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**Research Paper**

# Budget Deficit, Monetary Policy and Inflation Dynamics In Nigeria

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***ABSTRACT**: This research work investigates the relationship among budget deficit, monetary policy and the level of inflation in Nigeria. The study uses Johansen Cointegration and Pairwise granger causality as the estimation techniques. Findings from the study confirms that there is no long-term co-movement among the budget deficit, money supply and inflation in Nigeria. The study also confirms that there is a bi-directional causality between budget deficit and inflation. In addition, there is a unidirectional causality between budget deficit and money supply, in which causality only runs from money supply to budget deficit, but causality fails to run from budget deficit to money supply. Lastly, there is equally a unidirectional causality between inflation and money supply, in which causality only runs from money supply to inflation, but causality fails to run from inflation to money supply in Nigeria during the period under review.*

***KEYWORDS**: Budget Deficit, Monetary Policy, Inflation Dynamics, Johansen Cointegration, Pairwise Granger Causality.*

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## I. INTRODUCTION

Macroeconomic equilibrium is a vital engine of economic growth and development which is a must to be pursued by all economics of the world. Consideration of the consequences of budget deficit in the process of attaining macroeconomic balance cannot be underestimated in any country of the world. Budget deficit by definition refers to a situation when government expenditure exceeds its revenue which may be a result of shortage in government revenue or responsibilities (Akinmulegun, 2014). According to Nayab (2015), deficit financing is a government policy used to generate fund to finance the budget deficit by borrowing either from local or foreign sources.

Since it is mostly impossible to attain an annual balanced budget due to the endogenous features of tax income, in this regard, real structural budget deficits boost economic growth of a country through the enhancement of savings and investment (Cagan, 2006). Budget deficit financing gives room for government to spend more on social amenities and infrastructural development, thereby strengthening and stimulating private sector investment. Boost in the private sector investment stimulates productivity growth thereby encouraging more purchasing power in the economy that will at the end enhance economic growth.

However, while budget deficit acts as a catalyst to enhance economic growth and development in any nation, budget deficit financing may result in inflationary pressure which may hamper the growth objective of the price stability. In Nigeria, government expenditure has consistently exceeded its revenue for most of the years. Budget deficit increased from ₦47.38 billion in 2008 to ₦810, ₦1105, ₦1158 billion in 2009, 2010 and 2011 respectively. Although, Nigeria budget recorded a deficit of ₦975 billion in 2012, but later rose to ₦1153 billion in 2013 before declining to ₦835 billion in 2014. Furthermore, Nigeria started to record a consistent increase in budget deficit of ₦1557 billion, ₦2208 billion and ₦3679 billion in 2015, 2016 and 2017 respectively (CBN, 2017).

The relationship between budget deficit, inflation and monetary policy variables is very vital in the macroeconomic dynamics of any economy. Whenever monetary and fiscal authorities set out their policies in achieving the macroeconomic target of the economy, cautions are always being exercised so that both fiscal and monetary policies don't affect each other negatively. In a bid to finance the budget deficit in Nigeria, government most of the times borrows from the Central Bank of Nigeria, in which it authorizes the CBN to print more money. The increase in money supply due to the printing of money results to too much money in

circulation without a corresponding increase in the general output level which leads to more consumption instead of saving, thereby bringing about a demand-pull inflation (Hansen, 2004).

A large number of research works have been carried out to investigate the relationship between inflation and budget deficit in Nigeria. Research work in this regard include the studies of Oladipo and Akinbobola (2011), Onwioduokit (1995), Dockery, Ezeabasili and Herbert (2012), Olusoji and Oderinde (2011), Imobighe (2012), Anayochukwu (2012). Most of these studies have generated conflicting and inconclusive results, perhaps, due to ineffective econometric methods employed for their studies. In addition, the midway link of money supply between budget deficit and inflation has not been addressed by these past studies. This study therefore contributed to the existing literature by incorporating money supply as one of the explanatory variables so as to delve effectively into the role of the monetary policy in the relationship between budget deficit and inflation in Nigeria. Moreover, the study employs more robust estimation methods for more dependable results. The study also extends the study period to 2017 so as to really capture the periods of income-expenditure imbalances in Nigeria.

The remaining aspects of this research work contain section two which discusses a brief review of literature, section three captures the research method while section four presents the results and discussion of findings. Section five discusses the conclusion and policy recommendation of the study.

## II. LITERATURE REVIEW

Imobighe (2012) used Ordinary Least Square (OLS) model to examine the relationship between budget deficit and inflation in Nigeria between the period of 1970 and 2005. Findings from the results confirmed that fiscal deficit and credit to the federal government do not have significant impact on the rate of inflation in Nigeria.

Anayochukwu (2012) assessed the direction of causality between inflation and fiscal deficit in Nigeria between the period of 1970 and 2009. By employing Autoregressive Distributed Lag (ARDL) model. Results of the study showed a unidirectional causality from fiscal deficit to inflation. The results of ARDL also confirmed a significant and negative relationship between the growth of fiscal deficit and inflation rate in Nigeria.

Dockery et al (2012) employed cointegration and error correction model to investigate the long-run relationship between fiscal deficit and inflation in Nigeria on annual data spanning from 1970 to 2006. Findings from their study confirmed that there is a positive but insignificant relationship between fiscal deficit and inflation in Nigeria. Also, Olusoji and Oderinde (2011) examined the nexus between inflation and fiscal deficit in Nigeria between the period of 1970 and 2006. By employing robust -Yamamoto granger non-causality test, the findings of the study confirmed that there is no evidence of causality between fiscal deficit and inflation in Nigeria.

Onwioduokit (1995) examined the causal relationship between inflation and fiscal deficit in Nigeria between the period of 1970 and 1994. By employing granger causality as the econometric techniques and incorporating variables such as ratio of fiscal deficit to GDP, level of fiscal deficit and inflation rate, findings of the study revealed that fiscal deficit causes inflation without a feedback effect. Meanwhile, there is a bidirectional causal relationship between inflation and the rate of fiscal deficit to GDP.

Oladipo and Akinbobola (2011) investigated the causal relationship between budget deficit and inflation in Nigeria. By using pairwise granger causality test, findings of the study revealed that there is no causal relationship from inflation to budget deficit but causality runs from budget deficit to inflation in Nigeria. The implication of the findings is that budget deficit impacts inflation through fluctuations in exchange rate in Nigeria.

Banga-Banga (2011) employed Vector Autoregressive (VAR) techniques to examine the impacts of budget deficits on the long-term interest rate in South Africa for the period spanning from 1960 to 2000. Findings from the study revealed that there is a positive and significant relationship between the budget deficits and long-term interest rates. In the same vein, Joseph and Uma (2013) used vector error correction model (VECM) to investigate the link between interest rate and budget deficit in Nigeria between 1970 and 2010. Findings from the study showed that budget deficit has a positive and significant impact on interest rate in the long-run.

## III. RESEARCH METHOD

### 3.1 Theoretical Framework

The analysis of the relationship among budget deficit, money supply and inflation is rested on the model developed by Solomon and Wet (2004) and Bwire and Nampewo (2014). The model generates a link between the government deficits and inflation. Based on the propositions of Bwire and Nampewo (2014), the major sources of financing the budget deficit are presented in the equation below:

$$G_t + \frac{D_{t-1}}{P_t}(1 + r_t - 1) = T_t + \left(\frac{M_t - M_t - 1}{P_t}\right) + \frac{D_t}{P_t} + \Delta R \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 1$$

Where $G_t$ is the total government expenditure at time $(t)$, $G_t + \frac{D_{t-1}}{P_t}(1 + r_t - 1)$ is the discounted value of the real stock of accumulated government debt in the previous period with maturity value in the current period $(t)$, $T_t$ is the tax revenue at the current time $(t)$, $\left(\frac{M_t - M_t - 1}{P_t}\right)$ is the change in money supply or signage revenue, $\frac{D_t}{P_t}$ refers to both domestic and foreign sources of borrowing.

### 3.2 Model Specification

Following the theoretical proposition of Solomon and Wet (2004) and Bwire and Nampewo (2014) as discussed in this section, the model for this study is therefore specified in three equations as follows:

$$\Delta BD_t = \sum_{k=0}^{p} \theta_k \Delta MS_t + \sum_{k=0}^{p} \alpha_k \Delta INF_{,t} + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots 2$$

$$\Delta MS_t = \sum_{k=0}^{p} \theta_k \Delta BD_t + \sum_{k=0}^{p} \alpha_k \Delta INF_{,t} + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots 3$$

$$\Delta INF_t = \sum_{k=0}^{p} \theta_k \Delta BD_t + \sum_{k=0}^{p} \alpha_k \Delta MS_t + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots 4$$

Where:
BD is the Budget Deficit
MS is the broad Money Supply
INF is the Inflation Rate
$\varepsilon_t$ is the Vector error term

### 3.2 Sources of Data

The data set for this study consists of annual time series between the period of 1990 and 2017. Data on budget deficit, broad money supply and inflation rate were all sourced from Central Bank of Nigeria (CBN) statistical bulletin.

## IV. RESULTS AND DISCUSSIONS

### 4.1. Unit Root Tests Results

This section investigates the stationarity properties of the variables. This is done by testing the order of integration of the variables which is also called unit root test. In this regard, for the purpose of determining the stationarity of the variables, this study employs the Phillip-Peron unit root test as presented in table 1 below:

**Table1: Philip-Peron Unit Root test**

| Variables | T-Statistics | P-Value | Order of Integration |
|---|---|---|---|
| BD | -4.21434 | 0.0017*** | I(1) |
| MS | -3.51244 | 0.0048*** | I(1) |
| INF | -5.42108 | 0.0041*** | I(1) |

Source: Author's Computation
(***) denotes 1% level of significance.

Results of the Phillip-Peron unit root test in the table 1 above exhibits that at 1% level of significance, all the variables are non-stationary at levels, but are stationary at their first difference. The result indicates that any shock or disturbance to these variables will die off in a very short period of time.

### 4.2. Johansen Cointegration Test

Based on the results of Phillip-Peron unit root test, in which all variables are of the same order, I(1), it therefore becomes imperative to confirm if all the variables have a long-run relationship among themselves. The cointegrating relationship among the variables help to know the appropriateness in the use of granger causality or vector error correction model (VECM). The adoption of VECM is suitable only if there is a cointegrating relationship among the variables (Sim, 1980). But in case the long-run relationship cannot be achieved among the variables, then, either the pairwise granger causality test or vector autoregressive (VAR) is best employed because the two estimation techniques give constant estimates (Sim, 1980). In this regard, the Johansen cointegration tests are analyzed in the table below:

**Table 2: Johansen Cointegration Test**

| Maximum Rank | Eigenvalue | Trace Statistics | 5% Critical Value |
|---|---|---|---|
| 0 | 0.84215 | 101.24681 | 115.62011 |
| 1 | 0.72461 | 93.30214 | 107.39514 |
| 2 | 0.71028 | 84.11816 | 91.25145 |
| 3 | 0.62481 | 72.00142 | 88.28410 |
| 4 | 0.41841 | 64.19246 | 69.41728 |
| 5 | 0.38241 | 32.46711 | 52.41519 |

Source: Author's Computation

The results of the Johansen cointegration test above confirmed that the values of all vectors in the trace statistics are less than the critical values at 5% level of significance. The results indicate that the null hypothesis of no cointegration is accepted which therefore implies that there is no long-run relationship among the variables.

### 4.3. Granger Causality Test Results

In order to examine the direction of causality among the budget deficit, money supply and inflation rate, and also to work in line with the outcome of Johansen cointegration in which no long-run relationship was established, therefore, pairwise granger causality is employed and presented in the table below:

**Table 3: Pairwise Granger Causality Test Results**

| Null Hypothesis | F-statistics | Probability | Decision |
|---|---|---|---|
| BD does not granger cause INF | 8.18561 | 0.0237 | Reject |
| INF does not granger cause BD | 10.23582 | 0.0147 | Reject |
| BD does not granger cause MS | 0.24317 | 0.3214 | Accept |
| MS does not granger cause BD | 7.39101 | 0.0348 | Reject |
| INF does not granger cause MS | 0.10942 | 0.1341 | Accept |
| MS does not granger cause INF | 11.42110 | 0.0019 | Reject |

Sources: Author's Computation

Table 3 above exhibits the pairwise granger causality. The results from the table confirm that there is bidirectional causality between budget deficit and inflation in Nigeria. From the results, causality runs from budget deficit to inflation, while causality equally runs from inflation to budget deficit in Nigeria. The findings of these results therefore imply that an increase in budget deficit will also lead to a corresponding increase in the level of inflation. In the same vein, an increase in the level of inflation will also lead to an increase in the level of budget deficit. This finding is in line with the fact that inflation at any level will lead to reduction in the real income, thereby reducing the volume of revenue to the government through taxation which will result in increasing the tendency of budget deficit, since in this case, expenditure will always be above income revenue. This finding also agreed with the research work of Chimobi and Igwe (2010) who established bidirectional causality between budget deficit and inflation in Nigeria.

In addition, results from table 3 equally revealed that there is a unidirectional causality between budget deficit and money supply, also there is a unidirectional causality between inflation and money supply. This means that causality only runs from money supply to both budget deficit and inflation, but causality fails to run from both budget deficit and inflation to money supply. The implication of these findings is that both budget deficit and inflation could be caused by money supply, which means that they are both monetary policy phenomenon. The increase in money supply could help to cushion the extent of budget deficit in the Nigerian economy, whereas, the same increase in money supply might still lead to an increase in the level of inflation.

## V. CONCLUSION AND POLICY RECOMMENDATION

Considering the results and findings in this research work, this study concludes as follows: First, there is no long-run relationship among the budget deficit, money supply and inflation in Nigeria during the period under review. Second, there is a bidirectional causality between budget deficit and inflation in which causality runs from budget deficit to inflation, while causality equally runs from inflation to budget deficit. Third, there is a unidirectional causality between budget deficit and money supply, in which causality runs from money supply to budget deficit, but causality fails to run from budget deficit to money supply. Fourth, there is also a unidirectional causality between inflation and money supply, in which causality only runs from money supply to inflation but causality fails to run from inflation to money supply in Nigeria.

In this regard, this study therefore recommends that Nigerian government should cut down the current level of its budget deficit financing so as to reduce the rate of inflation. In addition, adequate monetary policy should be geared towards balancing the role that money supply performs to both budget deficit and inflation. In

this sense, for inflation to be curtailed, government should adhere strictly to fiscal discipline at all levels for budget deficit to be effective.

## REFERENCE


[1]. Akinmulegun, S.O. (2014). Deficit financing and economic growth in Nigeria: A preliminary investigation. *British Journal of Economics, Management and Trade*, 4(11), 1627-1643.

[2]. Anayochukwu O. B. (2012). "Fiscal Deficits and Inflation in Nigeria: The Causality Approach". *International Journal of Scientific and Technology Research* 1(8).

[3]. Bonga-Bonga, L. (2011). Budget deficit and long-term interest rates in South Africa. University of Johannesburg, department of economics and econometrics, Auckland Park, 2006, South Africa.

[4]. Bwire, T, & Nampewo, D. (2014). Fiscal deficits financing: implications for monetary policy formulation in Uganda. *Journal of Application Finance Bank* 4(2):125–138.

[5]. Cagan, P.J. (2006). "*The Monetary Dynamics of Hyperinflation. Studies in the quantity theory of money*". University of Chicago; Chicago press.

[6]. Central Bank of Nigeria (CBN). (2017). Statistical Bulletin. Vol. 21.

[7]. Chimobi, O. P. & Igwe, O. L. (2010). Budget Deficit, Money supply and Inflation in Nigeria. *European Journal of Economics, Finance and Administration Sciences*, 15(5), 52-60.

[8]. Dockery, E; Ezeabasili, V. N, & Herbert, W. E. (2012). "On the Relationship between Fiscal Deficits and Inflation: Econometric Evidence for Nigeria." *Economics and Finance Review*. 2(7), 17 – 30.

[9]. Hanason, J. L. (2004). "*A Textbook of Economics*"; London; Macdonald and Evans Ltd.

[10]. Imobighe, M. D. (2012). "The Impact of Inflation and Fiscal Deficit on a Growing Economy such as Nigeria" *International Review of Business and Social Sciences* 11(1), 17-35.

[11]. Joseph, C. O. & Uma, K. E. (2013). The Relationship between Budget Deficits and Interest rate: Evidence from Nigeria. *European Journal of Business and Social Sciences*, 2(1), 158-167.

[12]. Nayab, H. (2015). The relationship between budget deficit and economic growth of Pakistan. *Journal of Economics and Sustainable Development*, 6(11), 85 – 90.

[13]. Oladipo, S. O., & Akinbobola, T. O. (2011). Budget deficit and inflation in Nigeria: A causal relationship. *Journal of Emerging Trends in Economics and Management Sciences*, 2(1), 1- 8.

[14]. Olusoji, M. O. & Oderinde, L. O (2011). "Fiscal Deficit and Inflationary Trend in Nigeria: A Cross-Causal Analysis." *Journal of economic theory* 5(2), 37-43.

[15]. Onwioduokit, E. A. (1995). Fiscal deficits and inflation dynamics in Nigeria: An Empirical investigation of causal relationships. *CBN Economic and Financial Review*, 37(2), 1-16.

[16]. Sims, C. A (1980). Macroeconomics and reality. *Econometrica* 48(1):1- 48.

[17]. Solomon, M, & Wet, W. A (2004). The effect of budget deficit on inflation: the case of Tanzania. SAJEMS NS 7(1), 100–116.