

## An Empirical Analysis of Fiscal Deficits and Economic Growth with Recent Evidence from Nigeria: Implications for Fiscal Policy

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### ABSTRACT

*The paper empirically examines the impact of fiscal deficits on economic growth from 2000 to 2015 - a period of 16 years of relatively stable democratic governance in Nigeria. The country has, within the period, recorded rising fiscal deficits which have implications for fiscal policy making. Using the least squares regression technique of econometrics, it was revealed that fiscal deficits have affected economic growth negatively in Nigeria. The findings also show that government revenue and government expenditures have impacted insignificantly on growth. Based on the findings, the paper recommends that extra-budgetary expenditures in the form of transfer payments and administrative expenses should be reduced by governments at all levels in the country. There is the need to drastically reduce imports especially of luxury and semi-luxury goods, impose local sourcing of raw materials and finished goods, and encourage the importation of machinery (equipment) whose raw materials can be sourced locally in order to develop local industries to generate more tax revenues. To curb all forms of corruption, stiff penalties should be introduced. This may include imprisonment, public disgrace (naming and shaming) and confiscation of looted properties, and retrieval and repatriation of stolen funds amongst other policy recommendations.*

**Keywords:** Fiscal Policy, Fiscal Deficits, Government Revenue, Public Expenditure, Economic growth

**JEL Classification Codes:** H3; H6; H62; C22

### INTRODUCTION

The generation of revenue to finance public expenditures and provide economic and social services is the precursor of fiscal policy through government intervention in economic activities. Other reasons for state

intervention in fiscal affairs include redistribution of incomes and correction of market imperfections. The success of fiscal policy depends on the structure of an economy, the administrative machinery, the fiscal discipline, as well as the capability

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and political will of the government. The goal of fiscal policy is the stimulation of economic growth and development that would translate into improved standard of living for the people. The expectation is that fiscal policy would reduce poverty through the stimulation of economic activities that provide public goods and ensure increase in output, employment, income, and the maintenance of a favourable balance of payments (Ariyo, 1997).

However, the finances (resources) at the disposal of government which are required to achieve these objectives are generally scarce. Since the general public expects government to perform creditably well, the state is compelled to borrow as a means of augmenting or financing its expenditure shortfalls. This is known as fiscal deficits – a situation where current expenditure exceeds current expected income. This has far reaching implication in the light of the widespread corruption and fiscal indiscipline that have impeded its effectiveness and resulted in the debt overhang crisis in Nigeria. Despite government policies at overcoming fiscal deficit, the deficit has persisted in Nigeria and its adverse effects hurt the economy. Excessive borrowing from Central Bank of Nigeria and external sources to finance sizeable portion of the deficits without the concomitant utilisation of the debts in productive sectors would simply contribute to liquidity problem and inflation, stifle national income and suffocate the growth of domestic output.

These issues are the motivation for this study.

The objective of the paper therefore, is to examine empirically the impact of fiscal deficits on economic growth in Nigeria from 2000 to 2015 (a period of relative democratic stability) when huge fiscal deficits and debts were recorded. Could these deficits impact positively on economic growth in Nigeria? Have government revenues and public sector expenditures been significant drivers of growth and development in the country? The paper has attempted to provide answers to these questions which serve as a contribution to knowledge in the area of fiscal policy making. Data were sourced from the Central Bank of Nigeria (CBN) Statistical Bulletins for various years, Statement of Accounts and Statistical Abstract, National Bureau of Statistics (NBS) Statistical Reports, the World Bank Report and the African Development Bank (AfDB) Indicators. The entire paper is organised into seven sections. The foregoing is the introductory Section I. Section II contains the literature review which centres on the conceptual clarifications, theoretical underpinning and empirical review. Section III gives an overview of the challenges of internal revenue generation in Nigeria, taking into account the deficit factor, as well as the principle and significance of fiscal policy. Section IV describes the model specifications including the unit root test models, the structural model for estimation,

method(s) of data analysis, and the pre-test results. While Section V deals with the impact analysis and discussion of results, Section VI concludes the work and Section VII offers the policy implications and recommendations.

## **LITERATURE AND EMPIRICAL REVIEW**

### **Conceptual Clarifications**

Fiscal policy refers to government revenue generating and spending plans aimed at influencing macroeconomic conditions, change economic performance by adjusting tax rates and government expenditure or using taxes, borrowing and government expenditure to ensure the smooth running of the macroeconomy to enhance growth and development (Gushibet, Dalis & Anga, 2015). Fiscal policy employs these tools to prevent high unemployment and soaring inflation, as well as provide infrastructure support base for economic transformation. Thus, fiscal policy deals with government's decisions on taxing, spending programmes and debt. Public expenditure (recurrent and capital) refers to spendings made by the government of a country on collective needs such as pension, healthcare services, salaries and wages, provision of infrastructure such as roads, schools, hospitals, and all other expenditures that might contribute to development.

Fiscal deficits are the surplus of government expenditure over revenue (Gadong, 2010). High expenditures, heavy

debt service burden, and low government revenues would lead to recurring budget deficits (Asfaha, 2007; Neaime, 2008). Corruption increases and inflates the level of public expenditures (Mauro, 1997; Aliyu & Elijah, 2008; Gadong, 2010). Debt financing of the budget deficit involves borrowing by the government from internal or external sources in order to meet budgetary obligations (Albu & Pelinescu, 2000). Economic growth means increase in per capita gross domestic product (GDP) or other measures of aggregate income annually (Solow, 1956), as Elhanah (2004) corroborates that economic growth is an annual increase in a nation's total output of goods and services which can be achieved through macroeconomic stability, export growth and market penetration.

### **Theoretical Underpinning**

The paper tracks its theoretical basis in the Keynesian theory of Macroeconomics, which argues that an increase in government spending would enhance the growth of domestic output. Proponents or protagonists of this theory such as Okpanachi and Abimiku (2007), Chakraborty and Chakraborty (2006), would argue that deficit spending by the government stimulates the economy in the short-run by making households feel wealthier, thereby raising total private and public consumption expenditure. Budget deficits stimulate economic activity such as aggregate demand, savings and capital formation. The Keynesians believe that

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government spending would crowd out private investment spending through increased cost of credit (cost of borrowing) known as interest rate. However, they recommend that fiscal deficit should be implemented only in periods of depression when interest rates are likely to be unresponsive in order to avoid the dampening effect of rising interest rates on private investment expenditure. The Keynesian theory further posits that fiscal deficits could have a negative impact on the external sector, reflected through trade deficit, but only if the domestic economy is unable to absorb the additional liquidity through an expansion in output. It implies that if the supply of output does not expand in response to the deficit, the surplus expenditure would only increase the level of imports thereby resulting in trade deficits and subsequent fall in exchange rate of the domestic currency (naira). This is called the 'twin-deficits' hypothesis (Monacelli & Perotti 2006; Neaime 2008; Okpanachi & Abimiku, 2007; as cited in Gadong, 2010).

A second theoretical view is the Ricardian theory which argues that fiscal deficits notwithstanding how they are financed, would have no effect on private consumption and interest rates based on the assumptions that individuals internalise both the government's budget constraint and the utility of their offspring, the efficiency of the capital market in which the interest rate is the same for borrowers and lenders, and without distorting taxes

(Frish, 2003). While the Keynesian model supports the expansion of government expenditure (expansionary fiscal policy) in accelerating economic growth, endogenous growth model such as the Ricardian equivalence theory does not assign any importance to the role of government in the growth process. Although, both theories have their place and relevance, the Keynesian theory forms the foundation of analysis upon which this paper is based since government intervention and fiscal deficits are hardly avoidable in most if not all countries of the globe.

### Empirical Review

Empirical findings on the relationship between fiscal deficits and economic growth have been uneven. Guess and Koford (1984) use the Granger causality test to find the causal relationship between fiscal deficits and inflation, gross national product, and private investment using annual data for seventeen OECD countries for the period 1949 to 1981. They conclude that fiscal deficits did not cause changes in these variables. Kormendi and Meguire (1985) conduct a cross-sectional study across 47 countries investigating the effects of monetary variance, risk, government spending, inflation and trade openness on growth. Specifically, with respect to government deficit spending, they found that the mean growth rate of the ratio of government deficit spending to output has a positive effect on GDP growth. Grier and Tullock (1989) repeated the work

of Kormendi and Meguire (1985) on a larger sample 113 countries from which they constructed a pooled cross-section/time series data set. They tested for regularities in the data rather than robustness. They found that both the inflation rate and government deficit spending as a proportion of GDP were negatively related to growth. On the larger data set they found, contrary to Kormendi and Meguire, that the mean growth rate of the ratio of government deficit spending to output had a negative and significant impact on GDP growth. The fact that a complex and non-linear relationship between fiscal deficits and growth exists has been empirically verified in endogenous growth models. For instance, Barro (1990) points out that different size of fiscal deficits have two effects on growth rate. Specifically, an increase in taxes reduces growth rate through disincentive effects, but an increase in government spending raises marginal productivity of capital, which raises growth rate. He argued that the second force dominates when the government is small, and the first force dominates when the government is large. Easterly and Rebelo (1992; 1993) report a consistent negative relationship between growth and fiscal deficits.

Fischer (1993) supports Easterly *et al* (1992) findings when they note that large fiscal deficits and growth are negatively related. Among other variables such as inflation and distorted foreign exchange markets, Fischer emphasises the

importance of a stable and sustainable fiscal policy to achieve a stable macroeconomic framework. Nelson and Singh (1994) use data on a cross section of 70 developing countries during two time periods, 1970-1979 and 1980-1989, to investigate the effect of budget deficits on GDP growth rates. The GDP growth rate was used as the dependent variable. Among the explanatory variables in the study were government budget deficits, government revenue, defence spending, domestic private and public investment, population growth rate, per capita income, education, and the inflation rate. Their results suggest that defence spending and private investment have had a significant positive impact on economic growth both in the 1970s and 1980s for the countries analysed. Government revenue had a negative impact on growth. Public investment had a positive impact on economic growth in the 1980s but had no impact in the 1970s. The study concluded that the budget deficit had no significant effect on the economic growth of these nations in the 1970s and 1980s.

Al-Khedair (1996) studies the relationship between budget deficit and economic growth in the 7 major industrial countries (G-7). The data utilised covered the period 1964 to 1993. The variable included in the model were, budget deficit, the money supply, nominal exchange rate, and foreign direct investment. He found that the budget deficit has a significant positive impact on economic growth in

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France, Germany, and Italy. Overall results revealed that the budget deficit seems to positively and significantly affect economic growth in all the 7 major industrial countries. Kelly (1997) investigates the effects of public expenditure on economic growth among 73 nations (including developing and developed economies) over the period (1970-1989). This study used Ordinary Least Squares (OLS) to estimate economic growth as a function of various public expenditures including social expenditure, educational expenditure and other expenditures, and certain variables, which have been prominent in the empirical growth literature such as private investment, and the trade openness variable. This study found that public investment, and particularly housing expenditure, registered a uniformly positive and frequently significant relationship with growth. Although the results did not support a robust relationship between public investment and growth, it nevertheless conflicted with the crowding out thesis that dominated the theoretical literature. Social security expenditures are positively related to growth in each specification of the model and significantly so in several versions. The results are important because they suggest that nations may pursue social welfare and growth simultaneously. The results indicate that health expenditures are negatively and sometimes significantly

related to growth, while those for education vary in sign and significance.

Ghali and Al-shamsi (1997) utilise co-integration and Granger causality techniques to investigate the effects of fiscal policy on economic growth for the small oil producing economy of the United Arab Emirates over the period 1973-1995. They decomposed public spending into consumption and investment expenditures and showed how multivariate co-integration techniques could be used to test for long-run relationships and the inter-temporal causal effects between government spending and economic growth. The study provides evidence that government investment had a positive effect on economic growth, whereas the effect of government consumption was insignificant. Motivated by the persistent fiscal deficits in Zimbabwe, Jenkins (1997) examines public sector deficits and macroeconomic stability in Zimbabwe, by identifying an intense debt problem, drought and terms of trade shocks coupled with the government's unwillingness to engage in fiscal adjustment as fundamental macroeconomic setbacks in Zimbabwe. Findings of the study show that uncertainty caused by the growing public-sector debt reduced private investment and further resulted in a decline in growth. The macroeconomic model explored by the researcher showed that the variable with greatest influence on overall growth was agricultural output. However, the budget deficit had an unambiguously negative

impact on exports. It also reduced private welfare, worsened income distribution and reduced employment. Jenkins concludes that the growth of government resulted in a drain on the economy, rather than facilitate economic growth and development.

Phillips (1997) critically analyses Nigerian fiscal policy between 1960 and 1997 with a view to identifying workable ways for the effective implementation of Vision 2010. Phillips observes that fiscal deficits have been an abiding feature in Nigeria for decades. He notes that with the exception of the period 1971 to 1974 and 1979, there had been an overall deficit in the federal Government budgets each year since 1960. The chronic fiscal deficits and their financing largely by borrowing he asserts, resulted in excessive money supply, worsened inflationary pressures, and macroeconomic instability, resulting in negative impact on external balance, investment, employment and growth. He contended however that fiscal policy could be an effective tool for moving Nigeria towards the desired state in 2010 only if it is substantially cured of the chronic budget deficit syndrome it has suffered for decades. Anyanwu (1998) deviates from past studies that focused more on the effects of fiscal deficits to concentrate on the impact of deficit financing by applying regression analysis to pooled cross-section and time series data for Nigeria, Ghana and the Gambia. The results did not reveal a significant positive association between overall fiscal deficits (and its foreign

financing) and domestic nominal deposit interest rates. However, the author reported a significant positive relation between domestic financing of the fiscal deficits and domestic nominal deposit rates. He concluded that the concern of economists in the sub-region should shift from the deficits itself to the manner of financing the deficit.

Bahmani (1999) investigates the long-run relationship between United States (US) federal real fiscal deficits and real fixed investment using quarterly data over the 1947-1992. The methodology in this study was based on the Johansen-Juselius cointegration technique. Their empirical results indicate that real fiscal deficits have crowded in real investment, supporting the Keynesians who argue for the expansionary effects of fiscal deficits, by raising the level of domestic economic activity, 'crowd-in' private investment. In recent times as the debate on fiscal deficits and growth progressed, more elegant models and empirical strategies have been explored in the analysis of the subject. Prominent among these include, Adams and Bevan (2002), Korsu (2009) and Keho (2010). Their findings are divergent. Adams and Bevan (2002) assessed the relation between fiscal deficits and growth in a panel of forty 45 developing countries. An overlapping generation's model in the tradition of Diamond (1965) that incorporated high-powered money in addition to debt and taxes was specified. The estimation strategy involved a

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standard fixed effect panel data estimation and bi-variate linear regression of growth on the fiscal deficits using pooled data. An important contribution of the empirical analysis was the existence of a statistically significant nonlinearity in the impact of budget deficit on growth.

A number of studies have investigated the relationship between economic growth and fiscal deficits in different countries. Studies in this area include the works of Adam and Bevan (2004), Fiani (1991), Brauninger (2002), De Castro (2004), and Perotti (2004). These studies argue in favour of the existence of a positive relationship between economic growth and fiscal deficits. On the other hand, the findings of Gemmel (2001), and M'Amanja and Morrissey (2006) contradicted most of the earlier evidence on the impact of fiscal deficits on economic growth. Their results reveal a significantly negative effect of fiscal deficit on economic growth. However, Nigeria experienced uninterrupted democracy for the past 16 years (May 29, 1999 to date) with rising fiscal deficits but none of the available literatures reviewed above has analysed the impact of fiscal deficits on economic growth in a democratic Nigeria from 2000 to 2015. This leaves a trail on knowledge gap in the literature which this study attempts to fill through an empirical econometric investigation of the relationship between economic growth on one hand and fiscal deficits, government

revenue and public expenditure on the other in Nigeria.

### **CHALLENGES OF INTERNAL REVENUE GENERATION IN NIGERIA: THE FISCAL DEFICIT FACTOR**

Nigeria's fiscal system at federal and state levels has been characterised by a lopsided dependence on oil revenues. Given the volatility of oil export revenue arising from global oil price shocks and crude oil being an exhaustible resource, this overdependence on oil income has resulted in high fiscal deficits. This, if not checked and tackled, could deter Nigeria's growth and development. Clearly, there is a looming danger if states of the federation do not begin to refrain from the precarious life support of an oil economy which came with its indolent (lazy) entitlement culture that promotes consumption rather than production that broadens tax base. Most states in Nigeria have had to take short-term bank loans and bail-out credits (especially by heavily indebted states) to settle wages whenever there were delays or shortfalls in the monthly disbursements by the Federation Accounts Allocation Committee (FAAC). State governments became weak in generating revenues internally because of the free oil money that flows every month from the Federation Accounts in Abuja. As a result, the states have, over the years, failed to look inward to exploit and develop their productive base and refused to utilise their capacities in areas of their separate comparative

advantage capable of making them sustainable and self-reliant economies that will drive innovation and industrialisation for better internal revenue diversification.

Nigeria has huge but untapped potentials in agriculture, mining, manufacturing, power generation, water resources, land and real estate. A focus on these sectors would put the country on the path of sustainable growth and development. In the mining sector, for example, Plateau, Kogi, Nasarawa and other North Central states have enormous reserves of tin, columbite, coal, barite, and more than 25 mineral resources to cater for the needs of the entire country for the next 400 years (Gushibet, Ali & Anga, 2015). There are endless list of mineral resources across the country which are found in different locations, local government areas (LGAs), states and geographical regions that if harnessed and developed, the resources are capable of developing and empowering the people and the states of their endowments. However, deficiencies in the tax administration and tax collection system occasioned by complex, weak but unenforceable tax legislations, widespread corruption amongst tax authorities and collectors, and apathy on the part of those outside the tax net are some of the root causes of low productivity of the tax system in Nigeria. These have adversely affected internal revenue generation negatively. In view of the foregoing, restructuring the tax system and enforcing tax collection machinery towards higher revenue

generation at the federal and state levels would not only improve the revenue elasticity and buoyancy of the tax system to reduce fiscal deficits and borrowing, but would also facilitate growth and development in the country.

It is a sad phenomenon that each of the 36 states of Nigeria pay yearly salaries in two-digit billions but almost all of the states make internally generated revenue (IGR) in single-digit billion annually. According to a report by the Daily Trust (2013), it is only Lagos state that generated N219 billion in 2012 which is three times its annual wage bill of N76.5 billion. Rivers state which generated the second highest IGR of N66.2 billion, has an annual wage bill of N96 billion (an amount not enough to pay salaries of civil servants). Kaduna state had in the same period earned N11.5 billion IGR which is less than half its N27.4 billion annual wage bill. Again, Plateau state generated an IGR of N7 billion which is far less than its annual salaries of N20.7 billion in 2012. The situation was and is still virtually similar in other states of the federation. If states cannot afford to pay salaries of civil servants on their own internal strength, it portends serious danger for present and future generations. This paper is thus a wake-up call on both the federal and the state governments to rise up to the challenge before it is too late.

It should be noted that almost all the states in Nigeria have not diversified their revenue sources; a major reason for huge fiscal deficits and the accompanying debt

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burden. Worst still, the states cannot afford salaries payment without federal funds, not to talk of executing public projects on their own revenue strength. This implies that the states are grossly unviable. The current structure and the practices it has encouraged have been a major impediment to the economic and political development of the country. In light of the economic and governance challenges therefore, it seems plausible to suggest that the states of the federation be collapsed into six regions in order to reflect the regional system which was once viable in the 1960s. It means that the six existing geo-political regions be made to legally become the federating units of Nigeria. This might be necessary because Nigeria once operated a federal system at independence that allowed the regions to retain their autonomy, raise and retain revenues, promote development, and conduct their affairs as they deemed fit, while engaging in healthy competition with others.

### Principle and Significance of Fiscal Policy

If the economy faces a recession, the government is supposed to cut taxes and increase spending. When it does this, people have more money and can buy more goods and services. This will lead to more jobs for people who make those goods and services. By contrast, if the government fears inflation, it is supposed to raise taxes and cut spending. This decreases the amount of disposable income that people have and so they spend less and prices do

not rise. Fiscal policy deals with the decisions of government on taxing and spending programmes. Most economists believe that a blend of fiscal policy with monetary policy is the most important means of regulating the rate of inflation in an economy and preventing or controlling economic depression. A government can use fiscal policy to reduce the demand for goods and services. It can prevent depressions by encouraging spending, while rate of inflation can be controlled by discouraging spending. Tax rates, which are determined by fiscal policy, influence the level of spending by controlling the amount of money people have for spending. It implies that government can decrease or increase its own spending to manage inflation and depression, manipulate aggregate demand and facilitate the growth of output, income and employment in the economy.

## METHODOLOGY

### Unit Root Test Modelling

For a robust pre-analysis test, the paper adopts both the Augmented Dickey-Fuller (ADF) and the Philips-Perron unit root tests. These tests were necessary to avoid spurious regression. The Dickey-Fuller (DF) class of unit root test is based on the regression equation:

$$\Delta Y_t = \beta Y_{t-1} + U_t; U_t \sim N(0, \mu^2), Y_0 = 0 \quad \dots (1)$$

$$Y_t = (\beta - 1) Y_{t-1} + U_t \quad \dots (2)$$

Note that  $\beta = \beta - 1$  and  $\Delta Y_t = Y_t - Y_{t-1}$

Where:  $\Delta Y$  is the first difference in

the dependent variable,  $U_t$  is error term,  $N(0, \sigma^2)$  are the notations for the basic assumptions concerning the error term ( $U_t$ ) denoting the assumptions of randomness, normally distributed, zero mean, and constant variance of the stochastic term. The null hypothesis ( $H_0: \beta = 0$ ) would imply non-stationarity of the series with the alternative hypothesis ( $H_1: \beta \neq 0$ ). The explicit form of the DF model is:

$$\Delta \text{LogGDP}_t = \alpha + (\beta - 1) \text{LogGDP}_{t-1} + e_t \dots (3)$$

$$\Delta \text{LogFiscDef}_t = \alpha + (\beta - 1) \text{LogFiscDef}_{t-1} + e_t \dots (4)$$

This involves testing the negativity of  $\beta$  in the OLS regression equations (3) and (4). Rejection of null hypothesis would imply that GDP and Fiscal Deficits (FiscDef<sub>t</sub>) are integrated of order zero which means that the series are stationary with long-run equilibrium relationship between GDP and fiscal deficits. If this is not satisfied, then one can proceed with ADF which is of the form:

$$\Delta Y_t = \beta Y_{t-1} + \sum \alpha Y_{t-i} + e_t \dots (5)$$

The lag  $K$  (other explanatory variable is set in the equation (6) so as to ensure that any autocorrelation in  $\Delta Y_t$  is absorbed and that a reasonable degree of freedom is preserved as the error term ( $e_t$ ) is white-noised. The cointegrating Durbin-Watson-Regression test can be carried out by using the Durbin-Watson value from the cointegrating equation:

$$\Delta \text{LogGDP}_t = \beta_0 + \beta_1 \text{LogFiscDef}_{t-1} + \beta_2 \Delta \text{LogGDP}_{t-1} + \beta_3 \Delta \text{LogK}_{t-1} + e_t \dots (6)$$

Where  $K$  is other independent

variables,  $t-1$  = number of time lagged. It was stated by Engle and Granger (1987) that the error correction model (ECM) will be required to correct the disequilibrium error where the need arise, and is of the form:

$$\Delta \text{GDP}_t = \alpha_0 + \alpha_1 \Delta \text{FiscDef}_t + \alpha_2 e_{t-1} + \mu_t \dots (7)$$

Where  $\Delta$  denotes the first difference,  $e_{t-1}$  is the one period lagged value of the residual from the regression equation (1). The Philips-Perron unit root test robustly set off the ADF especially if the ADF fails to difference the variables within the first and second differencing.

### Structural Estimation Model

The structural model for estimation with the accompanying ordinary least square (OLS) regression technique as the analytical tool was used in this paper, and the equation is expressed as follows:

$$\text{GDP}_t = \alpha_0 + \alpha_1 \text{FiscDef}_t + \alpha_2 \text{GovRev}_t + \alpha_3 \text{GovExp}_t + \alpha_4 \text{Demo} + u_t \dots (8)$$

where;  $\text{GDP}_t$  = gross domestic product (proxy for economic growth),  $\text{FiscDef}_t$  = Fiscal deficits,  $\text{GovRev}_t$  = total government revenue,  $\text{GovExp}_t$  = Total government expenditure,  $\alpha_0$  = Intercept constant,  $\alpha_1$ ,  $\alpha_2$ , and  $\alpha_3$  are the estimating coefficients of the explanatory variables,  $\text{Demo}$  = democracy as dummy variable,  $t$  = time period of the time series data utilised, and  $U_t$  is the stochastic variable or error term.

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### Research Hypothesis

Gauged by p-value, the following hypotheses will be tested:

$H_0$ : Fiscal deficit has no significant impact on economic growth in Nigeria

$H_1$ : Fiscal deficit has a significant impact on economic growth in Nigeria

### RESULTS AND DISCUSSION

#### Unit Root and Co-integration Tests

The time series data for pre-tests and the main analysis was given in table 1 (see appendix A). Having carried out the

Augmented Dickey Fuller test, the variables could not be differenced even at second differencing; and the application of the Philips-Perron test (PP test) solved the problem. The PP test is a robust technique that includes the constant and a linear time trend to dictate the presence of unit roots or stationary series in data sets (Philips and Perron, 1988). The Philips-Perron test overcomes the inability of ADF to correct the problem of mild serial correlation. The following result was obtained:

**Table 2: Philips-Perron Unit Root Result**

Variables	At Level	First Difference	Critical Value: 5%
GDP <sub>t</sub>	0.400 I(0)	-3.44 I(1)	-1.97
FiscDef <sub>t</sub>	0.174 I(0)	-3.54 I(1)	-1.97
GovRev <sub>t</sub>	1.075 I(0)	-3.93 I(1)	-1.97
GovExp <sub>t</sub>	-2.432 I(0)	-12.91 I(1)	-1.97

**Source:** *Econometric views version 9 computations of data in table 1*

From Table 2, government expenditure was stationary at level while GDP, fiscal deficits and government revenue became stationary at first difference. Although, the result shows that the variables are stationary at first

difference, cointegration test was however carried out to determine if the variables have long-run properties or relationship. To achieve this, the Johansen cointegration technique was adopted in which the result is shown in Table 3.

**Table 3: Johansen Cointegration Result**

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.999573	170.7859	47.85613	0.0000
At most 1 *	0.969199	69.91859	29.79707	0.0000
At most 2 *	0.791697	24.67583	15.49471	0.0016
At most 3 *	0.280631	4.281951	3.841466	0.0385

Trace test indicates 4 cointegrating equation(s) at the 0.05 level

\* denotes rejection of the hypothesis at the 0.05 level

\*\*MacKinnon-Haug-Michelis (1999) p-values

CE(s) = number of cointegrating equation(s)

**Source:** *E-views version 9 computation of data in Table 1*

Comparing the trace statistic and the critical values at 5% (0.05) level of significance in Table 3 shows that the trace statistic values in rows 1 to 4 are (as expected) greater than the critical values in absolute terms. This concludes that the variables used in the

model are cointegrating. In order to obtain the speed of adjustment to the short-run effect from the equilibrium position, the error correction mechanism (ECM) was run and the result is indicated in Table 4.

**Table 4: Error Correction Model (Mechanism)**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(FiscDef)	-121.6819	80.47800	-1.511990	0.1648
D(GovRev)	1544.718	19496.30	0.079231	0.9386
D(GovExp)	441.5867	1220.217	0.361892	0.7258
ECM(-1)	-1.064334	0.407665	-2.610809	0.0282
C	11639775	33590213	0.346523	0.7369

Dependent Variable: D(GDP\_AT\_CURRENT\_MARKET\_PR), Included observations: 14 after adjustments

**Source:** *Econometric views version 9 computations of data in Table 1*

From Table 4, the error correction mechanism (ECM) is -1.064, which means that the speed of adjustment from short-run to long-run equilibrium position is 106.4%.

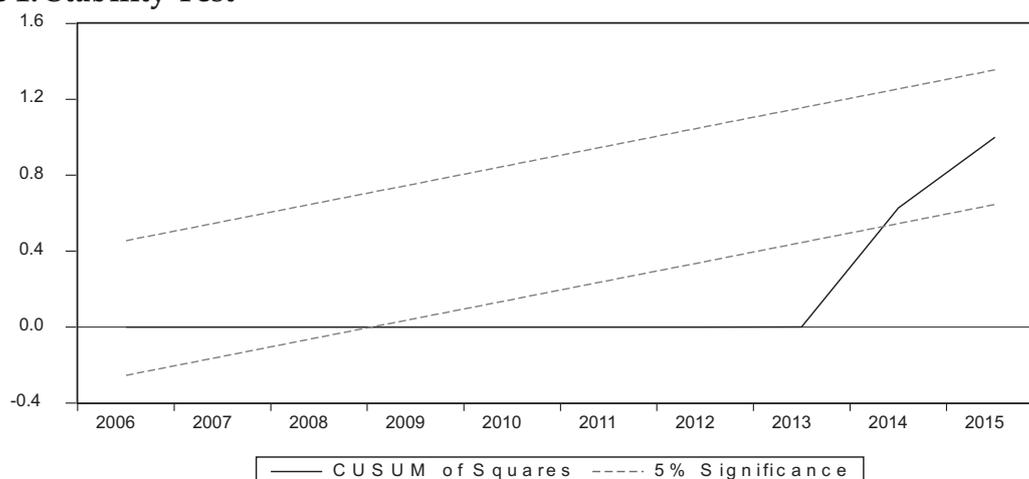
This denotes a very high speed of adjustment as the ECM is negative and significant as expected for upward adjustment of the GDP in the country.

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The cumulative sum of squares (CUSUM) as indicated in Figure 1 shows that there is instability in the overall fiscal deficits, government revenue and public

expenditure in relation growth of domestic output over the period especially between 2008 and 2015.

**Figure 1: Stability Test**



**Source:** *Econometric views version 9 computations of data in table 1*

The unstable trend could be attributable to dwindling oil revenue as a result of shocks in crude oil prices in the world market occasioned by widespread corruption in the country. The fact that the nation's budget (revenue and expenditure)

is based and bench-marked on crude oil prices, the instability became inevitable in the face of falling oil revenue, rising budget deficits and weak non-oil revenue earnings in the country.

### Analysis and Discussion of Results

From the regression result (see appendix E), the estimate is presented thus:

$$D(\text{GDP}_t) = 14017266 - 239.96D(\text{FiscDef}_t) + 5137.99D(\text{GovRev}_t) + 84.66D(\text{GovExpt}_t)$$

Std Err	(39814889)	(97.323)	(9904.56)	(222.702)
t-Stat	[0.352061]	[-2.465605]	[0.518750]	[0.380146]
P-value	0.7321	0.0334	0.6152	0.7118

$R^2 = 0.45$ , Adjusted  $R^2 = 0.29$ , F-statistic = 2.756, Durbin Watson statistic = 1.092

The result indicates that fiscal deficits have affected economic growth negatively in Nigeria, where a unit increase in fiscal deficits would translate into a

significant decrease in GDP by 239.96 units when other variables are held constant. The result, tested by p-value (0.03), shows that fiscal deficit was statistically significant on

GDP growth (though in a negative direction) at 5% level of significance since the p-value was less than 0.05. This implies a negative contribution of fiscal deficits on economic growth in Nigeria during the period investigated.

However, the coefficients of government revenue and public expenditures were positively signed but statistically insignificant in terms of impact on growth giving the high p-values of 0.62 and 0.71 respectively. It implies that government revenue has impacted positively (though insignificantly) on GDP growth for the period under review in which increase in government revenue had resulted in an insignificant increase in GDP by 5137.99 units as gauged by the p-value of 0.62 (greater than 0.05). Similarly, government expenditure (public expenditure) shows an insignificant positive impact on output growth (GDP) during the period under consideration, where increase in government spendings has led to an increase in GDP by 84.66 units when tested by p-value of 0.71 (more than 0.05). It implies that since the impact of fiscal policy was generally insignificant, the trivial improvement in GDP could not trickle down to growth that would enhance poverty reduction in the country. Overall, the estimates of the structural model do not support the deficit to growth transmission mechanism in Nigeria. Therefore, the null hypothesis stands accepted that fiscal deficit has no significant impact on economic growth in Nigeria. This result

agrees with the findings by Grier and Gullock (1989), Fischer (1993), Easterly and Rebelo (1992; 1993), Jenkins (1997), Gemmel (2001), and M'Amanja and Morrissey (2006) as contained in the empirical literature.

The R-squared (0.45) is an indication that about 45% of a change in GDP is caused by changes in the overall fiscal deficits, government revenue and public expenditure in Nigeria. The F-statistic which measures the fitness of the model indicates that the model is fit for analysis. The HAC procedure was employed during the regression which corrected the problem of autocorrelation and heteroscedasticity in the structural model. All the diagnostic test statistics were quite satisfactory and the coefficient values which were well defined in the regression confirm the absence of redundant regressors. ECM was carried out which established the long-run equilibrium relationship between GDP and fiscal deficits (FCD) in Nigeria. The disequilibrium error correction term (ECM) was statistically significant and negative (as expected) which confirms the existence of a long-run relationship between the variables of study. Since the ECM induces about 106.4% adjustment per period, it shows that the overall statistical fit is good and this calls for fiscal discipline so that the deficit can accelerate economic growth in the country.

The structural model employed in this paper captures the impact of fiscal policy on economic growth in Nigeria. Gross domestic product and fiscal deficits

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were cointegrated of order (1). The existence of cointegration between the series suggests that there is a long-run equilibrium relationship between fiscal deficits and economic growth. However, the negative impact of fiscal deficits on growth could mean that the expansion in social and economic activities in Nigeria has exerted a negative pressure on the growth of fiscal deficits. These social and economic activities include investment, infrastructure, education, financial services, security, and administrative and transfer expenses of the public sector. But funds meant for the implementation of these activities usually end in private pockets – a situation of fiscal irresponsibility, unaccountability, mismanagement, corruption and fiscal indiscipline.

### **CONCLUSION AND RECOMMENDATIONS**

Fiscal deficits have become a recurring decimal in Nigeria's fiscal policy environment. Instead of increasing Nigeria's output growth, fiscal deficits have continued to undermine economic growth and development in the country. This is attributable to poor governance, investment in weak and unproductive sectors, lack of accountability and widespread corruption, weak internal revenue generating capacity, debt burden arising from increasing interest payments and persistent debt services, expansion in extra-budgetary expenses, and an obvious

lack of commitment to nation building. In addition, the nation's revenue which warehouses its origin in oil has, in recent times, dwindled and failed to meet the expenditure requirements of governments across the country. The sticky nature of the public spendings has outstripped revenues leading to fiscal deficits which persist over the years. These fiscal deficits if not controlled could result in grave consequences such as macroeconomic instability, debt overhang crisis, anarchy and the possibility of subsequent collapse of Nigeria as a country. The continuous autonomous spending by government encourages fiscal deficits spendings largely on transfer services such as external debt service, hosting expenses of international conferences such as ECOWAS summit, OAU summit, Commonwealth Heads of State meeting, funding of transition programmes, political reform conferences, ECOMOG operations, corruption at all levels, stolen money stored abroad by the Nigerian elites, etc. These frivolous spendings do not add to production and innovation.

The policy implication is that the failure of government and policymakers to examine the basic conditions and realities underlying fiscal deficits has rendered fiscal policy ineffective in addressing some of the current economic problems in Nigeria. Another policy implication of the findings is that keeping growth in unproductive sectors (transfer services) within tolerable limits could significantly

reduce pressure on the growth of fiscal deficits. Therefore, efforts aimed at stimulating investment to achieve fiscal balance and sound economic base have, from a policy point of view, become crucial. The paper strongly recommends that fiscal deficits should be controlled through greater control of unproductive expenditure via stiff imposition of cost-effective and benefit-cost ratio analysis as prudently as applicable. Extra-budgetary payments in the form of transfer payments and administrative expenses should be reduced by governments at all levels in Nigeria. There is need to drastically reduce imports especially of luxury and semi-luxury goods, impose local sourcing of raw materials and finished goods, and encourage the importation of machinery (equipment) whose raw materials can be sourced locally.

To reduce fiscal deficits, governments at all levels should step up their internal revenue generating capacity, reduce external borrowing, seek for debt reduction, repudiation, relief and outright cancellation. This should be followed by efforts of governments to develop their respective domains in terms of productive public investments and policies that stimulate the private sector. Since frequent deficit financing from both internal and external sources have stifled the economy, a long-run policy to boost revenue should not be based on expenditure outlays, but be tailored towards production that add value to the economy. To curb all forms of

corruption, stiff penalties should be introduced. This may include imprisonment, public disgrace (naming and shaming), confiscation of looted properties, and retrieval and repatriation of stolen funds.

The paper further recommends that solid minerals and other natural resource endowments based on geography, that are peculiar to each state of the federation should be exploited, harnessed and developed. The private sector should be encouraged to speed up industrialisation and boost manufacturing output or productivity across the states. Agricultural and industrial development policies should be the thrust of policy by various state governments. These would create employment and income that would further facilitate tax revenue earnings and this would reduce the appetite for budget deficit financing. State governments should focus on developing the non-oil sector in order to raise their revenue generating capacity to finance their expenditure. To achieve this, measures to be taken may include improved tax administration to take in more tax revenues, as well as policies that will spur investment in research and development (R&D) at the enterprise level for innovation, technical production and technology discoveries in the country.

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**APPENDIX A**

**Table 1: Nigeria's Fiscal Data on GDP, Fiscal Deficits,  
Debts & Inflation Rate (2000-2015)**

YEAR	GDP AT CURRENT MARKET PRICES (₦' MILLION)	OVERALL FISCAL DEFICITS (₦' MILLION)	TOTAL GOVT. REVENUE (₦' MILLION)	TOTAL GOVT. EXPENDITURE (₦' MILLION)
2000	4582127.3	n.a	1906.16	2856.05
2001	4725086	-23408.2	2231.6	4967
2002	6912381.3	-54719.5	1731.84	3910.6
2003	8487031.6	-66162.6	2575.1	3401.09
2004	11411066.9	-11113.3	3920.5	4623.19
2005	14572239.1	-58948.4	5547.5	6515.9
2006	18564594.7	-43026.5	5965.1	6913.59
2007	20657317.7	-50732.9	5727.5	77510.07
2008	24296329.3	-47402.6	7866.59	11725.45
2009	24712669.9	-186239.8	4844.59	13655.97
2010	29108024.5	-258477.2	7303.67	11948.21
2011	37754394	-310865.5	11116.85	12499.49
2012	41179874.1	-1173626.4	10654.75	12073.7
2013	49205783.8	-1500789.4	9759.79	12797.27
2014	678965114.3	-2759578.6	10068.85	12211.62
2015	699421838.7	-1932149.3	9940.02	14766.17

**Source:** CBN Statistical Bulletin (Dec, 2009), CBN (various issues), NBS (various years), DMO (various years) & World Bank Reports/African Development Indicators (various issues) n.a = not available

**APPENDIX B**

**Unit Root Test**

Null Hypothesis: GDP\_AT\_CURRENT\_MARKET\_PR has a unit root

Exogenous: None

Bandwidth: 0 (Newey-West automatic) using Bartlett kernel

	Adj. t-Stat	Prob.*
Phillips-Perron test statistic	0.400336	0.7863
Test critical values:		
1% level	-2.728252	
5% level	-1.966270	
10% level	-1.605026	

\*MacKinnon (1996) one-sided p-values.

Warning: Probabilities and critical values calculated for 20 observations  
and may not be accurate for a sample size of 15

Null Hypothesis: D(GDP\_AT\_CURRENT\_MARKET\_PR) has a unit root

Exogenous: None

Bandwidth: 0 (Newey-West automatic) using Bartlett kernel

	Adj. t-Stat	Prob.*
Phillips-Perron test statistic	-3.443020	0.0022
Test critical values:		
1% level	-2.740613	
5% level	-1.968430	
10% level	-1.604392	

\*MacKinnon (1996) one-sided p-values.

Warning: Probabilities and critical values calculated for 20 observations  
and may not be accurate for a sample size of 14

Null Hypothesis: OVERALL\_FISCAL\_DEFICITS has a unit root

Exogenous: None

Bandwidth: 2 (Newey-West automatic) using Bartlett kernel

	Adj. t-Stat	Prob.*
Phillips-Perron test statistic	0.174788	0.7217
Test critical values:		
1% level	-2.740613	
5% level	-1.968430	
10% level	-1.604392	

\*MacKinnon (1996) one-sided p-values.

Warning: Probabilities and critical values calculated for 20 observations  
and may not be accurate for a sample size of 14

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Null Hypothesis: D(OVERALL\_FISCAL\_DEFICITS) has a unit root

Exogenous: None

Bandwidth: 2 (Newey-West automatic) using Bartlett kernel

	Adj. t-Stat	Prob.*
Phillips-Perron test statistic	-3.538267	0.0019
Test critical values:		
1% level	-2.754993	
5% level	-1.970978	
10% level	-1.603693	

\*MacKinnon (1996) one-sided p-values.

Warning: Probabilities and critical values calculated for 20 observations  
and may not be accurate for a sample size of 13

Null Hypothesis: GOVERNMENT\_REVENUE has a unit root

Exogenous: None

Bandwidth: 13 (Newey-West automatic) using Bartlett kernel

	Adj. t-Stat	Prob.*
Phillips-Perron test statistic	1.075572	0.9176
Test critical values:		
1% level	-2.728252	
5% level	-1.966270	
10% level	-1.605026	

\*MacKinnon (1996) one-sided p-values.

Warning: Probabilities and critical values calculated for 20 observations  
and may not be accurate for a sample size of 15

Null Hypothesis: D(GOVERNMENT\_REVENUE) has a unit root

Exogenous: None

Bandwidth: 3 (Newey-West automatic) using Bartlett kernel

	Adj. t-Stat	Prob.*
Phillips-Perron test statistic	-3.934906	0.0008
Test critical values:		
1% level	-2.740613	
5% level	-1.968430	
10% level	-1.604392	

\*MacKinnon (1996) one-sided p-values.

Warning: Probabilities and critical values calculated for 20 observations  
and may not be accurate for a sample size of 14

Null Hypothesis: TOTAL\_EXPENDITURE has a unit root  
Exogenous: None  
Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

	Adj. t-Stat	Prob.*
Phillips-Perron test statistic	-2.432011	0.0190
Test critical values:		
1% level	-2.728252	
5% level	-1.966270	
10% level	-1.605026	

\*MacKinnon (1996) one-sided p-values.  
Warning: Probabilities and critical values calculated for 20 observations  
and may not be accurate for a sample size of 15

Null Hypothesis: D(TOTAL\_EXPENDITURE) has a unit root  
Exogenous: None  
Bandwidth: 13 (Newey-West automatic) using Bartlett kernel

	Adj. t-Stat	Prob.*
Phillips-Perron test statistic	-12.90908	0.0001
Test critical values:		
1% level	-2.740613	
5% level	-1.968430	
10% level	-1.604392	

\*MacKinnon (1996) one-sided p-values.  
Warning: Probabilities and critical values calculated for 20 observations  
and may not be accurate for a sample size of 14

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**APPENDIX C**

**Johansen Cointegration Test**

Date: 07/11/16 Time: 15:01

Sample (adjusted): 2003 2015

Included observations: 13 after adjustments

Trend assumption: Linear deterministic trend

Series: GDP\_AT\_CURRENT\_MARKET\_PR OVERALL\_FISCAL\_DEFICITS

TOTAL\_EXPENDITURE GOVERNMENT\_REVENUE

Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value
None *	0.999573	170.7859	47.85613
At most 1 *	0.969199	69.91859	29.79707
At most 2 *	0.791697	24.67583	15.49471
At most 3 *	0.280631	4.281951	3.841466

Trace test indicates 4 cointegratingeqn(s) at the 0.05 level

\* denotes rejection of the hypothesis at the 0.05 level

\*\*MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value
None *	0.999573	100.8673	27.58434
At most 1 *	0.969199	45.24276	21.13162
At most 2 *	0.791697	20.39388	14.26460
At most 3 *	0.280631	4.281951	3.841466

Max-eigenvalue test indicates 4 cointegratingeqn(s) at the 0.05 level

\* denotes rejection of the hypothesis at the 0.05 level

\*\*MacKinnon-Haug-Michelis (1999) p-values

APPENDIX D

**Error Correction Model**

Dependent Variable: D(GDP\_AT\_CURRENT\_MARKET\_PR)

Method: Least Squares

Date: 07/11/16 Time: 15:32

Sample (adjusted): 2002 2015

Included observations: 14 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(OVERALL_FISCAL_DEFICI TS)	-121.6819	80.47800	-1.511990	0.1648
D(GOVERNMENT_REVENUE)	1544.718	19496.30	0.079231	0.9386
D(TOTAL_EXPENDITURE)	441.5867	1220.217	0.361892	0.7258
ECM(-1)	-1.064334	0.407665	-2.610809	0.0282
C	11639775	33590213	0.346523	0.7369
R-squared	0.688510	Mean dependent var		49621197
Adjusted R-squared	0.550070	S.D. dependent var		1.67E+08
S.E. of regression	1.12E+08	Akaike info criterion		40.17927
Sum squared resid	1.13E+17	Schwarz criterion		40.40751
Log likelihood	-276.2549	Hannan-Quinn criter.		40.15814
F-statistic	4.973353	Durbin-Watson stat		1.893834
Prob(F-statistic)	0.021533			

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**APPENDIX E**

**Regression Result**

Dependent Variable: D(GDP\_AT\_CURRENT\_MARKET\_PR)

Method: Least Squares

Date: 07/11/16 Time: 16:41

Sample (adjusted): 2002 2015

Included observations: 14 after adjustments

HAC standard errors & covariance (Bartlett kernel, Newey-West fixed  
bandwidth = 3.0000)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(OVERALL_FISCAL_DEFICI TS)	-239.9590	97.32257	-2.465605	0.0334
D(GOVERNMENT_REVENUE)	5137.987	9904.562	0.518750	0.6152
D(TOTAL_EXPENDITURE)	84.65920	222.7016	0.380146	0.7118
C	14017266	39814889	0.352061	0.7321
R-squared	0.452598	Mean dependent var		49621197
Adjusted R-squared	0.288377	S.D. dependent var		1.67E+08
S.E. of regression	1.41E+08	Akaike info criterion		40.60023
Sum squared resid	1.99E+17	Schwarz criterion		40.78282
Log likelihood	-280.2016	Hannan-Quinn criter.		40.58333
F-statistic	2.756032	Durbin-Watson stat		1.091898
Prob(F-statistic)	0.097889	Wald F-statistic		2.080387
Prob(Wald F-statistic)	0.166544			