



Canadian Social Science
Vol. 10, No. 5, 2014, pp. 201-205
DOI:10.3968/4517

ISSN 1712-8056[Print]
ISSN 1923-6697[Online]
www.cscanada.net
www.cscanada.org

The Short and Long-Run Implications of Budget Deficit on Economic Growth in Nigeria (1980-2011)

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Received 16 February 2014; accepted 23 April 2014
Published online 18 June 2014

Abstract

This research work investigated the short and long run implications of budget deficit on economic growth in Nigeria. The sample study comprises of time-series data covering period of 1980-2011. Regression analysis is conducted to ascertain and affirm the impact of Budget Deficit on the Economic growth in Nigeria. The result from the OLS regression analysis indicated that a negative relationship exist between budget deficit and economic growth. Johansen cointegration technique was used to investigate the long run effect of budget deficit. It was found that there is a significant long-run relationship between budget deficit and economic growth in Nigeria. The error correction model revealed that budget deficit shows a negative relationship with gross domestic product while gross capital formation (investment) shows a positive relationship with GDP. The study recommends that budget deficit should be financed appropriately to help promote economic growth in the nation.

Key words: Budget deficit; Economic growth (GDP); Gross investment (grGCF); Gross savings; Interest rate

Awe, A. A., & Funlayo, A. K. (2014). The Short and Long-Run Implications of Budget Deficit on Economic Growth in Nigeria (1980-2011). *Canadian Social Science*, 10(5), 201-205. Available from: <http://www.cscanada.net/index.php/css/article/view/4517>
DOI: <http://dx.doi.org/10.3968/4517>

INTRODUCTION

Budget deficit is an economic technique of overcoming depression. It represents the government's expenditures

which exceed the revenue generated. Sub-Sahara African countries contain of developing countries where deficit and its financing have over the years constituted challenges to economic advancement and growth of the region. Several researchers like Olumuyiwa (2001), Olomola and Olagunju, (2004), Oladipo and Akinbobola (2011), Abu and Achegbulu (2012), Mojekwu and Ezeabasili (2012), Awe and Olalere (2012), have addressed budget deficit effects, its financing and relationship with various economic variables such as inflation, interest rates, accounts balance, trade deficit etc.

Nigeria commonly referred to as a country with large economic process is visaged with public expenditure management which the Structural Adjustment Programme introduced in 1986 and a few financial reforms introduced recently were expected to capture. The budget analyses of the country have been in deficit over the years. The expertise of unsustainable deficits in most developing countries like Nigeria, exploit heavy debt burden and poor economic performance which had led to substantial deterioration in welfare of the people suggests that budget deficit in Nigeria ought to be re-examined.

The consistent high deficit in Nigeria necessitates the need to look at its short and long-term impact on economics variables within the country. The motivation of this study is to check for the short run and long-term impact of deficit on economic process in Nigeria through: assessing the trend pattern of deficit and output rate of growth in Nigeria and examining the short run and long-term effect of deficit on output growth in Nigeria.

1. LITERATURE REVIEW

There are controversial thoughts on the relationship between budget deficit and economic growth: the Keynesian economists argued that there is positive relationship between these two series, the new classical economists argued the opposite, while, the Ricardian

equivalence hypothesis claimed that there is neutral relationship between budget deficit and economic growth in a country. Budget deficit occurs when government expenditures exceed its revenues, thus the level of public savings is negative. This may give harm to the economic growth of a country.

Al-Khedair (1996) studied the relationship between the budget deficit and economic growth in the seven major industrial countries (G7) with data covering 1964 to 1993 and found that budget deficit has a significant positive impact on economic growth in France, Germany, and Italy. He concluded that budget deficit positively and significantly affects economic growth in all the seven major industrial countries analyzed.

Oladipo and Akinbobola (2011) used Granger causality pair-wise test in determining the causal relationship between budget deficit and inflation found that there was no causal relationship from inflation to budget deficit but from budget deficit to inflation in Nigeria. This indicates that budget deficit affects inflation through fluctuations in exchange rate in the Nigerian economy.

Najid Hamid (2013) used granger causality test in estimating the relationship between budget deficit and economic growth of Pakistan using time series data for the period of 1971 to 2007. He found that bi-directional causality runs from budget deficit to GDP and GDP to budget deficit. He concluded by analysing that Budget deficit has no role in bringing back the economy of the country to a stable level of equilibrium.

2. THEORETICAL FRAMEWORK

Keynesian theory indicates that, in an underemployed economy, an increase in the deficit raises disposable income which stimulates aggregate demand. This theory is based on the National Income Identity where $Y = C + I + G + (X - M)$. This theoretical framework follows the work of Mojekwu and Ezeabasili (2012). Where Y represents GDP, C is private consumption, I stand for private investment, G is government expenditure, X and M stand for exports and imports respectively. Assuming the aggregate demand = $C + I + G$

$$Y - (C + I + G) = X - M \quad (1)$$

$$Y - (C + I + G) = X - M \quad (2)$$

Equation (2) reflects the behaviour of the external sector of the economy. The direct interpretation is that, external imbalances always trigger a series of developments in the economy, which in this case is budget deficit. Therefore, any attempt to restore the balance must include effort to align revenue with expenditure. In order to isolate the disposable income, tax (T) and international reserve (R) based on the assumption of the fixed exchange rate regime are introduced into the national income identity. It follows that Equation (1) will become:

$$Y + R - T = C + I + (G - T) + (R + X - M) \quad (3)$$

$$S = Y + R - T - C, \text{ where S (savings) is the disposable}$$

income minus private consumption. the private absorption capacity is represented by $(C + I)$, $(G - T)$ represents budget deficit, the current account balance CAB indicates $(R + X - M)$, Substituting S and CAB by their respective components, we get:

$$(S - I) + (T - G) = (R + X - M) \quad (4)$$

It is often argued that deficit in the current account occurs when aggregate investment outweighs aggregate savings. However, if investments equals' savings and government expenditure is greater than its revenue then, the current account deficit becomes inevitable. The literature on the current account is quite obvious when it indicates the degree at which the domestic economy interacts with its external assets. Thus, $(X + R - M)$ would also be equivalent to the increase in net official assets plus the rate of capital outflow that is ΔNFA .

$$\text{Hence } CA = \Delta NFA \quad (5)$$

$$\text{Thus, } (S - I) + (T - G) = \Delta NFA \quad (6)$$

This indicates that budget deficit will be financed through a reduction in external net claims and domestic financing.

3. RESEARCH METHOD

Econometric test of unit root is employed to test for the order of integration and determine how stationary the data used are. Cointegration tests is conducted to determine the long run relationship existing among the variables with error correction model (ECM) also being used to adjust and correct for the possible short run dynamic behavior of the variables.

Model Specification:

Following the theoretical framework above, the following model was adopted;

GDP = investment, private savings, interest rate, budget deficit).

$$GDP = \beta_0 + \beta_1 I + \beta_2 G_s + \beta_3 Int + \beta_4 BD + e_t$$

4. DISCUSSION OF FINDINGS

4.1 Trend Analysis of Gross Domestic Product and Budget Deficit in Nigeria

Figure 1 indicates the trend analysis of annual GDP growth rates in Nigeria. Unprecedented growth was achieved in 1988(9.9%) after SAP which was slowed down in 1995 to 2002 as a result of over dependence on oil sector. The economy was vibrant as growth in domestic output was robust and broad-based in 2010(8%), due to sound economic management policies and vast economic reforms. The real Gross Domestic Product (GDP), measured in 1990 basic prices grew by 7.9 per cent, compared with 7.0 percent in 2009. Growth in 2010 was attributed largely to the performance of

the non-oil sector output which grew by 8.5 percent output.2011 recorded 7.4% annual growth rate in GDP. complimented by a significant increase in oil sector

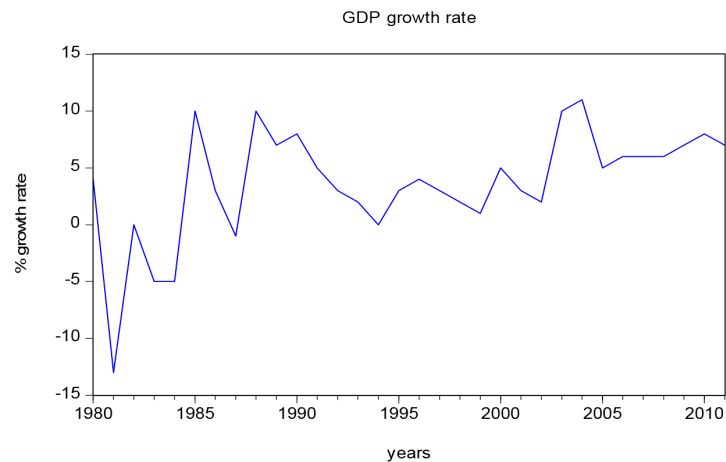


Figure 1
Nigeria GDP Annual Growth Rate Trend (1980-2010)

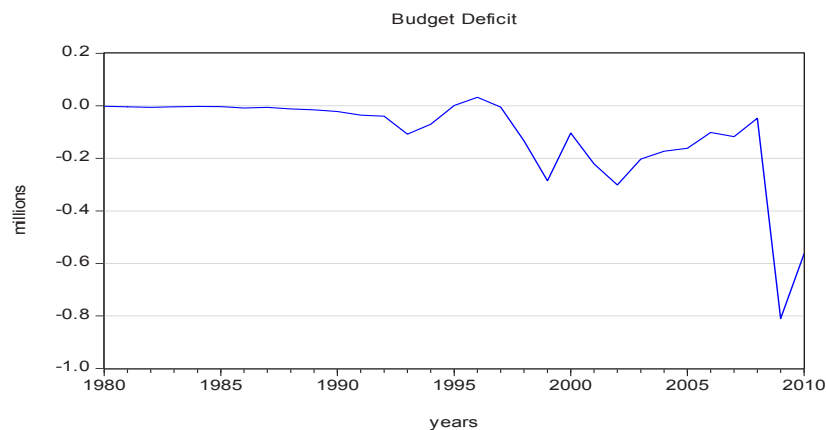


Figure 2
Trend Analysis of Budget Deficit in Nigeria

Figure 2 indicates that Nigeria recorded a budget surplus in 1995 and 1996 and a rising budget deficit was seen from 1997 to 2010. This rising deficit has effect on the nations economic growth as its financing involves the use of both fiscal and monetary policy which has implications on macroeconomic variables in the nation.

4.2 Unit Root Test

This was carried out on the variables to test for their stationarity at levels and at first difference using Phillip Perron test statistics.

The Table 1 presents the estimates of the results Phillip Perron test (P-P). Evidence from the results table confirmed that all the variables except the growth rate of capital formation are not stationary at levels but were made stationary at first level, indicating that they were integrated of order (1). Consequently the presence of significant co-integration relationship among the variables could be determined.

Table 1
Results: Unit Root Test Using Phillip–Perron Test Statistics

Variables	Series	At levels	At 1 st diff	Order of integration
Gross domestic product	GDP	-1.682157	-4.926056	I(1)
Interest rate	Int. rate	-2.962917	-9.924444	I(1)
Gross capital formation	grGCF	-4.287552	-12.17031	I(0)
Budget deficit	BD	-1.937247	-9.758173	I(1)
Gross savings	GS	-2.250665	-8.178473	I(1)
Critical values	1%	-3.661661	-3.670170	
	5%	-2.960411	-2.963972	

Source: author’s computation.

Table 2
OLS Regression Result

Variable	Coefficient	Std. error	t-statistic	Prob.
C	91.12391	4.434729	20.54780	0.0000
GRGCF(1)	0.032644	0.042072	0.775915	0.4445
INT	-1.216197	0.182445	-6.666101	0.0000
GS	0.131694	0.133645	0.985401	0.3332
BD	-1.43E-05	5.37E-06	-2.659739	0.0130

Note. R-squared=64%; adjusted R-squared = 58%; F-statistic = 12; Durbin-Watson stat=1.77.

The overall fit shows a high relationship between economic growth and the explanatory variables. It shows that about 64% of the economic growth proxy by GDP is explained by the variations in the explanatory variables. However, the co-efficient of government budget deficits and interest rate is negatively signed. Therefore, budget deficits in Nigeria have been shown from empirical analysis to have a dampening effect on the growth rate of the Real Gross Domestic Product: giving credence to the monetarist position that government budget deficits were counter-productive to economic growth by increasing real interest rate, this increase will cause decrease in real investment. That is, when government budget deficit and interest rate is increased by one percent, economic growth would reduce. The Durbin Watson statistics and F-statistics are also significant.

Table 4
The Pasimonuos ECM Specification

Regressor	Coefficients	Standard error	T-ratio (prob)	[Prob]
C	2.536956	9.136884	0.277661	0.7840
GDP(-1)	0.851031	0.113772	7.480169	0.0000**
GRGCF(-2)	0.050524	0.029086	1.737061	0.0970
GRGCF(-3)	0.055494	0.024724	2.244558	0.0357**
GS(-1)	0.186720	0.092312	2.022703	0.0560
GS(-2)	-0.352966	0.118030	-2.990477	0.0070**
BD(-1)	-9.06E-06	4.13E-06	-2.192232	0.0398**
ECM(-1)	-0.203042	0.180157	-1.127025	0.02724
	$R^2=0.852420$			
	Adj $R^2=0.803227$			
	F-Stat=17.32794			
	D/Watson=2.16760			

Note. ** 5% level of significance.

Source: authors estimates.

The coefficient value shows the speed of adjustment. Here the ECM coefficient is -0.203042, which means 20% deviations from equilibrium (disequilibrium in previous year) can be adjusted in the current year. The negative sign of coefficient indicates convergence in short run model. ECM coefficient is relatively lower and indicates that short run dynamics of GDP gradually adjusts to long run equilibrium. Variables: Budget deficit, Gross Savings and GDP, are statistically significant at five

Table 3
Johansen Cointegration Test: Series: GDP grGCF int GS BD

Eigen value	Likelihood value	Critical value (5%)	Hypothesized no of(cc)s
0.754343	78.55787	69.81889	None *
0.468954	36.44336	47.85613	At most 1
0.306432	17.45615	29.79707	At most 2
0.186035	6.478985	15.49471	At most 3
0.010077	0.303851	3.841466	At most 4

Note. * refers to hypothesis rejection at 5% significance level.

Long Run test indicates 1 co integrating equation(s) at 5% significance level. The results of the co-integration in Table 3 confirmed that there is at most one co-integration relationship among the macro economic variables used. The result above suggests that Gross Domestic Product has equilibrium condition with all the independent variables which keep them in proportion to each other in the long run. Co-integration existence among the variables rules out spurious correlations and applies that one direction of influence can be established among the variables. The existence of co-integration among this group of variables imply that budget deficit will affect economic growth thus the need to test for short run effect of the variables using Error Correction Model.

ERROR CORRECTION MODEL (ECM): Error Correction Model (ECM) is estimated to examine short run dynamics of the variables. The Pasimonuos ECM specification of model is expressed below:

percent confidence level. The convergence to the state of equilibrium is helped by the changes in the level of GDP growth and Budget deficit. There is a negative relationship between budget deficit and GDP. Gross savings and GDP also exhibit a negative relationship. A unit change in three and two periods lag gross fixed capital formation leads to 0.05 unit change in the current period gross domestic product and one unit change in two periods lag gross savings rate will lead to 0.35 changes (decrease) in gross

domestic product. High R^2 and Adjusted R^2 signify a good fitness of measurement.

CONCLUSION

This study presents analysis of the relationship between budget deficit and economic growth from Nigeria's perspective. By using data from 1980 to 2011, the study makes use of Johansen cointegration technique to investigate the long run effect of budget deficit. It was found that there is a significant long-run relationship between budget deficit and economic growth in Nigeria. The result from the OLS regression analysis indicates a strong relationship between the variables. Budget deficit and interest rates are having negative relationship with the country's gross domestic product; this means that when budget deficit decreases, GDP will rise. The error correction model revealed that budget deficit shows a negative relationship with gross domestic product while gross capital formation (investment) shows a positive relationship with GDP. The implication of these results is that for sustainable economic growth, there is need to cut down on government budget deficit as its financing crowd out investment and gross saving. Initially, a deficit spending and the resultant debt can increase economic growth by pumping liquidity into the economy. In the long run, the resultant debt is damaging because of higher interest rates. To promote growth, interest rate is to be reduced as it's indicated a negative relationship with GDP. Increase in borrowing spawns higher interest rates on debt; alternatives to budget deficit can be achieved through increase taxes or decrease in spending.

This study thus recommend based on the findings from the study that budget deficit should be financed appropriately to help promote economic growth in the nation. Budgets should be prepared according to targets and goals which should be linked by implementation and performance review. Public funds should be spent in accordance with budgetary allocations, besides there should be effective monitoring and evaluation (M & E) to minimize corruption, promote transparency and

accountability and ensure that the people derive the expected benefits. A credible programme of expenditure reductions that would keep government spending at sustainable limits is imperative.

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