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# Dynamic Relationship Between Fiscal Policy and Economic Growth in Nigeria (Long and Short Run Analysis)

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**Abstract:** This study investigates empirically the fiscal policy impact on the economic growth index in Nigeria for the period 1985-2015. Data for the study were collected from secondary sources. The expost facto research design was adopted for the study. The data were analysed using OLS multiple regression, unit root test, co-integration and Error Correction mechanism (ECM). The results revealed that the variables were all stationary at level and co-integrated of the same order in the long-run. The result also showed that fiscal policy significantly influenced the rate of growth in Nigeria economy. It was therefore recommended that government should ensure transparency in budget implementation and fiscal discipline to put Nigeria on the path of sustainable growth.

**Keywords:** Fiscal Policy, Economic Growth, Capital Expenditure, Recurrent Expenditure, Domestic Debt

## 1. Introduction

The Nigerian economy has been plagued with several challenges over the years. Researchers have identified some of these challenges as: gross mismanagement / misappropriation of public funds, corruption and ineffective economic policies, lack of integration of macroeconomic plans and the absence of harmonization and coordination of fiscal policies as well as inappropriate and ineffective policies. Imprudent public spending and weak sectorial linkages and other socioeconomic maladies constitute the bane of rapid economic growth and development.

Fiscal Policy is the budgetary policy of the government relating to revenue (taxes), public expenditure, public borrowing and deficit financing Sanni, [1]. Thus, fiscal policy aims at stabilizing the economy. As noted by Anyanwu [2], the objective of fiscal policy is to promote economic conditions conducive to business growth while ensuring that any such government actions are consistent with economic stability.

Economic Growth on the other hand is an increase in real output or real per capita output of an economy Udabah, [3]. Similarly, Kuznets [4] also defined economic growth as a long term rise in capacity to sustain increasingly, diverse economic goods and services to its population, growing capacity based on advancing technology, institutional and ideological adjustments that it demands. The interpretation of economic growth emphasizes a "sustained" rise in the output level which is the only manifestation of economic growth.

However, some scholars did not support the claim that increasing fiscal policy promotes economic growth, instead they assert that higher government expenditure may slowdown overall performance of the economy. For instance, in an attempt to finance rising expenditure, government may increase taxes and/or borrowing. Higher income tax discourages individual from working for long hours or even searching for jobs. This in turn reduces income and aggregate demand. In the same vein, higher profit tax tends to increase production costs and reduce investment expenditure as well as profitability of firms. Moreover, if government increases borrowing (especially from the banks) in order to finance its expenditure, it will compete (crowds-out) away the private sector, thus reducing private investment.

Diamond [5] notes that in Nigeria, less attention has been given to examining the productiveness of the various components of public spending. Longe [6] examines the growth and structure of fiscal policy in Nigeria with a view to ascertaining if the pattern fits with the result of other countries. Thus, his study revealed that government expenditure has shown many considerable structural shifts over the review period and that the ratio of government

expenditure to GNP has been rising and corresponds with the rising share hypothesis. About 60 percent of the population lives on less than US$1 per day. This is inspite of astronomical increases in government expenditure over the years. It is on this background that this study would investigate the impact of fiscal policy on the economic growth of Nigeria.

### *1.1. Statement of the Problem*

The relationship between fiscal policy and economic growth has continued to generate series of debate among scholars. Government performs two functions protection (security) and provisions of certain public goods Abdullah, [7] and Al-Yousif, [8]. Protection function consists of the creation of rule of law and enforcement of property rights. This helps to minimize risks of criminality, protect life and property, and the nation from external aggression. Under the provisions of public goods are defense, roads, education, health, and power, to mention a few. Some scholars argue that increase in government expenditure on socio-economic and physical infrastructures encourages economic growth. For example, government expenditure on health and education raises the productivity of labour and increase the growth of national output. Similarly, expenditure on infrastructure such as roads, communications, power, reduces production costs, increases private sector investment and profitability of firms, thus fostering economic growth. Supporting this view, scholars such as Al-Yousif, [8], Abdullah, [7], Ranjan and Sharma,[9] and Cooray, [10] concluded that expansion of government expenditure contributes positively to economic growth.

For instance Ram [11] found that a stronger positive relationship exists between fiscal policy and economic growth in lower income countries than in higher income countries. In contrast, Landau [12] concluded that the data he examined support the view that government spending is associated with a reduction in a country's capacity to grow. Easterly [13] seems to support Landau's results as he implied that government consumption spending is negatively associated with economic growth and GDP per capita. Ezirim and Muoghalu [14] investigated the extent to which factors like population growth, urbanization effects and taxation affect the size of public expenditure in less developed countries like Nigeria; and concluded that inflation constituted the most important factor that accounted for changes in government financial management. Offurum [15] in an extensive study investigated the impact of public expenditure on economic growth.

There exists a consensus in the literature that an adequate and effective macroeconomic policy is critical to any successful development process aimed at achieving high employment, sustainable economic growth, price stability, long-term viability of the balance of payments and external equilibrium. The poor growth performance of the Nigerian economy since 1986 has generated interest in issue of growth and development. From 1970 to 1985 there was financial repression. However, financial liberalization was introduced in 1986 to realise necessary finance to promote growth. This has made it necessary to study and understand the relationship between finance and growth. Nigeria is endowed with enormous potential for growth and development with her vast oil and gas resources, rich and expensive agricultural land, solid minerals and abundant human resources. Despite these factors, since 1960 when she got her independence from Britain, the successive governments have not done enough to put the nation's resources to effective productive use as to chart the path of growth and development. The net result is that the Nigerian economy is now performing below her potential as the "crown prince of the Gulf of Guinea".

Prior to 1975, there were lots of uncontrolled spending in the economy. The monetary control was minimal in the domestic science, ports were congested, the civil service was overloaded and largely corrupt and the economy lacked positive thrust. Despite the lofty place of fiscal policy in the management of the economy, the Nigerian economy is yet to come on the path of sound growth and development. Studies by Agiobenebo [16], Gbosi [17] and Okowa [18] indicate that the economy is still marred by chronic unemployment, rising rate of inflation, dependence on foreign technology, monoculture foreign exchange earnings from crude oil, and more. Furthermore, stagnating revenue mobilization in particular and some upward movements in expenditures led to a reversal of the fiscal stabilization process since the second half of the Nineties. An improved fiscal performance during 2003-04 engendered by containment of non-planned expenditures and supported by high revenue mobilization on the back of buoyant real activity paved the way for renewed commitment towards fiscal consolidation in Nigeria. Arising from the issue above, this paper seeks to examine the impact of fiscal policy on economic growth in Nigeria and thus fill the gap in literature.

### *1.2. Theoretical Literature*

Literatures abound on the relative effectiveness of fiscal policy in developed and developing countries of the world. The literature of fiscal policy provides guidance on how expenditure assignment could be optimally designed on the grounds of allocating efficiency, manageability, autonomy and accountability. Overtime, the role of government in an economy has continued to increase in absolute and relative terms for the past decades, this rising role had led the postulation of some economic theories that concerns the fiscal policy and the growth of the economy by some scholars in economics. Theoretically, it is argued that total government expenditure adjusts more rapidly than revenue to price level variation in such a way that bank-financed budgetary deficit set in (Aghevli and Khan, [19]). The following theories discusses fiscal policy and economic growth

#### *1.2.1. The Keynesian Hypothesis*

Fiscal policy gained its supremacy during the 1950s' economic depression especially at the wake of Keynesian economics. Specifically, it came into popular use when it

became clear that the market economy can no longer check economic depression that was not foreseen in the periods of the classical economists.

Keynes therefore argued, that the deficiencies that surround demand and the subsequent decline in production and employment could be eliminated through government intervention. This can be done by way of government expenditures on public works that will stimulate the economy to further activities through the multiplier and the accelerator. This new turn in economic event by Keynes formed the new era in economic thinking and policies. The use of fiscal policy therefore, brought into focus the government's active participation in the regulation and manipulation of aggregate economic activities. To this effect, Keynes believed that changes in saving and investment are responsible for changes in business activity and employment in an economy. He therefore, advocated for the use of fiscal policy by the government through deficit financing to tackle economic depression.

Since 1939, the most popular method of controlling business fluctuations or maintaining economic stability had been the deliberate use of fiscal policy. To Keynes, the fiscal policy of the Government involving taxation, debt and expenditure has to be anti-cyclical in behaviour. The Government will therefore spend more of its income during the period of depression and less in prosperity through fiscal policy. The intended objective is to ensure economic stability. In both developed and developing countries, the Government has a vital role to play in stimulating business activities. This objective can be achieved by using fiscal policy. It is designed to ensure adequate stabilization of income and employment levels of the economy, distribution of justice and optimum allocation of productive resources. It also aims at bringing about a reduction in inequalities in income and wealth.

#### *1.2.2. Wagner's Law of Increasing State Activity*

Wagner [20] was a German political economist who based his law on increasing state activities and historical facts, primarily in Germany. He studied the German economy overtime and observed a correlation growth between national output and the public expenditure in the economy.

He expressed the view that there was an inherent tendency for the activities of different layers of government (such as central and state governments) to increase both intensively and extensively. That is, there is a functional relationship between the growth of an economy and the growth of government activities, so that the government sector grows faster than the economy.

Wagner expressed the view that public expenditure increase at a faster rate than the national output. That is, the share of public sector in the economy will increase as the economy growth proceeds. Wagner argued that a functional cause and effect relationship exist between the growth of an industrializing economies. This long term hypothesis has it that social progress was the basic cause of the relative growth of the government in industrializing economies. The chain reaction circumstances are that social progress leads to a growth of government functions, which in turn, leads to the absolute and relative growth of economic activity.

### *1.3. Empirical Literature*

The impact of fiscal policy on economic growth has generated large volume of empirical studies by various scholars in economic literature with mixed findings using cross sectional, time series and panel data. Fiscal policy is generally believed to be associated with growth, or more precisely, it is held that appropriate fiscal measures in particular circumstances can be used to stimulate economic growth and development (Khosravi and Karimi, [21]). Hence, this section of the study seeks to review relevant empirical studies that have examined the impacts of fiscal policy in the actualization of sustainable growth and development.

Differing opinions have indeed continued to emerge on how fiscal policy can affect economic activities. The genesis of these controversies has been traced to the theoretical exposition of the different schools of thought namely; the classical, the Keynesian, and the Neoclassical school of thought (Tchokote, [22]).

To the classical school of thought, fiscal deficits incessantly financed by debt crowds-out private investment and by extension, lowering the level of economic growth. As summarized by Tchokote [22]), the classical economists believe that debt issued by the public has no effect on the private sector savings. To them, a deficit financed by increasing the supply of securities, ceteris paribus reduces its price and raises real interest rates and this crowds out private investment. In sum, excessive deficit can lead to poor economic performance.

In contrast, the Keynesian school of thought postulates a positive relationship between deficit financing and investment and consequently on economic growth. This school of thought sees fiscal policy as a tool of overcoming fluctuations in the economy. The school also regards deficits financing as an important tool to achieve a level of aggregate demand consistent with full employment. They asserted that when debt is used to finance government expenditures, consumers' income will be increased and given that resources are not fully utilized, crowding-out of private investment by high interest rates would not occur.

The position of the Keynesian school of thought on the possible effects of fiscal deficits on economic activities were challenged by the Neoclassical school of thought on the premise that the former school ignored the significance of how fiscal deficits are financed on the effect of this policy variable on macroeconomic performance. The Neoclassical school postulates that the manner in which deficits are financed is capable of influencing the level of consumption and investment and by extension affect economic growth.

One of the labels attached to the Neoclassical argument is the Ricardian equivalence, which states that consumers foresee that tax cut today paid by deficit and borrowing, will lead to a tax increase in the future. In anticipation of the tax

increase, consumers save rather than spend the income from tax cut. If the Ricardian equivalence holds, therefore, the reduction of fiscal deficit will not affect the level of consumption or balance of payments in the economy and the basis for deficit reduction, as part of stabilization programmes, no longer exist.

In addition to the controversies among the different schools of thought on the possible linkage between fiscal policy and economic growth, efforts have also been made by researchers to authenticate or refute the arguments of these prominent schools of thought.

Therefore, the attempt to empirically test the efficacy of fiscal policy in an economy dates back to the pioneering studies of Friedman and Meiselman [23] who empirically investigated the responsiveness of general price level on economic activity represented by aggregate consumption to change in money supply and autonomous government expenditure using ordinary simple linear regression model to estimate the US data from 1897-1957. In their conclusion, they found out that a stable and predictable causal relationship existed between demand and money supply while no such significant relationship was observed for government expenditure (Bogunjoko, [24]). Hence, there was a stable aggregate and money supply for the period.

Babalola and Aminu [25] investigated the impact of fiscal policy on economic growth in Nigeria over the period of 1977-2009. Unit roots of the series were examined using the Augmented Dickey - Fuller technique after which the co-integration test was conducted using the Engle - Granger Approach. Error correction models were estimated to take care of short-run dynamics. The overall results indicated that productive expenditure positively impacted on economic growth during the period of coverage and a long-run relationship exists between them as confirmed by the co-integration test.

Philips [26] critically analyzed the Nigerian fiscal policy between 1960 and 1997 with a view to suggesting workable ways for the effective implementation of vision 2010. He observed that budget deficit have been an abiding feature in Nigeria for decades. He noted that except for the period 1971 to 1974, and 1979, there has been an overall deficit in the federal government budgets each year since 1960 to date. The chronic budget deficits and their financing largely by borrowing, he asserts, have resulted in excessive money supply, worsened inflationary pressures, and complicated macroeconomic instability, resulting in negative impact on external balance, investment, employment and growth. He however, contends that fiscal policy will 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.

Loto [27] investigated the growth effects of government expenditure in Nigeria over the period of 1980 to 2008, with a particular focus on sectorial expenditures. Five key sectors were chosen (security, health, education, transportation, communication and agriculture). A linear ordinary least square (OLS) regression analysis was done. The variables were tested for stationarity and co-integration analysis was also carried out using the Johansen co-integration technique. Also error correction test was performed. The result showed that in the short-run, expenditures on education and agriculture were found to be relatively related to economic growth. While the impact of education was not significant, that of agriculture was found to be significant. Expenditure on health, national security, transportation and communication were found to be positively related to economic growth. The result of that of health was significant while that of national security, transportation and communication were found to be insignificant. Loto opined that it is possible that in the long run expenditure on education could be positive if brain is checked,

Egwaikhide [28] appraised the implication of Nigeria budget deficit profile for inflation and the current account balance. Evidence indicates that fiscal indiscipline in terms of lack of control over expenditure is the major determinant of budget deficit in Nigeria. While its mode of financing has aggravated inflation in the country, most importantly, it revealed that budget deficit correlates highly with current account deficit, implying that external disequilibrium is partly attributable to endogenous factors.

Akpan [29] used a disaggregated approach to determine the components (that include capital, recurrent, administrative, economic services, social and community service and transfers) of government expenditure that enhances growth and those that do not. The author concluded that there was no significant association between most components of government expenditure and economic growth in Nigeria.

However, in his study, showed that the major cause of macroeconomic instability and low growth in national output were the in unsustainable level of fiscal deficits, financed through borrowing from the banking system and poor management of deficit finance which gave little attention to the heavy scheduled debt service obligations. He highlighted that a prudent fiscal policy can contribute to the achievement of macroeconomic stability and growth. However, deficit financing by borrowing from the banking system and poor management of deficit finance can also lead to instability and poor economic performance.

Koman and Bratimasrene [30], studies the economy of Thailand, they made use of the Granger causality tests. Their findings were that government expenditures and economic growth are not co-integrated but indicated a one-dimensional relationship. This is because causality runs from government expenditure to growth; also their results indicated a significant positive effect of the government spending on economic growth.

Bader and Qarn [31], employed multivariate co-integration and variance decomposition approach to examine the causal relationship between fiscal policy and economic growth for Egypt, Israel and Syria. In the bi-variate framework, the authors observed a bi-directional (feedback) and long run negative relationship between fiscal policy and economic growth.

Daniel and Adams [32] employed the autoregressive distributed lag bounds testing approach to co-integration to investigate the extent to which democracy and government spending have had an impact on economic growth in Ghana over the period 1960-2008. The empirical results reveal a support of high efficiency of government spending in democracies hypothesis. The results also show that democracy and government spending go hand in hand to have a positive impact on economic growth in Ghana in both the long and short run.

Ubesie [33], in his study of the effect of fiscal policy on economic growth noted that rising capital inflow will increase economic growth. On the basis of his findings, he recommended that the government should formulate and implement viable fiscal policy options that will stabilize the economy. This could be achieved through the practice of true fiscal federalism and decentralization of levels of government in Nigeria. Again, there should be consistency in macroeconomic policies implementation in the non-oil sectors of the economy by providing incentives to foreigners (especially tax holidays) wishing to invest in the agricultural sector and manufacturing sectors.

# 2. Research Methodology

An ex post facto research design was adopted in this study because already existing data were used. The study mainly relied on annual time series secondary data covering the period 1985 to 2015. The information was sourced from Central Bank of Nigeria (CBN) statistical Bulletin and National Bureau of Statistics (NBS). The variables obtained include the following capital expenditure, Domestic Debt, Non-Oil Revenue, Recurrent Expenditure and Gross Domestic Product.

# 3. Data and Model Specification

### *3.1. Data*

This study uses annual data covering the period from 1985 to 2015. Four component of public sector (or fiscal policy instrument) expenditure are employed: recurrent expenditure and capital expenditure, Non-oil revenue and domestic debt is included in the model. These factors have been identify among the most significant determinants and proxies for fiscal policy instrument. Table 1 provides additional information on all the variables.

***Table 1.*** *List of variables.*

| Variable/Apriori | Definition | *Unit* | Sources |
|---|---|---|---|
| RGDPC | Represents the Gross Domestic Product. It captures economic growth of Nigeria from 1985-2015. | *lnRGDP* | CBN Statistical Bulletin [38] |
| DD (-) | It represent all local borrowing financial and non-financial institutions in Nigeria. | lnDD | CBN Statistical Bulletin [38] |
| NOILR (+) | It represents all the income from dgp other than oil sector. We expect this variable to positive in the model. | *lnNOILR* | CBN Statistical Bulletin [38] |
| CEX (+) | Represents public sector capital expenditure which includes capital expenditure on administration. economic services, social and community services, transfers etc. In consistent with Abu-Bader and Abu-Qarn [31]. | *lnCES* | CBN Statistical Bulletin [38] |
| REX (+) | Represents public sector recurrent expenditure on administration. Economic services, social.' and community services, transfers etc | *lnREX* | CBN Statistical Bulletin [38] |

*Author's Compilation*

Following the theoretical framework, the functional model for this study is presented thus:

$$GDP = f(CEX, DD, NOILR, REX) \quad (1)$$

The above model can be transformed into econometrics model as follows

$$In\ GDP = b0 + b_1 In\ CEX + b_2 In\ DD + b_3 In\ NOILR + b_4 In\ REX + U_t \quad (2)$$

Where: $b_1, b_3, b_4 > 0$ while $b_2 < 0$

In = natural logarithms of the variables.

Where;

GDP = Gross Domestic Product, CEX = Capital Expenditure, DD = Domestic Debt

NOILP = Non- oil Revenue, REX = Recurrent Expenditure

b0 = The intercept of the regression equation

$b_1$, $b_2$, $b_3$, and $b_4$ are the slope co-efficient of the independent variables

$U_t$ = Error term that captures the variables not explicitly included in the model

To improve the functional form of the model, the author followed the standard linear transformation.. Also transforming the variables into logarithms helps to reduce the possibility of conditional heteroscedasticity in the model (Gujarati, [34]). Accordingly, a log form of the model is introduced into equation (2) and it is stated thus:

### *3.2. Methodlogy*

The study adopted the following methods for analysis of data. These include OLS multiple regression, Unit root Test, co-integration test and Error correction Mechanism (ECM) test.

#### *3.2.1. Unit Root Test*

In time series analysis, before running the cointegration test the variables must be tested for stationarity to check the

problem of spurious regression. The ADF unit root test was adopted because it helps to avoid the problem of spurious regression, and adjusts appropriately for the occurrence of serial correlation (Ogwuru and Ewubare, [39]). Therefore, before applying this test, the author determine the order of integration of all variables using unit root tests by testing for null hypothesis $H_o: \beta = 0$ (i.e $\beta$ has a unit root), and the alternative hypothesis is $H_1: \beta < 0$.

### *3.2.2. Co-integration Test*

Having established the order of integration, the next thing is to use Johansen's [35] procedure of maximum likelihood to determine the number of cointegrating vectors.

Consider the following level vector autoregression, VAR of order

$$y_t = \mu + A_1 y_{t-1} + \ldots\ldots\ldots + A_p y_{t-P} + \varepsilon_t \quad (3)$$

Where $y_t$ is a $(n \times 1)$ vector of fiscal policy and growth in log form that are integrated at order one- commonly denoted 1 (1), n=5, $A_P$ are the parameters to be estimated, $\varepsilon_t$ are the random errors. This (VAR) can be re-written as;

$$\Delta y_t = \mu + \prod y_{t-1} + \sum_{i=1}^{p=1} \Gamma_i \Delta y_{t-i} + \varepsilon_t \quad (4)$$

Where,

$$\Pi = \sum_{i=1}^{p} A_i - 1 \text{ and } \Gamma_i = -\sum_{j=i+1}^{p} A_j \quad (5)$$

If the coefficient matrix Π has reduced rank $r < n$, then there exist $n \times r$ matrices of $\alpha$ and $\beta$ each with rank $r$ such that

$$\Pi = \alpha\beta' \quad (6)$$

Where $r$ is the number of co-integrating relationship, the element is $\alpha$ is known as the adjustment parameters in the vector error correction model and each column of $\beta$ is a cointegrating vector. It can be shown that, for a given $r$, the maximum likelihood estimator of $\beta$ define the combination of $y_{t-1}$ that yield the $r$ largest canonical correlations of $\Delta y$ with $y_{t-1}$ after correcting for lagged differences and deterministic variables when present. The two different likelihood ratio test of significance of these canonical correlations are the trace test and maximum eigenvalue test, shown in equation 7 and 8 respectively below

$$\lambda_{trace}(r) = -T \sum_{i=r+1}^{n} \ln(1 - \widehat{\lambda_i}) \quad (7)$$

and

$$\lambda_{max}(r, r+1) = -Tln(1 - \hat{\lambda}_{r+1}) \quad (8)$$

Here, T is the sample size and $\hat{\lambda}_i$ is the $i^{th}$ ordered eigenvalue from the Π matrix in equation 3 or largest canonical correlation. The trace tests the null hypothesis that the number of $r$ co-integrating vector against the alternative hypothesis of $n$ co-integrating vector where $n$ is the number of endogenous variables. The maximum eigenvalue tests the null hypothesis that there are $r$ cointegrating vectors against an alternative of $r + 1$ (see Brooks [36]).

### *3.2.3. Error Correction Mechanism (ECM)*

Having determined whether or not co-integration exists, we applied the ECM to ascertain the speed of adjustment from the short-run equilibrium to the long-run equilibrium state. If co-integration is accepted, it suggests that the model is best specified in the first difference of its variables with one lag of the residual [ECM (-1)] as additional regressor. The (ECM) incorporates the variables at both side levels and first differences and thus captures the short-run disequilibrium situations as well as the long-run adjustments between variables (Mukhtar et al,[37]). This study uses Akaike information criteria for selected the optimal lag length. The short run equilibrium relationship is tested using vector error correction model (VECM). VECM is restricted VAR that has cointegration restriction built into the specification. The VECM analysis in this study is based on equation 2 and it involves five cointegrating vector as thus:

$$\Delta lnGDP_t = \alpha_0 + \sum_{i=1}^{n} \beta_{1i} \Delta lnGDP_{t-1} + \sum_{i=0}^{n} \beta_{2i} \Delta lnCEX_{1_{t-1}} + \sum_{i=0}^{n} \beta_{3i} \Delta lnDD_{2_{t-1}} +$$
$$\sum_{i=0}^{n} \beta_{3i} \Delta lnNOILR_{2_{t-1}} + \sum_{i=0}^{n} \beta_{3i} \Delta lnREX_{2_{t-1}} + \lambda_1 ecm_{t-1} + \mu_t \quad (9)$$

$ecm_{t-1}$ is the error correction term obtained from the cointegration model. The error coefficients $(\lambda_1)$ indicate the rate at which the cointegration model corrects its previous period's disequilibrium or speed of adjustment to restore the long run equilibrium relationship. A negative and significant $ecm_{t-1}$ coefficient implies that any short run movement between the dependant and explanatory variables will converge back to the long run relationship.

# 4. Data Analysis and Discussion of Results

***Table 2.*** *Level Series Multiple Regression.*

| **Dependent variable: In (GDP)**<br>**Method: Least Square**<br>**Date: 15/09/16 Time: 10:12**<br>**Sample: 1986- 2015**<br>**Included Observations: 30** | | | | |
|---|---|---|---|---|
| **Variable** | **Coefficient** | **Std Error** | **t-statistic** | **Prob.** |
| C | 2.132296 | 0.511188 | 4.171257 | 0.0003 |

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|---|---|---|---|---|
| **Method: Least Square** | | | | |
| **Date: 15/09/16 Time: 10:12** | | | | |
| **Sample: 1986- 2015** | | | | |
| **Included Observations: 30** | | | | |
| **Variable** | **Coefficient** | **Std Error** | **t-statistic** | **Prob.** |
| In CEX | 0.035904 | 0.097952 | 0.366553 | 0.7170 |
| In DD | 0.574857 | 0.149859 | 3.835984 | 0.0008 |
| In NOILR | 0.377575 | 0.135785 | 2.780677 | 0.0102 |
| In REX | 0.035489 | 0.142877 | 0.248385 | 0.8059 |
| R- squared | 0.990086 | | Mean dependent var. | 15.25467 |
| Adj-R-Squared | 0.988500 | | S.D. dep. Variable | 1.934976 |
| S.E. of Reg. | 0.207501 | | Akaike info. crit. | -0.156352 |
| Sum sq. resid. | 1.0764 1 4 | | Schwartz crit. | 0.077181 |
| Log. Likelihood | 7.345274 | | Hannan-duinn crit. | -0.081642 |
| F- statistic | 624.1985 | | Durbin Watson Stat. | 1.9246 |
| Prob. (F-statistic) | 0.000000 | | | |

Source: Author's Computation

Table 2 above presents the level series multiple regression-estimated model, which shows the relationship between Fiscal Policy and Economic Growth variables. From the table, In (CEX) is not significantly related to In (GDP) as well as In (REX), but In (NOILR) and In (DD) are significantly related to In GDP. The Adjusted R-squared is approximately 98.85% and the Durbin-Watson statistic is approximately, 2.0, which shows the absence of positive auto-correlation in the estimated model.

### *4.1. Unit Root Test*

The variables were tested for unit root using the Augmented Dickey-Fuller test (ADF) at the level of first difference. The result of the unit root tests are as presented in table 3 below.

***Table 3.*** *Augmented Dickey-Fuller Unit Root Test Summary Results.*

| **Variable** | **ADF test Statistical at first Difference** | **Critical Values** | **Order of Integration** |
|---|---|---|---|
| In CEX | -5.841542 | 1% = -3.689194<br>5% = -2.971853<br>10% = -2.625121 | 1 (1) |
| In (DD) | -4.952331 | 1% = -3.689194<br>5% = -2.971853<br>10% = -2.625121 | 1 (1) |
| In GDP | -5.479928 | 1% = -3.689194<br>5% = -2.971853<br>10% = -2.625121 | 1 (1) |
| In NOILR | -7.187499 | 1% = -3.689194<br>5% = -2.971853<br>10% = -2.625121 | 1 (1) |
| In REX | -7.655063 | 1% = -3.689194<br>5% = -2.971853<br>10% = -2.625121 | 1 (1) |

Source: Author's computation

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| In NOILR | -7.187499 | 1% = -3.689194<br>5% = -2.971853<br>10% = -2.625121 | 1 (1) |
| In REX | -7.655063 | 1% = -3.689194<br>5% = -2.971853<br>10% = -2.625121 | 1 (1) |

Source: Author's computation

Table 3 above presents the result of the ADF unit root tests. The results of the unit root tests shows that the null hypothesis of a unit root test for first difference series for all the variables can be rejected at all critical values indicating that the level series can be made stationary at the second difference and maximum lag of one. Thus, the reduced form model follows an integrating order of 1 (1) process and therefore a stationary process. The test of stationarity in the residuals from the level series regression is significant at all lags.

### *4.2. Co-integration Test*

Applying the Johansen co-integration test, we find that the null hypothesis of no co-integration is rejected and we concluded that the variables are co-integrated in the long-run. To determine the number of co-integrating equations, we employ the Johansen (1991) test for co-integration as shown in Table 4 below. The lag interval of 1 to 2 was used with linear deterministic test assumption.

***Table 4.*** *Johansen Co-integration Test.*

| **Date 15/09/2016: Time: 10:30** | | | | |
|---|---|---|---|---|
| **Included observation: 27 after adjustments** | | | | |
| **Sample (adjusted): 1989-2015** | | | | |
| **Series: In (GDP) In (CEX) In (DD) In (NEX) In (REX)** | | | | |
| **Trend assumption: Linear deterministic trend** | | | | |
| **Lag interval (in first difference): 1 to 2** | | | | |
| **Unrestricted co-integration Rank Test (Trace)** | | | | |
| **Hypothesized No of CE(s)** | **Elgen value** | **Trace Statistic** | **0.05 Critical value** | **Prob.**** |
| None* | 0.784470 | 114.6544 | 69.81889 | 0.0000 |
| At most 1* | 0.751419 | 73.21871 | 47.85613 | 0.0000 |
| At most 2* | 0.563733 | 35.63511 | 29.79707 | 0.0095 |
| At most 3 | 0.367219 | 13.23860 | 15.49471 | 0.1063 |
| At most 4 | 0.032159 | 0.882569 | 3.841466 | 0.3475 |
| Trace test indicates 3 co-integrating equation at 0.05 level | | | | |
| * denotes rejection of the hyp. at 0.05 level | | | | |
| ** Mackinnon-Haug-Michelis (1999) P-values | | | | |
| Unrestricted co-integration Rank Test (Max. Elgen Value) | | | | |
| Hypothesized no of RE(s) | Elgen value | Max. Eigen Statistic | 0.05 Critical value | Prob.** |
| None* | 0.784470 | 41.43572 | 33.87687 | 0.0052 |
| At most 1* | 0.751419 | 37.58360 | 27.58434 | 0.0019 |
| At most 2* | 0.563733 | 22.39651 | 21.13162 | 0.0330 |
| At most 3 | 0.367219 | 12.35603 | 14.26460 | 0.0980 |
| At Most 4 | 0.032159 | 0.882569 | 3.841466 | 0.3475 |
| Max-eigen value test indicates 3 co-integrating equation(s) at 0.05 level | | | | |
| * denotes rejection of the hyp. at 0.05 level | | | | |
| ** Mackinnon-Haug-Michelis (1999) P-values | | | | |

*Author's computation*

From the table 4 above, we can observe that the unrestricted Rank Test indicates that there are three cointegrating equations at the 5% level of significance among the dependent and independent variables. In addition the maximum Eigen value test also shows that there are three co-integrating equations at the 5% level of significance.

The existence of a long run co-integrating equilibrium provides for short-term fluctuations. Having established the existence of a long run co-integrating relationship among the variables, we therefore apply the error correction mechanism to examine the interplay of the long run and short term fluctuations in the model using the general specific approach.

### *4.3. Error Correction Model*

***Table 5.*** *Over-parameterized Error Correction Model.*

| **Dependent variable: D(In (GDP)}** | | | | |
|---|---|---|---|---|
| **Method: Least Square** | | | | |
| **Date: 15/09/16 Time: 12:04** | | | | |
| **Sample (adjusted) 1990- 2015** | | | | |
| **Included Observations: 26 after adjustments** | | | | |
| **Variable** | **Coefficient** | **Std Error** | **t-statistic** | **Prob.** |
| C | 0.288903 | 0.173943 | 1.660909 | 0.1576 |
| D(In (GDP(-1))) | 0.603196 | 0.604738 | 0.997450 | 0.3643 |
| D(In (GDP(-2))) | -0.488351 | 0.599480 | -0.814625 | 0.4523 |
| D(In (GDP(-3))) | -0.040317 | 0.080737 | 0.080737 | 0.9388 |
| D(In (CEX)) | 0.352873 | 1.276761 | 1.276761 | 0.2578 |
| D(In (CEX(-1))) | 0.635203 | 2.587948 | 2.587948 | 0.0490 |
| D(In (CEX(-2))) | 0.050415 | 0.169268 | 0.169268 | 0.8722 |
| D(In (CEX(-3))) | -0.121661 | -0.612338 | -0.612338 | 0.5671 |
| D(In (DD) | 0.088160 | 0.250475 | 0.250475 | 0.8122 |
| D(In (DD(-1))) | -0.252501 | -0.493651 | -0.493651 | 0.6425 |
| D(In (DD(-2))) | -0.327507 | -0.901144 | -0.901144 | 0.4088 |
| D(In (DD(-3))) | -0.244488 | 0.383589 | -0.637370 | 0.5519 |
| D(In (NOILR) | 0.295864 | 0.242029 | 1.22430 | 0.2760 |
| D(In (NOILR(-1))) | -0.270078 | 0.308073 | -0.876670 | 0.4208 |
| D(In (NOILR(-2))) | -0.079167 | 0.249486 | -0.317322 | 0.7638 |

| **Dependent variable: D(In (GDP)}** | | | | |
|---|---|---|---|---|
| **Method: Least Square** | | | | |
| **Date: 15/09/16 Time: 12:04** | | | | |
| **Sample (adjusted) 1990- 2015** | | | | |
| **Included Observations: 26 after adjustments** | | | | |
| **Variable** | **Coefficient** | **Std Error** | **t-statistic** | **Prob.** |
| D(In (NOILR(-3))) | 0.150294 | 0.228297 | 0.658325 | 0.5394 |
| D(In (REX) | -0.196725 | 0.201936 | -0.974192 | 0.3747 |
| D(In (REX(-1))) | -0.186264 | 0.201475 | -0.924500 | 0.3977 |
| D(In (REX(-2))) | -0.107072 | 0.345784 | -0.309649 | 0.7693 |
| D(In (REX(-3))) | -0.210860 | 0.550815 | -0.382814 | 0.7176 |
| ECM (-1) | -1.468367 | 0.894134 | -1.642223 | 0.1615 |
| R- squared | 0.815205 | | Mean dependent var. | 0.223985 |
| Adj-R-Squared | 0.076025 | | S.D. dep. Variable | 0.187079 |
| S.E. of Reg. | 0.179828 | | Akaike info. crit. | -0.626911 |
| Sum sq. resid. | 0.161690 | | Schuartz crit. | 0.389244 |
| Log. Likelihood | 29.14984 | | Hannan-duinn crit. | -0.334295 |
| F- statistic | 1.102850 | | Durbin Watson Stat. | 2.002425 |
| Prob. (F-statistic) | 0.503800 | | | |

Source: Author's Computation

Table 5 above shows the over-parameterized ECM estimate with maximum lag of three. The Durbin-Watson statistic is 2.00 and Adjusted R-squared of approximately 7.6%. From the over-parameterized ECM, we obtained the parsimonious ECM as presented in table 6 below;

***Table 6.*** *Parsimonious Error Correction Model.*

| **Dependent variable: D(In (GDP)** | | | | |
|---|---|---|---|---|
| **Method: Least Square** | | | | |
| **Date: 15/09/16 Time: 12:45** | | | | |
| **Sample (adjusted) 1990-2015** | | | | |
| **Included Observations: 26 after adjustments** | | | | |
| **Variable** | **Coefficient** | **Std Error** | **t-statistic** | **Prob.** |
| C | 0.2199770 | 0.077402 | 2.839326 | 0.0139 |
| D(In (GDP(-1))) | 0.348640 | 0.186471 | 1.869675 | 0.0842 |
| D(In (GDP(-2))) | -0.598896 | 0.204378 | -2.930333 | 0.0117 |
| D(In (CEX)) | 0.297643 | 0.112259 | 2.651399 | 0.0200 |
| D(In (CEX(-1))) | 0.544029 | 0.116241 | 4.680201 | 0.0004 |
| D(In (CEX(-3))) | -0.101174 | 0.090511 | -1. 117805 | 0.2839 |
| D(In (DD(-2)) | -0.210844 | 0.174201 | -1. 210353 | 0.2477 |
| D(In (NOILR) | 0.232511 | 0.082812 | 2.807698 | 0.0148 |
| D(In (NOILR(-1))) | -0.288706 | 0.099783 | -2.893344 | 0.0126 |
| D(In (NOILR(-2))) | 0.118107 | 0.078341 | 1.507610 | 0.1556 |
| D(In (REX) | -0.195558 | 0.113730 | -1.719502 | 0.1092 |
| D(In (REX(-1))) | -0.145335 | 0.106539 | -1.364153 | 0.1957 |
| ECM (-1) | -0.963834 | 0.199139 | -4.840014 | 0.0003 |
| | | | | |
| R- squared | 0.793623 | | Mean dependent var. | 0.223985 |
| Adj-R-Squared | 0.603122 | | S.D. dep. Variable | 0.187079 |
| S.E. of Reg. | 0.117857 | | Akaike info. crit. | 1.131840 |
| Sum sq. resid. | 0.180573 | | Schuartz crit. | 0.502792 |
| Log. Likelihood | 27.71392 | | Hannan-duinn crit. | 0.950697 |
| F- statistic | 4.165967 | | Durbin Watson Stat. | 2.386429 |
| Prob. (F-statistic) | 0.008057 | | | |

*Author's Computation*

Table 6 above presents results of the parsimonious error correction model conducted to further analyze the long run relationship between fiscal policy and economic growth and also to capture the short run deviations of the parameters from the long run equilibrium by incorporating period lagged residuals. The result shows that In (CEX) lagged three periods, is negative and not significantly related to GDP, while In (CEX) one period lag is negative and significant. In (DD) lagged two period is negative and not significant. In (NOILR) lagged two periods is not negative and not significant. In (REX) is negative and not significantly related to GDP. From the model, the Adjusted R-squared is approximately 60.3% showing/indicating that the model jointly explains 60.3% of the total variations in GDP. The Durbin-Watson is approximately 2.39 showing the absence of auto-correlation in the estimated model. The error correction co-efficient is appropriately signed with value of -0.963834 and is significant. The error correction Co-efficient shows that the speed of adjustment of the model due to any short

run shock is approximately 96.38% per annum. The F-statistic is 4.165967 with P-value of 0.008057, which is significant. We therefore conclude that Fiscal Policies impact significantly on economic growth and reject the null hypothesis, which states that Fiscal Policy has no significant impact on the economic growth of Nigeria.

### *4.4. Discussion of Findings*

The result of this study is in line with Babalola and Aminu (2011), Loto (2011), lkem (2011), Chih-Hil (2008) and others, who observed that Fiscal policies usually have impact on the Economy. From the above result, the Adjusted $R^2$ that is the coefficient of determination showed that 60.3% of the total variation in GDP is explained by the independent variables included in the model. Collectively, there is a trend between the variables, which implies that an increase in the fiscal policy variables will increase economic growth while decrease will also decrease economic growth. The P-value of the F-statistic is 0.008057, which is sufficiently low, and we conclude that there is a long run equilibrium relationship between fiscal policy and economic growth in Nigeria.

## 5. Summary of Findings, Conclusion and Recommendations

The co-integration test revealed that there is a co-integration relationship between Fiscal Policy variables and Economic growth variable (GDP).

The findings of the study reveal that:

a. The regression result as analyzed, confirms that there exists positive relationship between the Fiscal Policies and Economic Growth of Nigeria.
b. The relationship is statistically significant. This in essence means that the impact of the Fiscal Policy on the Economic Growth of Nigeria is strong and significant.

### *5.1. Conclusion*

The study reveals that Fiscal Policies impact on the Economic Growth of Nigeria via the Gross Domestic Product (GDP). Hence the fiscal policies in every economy have the power to influence or impact the growth of that economy. Government is therefore advised to put up measures to stem up the implementation of fiscal policies as this will help in the growth of the economy.

### *5.2. Policy Recommendations*

In the light of the research findings, the following recommendations are presented:

a. To ensure macroeconomic stability and put the Nigeria economy along the path of sustainable growth, Government must put a stop to diversion of foreign borrowing, to unproductive use.
b. Government must curtail wasteful spending.
c. Government must embark upon specific fiscal policies aimed at achieving increased and sustained productivity in all sectors of the economy.
d. There should be emphasis on non-oil revenue. The system of assessment and collection of such revenue, particularly income tax, must be as simple as possible with a few taxes and uncomplicated Legislations aimed at lowering the costs of doing business in Nigeria.
e. The country should equally concentrate more on capital expenditure and reduce allocation to recurrent expenditure. There should be expansive development of infrastructure, as it will impact on economic growth.
f. It is recommended that government should formulate and implement viable fiscal policy options that will stabilize the economy.

## Appendix

| Year | Capital Exp. (₦m) | Domestic Debt (₦-million) | Non-oil revenue (₦ million) | Recurrent Expenditure (₦ million) | GDP (₦m) |
|---|---|---|---|---|---|
| 1985 | 5464.700 | 134585.6 | 4126.70 | 7576.40 | 60168 |
| 1986 | 8526.800 | 134603.3 | 4488.50 | 7696.90 | 69147 |
| 1987 | 6372.500 | 193126.2 | 6353.60 | 15646.20 | 105222 |
| 1988 | 8340.100 | 263294.5 | 7765.00 | 19409.40 | 539085 |
| 1989 | 15034.10 | 382261.5 | 14739.90 | 25994.20 | 516797 |
| 1990 | 24048.60 | 472648.7 | 26215.30 | 36219.60 | 155506 |
| 1991 | 28340.90 | 545672.4 | 18325.20 | 38243.50 | 312139 |
| 1992 | 39763.30 | 875342.5 | 26375.10 | 53034.10 | 532613 |
| 1993 | 54501.80 | 1089680 | 30667.00 | 136727.10 | 683869 |
| 1994 | 70918.30 | 1399703 | 41718.40 | 89974.90 | 599863 |
| 1995 | 121138.30 | 2907358 | 135439.70 | 127629.80 | 1933211 |
| 1996 | 212926.30 | 4032300 | 114814.00 | 124491.30 | 2702719 |
| 1997 | 269651.70 | 4189250 | 166000.00 | 158563.50 | 2801972 |
| 1998 | 309015.60 | 3989450 | 139297.60 | 178097.80 | 2708430 |
| 1999 | 498027.60 | 4679212 | 224765.40 | 449662.40 | 3194015 |
| 2000 | 239450.90 | 6713575 | 314483.90 | 461600.00 | 4582127 |
| 2001 | 438696.50 | 6895198 | 903462.30 | 579300.00 | 4725086 |
| 2002 | 321378.10 | 7795758 | 500986.30 | 696800.00 | 6912381 |
| 2003 | 241688.30 | 9913518 | 500815.30 | 984268.10 | 8487031 |
| 2004 | 351250.00 | 11411067 | 565700.00 | 1032741.30 | 11411066 |

| Year | Capital Exp. (₦m) | Domestic Debt (₦ million) | Non-oil revenue (₦ million) | Recurrent Expenditure (₦ million) | GDP (₦m) |
|---|---|---|---|---|---|
| 2005 | 519470.00 | 14610881 | 785100.00 | 1223730.00 | 1457223 |
| 2006 | 552385.80 | 18564595 | 677500.00 | 1390201.90 | 18564594 |
| 2007 | 759281.20 | 20657318 | 1200800.00 | 1589300.00 | 20657317 |
| 2008 | 960890.10 | 24296329 | 1336000.00 | 2117362.00 | 24296329 |
| 2009 | 1152800.00 | 24794239 | 1652700.00 | 2127971.50 | 24310724 |
| 2010 | 883870.00 | 33984754 | 1907600.00 | 3109378.51 | 24712669 |
| 2011 | 918500.00 | 37409861 | 2237900.00 | 3314513.33 | 54204800 |
| 2012 | 874800.00 | 40544100 | 2628771.39 | 3325178.00 | 71186530 |
| 2013 | 1108390.00 | 80092560 | 2950560.00 | 3689060.00 | 802222130 |
| 2014 | 783120.00 | 89043620 | 3275120.00 | 3417580.00 | 84312140 |
| 2015 | 8421000 | 9204340 | 3995154.00 | 3891400.00 | 942,66741 |

Source: CBN Statistical Bulletin and NBS various issues.

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