

# **ESTIMATING THE IMPACT OF THE COMPONENTS OF PUBLIC EXPENDITURE ON ECONOMIC GROWTH IN NIGERIA (A BOUND TESTING APPROACH)**

**Ogbuagu Matthew I.** 

Dept of Economics and Devt. Studies, Federal University, Oye-Ekiti, Nigeria

ogbuagumatthew@gmail.com

**Ekpenyong Udom I.**

Dept of Economics and Devt. Studies, Federal University, Oye-Ekiti, Nigeria

imohtranspose@gmail.com

## **Abstract**

*The ever increasing presence of the Nigerian government in economic activities (reflected on the astronomical increase in government expenditure) calls for a reassessment of the impact of public expenditure on economic growth. This paper attempts to measure the short-run and long-run impacts of government recurrent expenditure and capital expenditure on economic growth. Using data from 1970-2014, we estimated the relationship with an Autoregressive Distributed Lag (ARDL) Model or “Bound Testing Approach” to cointegration. The most parsimonious model shows that recurrent expenditure has a positive and long-run impact on GDP. Surprisingly, the short-run coefficient of capital expenditure was negative and this effect dies out in the long-run. Also, the Toda-Yamamoto causality test shows a unidirectional causality emanating from GDP to government expenditure (Wagner’s Theory). The authors recommend that policies should be geared towards full implementation of capital project that are captured in the budget.*

**Keywords:** *Public Expenditures, Recurrent Expenditure, Capital Expenditure, ARDL*

## INTRODUCTION

The rebirth of growth theories in the 1980s has also revived interest among researchers in verifying and understanding the linkages between government spending and economic growth especially in a developing country like Nigeria. Over the past decades, the public sector spending has been increasing owing to increased government participation in economic activities through its various Ministries, Departments and Agencies (MDA's) (Niloy et al. 2003). Debates on the role of government's involvement in economic activities have been divided between two different camps. On one side of the divide are the classical economists who are of the opinion that the economy is self-regulating and the role of the government in economic activities could at best be relegated to the background.

The general view is that public expenditure either recurrent or capital expenditure, notably on social and economic infrastructure can be growth-enhancing. Nevertheless, financing of such expenditure if not properly managed can retard growth. Understanding the linkages between fiscal policies and economic growth has raised huge debates theoretically and empirically. Public expenditure and national income have been at the focus of public finance, since the magnitude of public expenditure has been increasing over time in almost all the countries of the world. It is therefore necessary for state governments to know the causal relationship between the two. This is crucial because it is a common belief that the state government plays a significant role in the development of a country. Increase in government expenditure may result in the growth of the economy by increasing the national income, especially when it is injected in development programs (Omoke 2009).

In Nigeria, state governments' expenditure have been on the rise owing to the huge receipts from production and sales of crude oil, and the increased demand for public (utilities) goods like roads, communication facilities, power, education and health. In addition, there is increasing need to provide both internal and external security for the people and the nation. Unfortunately, this rising expenditure has not translated into meaningful growth and development, as Nigeria ranks among the poorest countries in the world.

It is therefore seen as a paradox that despite the rising levels of government expenditure, which in most cases is financed through local and international debts, many Nigerians are yet to feel the real impact of this rising expenditure. The problem is compounded because it is the citizens that will bear the cost of servicing and paying back the debt.

Previous studies on the subject have focused mainly on examining the impact of total government expenditure on growth. As an improvement over previous studies, this paper assesses the impact of the components of government expenditure on economic growth. Also, most studies that have examined the short-run and long-run impacts of government expenditure

on economic growth have generally used the Johansen cointegration approach regardless of the order of integration of the variables. Our present study uses the bound testing approach to cointegration.

The remainder of this paper is divided into five sections. Section two focuses on the review of some theoretical and empirical review of the literature on the subject matter. Here, theories that explain the relationship between government expenditure and economic growth are discussed. Also, empirical findings of some selected authors that confirm each theory are presented. The third section discusses the research methodology adopted and sources of data. The fourth and fifth sections present the results and the conclusions of the study.

## **LITERATURE REVIEW**

This section highlights some basic theories that have been used to support the effects of public expenditure on economic growth. Such theories amongst others are: the Wagner's Law, the Keynesian Theory, the Richardian Equivalence Theory and Musgrave Theory of Public Expenditure

### **The Keynesian Theory**

This theory was propounded by the British economist; John Maynard Keynes. The theory became popular during the Great Depression of the 1930s. According to Keynes, public expenditure is an exogenous factor which can be utilized as a policy instrument to promote economic growth. From the Keynesian thought, public expenditure can contribute positively to economic growth. Hence, an increase in the government consumption is likely to lead to an increase in employment, profitability and investment through the multiplier effects on aggregate demand. As a result, government expenditure augments the aggregate demand, which provokes an increased output depending on expenditure multipliers. Some studies that have empirically confirmed this relationship are Omoke (2009), Olugbenga and Owoye (2007), John and George (2005), Ergun and Tuck (2006), Sevitenyi (2012), Abayomi and Taiwo (2011), Oni et al (2014).

### **Musgrave Theory of Public Expenditure Growth**

This theory was propounded by Musgrave as he found changes in the income elasticity of demand for public services in three ranges of per capita income. He posits that at low levels of per capita income, demand for public services tends to be very low, this is so because according to him such income is devoted to satisfying primary needs and that when per capita income starts to rise above these levels of low income, the demand for services supplied by the

public sector such as health, education and transport starts to rise, thereby forcing government to increase expenditure on them. He observes that at the high levels of per capita income, typical of developed economics, the rate of public sector growth tends to fall as the more basic wants are being satisfied.

### **The Wagner's law:**

Wagner's law is a principle named after the German economist Adolph Wagner (1835-1917). Wagner advanced his 'law of rising public expenditures' by analyzing trends in the growth of public expenditure and in the size of public sector. Wagner's law postulates that: (i) the extension of the functions of the states leads to an increase in public expenditure on administration and regulation of the economy; (ii) the development of modern industrial society would give rise to increasing political pressure for social progress and call for increased allowance for social consideration in the conduct of industry (iii) the rise in public expenditure will be more than proportional increase in the national income (income elastic wants) and will thus result in a relative expansion of the public sector. Musgrave and Musgrave (1988), in support of Wagner's law, opined that as progressive nations industrialize, the share of the public sector in the national economy grows continually. Studies that have confirmed this theory include (Muhlis and Hakan (2003), Jamshaid et al. (2010)).

### **The Richardian Equivalence Theory**

This theory postulates that consumers are forward looking and so factor-in the government's budget constraints when making their consumption decisions. The result is that for a given pattern of government spending, the method of financing that spending does not change aggregate demand. Thus, the theory is used as an argument against increasing government spending in an economy. Some studies that have empirically established this relationship are Muhlis and Hakan (2003), Singh and Sahni (1984), Ergun and Tuck (2006)

## **METHODOLOGY**

This research made use of secondary data sourced from the Central Bank of Nigeria Statistical Bulletin and World Bank Database. The sample periods covers 1970 to 2014. The key variables of interest are the Gross Domestic Product growth rate (*gdp*), recurrent government expenditure (*rex*) and capital government expenditure (*cex*). Other variable that will be included in the model are net exports (*nx*), and gross national savings (percent of GDP).

We adopt the basic Keynesian model in our analysis. The functional model is of the form

$$gdp = f(rex, cex, nx, gs, inf)$$

Before proceeding to testing the above model, there will be need to first perform unit root tests on each of the variables to check for stationarity. We will attempt to check the long run and short run relationship between GDP and the components of government expenditure (recurrent and capital expenditure). In achieving this, we will be adopting an Autoregressive Distributed Lag Model (Bound Testing) developed by Pesaran and Shin (2001). The bound testing approach to cointegration is convenient because it can handle both  $I(0)$  and  $I(1)$  variables. The ARDL model that will be convenient for this is stated below:

$$\Delta gdp_t = b_1 gdp_{t-i} + b_2 rec_{t-i} + b_3 cex_{t-i} + b_4 nx_{t-i} + b_5 gs_{t-i} + b_6 inf_{t-i} + b_7 \Delta gdp_{t-i} + b_8 \Delta rec_{t-i} + b_9 \Delta cex_{t-i} + b_{10} \Delta nx_{t-i} + b_{11} \Delta gs_{t-i} + b_{12} \Delta inf_{t-i} + \varepsilon_t$$

Also, we will be interested in establishing the direction of causality between government spending and economic growth.

## EMPIRICAL RESULTS AND DISCUSSIONS

Table 1: Unit Root Results

Variables	p-values at Levels	p-values at First difference
Gdp	0.0001*	
Inflation	0.0938***	
Lcex		0.0294*
Lnsa		0.0672***
Lrec		0.092***
Nx	0.0331**	

\* \*\* \*\*\* denote significance at 1%, 5% and 10% respectively

The table above presents the Augmented Dickey-Fuller unit root test results for each of the variable. From the table, only three of the six variables are stationary at level. They are gdp, Inf and nx. The other variables (Lcex, Lnsa and Lrec) become stationary after taking their first difference. Since the variables of interest are either  $I(0)$  or  $I(1)$  variables, we will attempt to check if there is a long-run relationship among the variables. The ARDL model specified above will be convenient for this purpose.

The Wald coefficient restriction test shows a test statistic of 4.62 which is higher than 3.34 which is the value obtained from the asymptotic critical value upper bound provided by

Pesaran *et al* (2001). This suggests that there is a long-run relationship among the variables. The table below presents the most parsimonious ARDL model

Table 2: Most Parsimonious ARDL Regression Result

Variables	Coefficients	T-Statistics	P-Values
Gdp(-1)	-1.06*	6.90	0.000
Lnsa(-1)	-8.84E-06*	3.02	0.0047
Lrec(-1)	1.79E-05*	3.66	0.0008
Nx(-1)	-0.132**	-2.20	0.0344
D(lcex(-1)	-2.52E-05**	-1.57	0.013
D(lnsa(-1)	1.33E-05***	1.80	0.080

\* \*\* \*\*\* denote significance at 1%, 5% and 10% respectively

From the table above, three variables have significant long-run coefficients and two significant short-run coefficients. The long-run coefficient of the log of recurrent expenditure is positive and significant, Capital expenditure, on the other hand, does not have a short-run effect, but over the long-run, its impact is felt; although negatively. This result is surprising because capital expenditure is supposed to have a positive impact on GDP, at least in the long-run. Both the long-run and short-run impacts of national savings Lnsa(-1) have impacts on GDP growth rate. The short-run impact is negative while the long-run impact is positive. This makes economic sense because in the short-run, as savings increases, resources are diverted away from productive activities. But over the long-run, this increased savings would have been used for capital acquisition which is vital for growth. The short-run coefficient of net exports (nx) has a negative impact on the GDP growth rates. The coefficient of the lag of GDP (Gdp(-1) is the error correction component of the model. It is negative and significant; implying that it takes 6% yearly for the short-run disequilibrium to be corrected.

To test for the direction of causality, Toda-Yamamoto causality test was carried out to establish the direction of causality between GDP and government expenditure. The test result shows a uni-directional relationship running from GDP to government expenditure. This is in line with the Wagner's theory.

## CONCLUSION AND POLICY RECOMMENDATIONS

This empirical study was motivated by the desire to determine the long-run and short-run impacts of components of government expenditure on economic growth. To establish these relationships, a bound testing technique was adopted. The most parsimonious regression result shows that recurrent government expenditure has a positive impact on GDP growth only in the short run. The impact of capital expenditure is only seen in the long-run; although negative. The

causality test that was performed showed a uni-directional causality running from GDP to government expenditure; thus confirming Wagner's theory in Nigeria.

It is surprising that the effect of capital expenditure on GDP is negative. However, this might be due to the fact that in Nigeria, a large chunk of the money earmarked for capital expenditure is not utilized for the stated purpose (Uzoma, 2007). Hence policies should be geared towards full implementation of capital project that are captured in the budget.

We have succeeded in estimating the long run effects of the components of public expenditures on economic growth in Nigeria using the "Bound Testing Approach" among others. So researchers in Nigeria and scholars from developing countries interested in the field of public finance should further expand this area by ascertaining whether or not these long run coefficients are significant using the bootstrap approach. Also, it might be imperative to test the presence or absence of the Musgrave theory of public expenditure and economic growth in Nigeria to determine the degrees of elasticity of public expenditure to changes in economic growth.

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