The Roles of Monetary policy on Balance of Payment in Nigeria

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Abstract: In spite of the plethora of monetary policy measures adopted and applied over the years, the Nigerian economy still continues to face the problem of balance of payment disequilibrium. Therefore, this research work examined the roles of Monetary Policy on Balance of Payment in Nigeria. This study used quarterly data spanning from 1981 to 2017 and the data were sourced from Central Bank of Nigeria statistical bulletins and National Bureau of Statistics. Relevant literature was reviewed in the study ranging from conceptual issues, theoretical literature to the empirical studies of past researchers. Co-integration analysis and Error Correction model were employed to capture the stated objectives. The result of the study revealed that the variables are stationary at levels and at the first difference that necessitated the use of ARDL co-integration analysis. The ARDL bound test showed that there is no long-run relationship between monetary policy and the balance of payment. The result of the short-run ARDL Error Correction Model, therefore, revealed that MPR, INT, and M2 exhibit insignificant negative relationship with the balance of payment while there is an insignificant positive relationship between exchange rate, openness, and balance of payment. The study as well as rules out the presence of autocorrelation and heteroscedasticity. Therefore, the study concludes that monetary policy is ineffective in promoting the balance of payment in Nigeria. Based on the findings of this study, it was recommended that the Central Bank of Nigeria (CBN) should intensify the process of regular monitoring of the operation of deposit money banks to ensure compliance with prudent guidelines and promote transparency in the banking operations. More so, for monetary policy to be effective in ensuring stability in the balance of payments position of the economy, it should be complemented with effective fiscal policy.

Keywords: Monetary policy rate, Money Supply, Balance of Payment and ARDL Co integration

Introduction

Monetary policy is one of the key economic stabilization weapons which involve measures designed to regulate and control the volume, cost, availability and appropriate direction of money in an economy to achieve some specific macro-economic policy objectives (Akanbi and Ajagbe (2012). Monetary policy is also described as a deliberate action of the monetary authority to influence the quantity, cost and availability of money credit in order to achieve desired macroeconomic objectives of internal and external balances (CBN, 2011). The internal balance refers to achievements of price stability (inflation), low unemployment, high and stable economic growth, while the external balance refers to achievements of balance of payments equilibrium and exchange rates stability (Chibundu, 2009). It could be either expansionary or contractionary monetary policies with the optimum aim of either increasing or decreasing money supply, with the resultant consequences on the stability on the commercial banks and the spill-over effect on the macro economy. Monetary policy is one of the macroeconomic instruments with which monetary authority in a country employed in the management of their economy to attain desired objectives. It entails those actions initiated by the Central Bank which aim at influencing the cost and availability of credits (Nwankwo, 1991). For most economies, the basic aims of monetary policy include price stability, maintenance of balance of payments equilibrium, and promotion of employment, output growth and sustainable development. These objectives are essential for the attainment of internal and external balance of value of money and promotion of long run economic growth. Nigeria like many countries in the world today is currently experiencing an overall balance of payments deficit, which has provoked many questions on potential causes of this imbalance. This is a cause of concern because Nigeria, like any other country, aims to maintain a stable

equilibrium in the balance of payments as one of the core objectives of macroeconomic policy. Organizations such as the International Monetary Fund (IMF) have been giving a great deal of attention to stable balance of payments situations (Fleermuys 2005). Kemp (1975) identified two major shortcomings that were apparent towards the exploration of the body of research dealing with the balance of payments. First, there are no widely accepted theories of balance payments which simultaneously incorporate the current and capital account. The great majority of models used in balance of payment theory consider either the capital account or the current account separately. Second, there have been very few attempts to include even the fundamentals of portfolio choice theory in balance of payments (BOP) models. In spite of this, this is surprising in view of the essential monetary nature of payment theory. The conversation of balance of payments problem and what should be done about its empirical research will invariably involve the mentioning of monetary policy. In addition, anyone who discusses an economy's monetary policy will almost certainly mention the balance of payments situation (Grove, 2005). Hence, observation and logic therefore convinces that monetary policy and balance of payment are interlinked to such a degree that one cannot be fruitfully discussed one without the other. However, the main relevance of the study lies in its attempt in establishing the roles and growth effect of monetary policy on balance of payments problems. In particular, by using Nigeria as empirical evidence, the research provides quantitative information which enable us to know and when to use monetary policy to restore economic growth to its long-run path being distorted by balance of payments disequilibrium. If a significant negative relationship is established between balance of payment and domestic credit expansion, the implication for monetary management will be that the manipulation of domestic credit by the monetary institutions or authorities will enhance balance of payments viability overtime especially at this critical moment of the nation's economic circumstances. On the other hand, if no significant negative relationship is established, it follows that the Nigerian monetary and fiscal authorities should give greater priority to other policy instruments or measures to achieve balance of payments stability. Similarly, different views and analyses were given by various scholars on the definitional approaches to balance of payment; the fact still remains that balance of payments problem persistent and its inherent growth consequences. Invariably, these problems dictate macroeconomic performances, amidst the ineffectiveness of monetary policy instruments in the growth adjustment process.

In the same vein, one of the major macroeconomic goals of stabilization policy in any country of the world is to maintain a healthy balance of payment position in order to safe guard the external value of nation's currency. Many developing countries like Nigeria have experienced chronic deficit on the balance of payment account and face many difficulties in monetary actions. Many research studies are centered on monetary approach to balance of payments. Studies like Alamode (1997) and Ajayi (2015) maintained that the Monetary Approaches to Balance of Payment does not work in short term but it is only reliable in long run case. However, the neglect of the impact of the monetary analysis of the balance of payment has constituted a serious problem in attainment of adequate and timely liquidity to support credit dynamism that would sustain fiscal mechanism in line with on-going reforms by the regulatory authorities to enhance robust economic growth prospects. Therefore, this study intends to evaluate the roles of monetary policy variables on Nigeria's balance of payment and the study will also determine both the short and long run effect of monetary policy on the country BOP.

The major problem that triggered off this research work is the occurrence of general price instability, persistent inflationary pressure and unemployment as well as balance of payment disequilibrium in the economy. In spite of the plethora of monetary policy measures adopted and applied over the years, the Nigerian economy still continue to face the problem of balance of payment disequilibrium, inability to mobilise domestic saving, and unsatisfactory expansion of domestic output. Different policies have been adopted by the government in order to play their roles in stabilizing the economy from inflation, unemployment, and balance of payment disequilibrium, yet balance of payment deficit are recurring in Nigeria. Based on this backdrop, this study intends to fill this lacuna. The main objective of this study is to examine the roles of monetary policy on balance of payment in Nigeria while the specific objective is to determine the effectiveness of monetary policy on balance of payment in Nigeria. The rest of this study is structured as follows: The next section to the introductory aspect is the review of related literature. Section three handles research methods. Section four presents empirical results and discussion of findings. The last section which is the fifty sections contains conclusion and policy recommendations.

2. Review of Related Literature

Osasohan (2014) investigates empirically the impact of monetary policy on economic growth in the United Kingdom. The study uses time-series data over a study period spanning from 1940-2012. The impacts of each of

the endogenous variables are investigated using the Vector Error Correction Model (VECM). The study shows that a long run relationship exists among the monetary variables. Specifically, it finds that the inflationary rate and money supply are significant monetary policy instruments that drive growth in the United Kingdom. Jose (2004) explored the role of the financial position of private agents in the transmission of monetary policy (the balance-sheet channel) to the extent that official interest rates are able to affect the market. Besides, the income flows of certain categories of financial instruments and that these changes in financial wealth and interest income have an effect on aggregate expenditure, output and prices, supplementary transmission mechanisms arise in addition to those related to the substitution between current and future (or between domestic and foreign) demand. However, the pass-through from official interest rates to market rates and asset prices and the sensitivity of demand to wealth and interest income are not dealt with in the current exercise. By focusing mainly on analysing the financial position of private agents in two countries (Germany and Spain), the scope is substantially more limited. Evidence provided points towards relatively small differences in the potential extent of the balance-sheet channel in both countries, although its potency seems to be larger in the case of Germany, particularly as far as non-financial enterprises are concerned.

Dhliwayo (1996) tested the monetary approach to Zimbabwe's balance of payments during the period 1980 to 1991 using multivariate co-integration and Error Correction Modelling, the results suggest that money played a significant role in determining the balance of payments and concluded that balance of payments disequilibrium can be corrected through appropriate financial programming and monetary targeting. Boateng and Ayentimi (2013) examined monetary approach to balance payment in Ghana using annual data set that covered 1980-2010. The ordinary least squares empirical results shows that the balance of payments in Ghana is not wholly a monetary phenomenon and found that monetary variables of domestic credit, inflation, interest rate have a significant impact on balance of payment proxy by net foreign assets. Ali (2010) examined the evaluation of the monetary approach to the Pakistan balance of payments for the period 1990–2008 employing the reserve flow equation; it tests whether excess money supply played a significant role as a disturbance by using co-integration tests and error-correction modelling. The empirical results show that monetary variables do not play an overwhelming role in determining Pakistan's balance of payments. The study also revealed that balance of payments is not a purely monetary phenomenon. Therefore disequilibrium in the Balance of payments cannot be corrected only through monetary actions by the authorities.

Fleermuys (2005) also utilised co-integration tests and error-correction modelling to explore the Namibia monetary approach to balance of payments for the period 1993–2003, the empirical results shows that monetary variables do not play an overwhelming role in determining Namibian balance of payments. The results showed that, although some variables suggested by the monetary approach play significant roles and balance of payments disequilibrium can, therefore, not be corrected only through monetary actions by the authorities. Furthermore, Umer, et al., (2010) in their study which examined the monetary approach to Pakistan's balance of payments for the period 1980-2008 uses Co- integration test and error correction modeling. The empirical results revealed that monetary variable does not play an overwhelming role in determining Pakistan's balance of payments and conclude that the balance of payments is not a purely monetary phenomenon. Akosah (2015) examined the effectiveness of monetary policy transmission mechanism in Ghana using Vector Error Correction Model (VECM) and VAR Granger Causality Test on the collected data from 2002 to 2014. The study shows that monetary policy plays an important role in achieving targeted inflation in Ghana

Amassoma,(2011) examined the effect of monetary policy on macroeconomic variables in Nigeria for the period 1986 to 2009 by adopting a simplified Ordinary Least Squared technique and found that monetary policy had a significant effect on exchange rate and money supply while monetary policy was observed to have an insignificant influence on price instability. Onyeiwu (2012) examined the impact of monetary policy on the Nigerian economy using the Ordinary Least Squares Method (OLS) to analyse data between 1981 and 2008. The result of the analysis shows that monetary policy represented by money supply exerts a positive impact on GDP growth and balance of payment. Furthermore, the findings of the study support the money-prices-output hypothesis for Nigerian economy. Danjuma (2013) determined whether excess money supply has played a significant role in the disequilibrium of balance of payment in Nigeria during the period 1986-2010. Using Johansen Co-integration, Vector Error Correction Mechanism and the Impulse Response Function and Variance Decomposition. The results confirm that balance of payment in Nigeria is not a purely monetary phenomenon and the monetary authority in the country should seriously monitor budget deficit because this also cause domestic credit increase. Imoisi (2012) 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 that inflation rate was not significant. Tijani (2013) empirically analysed balance of payment adjustment mechanisms using monetary channel in Nigeria from 1970– 2010. The regression analysis found a positive relationship between the BOP and domestic credit, exchange rate and balance of trade while inflation rate and gross domestic product have a negative effect and concluded that monetary measures constitute immensely to the position of BOP, cause disturbances and also serve as adjustment mechanism to bring BOP to equilibrium depending on it application and policy mix by monetary authority. Imoisi, Olatunji and Ekpenyong (2013) studied the efficacy of monetary policy in achieving balance of payments stability in Nigeria from 1980 to 2010 using an Ordinary Least Squares (OLS) technique of multiple regressions. The estimated result shows a positive relationship between the BOP and the monetary variables of money supply, exchange rate and interest rate. Specifically, money supply and interest rate had significant relationship with BOP, whereas exchange rate was not statistically significant. They concluded that the government should promote the exportation of Nigerian products especially the non oil products, as this will bring in more foreign exchange earning into the country, boost productive activities and improve the balance of payments position of the country. Ajayi (2015) examined the determinants of balance of payments in Nigeria between 1970-2010.The study employed the co-integration method to assess the long run impact of macroeconomic variables and found a negative significant relationship between monetary policy instruments (i.e. monetary policy rate and money supply) and balance of payment. The study concluded that a larger exchange rate and a lesser monetary policy rate will raise the balance of payments of the Nigerian economy.

Imughele and Ismaila (2015) examined the monetary policy phenomenon to balance of payment (BOP) in Nigeria. The study uses time-series data which spanned between 1986 and 2013.The effects of stochastic shocks of each of the endogenous variables are explored using Error Correction Model (ECM). The study shows that Long run relationship exists among the monetary policy variables and BOP. The core finding of this study shows that monetary policy variables of exchange rate, broad money supply and credit to the private sectors are the major monetary factors that determine BOP in Nigeria. The study concluded that monetary policies and implementation capacity is important in the Nigerian economy, because it is very special for determining the provision of interest rate to private sector which produce for export which will have a spillover effect on BOP and economic growth. Also, balance of payment is a monetary phenomenon and monetary policy can be used by monetary authority to improve and stabilize the foreign sector performance in Nigeria.

Danmola and Olateju (2013) investigated the impact of monetary policy on the current account's components for the period 1970-2010 in Nigeria. The study employs Johansen Co-integration, Ordinary Least Square Method (OLS) and Error Correction Model, and the study confirms a long-run relationship between monetary policy (proxy by money supply) and components of current account under consideration. Money supply positively influences all the variables expect exchange rate that is negative. The study further shows that money supply significantly influences exports, imports and industrial output at 5% level of significance. The error correction model shows an appropriate sign, indicating that over 30 percent of the of the last year's shock is adjusted back to the long run equilibrium association in the present year. The study therefore suggests monetary policy measures that help in providing clear-cut incentives in the importation of industrial raw-materials and equipment and expansion in the volume of exports, so as to reduce the deficit in the current account balance.

Anthony et al (2013) examined the efficacy of monetary policy in achieving balance of payments stability in Nigeria. One of the stabilization policies with which the government of Nigeria manages the economy is that of Monetary Policy. Monetary Policy formulation in Nigeria is usually targeted at achieving some macro-economic objectives amongst which is equilibrium in the country's balance of payments (BOP). The general objective of this research was to examine the relationship between the balance of payments position in Nigeria and monetary policy adopted in the country. The research was conducted using an Ordinary Least Squares (OLS) technique of multiple regression models using statistical time series data from 1980-2010. The estimated 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.

Bobai(2013) offered another perspective to using the econometric study to analyze the Nigeria's experience of balance of payments as a monetary phenomenon. The argument was to determine whether excess money supply has played a significant role in the disequilibrium of balance of payment during the period 1986-2010. Johansen

Co-integration, Vector Error Correction Mechanism and the Impulse Response Function and Variance Decomposition were the methods used in analyzing the annual data. The results of VECM and impulse responses confirm that balance of payment in Nigeria is not a purely monetary phenomenon in line with similar studies in other countries. The monetary authority in the country should seriously monitor budget deficit because this also cause domestic credit increase.

3.0 Research Methods

3.1 Model Specification

The model used in this study follows the model of Anthony et al(2015) with modifications which derived its root from absorption theory of balance of payment. This study modifies the model with policy variable of monetary policy rate and non-policy variable of openness. The model is thus specified below:

BOP=f (MPR, INT,MS, EXR, OPEN)--------------------------------3.5

Explicitly, model can be re-stated as follows:

BOP= α_0 +α_1MPR +α_2 INT+α_3MS +α_4EXR +α_5OPEN + u_t------------3.6

Where

BOP= Balance of Payment

MPR= Monetary Policy Rate which is the official interest rate of the CBN.

INT= Interest Rate

MS=Money Supply

EXR=Exchange Rate

OPEN= Openness

α_0 =intercept

α_1 - α_5 = parameters to be estimated

u_t= error term

3.3 A priori Expectation

Based on economic theory, It is expected that there will be positive relationship between balance of payment and Monetary policy Rate. Thus, the coefficient of Monetary policy rate is positive; $a_1 > 0$. Also, from economic theory, an increase in the rate of interest will discourage investors from borrowing funds from the financial sector, thus, reducing the level of investment and productive activities in the economy. Such reduction in the productive activities of the country will lead to fall in the balance of payments position in the country. Hence, the coefficient of IR will be negative; $a2 < 0$. An increase in money supply will bring about an increase in the total money in circulation in the country. This will therefore increase aggregate demand and lead to a rise in productive activities and investment opportunities in the economy. This rise in the productive activities in the economy will lead to a rise in the export of goods and services, thus, leading to a rise in the balance of payments position of the country. Hence, the coefficient of MS will be positive; i.e. $a_3 > 0$. More so, economic theory tells us that an increase in exchange rate (price of a country's currency with respect to other currencies of the world) will make the domestic currency cheaper in the foreign exchange market. This depreciation in the domestic currency will make our exports cheaper and imports expensive in the international market for goods and services. As a result of this, our goods and services would be more in demand thus, leading to a rise in the balance of payments position of the country. Hence, $a_4 > 0$. Finally, based on economic theory, openness and balance of payment are expected to exhibit positive relationship. An increase in degree of openness is expected to boost or favour balance of payment in Nigeria. Therefore, the coefficient of openness will be positive i.e $a_5 > 0$.

3.4 Estimation Techniques

This study employed co-integration analysis and Error Correction Model to capture the stated objectives of this study. ARDL Co-integration Analysis and Error correction Model were employed to assess dynamic relationship between monetary policy and balance of payment in Nigeria and to unify the short-run dynamics and long –run dynamics respectively.

3.5 Sources of Data

Secondary data was used for this study. The data like monetary policy rate, money supply, exchange rate and interest rate were sourced from the CBN publications, statistical bulletins while Exchange rate and balance of payment sourced from National Bureau of Statistics between 1981 and 2017

4.0 Empirical Results and Discussion

4.1: Unit Root Test

Table 4.1: Augmented Dickey Fuller Unit Root Test

Variable	At Level		At First Difference		Order of integration	Remark
	t-statistic	Critical value (5)	t-statistic	Critical Value (5)		
BOP	-2.851689	-2.951125	-6.298475	-2.957110	I(1)	Stationary
MPR	-2.769370	-2.960411	-2.441299	-2.960411	I(1)	Stationary
INT	-5.844381	-.2.951125	-4.373318	-2.976263	1(0)	Stationary
M2	-2.118328	-2.951125	-4.799908	-2.954021	I(1)	Stationary
EXR	0.289151	-2.957110	-7.038399	-2.957110	I(1)	Stationary
OPEN	-2.150527	-3.020686	-2.400682	-3.040391	I(1)	Stationary

Source: Author's Computation

The result of the Augmented Dickey Fuller (ADF) revealed that variables like balance of payment (BOP), monetary policy rate (MPR), money supply (M2), exchange rate (EXR) and openness(OPEN) are stationary at first difference except interest rate (INT) that are stationary at level. This indicates that these variables are stationary at different order of integration of zero and one. Thus, the use of Johansen co-integration technique is not suitable for this, which leads to the use of ARDL which accept variables stationary at different orders of integration of zero and one. The table 4.2 below presents the result of the ARDL Short run estimates.

4.2: ARDL Short Run Result

Table 4.2: ARDL Short Run Result

The Short run Dynamics and Error Correction Model

	Coefficient	Std. error	t-statistic	Prob
BOP(-1)	0.589473	0.173979	3.388180	0.0023
MPR	-0.098234	0.408408	-0.240529	0.8118
INT	-0.048247	0.093184	-0.517758	0.6090
M2	-0.195701	0.228496	-0.856476	0.3996
EXR	0.003783	0.026500	1.262099	0.2181
OPEN	0.003783	0.121771	0.031065	0.9755
ECM(-1)	-0.437263	0.147309	-2.968342	0.0057

Source: Author's Computation

The table 4.2 indicates that monetary policy rate (MPR), interest rate (INT) and money supply(M2) exhibit a negative relationship with balance of payment while exchange rate(EXR) and openness(OPEN) confirms a positive relationship with balance of payment. The implication is that openness and exchange rate is capable of promoting balance of payment in Nigeria while monetary policy rate and money supply showed negative impact on balance of payment. This also implies that monetary policies in Nigeria are not effective in promoting balance of balance of payment in Nigeria. The ECM Coefficient is -0.4372 and that it is not that significant at 10% level of significance but it is correctly signed with expected negative sign.

4.3: Wald Bound Test Result

Table 4.3: Wald Bound Test Result

Test statistics	Value	Regressors(k)
F- statistic	1.211078	5
Critical value bounds	I(0) bound	I(1) Bound
10%	2.26	3.35
5%	2.62	3.79
1%	3.41	4.68

Source: Author's Computation

The rule of thumb is that if the computed F- Statistics falls below the lower bound value , I(0), the null hypothesis (no co-integration) cannot be rejected. If the computed F-Statistics exceeds the upper bound value, I(1), then the null hypothesis (no co-integration) is rejected and thus, there is prove of long-run relationship. if the computed F-Statistics falls between the lower bound value and upper bound value, the test is inconclusive. From the Wald bound test above, the null hypothesis of no co-integration cannot be rejected since the critical value 1.1211 is less than the lower bound value of 2.62 at 5% level of significance. Therefore, it confirms no proof of co-integration or long-run relationship

4.4: Breush Godfrey Correlation LM Test

Table 4.4: Breush Godfrey Correlation LM Test

F-statistic	2.941103	Prob. F (1,7)	0.0720
Obs*R- squared	6.495932	Prob. Chi-square (1)	0.0389

Source: Author's Computation

The null hypothesis here is that there is no serial correlation. Considering F- statistics and the probability value in table 4.4, it is obvious that the null hypothesis is to be accepted while rejecting the alternative hypothesis that there is serial correlation.

4.5: Breusch-Pagan-Godfrey Heteroskedasticity test

Table 4.5: Breusch-Pagan-Godfrey Heteroskedasticity test

F-statistic	0.740545	Prob. F (6,26)	0.6219
Obs*R-squared	4.816433	Prob. Chi-square(6)	0.5676

Source: Author's Computation

The null hypothesis here is that there is no heteroscedacity. Considering F- statistics and the probability value in table 4.5, it is apparent that the null hypothesis is to be accepted while rejecting the alternative hypothesis that is suggesting homoscedacity.

5.0 Conclusion and Policy Recommendations

This research work examined the roles of monetary policy on balance of payment in Nigeria using quarterly data spanning from 1981 to 2017. The result of the study revealed that the variables are stationary at levels and at the first difference that necessitated the use of ARDL co-integration analysis. The result also exhibits negative relationship between MPR, INT, M_2 and BOP while there is positive relationship between exchange rate, openness and balance of payment. The study also revealed that none of the variables has significant impact on balance of payment. The study as well rules out autocorrelation and heteroscedacity. Based on the analysis of the study that there is insignicant negative relationship between MPR, INT, M_2 and BOP, therefore, the study concludes that monetary policy in is not effective in promoting balance of payment in Nigeria. In line with these findings of this study, the following recommendations are made: The Central Bank of Nigeria (CBN) should

intensify the process of regular monitoring of the operation of deposit money banks to ensure compliance with prudent guidelines and promote transparency in the banking operations. . Also, for monetary policy to be effective in ensuring stability in the balance of payments position of the economy, it should be complemented with an effective fiscal policy. Moreover, government must intensify aggressive monetary policy that will both encourage industrial production and further provides incentives for export expansion.

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