the Gross domestic product (GDP) could also determine the extent of public expenditure as opined by Wagner.

## 5.0 RECOMMENDATIONS

Sequel to the results reported in the preceding sections and the conclusion drawn in this section, the following policy recommendations are made:

Firstly, the Nigeria government should ensure that public expenditure is properly managed in a way that the nation's production capacity will appreciate and accelerate economic growth. Again, since expenditure on administration has a positive and significant relationship with economic growth, it is recommended that the government should continue to increase its budget allocations to this component. Defence and internal security which form part of this component should be given priority attention thereby building more conducive and attractive environment for business to thrive, thus winning the confidence of private investors(both foreign and local ).

More still, public expenditure on social and community services showed a positive and significant impact on the growth of the economy; it is therefore, recommended that the government should continue to spend more on this component mainly through investment on human capital development (Education and Health) which make up part of the social and community services. Based on this, investing in more and qualitative education in the labour force will help create conditions that could lead to higher productivity and higher economic growth as the level of literacy would improve. On health, while an increased expenditure on the health system would contribute to a healthy and stronger labour force, it is also recommended that the government supports research and development in this sector locally.

Since the expenditure on economic services showed a negative but insignificant relationship with the GDP as against a priori expectation, it is suggested that the government winds into this to check possible anomalies in dispensing of funds allocated to the sectors involved here.

Finally, the government should also continue to spend more on transfers since this component as reported from our findings had a positive significant impact on economic growth.

Future researchers should study each expenditure component exclusively, for instance, *Public Expenditure on Economic services and the growth of the economy* in order to capture the specific sectors within the component responsible for economic growth and those acting as impediments to growth.

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