

AN EXAMINATION OF THE RELATIONSHIP BETWEEN FISCAL DEFICIT FINANCING AND INTEREST RATE IN NIGERIA (1970 – 2011)

***Nura Sani Yahaya, ** Hassan Abdullahi**

**Department of Management Sciences,
Kano State College of Arts and Sciences
P.M.B. 3145, Airport Road, Kano State Nigeria.*

***Department of Management Sciences,
Rabiu Musa Kwankwaso, College of Arts and Sciences
Tudun Wada, Kano State Nigeria.*

ABSTRACT

The study examines the relationship between fiscal deficit financing and interest rate in Nigeria from 1970 to 2011. It employed vector error correction techniques on the variables, fiscal deficit financing (FDEF), Interest rate, (INT), Money Supply (MS) and Exchange rate (EXCR). The techniques were adopted in order to examine the long run relationship and their direction of causality existing between the variables under study. Based on model approach, preliminary investigation on the time series reveals stationary using Augmented Dikey Fuller at first difference. Co-integration results show a stable long- run equilibrium condition between the variables under study, Granger causality test was also conducted in order to examine the direction of causality between the variables. The VECM estimates revealed that there is a strong relationship between the variables and the lag values. Based on these findings, the study recommends that policy makers should control interest rates for the development of infrastructures and improvement in the level of investment as well as favorable exchange rate for the economy by promoting exports.

Keywords: Interest Rate, Fiscal Deficit Financing, Money Supply, Exchange Rate and Nigeria.

1. INTRODUCTION

The contradiction on the exact relationship between fiscal deficits financing (government debts) and interest rates motivated this study. Easterly and Schmidt Hebbel (1993) argued that the relationship between fiscal deficits and interest rates is a complex one because countries finance their deficits in different ways. Under a repressed financial sector, taxes on financial assets are a

major source of revenue for the government. On the other hand, in a liberalized financial system, where the government finances its deficits through domestic borrowing, public sector will compete with the private sector for loans. This puts upward pressure on interest rates. The World Bank (1993) opined that in economies where financial markets are not repressed, higher deficits financed by domestic debt increase domestic real interest rates when external borrowing is not possible. However, if financial markets are integrated with world capital markets, higher domestic borrowing results in international capital inflows and higher foreign debt. Thus, the impact on domestic real interest rates will not be much. Moreover, in countries where the financial markets are repressed (that is, interest rate control, compulsory public debt placements, and controls on external capital flows), given a fixed nominal interest rate. Fiscal deficits raise inflation, resulting in a repressed real interest rate (World bank, 1993).

In many countries of the world, government deficits can be financed by borrowing from the Central Bank (deficit financing or money creation), borrowing from the domestic money market (mainly from the banks) or borrowing from abroad. Among the important objectives of Nigeria's fiscal policy is to reduce national debt and to check the interest payments on such debt from rising and prevent it from leading to higher deficits in the future.

In Nigeria, government fiscal deficits financing increase continuously in the past four decades. For instance, deficits financing increase from N455.1million in 1970 to N1090.8 million in 1976 and 3,902.10 million in 1981 to N8, 254.30 million in 1986 and further to N15, 134.70 million in 1989. The rising trend of deficits continued except in the year 1995 when it was a surplus of N1, 000 million. By the year 1988, deficit was increased to N133,389.30million and further to N301,401.60 million in 2002. Starting from 2003, government fiscal deficits financing declined moderately from N202,724.70 million to N 172,601.30 million, N161,406.30 million and N101,397.50 million, N117,237.1 in 2004, 2005, 2006 and 2007 respectively. Fiscal deficit increased to N1, 105,439.78 million in 2010 and N 1,158,518.40 million in 2011. (C B N Bulletin 2007, 2010, 2011)

The interest rate (lending rate) showed a constant trend of 7.0 percent from 1970 to 1974, while it declined from 1976 to 1978 to 6.0 percent. And raised to 7.0 percent again in 1978. Interest rate also record high of 26.80 percent 1989. In 1995, interest rate decrease to 20.18 percent only to rise again to 21.32 percent in 1999 and 24.40 percent in 2002. The value of interest has being falling, moving from 20.40 percent in 2003 to 19.15 percent, 17.85 percent and 17.30 percent in 2004, 2005, 2006 respectively. In 2007 interest rate declined to 16.94 and 15.14 percent in 2008, it also increased to 18.99 and declined to 17.59, 16.02 percent in 2010 and 2011, respectively. (C B N 2007, 2010, 2011).

Statement of the problem

Over a period of four decades (1970 – 2011), the fiscal operations of the Nigerian government result in fiscal deficits financing for about thirty four years and surplus in only six years, these surpluses occurred in 1971, 1973, 1974. 1979, 1995 and 1996. Fiscal deficits throughout these decades were generally financed by the excessive borrowing from the banking sector and external sources which resulted in high monetary expansion, high inflation, high public debt, exchange rate depreciation, deterioration in balance of payments, sluggish or negative growth rates, high interest rate including the crowding out of the private sector investment, corruption and unemployment (Onwioduokit, 1999).

Furthermore, in the course of reviewing literature in the research area, it is observed that most of Nigerian studies failed to include exchange rate and money supply in their empirical model. These variables were found to exert significant influence on interest rate in the research works conducted by various authors across the globe such as Noula (2012) and George (1995).

Moreover, a study by Ben and Abu (2009) examined the effect of fiscal deficit and government debt on interest rate in Nigeria by applying vector – auto regression approach (VAR) for the period 1981 to 2006. This study did not employ co-integration analysis and also the time frame for the study was 1981 to 2006 which is rather short to yield concrete results.

These observed short comings in the foregoing discussion have left a trail on knowledge gap in the literature which includes, firstly, available research works reviewed in Nigeria, failed to incorporate money supply, exchange rates, and current government transfer in the empirical model of their studies. Secondly, a study in Nigeria by Ben and Abu (2009) did not apply co integration analysis in analyzing their research data and time frame for this study was rather short (1981 to 2006). These observed literature gaps warrant the need for more systematic examination of the relationship between fiscal deficit financing and interest rate by employing co- integration analysis so as to investigate long-run relationship and direction of causality between fiscal deficit and interest rate as well as expanding time frame of the study to cover four decades from 1970 - 2011 in order to produce better result.

Research objectives

The main objective of this research work is to examine the relationship between fiscal deficits financing and interest rate in Nigeria. In addition, the specific objectives of the study are: -

1. To investigate long run relationship between fiscal deficit financing and interest rate in Nigeria.

2. To determine the direction of causality between fiscal deficit financing and interest rate in Nigeria.

Research Hypothesis

The research develops the following hypothesis

Ho: Interest rate does not granger cause fiscal deficit financing.

Ho: Long run relationship does not exist between interest rate and fiscal deficit financing.

Significance of the Study

Having observed the research problem and identified the literature gaps, this study aims at bridging the gaps by including money supply and exchange rate as well as investigating long run relationship and direction of causality between interest rates and fiscal deficit by extending the time frame of the study to 2011. Thus, the major significance of this research work lies in the technique of data analysis employed as well as the variable selected.

Furthermore, the relationship between fiscal deficit financing and interest rate is examined with data spanning from 1970 to 2011. The justification for choosing this time frame lies in the fact that the period produced large fiscal deficit financing, with only six years surplus of N171.6Million in 1971, N166.1Million and N1796.4 Million in 1973 and 1974, N1461.7Million in 1979, N1000 and N32049.1Million in 1995 and 1996. Fiscal deficits were financed by excessive borrowing from banking sector and external sources resulting in high interest rate and high public debt. The study period also corresponds to and witnessed regimes of economic reforms in Nigeria in response to the economic crises of the 1980s which necessitated the adoption of structural adjustment program (SAP) focused on short-term and medium term policy reforms to structurally adjust the economy. Despite the economic reforms program over the years budgets deficit have persisted, thus, over four decades 1970 to 2011. Nigeria witnessed 6 years of surplus fiscal operation with 34 years of fiscal deficit financing.

Limitation of this study entail time and resources to be utilized in the research work as well as availability and reliability of data for the study since the research intends to use time series data which suffer from data variation problem.

LITERATURE REVIEW

2.1 Conceptual Literature

Interest rate: The rate of interest is the reward for parting with liquidity for specific period. It is the “price” which equilibrates quality of each that is the price of credit. Interest rate as the price paid for the right to borrow and use loan able funds is the cost of holding money (Anyanwu and

Oaikhanem, 1995). The interest rate is categorized in to nominal and real interest rates. The market rate of interest is roughly equivalent to the sum of the two forms of cost of holding money, that is, the market or nominal rate of interest rate which equals (approximately) the real rate of interest plus the rate of increase in the price level.

Fiscal deficit financing

Fiscal deficits are the surplus of government (public) expenditure over revenue. Conventional budget balance can be measured on a cash basis or an accrual (balance or payment order) basis. The conventional budget balance on a nominal cash basis is defined as the “difference between total government expenditure (including interest rate payments on public debt but excluding any amortization payments) and total cash receipt (including taxes and non-tax revenue plus grants, without loans). This approach permits international comparisons of deficit across countries. In second case (the accrual-based deficits) the balance reflects accrual income and spending flows, regardless of whether they involve cash payment or not.

Money Supply

The supply of money at any moment is the total amount of money in the economy, there are three alternative views associated with the traditional and Keynesian thinking which stresses the medium of exchange function of money. According to this view, money supply is defined as currency with the public and demand deposits with commercial banks. Demand deposits are savings and current accounts of depositors in a commercial bank. They are the liquid form of money because depositors can draw cheques for any amount lying in their accounts and the bank has to make immediate payment on demand. Demand deposits with commercial banks plus currency with the public are together denoted as M1, the money supply. This is regarded as a narrower definition of the money supply.

The second definition is broader and is associated with the modern quantity theory headed by Friedman. Professor Friedman defines the money supply at any moment of time as “literally the number of dollars people are carrying around in their pockets, the number of dollars they have to their credit at bank or dollars they have to their credit at banks. “Time deposits are fixed deposits of customers in a commercial bank. Such deposits earn a fixed rate of interest to the bank. So, time deposits possess liquidity and are included in the money supply by Friedman. Thus, this definition includes M1, plus time deposits of commercial bank in the supply of money. This is a wider definition and is characterized as M2 in America and M3 in Britain and India. It stresses the store of value function of money or what Friedman says, „a temporary above of purchasing power“.

The third definition is the broadest and is associated with Gurky and Shaw. They include in the supply of money, M2 plus deposits of savings bank building societies, loan associations, and deposits of other credit and financial institution.

Exchange rate

Exchange rate is the rate at which one currency is exchange for another. It is the price of one currency in terms of another currency. It is customary to define the exchange rate as the price of one unit of foreign currency in terms of the domestic currency. The exchange rate between the dollar and the pound refers to the number of dollars required to purchase a pound. Thus, the exchange rate between the dollar and the pound from the US view point is expressed as $\$2.50 = \pounds 1$. The British people would expressed it as number of pounds required to get one dollar, and the above exchange rate would be shown as $\pounds 0.40 = \$1$. The exchange rate in a free market is determined by the demand for and the supply of foreign exchange rate.

2.2 Review of Empirical Literature

Many researchers in different countries of the globe have examined the empirical relationship between fiscal deficit and various factors that influence it. For instance Noula, (2012) examined the determination of fiscal deficits and nominal interest rate in Cameroon. The variables used in the study are expected inflation, budget deficit, real income, money supply, foreign interest rate and exchange rate. The study concludes that policy makers in Cameroon should reconcile the budget deficit policy and its means of financing.

Bayat et- al (2012). Analyzed the causality between budget deficit and its ratio to gross domestic product and interest rate in Turkish economy during the years between 2006 to 2011. The study employed the conventional Toda-Yamamoto (1995) linear Granger type causality test and Hacker and Hatemi (2005, 2006). Variables used in the study are budget deficit, budget deficit /GDP ratio and nominal interest rate. Analysis result shows that there is no causal relation between budget deficit budget ratio to gross domestic product and nominal interest rate. Fiscal policies financed by loan do not affect aggregate demand and capital allocation in a full employment economy via nominal interest rate channel. Result of empirical analysis support research equivalent hypothesis and imply that there is no effect of financing type of budget deficit on nominal interest rate.

Vincent et-al (2012) reexamines the relationship between fiscal deficit and inflation in the context of a developing country, including Nigeria using time series data from 1970 to 2006. The study adopted a modeling approach that incorporates cointegration techniques and

structural analysis. The results reveal a positive but insignificant relationship between inflation and fiscal deficit in Nigeria.

Medee and Nenbee (2012) studied the impact of fiscal deficits on inflation in Nigeria using time series data from 1980 to 2012. The ordinary least square estimate method of multiple regression analysis showed that both inflation and interest rates were rightly signed with fiscal deficit. The authors concluded that positive impact of inflation on fiscal deficits perhaps could be blamed on unstable macro-economic policy environment and corruption. Thus, it suggested that there is need to re-order our fiscal policy priorities based on sincerity so as to rebuild confidence in the economy.

Vincent et-al (2011) investigates the effect of fiscal deficits on nominal interest rate in Nigeria, using time series data from 1971 to 2006. Cointegration techniques and structural analysis were adopted for the study. Empirical evidence emerges that the co-efficient of fiscal deficit variable is positive and statistically significant. This indicates that elasticity of fiscal deficit with respect to income is 0.114, an indication that large deficit causes higher interest rate. In addition money supply has an inverse relationship with interest rate in Nigeria, but there exist a positive and significant relationship between inflation and interest rate. The co-efficient of government expenditure is positive with a short-run effect of 0.229. It is recommended that government should consider the option of bond financing of budget deficit as an alternative to monetary financing.

Lumengo (2011) investigate the effects of the systematic and surprise change in budget deficit on long term rate in South Africa using quarterly data from 1970 to 2008. The author used auto-regression approach (VAR) and the result of the paper showed a positive relationship between the budget deficit and long term interest rate to systematic and surprise change to budget deficits. The variables employed in the study include nominal long term interest rate, nominal short term interest rate, and ratio of government budget by gross domestic product, expected price and real GDP.

Yi-Chichen (2011) empirically examined the relationship between long term interest rate and macro-economic performance in Japan. The study adopted regression model estimated by least square method using time series data from 1972 to 2010. The variables employed in the empirical model include fiscal deficit, long term interest rate, real short term inflation rate, real money market rate, percentage change in real GDP and exchange rate. Autoregressive conditional Heteroscedasticity test (ARCH) was conducted for possible heteroskedastic errors. The results showed that fiscal deficit, inflation rate, real money market rate, the GDP growth rate

have positive effects on the Japans long interest rate. The author concluded that a higher fiscal deficit, real money market rate and inflation rate would cause the long term interest rate to rise.

Gadong (2010) employed ordinary least square linear regression model to determine the effectiveness of fiscal deficits in the expanding the level of economic activity in Nigeria. The study used both theoretical and empirical approaches and time series data from 1982 to 2008. The result indicated that fiscal deficits have a damping effect on the growth rate of the real gross domestic product and statistical insignificance relationship with real gross domestic product. The author's findings suggest that fiscal deficits are counter-productive to economic growth and as such they have little influence on the level of economic activities.

Hsing (2010) examines the impact of more government deficits on higher long term interest rate using extended loanable fund model to Estonia. The study employed regression analysis and used time series data from 2000 to 2009. The study found that more government borrowing as percent change in real GDP leads to a higher government bond yield, and that the positive co-efficient of real money market rate, growth rate of real GDP and expected inflation are significant at 1% level and that the negative co-efficient of the ratio of the net inflows of GDP in the conventional open economy loanable funds model is significant at the 1% level.

Duzgun (2010) examined efficiency of money and fiscal deficits in the Turkish economy in the 1987 to 2007 period by using ARDL bounds test approach. He found that as a result of application of expansionary fiscal policies, private investment would reduce nominal interest rate and economy would contract.

Ben and Abu (2009) used time series data from 1981 to 2006 to examine the effects of fiscal deficit and government debt on interest rate in Nigeria. The authors used auto-regression approach (VAR) to estimate the effect of fiscal deficits and government debt have positive impact on interest rate, but inflation and international interest rate were found to have negative effect on interest rate. The authors advised that government revenue should be increased, unnecessary spending should be discouraged and where deficit financing is inevitable, it should be put into productive activities so as to create more employment opportunities, raise national output and increase the living standard of the people.

Kiani (2009) evaluated the impact of budget deficits on long term interest rate within the context of the loanable fund theory in the united state of America from 1962 to 2005. The result shows that there was a link between budget deficits and the slope of the yield curve. The result

indicated that economic agents are coming more sensitive to the outlook of budget deficits in the U.S.A.

Mukhtar and Zakaria (2008) empirically examine long run relationship between nominal interest rate and budget deficits for Pakistan, using quarterly time series data for the periods 1960 to 2005. The regression result showed that budget deficits did not have significant effect on nominal interest rate, while budget deficits GDP ratio has significant positive impact on nominal interest rate. These findings support the conventional wisdom of crowding out. The results are also validated by the Granger causality test.

Ari and David (2007) examines the effects of budget deficits and interest rates using time series data between 1970 to 2006 of 60 advanced and emerging economies and found that there was overall highly significant positive effect of budget deficits on interest rate. The study used VAR model in empirical analysis as well as finding of important policy implications and suggest that fiscal policy is more effective when the initial budget deficit and level of debt are lower and when financial openness and financial dept. are greater, because the effect of deficits on interest rate is smaller under these conditions, employing less crowding out and a greater multiplier.

Richard (2003) examines the causality relationship between the Federal government budget deficit and the ex-ant real interest rate yield on high grade long term tax free municipal bond in the United State of America, using time series data from 1998 to 2001, the error correction model estimate strong suggest a bi-directional relationship between the primary budget deficit and ex-ant real interest rate yield. The study employed the following variables, such as ratio of the seasonally adjusted nominal primary Federal budget deficit, the nominal federal personal income tax rate in quarterly time, the percent change in the seasonally adjusted real M2 money supply and ratio of the seasonally adjusted nominal net international inflow of capital in quarterly time.

3. RESEARCH METHODOLOGY

3.1 Sources of Data

The data used for this study is secondary data which are sourced from Central Bank of Nigeria (CBN) statistical bulletins (2007, 2010 and 2011). It covers time series data from 1970 – 2011.

3.2 Model Specification

The research adopted the model used by Ben and Abu (2009) which empirically identified the effects of fiscal deficits and government budget, on the interest rates in Nigeria. The study

modified the model by including money supply, and exchange rate to the list of explanatory variables. The Ben and Abu model was given as

$$INT = F(FDEF, GOV, INFL, USIN, U_t)$$

Where

INT = Interest rates

FDEF = the ratio of the overall deficits

GOV = Government total debt to GDP ratio

USIN = International interest rate

INFL = Inflation rate

U_t = is the error term

The modified model is as follows:

$$INT = \beta_0 + \beta_1 FDEF + \beta_2 EXCR + \beta_3 Ms + U$$

β_0 = Constant term

$\beta_1, \beta_2, \beta_3$ = Regression coefficients.

FDEF = Fiscal deficits financing (ratio of overall fiscal deficit to GDP)

EXCR = nominal exchange rate of naira in terms of US dollar.

Ms = Money supply

U = Error term

A prior exception

It is expected that, $(\beta_1, \beta_2, \beta_3) > 0$

3.3 Method of Data Analysis

The research analyzed the data using a vector error correction (VEC) methodology. A conventional VEC analysis consisting of unit root test, co-integration test and causality test.

3.3.1 Description of Variables

The research used VEC model in which the endogenous variables are the fiscal deficit financing and interest rate while the exogenous variables are money supply and exchange rate. The money supply is measured by the nominal value of the broad money supply (MS million naira) while interest rate is measured by weighted money market interest rate in percentage lending rate.

The exchange rate CEXCR is measured by the market exchange rate of U.S Dollar to Nigerian Naira, expressed in naira.

It is indicative from the aforementioned literature reviewed in the research area that variety numbers of studies were conducted in Nigeria and other countries of the world. Some of the studies carried out on the field of research are multi country employing cross-sectional and

quarterly time series data, ordinary least square regression and vector auto-regression approach (VARs). Furthermore, some previous studies in Nigeria did not look at the long term relationship between fiscal deficits and interest rate, money supply, government current transfer, exchange rate and government current expenditure on goods and services were not included in the empirical model of the study in Nigeria literatures. These variables were found to have significant influence on interest rate in research work in other countries like Cameroon, Greece and Japan.

4.0 RESULTS AND DISCUSSIONS

4.1 Unit root result

| Variables | ADF statistics | Mckinon critical values |
|-----------|----------------|---|
| EXCR | 6.17605 * | At 1% - 4.205004 At 5% - 3.526609 At 10% - 3.194611 |
| FDEF | 6.351812 * | At 1% - 4.273277 At 5% - 3.557759 At 10% - 3.212361 |
| MS | 8.949640 * | At 1% - 4.205004 At 5% - 3.526609 At 10% - 3.194611 |
| MS | 8.949640 * | At 1% - 4.205004 At 5% - 3.526609 At 10% - 3.194611 |
| INT | 9.949130 * | At 1% - 4.205004 At 5% - 3.526609 At 10% - 3.194611 |

**Denotes rejection of the null hypothesis at 1% significance level*

Source: Researchers computation output using E-views 7.0

Table 4.1 Reports the results of the ADF unit root test. All the four variables, EXCR, FDEF, MS, and INT are found to be stationary in their first difference at 1% level of significance. The result reveals that all the variables are stationary at first difference and thus characterized as I(I) process.

4.2 Co integration Test Result

Given that all the variables were stationary at first difference it provides statistical evidence for existence of long-run relationship. Based on that, the Johansen co-integration results are stated below:

Table of cointegration results (Trace and Maximum Eigen value)

Unrestricted Cointegration Rank Test (Trace)

| Hypothesized No. of CE(s) | Eigen value | Trace Statistic | 0.05 Critical Value | Prob.** |
|------------------------------|-------------|--------------------|------------------------|---------|
| None * | 0.553766 | 49.76727 | 47.85613 | 0.0327 |
| At most 1 | 0.308380 | 19.91152 | 29.79707 | 0.4288 |
| At most 2 | 0.150109 | 6.268941 | 15.49471 | 0.6637 |
| At most 3 | 0.006761 | 0.250991 | 3.841466 | 0.6164 |

Trace test indicates 1 cointegrating equation(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigen value)

| Hypothesized No. of CE(s) | Eigen value | Max-Eigen Statistic | 0.05 Critical Value | Prob.** |
|------------------------------|-------------|------------------------|------------------------|---------|
| None * | 0.553766 | 29.85574 | 27.58434 | 0.0251 |
| At most 1 | 0.308380 | 13.64258 | 21.13162 | 0.3950 |
| At most 2 | 0.150109 | 6.017949 | 14.26460 | 0.6109 |
| At most 3 | 0.006761 | 0.250991 | 3.841466 | 0.6164 |

Max-eigen value test indicates 1 cointegrating equation(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

From the above table, shows that, both trace test and maximum eigen value indicate the one cointegration equation which reveals that there is present of long run relationship among the variables under study.

VECM Regression Estimate

Estimate for VECM with Two Endogenous Variables (INT AND FDEF) and Two Exogenous Variables (EXCR AND MS)

| VARIABLES | D (INT) | D (LOG (FDEF)) |
|---------------------|--------------------------------------|------------------------------------|
| D (INT (-1)) | -0.531815 (0.20721) [-2.56654] | 0.010413 (0.04142) [0.25140] |
| D (INT (-4)) | 0.112045 (0.21989) [0.50956] | 0.177011 (0.04395) [4.02741] |
| D (LOG(FDEF (-1)) | 1.279075 (1.01475) [1.26048] | 0.356669 (0.20283) [1.75846] |
| D (LOG (FDEF (-04)) | 0.607473 (0.73075) [0.83130] | 0.72153 (0.41606) [0.49398] |
| LOG (MS) | 1.445687 (1.28340) [1.12645] | 1.056885 (0.25653) [4.11997] |
| EXCR | -0.008415 (0.03080) [-0.27318] | 0.001399 (0.06616) [0.22729] |

SOURCE: researcher's computation output using E-Views 7.0

Note: number in brackets and square brackets indicates standard error and t-statistics

The vector error correction mechanism is a means to reconcile the error correction model (VECM) requires selection of an appropriate lag length: the choice of the maximum lag is based on Akaike and Schwarz criteria, where the chosen lag length minimize their values. The maximum lag length chosen are 4 lags, they minimize the Akaike (8.510333) and Schwarz (9.642329) to kits barest minimal in appendix (II).

From table 4.3 indicates that, INT on its first lag (INT (-1)) is statistically significant and negative relationship, while on the 4th lag it is statistically insignificant and positive relationship on itself. And log FDEF are all statistically insignificant and positively related with INT on both first and fourth lag, while LOG (MS) is statistically insignificant and positively related to (INT), but EXCR is statistically insignificant and having negative relationship with (INT).

In FDEF equation on the other hand INT have positive relationship and statistically significant with FDEF in first and fourth lags respectively. While the FDEF on itself have positive relationship and statistically insignificant in both the first and fourth lags, while LOG (MS) is statistically significant and positively related to (FDEF) equation, but EXCR is statistically insignificant and having positive relationship with (FDEF).

4.3 Granger Causality Test Result

| NULL HYPOTHESIS: | F-STATISTIC | PROB. |
|--|-------------|--------|
| LOG(FDEF) DOES NOT GRANGER CAUSE INT | 0.53279 | 0.7995 |
| INT DOES NOT GRANGER CAUSE LOG(FDEF) | 2.84468 | 0.0313 |
| LOG(MS) DOES NOT GRANGER CAUSE INT | 0.39903 | 0.8917 |
| INT DOES NOT GRANGER CAUSE LOG(MS) | 3.24814 | 0.0180 |
| EXCR DOES NOT GRANGER CAUSE INT | 0.61569 | 0.7367 |
| INT DOES NOT GRANGER CAUSE EXCR | 4.52935 | 0.0036 |
| LOG(MS) DOES NOT GRANGER CAUSE LOG(FDEF) | 1.34862 | 0.2799 |
| LOG(FDEF) DOES NOT GRANGER CAUSE LOG(MS) | 4.86820 | 0.0024 |
| EXCR DOES NOT GRANGER CAUSE LOG(FDEF) | 0.55333 | 0.7842 |
| LOG(FDEF) DOES NOT GRANGER CAUSE EXCR | 3.72995 | 0.0096 |
| EXCR DOES NOT GRANGER CAUSE LOG(MS) | 1.45833 | 0.2380 |
| LOG(MS) DOES NOT GRANGER CAUSE EXCR | 0.96713 | 0.4808 |

Source: Researcher's computation output using E-views 7.0

The result in the above table indicate that the null hypothesis that LOG (FDEF) does not Granger cause INT is not rejected, while the hypothesis that INT does not Granger cause LOG (FDEF) is rejected at 5%. Thus, unidirectional causality runs from INT to FDEF.

The null hypothesis that LOG (MS) does not Granger cause INT is not rejected, while hypothesis that INT does not granger cause LOG (MS) is rejected at 5%. Thus, unidirectional causality exists from INT to (MS).

However, the null hypothesis of EXCR does not Granger cause INT is not rejected and the hypothesis that INT does not Granger cause EXCR is rejected at 1%. Thus, unidirectional causality exists from INT to EXCR. The null hypothesis that LOG (MS) does not Granger cause LOG (FDEF) is not rejected, while the hypothesis that LOG (FDEF) does not Granger cause

LOG (MS) is rejected at 1% which indicate a unidirectional causality running from LOG (FDEF) to LOG (MS).

The null hypothesis that EXCR does not Granger cause LOG (FDEF) is not rejected, while the hypothesis that LOG (FDEF) does not Granger cause EXCR is rejected at 1%. Thus unidirectional causality exists running from LOG (FDEF) to EXCR.

The null hypothesis of EXCR does not Granger cause LOG (MS) and LOG (MS) does not Granger cause EXCR are all not rejected meaning that there is no causality at all between EXCR and LOG (MS).

4.4 Discussions and Policy Implications

Based on the finding of cointegration, there is evidence of long-run relationship between FDEF and INT in Nigeria. This finding is in line with the finding of Nakazofa (2003) for G7 countries and Sweden,.

Empirical evidence from granger causality test shows that, there is unidirectional causality between INT and FDEF, INT and MS, INT and EXCR as well as FDEF and EXCR in Nigeria. That is to say INT granger causes all the three variables in Nigeria. While FDEF granger cause EXCR in Nigeria. The finding indicates that, any change in INT affects changes in FDEF positively as indicated by VEC result. The policy implication of this finding indicates that any increase in INT leads to increase in FEDF and in turn leads to more money in circulation which has multiplier effect on inflation. This discourages saving due to inflation and worsens the balance of payments in Nigeria.

Similarly, evidence of short-run unidirectional causality is seen from interest rate to money supply. This indicates that over the years, in Nigeria, interest rate has been increasing which in turn brings about increase in money supply.

However, the study indicates absence of causality between exchange rate and money supply.

The evidence of linear interdependence between variables in the VEC estimates is an indication of strong relationship among, money supply, exchange rate, interest rate and fiscal deficits with their lagged values.

4. CONCLUSIONS

Based on the empirical finding, the following conclusions could be drawn. First and foremost, there is existence of long-run relationship between fiscal deficit financing and interest rate and also a positive relationship between money supply and interest rate, but negative relationship between exchange rate and interest rate. Similarly money supply and exchange rate are positively related to fiscal deficit in Nigeria.

Thus, the null hypothesis of no long-run relationship between interest and fiscal deficit financing is rejected. Secondly, there is also long-run causality between fiscal deficit financing and money supply. Thus, the null hypothesis of no causality between fiscal deficit financing and exchange rate is rejected. Thirdly, fiscal deficit financing, money supply and exchange rate are linearly interdependent in Nigeria.

5. RECOMMENDATIONS

Based on the findings, the study recommends the following:

1. Government should control interest rate at expense of fiscal deficit financing especially given the level of development of the economy in terms of infrastructures and investment
2. Since interest rate Granger cause exchange rate in the analysis in Nigeria , policymakers should lower the level of interest rate in order to have favorable exchange rate for the economy by promoting exports
3. further research in the area especially with respect to the relationship between fiscal deficit financing and economic growth

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