

# **Fiscal Policy and Economic Growth in Nigeria, 1970 – 2011**

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## **ABSTRACT**

*The aim of this paper is to examine the relationship between fiscal policy and the growth of Nigerian economy using annual series data from 1970 to 2011. The study adopted the Johansen Co-integration Test, Vector Error Correction Mechanism (VECM) Test and Granger Casualty Test for data analysis. Before estimating the data the variables were checked for unit root using Augmented Dickey-Fuller (ADF) and Phillip-Peron Tests (PP) Tests. The study reveals that there is a significant causal relationship between Gross Domestic Product (GDP) and the variables used in this research. On the basis of the findings the paper recommends among others consistency in macroeconomic policies implementation for a sustained increase in output growth of the Nigerian economy.*

**Keywords:** *Economy, GDP and Fiscal Policy*

## **INTRODUCTION**

Fiscal policy is a technique of government management of the economy through the instrumentality of taxation to achieve certain desired macroeconomic objectives aimed at influencing macroeconomic activity as well as to fine-tune and direct the economy towards achieving the policy goals of internal balance and external balance (Chukuigwe and Abili, 2008) through fiscal policy instruments like taxation, government expenditure and deficit financing. The relationship between fiscal policy and economic growth continues to fascinate policy makers, academicians, financial analysts, governments and economists (Abdullah, Habibullah and Baharunshah, 2009). Prudent and sustainable fiscal posture provides the attainment of non-inflammatory economic growth, low and stable levels of fiscal deficit, government debt and reduction of budget imbalances.

However, despite the consensus on the effects of efficient fiscal policy on growth of any economy the Nigerian economy is still plagued with mismanagement and misappropriation of public funds (Okemini and Uranta, 2008), corruption and ineffective economic policies (Gbosi, 2007), lack of integration of macroeconomic plans and absence of harmonized and co-ordination of fiscal policies (Onoh, 2007). According to Amadi et al (2006),

imprudent public spending and weak sectoral linkages and other socioeconomic maladies constitute the bane of rapid economic growth and development (Ogbole, Amadi and Essi, 2011). Ajiobenebo (2003) corroborates the assertion that the Nigerian economy is still marred by chronic unemployment, high rate of inflation, dependence on foreign technology, insecurity and poverty both in the urban and rural areas. The question then is why has there not been adequate improvement in major macroeconomic variables in spite of the several fiscal policy measures introduced by the government over the decades. The country still experiences high levels of unemployment, poverty while insecurity remains widespread.

### **The Impact of Fiscal Policy on Economic Growth in Nigeria**

The attempt to empirically test the efficacy of fiscal policy in an economy dates back to the pioneering work of Friedman and Meiselman (1987) who studied 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. Their findings indicated that a stable and predictable causal relationship existed between demand and money supply while no such significant relationship was observed for government expenditure. Siyan and Adebayo (2005) assert that fiscal policy is undoubtedly one of the most important tools used by government to achieve macroeconomic stability in the economy. According to Abdullah, Habibullah and Baharunshah (2009), fiscal policy is used by government to influence the level of aggregate demand in the economy in an effort to achieve economic objectives of price stability, full employment and economic growth with evidence in support of the existence of co-integration between government expenditure and GDP. Furthermore, Levine and Renelt (1992) find out that none of the fiscal policy indicators is robustly correlated with economic growth when evaluated individually.

In response to the issue of fiscal policy and economic growth, Ekpo (1995) provides support for fiscal policy-led growth through crowding-in of private investment resulting from government expenditure on infrastructure. However, Nurudeen and Usman (2010) discover that government total capital expenditure, total recurrent expenditure and expenditure on education have negative effect on economic growth. Duada (2010) in his study employs co-integration and error correction models reveals positive and significant effect of education expenditure on economic growth. Similarly, Odusola (1996) reveals that aggregate military expenditure was negatively related to economic growth. Adam and Bevan (2004) present evidence of a threshold effect at a level of the deficit about 1.5 percent on GDP, indicating that economy is not on its steady state growth path, irrespective of the level of fiscal policy aimed

at influencing macroeconomic objective of the economy. In the light of the above, the study intends to find out the effectiveness of fiscal policy on economic growth in Nigeria, whether fiscal policy can curb the problem of ineffective economic growth. Consequently, the main objective of this paper is to examine the relationship between fiscal policy variables and economic growth in Nigeria between 1970 and 2011.

## METHOD

This study adopts econometric approach in its empirical analysis of the relationship between fiscal policy, economy and GDP. The data used in this study are secondary data collected mainly from Central Bank of Nigeria statistical bulletin for a period of 42 years (1970-2011). In line with the neoclassical theoretical framework of fiscal policy, this paper is rooted in two gap empirical models as specified.

$$GDP = \alpha + \beta x + \mu \dots\dots\dots(1)$$

Econometrically, equation (1) is transformed into an econometric log linear form thus:

$$\beta_4 \text{LnGNOil Rev} + \beta_5 \text{LnTB} + \beta_6 \text{LnFD} + \mu \dots\dots\dots(2)$$

Where:

- LnGDP = log of Gross Domestic Product;
- LnGCAExp = log of Government Capital Expenditure;
- LnGOilRev = log of Government Oil Revenue;
- LnGNOilRev = log of Government non Oil Revenue;
- LnTB = log of Treasury Bill;
- LnFD = log of Fiscal Deficit.

Therefore, the coefficient in the models  $b_1 - b_6$  defines elasticities of the logged variables:  $b_1 > 0, b_2 > 0, b_3 > 0, b_4 > 0, b_5 > 0, b_6 > 0$

This paper adopts an econometric methodology that is rooted in co-integration, granger causality and Error Correction Mechanism (ECM). The steps include the testing of the series individually for stationarity using the Augmented Dickey-Fuller (ADF) and Phillip Peron (PP) set of unit root test (Audu, 2010). After that, we proceeded to search for the existence of long-run equilibrium casualty relationship between fiscal policy and the macroeconomic variables. Finally, the result was estimated using the error correction modeling approach.

## RESULTS AND DISCUSSION

This section presents result of empirical analysis of the study, unit roots test is the first conducted then followed by regression, Johansen co-integration result and lastly, vector error correction model (VECM). The results of the unit root tests (ADF and PP) indicate that at 0.05 level of significance, all the variables were not stationary but on further differencing, they all become stationary. Therefore, the result confirm that all variables are integrated of order one  $I(1)$  at first difference but were not integrated of order zero  $I(0)$  at level 0.05 level of significance. Table 3 shows the summary of result of the Johansen's maximum likelihood co-integration test. The  $\lambda$ -trace statistic rejects the null of  $r \leq 0$  but cannot reject  $r \leq 1$  also, the  $\lambda$ -max statistic rejects the null of  $r = 0$  but fail to reject  $r = 1$  at 5% level. Thus, The Johansen co-integration test results for both trace and maximum Eigen-value statistics indicates one co-integrating vector exists among the variables. Both tests reject the null hypothesis of no co-integration between fiscal policy variables and economic growth.

Therefore, we conclude that there is long run relationship between fiscal stance variables and economic growth. It also indicates that fiscal policy will be effective in supporting economic growth. The result of the Granger Causality test presented in table 4 shows that there exist a uni-directional causality that runs from LGREX to LGDP, LGNOILREV to LGDP, LGOILREV to LGDP, LGTB to GFD, GRECEXP to LGCAPEXP, LGOILREV to GCAPEXP, GTB to GCAPEXP, LGNOILREV to LGRECEXP and GOILREV to GRECEXP. The result also indicates that a bi-directional causality runs from LGOILREV and LGNOILREV and vice versa. The results of the error correction models as contained on table 6 (Appendix) provided evidence for equilibrium to be restored after short-run disturbances as indicated by the statistically significant and negatively signed coefficients of the error correction term.

Following short run disequilibrium in real GDP, error correction coefficients show that the average adjustment is 63% in the cointegration equation. Therefore, the 63% adjustment to the short run disequilibrium shows a tendency of improvement the Nigerian economic growth. The result also shows that all the diagnostic test statistics are quite satisfactory. In consonance with a priori expectation, government expenditures were found to affect growth significantly. The economic growth equation has statistically significant coefficients for Fiscal deficits (FD); Capital Expenditure (GCAPEXP); Recurrent Expenditure (GRECEXP); Government Non-Oil Revenue (GNOILREV) and the past levels of economic growth. Treasury Bills (TB) and Oil revenue (GOILREV) although affected growth positively especially within the first lag, they were however found to be insignificant.

## CONCLUSION AND RECOMMENDATIONS

The result shows that fiscal policy variables; fiscal deficit, government recurrent and capital expenditure, non-oil revenue are the main determinant of economic growth. Oil revenue and Treasury bill were found to be insignificant both at 5% and 10% levels. Based on the findings of this study, we therefore recommend that 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. More importantly, there should be macroeconomic policy mix in managing the economy (especially monetary and fiscal policies) and sorts. Finally, government spending should be done with due regard to resource availability, as the price of oil, Nigeria's major revenue earner, is volatile and prone to the vagaries of the international market.

**Table 1:** Augmented Dickey – Fuller for Unit Root

Variable	Critical Value	levels	First Difference	Order of Integration
FD	-3.523623	4.175998	1.003301	1(1)
GDP	-3.523623	-1.631444	-5.672588**	1(1)
LGCAPEXP	-3.523623	-2.205230	-6.605732**	1(1)
LGRECEXP	-3.523623	-2.771689	-7.898440**	1(0)
TB	-3.523623	-2.246313	-7.103743**	1(1)
LGNOILREV	-3.523623	-2.587281	-7.668386**	1(1)
LGOILREV	-3.523623	-3.226662*	-7.131891	1(0)

\*Denotes Rejection of Null Hypothesis at 5%

\*\* Denotes rejection of Null hypothesis at 10%

**Table 2:** Philip Perron Test for Unit Root

Variable	Critical Value	levels	First Difference	Order of Integration
FD	-3.523623	2.774848	-3.663438**	1(0)
GDP	-3.523623	-1.851645	-5.671538**	1(1)
LGCAPEXP	-3.523623	-2.328782	-6.637476**	1(1)
LGRECEXP	-3.523623	-2.771689	-8.441215	1(1)
TB	-3.523623	-2.265862	-7.294232**	1(1)
LGNOILREV	-3.523623	-2.485743	-7.954517**	1(1)
LGOILREV	-3.523623	-3.331659*	-7.271754**	1(0)

\*Denotes Rejection of Null Hypothesis at 5%

\*\* Denotes rejection of Null hypothesis at 10%

**Source:** Author's estimation using E-view 3.0

**Table 3: Results of Johansen's Co-integration Test**

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.789608	63.91005	46.23142	0.0003
At most 1	0.532802	31.20109	40.07757	0.3486
At most 2	0.466600	25.76783	33.87687	0.3351
At most 3	0.269496	12.87482	27.58434	0.8917
At most 4	0.254217	12.02614	21.13162	0.5451
At most 5	0.154250	6.868813	14.26460	0.5048
At most 6	0.026311	1.093212	3.841466	0.2958

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level

\* denotes rejection of the hypothesis at the 0.05 level

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

**Table 4: Granger Causality Tests**

Null Hypothesis:	Obs	F-Statistic	Probability
FD does not Granger Cause LGDP	40	0.54017	0.58743
LGDP does not Granger Cause FD		0.46109	0.63437
LGCAPEXP does not Granger Cause LGDP	40	0.26606	0.76793
LGDP does not Granger Cause LGCAPEXP		12.3921	8.5E-05
LGRECEXP does not Granger Cause LGDP	40	6.42176	0.00421
LGDP does not Granger Cause LGRECEXP		1.58672	0.21896
LGNOILREV does not Granger Cause LGDP	40	0.19160	0.82650
LGDP does not Granger Cause LGNOILREV		7.27082	0.00229
LGOILREV does not Granger Cause LGDP	40	0.91894	0.40835
LGDP does not Granger Cause LGOILREV		3.92635	0.02894
LTB does not Granger Cause LGDP	40	0.86435	0.43012
LGDP does not Granger Cause LTB		0.94831	0.39712
LGCAPEXP does not Granger Cause FD	40	0.17524	0.83999
FD does not Granger Cause LGCAPEXP		1.68965	0.19929
LGRECEXP does not Granger Cause FD	40	0.18101	0.83520
FD does not Granger Cause LGRECEXP		1.01972	0.37116
LGNOILREV does not Granger Cause FD	40	0.19399	0.82454
FD does not Granger Cause LGNOILREV		1.70018	0.19739
LGOILREV does not Granger Cause FD	40	0.13569	0.87357
FD does not Granger Cause LGOILREV		2.00666	0.14961
LTB does not Granger Cause FD	40	5.65700	0.00743
FD does not Granger Cause LTB		0.41472	0.66373
LGRECEXP does not Granger Cause LGCAPEXP	40	3.50568	0.04095
LGCAPEXP does not Granger Cause LGRECEXP		0.21595	0.80684
LGNOILREV does not Granger Cause LGCAPEXP	40	1.97323	0.15417
LGCAPEXP does not Granger Cause LGNOILREV		1.73019	0.19207
LGOILREV does not Granger Cause LGCAPEXP	40	8.69271	0.00086
LGCAPEXP does not Granger Cause LGOILREV		0.20068	0.81911
LTB does not Granger Cause LGCAPEXP	40	2.27531	0.11776
LGCAPEXP does not Granger Cause LTB		2.80271	0.07430
LGNOILREV does not Granger Cause LGRECEXP	40	0.45034	0.64105
LGRECEXP does not Granger Cause LGNOILREV		9.98774	0.00037
LGOILREV does not Granger Cause LGRECEXP	40	0.30111	0.74189
LGRECEXP does not Granger Cause LGOILREV		6.53633	0.00387
LTB does not Granger Cause LGRECEXP	40	1.77800	0.18390
LGRECEXP does not Granger Cause LTB		1.10797	0.34153
LGOILREV does not Granger Cause LGNOILREV	40	4.90987	0.01320
LGNOILREV does not Granger Cause LGOILREV		2.78129	0.07568
LTB does not Granger Cause LGNOILREV	40	2.43304	0.10248
LGNOILREV does not Granger Cause LTB		1.48494	0.24044
LTB does not Granger Cause LGOILREV	40	1.21445	0.30908
LGOILREV does not Granger Cause LTB		1.83360	0.17486

Source: Author's estimation using E-views 3.0

**Table 5: Long run VECM estimates**

Regressors	Long run estimate	Standard error	t-values
LGDP(-1)	1.000000		
FD(-1)	9.58E-07	(3.0E-07)	[ 3.16830]
LGCAPEXP(-1)	-0.298596	(0.09092)	[-3.28428]
LGRECEXP(-1)	-0.832638	(0.20146)	[-4.13292]
LGNOILREV(-1)	-0.298084	(0.13280)	[-2.24469]
LGOILREV(-1)	0.448885	(0.15649)	[ 2.86849]
LTB(-1)	-0.079954	(0.04361)	[-1.83341]
C	-0.846548		

**Table 6: Short run VECM estimates**

Error Correction:	D(LGDP)	D(FD)
CointEq1	-0.634703 (0.14954) [-4.24426]	-757986.7 (286165.) [-2.64878]
D(LGDP(-1))	0.433006 (0.21772) [ 1.98884]	501813.9 (416623.) [ 1.20448]
D(FD(-1))	5.85E-07 (1.9E-07) [ 3.13816]	1.197703 (0.35672) [ 3.35755]
D(LGCAPEXP(-1))	0.269061 (0.11158) [ 2.41131]	380842.6 (213523.) [ 1.78361]
D(LGRECEXP(-1))	-0.445550 (0.17141) [-2.59935]	-159102.2 (328005.) [-0.48506]
D(LGNOILREV(-1))	-0.252921 (0.09731) [-2.59924]	-411342.5 (186202.) [-2.20912]
D(LGOILREV(-1))	0.117499 (0.14877) [ 0.78980]	42207.64 (284686.) [ 0.14826]
D(LTB(-1))	0.103122 (0.06913) [ 1.49167]	497438.2 (132290.) [ 3.76020]
C	0.093058 (0.02777) [ 3.35149]	-66867.28 (53132.8) [-1.25849]
R-squared	0.593755	0.660693
Adj. R-squared	0.328812	0.439406
F-statistic	2.241068	2.985686

**Source:** Author's estimation using E-views 3.0



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