# EMPIRICAL ANALYSIS OF BOND-FINANCED DEFICIT AND PRICE LEVEL DYNAMICS IN NIGERIA

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**ABSTRACT**

This study examined the theoretical and empirical relationship between bond-financed deficit and Price level Dynamics in Nigeria. The study employed quasi-experimental research design approach for the data analysis. This design combined theoretical consideration (a priori criteria) with empirical observations and extracted maximum information from the available data. It was expected that bond-finance deficit should be non-inflationary. The results of the data analysis and estimation were obtained using the parsimonious error correction mechanism. Contrary to a priori expectation, the result demonstrated a direct and significant relationship between bond-financed deficit and Price level dynamics in Nigeria. It shows that a 1% rise in government bond-financed deficit in the past period leads to 134% rise in the general prices levels. In other words, the bond-financed deficit determines increase in general prices levels by a high magnitudes. The result revealed that open market operation is not effective in Nigeria. The study however recommended that the policy makers should pay greater attention to the effectiveness of open market operation in Nigeria and put in place policies that will minimize the budget deficit and deficit financing.

**Keywords:** Bond-Financed Deficit, Fiscal policy, Budget, General Prices Levels, Structural Adjustment Program (SAP)

## INTRODUCTION

When structural adjustment program (SAP) was introduced in Nigeria in 1986, fiscal deficit started to become an important macroeconomics problem. The structural adjustment programme was aimed at stimulating aggregate supply and creating favourable conditions for the revival of the economy along the path of sustainable growth. Tight monetary and fiscal policies were adopted. The adoption of the tight monetary and fiscal policies was a major policy instrument to enhance the success of SAP. The fiscal policy measures were designed to significantly reduce government fiscal deficit, trigger an increase in government revenue and enhance efficiency in government fiscal programme. Some of the measures included are policies to index the government revenue base; reduce subsidies and import; lessen government involvement in economic activity and re-allocate resources in favour of private sector. In overall, the main

objectives of the fiscal policy under SAP were to achieve a realistic alignment between government expenditures and revenue generation. In more concrete terms, government intended to adjust spending to reflect revenue constraint so that budget deficit will fall below 4 percent of Gross Domestic Product. Many economists share the opinion that a budget deficit normally exceeding 4 percent is inimical to the overall process of economic growth of any country. Economists and laities also agreed on the fact that a reasonable percentage of a government budget deficit even when it is above 4 percent will not constitute a burden so long as it is utilized for productive activities and it is financed in a non-inflationary manner. More worrisome is the facts that budget deficit have consistently exceeded the targeted 4 percent of GDP in Nigeria since 1986 and this is considered to have implications on the growth in money supply, runaway inflation and down turn in economic growth. For instance; as at 1986, federal nominal budget deficit stood at 12.1 percent of GDP. This figure dropped to 5.41 percent in 1987. The deficit-GDP ratio rose to from 8.42 in 1988 to 10.4 in 1992 and 15.3 percent in 1993. In overall between 1985 and 1986 fiscal deficit grew by 58 percent while the real GDP growth rate was 3-1 percent. During the year 1987, 1988, 1989 GDP growth rate were -0.6, 7.3 and 4.6 percent respectively. Between 1991 and 1992, fiscal deficit grew by 60.9 percent and increase to 18.2 percent by 1993. Fiscal deficit fell drastically to 3.3 percent in 2006, rose to 6.6 percent in 2010 and stood at 5.7 percent in 2011.  This situation persisted in recent years.

The overall macroeconomic performance appears to have been in consonance with the fluctuations in the fiscal deficit. As measured by the real GDP, the macroeconomics performance was impressively high between 1986 and 1990. On the average, the real Gross Domestic Product between 1986 and 1990 increased by 5.6 percent contrasting with the negative growth of 0.4 percent in the pre-SAP period. However the growth of all Gross Domestic Product declined sharply from 8.3 percent in 1990 to 4.7percent in 1991. The growth performance was still reasonable, but the growth in real Gross Domestic Product declined in the next three years recording a low of 1.2 percent in 1994. A slight recovery was recorded in 1995 but dropped significantly year after.

Picking on the general price level dynamics and contrary to the objectives of dampening the inflationary pressure, prices of goods and services have risen persistently during the period under review. From the low single digit of 5.4 percent in 1986, the rate of inflation rose to a two digit of 10.2 percent in 1987. The trend continued and the inflation rate reached 50.5 percent in 1987 before declining to 7.4 percent in 1990. The inflation rate dropped from 29.3 percent in 1996 and fell further to single digit of 8.5, 6.6and 6.9 percent in 1997, 1999 and 2000 respectively. The rate picked up again and rose to 18.9 percent in 2001 averaging 14 percent in 2002, 2003 and 2004. It stood at 17.9 percent in year 2005. The inflation rate moved from 13 percent in 1991 to 57.2 percent in 1993 and an in estimated 72.8 percent at the end of October 1995. The fiscal

deficit dropped to 4.8 in 1994 whereas in 1995, there was a balance budget. The deficit fluctuated marginally between 0.8 percent and 1.1 percent between 1996 and 2005 averaging 3.5 percent per annum. The high inflation rates in the early part of the programme seem due to such factors as deficit finances, debt burden and poor exchange rate policy.

In view of the fact that budget deficit have persisted over the year  in spite of the measures put in space to significantly  reduce them and their implication for economics performances, this paper examines the implications of the persistent budget deficit on the growth and stability of the Nigerian economy. The paper places emphasis on the bond -financed deficit and its macroeconomic implication rather than external borrowing. This is because given the Nigeria fiscal federalism, the federal government fiscal activity capture well the Treasury bill and government bond method of fiscal policy.

Apart from the foregoing section, the rest of the paper is organized as follows: in section II, we present the review of relevant literatures. The methodology and the theoretical framework are discussed in section III. Section IV deals with empirical analysis and interpretation of results. Finally, Section V summaries the findings, derive policy implications of findings and conclude the paper.

**SECTION II**

**LITERATURE REVIEW**

Several economists and policy analysts have attempted to analyze the ways and the extent to which fiscal deficits affect macroeconomic variables such as money growth, unemployment, inflation, economic growth, interest rate and investment to mention a few.

Among these economists are Barro (1974), Humburger and Swick (1981), Blinder (1983), Faini (1991), Ojo and Okunronmu (1992), Odozi (1994), Lin and Liu (2000) and Ojo (1995). According to Barro (1974), there is no systematic and significant relationship between fiscal deficits and expected money growth. In another study, utilizing a version of Barro's model, Humburger and Swick (1981) found some evidences of direct relationship between budget deficit and expected money growth. Nikanen (1978) has also derived a similar result, whereas Blinder (1983) found that the effect of fiscal deficit depends on the extent to which the deficits are monetized. His study revealed that monetization of budget deficit varies inversely with the rate of inflation in a similar study. Faini (1991) studied Morocco's budget deficit and inflation trends and found that Morocco's inflation trends seem to contradict the received trend that large budget deficits foster inflation.  Ojo and Okunronmu (1992) examined the effects of budget

deficit in Nigeria and discovererd that fiscal deficits especially the ones financed by borrowing from the banking system triggered macroeconomic instability and external debt burden.

Odozi (1994) studied the impact of fiscal deficits on inflationary trend. He posited that fiscal deficits adversely impact on the economy especially through added pressure on domestic prices and naira exchange rate. But according to Ojo (1995), the method of financing deficit accentuates real exchange rate depreciation, high inflation and balance of payment deficits. In his view, when fiscal deficits are financed through borrowings, they adversely impact on the economy.

Lin and Liu (2000) carried out formidable investigation on the effect of fiscal decentralization on the growth rate of the per capita GDP in China, in the mid-1980s. This was analysed by using a production function. The study employed a robust regression analysis framework which has been widely adopted in the empirical literature on economic growth. The estimation technique used was purely Ordinary Least Squares (OLS) based on a price-level panel data set from 1970 to 1993. Results from the study revealed that fiscal decentralization made a significant contribution to China's economic growth. This is consistent with the hypothesis that fiscal decentralization can increase economic efficiency. The results further revealed that rural reform, the non-state sector, and capital accumulation along with fiscal reforms are the key driving force of China's impressive growth over the past 20years. The study however concluded fiscal decentralization has increased the economic growth rate in China mainly by improving the efficiency of resource allocation, rather than by inducing more investment.

A direct test of the impact of budget deficits on growth, based on cross-country data, has also been recently undertaken in a number of studies. Martin and Fardmanesh (1990), Levine and Renelt (1992), Ekpo (1994) have robust articles in this area. For instance, Martin and Fardmanesh (1990) found the correlation significant and negative impacts only for mid-income countries, while Levine and Renelt (1992) found the correlation fragile. Using cross-country regressions, Ram (1986) in his own study found that although growth in general was positively correlated with the rate of change in total public expenditure, it was negatively correlated with the level of such public expenditure. This last result was also obtained by Levine and Renelt (1992). Cross-country and cross-sectional studies do not address the specific problems of regions or countries. Equally missing is any specific individual country that examined the fiscal policy impact on economic growth. The study on Nigeria by Ekpo (1994) only examined the impact of government expenditure on economic growth from 1960 to 1992. The study eventually estimated the private investment model with the assumption that all the factors affecting private investment automatically affect growth. This present study will put this assumption to an

empirical test. In addition, the present study will use a growth model (not used in Ekpo's study) to identify the major fiscal variables impacting on economic growth.

Kouassy and Bohoun (1993) used a growth model to analyze the relationship between fiscal adjustment and growth in Cote d'Ivore. They established that public investment has a net crowding-in -effect on the private sector and a positive impact on economic growth.

Ariyo (1993) provided a behavioural explanation for the huge persistent annual fiscal deficits in Nigeria. The study revealed that these excessive expenditures were beyond the budgeted estimates and were not anchored on any macroeconomic target. This large variance in revenue and expenditure also suggests the absence of any positive learning effect over the years. Ariyo's study mainly attributes the cause of the variance to the intrusion of the political class, which has probably nullified the degree of professionalism of the technocrats.

Njeru and Randa (2002) examined the external macroeconomic implications of fiscal deficit in Kenya. The study specifically investigated and analyzed the relationship between fiscal deficit and the external sector. It used the Easterly, Rodriguex and Schmidt Hebbel model to analyze the effects of fiscal deficit on the macroeconomic variables in Kenya. The findings of the study among other things revealed that fiscal policy in Kenya had a positive effect on external balance. This is not only because of the size of the deficit, but also because of the constraints that the government had in financing the deficits. Similarly, Ram (1986) and Grossman (1988) reported positive and direct relationships between government fiscal deficits and growth.

Ajab Amin (1998) investigated the case of Cameroon. He examined the effects of fiscal policy on economic growth. His study was focused on the relationship between government spending, private investment and growth directly. He then stressed the crowding in and or crowding out effect of private investment due to public expenditures in Cameroon. He adopted a derivative of the Denison growth accounting model to analyze the relationship between fiscal policy and economic growth in Cameroon. He used The Ordinary Least Squares (OLS) technique to estimate the equations that link private investments with growth. His findings revealed that expenditure, especially on education and health, crowded-in private investment. The results further revealed some evidence of causality in infrastructure, private investment and growth.

It is, however, important to note that most of these empirical studies reviewed above were based on cross-country analysis on which country-specific recommendations cannot be based. This justifies the policy relevance of this empirical study for Nigeria. Thus, the methodologies adopted by the various literatures reviewed shall be considered in formulating the model for this study.

**SECTION III:**

**THEORETICAL FRAMEWORK AND METHODOLOGY OF THE STUDY**

**THEORETICAL FRAMEWORK**

In theoretical terms, the concept in more general discussions of government policy is that of the budget deficit (or surplus). When we are dealing with the model without transfers, the budget deficit **D** is given by the excess of government expenditures over receipts.

$$D = G - T$$

But when we are dealing with the model with transfers, this becomes

$$D = G + R - T$$

Where:

D=Budget Deficit

G= Government Expenditures

R= Government Receipt

T=Government Transfers

Like households, governments may operate with deficits by borrowing at least for a short time. Unlike households, however, the government may use its powers to expand the economy's money supply in order to pay for its purchases of goods and services. In either case, as we will see, the financing of fiscal policy has monetary implications so that fiscal and monetary policies are intimately linked. The following theories explore some of these linkages. (McKenna and Rees 1993)

**The government budget constraint**

Suppose that, starting with a balanced budget in which government expenditure and tax revenue are equal, the government decides to increase its public expenditures. *Cetries paribus,* this action will create a budget deficit. The government will be spending in excess of its (tax) income.

Clearly, since bills must be paid, the government must find the shortfall of money from somewhere. There are four main ways in which governments may fill this gap:

(i)     borrowing from abroad (for example from the IMF or other countries)
(ii)    borrowing from domestic residents and banks
(iii)   increasing taxation
(iv)    increasing the money supply

The first of these is ruled in this theory because of the closed economy assumption. The three remaining ways of financing the deficit are accounted for in the following relationship, known as the government budget constraint;

$$G - T = \Delta M + \frac{\Delta B}{T}$$

This says that the excess of expenditure over tax revenue must be equal to the increase in the money supply (cash) and the increased revenue from the sale of bonds. Clearly, the extent to which taxes are raised to reduce the deficit $G - T$, reduces the need to increase the money supply or to issue bonds. Increasing taxes is an obvious way of reducing the deficit and creating a balanced budget. Thus, we have a pure fiscal policy in which $\Delta G = \Delta T$ with $\Delta M = \Delta B/r = 0$, The government may decide, however, to run a deficit and pay for the extra goods and services by increasing the money supply only. Thus, $G - T = \Delta M$ is no difficulty for the government to pay for extra goods and services by a new issue of high-powered money. Also, the government is in the unique position of being able to print money.

Finally, the government budget constraint tells us that with the tax and money supply unchanged, a government deficit may be financed by a bond-issue so that $G - T = \Delta B/r$, $\Delta M = 0$. This is the way governments borrow from banks and an asset which earns interest, r. suppose that B/r is the price paid for bonds of total (face) value B, so that an increase in bonds of $\Delta B$ generates an extra revenue for the government of $\Delta B/r$, representing the amount paid by the public for the extra bonds. This revenue from bond sales is then used by the government to purchase goods and services. The implications of a bond-financed deficit are discussed fully below.

**Fiscal Policy in the Income-Expenditure Model**

Suppose we start from an equilibrium condition,

$$Y^* = C(Y^* - T) + I + G\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 1$$

and for convenience, we write a bond-financed increase in government expenditure as

$$\frac{dY^*}{dG} = \frac{1}{1 - C'(Y^* - T)} > 0\dots\dots\dots\dots\dots\dots\dots\dots\dots 2$$

and

$$\frac{dY^*}{dT} = \frac{-C'(Y^* - T)}{1 - C'(Y^* - T)} < 0\dots\dots\dots\dots\dots\dots\dots\dots\dots 3$$

In the language of the previous theory, equations 2 & 3 represent the effect of a bond-financed increase in government expenditure, since we have not simultaneously allowed added government expenditure to be accompanied by increased taxes or an increase in the money supply (which of course is absent from the income-expenditure model). It is a fairly straightforward matter to use the effects in (equation 2) and (equation 3) to study the effects of a balanced budget increase in government expenditure. We start by observing that, according to (equation 2) and (equation 3), an increase in income may be generated by an increase in G or by a reduction in T.

Now, does the government regard increases in its own expenditure and reductions in direct tax as perfect substitutes? Apparently not, since a small reduction in T increases $Y^*$ by

$$C'(Y^* - T)/[1 = C'(Y^* - T)]\dots\dots\dots\dots\dots\dots\dots\dots\dots 4$$

whilst an increase in G of the same magnitude increases $Y^*$ by

$$1/[1 - C'(Y^* - T)]\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 5$$

and the latter is clearly greater than the former. Notice that both of these changes have equivalent budgetary implications so that as far as the budget is concerned they are perfect substitutes. As far as their effectiveness in increasing $Y^*$ is directly while a reduction in T of equal magnitude first increases disposable income some of which is saved and the remainder consumed. Hence not all of the reduction in T is passed on as an increase in expenditure. This observation leads to a famous result known as the balanced budget multiplier theorem. A budgetary neutral increase in expenditure requires dG = dT.

Totally differentiating (equation 1) and enforcing this restriction gives

$$dY^*[1 - C'(Y^* - T) = dG[1 - C'(Y^* - T)]\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.6$$

so that $Y^*/dG = 1$. Thus in this model, the balanced budget multiplier is unity: a budget-neutral increase in G increases $Y^*$ by the same amount. The government expenditure multiplier is therefore smaller than (equation 2) but is still positive.

Suppose the tax function takes the form

$$T(Y) = tY \qquad 0 < t < 1\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.7$$

In the earlier case, with a lump-sum tax the policy-makers rule for arriving at the balanced budget multiplier was very simple; ensure that $dT = dG$. In (equation 7), however, it is the tax rate that is under direct control, and the rule for knowing how much to change **t** when **G** increases so as to leave the budget in balance is a little more involved. This is because tax revenue **T** now increases automatically when **G** increases, because more taxable income is generated by the government expenditure multiplier. Fortunately, we know by how much income increases as government expenditure and tax revenue increase by the same amount, since from (equation 6)

$$dY = dG \ (=dT)\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.8$$

Now with the government able to vary t, the total tax revenue change is

$$dT = \frac{\delta T dt}{\delta t} + \frac{\delta T dY}{\delta Y}\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots..9$$

or using (equation 7)

$$dT = Ydt + tdY\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots..10$$

but $dT = dY$ so using this we may solve (equation 10) for dt to give

$$dt = \frac{dY\ (1 - t)}{Y\delta}\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots..11$$

Thus, the required change in the tax rate is the product of the proportional change in income dY/Y and the proportion of untaxed income. Since we know the current income Y, the current tax rate t, and $dY = dG$, the required change in the tax rate, **dt** may be calculated. Notice that the

induced increase in the tax base following an increase in G is insufficient to bring about a balanced budget increase in tax given by (equation 11), is of course only appropriate for the particular model under consideration. If the tax schedule were other than the proportional one in (equation 7) our formulae for the change in tax instrument would be different.

We know from the previous theory that unless the government operates on budget balance rules, increases in government spending will create budget deficits which must be financed in some way. This paper is therefore based on the framework of bond-financed deficit approach rather external debt-financed approach.

## METHODOLOGY OF THE STUDY

This section discusses the methodology of the study. Issues relating to the choice of research design and strategies, model specification, data requirements and sources, the nature and scope of data collection, the data processing technique are discussed. The models were adjudged reliable before they were used. The components of the model were defined and a prior expectation of the relationship among the variables explained for the purpose of giving the reviewers and users a deep insight into the phenomenon under study.

### Research Design and Strategies

The study uses experimental research design approach for the data analysis. This approach combines theoretical consideration (*a prior criterion*) with the empirical observation and extracts maximum information from the available data. It enables us therefore to observe the effects of explanatory variables on the dependent variables.

### The Model

The study specifies a model that captures the implications of bond-financed deficit on Price level Dynamics in Nigeria. Our standard approach for testing the relationship between bond-financed deficits on Price level Dynamics is based on the hypothetical statements: 'there is no significant relationship between bond-financed deficit and price level dynamics in Nigerian economy. Thus, the scope of the study is briefer than looking at the entire fiscal policy implications on inflation.

**The Model:   Bond-Financed Deficits Model**

The Bond-Financed Deficits model adopted in this study combines the structuralist, monetarist and fiscalist approaches analyzed by McKenna and Rees (1993) and stated in our theoretical framework. According to model $G - T = \Delta M + \dfrac{\Delta B/T}{T}$

This says that the excess of expenditure over tax revenue must be equal to the increase in the money supply (cash) and the increased revenue from the sale of bonds. Clearly, the extent to which taxes are raised to reduce the deficit $G - T$, reduces the need to increase the money supply or to issue bonds. Increasing taxes is an obvious way of reducing the deficit and creating a balanced budget. Thus, we have a pure fiscal policy in which $\Delta G = \Delta T$ with $\Delta M = \Delta B/r = 0$, The government may decide, however, to run a deficit and pay for the extra goods and services by increasing the money supply only. Thus, $G - T = \Delta M$. Also, the government is in the unique position of being able to raise money by sales of bonds. It is expected that bond-finance deficit should be non-inflationary since no extra money is injected into the circulation. Given the structure of the Nigerian economy as well as voluminous empirical evidence on Nigeria and other nations of the world, it could be argued that the price level dynamics in Nigeria is traceable largely to the increase in financing deficit through external borrowing and not through bond-financed deficit.

But in order to test our hypothesis which state that there is no significant relationship between bond-financed deficit and general price level, this research work specifies that the price level dynamics depends on Bond-Financed Deficits (BFD), money supply (MSR), Interest Rate (RT), Real Exchange Rate (EXR)

and specifies a model as  follow:

$PLDs = \alpha_0 + \alpha_1 BFD + \alpha_2 MSR + \alpha_3 RT + \alpha_4 EXR + \mu i$……………………………(1)

Where:

PLDs = Price level dynamics proxied by percentage of inflation rate

BFD = percentage of Bond-Financed Deficits.

MSR = percentage of money supply (M1) growth rate

RT = percentage of interest rate

EXR = percentage of real exchange rate

The model states that price level dynamics is a function on bond-financed deficits, money supply, interest rate, real exchange rate where $\mu_1$ is the error term which is assumed according to OLS assumption to be distributed in zero mean and constant variable $\mu_1 \sim N(0, \delta^2)$ where $i \neq j$ and $\alpha_0$, $\alpha_1$, $\alpha_2$, $\alpha_3$, $\alpha_4$ are the elasticity and $\mu i$ is the error term.

In consonance with economic theory, it is expected that increased bond-financed deficits will not lead to inflation, whereas increase in money supply, interest rate, real exchange rate will result in increased fluctuations in general price levels.

Based on *a priori* therefore, the signs of parameters in model "$\alpha_2$", "$\alpha_3$" and "$\alpha_4$" are expected to be direct while "$\alpha_1$", is expected to be inverse.

### The Nature, Types and Sources of Data

The data utilized consist of annual observation on selected macroeconomic variables for 30years (1985-2015). The fiscal deficit data takes different forms, but the one adopted in this paper is the overall deficit which covers the excess of both current and capital expenditure over current revenue.

Given the nature of the model, it is imperative that the data that will permit the estimation of the stochastic equations on inflationary implication of bond-financed deficits can be collected. These include bond-financed deficits, the percentage of inflation rate, money supply, real exchange rate and percentage of interest rate. The data were obtained from the various issues of Central Bank of Nigeria Statistical bulletin. IMF's international financial statistics and World Bank table.

### Data Processing Techniques

The secondary data used for the study were processed using E-view for windows econometric packages. These packages are suitable because they are time efficient in terms of output and adequacy of statistics generated. The empirical study uses a simulation approach to investigate the determinants of money supply and its implications on inflationary trend in Nigeria. The E-View is preferred to the Ordinary Least Square (OLS) because it enables us to have the data corrected that is, the serial correlation in the data will be corrected. The study employs Error Correction Mechanism (ECM) to overcome the problems of spurious regression often associated with non-stationary time series data. The ECM reveals that the change on a variable at time t is not dependent on lagged changes in its independent variables, but also its own lagged changes. It is appealing due to its ability to induce flexibility by combining the short

run and long run dynamics in a unified manner. Also, the estimates of the parameters of the ECM are generally consistent and efficient (Henry and Richard, 1983).

**SECTION IV**

**Interpretation of Results and Discussions**

The results of the data analysis and estimation were obtained using the parsimonious error correction mechanism. This is presented in the table below:

**Table 1: Error Correction Model**

LS/ Dependent Variable is D(IR) Sample adjusted: 1985-2015.

Included observation after adjusting endpoints: 24

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|----------|-------------|------------|-------------|-------|
| C | 0.200965 | 0.000913 | 0.010683 | 0.0012 |
| BFD | 1.173508 | 0.831239 | 0.7388442 | 0.0802 |
| BFD(-1) | 1.342906 | 0.004896 | -1.435470 | 0.0412 |
| MSR | 0.056795 | 0.002145 | -0.160398 | 0.0148 |
| MSR(-1) | 0.746710 | 0.333512 | 1.743645 | 0.2311 |
| RT | 1.029752 | 0.486321 | 1.234692 | 0.0005 |
| RT(-1) | 0.959611 | 0.124987 | -0.952032 | 0.0132 |
| EXR | 0.195056 | 0.096863 | -0.802261 | 0.0166 |
| EXR(-1) | 0.202801 | 0.002486 | -0.727500 | 0.0002 |
| ECM(-1) | -0.143953 | 0.002466 | 0.512106 | 0.0023 |

| | | | |
|---|---|---|---|
| R-squared | 0.831965 | Mean dependent var. | 22.47083 |
| Adjusted R-squared | 0.613519 | S.D. dependent var. | 19.41401 |
| S.E. of regression | 12.06922 | Akaike info criterion | 8.110391 |
| Sum squared resid | 1456.660 | Schwarz criterion | 8.797590 |
| Log likelihood | -83.32470 | F-statistic | 3.808570 |
| Durbin-Watson stat. | 2.24825609 | Prob(F-Statistic) | 0.020324 |

**Discussions**

i. The t-statistic and the standard error test revealed that the parameters were significant except the money supply (lagged once). For all the variables in the model, the values of standard error are less than half of the values of the coefficient of the variables. This shows that the data used for the computation are statistically significant. The Lagged Error Correction term ECM(t-1) included in the model to capture the long run dynamics between the co-integrating series are correctly signed (negative) and statistically significant. The coefficients indicated adjustment of 14% for the model. These adjustments imply that errors are corrected within one year. The ECM also reveals a long run relationship between explanatory and dependent variables in each model.

ii. The value of the coefficient of all the independent variable except bond-financed deficit manifest correct signs which is in consonance with the '*a priori*' expectations. The sign of the coefficient of bond-financed deficit is contrary to the '*a priori*' expectations

iii. The result show that changes in money supply determines increase in general price level in Nigeria in the current period but reveals that money supply did not determine increase in general price level in the past years (lagged once). It shows that a 1% rise in money supply in the current period leads to 5.6% rise in increase in general price level. Also, a rise in real exchange rate has positive effect on increase in general price level as expected. It shows that a 1% rise in real exchange rate will raise increase in general price level by 19.5%. However, there was no significant effect of real exchange rate in the past one decade (lagged once) on general price level in Nigeria.

iv. Similarly, the interest rate determines increase in general price level by the highest magnitude. It shows that a 1% increase in interest rate leads to 102.9% rise in general price level in Nigeria.

v     Most important for the objective of this study is the relationship between bond- financed deficit and general price level. The result demonstrated that there is a direct relationship between bond- financed deficit and increase in general price level in Nigeria. The direct effect of government bond-financed deficit on general price level in the current period was also not expected but not significant. However, in the past (lagged once), the coefficient of bond- financed deficit was quite significant and enormous. It shows that a 1% rise in bond- financed deficit in the past period leads to 134% rise in inflation. This is contrary to *a priori* expectations.

vi.     The value of the adjusted $R^2$ for the model is high, pegged at 0.613519 or 61.4%, which implies that government fiscal deficit, money supply, interest rate and exchange rate explained about 61.4% systematic variation on general price level over the observed years in the Nigerian economy while the remaining 38.6% variation is explained by other determining variables outside the model.

vi.     The value of Durbin Watson is 2.2 for the model. This fall within the determinate region and imply that there is a negative first order serial autocorrelation among the explanatory variables in the model.

**SECTION V : SUMMARY, CONCLUSION AND POLICY RECOMMENDATIONS.**

This paper investigated if any significant relationship exists between bond-financed deficit and Price level Dynamics using Nigerian time series data. The paper reviewed the relevant and current literatures and discovered an inconsistency and controversies on whether or not bond-financed deficit has significant impact on inflation in Nigeria. On theoretical ground, the paper proposed that increased bond-financed deficits should be non-inflationary, whereas increase in money supply, interest rate, real exchange rate could result to increased fluctuations in general price levels.

The regression results were robust and reasonable. Using several diagnostic and econometric tests, the study discovered a significant and direct relationship between bond-financed deficit and Price level Dynamics in the observed years in Nigeria. Similarly, the study found a positive and statistically significant relationship between money supply and inflation in the long run. Thus from the previous discussions and from the findings of this study, it can be concluded that bond-financed deficit caused the quantity of money to increase in circulation and it is a major factor for the upsurge in the general price level in Nigeria. The result demonstrated that open market operation is not effective in Nigeria. The study however recommended that the policy makers

should pay greater attention to the effectiveness of open market operation in Nigeria and put in place policies that will minimize the budget deficit.

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