

Dynamic Interactions Among Budget Deficit, Economic Growth And Poverty Level Towards Capacity Building Strategy For Sustainable Development And Poverty Alleviation In Nigeria (1980-2012)

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Abstract

The study investigates the dynamic interaction among budget deficit, economic growth and poverty level in Nigeria. This is with a view to providing empirical evidence on budget deficit operation in stimulating economic development through economic growth and poverty reduction in Nigeria. Secondary data were used in this study. Data on poverty rate, real domestic and budget deficit were sourced from Statistical Bulletin published by Central Bank of Nigeria (CBN) and the National Bureau of Statistic (NBS) Abuja. Vector autoregressive Model was conducted in determining the interaction effects among the three variables. The result showed that one per cent innovation in economic growth brought about a negative response by budget deficit at the initial period but became positive over time. Also, a shock to budget deficit and real consumption expenditure per capita produced a negative response by the economic growth, but however, became positive over time.

Keywords: poverty level, budget deficit, economic growth, and error correction

INTRODUCTION

Sustainable economic growth and development is one of the most challenging issues in both developed and developing countries of the world. The importance of an effective running of monetary and fiscal policies is to reduce balance of payment deficit, control inflation, reduce unemployment and sustained economic growth. Economic growth is primarily driven by improvement in productivity, which involves producing more goods and services with the same inputs of labor, capital, energy and materials. Government spending could stimulate economic growth and it is important to know that effective use of one resource depends upon appropriate use of the other.

Over the years, government has been working in achieving sustainable development and poverty alleviation through capacity building by investing in human capital development and infrastructures. However, the country has not attained her objective given the level of poverty in the country viz and viz the rate of increase in budget deficit. Therefore, a strategic capacity building and more proactive policy will be needed by the government through an empirical investigation in achieving sustainable development and poverty alleviation in Nigeria. The development of budget deficit is often traced to the Keynesian inspired expenditure-led growth theory (Oladipo and Akinboola, 2011). The Keynesian

agitate that the intervention of government in financing budget deficit is to motivate aggregate demand which will increase economic growth of an economy. Keynes believed that budget deficit result in an increase in domestic production which makes private investors better off. Over the years government spending has exceeded its available resources thereby leading to deficit. Most time budget deficit is consciously and deliberately implemented in order to attain economic development. The aim of government in financing budget deficit is to achieve full employment of resource, price stability, create conducive environment for both private and public investment, and create job opportunities which translate to economic growth and poverty reduction in an economy.

STATEMENT OF PROBLEM

Nigerian economy has been growing over time given the upward trend of GDP. In spite of this, the country has been facing a lot of economic crisis (indebtedness, high rate of inflation; poor investment performance, unemployment and increase in poverty rate). Moreover, with the volatile revenue base of the government, fiscal deficits still persist in the economy. However, the possible adverse effect of fiscal deficits remains an issue in the mind of policy makers. Studies have shown that over 70 per cent of Nigerian population lives below one dollar per day (Ogun 2010). Precisely, poverty has increased from

27.2 per cent in 1980 to 42.7 per cent in 1992 and to 69 per cent in 2010. Also, government expenditure increased from 11,413.70 million naira in 1980 to 92,797.40 million naira in 1992 and increased greatly to 4,194,217.88 million naira in 2010. Therefore, it is fallacious to conclude that the increase in government expenditure is as a result of continuous increase in the level of poverty over the years without empirical findings. Also, economic growth over this period has been on the increase; however it cannot be concluded that increase in government expenditure that has led to budget deficit has contributed to the increase in economic growth without proper investigation.

Thus, studies like Chude and Chude (2013), Vincent and Clem (2013); Adewale and Oloni (2012), Folorunsho and Felix (2008), Ogunmuyiwa (2011), Adesoye et al (2010), Omoke (2010), Vincent et al (2012), and Paiko, (2012) among others, have examined the impact of government spending on economic growth, without considering the issue of poverty in relation to economic growth and budget deficit. Therefore, this necessitate further empirical findings on the interaction among budget deficit, economic growth and poverty in order to guide policy makers on the right path to economic development. Based on the above issues, it is then imperative to know the dynamic interaction that exists among budget deficit, economic growth and poverty level in Nigeria for the period 1981 to 2012. Therefore, the objective of this study is to analyze the interactive effects among budget deficit, economic growth and poverty level in Nigeria.

LITERATURE REVIEW

There are three views on the relationship between budget deficit and economic growth. These are the Keynesian, the Neoclassical and the Ricardian Equivalence Hypothesis schools of thought (REH). Keynesian was of the opinion that, positive relationship exist between budget deficit and economic growth while the Neo-classical opined that an inverse relationship exist between budget deficit and economic growth. Moreover the REH believed that a neutral relationship exists between budget deficit and economic growth. However, many postulates of these schools of thought have presented conflicting and inconclusive evidence of the relationship that exists between budget deficit and economic growth both at local and international level.

Bahmani (1999), using Johansen Juselius cointegration technique to examine budget deficit and investment considering quarterly data for the period of 1947-1992 concluded that, budget deficit crowd in real investment, which is in agreement with the Keynesian proposition. However, his findings was in conflict with the work of Vincent and Clem (2013) that examined the crowding-out effect of budget deficits on private sector investments within the

Nigerian context, using data for the period of 1970-2006. The result indicated that budget deficits had a depressive effect on private investment in the country. The estimation results suggest that a 1% increase in fiscal deficit leads to 0.267% decline in private investment. The results also indicate that Nigeria's debt profile has had strong and negative impact on private investment in Nigeria.

Ranjan and Sharma (2008) showed that government expenditure exerted significant positive impact on economic growth in India during the period 1950-2007, and that the two sets of variables cointegrated. This was in line with the earlier work of Barro (1979) who observed a positive and significant impact of budget deficit on economic growth. In empirical study by Najid (2013), the relation between budget deficit and gross domestic product in Pakistan was investigated by employing a time series data for the period of 1971-2007. The result showed that there was bi-directional causality running from budget deficit to GDP and from GDP to budget deficit. This was a contrary view to the earlier work of Nur Hayati (2012) who established a no link of relationship between budget deficit and economic growth in the long run in Malaysia. This result was also supported by a study carried out by Ghali (1997) in Saudi Arabia. A contradicting study result came from the work by Gohar Fatima (2012). The study finds negative relation between budget deficit and economic growth in Pakistan. This finding was supported by the work of Ghosh and Hendrik (2009). They reported that, *ceteris paribus*, an increase in budget deficits slows growth of the U.S. economy.

Bose (2007) find positive relation between budget deficit and economic growth in 30 developing countries. In contrary, Laudau (1983) examined the effect of government deficit on economic growth for a sample of 96 countries and found that government deficit exerts a negative effect on real output. The empirical work of Adam and Bevan (2004) was on the relationship between fiscal deficits and growth (GDP) for a panel of 45 developing countries. Based on the consistent treatment of budget constraints, the study found evidence of a threshold effect at a level of the deficit around 1.5 per cent of GDP. The threshold involves not only a change of slope but also a change of sign in the relation regardless of the budget category excluded from the model, indicating that for an economy not on its steady state growth path, there is a range over which deficit-financing may be growth-enhancing. This was supported by the work of Olugbenga and Owioye (2007)

The work of Olugbenga and Owioye (2007) investigated the relationships between government deficit financing and economic growth in a group of 30 OECD countries for the period 1970-2005 using regression analysis. Their analysis showed that a

long-run relationship exists between government expenditure and economic growth, and also indicated existence of feedback relationship between government expenditure and economic growth.

In summary, based on the conflicting results obtained from the literatures reviewed on the budget deficit - economic growth nexus in Nigeria, this study deserves further empirical investigation. This is because most of the studies reviewed fail to investigate the various effects of budget deficit on poverty on one hand and the dynamic interactions among budget deficit, economic growth and poverty reduction in Nigeria on the other hand.

METHODOLOGY

Theoretical Framework

Recent literature on endogenous economic growth theory has provided some insight into the reason why some countries grow at different rate over periods of time. In most of these models, fiscal variables which are capable of yielding predictions of long run or steady state growth usually model economic growth (y) as a function of number of growth determinants. This study employs the popular endogenous growth theory as analyzed by Barro (1990) and Barro and Sola-i-Martin (1992) using AK model. Authors such as Brauning (2002), De castro (2004) and Perotti's (2004) study of five OECD countries have pointed out that budget deficit influences economic growth using the endogenous growth model. Thus, the study makes use of the Cobb-Douglas production function:-

$$Y = f(AK^\alpha, L^\beta) \dots\dots\dots 1$$

Where $\alpha, \beta > 0$

Y represents output/real GDP, K and L stand for capital and labor, A is the efficiency parameter while α and β are the parameters representing the output elasticity of such inputs. Modifying the Cobb-Douglas production function by accommodating budget deficit, we have equation (2)

$$Y = f(AK^\alpha, L^\beta, Bd) \dots\dots\dots 2$$

Equation 2 is a modified Cobb-Douglas production function that accommodates the budget deficit (Bd), whereas the endogenous growth model looks at the investment and capital in a country.

Model Specification

A way to summarize the dynamics of macroeconomic data is to make use of vector autoregressive model. VAR models have become increasingly popular in recent decades. They are estimated to provide empirical evidence on the response of macroeconomic variables to various exogenous impulses in order to discriminate between alternative theoretical models of the economy. This simple framework provides a systematic way to capture rich dynamics in multiple time series, and the statistical toolkit that came with VARs was easy to use and to interpret. As Sims (1980) and others argued in a series of studies, VARs held out the promise of

providing a coherent and credible approach to data description, forecasting, structural inference and policy analysis.

With vector autoregressive models it is possible to approximate the actual process by arbitrarily choosing lagged variables. Thereby, one can form economic variables into a time series model without an explicit theoretical idea of the dynamic relations. A VAR is an n equation, n variable model in which each variable is in turn explained by its own lagged values, plus (current) and past values of the remaining $n-1$ variables. A VAR can be thought of as the reduced form of a dynamic economic system involving a vector of variables z_t .

$$Az_t = b_1 z_{t-1} + b_2 z_{t-2} + \dots\dots\dots + b_p z_{t-p} + u_t$$

$$(3) z_t = (bd_t, gdp_t, rcx_t) \text{ and } u_t = \sum e_t \text{ where}$$

$b_1, b_2, \dots, b_p$ are the coefficient of budget deficit, economic growth and poverty level. Therefore, z_t can be expressed as thus:

$$bd_t = b_1 bd_{t-1} + b_2 gdp_{t-1} + b_3 rcx_{t-1} + e_{1t} \dots\dots\dots (4)$$

$$gdp_t = b_4 gdp_{t-1} + b_5 bd_{t-1} + b_6 rcx_{t-1} + e_{2t} \dots\dots\dots (5)$$

$$(5) rcx_t = b_7 rcx_{t-1} + b_8 bd_{t-1} + b_9 gdp_{t-1} + e_{3t} \dots\dots\dots (6)$$

Therefore, equation 4 to 6 will be estimated in obtaining the dynamic effect that exists among budget deficit, economic growth and poverty reduction

Where gdp = real gross domestic product, bd = budget deficit, rcx = poverty level proxied by Real Consumption Expenditure per Capita as a measure which is superior to income measures (Okojie, 2002 and Ogun 2010.)

This study used essentially secondary data for its analysis. The data on the variables were obtained from the following sources: (i) Central Bank of Nigeria (CBN) Statistical Bulletin (2010), National Bureau of Statistics (NBS) various issues and World Development Indicator (2012).

EMPIRICAL RESULTS

Time Series Properties of the Data

From Table 1 below, it was confirmed that, all the variables (real consumption expenditure per capita, budget deficit and gross domestic product) were not stationary at level. However they became stationary after first difference since the series were integrated of order one i.e. I (1) at 5 per cent level of significance.

Table 1: ADF Statistics for Testing Unit Roots in the Variables

Series	Level	First Diff	Remark
Bd	-1.76	-7.45	I(1)
Log(Rcx)	-1.43	-6.15	I(1)
Log(gdp)	0.02	-4.42	I(1)

Critical Value at 5% = 2.99,

Sources: computed from study data

Consequently, the presence of significant co-integration relationship among the variables could be determined, but in doing this the optimal lag length must be observed.

From Table 2, the Akaike Criteria (AIC), Schwarz Bayesian Criteria (SBC) and Hannan-Quinn Information Criterion (HQ) indicated that the optimal lag structure for the VAR upon which the cointegration analysis is based is two.

Table 2: Determination of Optimal Lag Length

	LogL	LR	FPE	AIC	SC	HQ
0	-119.349	NA	23.07821	11.6523	11.80152	11.68469
1	-44.5399	121.1199	0.044389	5.384747	5.981617	5.514283
2	-25.8486	24.92167*	0.018828*	4.461771*	5.506293*	4.688459*
3	-19.6022	6.543887	0.029057	4.724015	6.21619	5.047855
4	-14.1387	4.162634	0.05923	5.060829	7.000656	5.481821

*indicates lag order selected by the criterion at 5 per cent level of significance.

Therefore, the cointegration test was carried out using Johansen cointegration test with lag 2. This is because Johansen cointegration is a superior test that lies on asymptotic property that is sensitive to error in small sample. It is also robust to many departures from

normality as it gives room for the normalization with respect to any variable in the model that automatically becomes a dependent variable. This result of the cointegration test is presented in Table 3

Table 3: Result of the Cointegration Test

Sample (adjusted): 1983 2010
Included observations: 23 after adjustments
Trend assumption: No deterministic trend (restricted constant)
Series: BD LOG(GDP) LOG(RCX)
Lags interval (in first differences): 1 to 2

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None	0.538707	32.50699	35.19275	0.0948
At most 1	0.354245	14.71140	20.26184	0.2434
At most 2	0.183143	4.652696	9.164546	0.3237

Trace test indicates no cointegration at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

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

The results of the co-integration test in Table 3 confirmed that there is no co-integration relationship among the macro economic variables included in the model. Therefore, we proceeded in obtaining the interactive effects among budget deficit, economic growth and poverty level using impulse response approach by estimating the VAR models stated in equations 4-6 with their first difference.

In Figure 1, one standard deviation in the model is calculated in percentage. For each of the variables, the

horizontal axis of the IRF shows the number of periods that have passed after the impulse has been given, while the vertical axis measures the responses of the variables. Evidently from Figure 1 (Panel b), it is observed that one per cent innovation in economic growth brought about a negative response by budget deficit at the initial period but became positive over time. Also, (Panel h) is the response of real consumption expenditure per capita that responded

negatively to economic growth at the initial period became positive at the 5th period and fall to negative thereafter.

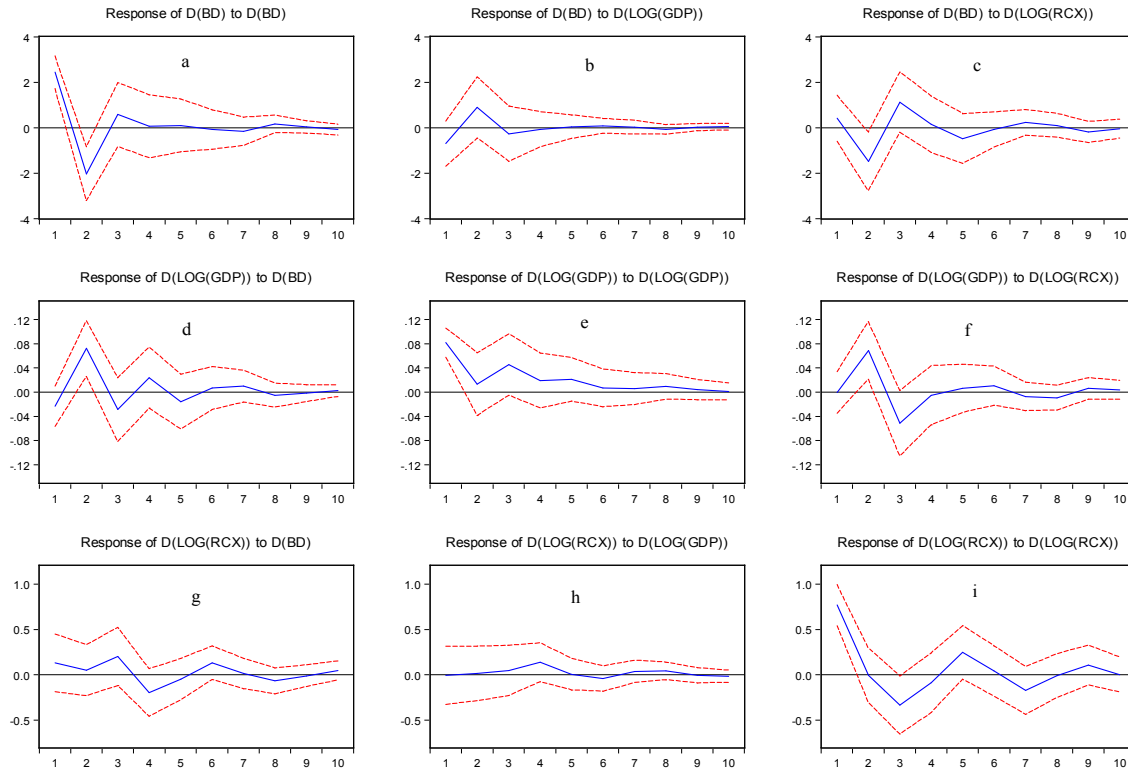


Figure 1: Impulse Response Functions
Source: Author's Computation (2014).

From (Panel d and f) a shock to budget deficit and real consumption expenditure per capita produced a negative response by the economic growth, but however, became positive response over time. Moreover, is the fluctuating response of real consumption expenditure per capita between positive and negative horizon as a result of an innovation in budget deficit?

CONCLUSION/POLICY REMARKS

The implications from the above is that when budget deficit is financed in Nigeria, it may affect economic growth positively over time but the negative response by the real consumption expenditure shows that budget deficit in Nigeria has not been impacting positively on poverty level of the country which is the main objective of government interventions in an economy. This is a true picture of Nigerian economy since most time budget deficit are tailored towards recurrent expenditures and not capital project that may affect the poor in the long run. This also explains why the response of real consumption expenditure per capita to economic growth has not shown any significant impact on poverty reduction in Nigeria.

Therefore, it is recommended that, budget deficit should be channelled towards capital projects that are capable of creating conducive environment for both public and private investment. This is necessary in

order to create jobs and increase real per capita consumption expenditure. Doing these could bring about economic growth and poverty reduction in the country.

CONTRIBUTION TO KNOWLEDGE

This study has contributed to literature by investigating the dynamic interaction that existed among fiscal policy, economic growth and poverty level in Nigeria for the period 1981 to 2012. Moreover, it has also shed light on how budget deficit financing can be used as a strategy for capacity building for sustainable development and poverty alleviation in Nigeria.

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