FISCAL DEFICIT AND ECONOMIC GROWTH IN NIGERIA (1970-2011): A DISAGGREGATED APPROACH

Ali Danjumah Umaru and Ahmad Usman Gatawa
Department of Economics,Sokoto State University, Sokoto
E-mail: umaruali38@yahoo.com +234**8134042317**

Abstract
The role of expansionary fiscal policy on economic growth has generated series of intellectual brainstorming on whether a prolonged deficit budget induces or reduces national output particularly in the developing economies. The outcome probably depends on how the deficit is being financed and its distribution between capital and recurrent expenditure. This paper examines the impact of fiscal deficit and a disaggregated government expenditure on economic growth in Nigeria from 1970 to 2011 using autoregressive distributed lagged (ARDL) approach. It further investigates the nature and direction of causality between economic growth and the explanatory variables. The ARDL estimation reveals that a percentage increase in fiscal deficit expands the national output by 10.05% while a 10% increase in government capital expenditure in Nigeria increases the growth rate of the economy by 62.21%. However, recurrent expenditure has no significant impact on economic growth. On the direction of causality, a unidirectional causality is found running from capital expenditure to economic growth, while no causality between recurrent expenditure and economic growth and also between fiscal deficit and economic growth. From the analyses, it has been empirically confirmed that deficit budget and capital expenditure in Nigeria are growth inducing, therefore we recommend a sustainable and absorbable deficit budget which should be geared towards capital projects like infrastructural and human capital development to achieve sustainable growth and development, not as it is currently being directed towards unproductive and insignificant recurrent expenditure.

Keywords*:* Fiscal deficit, government expenditure, economic growth, disaggregate approach

Introduction
The achievement of an inclusive and sustainable growth has been acknowledged as a major macroeconomic prerequisite for development. Economic growth simply means a persistent quantitative expansion in national output over a period of time. It is measured in terms of Gross Domestic Product which is the total value of goods and services produced by the citizens and aliens living within the geographical territory of a country over a period of time usually a year. Maji and Achegbulu (2012) see economic growth as annual percentage increase in Gross Domestic Product (GDP). When the GDP is averaged by the total number of the population it gives per capita income. In a situation where national output expands at a rate higher than the population growth rate, more income is expected to be at individuals' disposal hence, increasing general living standard of the people. In both developing and emerging economies, policy makers see GDP growth parameter as the leading performance indicator in reducing unemployment, inequality and poverty. However, evidence from the developing countries particularly Nigeria, has proved otherwise. To curb the menace of non-inclusive growth in Nigeria, fiscal policies implemented has left behind a prolonged deficit balance on the Nigerian budgetary system. The sustained deficit budget accompanied by a cyclical non-inclusive growth in Nigeria implies an existence of relationship between fiscal deficit and economic growth unless it is empirically proved otherwise.

Fiscal Policy can be defined as a tool of macroeconomic management used by government to control the economy via its revenue and expenditure portfolios. The revenue portfolio consists of components like tax revenue, trade surplus, foreign aid etc while the expenditure portfolio consists of recurrent and capital expenditure. The equality between the planed

government expenditure and expected revenue for a fiscal year is called balanced budget. However, when differences occurred between the revenue-expenditure portfolios, it results to either surplus budget (excess or revenue over expenditure) or deficit budget (excess of expenditure over revenue). Chimobi and Igwe (2010) defined budget deficit as a fiscal period where total government expenditure exceeds it revenue. The concept of budget deficit has been used interchangeably with fiscal deficit in economic literature. This reason may not be unconnected with the fact that, the focused and nature of any country fiscal policy for a particular year is captured by the annual budget. Therefore a contraction in fiscal policy leads to surplus budget while expansionary fiscal policy (fiscal deficit) results to a deficit budget.

Most developed countries are less faced with the problem of deficit budget due to their strong fiscal structure while their developing counterparts are seriously faced with it (see Sahan and Bektasogh, 2011). This may not be unconnected with unstable public revenue, economic underdevelopment, deficient government authority, high inflation and low per capital income that all characterized the developing economies.

Deficit budget deficit can be financed by printing money, running down foreign exchange reserves, borrowing from abroad and domestic markets (Sahan and Bektasogh, 2011). Each of these sources has its own implications on the macroeconomic variables of the concerned economy. If fiscal expenditures are directed towards the growth real sector of the economy in terms of infrastructural and human capital development, they would be capable of increasing output to the desired direction hence increasing average living standard of the people. However, in a country like Nigeria where fiscal operation of the government is characterized with huge recurrent spending (e.g. debt servicing, national assembly administration, maintenance, pension and gratuities etc.) which has translated into prolong fiscal deficit, obviously has serious implication on macroeconomic aggregates particularly the national output. Hence, these implications have led to a large body of literature examining the question of whether economy with prolonged fiscal deficits

and sustained excess of recurrent expenditure over capital expenditure is accompanied with persistent output expansion or contraction.

It is against this background that this paper tends to examine the impacts of fiscal deficit, capital expenditure and recurrent expenditure on economic growth in Nigeria. It also tends to investigate the nature and direction of causality between economic growth and the explanatory variables.

Theoretical framework and empirical review

This part takes a look at theoretical underpinnings and empirical reviews of fiscal deficit and economic growth nexus coupled with a disaggregated trend analysis of government expenditure and economic growth in Nigeria. From the theoretical perspective, the neo-classical economists viewed fiscal deficit as having adverse effect on economic growth. They argued that fiscal deficit being a decline in government savings will put pressure on interest rate except it is fully offset by private savings. Therefore, a decline in national saving will pressure cost of credit which crowds out private investment and results to fall in general level of output in the long-run (Mohanty, 2012).

However, the Keynes view on expansionary fiscal deficit is a short-run phenomenon anchored on the multiplier effect of government expenditure on national output. His argument assumes existence of unutilized human and material resources in terms of economic recession. Therefore, an expansion in government spending (or tax reduction) over its revenue will increase both investment and consumption hence leading to output expanding in multiple of the government expenditure. This he called the government expenditure multiplier. However the magnitude of the output expansion depends on the marginal propensity to consume (MPC). Hence government spending increases total output more rapidly in an economy with high MPC than country with low MPC. In a nutshell fiscal deficit is an important macroeconomic policy for output expansion and employment generation during a recession.

The Ricardian Equivalent Theory on the other hand views fiscal deficit as having neutral effect on

economic growth. The theory assumes individuals as maintaining permanent consumption pattern over their life-time. Since the excess of government expenditure over revenue enjoyed by the public today must be paid in form of tax in the near future, the expansionary budget will not have effect on the present individuals' consumption, as they will rather save against the tax burden to be paid in the future. Also from the investment perspective, expansionary budget which implies reduction government savings may be fully offset by the private savings as such having no effect on cost of credit hence making investment indifference. In a nutshell, fiscal deficits will neither affect real interest rate to crowd out investment nor stimulates consumption to expand output. Therefore fiscal deficit is a useful stabilization technique to smoothen the impact of revenue shocks or for meeting the requirements of lumpy expenditures (Mohanty, 2012).

A growing body of empirical studies on government expenditure and economic growth has been documented in economic literature. To start with, Audu (2012) examined the relationship between money supply, fiscal deficit and export on economic growth from 1970-2010 using error correction mechanism. His findings showed that all the variables have significant impact on economic growth. That an increase in fiscal deficit by 10% will lead to a 2% decreased in economic growth in Nigeria. In a related study, Mohanty (2012) examined impact fiscal deficit and economic growth in India using vector error correction model. His result revealed a significant negative relationship between fiscal deficit and economic growth with evidence of no causality between the two variables.

The impact of a disaggregated government expenditure on human capital development and economic growth in Nigeria attracted the attentions of Oluwatobi and Ogunrinola (2011). Their analysis using vector error correction mechanism revealed a positive relationship between government recurrent expenditure on health, education and real GDP while capital expenditure is negatively related with economic growth. However, Nurudeen and Usman (2010) revealed government expenditure on health coupled with

transport and communication related expenditures as inducing economic growth positively while capital expenditure, recurrent expenditures, as well as a disaggregated expenditure on education being negatively related to economic growth.

Wosoweil (2013) examined the relationship between fiscal deficit and some macroeconomic aggregates in Nigeria for the period 1980-2010. Using ordinary least square and Engel Granger co-integration approach, the result revealed a negative but insignificant relationship between fiscal deficit and gross domestic product. While on the direction of causality, a bi-directional relationship was reported between fiscal deficit and GDP also between government tax and unemployment in Nigeria. However, Usman et al. (2011) using vector error correction model, reported existence of long-run relationship between government spending and economic growth.

Also in their Studies Maji and Achegbulu (2012) using ordinary least square on series of data from 1970 to 2009, reported a significant and strong positive relationship between fiscal deficit and economic growth in Nigeria. They further argued that a percentage increase in fiscal deficit will lead to approximately 7.5 per cent increase in economic growth in Nigeria. While on a more specific analyses, Taiwo and Abayomi (2011) using ordinary least square on series from 1970-2008 and found a significant positive relationship between economic growth and capital and recurrent expenditure. Their analyses contradict the findings of Fajingbensi and Odusola (1999) who reported insignificant relationship between recurrent expenditure and economic growth.

Ezeasibili, Tsegba and Eze-Herbert (2012) examined the relationship between fiscal deficit and economic growth in Nigeria for the period 1970-2006. Their findings indicated that a percentage increase in fiscal deficit is capable of decreasing economic growth by 0.023 per cent. They further opined a strong negative relationship between government consumption expenditure and economic growth in Nigeria.

The forgoing inconclusive results gathered in the reviewed literature coupled with the inadequate estimation technique (e.g. ordinary least square as

used by Maji and Achegbulu, 2012; Taiwo and Abayomi, 2011) has opened a research gap necessitating a more systematic approach in examining the impact of government expenditure and fiscal deficit on economic growth in Nigeria.

Trend analyses of government expenditure and economic growth in Nigeria

From 1970 to 2011 (42 years), Nigeria being a developing economy only recorded fiscal surplus in 1971, 1973, 1974, 1979, 1995 and 1996. In 1995 during the era of tight banking policies, fiscal deficit as a ratio of GDP was less than unity i.e. 0.05% (CBN, 2011). While for the remaining 35 years were characterized with expansionary budget, the deficits as a percentage GDP was not only on the increase but also far from unity except for the years 1972, 2006, 2007 and 2008, which stood at -0.08, -0.55, -0.57 and -0.20 respectively.

This prolong deficits would not have been a cause for alarm, provided their reasonable share were directed towards capital expenditure in terms of infrastructure facilities, human capital development (education and health) and economic diversification. Unfortunately, greater part of the deficits is expended on recurrent expenditure such as debt servicing, national assembly administration, maintenance, allowances, pension and gratuities among others. For instance, the excess of recurrent expenditure over capital expenditure in 2000 stood at over N222.14bn, which skyrocketed to over N1.14tr in 2009 and approximate N2.42tr in2010 (see CBN Bulletin, 2011).This prolong irrational national spending will no doubt have bearing impact economic growth and other macroeconomic indicators in Nigeria.

Figure 1.0 Capital Expenditure, Recurrent Expenditure and Real GDP Trends in Nigeria (1970-2011) in Million Naira
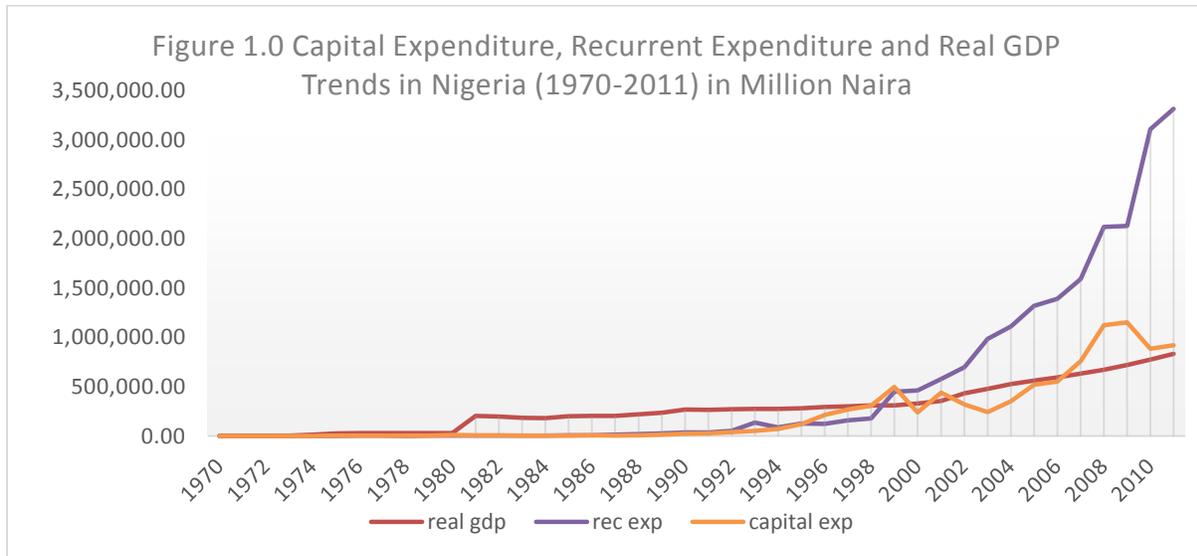
Source: Author's computation using data from CBN Bulletin (2011).

Research methodology
Sources of data
In order to estimate the empirical impacts of fiscal deficit and government expenditure on economic growth in Nigeria, secondary data were collected from Central Bank of Nigeria (CBN) statistical bulletin and National Bureau of Statistics (NBS) for the period 1970-2011.

Model and variables measurement
The model for the fiscal deficit, government expenditure and economic growth nexus can be expressed as follows:

$$GDP = f(FD, CEXP, REXP)\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots. (3.1)$$

This can be expressed in terms of an Unrestricted Vector Error Correction model as follows

$$\Delta GDP_t = \beta_0 + \sum_{i=1}^{m} \beta_1 \Delta GDP_{t-i} + \sum_{i=1}^{m} \beta_3 \Delta CEXP_{t-i} + \sum_{i=1}^{m} \beta_4 \Delta REXP_{t-i} + \alpha_1 GDP_{t-1} + \alpha_2 FD_{t-1}$$

$$+ \alpha_3 CEXP_{t-1} + \alpha_4 REXP_{t-1} + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots. (3.2)$$

where:
GDP	= gross domestic product, measured as real GDP growth rate
FD	= fiscal deficits, measured as a ratio of GDP
CEXP	= capital expenditure, measured as a ratio of GDP
REXP	= recurrent expenditure, measured as ratio of GDP
$\beta_0 - \beta_3$	=vector coefficients of the first differenced lagged value of the variables
$\alpha_1 - \alpha_4$	= coefficients of level lagged value of the explanatory variables
E	= stochastic disturbance
M	= optimum lag length to be selected based on Akaike Information Criteria
Δ	= difference operator
T	= time trend over the period of the analysis

Estimation procedure
In estimating the government expenditure and economic growth nexus in Nigeria, ARDL cointegrated approach is employed. This approach is a more robust econometric technique developed by Pesaran et al. (2001) for estimating level relationship between a dependent variable and a set of independent variables that may not necessarily be integrated of the same order. ARDL model provides consistent estimation for observations with small or finite sample size, it also allows simultaneous estimation both long run and short run relationship in the presence of a mixture of stationary and non-stationary series (Pesaran et al. 2001). However, the mixture of the series must not go beyond I(1), consequently, a unit root test using Augmented Dickey Fuller and Philip Perron stationarity testing approaches are carried out to address spurious estimation associated with time series data also to ensure that none of the variables is I(2) or beyond, while Granger causality test was finally conducted to examine the nature and direction of causality.

Unit root testing
The results of the ADF and PP test show that at level value, GDP growth rate, fiscal deficit, and recurrent expenditure are stationary at 1% level of significance except the ADF test on fiscal deficit which is stationary at 5% level. While at first difference, capital expenditure is stationary at 1% level of significance (see table 1). The absence of unit root problem in most of the variables (fiscal deficit, and recurrent expenditure) at level value may not be unconnected with the fact that they are measured as a ratio of GDP. The mixture of stationary and non-stationary series lead us to the adoption of ARDL approach which provides valid and consistent estimation for mixture of variables that are I(0) and I(1) Pesaran *et al.*(2001).

Table 1 Unit Root Test

Variables	ADF unit root test		PP unit root test	
	At a level value	At first diff.	At a level value	At first diff.
GDP	-4.6661 (-3.6019)*		-6.3691 (-3.5937)*	
FD	-2.9232 (-2.9358)**		-4.2076 (3.3597)*	
CEXP	-1.9167 (2.6059)	-5.27124 (-3.6067)*	-2.7253 (-2.9339)	-9.4819 (-3.6019)*
REXP	-3.4255 (-3.6019)*		-4.1876 (-3.5973)*	

Note: (*) and (**) signify 1% and 5% level of significance while figures in parenthesis indicate critical values for rejection of hypothesis.
Source: Author's estimation using STATA SE 10

Optimum lag selection criteria
Prior to the bound test, Optimum lag selection was carried out in order to the determined the number of lag(s) to be included in the model. Hence, Akaike Information (AIC) Criteria and the Schwarz Bayesian Information Criteria (SBIC) indicated one maximum lag selection at 1 per cent level of significant while the likelihood ratio indicates four maximum lag (see table 1). For this research work however, AIC will be adopted.

Table 2 Optimum Lag Selection Criteria

Lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	-755.271				1.6e+11	40.0142	40.0909	40.2297
1	-692.669	125.2	25	0.000	2.3e+10*	38.0352*	38.4952*	39.3281*
2	-673.338	38.662	25	0.040	3.3e+10	38.3336	39.1769	40.7038
3	-657.131	32.414	25	0.146	6.4e+10	38.7964	40.023	42.2439
4	-629.267	55.729*	25	0.000	8.4e+10	38.6456	40.2556	43.1705

Source: Author's estimation using STATA SE 10

Bound testing for existence of cointegration
The critical values for rejecting the null hypothesis have been presented alongside Wald F-test for existence of cointegration in table 2 below. These critical values are gotten from the Pesaran *et al.* (2001) table of critical value, with the formula: (k+1) = number of variables in the model. In our 4 variable model, (k+1) = 4; which implies K = 3. The null hypothesis of no cointegration between GDP and the explanatory variables could not be rejected at 5% level because the Wald F- statistic (4.141) falls inside the critical bound indicating inconclusive result. However, at 10% level our estimated F- statistic (4.141) falls outside the bound of the critical value indicating the existence of long run relationship between GDP and the independent variables (see table 2).

Table 3 Bound Test for Result
Null Hypothesis: C(18)=0=C(19)=C(20)=C(21)=0   Pesaran *el at*. (2001) Critical value

		Probability		At 1%	At 5%	At 10%
Wald Test F-statistic	4.140899	0.017220	Upper bound	5.61	4.35	3.77
Chi-square	16.56360	0.002349	Lower bound	4.29	3,23	2.72

Critical values are derived from Table CI (iii) on p.300 of <u>Pesaran *et al*</u>. (2001)
Source: Author's estimation using EViews 3.1

Estimated long run coefficients using the ARDL approach
ARDL(0,1,1,0) selected based on Akaike Information Criterion
With the empirical evidence of cointegration among the variable, the long run relationship between economic growth and the explanatory variables has been estimated using the ARDL approach with ARDL (0,1,1,0) specification selected based on Akaike Information Criterion. The result as reported in table 4 below shows that the null hypothesis of no long-run between fiscal deficit and GDP in Nigeria rejected going by the p-value (0.017) and the estimated coefficient 10.05. This indicates a strong positive relationship between fiscal deficit and economic growth at 5% level of significance. Hence a percentage increase in fiscal deficit expands the growth of national output by 10.05%. This is in line with the findings of Maji and Achegulu (2012), however contradicts the findings of Audu (2012) and Ezeasibili et al. (2012). In the same token, a significant positive relationship is discovered between capital expenditure and economic growth at 5% level of significance. The result shows that a 10% increase in government capital expenditure induces the growth rate of the economy by approximately 62.21% (see table 2), this partly corresponds with the result of Taiwo and Abayomi (2011). However, the null hypothesis of absence of long-run relationship between recurrent expenditure and economic growth in Nigeria could not be rejected going by estimated p-value which is 0.627. This conflicts the result of Oluwatobi and Ogunrinola (2011).

Table 4 Estimated Long Run Coefficients using the ARDL Approach   ARDL(0,1,1,0) selected based on Akaike Information Criterion

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
GDP	10.0527**	4.0111	2.5062 [0.017]
CEXP	6.2210**	2.9631	2.0994 [0.043]
REXP	1.3600	2.7734	.49036 [0.627]

Note: ***, ** and * signify 1%, 5%, and 10% level of significance respectively
Source: Authors estimation using Macrofit 5.01

Result of the diagnostic test of selected ARDL model
To justify the adequacy of the selected ARDL model, post-estimation diagnostic tests for serial correlation and heteroscedasticity were carried out using Macrofit 5.0. The p-value of Langrage Multiplier (LM) test for the serial correlation is 0.960 indicating that the null hypothesis of no serial correlation is accepted. This is indeed a desirable result proving the adequacy of the selected ARDL model. The autoregressive conditional heteroscedasticity test was carried out, the result reveals that the null hypothesis which says there is homoscedasticity among the variables could not be rejected going by the p-value (0.000). This indicates absence of heteroscedasticity. In a nutshell, our two post-estimation tests have complimented each other in justifying the adequacy of the model.

Granger causality test
The test on the nature and direction of causality between economic growth and explanatory variables reveals that capital expenditure granger cause economic growth without a feedback effect which implies a unidirectional causality. In addition, there is no causality between recurrent

expenditure and GDP and also between fiscal deficit and GDP (see table 3).

Table 3: Pairwise Granger Causality Tests

Null Hypothesis:	Observation	F-Statistic	Probability
GDP does not Granger Cause FD	40	2.39495	0.10597
FD does not Granger Cause GDP		2.15456	0.13109
GDP does not Granger Cause CEXP	40	0.31716	0.73029
CEXP does not Granger Cause GDP		6.09523	0.00535
REXP does not Granger Cause GDP	40	0.16978	0.84454
GDP does not Granger Cause REXP		0.38393	0.68402

Source: Author's estimation using EViews 3.1 on data sourced from CBN.

Summary
In summary, this paper has examined the impact of fiscal deficit and a disaggregated government expenditure on economic growth in Nigeria. It is discovered that the prolonged fiscal expansion maintained in Nigeria since 1970 has a strong and positive impact on the national output. This is because a percentage increase in fiscal expansion is capable of increasing growth rate of the economy by 10%. In the same vein, capital expenditure is significant and positively related to national output, as its 10% increase, expands the growth rate of the economy by 62.21%. However, government recurrent expenditure which is persistently greater than the capital expenditure (in trillions of naira) has no significant impact on the economy.

Conclusion and recommendations
A conclusion emanating from above empirical analyses is that expansionary fiscal policy is very important in the ongoing transformation process. However, it should not be expanded beyond the absorption capacity of the economy. We therefore recommend a review of the Nigerian budgetary system in terms of sustainable and absorbable deficit budget which should be geared towards capital projects like provision of critical infrastructure, economic diversification and human capital development not as it is currently being directed towards unproductive and recurrent expenditure. If this budget review is implemented with high rate of accountability and transparency, Nigeria will obviously finds its way back to the path of sustainable growth and development.

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