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Impact of Fiscal Deficits on Macroeconomic Variables in Nigeria

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Abstract
There has been so much debate on issues in public finance in developing countries as they relate to fiscal deficits. Few issues in public finance of developing countries have generated so much debate on fiscal deficits. Critics have rejected the claims that any positive contribution have been made to the economy. This research work adopted Vector Auto-regression method in analyzing the impact of fiscal deficits on macroeconomic variables in Nigeria for the period of 1970 to 2013.The paper also analysed the trend of fiscal deficits by the use of graph. The empirical results of the model showed that all the equations of the models have good fit as indicated by the adjusted R^2. There is also an indication that fiscal deficits have positive impact on inflation, and negative on money supply and exchange rate both are statistically significant. It was therefore concluded that fiscal deficits have significant impact in Nigeria. The study therefore recommends among others the followings: in order to curtail deficits, public spending growth rate must be better managed. The fiscal responsibility Act 2007 should be effectively implemented in order to improve the management of the fiscal operations of the federal and sub-national governments. This will involve shift away from discretionary to rule-based fiscal operations. The implementation of the fiscal responsibility Act 2007 is expected to increase productivity of government expenditure and keep deficits within the statutory limits.
Keywords: Fiscal deficits, inflation, money supply, monetary policy rate, interest rate, Vector Auto-regression

Introduction

Governments are often engulfed in the belief that one way of solving social problems is by increasing government spending [1]. In other words, the government as an agent of the people is required to provide education, employment, adequate health services, infrastructure and security among others. In the process of carrying out its responsibility, the revenue requirements often outstrip its availability, hence the recourse to deficit financing so as to fill the gap between expenditure needs and revenue availability.

Fiscal deficit is an economic phenomenon where the government's total expenditure surpasses the revenue generated. It is therefore the difference between government's total receipts and total expenditure that gives the signal to the government about the total borrowing requirements from all sources. Fiscal deficits have been at the forefront of macroeconomic adjustment to the extent that purposeful and coherent set of measures have been used to respond to imbalances in the economy in both developing and developed countries.

It is widely recognized that fiscal deficits which is a key fiscal indicator and macroeconomic indicators such as growth, inflation, current account, exchange rate, interest rate etc. influence each other in both directions. Macroeconomic variables are macro aggregates that provide information about the performance of an economy in terms of growth, functional distribution of income, external sector exposure, economic stock vulnerability as well as direction of the economy. Fiscal deficits have been blamed for the assortment of ills that beset developing nations for a number of years. Therefore, macroeconomic problems namely high inflation rate, unemployment rate, high import dependence, heavy debt burden among other's things are linked with fiscal deficit and deficit financing [1].

The economic consequences of large fiscal deficits are many. A government has at its disposal various modes of financing its spending. These include taxation, borrowing from public (bond financing) and borrowing from the banking system (credit creation). There are inherent problems in the three modes. Different modes of financing have different costs and impacts. In any case, expansion in aggregate investment is being stifled whenever government resolves to adopt any of these options.

Fiscal deficits in Nigeria have been attributed to rapid growth of public expenditure. For examples, Nigeria public expenditure accounted for over 20 percent of the Gross Domestic Product (GDP) on the average between 1993 and 2001 [2]. Nigerian government was able to sustain such high levels of public expenditure in the 1970s and late 1980s because of the windfall gains from petroleum products which it enjoyed during the period. However, the enthusiasm which prompted the massive intervention of federal government in many sectors of the economy in the 1970s began to fade in the 1980s when falling commodity prices in the world market resulted in drastic reduction in government foreign exchange earnings [3].

A major problem which has hindered the attainment of macroeconomic stability and sustainable growth in Nigeria has been attributed to fiscal deficit and the reliance of government on borrowing particularly from the

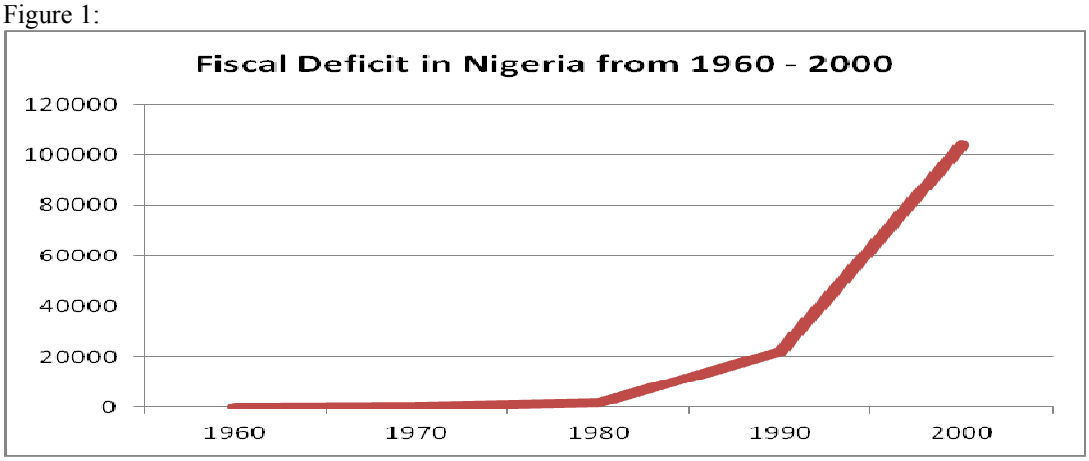
banking system [4]. This has resulted in excess liquidity in the financial system, depreciation of the Naira and inflationary pressures in the goods and services markets as well as the crowding out of the private sectors by the government from the credit market.

The central objective of this study is to analyze the impact of fiscal deficits on some selected macroeconomic variables in Nigeria. The paper is structured in five sections: section one is the background introduction of the research. The next section summarises some of important theoretical and empirical issues arising from macroeconomic studies. Section three describes methods of analysis applied in our study, while section four details results and discussion. The last section five outlines conclusions and some policy implications.

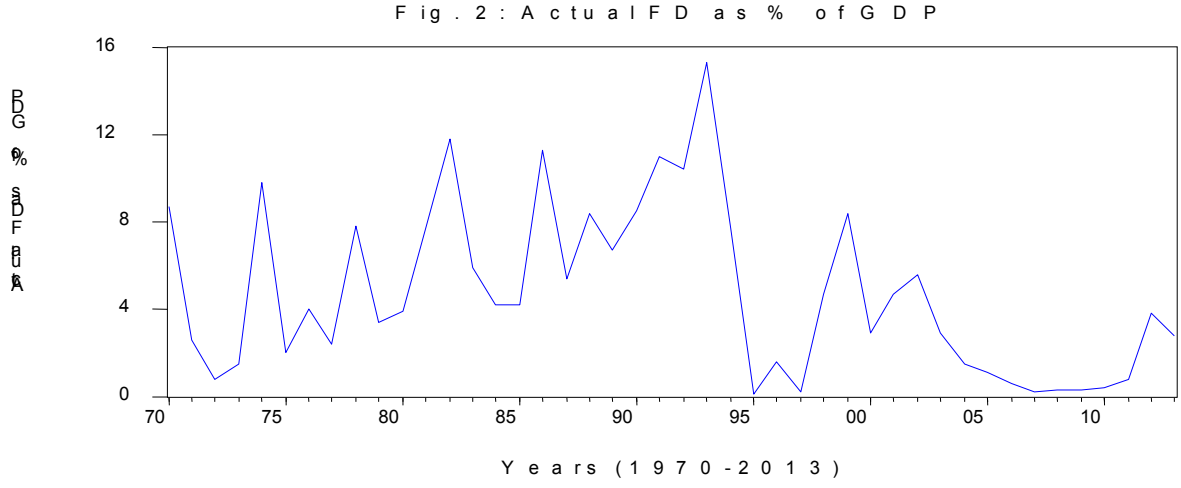
Trend in Actual Fiscal Deficit as % of GDP (1970 – 2013)

In Nigeria, huge fiscal deficits have been recorded over the years. It was N93.1 million in 1960, rising to N473.1 million in 1970, N1975.2 million in 1980, N22116.7 million in 1990 before falling to N6752.6 million in 1995. It rose to N103, 777.3 million in 2000 and in 2003; it was N202, 724.7 million [5]. Figure 1, shows the skyrocketed trend in fiscal deficit in Nigeria starting from 1980. As percentage of GDP, fiscal deficits were 5.5% in 1987, 4.6% in 1997, 0.6% in 2007, 3.3% in 2009, 4.1 in 2010 and 2.96 in 2011. Therefore, fiscal deficits are global issues and problems.

Figure 1:



Similarly, figure 2 shows the trend of actual fiscal deficits as percentage of GDP in Nigeria from 1970 to 2013. It shows that fiscal deficits fluctuated considerably during the period. An actual fiscal deficits as percentage of GDP was 8.7 % in 1970 and increased in the following year (2.6%). It dropped to 0.8 % in 1972, positive in 1973 and 1974 and from 1975 to 1978; the actual fiscal deficits as percentage of GDP were high. From the graph, actual fiscal deficits as percentage of GDP were highly positive in 1974 and highly negative in 1995. The ups and downs in figure 2, reflects the volatility in Nigerian fiscal deficit. Their vertical axis represents the fiscal deficit in million and billions of naira, while the horizontal axis represents the period.



Theoretical and Empirical Backgrounds

The Keynesian economists believed that, there is a positive relationship between budget deficits and

macroeconomic variables. They argue that budget deficits result in an increase in domestic production, increases aggregate demand, increases savings and private investment at any given level of interest rate [6]. The Keynesian theory suggests that an increase in the budget deficits would induce domestic absorption and thus, import expansion, causing current account deficit.

Olowononi [7] examined the impacts of fiscal deficits on some macroeconomic variables in Nigeria. The study showed that fiscal deficits had negative impacts on some macroeconomic variables. He showed that fiscal deficits had increasingly caused inflation in Nigeria. The fiscal deficits were negatively related to unemployment, meaning that the results confirmed the prescription of economic theory that rising fiscal deficits leads to reduced unemployment. He also discovered that there was a negative relationship between fiscal deficits and gross capital formation and private investment in Nigeria.

Dwyer [8] studied the relationship between budget deficits and macroeconomic performance of US using Vector Autoregressive Model (VAR) for the period 1952-1978. He found no evidence that larger government deficits increase prices, spending, interest rates, or the money stock. Bahmani [9] investigated the long run relationship between U.S Federal real budget deficits and real fixed investment using quarterly data from 1947 to 1992. The empirical results indicated that real budget deficits crowded in real investment, supporting the Keynesians who argue for the expansionary effects of budget deficits, by raising the level of domestic economic activity, crowd-in private investment. Kumar and Soumya [10] investigated the relationship between GDP growth and fiscal deficits taken as percentage of GDP using a simple regression equation. The result yielded a negative correlation, though a weak one. However, the long run relationship between fiscal deficit and GDP, using the logarithm of both to avoid non-stationary problem, was surprisingly a positive one.

Ali Salman [11] analyzed the impact of the budget deficit on key macroeconomic variables in the seven major industrial countries (G-7): Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States. Four models were developed to test the impact of the budget deficit on the variables of importance within the economies of the countries in question. The first model tested the relationship between the budget deficit and the short-term interest rate. The second explored the impact of the budget deficit on the long-term interest rate. The third model examined the impact of the budget deficit on the trade balance. The fourth and final model was specified to explain the relationship between the budget deficit and economic growth. The data utilized in this study covered the period from 1964 to 1993 and were gathered mainly from the international statistics of the International Monetary Fund. The data were standardized in the form of the percentage of the gross domestic product and the percentage change over the previous year in order to compile similar data across the seven countries. Multiple regression analyses as well as meta-analysis were used to analyze the data. The multiple regression results indicated that the budget deficit led to higher short-term interest rates in Japan and the United States. With respect to the long term-interest rate, the budget deficit led to an increase of this rate in France, Germany, and the United States. The budget deficit, however, appeared to worsen the trade balance in Canada. In Italy and the U.S., the trade balance improved with the budget deficit. With respect to the economic growth, the budget deficit was significant variable of growth in France, Germany, and Italy. When the data for the seven countries were combined in Meta-analysis, the results showed that the budget deficit led to higher short-term interest rates in the seven countries. The budget deficit, however, did not manifest any impact on the long-term interest rates. The trade balance was worsened by the budget deficit and the economic growth improved in all the seven major industrial countries.

Research Methodology

The use of VAR model is adopted to analyze the impact of fiscal deficits on some selected macroeconomic variables in Nigeria during the period under review. This is because the relationship between the variables is complex and dynamic, and can only be best estimated by the use of VAR. The Vector Autoregressive model was adopted for this work because it is commonly used for forecasting systems of interrelated time series and for analyzing the dynamic impact of random disturbances on the system variance. The VAR model sidesteps the need for structural modeling by treating every endogenous variable in the system as a function of the lagged values of all endogenous variables in the system. The granger causality test was used to identify and assess the effect and the causal relationship between fiscal deficits and some selected macroeconomic variables in Nigeria.

Research Hypotheses

The following hypotheses were tested:

H_o: Fiscal deficits have no significant impact on macroeconomic variables in Nigeria.

H_1: Fiscal deficits have significant impact on macroeconomic variables in Nigeria.

Model Specification

To determine the extent to which fiscal deficits influence macroeconomic variables in Nigeria, the VAR model is presented below:

$INF=ao+a_1FD_t+a_2MS_t+a_3ER_t+a_4MPR_t+a_5IR_t+a_6GDP_t+Ut$ …… 1
INF=Inflation Rate, FD=Fiscal deficits, MS=Money Supply, ER=Exchange Rate, MPR=Monetary Policy Rate, IR=Interest rate and GDP=Gross Domestic Product.

Results and Discussion

Unit root test

A necessary but not sufficient condition for cointegration and VECM is that all series should share the same integrational properties in a univariate sense. Prior to testing for cointegration, we investigated the integrational properties of each of the variables by applying unit-root testing procedure. This study makes use of Philips-Perron (PP) tests. The result shows that all variables are not stationary in levels. After first difference, the PP test of unit root indicates that all variables employed are stationary at one percent level and their use would not lead to spurious regression. Therefore, all the series are stationary or integrated of the same order one, that is, *I*(1) as expected.

Table 1: Philip-Perron (PP) StationaryTests

Variable	Level & 1st difference	With drift & trend	Conclusion
FD	Level First diff	-2.532954 -4.575328*	I(1)
INF	Level First diff	-2.187464 -3.732581*	I(1)
MS	Level First diff	-2. 105475 -5.681758*	I(1)
ER	Level First diff	-2.532954 -4.519526*	I(1)
MPR	Level First diff	-2.532954 -3.967328**	I(1)
IR	Level First diff	-2.532954 -4.835637*	I(1)
GDP	Level First diff	-2.802563 -5.195474*	I(1)

Critical value: 1%=-4.4025, 5%=-3.6012, 10%=-3.2634, * 1% significance level, **5% significance level, ***10% significance level

Source: Author's Estimation using E-views 4.0.

Cointegration Test Results

We used the Johansen-Juselius maximum likelihood procedure in determining the cointegrating rank of the system and the number of common stochastic trends driving the entire system. We presented the trace and maximum eigen-value statistics and its critical values at both 1% and 5% in the table below. The result shows that none cointegrating relationship exists among the variables. (See table 2)

Table 2a: Cointegration Trace Statistic and Max- Eigen Statistic

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	5 Percent Critical Value	1 Percent Critical Value
None	0.894633	50.42109	57.34	52.73
At most1	0.437842	27.63734	40.15	41.82
At most 2	0.217457	14.28271	28.83	30.64
At most 3	0.110525	8.873900	15.92	22.81
At most 4	0.068476	4.642889	9.21	5.73

Trace test indicates no cointegrating equation (s) at both 1% and 5% levels.

Source: Author's Estimation using E-views 4.0

Table 2b: Cointegration Max- Eigen Statistic

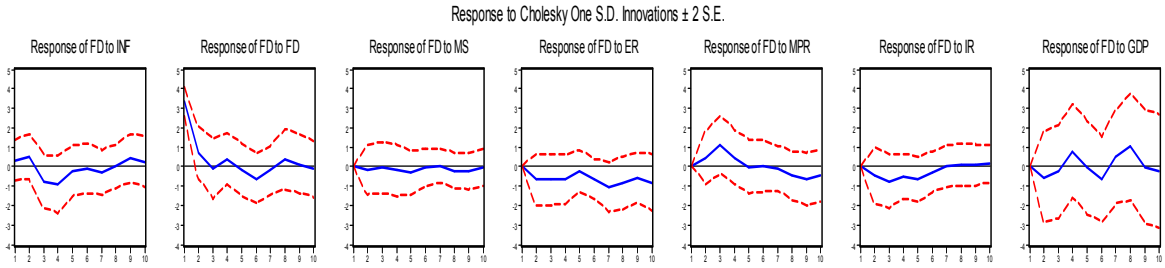
Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	5 Percent Critical Value	1 Percent Critical Value
None**	0.894633	53.84675	51.53	56.91
At most1	0.437842	25.02619	35.71	38.03
At most 2	0.217457	12.94741	18.95	19.52
At most 3	0.110525	6.642636	9.58	8.63
At most 4	0.068476	2.152026	5.12	6.94

Max-eigenvalue test indicates 1 cointegrating equation (s) at the 5% level.

Source: Author's Estimation using E-views 4.0

The Vector Auto-regression Result

Having estimated the VAR, the analysis proceeds to use those properties in analyzing the short run dynamic properties of the economy using impulse response function. An impulse response function (IRF) using the accumulated response to cholesky one S.D. innovations measures the time profile of the effect of a shock on the behavior of time series. It is used to investigate the time profile of the effect of a shock hitting the individual variables in the core model at any time t. Thus, for every VAR model we are able to compute the accumulated impulse response functions for short-term fiscal deficits (FD), that follow from a shock to macroeconomic variables such as inflation rate (INF), Money supply (MS), interest rate (IR), monetary policy rate (MPR) and gross domestic product (GDP). The analysis of accumulated impulse responses of economic variables under consideration to inflation shock are presented below.



Source: Author's Estimation using E-views 4.0.

From the above graph, the first panel shows the shocks of inflation rate to innovations in fiscal deficit. It is observed that the response of inflation rate was positive during the 1st and the 2nd periods and became negative at the 3rd and 4th period as fiscal deficits expand and there after picked up throughout the period. The impact of fiscal deficit on money supply as indicated in the 3rd panel is not encouraging as the impact is not significantly different from zero throughout the period. This means that increase in fiscal deficit (government expenditure is greater than government revenue) will not result to increase in money supply. This is far contrary to economic theories. The fourth panel presents the response of exchange rate (ER) to shock in fiscal deficits (FD) in the system. The response is consistently negative from the first period to the last. This implies that, increase in fiscal deficits in Nigeria lead to decrease in exchange rate and this will last for some time. Shocks in monetary policy rate (MPR) shows positive relationship from the 1st via the 4th period however, from the 6th to the 10th period indicated that a negative response existed throughout within the period of study. The response of interest rate (IR) to innovations in fiscal deficits (FD) is negative to the 6th period and no effects from the 7th period to the last. The response of gross domestic product (GDP) to fiscal deficits from the first to the last quarter shows fluctuations effect throughout the horizon. This means that, a fiscal deficit is significant in influencing macroeconomic variables in the Nigeria. Thus, the alternative hypothesis is hereby accepted that fiscal deficits have significant impact on macroeconomic variables in Nigeria while the null hypothesis is rejected.

Conclusion and Recommendations

The main conclusion is that a large and growing budget deficit in Nigeria was found to be one of the major causes of high inflation, low growth and crowding out of private investment and consumption. It can therefore be concluded that fiscal deficits in Nigeria has been at the heart of macroeconomic instability. In view of the findings, the following recommendations are made to the government and the monetary authorities. In order to curtail deficits, public spending growth rate must be better managed. There is a need for budget restructuring. The non-oil revenue must increase substantially. There should be a serious review of government expenditure programmes with a view to reducing the size of the government. Finally, the Fiscal Responsibility Act 2007 should be implemented in order to improve the management of the fiscal operations of the federal and sub-national governments.

Reference

1]Easterly & Schomidt-Hebbel (1993); "Fiscal Deficits and Macroeconomic Performance in Developing Countries", *World Bank Research Obsemel;* vol. 8 No. 2 Egwaikhide, F. 0. et a1 *(1992): "Exchange Rate*
2]Adubi, J.T and Obioma, E.C. (1999). Public Expenditure Management in Nigeria. NCEMA, Ibadan, Nigeria.
3]Nyong, Michael.O. and Odubekun, F (2002): "The Macroeconomic Effects of Monetary Financing of Fiscal Deficits in Nigeria" *West African Journal of Monetary and Economic Integration,Second Half.*

4]Ariyo, A. and M.I. Raheem (2001). "Effects of Fiscal Deficit on Some Macroeconomic Aggregates in Nigeria", Research Report submitted to the African Economic Research Consortium, Nairobi, Kenya.
5]CBN (2013): Statistical Bulletin. Central Bank of Nigeria. Vol. 17.
6]Okpanachi & Abimiku (2007); "A Neoclassical Perspective on Budget Deficits", *Journal of Economic Perspective,* 3: 55-72
7]Olowononi, Gabriel D. (2006) "The Effects of Fiscal Deficits on the Nigeria Economy." *Journal of Economic and Social Research*. *Destiny ventures, Makurdi, Benue State.*
8]Dwyer (1982); "Fiscal and Quasi-Fiscal Deficits, Nominal and Real: Measurement and Policy Issues"; World Bank Policy Research Working Papers (June): 1 - 59.
9]Bahmani, O. M. (1999): "Do the Federal Budget Deficits Crowd Out or Crowd in Private Investment?". *Journal of Policy Modelling, Vol. 21, No. 5, pp. 633 – 40.*
10]Kumar, R. and Soumya, A. (2010): Fiscal Policy Issues for India after the Global Financial Crisis (2008-2010); Asian Development Bank Institute Working Paper 249, Tokyo.
11]Ali Salman Saleh (2003): The Budget Deficit and Economic Performance: *A Survey, University of Wollongong, Economics Working Paper Series 2003, WP 03 – 12, September 2003.*