

MONETARY POLICY AND BALANCE OF PAYMENTS IN NIGERIA: A CO-INTEGRATION SCRUTINY

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ABSTRACT

The study examines balance of payments and monetary policy in Nigeria from 1980 to 2013. The main purpose of the study is to examine the relationship between monetary policy and balance of payments in Nigeria. The data for the study were sourced from CBN statistical bulletin. The variables were tested for stationarity using the Augmented Dickey fuller test. Also, Johansen co-integration method was the main tool for the analysis. From the Johansen co-integration result, we discover that there are two co-integrating equations because Max-Eigen Statistical values are larger than critical values. Thus, we accept the alternative hypothesis that there is a long run relationship between balance of payments (BOP), interest rate (INT), money supply (MS) and government expenditure (GEX). Meaning that, uninterrupted, appropriate and suitable monetary policy has the ability to solve balance of payments problem in Nigeria. Based on the above findings, the paper recommends that monetary policy should be complemented with an effective fiscal policy to improve the Nigeria's balance of payments situation.

Keywords: BOP, Government Expenditure, Interest Rate, Money Supply, Monetary policy, Expansionary, Contractionary and Co-integration.

INTRODUCTION

Every country tries, at the end of each year, to assess its overall position in the transactions it carries out with other countries. This is done using an annual accounting statement called the balance of payments (BOP). This accounting statement sums up all the economic dealings between people of one country and people of other countries. Put differently, it is the overall economic dealings between one country and other countries. Supporting this, Gbosi (2011) submits that BOP statement is a record that sums up a country's dealings with other countries in monetary terms. A country's 'equilibrium' of international payments statement usually consists of several component parts, these component parts are called accounts. In Nigeria, the most significant parts of our balance of payments statement consist of the current account, capital account and monetary transactions account (also recognized as the official statement account). These accounts enable us to know whether a surplus or deficit has occurred in the BOP. Strictly speaking, BOP statement also enables us to know the level of export and import.

Moreover, prior to the 1970s, Nigerians were able to carry out investment projects through proceeds from agricultural products exports (groundnut, cocoa, cotton, palm oil to mention a few), savings and foreign aid. But the oil boom of 1970s led Nigeria to disregard her strong agricultural sector. To be honest, since the advent of oil as a major source of overseas income to Nigeria, the picture has been almost that of general reduction in real sector (agriculture) exports. However, in 1980s, there were imbalances in both internal and external sectors of the Nigerian economy because the oil market was weakened. These imbalances were financed through civic sector borrowing, depleting overseas reserves and large gathering on payment amount outstanding on international trade credits and as such created troubles for our BOP.

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Therefore, the Nigeria's BOP statement recorded deficits in 1984. Furthermore, fiscal and monetary policy measures were introduced to tackle the troublesome deficit in the country's BOP, these included; reduction of budgetary expenditures, import licenses control and increase in tariffs. In 1986, the government introduced Structural Adjustment Programme (SAP) which in the midst of other things, pooled exchange rates and trade policies together in other to promote sustainable economic growth and efficiency in the stabilization policies designed to repair the troubles of balance of payments disequilibrium and price instability. Nevertheless, the main aim of Nigerian government since 1960 when she got her independence from Britain up till date is to ensure that the position of BOP is stable. The reason is that the unsteadiness in Nigeria's BOP always calls for an attention.

Therefore, over the years the various governments in Nigeria have enunciated and implemented a myriad of macroeconomic policy options especially monetary policy in an attempt to tackle the BOP crisis. By monetary policy, we mean how changes in money supply and credit controls affect macroeconomic outcomes. According to Gbosi (2005), the aim of monetary policy is to control money supply in order to check unwanted trends in the economy, among which is imbalance in the BOP. Even with the manipulations of monetary policy instruments of minimum rediscount rate (MRR), Open market operations (OMO), Reserve requirements (RR), Cash and Liquidity ratio, the exchange rate and moral suasion; Nigeria's BOP trouble has remained the same, even worse because of the pitiable non-oil export performance, persistent decline in the country's foreign exchange, high import, preference for foreign goods and services over domestic goods and services, stagnated agriculture, pressure of inflation, inefficiency of the manufacturing sector and falling oil prices in the foreign oil market. It is no longer news that if a country faces persistent shortfalls in the current account, such country's balance of payment is said to be

experiencing balance of payment problem. Gbosi (2001) opines that, in spite of all the laudable efforts of monetary authorities at addressing the problem of BOP deficits, balance of payments deficits still remains a major problem in Nigeria. In current years, there have been continuous shortfalls in the country's BOP because of the declining prices of crude oil in the international oil market.

In addition, a number of studies have been carried out on different aspects of this subject using various measures to investigate the nature of relationship between BOP and monetary policy. However, the studies have provided mixed results. For instance, the studies of Adamu, et al (2010), Unaimikogbo and Enoma (2011), Onyeiwu (2012), Tijani (2013), Imoisi, Olatunji and Ekpenyong (2013) and Udude(2015) showed that monetary policy tools (specifically money supply) exerts a significant impact on BOP while Ajayi (2014), discovered a negative association between monetary variables (i.e., MPR and money supply) and BOP. The results of Danjuma (2013), Boateng et al (2013), Fleermuys (2005) goes to also verify that, BOP is not a purely monetary occurrence. The difference in empirical findings on the impact of monetary policy on BOP is of serious concern, especially to Nigeria. The above state of affairs raised some pertinent questions: is there any association between BOP and monetary policy in Nigeria? Or what is the trend of the Nigeria's BOP? Answers to these questions are the major concern of this work. Therefore, the main objective of the study is to examine the relationship between monetary policy and balance of payments in Nigeria from 1980-2013.

THEORETICAL AND CONCEPTUAL FRAMEWORK

Attempts to explain the causes of balance of payments problem are sometime referred to as approaches to balance of payment. Therefore, we examine the monetary approach to balance of payments, Elasticity

Approach to Balance of Payments and Absorption Approach to balance of payments.

The Monetary Approach to the Balance of Payments

The monetary approach seems to be the best in explaining the problem of the BOP. Certain assumptions underlies the monetary approach to BOP. These assumptions include the following:

- a) The model assumes that $M^s = M^d$. That is changes in the BOP are caused by changes in the money market.
- b) There exists Rigid exchange rate system.
- c) The monetary model assumes that the prices and rate of interest are exogenously determined.
- d) The monetary approach also assumes that income (Y) is exogenously determined. The model takes into account the long run phenomenon. The monetary approach to BOP made certain predictions uncertain.
- e) That devaluation, tariff, imports, quotas have only transitory effects on the BOP.
- f) That a country will experience balance of payment deficit when it runs out of foreign reserve.
- g) Under fixed exchange rate regime, like in the case with BEAC, individual countries within these regimes cannot provide for themselves any independent monetary policy.
- h) That a rise in domestic rate of interest or price level may lead to BOP deficit and vice versa.

Specifically, this approach postulates that the causes of BOP disequilibrium can be traced to the disequilibrium in the monetary market. The monetarists postulate some positions for the BOP. First, that if the demand for money is not equal to the supply of money i.e. $M^d \neq M^s$, then the BOP will certainly be in disequilibrium. Secondly, that if $M^s > M^d$, that is money supply is greater than money demanded, there

will be excess money holding in the hands of the public which will increase their purchasing power and eventually result to an inflationary condition. Such inflationary condition will make local products more expensive, thus increasing the demand for foreign products, high financial transfer and eventual BOP shortfall. It will also make local products less competitive in the foreign market. The third condition demands that, $M^d > M^s$, When this condition holds, it means that there is less money in the hands of the public. The effect will be falling domestic prices which will make local products more competitive in the foreign market. This will cause inflow of foreign exchange and eventual increase in foreign reserves and as such BOP surplus. The last condition is where $M^s = M^d$, this is equilibrium condition. At this condition the BOP is at equilibrium. The monetary approach justifies the inclusion of money supply in the model.

Elasticity Approach to the Balance of Payments

Another approach that provides partial solution to the problem of BOP is the elasticity approach to the BOP. This approach is tied to the Marshall - Lerner conditions, which stated that the solution to the BOP can be achieved through devaluation if and only if the absolute sum of the elasticity of imports and exports are greater than one. That is $(e_i + e_x) > 1$

Where; e_i is elasticity of imports and e_e is elasticity of exports. According to Marshall - Lerner, devaluation will improve BOP situation of a country when $(e_e + e_x) > 1$. The elasticity of imports and exports provide explanation to people's responses to the changes in imports and exports, with emphasis laid on devaluation and the price level. The elasticity approach therefore argues that in a country whose exports elasticity is very high and her import elasticity is also very high devaluation will improve the BOP situation of such a country while if the import elasticity of a country is very low and export is equally very

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low then devaluation will help to worsen her BOP situation. If we systematically apply this approach to Nigeria, we will realize that the elasticity approach to the BOP will place Nigeria in an uncomfortable BOP shortfall through devaluation. The reason is that Nigeria produces limited quantity of goods and services and mostly agricultural products whose export elasticities are very low.

Furthermore, the income per head in Nigeria is very low, hence her imports are limited to basic necessities with little amount of capital goods. From the above analysis, we discover that it is difficult for $(e_m + e_x) > 1$, hence the elasticity approach to balance of payments concludes that the Marshall - Lerner approach will empirically stand as $e_m + e_x < 1$ in Nigerian economy.

The Absorption Approach

The absorption approach to balance of payment was developed by Sidney Alexander, published in 1952. It is in part a reaction against the restrictive assumptions underlying the elasticity approach and emphasizes the macroeconomic income effects of devaluation.

Using some set of equations to explain the absorption approach, we state the national income equation for an open economy:

$$Y = C + I_d + G + X - M \text{ ----- (1)}$$

Where Y = National income, C = consumption expenditure, I_d = Investment demand, G = Government expenditure less tax revenue, X = exports and M = Imports. If we rearrange this equation to express the current account surplus in terms of the other variables as: $X - M = Y - (C + I_d + G)$ ----- (2)

Note; $(C + I_d + G)$ are the components of expenditure defined as the absorption of the economy. If we denote $C + I_d + G$ as A and B for the current - account surplus, equation (3) becomes:

$$B = Y - A \text{ ----- (3)}$$

Equation (3) states that if domestic output exceeds domestic absorption then there must be surplus on the current account whereas a current account deficit implies that absorption exceeds output. Consequently, the current - account balance will be improved only if we can increase output relative to absorption. Formally; $dB = dy - dA$ -- (4)

BOP policy instruments are often classified according to whether their initial impact is on output or on absorption. To change absorption without changing output, a policy must lead to the replacement of foreign goods by domestic goods, or vice versa. Devaluation and the imposition of import restrictions are good examples of such policies and they are referred to as expenditure - switching policies that affect both output and absorption directly are known as expenditure-reducing policies: fiscal and monetary policies are good examples.

There are three factors which affect the impact of devaluation on the balance on current account, these are: the value of the marginal propensity to absorb, the effect of devaluation on output and the devaluation on direct absorption. These factors are however affected by the extent to which there are unemployed resources in the economy. A policy that increased output without decreasing direct absorption would lead to an improvement in the current account balance. This justifies the inclusion of fiscal policy variable (government expenditure) in the model.

The Concept of Balance of Payments (BOP)

BOP is defined as an accounting statement that sums up all the economic dealings between people of one country and people of other countries. In other words, it is the overall economic dealings between one country and other countries. Gbosi (2005) asserts that the BOP is

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among other three records of international economic dealings between countries. The three major components of the BOP are the Current Account, Capital Account and Official Statement balance. The first account (i.e., current) includes dealings where the payments are income for the recipient country. They include visible goods, invisible services, remittances, payment of factors etc.

The second (i.e., capital) account records asset transactions. It enables us to know the volume of investment that is made by Nigerian nationals as well as the government in other countries. On the other hand, the Official Statement Account primarily aimed at matching any balance in the Current or Capital Account. Whenever a country's payments exceed her receipts from her foreign transactions, BOP becomes unfavourable. This will of course lead to the depletion of her external or foreign reserves. Furthermore, if such an adverse condition continues for a long time, pressure will be mounted on the value of her domestic currency, thereafter heading to devaluation or gradual depreciation of the domestic currency. This has been the state of the Nigerian Naira in recent years.

Moreover, a country may record surplus or deficit balance of payment. We can say that a balance of payment of a country is in surplus when the revenue from export exceeds the payment for import and negative when the reverse is the case. A balance of payment disequilibrium may either be positive or negative where it is possible that when net payments that comes from other countries and when net payment that goes to other countries will be negative (Gbosi, 2005).

Devaluation as a Corrective Mechanism of BOP Deficits

It is argued that when a country devalues its currency, the worth or price of that currency compared to other currencies decreases, thus, making it possible for foreigners to buy more of the devaluing country's

goods than before, and import becomes more expensive (Gbanador, 2005). Devaluation is supposed to discourage imports and encourage export of the devaluing country, thereby raising the BOP. The traditional approach to the effect of demand suppleness of imports and exports of the diminishing country, that is, an enhancement in the stability of trade will depend on whether the demand for imports and exports is elastic or inelastic. If the demand for the devaluing country's import is inelastic, its imports will be costlier than before. Thus, a higher amount will be spent for the same import thereby worsening her balance of trade, hence, the balance of payment. Similarly, if the demand for exports is inelastic, then the devaluation will lead to a lesser amount being spent on her goods by foreigners, adversely affecting the BOP of the diminishing country.

Contrarily, if the demand for export is elastic, then a fall in the price of export as a result of the deliberate reduction in the country's value of currency in terms of other countries' currency, foreign demand for her export will increase, thereby raising the BOP position of the devaluing country. In the same way, if the demand for import is elastic, then import of the country will be significantly reduced because the high price of her imports necessitated by devaluation will reduce its import thereby raising the BOP position of the country. We call this the elasticity model stated in the theoretical framework above.

The elasticity model is built on Marsha-Lerner condition which implies that under certain conditions, devaluation will improve the BOP position if the addition of the two elasticities of the demand for imports and exports exceeds unity (one). According to the model, when the addition of the elasticity is equal to one, devaluation tends to leave the size of the deficit unchanged, when it is less than one, it makes the BOP worse than before. Critics have argued that the Marshal-Lerner condition does not hold in Nigeria. Strictly speaking, empirical evidence does not

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seem to suggest that the theoretical expectations of the Marshall-Lerner condition can be satisfied in the Nigerian case. The reason is that the addition of the price elasticity's of the country's imports and exports is less than unity.

However, the disproportionate size of oil exports vis-a-vis non-oil export, the excruciating debt burden and the unfavourable domestic and international economic environment have constrained the achievement of a balance and sustained economic growth that could foster BOP viability. There is need to adopt economic policies that would ensure macro-economic balances, institute a culture of policy stability, enhance non-oil exports, and develop adequate debt servicing capacity through the enhancement of domestic productivity

EMPIRICAL LITERATURE

Because of the importance of monetary policy in achieving balance of payments equilibrium, a lot of research work have been carried out in this direction. For instance, Imoughele and Ismaila (2015) examine monetary policy and BOP in Nigeria from 1986 to 2013. In order to achieve the objective, the study used time-series data and Error Correction Model (ECM) to analyze the data. According to Imoughele and Ismaila (2015), there exist a Long run association between monetary policy variables (Exchange rate, Broad money supply and credit to the private sectors) and BOP. That is, they are the main variables that determine BOP in Nigeria. The study therefore concluded that BOP is a monetary occurrence hence; monetary policy is the appropriate tool can be used by monetary authority to improve and stabilize Nigeria's foreign sector performance.

Udude(2015) did well to examine empirically the impact of monetary policy on Nigerian BOP. Time series data were collected on exchange rate (EXCR), Balance of Payments (BOP), Interest rate (INT), gross

domestic product (GDP) and broad money supply (M2), from 1980 to 2010. However, Ordinary Least Squares (OLS) and Co-integration techniques of econometrics were used as the main analytical tools. The results show that there is a long run association among the variables. Also, the coefficients of M2 and EXCR were positive while those of INT and GDP were negative. Furthermore, all the coefficients of variables except interest rate were statistically significant. Therefore, monetary policy instruments significantly impact on the BOP.

Moreover, Ajayi (2014) find out the determinants of BOP in Nigeria from 1970 to 2010. To achieve the objective of the study, he used data on money supply, BOP and monetary policy rate (MPR). The Econometric method of co-integration was used as the analytical tool. The researcher found a negative significant association between variables of monetary policy (i.e. money supply and monetary policy rate) and BOP. The study concluded that a better exchange rate and a smaller monetary policy rate will raise the BOP of the Nigerian economy.

Similarly, Imoisi, Olatunji and Ekpenyong (2013) jointly examined the power of monetary policy in achieving constancy in the BOP of Nigeria. They made use of time series data from 1980 to 2010 and Ordinary Least Squares (OLS) technique of econometrics was also used as the main analytical tool. The result shows a positive association between BOP and all the monetary policy variables such as; Interest Rate, Money Supply and Exchange Rate. In particular, the result shows that Interest Rate and Money Supply had significantly impacted on BOP during the period of study, whereas Exchange Rate was not statistically significant. Therefore, the study recommended that the government should encourage the exportation of goods and services especially the Non-oil products.

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Tijani (2013) empirically investigated BOP Adjustment Mechanisms using Monetary Channel in Nigeria from 1970 to 2010. The study made use of time series data and econometric method of OLS to analyze the data obtained. The regression result shows that there is a positive relationship between the BOP and Exchange Rate, Domestic Credit and Balance of Trade while Gross Domestic product and Inflation Rate have a negative effect on BOP. The study summarized that monetary measures contribute immensely to the position of BOP of Nigeria, depending on the way it is applied by the monetary authorities.

Danjuma (2013) examine the role excess money supply has played in the position of balance of payment in Nigeria from 1986 to 2010. The econometric methods of Co-integration, Vector ECM and Impulse Response Function and discrepancy decay which result shows that balance of payment in Nigeria is not entirely monetary phenomenon and he advised that the monetary authority should try and monitor budget deficit of the country.

Furthermore, Boateng et al (2013) systematically examines Balance of Payments in Ghana. The researcher made use of time series data from 1980 to 2010. In other to achieve the objective of the research, the researcher used monetary approach and econometric methods/models. The study shows that the balance of payment imbalance in Ghana is not controlled only by monetary policy. The results also show that variables such as GDP growth, domestic credit, interest rate have a significant relationship with BOP. Moreover, interest rate and Domestic credit are negatively linked to net foreign assets while GDP growth is positively related. In addition, Inflation is not significantly related to net foreign assets. The study therefore concluded that for monetary policy to correct the disequilibrium in BOP, government should give equal attention to other macroeconomic policies.

Imoisi, Olatunji and Ekpenyong (2013) examined the efficacy of monetary policy in achieving Balance of Payments stability in Nigeria using an Ordinary Least Squares (OLS) technique of multiple regression models from 1980-2010. The estimated regression result shows a positive relationship between the dependent variable (Balance of Payments) and the Independent variables (Money Supply, Exchange Rate and Interest Rate). Specifically, Money Supply and Interest Rate had significant relationship with Balance of Payments, whereas Exchange Rate was not statistically significant. Imoisi (2012) also examined the trends in Nigeria's Balance of Payments position from 1970-2010 using an econometric analysis and found that exchange rate and interest rate as monetary variable has a significant impact on Nigeria Balance of Payments and inflation rate was not significant.

Momentously, in an attempt to understand the impact of monetary policy on the Nigerian economy, Onyeiwu (2012) collected time series data from 1981 to 2008 and used the Ordinary Least Squares (OLS) Method of econometrics to analyze the data. The regression result shows that monetary policy variable of money supply impacts positively on BOP during the period of study. Ditimi, Wosa and Olaiya (2011) looked at the effect of monetary policy instrument on BOP in Nigeria from 1986 to 2009. The study used OLS i.e., ordinary least squares method of econometrics to analyze the secondary data obtained. The result shows that monetary policy has significant effect on BOP and also it is a potent tool in maintaining BOP that is favourable within the Nigerian economy.

Fleermuys (2005) empirically examines the monetary approach to the Namibian BOP. The researcher collected secondary data from 1993 to 2003 and used econometrics method to analyze the data obtained. The regression result shows that monetary policy don't play an irresistible role in determining Namibia's BOP. The regression results evidently

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showed that, although some variables suggested by the monetary approach play significant roles, the BOP is not a purely monetary phenomenon. Moreover, as much as the above studies are commendable, the basic questions remain as: is there any relationship between balance of payments and monetary policy in Nigeria? Or what is the trend of the Nigeria's BOP? These questions plead for answers and this study therefore seeks to appeal to empirical evidence to resolve these questions.

Nevertheless, in the works of some scholars like Imoisi et al (2013), Onyeiwu (2012), Unaimikogbo and Enoma (2011), etc. OLS econometric method was used. None of these scholars used Co-integration method to find out whether there exist a long-run relationship between monetary policy variables (money supply, interest rate as well as fiscal policy variable of government expenditure) and balance of payments in Nigeria. Secondly, none of these scholars covered the period of 1980 to 2013 that reflects the current state of the Nigerian economy. Therefore, this study systematically looks at how monetary policy has impacted on BOP in Nigeria from 1980 to 2013 by using the econometric method of Co-Integration to assess and determine the association amongst variables included in this investigation.

METHOD OF STUDY

The study is analytical in nature because of the time series data used. Specifically, Johansen co-integration was the main analytical tool. The co-integration technique establishes the long run equilibrium relationship between the variables in the model. In addition, the model was cast in line with Imoisi, Olatunji and Ekpenyong (2013), whose model is in the form $BOP = f(MS, IR, EXR)$ but with slight modification. Hence, our model used government expenditure in place of exchange rate to also see its impact on BOP in Nigeria. Therefore,

our model is presented thus:

$$BOP = F (MS, INR, GEX) \quad (4.1)$$

$$BOP_t = a_0 + a_1MS_t + a_2INR_t + a_3GEX_t + U_t \dots \dots \dots (4.2)$$

Where; BOP is Balance of Payments, MS is Money Supply, INR is Interest Rate, GEX is Government expenditure, U is Error Term, a_0 is the constant parameter, a_1 , a_2 and a_3 are the slope parameters. On the a priori: $a_1 > 0$, $a_2 < 0$ and $a_3 > 0$.

Unit Root Test: Given that most short run analyses may be characterized by spurious result, a stationarity test (i.e., unit root test) becomes necessary. This was followed by the Johansen co integration test to determine whether a long run equilibrium relationship exists amongst the variables. The unit root model is presented thus:

Augmented Dickey-Fuller test relies on rejecting a null hypothesis of unit root (the series are non-stationary) in favour of the alternative hypotheses of stationarity. The tests are conducted with and without a deterministic trend (t) for each of the series. The general form of ADF is estimated by the following regression

$$\Delta y^t = b^0 + b^1 y^{t-1} + \sum b \Delta y_i + u^t \quad (4.3)$$

$$\Delta y_t = b_0 + b_1 y_{t-1} + \sum b_1 \Delta y_i + \delta t + u_t \quad (4.4)$$

Where: Δ is the first difference operator, y is a time series, t is a linear time trend, b_0 is a constant, and U is the random error term.

Co-integration Test

The fundamental argument of Johansen's procedure is that the rank of matrix of variables can be used to determine whether or not the two variables are co-integrated. A lack of co-integration suggests that

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such variables have no long-run relationship. Co-integration is conducted based on the test proposed by Johansen (1998). Johansen's methodology takes its starting point in the vector auto regression (VAR) of order P given by

$$y_t = \mu + \Delta_1 y_{t-1} + \dots + \Delta_p y_{t-p} + U_t \quad (4.5)$$

Where:

Y_t is an $n \times 1$ vector of variables that are integrated of order commonly denoted (1) and U_t is an $n \times 1$ vector of innovations. This VAR can be rewritten as

$$\Delta y_t = \mu + \tau_1 y_{t-1} + \sum \tau_i \Delta y_{t-1} + U_t \quad (4.6)$$

Where:

$$\tau_i = \sum A_{i-1} \text{ and } \tau_i = - \sum A_j \quad (4.7)$$

To determine the number of co-integration vectors, Johansen (1988) suggested two statistic tests, the first one is the trace test (trace). It tests the null hypothesis that the number of distinct co-integrating vector is less than or equal to q against a generalun restricted alternatives $q = r$. The test calculated as follows:

$$\lambda \text{ trace } (r) = -T \sum \ln(1 - \lambda_i)$$

Where: T is the number of usable observations, and the λ_i s are the estimated Eigen value from the matrix. We carry out the Augmented Dickey-Fuller (ADF) Unit Root Test to know the order of integration of the individual series under consideration.

RESULTS AND DISCUSSION

Table 1: Unit Root Test for Stationarity (ADF)

Variables	ADF Test	Critical Values			Order of integration
		critical value 1%	critical value 5%	Critical value 10%	
BOP	-7.555626	-3.661661	-2.960411	-2.619160	1(3)
INT	-5.966244	-3.661661	-2.960411	-2.619160	1(2)
MS	5.301300	-3.737853	-2.991878	-2.635542	1(2)
GEX	-12.24374	-3.661661	-2.960411	-2.619160	1(3)

Source: Authors' Computed Result from (E-views)

Table 2: Johansen Test for Co-integration

Eigen value	Max-Eigen Statistic	5% critical value	Prob. **	Hypothesis of CE(s)
0.951936	94.09187	27.58434	0.0000	None *
0.599745	28.38524	21.13162	0.0040	At most 1*
0.154398	5.198885	14.26460	0.7166	At most 2
0.035099	1.107615	3.841466	0.2926	At most 3

Source: Computed Result Using (E-Views)

The stationarity test (i.e., unit root test) result presented in table one above shows that the variables were not stationary at ordinary levels. This can be seen by comparing the observed values of the ADF test statistics with the critical values of the test statistics in absolute terms at 1%, 5% and 10% level of significance. Hence, we accept the null hypothesis that all the variables are not stationary. In line with Granger and Newbold (1974), the variables were differenced. Thus, INT and MS became stationary at second difference (i.e., integrated of order two). Meaning that, ADF test statistic was greater than their theoretical values at order two. While the other variables such as BOP and GEX were integrated of order three (i.e., integrated of order two).

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Meaning that, ADF test statistic was greater than their theoretical values at order three. Therefore, two variables were integrated of order two and the remaining two were integrated of order three. Hence, the entire variables in this study are stationary. Therefore, there is the need to examine the presence or absence of co-integration among the variables. When a co-integration exists (i.e., when there is co-integration relationship among the variables), it means that the study variables: BOP, MS, INT and GEX have a common trend and long-run relationship or equilibrium. If otherwise, there is no long run relationship among the variables. The Johansen co-integration result in table 2 above, indicates that there are two co-integrating equations because Max-Eigen Statistic are larger than critical values. Thus, the alternative hypothesis that there is a long run relationship between balance of payments (BOP), interest rate (INT), money supply (MS) and government expenditure (GEX) was accepted. Meaning that, there is a long-run relationship among BOP, INT, MS and GEX.

SUMMARY AND RECOMMENDATIONS

The paper examined monetary policy and balance of payments in Nigeria for the period 1980 to 2013. We collected data from CBN statistical bulletin on balance of payments (BOP), interest rate (INT), money supply (MS) and government expenditure (GEX). The variables were tested for stationarity using Augmented Dickey Fuller and co-integration analysis, also using the Johansen co-integration technique. The study found that monetary policy variables including government expenditure (i.e., fiscal policy variable) have a long run relationship with balance of payments (BOP) in Nigeria. Thus, the alternative hypothesis that there is a long run relationship between balance of payments (BOP) and monetary policy was accepted. Meaning that, in the long run uninterrupted, appropriate and suitable monetary policy has the ability to solve balance of payments problem in Nigeria. It also means that the pitfalls in BOP will be reconciled in the long run by right or appropriate

monetary policy formulation and implementation. Put differently, any deficit in the BOP will be reconciled in the long run by right or appropriate monetary/fiscal policy formulation and implementation. Therefore, a well-coordinated macroeconomic policy is needed to enhance BOP in Nigeria. Based on the above findings, the following recommendations were made: Since, monetary policy has the ability to solve balance of payments problem in Nigeria; there should be an evaluation of interest rate policies by monetary authority to stimulate investment and increase BOP position of the country. There should be co-operation between monetary policy tool of 'MS' and other variable factors to enhance the BOP situation of Nigeria. Hence, for monetary policy to be effective, and ensuring stability in the balance of payments position of the economy, it should be complemented with an effective fiscal policy.

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Reference to this paper should be made as follows: Abomaye-Nimenibo, W.A.S. & Inimino, E.E. (2016), Monetary Policy and Balance of Payments in Nigeria: A Co-Integration Scrutiny. *J. of Biological Science and Bioconservation*, Vol. 8, No. 2, Pp. 45-66.
