Relationship between Macro-Economic Variables and Budget Deficit

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Abstract

Few are the econometric studies which have examined the relationship between budget deficit and microeconomic variables-interest rate, exchange rate, inflation and money supply. This study analyses empirical relationship among interest rate, exchange rate, inflation, money supply and budget deficit in Nigeria over a period of 31 years from 1981 to 2012. The data were sourced from the World Bank Statistics (2013). In order to clarify whether exchange rate, money supply, interest rate and inflation rate cause budget deficit or vice versa, a vector autoregressive model is developed. Moreover, Granger causality technique is used to assess the direction of causation. The results show that bilateral causal relationship in the long run from exchange rate to budget deficit and from budget deficit to exchange rate while there is no causation between interest rate, money supply and inflation rate. The study recommended that the presence of a causal link between exchange rate and budget deficit has implications of great importance on development strategies for developing countries in the world such as Nigeria. The findings provide evidence to support the exchange rate-led budget deficit hypothesis. Thus, exchange rates are important in contributing to economic growth via budget deficit. Inflation and interest policy should be implement as they are capable of reducing budget deficit in Nigeria by more thousands percentage index. Fiscal policy measures can be changed and checked in tax rate, government consumption and public expenditures.

Keywords: Budget Deficit, Fiscal deficit, Macroeconomic variables, Causation, VEC.

1. Introduction

Budget is a tool for managing the economy and also a key instrument of Fiscal Policy. A budget deficit arises from Fiscal operations of the government. This can arise whenever expenditure surpasses revenue derived. The main objective of Nigeria budget deficit could be seen as achieving efficient distribution of natural resources and income between the public sectors and private sectors. The government does this with the use of fiscal policy which focuses on the way the revenues and expenditures accruing to the government are utilized for a given period. In an attempt to achieve these objectives, the government may spend more money than the revenue derived and this results to what we call budget deficits. Budget deficit could be seen as a situation where total expenditure exceeds the total revenue for the fiscal year. If government projected revenues exceed projected outlays, the government has a budget surplus. If projected outlays exceed projected revenue the government has a budget deficit, if both are equal, government has a balance budget (Osiegbu and Onuorah, 2010).

Budgeted deficits when exhausted are supplemented with borrowings from CBN, engage in short term securities like treasury bills, treasury certificates and use of cash reserve deposits. If budget deficits are used for long term productivity investment like importing and exporting of capital goods and services, capital intensive goods, training and manufacturing new technology and technical expertise, the deficit will result to long term investment growth and will foster high economic growth, achieve and accelerate economic activities and stability. It was argued in world economics (2013) that budget deficit implies an increase in the supply of government bonds. In order to improve the attractiveness of these bonds, the government offers them at a lower price which leads to higher interest rate and the increase in interest rate discourages the issue.

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of private bonds, private investment and private spending. This will lead to financial crowding out of the private sector investment. Some economists Vuyyuri and Seshaiah (2004), Aking and Miller (1983) and Friedman (1968) have argued that government deficit spending is a primary cause of inflation while Sargento and Wallace (1981) have supported the proposition that central bank will be obliged to monetize the deficit resulting to an increase in the money supply and inflation rate. Exchange rate may appreciate or depreciate due to budget deficit.

The relationship between budget deficit and macroeconomic variables such as interest rate, exchange rate, inflation rate, and money supply is the focal point of this study. This study is subdivided into five sections: section one as discussed above covers the introduction, section two covers the literature review, section three covers the methodology of the study, section four is the empirical analysis and the result, while the last section presents the conclusion and remarks on the study.

**Statement of Problem**

Odionye and Ebi (2013) stated that the Nigeria budget deficit witnessed a little swing since early 1990s while in Ahmed and Miller (2004) opined that it may be as a result of the contributions of macroeconomic variables instability. The pathway of deficit budgeting state that the fiscal responsibility act deficits should not exceed 3 percent of GDP (World Bank, 2010).

According to Gbosi (2004) and Kwanashie (2013), these conditions are achieved if the size of the overall deficit is about 3 percent of the Gross Domestic Product (GDP). However, if the budget deficits is excessively large and persistent, that it could not comply with the budget deficit benchmarked specified by World Bank, it will bring negative effect such as economic imbalances, contributes to unemployment situation, external debt burden, macroeconomic instability which will have adverse effect on output growth, economic depression and high level of inflationary pressure, reduction in bank loans and advances, exchange rate depreciation and low bank interest rate for loan-able fund and current account deficits, unfavorable balance of trade and payment, low import and export transactions, no maintenance of foreign reserve account and many other problems meditating around the economy. Given that Nigeria has been managing the excessive and persistent budget deficits, problems discussed above over the years, leading them to saving in unemployment economic situation and depressions.

The study is set out to ascertain the preposition of the macro economist such as the classical, the neoclassical and ricardian proposition assertion that budget deficit crowds in and crowds out private investment. Budget deficit do not crowd in nor crowd out macroeconomic variables.

**Objectives of the Study**

The paper is set out to achieve the following objectives:

1. To examine the effect of Exchange rate on budgets deficit in Nigeria.
2. To examine the effect of interest rate on budget deficit in Nigeria.
3. To investigate the effect of inflation on budget deficit in Nigeria.
4. To ascertain the effect of money supply on budget deficit in Nigeria.

**Research Questions**

The following are the research questions:

1. Does exchange rate have any effect on Budget deficit in Nigeria?
2. Does interest rate have any effect on Budget deficit in Nigeria?
3. Does inflation rate have any effect on budget deficit in Nigeria?
4. Does money supply have any effect on budget deficit in Nigeria?
Hypothesis of the Study

The following hypotheses are tested to achieve the objectives of the study

H0₁: Exchange rate does not have any significant relationship on Budget deficit.
H0₂: Interest rate does not have any significant relationship on budget deficit.
H0₃: Inflation rate does not have any significant relationship on Budget deficit.
H0₄: Money supply does not have any significant relationship on Budget deficit.

Significance of the Study

This study will enrich the potentiality of different users in the economy, such as the students and research analyst will use it as their research material in finding out the effect of the above mentioned variables on budget deficit. The policy makers will have an insight of the type of relationship that exists between macroeconomic variables and deficit financing. Also the financial analyst will use it to know the extent of behavioral pattern of the macro economic variables to deficit financing.

2. Literature Review

Theoretical Issues

This section reveals the theoretical framework related to budget deficit and macroeconomic variables. Some of the economist such as Keynessian, Neoclassical and Ricardo schools of taught gave either positive or negative support to the relationship between macroeconomic variables and budget deficits

The neoclassical school proposes a negative relationship between macroeconomic variables and budget deficits. They argue that budget deficits lead to higher interest rates, discourages the issue of private bonds, private investments, and private spending, increases inflation level, and cause a similar increase in the current account deficits and finally slows the growth rate of the economy through resources crowding out. Furthermore, Yellen (1989) argues that in standard Neoclassical Macroeconomic models, if resources are fully employed, so that output is fixed, higher current consumption implies an equal and offsetting reduction in other forms of spending. Thus, investment and/or net exports must be “fully crowding out”. When the government sector expands, the private sector will contract because of the increase in prices on these resources due to an excess demand by the government, hence this leads to a fall in investment and consumption by the private sector. Thus the government sector’s expansion crowds out the private sector. It is worth noting here as well that resource crowding out is an important issue to take into account especially in developing countries where resources are scarce even sometimes to the private sector, so any excess demand for these resources by the government will severely impinge on private sector productivity.

- The Conventional Keynesian Proposition

The Keynesian posits that a positive relationship between budget deficits and macroeconomic variables. They argue that usually changes in budget deficits result in an increase in aggregate demand, savings and private investment at a particular level of interest rate. The Keynesian absorptive theory argued that an increase in the budget deficits would bring about domestic absorption and import expansion, more so leading to current account deficit. These will in turn bring an increase in the budget deficit, causing an upward pressure on interest rate, capital inflows, and an appreciation of the exchange rate, and increase the current account balance. Many traditional Keynesians argue that deficits need not crowd out private investment. Eisner (1989) suggests that increased aggregate demand enhances the profitability of private investments and leads to a higher level of investment at any given rate of interest.

- The Ricardian School

The contrary approach advanced by Barro-Ricardo (1989) proposition, suggest that government budget deficits do not affect the total level of demand in an economy and does not matter, because an increase in
government budget deficit is effectively equivalent to a future increase in tax liabilities. Taking into account that lower taxation in the present is offset by higher taxation in the future, it means that budget deficits do not influence the macroeconomic variables. Governments may either finance their spending by taxing current taxpayers, or they may borrow money. However, they must eventually repay this borrowing by raising taxes above what they would otherwise have been in future. Economists such as Robert Barro have developed more sophisticated variations on the same idea, particularly using the theory of rational expectations. Ricardian Equivalence suggests that government attempts to influence demand using fiscal policy will prove fruitless. He argues that an increase in budget deficits, due to an increase in government spending, must be paid for either now or later, with total present value of receipts fixed by the total present value of spending.

**Empirical Evidence**

In the case of Nigeria, Onwioduokit (n. d) studied the causal relationship between inflation and fiscal deficits in Nigeria using annual data from 1970 to 1994. He employed Granger Causality Test. The variables in his model were ratio of fiscal deficit to gross domestic product, level of fiscal deficit and inflation rate. He found evidence that fiscal deficit caused inflation without a feedback effect but however feedback existed between inflation and the ratio of fiscal deficit to gross domestic product. Karras (1994) studied the relationship between budget deficits and macroeconomic variables in a Cross-sectional study involving 32 countries for the period 1950-1980, using OLS and GLS. He found out that Deficits do not lead to inflation, they are negatively correlated with the rate of growth of real output and increased deficits appear to retard investment. Al-Khedir (1996) studied the relationship between budget deficits and macroeconomic performance of the G-7 countries for the period 1964-1993 using VAR. He found out that budget deficits led to higher short-term interest rates in the seven countries. However, the deficits did not manifest any impact on the long-term interest rates. The trade balance was worsened by the budget deficit and economic growth improved in all seven countries studied. Obi and Nuruden (2008) and Chimobi and Igwe (2010) studied the relationship between budget deficit and macroeconomic variables such as inflation and money supply in Nigeria, using causality and co-integration test and the result revealed a positive relationship between budget deficit and macroeconomic variables.

Guess and Koford (1984) used the Granger Causality test to find the causal relationship between budget deficits and inflation, GNP and private investment using annual data for seventeen OECD countries for the period 1949 to 1981. They concluded that budget deficits do not cause changes in these variables. Haan and Zelhorst (1990) analyzed the relationship between budget deficit and money growth in the developing countries. The overall conclusion of their study did not provide much support for the hypothesis that government budget deficit influences monetary expansion and therefore create inflation.

3. Methodology

**Data**

The study covers three selected macroeconomic variables such as Exchange rate (EXCR), Interest rate (INTR) and Inflation rate (INFR) and its relationship with budget deficit (BDF), money supply (MOSP). The period of study covers from 1981 -2012. The data was secondary data sourced from World Bank (2013) statistical base. The functional form for the model and the empirical form of the model specification is stated are as follow:

**Functional Form of the Model**

The functional form of the model based on the macroeconomic variables is given as:

$$ BDF = f(INTR, EXCR, INFR and MOSP) $$

where:

- $BDF$ - Budget Deficit
- $INTR$ - Interest Rate

3.1
EXCR - Exchange Rate  
INFR - Inflation Rate  
MOSP - Money Supply  

Modeling Specification  
The model for the study is specified to measure the impact of the identified macroeconomic variables on the Budget deficit in the Nigerian economy (BDFT). It is modelled to estimate the relationship between the macroeconomic variables and budget deficit regarding Nigeria and the study is described in equation 3.2. To effectively determine the relationship between macroeconomic and budget deficit in the Nigeria, the model below is considered by this study as appropriate. The analysis of data is conducted electronically with the aid of econometric software E-Views 4.0.

The Empirical Model of the Study  

\[
BDFT_{t-1} = \alpha_0 + \alpha_1 \sum_{i=1}^{n} INTR_{t-1} + \alpha_2 \sum_{i=1}^{n} EXCR_{t-1} + \alpha_3 \sum_{i=1}^{n} INFR_{t-1} + \alpha_4 \sum_{i=1}^{n} MOSP_{t-1} + Var(\alpha_i) + \varepsilon_{t-1}
\]  

Where;  

- \( BDFT \) = Budget Deficit, \( INTR \) = Interest Rate, \( EXCR \) = Exchange Rate, \( INFR \) = Inflation Rate; \( MOSP \) = Money Supply, \( \alpha_0 \), \( \alpha_i \) = constant, \( \alpha_i \) = regression parameters or coefficients, \( Var(\alpha_i) \) = is the long run equilibrium function, \( \varepsilon \) = Stochastic error.

The presumptive signs or a priori expectations in this study are described as the signs or directional expected behaviour of the macroeconomic variables to the endogenous variable. Usually, it is frequently used sign of coefficients parameter description symbolically presented as \( \nabla \alpha \) which implies change in or increment in series. For every change in macroeconomic estimated model, there exists a sign change or effect in the endogenous variable as either being positively or negatively related. Assuming some independent variables is not positively related to dependent variable and \( \alpha \) is a vector. Therefore, \( \alpha_1, \alpha_2, \alpha_3 \leq 0 \) and \( \alpha_4 > 0 \). In the model equation, money supply represented by of \( \alpha_4 \) would be expected to increase budget deficit relatively to the overall economic macroeconomic variables for the study. Sometimes money supply and government expenditures are used to create investment and total income through the multiplier effect. However, in this study the expectation of money supply is expected to be directly related to budget deficit.

4. Empirical Results and Discussion  
The tables below give the brief summary of the empirical results and discussions for the output of the E-views model interaction between the selected macroeconomic variables and budget deficit trend in Nigeria.

Table 1: Diagnostic Test  
The result of the diagnostic test is presented in the summarized table below as:

<table>
<thead>
<tr>
<th>Test</th>
<th>P-value</th>
<th>Critical value at 5%</th>
<th>Decision P-value &lt;5%</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normality</td>
<td>0.4508</td>
<td>0.05</td>
<td>Sig.</td>
<td>It is normal</td>
</tr>
<tr>
<td>Serial Correlation</td>
<td>0.4271</td>
<td>0.05</td>
<td>Sig.</td>
<td>No presence of Serial correlation</td>
</tr>
<tr>
<td>Heteroskedasticity</td>
<td>0.0290</td>
<td>0.05</td>
<td>Not Sig.</td>
<td>There is heteroskedasticity</td>
</tr>
<tr>
<td>Stability</td>
<td>0.2281</td>
<td>0.05</td>
<td>Not Sig.</td>
<td>It is not structurally stable</td>
</tr>
</tbody>
</table>
Diagnostically, the table above reveals that the residual of the variable (budget deficit) is statistical normal at 5% and there is no presence of serial autocorrelation. However, the results confirmed that the variables are not structural stable since the p-value is greater than 5% and there is presence of heteroskedasticity as the probability value is less than 0.05.

### Table 2: Unit Root Test

<table>
<thead>
<tr>
<th>Variables</th>
<th>Order</th>
<th>PP-Test Value</th>
<th>At 5% Critical Value</th>
<th>Decision PP-test &gt; 5%</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDFT</td>
<td>I(1)</td>
<td>-6.3004</td>
<td>-2.9627</td>
<td>No unit root</td>
<td>Stationary</td>
</tr>
<tr>
<td>INTR</td>
<td>I(1)</td>
<td>-8.1607</td>
<td>-2.9627</td>
<td>No unit root</td>
<td>Stationary</td>
</tr>
<tr>
<td>EXCR</td>
<td>I(1)</td>
<td>-9.5369</td>
<td>-2.9627</td>
<td>No unit root</td>
<td>Stationary</td>
</tr>
<tr>
<td>INFR</td>
<td>I(1)</td>
<td>-5.5331</td>
<td>-2.9627</td>
<td>No unit root</td>
<td>Stationary</td>
</tr>
<tr>
<td>MOSP</td>
<td>I(1)</td>
<td>-4.6167</td>
<td>-2.9627</td>
<td>No unit root</td>
<td>Stationary</td>
</tr>
</tbody>
</table>

The result of the unit root test above summarizes the unit root test of the variables to understand the stationarity and behaviour pattern over time and the Phillip-Perron Test (PP-Test) results confirmed budget deficit, interest rate, exchange rate, inflation rate and money supply are stationary at order I(1). This suggests that there is no presence of unit root as the PPt values are greater than the critical value at 5%. Hence, the variables are stationary at order 1.

### Table 3: Johansen Co integration Test

Series: BDFT  
Exogenous series: INTR EXCR INFR MOSP  
Critical values were derived assuming no exogenous series  
Lags interval: 1 to 2

<table>
<thead>
<tr>
<th>Eigenvalue</th>
<th>Likelihood Ratio</th>
<th>5 Percent Critical Value</th>
<th>1 Percent Critical Value</th>
<th>Hypothesized No. of CE(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.253297</td>
<td>8.470537</td>
<td>3.76</td>
<td>6.65</td>
<td>None **</td>
</tr>
</tbody>
</table>

*(***) denotes rejection of the hypothesis at 5%(1%) significance level  
L.R. test indicates 1 co integrating equation(s) at 5% significance level

Empirical results from Table 3 show that both the maximum eigenvalue and trace tests statistics (L.R) have values greater than the critical values at 5 percent level of significance. Therefore, the null hypotheses of no co integrating vectors (r = 0; r ≤ 1) against the specific alternatives are clearly rejected. There is co integration at most none with at least one co integrating equation. It is a clear evidence to say that there are long run equilibrium relations among the five variables.
Table 4: VEC Model

<table>
<thead>
<tr>
<th>Stochastic Coefficient</th>
<th>Estimate</th>
<th>Standard Error</th>
<th>t-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>D(BDFT)</td>
<td>0.271226</td>
<td>0.18859</td>
<td>-1.43815</td>
</tr>
<tr>
<td>D(BDFT(-1))</td>
<td>-0.313795</td>
<td>0.18481</td>
<td>-1.69794</td>
</tr>
<tr>
<td>C</td>
<td>53925.26</td>
<td>36486.7</td>
<td>1.47794</td>
</tr>
<tr>
<td>INTR</td>
<td>-5888.299</td>
<td>2898.44</td>
<td>-2.03154</td>
</tr>
<tr>
<td>EXCR</td>
<td>300.1914</td>
<td>279.796</td>
<td>1.07289</td>
</tr>
<tr>
<td>INFR</td>
<td>1132.549</td>
<td>736.042</td>
<td>1.53870</td>
</tr>
<tr>
<td>MOSP</td>
<td>-709.8751</td>
<td>715.724</td>
<td>-0.99183</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.318201</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adj. R-squared</td>
<td>0.132256</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sum sq. resids</td>
<td>8.22E+10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S.E. equation</td>
<td>61117.95</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F-statistic</td>
<td>1.711261</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Log likelihood</td>
<td>-356.7398</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Akaike AIC</td>
<td>25.08550</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schwarz SC</td>
<td>25.41554</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean dependent</td>
<td>-3227.017</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S.D. dependent</td>
<td>65610.43</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Estimation Proc:  
=================================================================
EC 1 2 BDF @ C INTR EXCR INFR NOSP

VAR Model:  
=================================================================
\[ D(\text{BDFT}) = C(1,1) \cdot D(\text{BDFT}(-1)) + C(1,2) \cdot D(\text{BDFT}(-2)) + C(1,3) + C(1,4) \cdot \text{INTR} + C(1,5) \cdot \text{EXCR} + C(1,6) \cdot \text{INFR} + C(1,7) \cdot \text{MOSP} \]

VAR Model - Substituted Coefficients:  
=================================================================
\[ D(\text{BDFT}) = -0.2712256521 \cdot D(\text{BDFT}(-1)) - 0.3137946723 \cdot D(\text{BDFT}(-2)) + 53925.26194 - 5888.299208 \cdot \text{INTR} + 300.1914467 \cdot \text{EXCR} + 1132.5485 \cdot \text{INFR} - 709.875109 \cdot \text{MOSP} \]

Table 4 presents the error correction model (VEC) from each of the five equations. From the equation we can see that interest rate and inflation rate are statistically significant by the 2.0 rule of thumb criteria to the budget deficit. Turning to the t-statistics of the coefficients for one period lagged error-correction term, it can be seen that the coefficients of exchange rate and inflation rate have a positive sign but only inflation rate is statistically significant by the 2.0 rule of thumb in VEC model estimate. A unit change in exchange and inflation rates will account positively for about 300% and 1132.5% increase in budget deficit. Money supply and interest rate will result inversely to relatively high decrease in budget deficit by large percentage values in thousands. In addition, interest and inflation rates are statistically significant. Since there exists one cointegrating vectors in the five variables of VEC model used in the cointegrating tests, it is best to estimate the models with one error correction term included to capture the short and long run dynamics by performing multivariate Granger causality test for the VECM.

**Table 5: Granger Causality Test**

<table>
<thead>
<tr>
<th>Null Hypothesis:</th>
<th>Obs</th>
<th>F-Statistic</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXCR does not Granger Cause BDFT</td>
<td>30</td>
<td>7.96945</td>
<td>0.00210</td>
</tr>
<tr>
<td>BDF @ C INTR EXCR INFR NOSP</td>
<td></td>
<td>4.14366</td>
<td>0.02791</td>
</tr>
<tr>
<td>INFR does not Granger Cause INTR</td>
<td>30</td>
<td>3.39838</td>
<td>0.04948</td>
</tr>
<tr>
<td>INFR does not Granger Cause INFR</td>
<td></td>
<td>3.35132</td>
<td>0.05135</td>
</tr>
<tr>
<td>MOSP does not Granger Cause EXCR</td>
<td>30</td>
<td>3.02512</td>
<td>0.06659</td>
</tr>
<tr>
<td>EXCR does not Granger Cause MOSP</td>
<td></td>
<td>0.06861</td>
<td>0.9387</td>
</tr>
</tbody>
</table>

The results in table 5 show that there is bilateral causal relationship from exchange rate to budget deficit in the long run and from to budget deficit to exchange rate, whereas there is no causal relationship among inflation, interest rates and money supply to budget deficit. However, money supply has causal relationship with exchange rate and both interest and inflation rates granger causes each other as the probability values are less than 5% level of significance. This means that there is a long run causal one-way relationship from exchange rate to budget deficit. As a whole, the results imply that exchange rate do influence the budget deficit output in Nigeria in the long run. While in the long-run, interest rate influences the inflation rate.
Fig. 1 Budget deficit residual pattern

From the graphical behaviour of budget deficit residual in the figure 1 above, there is down ward and upward stability pattern in the budget deficit in Nigeria from 1982 to 1989 and 1990 to1999. Same pattern of trend is indicated by the fig.1 in 2000. Hence, the period of volatility tends to be follows by the periods of high and low volatility respectively. Therefore, there is evidence of unequal variance in the trend of budget deficit in Nigeria. This is statistically confirmed by the ARCH test result in the diagnostic test in table 1 above.

5. Conclusion and Recommendation

Few are the econometric studies which have examined the relationship between budget deficit and, microeconomic variables-interest rate, exchange rate, inflation and money supply. This study analyses empirically the causal relations among interest rate, exchange rate, inflation, money supply and budget deficit in Nigeria over a period of 31 years from 1981 to 2012. Public debt has become an increasingly serious problem for Nigeria and it is due to unexamined public expenditures, bureaucracy, tax evasion and corruption. The government debt as a percentage of GDP has begun to develop steadily since 2009 in order to reach 70.9% in 2012. According to the World Bank, when the external debt of a country reaches 80% of its GDP, it becomes sustainable. In order to reduce its debt burden, Nigeria has to focus on fiscal policy measures. These fiscal policy measures can be changes in tax rate, government consumption and public expenditures. In order to clarify whether exchange rate, money supply, interest rate and inflation rate cause budget deficit or vice versa, a vector autoregressive model is developed. Moreover, Granger causality technique is used to assess the direction of causation. The results show that we get a unilateral causal relationship in the long run from exchange rate to budget deficit and from budget deficit to exchange rate while there is no causation between interest rate, money supply and inflate rate In the long run there is a causal bi-directional relationship from exchange rate to inflation. Money supply was found to have unidirectional causal effect on exchange rate.

The presence of a causal link between exchange rate and budget deficit has implications of great importance on development strategies for developing countries. If exchange rate causes budget deficit, budget deficit will be a necessary condition for the country to expand its exchange rate even more. The findings provide evidence to support the exchange rate-led budget deficit hypothesis. Thus, exchange rates are important in contributing to economic growth via budget deficit. Inflation and interest policy should be implement as they are capable of reducing budget deficit in Nigeria by more thousands percentage index.
References


