Inflation and Government Spending in Nigeria, 1985-2017

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Abstract— This paper examined the relationship between inflation and government spending in Nigeria for the period 1985 to 2017. The study utilized Augmented Dickey-Fuller unit root test, Johansen co-integration; Granger causality Test and Vector Error Correction Model (VECM) approaches. The secondary data variables in consideration are government spending (GEXP), inflation rate (INF), exchange rate (EXR) and broad money supply (MS_2) and they were soured from CBN Statistical Bulletins. Although the unit root tests showed that the variables possessed a unit root problem at their level but freed from this at their first order of integration, the Johansen co-integration result showed that the variables were co-integrated. The result indicated that there is a long-run and short-run bilateral causal relationship between inflation and government spending. The regression estimate based on the short run and long run VECM showed that inflation rate has a positive significant influence on government spending in Nigeria over the study period. Money supply is positively related with government spending in the recent years. Meanwhile exchange rate over the study periods showed a significant reduction in government spending in Nigeria in the recent years because a rise in exchanger rate reduced the value of naira and hence affect the government expenditure negatively.

Keywords— Government Expenditure, Inflation, Exchange rate, Money Supply

I INTRODUCTION

The problem of inflation has been on the increase in the less developed countries of the world over decades. The greatest threat and the major contributory factor to poor economic growth of a country and weak currency is inflation. The monetary well-being of a nation can go under and deteriorate drastically when inflation rears its ugly head and once buoyant economy can become sicken with depressed currency. In most cases inflation could become a tool to erode the debt of a nation. A country with large domestic and foreign debts can utilize the inflationary trends to reduce the burden of its debts, (Ezirim, Muoghalu and Uchenna, 2008). Inflation can be defined as a sustained and persistent rise in the general price level. Inflation can be caused by many factors ranging from increase money supply, increase in government spending, shortage of productivity and other factors. Any given economy would fret at the awareness of inflation in its economy because inflation inflicts hardship on a segment of the economy, (Oladipo and Akinbobola, 2011). It also leads to misallocation of resources because during inflation some price rise while some do not. As a result, misallocation of resources occurs. Inflation also leads to inefficiency in business and it becomes very difficult to make any rational forecast or estimation. However, this largely depends on the type of inflation which might be cost – push, demand-pull among others. One of the debilitating effect of inflation is its effect on expenditure as it makes it more bogus. This is why government budget in some developing countries is usually subjected to incessant review owing the unstable nature of inflation and its influence on government expenditure (Maku, 2009).

Government spending is one of the instruments of the fiscal policy used to stimulate or control macroeconomic activities in an economy. Government spending is also known as public expenditure which involves the spending of all tiers of government in any given country. It is the expenses which the government incurs for its maintenance of the economy as a whole. It is a very important mechanism which government can use to have substantial effect on people. In terms of living standard and better opportunities. Government spending decisions are approved by legislators who then forward the implementation of the decisions approved to the executive arm of the government. Government spending can be of two forms: recurrent and capital expenditure, (Abu and Abdullahi, 2010).

Historically, public expenditure has recorded a continuous increase over time in almost every country. However, traditional thinking and philosophy did not favour this trend because it rated market mechanism as a better guide for the working of the economy and allocation of its resources. It was argued that each economic unit was the best judge of its own economic interests and the government should not try to decide on behalf of others. Furthermore, while a private economic unit was guided by its own economic interests, the public sector had no such motivation. Accordingly, its efficiency was bound to be very low. However, if this philosophy has been practiced in its entirety, public expenditure would not have grown as rapidly as it did. In reality, the state could not ignore problems of economic growth and social injustice. It could not remain silent spectator of the miseries of the people.

This resulted in the acceptance of several versions of socialist and welfare philosophy, (Ajie, Akekere and Ewubare, 2008). The annual budget spells out the direction of the expected expenditure, as it contains details of the proposed expenditure for each year, though the actual expenditures may differ from the budget figures due, for example, to have extra budgetary expenditures or allocations during the course of the fiscal year, (Oziengbe, 2013).

The debate on inflation growth and government expenditure nexus is still on-going. The argument had centered on whether or not the increasing public spending has the potential to induce inflation. While some scholars are of the belief that increasing public expenditure enhances inflation, others are of the view that, it is inflationary pressure that causes the growth of government spending in both developing and developed countries, (Ezirim et al, 2008). There is still an unresolved issue theoretically as well as empirically as to the effect of government spending on inflation.

The issue of lack of consensus on the direction of causality between the two has been on-going for ages among researchers. This actually made it interesting to contribute to the existing literature on the issue with this study. In addition, the super-neutrality of money has also been brought into question here as to whether the impact of inflation is more significant in the long run or in the short run (Pamperdemous, 2013). Consequently, the major objective of this study is to investigate the impact of inflation on government expenditure. Apart from investigating the impacts in both long and short run periods, the study will also assess the direction of causality between the two. The rest of the paper is divided into literature review, methodology, results and discussion , conclusions and recommendations.

II LITERATURE REVIEW

There are various empirical studies on issue relating to government expenditure. However, most common feature of many of them is that they centered on its impact on growth only few investigated its relationship with inflation. Some of the related literatures are discussed as follows;

Castro and Hubic (2010) studied the effects of fiscal shock on economic variables by employing OLS as estimation technique. They analysed quantitatively the effects of inflation on general government accounts for some euro area countries and find out that inflation is not always positive for public finances. Rather, inflation weights on economic growth, which may leads to deteriorating government balance and increase public debt. Since inflation will reduce the value of money, thereby limiting the extent to which government can spend on providing basic infrastructures. Castro and Hubic failed to recognize the impact of inflation incidence in the developing countries.

Tayeh and Mairna (2011) examined the factors that affect the Jordanian total government expenditures by using correlation and cointegration analysis. The study showed that government expenditure is significantly related to the variables of inflation rate, unemployment rate and population with a typical relationship between government expenditure and inflation. They however recommended that there is a need to develop more different economic sectors and make them capable of utilizing their competitive aspects by improving both infrastructure facilities and superstructure services. this should be enforced by expanding the role of the Private Sector investment and capital attraction, this process must be within a framework of mutual cooperation between different stakeholders (mainly public and private sectors).

Olaiya e tal (2012) investigated the causality relationship among economic growth, public expenditure and inflation rate in Nigeria for the period spanning 1970 to 2010, using co-integration analysis and trivariate causality test. They reported the existence of long run relation among the variables. Their findings revealed the existence of a bi-directional causality between government expenditures and economic growth both in the short run and in the long run while a unidirectional causality was observed in the short run from economic growth and government expenditure to inflation rate. The implication of this result is that both government spending and economic growth also influence inflation rate in Nigeria. Based on these findings, they recommend that government should implement policies that would moderate government spending in order to reduce inflation rate. To compliment for the loss in economic growth through the reduction in government spending, lending rate should be moderated in order to encourage private investors in investing in the Nigerian economy. The reduction in inflation rate is essential because price stability is an incentive for investment and motivation for inflow of foreign capital, which can promote economic growth.

Olawumi and Tajudeen (2009) examined empirically the contribution of fiscal policy in the achievement of sustainable economic growth in Nigeria between 1970 and 2006. Ordinary Least Square (OLS) technique was used in this study and the result showed that fiscal policy does not have significant impact on economic growth in Nigeria. The finding seems invalidating the Keynesian postulation of the need for an active policy to stimulate economic activities. However, factors such as policy inconsistencies, high level of corruption, wasteful spending, poor policy implementation and lack of feedback mechanism for implemented policies evident in Nigeria which are indeed capable of hampering the effectiveness of fiscal policy have made it impossible to come up with such a conclusion. To put economy, therefore, along

the path of sustainable growth and development, they stated that the government must put a stop to the incessant unproductive foreign borrowing, wasteful spending and uncontrolled money supply and embark upon specific policies aimed at achieving increased and sustainable productivity in all sectors of economy.

Olukayode (2009) examined the link between government spending and economic growth in Nigeria over the last four decades (1977 – 2006) using time series data. OLS approach was employed to analyse the Ram (1986), model was developed to regress Real GDP on private investment. Human capital investment, government investment and consumption spending at absolute levels regressing it as a share of real output and regressing the growth rate real output to the explanatory variable as share at real GDP. The result showed that private and public investments have significant effects on economic growth during the review period. There was an attempt to test for presence of stationary using Augmented Dickey Fuller (ADF) unit root test, and it revealed that all variable incorporated in the model were non – stationary at their levels. In a bid to establish long run relationship between public expenditure and economic growth, the result revealed that the valuable were co integrated at 5 percent and 10 percent critical level. Were paper also used error correction model to detect short run behaviour of the variables. The result showed that for any distortion in the short run, the error restore the relationship back to its original equilibrium by a unit. A number of suggestions were however made on how government spending should be channel in order to influence economic growth significant and positively in Nigeria.

This empirical literature shows that there is a limited empirical study in Nigeria to properly address the link between growth inflation and government expenditure. Indeed, most of the works have focused on the causal relationship between fiscal deficit or government expenditure and economic growth. It is evident from the review of literature that there is dearth of studies on the link between growth inflation and government expenditure. The interest of this study is, therefore, to address the neglect issue on the nexus between inflation and government expenditure. Therefore, this study intends to fill the gap.

III METHODOLOGY

This section deals with the methodology used to source data and the methods adopted in analyzing these data so as to arrive at the main objective of the study. It involves theoretical framework of the model, model specification; estimation techniques, sources of data and measurement

Theoretical Framework

The model for this study is pinned down to the Neo-Keynesian theory of government spending which deduced that increase in government spending causes inflation in such a way that increase in inflation rate may result in decrease in government expenditures. This theory focuses on productivity, because, declining productivity signals diminishing returns to scale and consequently, induces inflationary pressures, resulting mainly from over-heating of the economy and widening output gap. One of the recent studies adopting this approach is Loizides and Vamvoukas (2005), they utilize a trivariate error correction model to study the relationship between government size measured as the ratio of total government expenditure percentage over GDP and the rate of output growth in India, Indonesia and Vietnam. The three variables include GDP growth rate, growth rate of the share of government expenditure in GDP, and either unemployment rates or inflation rates. Method of co-integration and Granger causality were employed in this study using time series data. The model can either be bivariate or trivariate, that is two or three endogenous variables in the system, respectively. Morealso, Tayeh S. N. and Mairna H. M. (2011) examined the factors that affect the Jordanian total government expenditures by using correlation and cointegration analysis. They include total expenditures (GEXP) as function of inflation (INF), unemployment (EMP), imports (IMP), exports (EX) and other endogenous variables in their model. The model showed that government expenditure is significantly related to the variables of inflation rate, unemployment rate and population with a typical relationship between government expenditure and inflation.

Model Specification

In the current paper, both bivariate and trivariate VECM are adopted to evaluate the causal link between inflation and government spending. The bivariate VECM include the two endogenous variables, which are growth rate of annual consumer price index (CPI) and growth rate of government spending as percentage of GDP. In the trivariate system, apart from the two above variables, either nominal exchange rate or GDP per capita is added as another endogenous variable in the system. The inclusion of another endogenous variable may help in controlling for possible omitted variable bias and also in testing for the robustness of the estimated results in the bivariate system.

Model specification in the study consists of a system of one equation in 3 explanatory variables. They are then specified that government spending (GEXP) is a function of inflation rate (INF), exchange rate (EXR) and broad money supply (MS_2). Hence the model equation is specified as follows:

$$GEXP = \beta_0 + \beta_1 INF + \beta_2 EXR + \beta_3 MS + \mu_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots .(1)$$

Where; GEXP = Government spending (Proxies as total expenditure as percentage of GDP) INF = Inflation rate, EXR = Exchange rate (Proxies as real

exchange rate), MS = Broad money supply (Proxies as broad money supply as percentage of GDP), Ut = Stochastic Variable (Error term), B_0 = Constant term, β_1, β_2 and β_3 = Parameters to be estimated

Estimation Techniques

The conventional approach to time-series econometrics is based on the implicit assumption of stationarity of time-series data. A recent development in time-series econometrics has cast serious doubt on the conventional time-series assumptions. There is substantial evidence in the recent literature to suggest that many macroeconomic time series may possess white noise. That is, they are non-stationary processes. A time-series integrated of order zero I(0), is level stationary, while a time-series integrated of order one, I(1), is stationary in first difference. Most commonly, series are found to be integrated of order one, or I(1). The implication of some systematic movements of integrated variables in the estimation process may yield spurious results. In the case of a small sample study, the risk of spurious regression is extremely high. In the presence of I(1) or higher order integrated variables, the conventional t-test of the regression coefficients generated by conventional OLS procedure is highly misleading (Springer, 2011). Resolving these problems requires transforming an integrated series into a stationary series by successive differencing of the series depending on the order of integration. However, the differencing process loses valuable information in data, especially in the specification of dynamic models. If some, or all, of the variables of a model are of the same order of integration, following the Engle-Granger theorem, the series are cointegrated and the appropriate procedure to estimate the model will be an error correction specification. Hendry (1986) supported this view, arguing that error correction formulation minimizes the possibilities of spurious relationships being estimated as it retains level information in a nonintegrated form. Hendry (1986) proposed a general autoregressive distributed lag model with a lagged dependent variable, which is known as the 'error-correction' term. He also advocated the process of adding lagged dependent and independent variables up to the point where residual whiteness is ensured in a dynamic specification. Therefore, error correction models avoid the spurious regression relationships. To guard against the possibility of estimating spurious relationships in the presence of some non-stationary variables, estimation is performed using a general-to-specific Hendry-type error correction modeling (ECM) procedure. This procedure begins with an over parameterized autoregressive distributed lag (ADL) specification of an appropriate lag. The consideration of the available degrees of freedom and type of data determine the decision on lag length. With annual data, one or two lags would be long enough, while with quarterly data a maximum lag of four can be taken. Under this ECM procedure, the long run relationship is embedded within the dynamic specification, (Wooldridge, 2013).

Unit Root Test

Macroeconomic time series data are generally characterized by stochastic trend which can be removed by differencing. Thus, this paper used or adopt Augmented Dickey-Fuller (ADF) Techniques to test and verify the unit root property of the series and stationarity of the model, (Dickey and Fuller, 1997).

Co-integration test

Two variables are said to be co-integrated if they have a long-term, or long run equilibrium, relationship between them. If two variables, dependent and an independent, are individually non-stationary but their residual (combination) is stationary, those variables are co-integrated on the long run (Gujarati, 2004; Yang, 2000). In this case the researchers used the Johansen co-integration test to test co-integration since it is the only test which can estimate more than one co-integration relationship if the data set contains two or more time series as well as gives the maximum rank of co-integration, (Dickey and Fuller, 1981).

Causality Test

In order to determine which variable in the model causes the other, the Granger causality test is to be used. The F-statistics is used to reject or accept the null hypothesis of no causation between the variables when F-statistics is greater than 2 and less than 2 respectively. Engle and Granger (1987) causality test regresses a variable, H, on lagged values of itself and another variable P. If P is significant, it means that it explains some of the variance in H that is not explained by lagged values of H itself. This indicates that P is causally prior to H and is said to dynamically cause or Granger cause P. This means that P does not granger cause H if β_2=0. The Granger equation is shown below:

$$H_t = \sum_{j=1}^{m} \beta_{1j} H_{t-j} + \sum_{j=1}^{m} \beta_{2j} P_{t-j} + \mu_t \quad \ldots\ldots(.2)$$

For the purpose of this study, the granger causal equation is represented thus:

$$GEXP_t = \sum_{j=1}^{m} \beta_{1j} GEXP_{t-j} + \sum_{j=1}^{m} \beta_{2j} INF_{t-j} + \mu_t \quad \ldots\ldots(3)$$

Where, GEXP is government expenditure, INF is inflation rate, m's are lag periods, β_{1j} and β_{2j} are parameters to be estimated and Ut denotes stochastic error term.

Error Correction Mechanism (ECM)

The Engle – Granger representation theorem proves that, if a co-integrating relationship exists among a set of I(1) series, then a dynamic error-correction

(EC) representation of the data also exists. The methodology used to find this representation follows the "general-to-specific" paradigm (Hendry, 1987). Initially, first difference of each variable in the model for this study, a constant term, and one-lagged EC term (EC_{t-1}) generated from the static regression procedure were used. Then the dimensions of the parameter space were reduced to a final parsimonious specification by sequentially imposing statistically insignificant restrictions or eliminating insignificant coefficients, (William and Judith, 1978). In case of this study, equation for Vector Error Correction Model is represented as shown below:

$$\Delta GEXP_t = \beta_0 + \beta_1 ECM_{t-1} \sum_{j=1}^{P_1} \beta_2 li\Delta GEXP_{t-j} + \sum_{j=1}^{P_2} \beta_3 li\Delta INF_{t-j} + \sum_{j=1}^{P_3} \beta_4 li\Delta EXR_{t-j} + \sum_{j=1}^{P_4} \beta_5 li\Delta MS_{t-j} + \mu_t \quad \ldots\ldots\ldots(4)$$

Where, ECM is error correction term (i.e measure of the speed of adjustment), Δ is the first-difference operator, p's are lag periods, β_0 is constant, $\beta_1 - \beta_5$ are parameters to be estimated and Ut denotes stochastic error term.

Sources of Data and Measurement

The data used for this study are basically time series data covering 1985 – 2017, that is thirty-three (33) years. The data were sourced from Central Bank of Nigeria (CBN) Statistical Bulletin. In terms of measurement, total expenditure as percentage of GDP will be used to proxy government spending, inflation rate is used; real exchange rate will be used for exchange rate while broad money supply (MS_2) as percentage of gross domestic product (GDP) will be used as proxy for money supply.

with the usage of the lag operator L which is selected through $L^k x_t = x_{t-k}$. the equation becomes:

$$A(L)y_t = \mu_t \quad \ldots\ldots\ldots(2)$$

Where: $A(L) = A_0L^0 - A_1L^1 - A_2L^2 - \cdots \ldots \ldots - A_pL^p$, A_0 = I (identity matrix) it is required that *A(L)* lies outside the unit circle for stationarity to be ensured.

Generalized Impulse Response Function for VAR

The generalized impulse response function refers to the reaction of any dynamic system in response to some external shocks or changes. In a VAR framework, the impulse response function traces out the reaction of the endogenous variable to shocks to each of the other individual variables. To assist this study, the impulse response function will be used to investigate the interaction between oil price and macroeconomic variables in Nigeria. The process through which the external shocks transmit in the economy will be the focus in our context and the cumulative impulse response function to help in the interpretation of the overall effects of shock upon dependent variable in a given period.

According to Stock and Watson (2001) the analysis of the impulse response function traced out the effects of a one-unit shock to a variable's error term on the dependent variables that made up the VAR model. Wouter (2011) identifies three types of structural shocks as; productivity shock, preference shock and monetary policy shock. According to his definition, "the impulse response function gives the Jth-period response when the system is shocked by a one-standard-deviation shock through a sequence of shock and alternative series of shocks". Impulse response function can be analyzed in different ways but this study follows the multivariate extension of factorization technique of the Cholesky Orthogonalisation approach as it is consistent with previous studies of Cheng (2006) that are related to this study.

Variance Decomposition for VAR

This is another application of multivariate time series analysis that will be used in the interpretation of VAR and is known as Forecast Error Variance Decomposition (FEVD). It explains how each variable contributes to other variables in a regression model by determining the rate at which the forecast error variance of each variable is explained by the exogenous shocks to other variables and further considers the portion of the observed variation that is attributed to the orthogonalised shock in a variable. According to Stock and Watson (2001) the variance decomposition explains the fraction of the observed variable that can either be ascribed to those variables being affected by shock or that of another endogenous variable. The application of this analysis will assist in analysing the behaviour macroeconomic variables in Nigeria to oil price shocks.

IV RESULTS AND DISCUSSION

This section involves the results and interpretation of the unit root test, co-integration test, Granger causality test and vector error correction model.

Unit Root Test

In other to estimate vector error correction model, the variables must be free from unit root problems, meaning that they have to be stationary at the same order of integration. Therefore, the result of the Augmented Dickey-Fuller Unit Root Test is presented as follow:

Table 1: Augmented Dickey-Fuller (ADF) TESTS

VAR	Level	1st Difference	2nd Difference	Order of Integration
GEXP	-1.8954	-6.8526	-	I(1)
INF	-2.7230	-5.5138	-	I(1)
EXR	-0.0362	-5.3242	-	I(1)
MS_2	-2.0273	-5.2466	-	I(1)

Note: ADF F-Stat. at 5% Critical Value is -2.960
Author's Computation, 2020

.Table 1 shows the Augmented Dickey – Fuller (ADF) unit root test, it is shown that all the variables are not stationary at level. Government spending (GEXP), inflation rate (INF) and exchange rate (EXR) and broad money supply are stationary (i.e. free from unit root problem) after their first difference, I(1). This is because their ADF test statistic values are lesser than Mackinnon's critical value at this first difference. This condition satisfies the first step in achieving the Engle-Granger Two Step model estimation approach that the variables do not have unit root problem at integration of order one, I(1). On the basis of this, null hypothesis of non-stationary is rejected and it is safe to conclude that the variables are stationary.

Co-integration Test

Johansen Co-integration test is carried out to determine the long run relationship among the variables in the model. The trace statistics and the maximum Eigen value are comparing with Mackinnon critical value at 5% of significance in order to determine the number of co integrating vector equation in the model and the test considers lag interval of 1 with intercept and trend in CE and test VAR. The result of the Johansen co-integration Test is presented in table below.

Table 2 Johansen Co-Integration Test

Hypothesized No. of CE(s)	Eigenvalues	Trace Statistics	5% Critical Values	Prob.**
None *	0.693687	60.21279	47.85613	0.0023
At most 1	0.432362	24.71832	29.79707	0.1717
At most 2	0.220047	7.730167	15.49471	0.4947
At most 3	0.009109	0.274507	3.841466	0.6003

Author's Computation, 2020

From the table 2, the trace statistics exceeds the critical value at 5% level of significance for hypotheses rank 0, meaning that the statement that there is no co-integration equation or error term in the model is rejected. This is ascertained as critical value is less than trace statistics at none rank of co-integration. These results showed that only one co-integrating equation exists among the variables. Therefore it is shown that there is an existence of a long-run dynamic relationship among the variables and an Error Correction Model is thus justified.

Granger Causality Test

The test is carried out by using Pairwise Granger Causality method and the maximal lag difference chosen is 1 in order to make the test effective.

Table 3: Pairwise Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.
INF does not Granger Cause GEXP	32	4.272	0.047
GEXP does not Granger Cause INF		5.899	0.007
EXR does not Granger Cause GEXP	32	9.229	0.005
GEXP does not Granger Cause EXR		0.203	0.654
MS_2 does not Granger Cause GEXP	32	0.149	0.708
GEXP does not Granger Cause MS		4.680	0.045
EXR does not Granger Cause INF	32	1.22	0.277
INF does not Granger Cause EXR		1.121	0.298
MS_2 does not Granger Cause INF	32	0.005	0.942
INF does not Granger Cause MS		3.537	0.070
MS_2 does not Granger Cause EXR	32	0.014	0.906
EXR does not Granger Cause MS		2.249	0.144

Author's Computation, 2020

It is shown from this results from table 3 that the statement that inflation (INF) does not granger cause government spending (GEXP), GEXP does not granger cause INF, exchange rate (EXR) does not cause GEXP and GEXP does not cause granger cause money supply (MS_2) cannot be easily accepted because their F-statistics probability are less than 5% critical significant value.

In contrast, the null hypotheses that GEXP does not granger cause EXR, money supply (MS_2) does not granger cause GEXP, EXR and INF do not granger cause each other, EXR and MS_2 do not cause each other are accepted due to the reason that their F-probability value exceed 5% significant level. Therefore it is deduced from this results that there are bilateral causality between inflation rate and government spending, meaning that government spending causes inflation in Nigeria and vice versa. Meanwhile, Exchange rate and government spending present a unilateral relationship; this shows that only

exchange rate can cause productivity growth. Moreover, government spending and broad money supply indicated a unilateral causal relationship in such a way that only government spending can cause money supply not the way round.

Estimation of Error Correction Model (ECM)

According to the Granger Representation theorem, when variables are co-integrated, there must also be an error correction model (ECM) that describes the short-run dynamics or adjustments of the co-integrated variables towards their long-run equilibrium values. ECM consists of one-period lagged co-integrating equation and the lagged first differences of the endogenous variables. Using the Vector Auto-regression (VAR) method with lag interval of 1 to 2 and intercept (no trend) in co-integration (CE) and in VAR, the ECM is estimated as below with government spending (GEXP) as a dependent variable and the rest of the variables are said to offer explanation to the economic growth in Nigeria. The result of vector error correction model is shown in Table 3.

Long-run Causality Relationship

From the table 4, the speed of adjustment coefficient of the ECM is -1.7128 and significant since its t-statistics probability is 0.0000% and this is less than 5% significant level. This implies that at every interval, the recovery of the government spending back to equilibrium once affected by shock in the growth is adjusted relatively by 71.28% increase and as well significant. The implication of this is that there is a long-run relationship running from inflation rate, exchange rate and broad money supply to government spending in Nigeria.

Table 4:Vector Error Correction Model

	Coefficient	t-Statistic	Prob.
ECM-(1)	-1.712825	-5.28004	0.0000
D(GEXP(-1))	0.666907	2.90681	0.0088
D(GEXP(-2))	0.146149	0.80549	0.9026
D(INF(-1))	0.077461	2.05292	0.0473
D(INF(-2))	0.029926	0.90084	0.6921
D(EXR(-1))	-0.134056	-3.16568	0.0054
D(EXR(-2))	0.039851	0.95302	0.6448
D(MS_2(-1))	0.088167	0.62186	0.9106
D(MS_2(-2))	0.233708	1.85818	0.0810
C	0.644939	1.13112	0.2792
R-squared	0.706388	0.245388	
Adjusted R-squared	0.574263	3.962952	
S.E. of regression	2.585768	4.999124	
Sum squared resid	133.7240	5.466190	
Log likelihood	-64.98686	4.831782	
F-statistic	5.346348	2.283917	
Prob(F-statistic)	0.000793		

Author's Computation, 2020

Short-run Causality Relationship

The result from this study represented in the table 4 shows that government spending is statistically significant for the lagged periods in the short-run dynamic associations. The estimation reveals that the government spending at both previous one and two years is positive but statistically significantly only at previous one year. This shows that government spending in Nigeria in the previous one year was significantly favourable and indicated a significant improvement by 66.6% as a result of money supply, inflation and exchange rate.

Furthermore, that inflation rate at both two lagged years is positively but only statistically significantly in previous one year. This shows that a unit increase in inflation in the previous one year leads to a significant 0.0775 units increase in government spending. Moreover, the inflation rate in the previous two year is insignificantly but positively related with government spending. This implies that a unit increase in inflation in the previous two year results in approximately 0.0299 unit increases in government spending.

Meanwhile, exchange rate in the previous one year is negatively related with government spending in Nigeria. This shows that as exchange rate of Nigeria naira per dollar increases by one unit in the previous one year, government spending reduces by 0.1341 units. The effect of previous two year shows that the exchange rate increases the government spending insignificantly by approximately 0.0399 units. This is because it shows a positive relationship with government spending at this lagged year and also statistically insignificant.

Finally, the estimation reveals that the broad money supply is positively related but statistically insignificant to government spending at both lag 1 and lag 2. This shows that in the short-run dynamic association, a unit increase in broad money supply in the previous one year and two year leads to insignificant increase in government spending by 0.0882 and 0.2337 units respectively.

Model Overall Significance

This is deduced from the F-statistics probability, in table 4 the F-statistics probability is 0.00, which is less than 0.05 significant levels; and this indicates that all the explanatory variables are significantly influenced government spending in the error correction model.

Model Goodness of Fit

This is estimated by using R^2, the table 4 shows that R^2 for the model equal to 0.7064, which represents Coefficient of multiple determinations and this measuring the model goodness of fit. This value reflects 70.64% variance of the economic growth as explained by the inflation rate, exchange rate and broad money supply. This also indicates that the remaining 29.36% not captured by the explanatory

variables in the model is due to changes in other variables or error terms.

Autocorrelation Test

This test is carried out by using Durbin – Watson value. From the table 4, Durbin – Watson value (Dw^x = 2.284), the dl=1.214, du=1.650, 4-du=2.350 and 4-dl=2.786. Then, the Durbin – Watson value falls between du and 4-du region and this implies that there is no autocorrelation (serial correlation) among the variables.

V CONCLUSIONS

The finding from this study implies that the time series variables are stationary at integration of order one I(1) while tested with Augmented Dickey-Fuller Unit Root Test. This implies that these variables do not possess unit root problem. Johansen Co-integration Test shows that there is a long-run association among the variables. This implies that at every interval, the recovery of the government spending back to equilibrium once affected by shock in the growth is adjusted relatively by 71.28% increase and as well significant. The implication of this is that there is a long-run relationship running from inflation rate, exchange rate and broad money supply to government spending in Nigeria. Therefore, these variables could co-move in the future under dynamic relationship.

Results from Error Correction Model show that, government spending in Nigeria in the previous one year was significantly favourable and indicated a significant improvement by 0.6669 units as a result of money supply, inflation and exchange rate in the short-run dynamic associations. The reason for this may be traced to the huge amount of capital and recurrent expenditures that Federal government, state government and Federal capital territory as well as local government of Nigeria considerably incur annually. These expenditures might be on administration; social and community services such as education and health; economic services such as agricultures, construction and transport; and transfers such as public debt servicing, gratuities and pension.

Furthermore, it is shown from the study that a unit increase in inflation in the previous one year leads to a significant 0.0775 units increase in government spending and a unit increase in inflation in the previous two year results in approximately 0.0299 unit increases in government spending. This result confirms the a priori expectation and the implication of this is that the recurrent and capital expenses that government of Nigeria has been spending annually are high enough to raise the general price to double digit level in the recent years.

Meanwhile, the result also showed that as exchange rate of Nigeria naira per dollar increases by one unit in the previous one year, government spending reduces by 0.1341 units. But the effect of previous two year shows that the exchange rate increases the government spending insignificantly by approximately 0.0399 units. Result of the previous one year conforms to a priori expectation of the study. This may be due to fact that when the exchange rate rises, the value of naira will tend to fall and even the cost on foreign trade will be so higher to hamper the government project. This will then lead to reduction in government spending all the way. Therefore, increase in exchange rate fail to act as engine of increase in government spending in Nigeria in the recent years.

Again, the estimation reveals that in the short-run dynamic association, a unit increase in broad money supply in the previous one year and two year leads to insignificant increase in government spending by 0.0882 and 0.2337 units respectively. This result agrees with a priori expectation of this study and the implication of this result is that when there is more money in circulation, it may be as a result of increase in government spending. The reason is that when government spends more, there will be enough cash flow in the society; therefore money supply is favourable to government spending in Nigeria. Above all, this study has shown that inflation rate has a positive significant influence on government spending in Nigeria.

This study is in agreement with the work of Ezirim et al (2008) who studied the relationship between growth rate of public spending and inflation rate for the United States of America, using granger causality and cointegration models. They found that the two variables are positively correlated and that there is bi-directional relationship between public expenditure growth and inflation in the United States of America. The study concluded that inflation significantly influences public expenditure decisions in the United States of America. Also from the study, Public expenditure growth was seen to aggravate inflationary pressures in the country, while reduction in public expenditure tends to reduce inflation. Also, the study is in conformity to work of Tayeh S. N. and Mairna H. M. (2011) which examined the factors that affect the Jordanian total government expenditures by using correlation and cointegration analysis. The study showed that government expenditure is significantly related to the variables of inflation rate, unemployment rate and population with a typical relationship between government expenditure and inflation.

On the contrary, the study is not concurred with the work of Oniore J. O., Obumneke E. and Torbira M. T. (2015) which examined empirically the causal relationship existing between public expenditure growth and inflation in. The study provides evidence that there is no statistically discernible relationship between government expenditure growth and inflation in Nigeria. They therefore, kick against the ‘old-time religion’ of restricting aggregate demand by tight

monetary policy as often demonstrated by the Central Bank of Nigeria through adjustments in the Monetary Policy Rate.

This study has confirmed that there is a bilateral causal relationship between inflation and government spending in Nigeria. It is concluded that there is a long-run causal relationship running from the government spending to inflation, exchange rate and money supply and these variables could co-move in the future under dynamic relationship.

It is equally ascertained from this study that inflation increases with government spending. The implication of this is that, capital and recurrent expenditures that all tiers of government incur annually on administration; social and community services such as education, health, economic services such as agricultures, construction and transport; and transfers such as public debt servicing, gratuities and pension are high enough to raise the general price to double digit level in the recent years.

The findings as well inferred that increase in exchange rate is detrimental to government spending. When the exchange rate rises, value of naira falls and this triggers the cost on foreign trade hence increase the values of government projects. This affects government expenditure negatively. Therefore, it can be concluded that increase in exchange rate fails to act as engine of increase in government spending in Nigeria in the recent years.

It is at the same time deduced from the study that money supply increase alongside government spending in Nigeria. The implication of this result is that when there is more money in circulation, thiscan be traced to increase in government spending. The reason is that when government spends more, there will be enough cash flow in the society, therefore money supply is rises with government spending in Nigeria. Moreover, this study has concluded that inflation rate has a positive significant influence on government spending in Nigeria.

Recommendations

Based on the results from this study, it therefore recommended that to curb inflation, the government would have to reduce its expenditure levels appropriately. On the other hand, to achieve a higher level of inflation aimed at boosting economic activities, the government would have to increase its level of spending. This tends to suggest that for Nigeria, fiscal policy manipulation would be an appropriate tool to control inflation. This policy option is without prejudice to the possible effects of monetary policy on the economic causes of the country.

Since government direct instrument and the moral suasion by the Central Bank of Nigeria never persuaded them to adhere to the fiscal prudence, there should be a policy or an act of parliament empowering the banks granting loans to government to make exceptional prudential use of such loans. The problem of poor economic infrastructure (water supply, transport system, telecommunication, and energy) can be solved by the use of private-public partnership. Although, this might still have inflationary effect on the economy but such inflationary effect would be minimal if the investments are spread out over a long time period.

Exchange policy should be designed to bridge the savings investment gap, enhance government revenue and reduce the fiscal gap through the curtailment of deficits and guarantee of external balance in the long run. This implies that domestic productivity and exports should be enhanced in the medium to long term while aggregate demand should be curtailed in the short run. To reduce exchange rate, the foreign exchange market should be policed to ensure that only those who have the aim to add value to the real sector get attention. This will prevent upsurge in the exchange rate, which could have debilitating effects on the naira.

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