Macroeconomic forces and Balance of Payment in Nigeria: The Triple Helix of Elasticity-Absorption- Monetary Approaches

Abstract

The study examines the effect macroeconomic forces on balance of payment. Ex post-facto research was adopted and the sample of the study covers the period of thirty-one years spanning from 1986 to 2016. Secondary source of data was used and obtained from Central Bank of Nigeria Statistical Bulletin. The data were analysed through Toda-Yamamoto causality test. The study reveals mixed relationship between exchange rate, inflation rate, money supply and interest rate. The study concludes that government should encourage export and restrict importation of goods and services in the country and this will reduce dependency on foreign goods and service and improve the domestic value of naira in the country. Also, there exist an interaction among elasticity, absorption and monetary approaches. In view of this, the study recommends that monetary policy made by Central Bank of Nigeria should not be tailored only to money supply but also ensuring higher output, stabilization of inflation pressure, flexible interest rate and employment among others in the country in order to enhance favourable balance of payment.

Keywords: Macroeconomic forces, Balance of Payment, Elasticity Approach, Absorption Approach, Monetary Approach

1.0   Introduction

Expenditure-switching policy stressed that domestic expenditure should be reduced on consumption and investment and this will release goods for export, while leaving aggregate output unchanged. This corroborates with the assertion of Komolafe, (1996) who posit that the aim of expenditure switching policy is about switching domestic demand from imported to home made goods. The extent to which the switching is achieved depends on elasticity of supply and demand for tradable goods. However, expenditure- switching policies have costs in terms of loss of output, investment and employment. The loss would be minimized if resource can be easily moved to the tradable goods sector or bridging external loans may be contracted to sustain an acceptable level of investment and output. In spite of this, the need to maintain balance of imports and exports of goods is not only of comparative advantage of international trade but also reveal performance of a country in an international economic competition. The effect of decrease and increase in balance of trade is observed in determination of balance of payments of a country because it is a developed tool that is used for the accounting of any country's total payments made during a specific period and the total receipts collected from foreign economies that result from engagement with foreign governments or foreign private sectors through trade (International Monetary Fund, 2009). However, evidence from literature shows that since the 50s and 60s of the last century there has been a consensus on three fundamental approaches in the analysis of the balance of payment known as elasticity, absorption, and monetary approaches. The common characteristic of these three approaches is that in their equations these approaches take into account mainly the local variables thus observing the impact of their change under the operation of the measures of national economic policies targeting the equilibrium of the balance of payments of the country.

Elasticity approach shows how the change in the value of the currency affects the balance of payments. Hence, changes in the exchange rate of the local currency vis-à-vis the currency in

which the external trade takes place results in different balances of the current account within the balance of payments. In this context, Marshall-Lerner condition states that the currency devaluation will eventually improve the balance of payments and in order to achieve this, amount of elasticity of the demand for imports and exports should increase. When the country devalues its currency, the price of exports will decline and theoretically it will increase demand for these exports. However, in order to come to the increased demand, the exported products must be products with elasticity. The absorption approach assumes that the basic income and expenses change and that this change affects the performance of the balance of payments. So the absorption approach ignores the effect of the change in the exchange rate, which as noted earlier as a feature of the elasticity approach. Consequently, this approach advocates for running an active policy in managing the domestic demand so it can help reduction of current account deficit of the balance of payments - because as it is known with a slowdown in domestic demand compare to the domestic supply, which can reduce the current account deficit. Surplus in the current account when the country consumes less than it produces and the opposite in the case of the deficit - which the country spends more than it produces. The state of the current account deficit poses a serious problem for policymakers and this deficit can be reduced either by increasing GDP and / or by reducing domestic demand.

The monetary approach puts at centre monetary terms, namely it treats the balance of payments as a monetary phenomenon and therefore calls for analysis of the balance of payments by using monetary theory. In general, although the real factors are not entirely excluded, this approach mainly focuses on the relationship between supply and demand for money as the main basis for analyzing the balance of payments. Based on this, the main thrust of this research is to examine whether an interaction exist among the elasticity-absorption-monetary approaches and their effect on balance of payment. The fundamental questions in this study are does relationship exist between exchange rate, inflation rate, money supply and interest rate? What effect does this relationship has on balance of payment? To answer this questions the remaining part is structured as follows: section two reviews literature and theory that underpin the study, section three outlines the methodology and model specification adopted for the study. Data analysis and discussion were presented in section four while section five concludes the paper and proffer recommendations.

2.0   Empirical Review and Theory

Mungami (2012) examined effects of exchange rate liberalization on balance of payments of a developing country using a case of Kenya. The study found that exchange rate liberalization had improved the overall balance of payment but it had not improved the current account or reduced the balance of trade deficit. The study concluded that exchange rate liberalization had a negative effect on the companies export sales due to wide fluctuations that made planning hard and losses were incurred because of fluctuation. In the same token, Osoro (2012) did an investigation on major determinants of trade balance in Kenya using annual data for 1963-2012. The findings indicated that the coefficients of trade balance are positively correlated with budget deficits, FDI and exchange rates. The result showed that FDI has a positive effect on trade balance because the trade balance in Kenya is negative. The study concluded on the basis of Marshall-Lerner condition through VECM, indicating that depreciation improves the trade balance. In a similar study, Umoru and Odjegba (2013) analysed the relationship between exchange rate misalignment and balance of payments (BOP) mal-adjustment in Nigeria over the sample period of 1973 to 2012 using the vector error correction econometric modeling technique and Granger Causality Tests. The study revealed that exchange rate misalignment exhibited a positive impact on the Nigeria's

balance of payments position. The Granger pair-wise causality test result indicated a unidirectional causality running from exchange rate misalignment to balance of payments adjustment in Nigeria at the 1 percent level. The study concluded that there is inconsistency in the research results of the study and this is line with various studies reviewed.

Iyoboyia and Olarinde (2013) investigated the impact of exchange rate depreciation on the balance of payments (BOP) in Nigeria over the period 1961–2012. The study found a long-term equilibrium relationship between BOP, exchange rate and other associated variables. The empirical results are in favour of bidirectional causality between BOP and other variables employed. The study concluded that exchange rate depreciation which has been more important in Nigeria since the mid-1980s was not very useful in promoting the country's positive balance of payment. Were, Nyamongo, Kamau, Sichei, and Wambua (2014) analyzed monetary policy reaction function for Kenya using quarterly data for the period 1999 to 2011. The study revealed a strong effect of interest rates smoothing and supports the fact that monetary policy was accommodative of the output growth objective. The study concluded that evidence supported forward-looking monetary policy, which is critical in view of the increasing role of expectations in modern monetary policy-making process. Gureech, (2014) assessed the determinants of balance of payment performance in Kenya using time-series data for period the 1975 – 2012. The study found a positive relationship between current balance of payment and previous balance of payment at first, second, and third lag, differenced money supply at fourth lag, differenced exchange rate, terms of trade at second lag, differenced openness of economy at third and fourth lags, real interest rate at second and fourth lags and gross capital formation at fourth lag. The study recommended that the Government of Kenya, Central Bank of Kenya, all financial institutions and other stakeholders whose activities influence money supply, terms of trade, openness of economy, real interest rate, gross capital formation, and political instability ought to apply relevant policy measures for better management of Kenya's balance of payment.

Imoughele, and Ismaila (2015) examined the monetary policy phenomenon to Balance of Payment (BOP) in Nigeria. The study found 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 spill over effect on BOP and economic growth. Ismaili-Muharremi, (2015) investigated the difficulties and challenges of the selected Western Balkan countries that all seems to have serious problems with regard to the sustainability of their current account. The study is a conceptual research and found that domestic production and increased volume of exports accompanied by stable flow of FDIs are the key elements of the framework for improving the current account of the balance of payments in this part of the world. In a recent study, Mbanasor, and Obioma, (2017) conducted a study on the effect of fluctuations of exchange rates on Nigeria's balance of payment is the focus of this research. The study found that exchange rate fluctuations have positive and non-significant impact on Nigeria's balance of payment. The study concludes that the dominance of the oil sector in Nigeria has left the balance of payment vulnerable when there are sharp changes in the rate of foreign exchange and since much has not been done over the years enlist other sectors of the economy the problem persists. This study recommends that monetary policy authorities should ensure a consistent exchange rate policy which domesticates the peculiarities of the Nigerian economy to ensure a favourable balance of payment position for Nigeria.

149 Oghenebrume, (2018) conducted a study on exchange rate volatility and Balance of Payments
150 Problem in Nigeria, 1980-2016. The study adopted GARCH approach to measure exchange
151 rate. The empirical results confirmed that exchange rate is positively related to balance of
152 payments; while real gross domestic, inflation rate and volatility of exchange rate are
153 negatively related to balance of payments. The study concluded that government should not
154 underplay exchange rate volatility in Nigeria. The study recommended that government
155 should encourage export promotion strategies in order to maintain a surplus balance of trade
156 which will help make the domestic currency strong and also prevent further depreciation of
157 the Nigeria naira in the future. Olisah, (2018) conducted a study on the impact of institutional
158 quality on balance of payments (BOP) position in Nigeria from 1970 to 2016 adopting error
159 correction mechanism. Time series data from the Central Bank of Nigeria (CBN) and World
160 Bank publications were utilized. The result found a positive relationship between institutional
161 quality proxied by contract intensive money (CIM) and BOP in Nigeria. The study concluded
162 that exchange rate appreciation and price increase have adverse effect on the BOP; a
163 moderate rise in interest rate exerts a favourable effect on the BOP. Thus, the study
164 recommended that rules and regulations guiding proper accountability in trade operations
165 should be intensified by the government. From the studies reviewed, it was found that there
166 are scanty of literatures on the effect of macroeconomic forces on balance of payment, even
167 out all these study none of them documented an interaction among elasticity, absorption and
168 monetary approaches and create a research gap and justifies the importance of conducting
169 this research in order to observe effect of macroeconomic forces on balance of payment with
170 emphasis on interaction that exist between elasticity, absorption and monetary approaches.
171 Thus, **e**lasticity, absorption and monetary approaches are adopted to underpin the study.
172

173 **3.0   Methodology**
174 Ex post-factor is employed in the study and time series data were collected over a successive
175 point for thirty-one years which spans from 1986 to 2016 from Central Bank of Nigeria
176 statistical bulletin. The vector autoregression (VAR) which is an econometric model used to
177 capture the linear interdependencies among multiple time series is employed in this study.
178 This is because VAR models generalize the univariate autoregressive model by allowing for
179 more than one evolving variable. All variables in a VAR are treated symmetrically in a
180 structural sense; each variable has an equation explaining its evolution based on its own lags
181 of the other model variables (Banerjee, Juan, Galbraith, & David, 1993). Thus, this study
182 adopt VAR proposed by Toda and Yamamoto in (1995) which confirm that the Wald statistic
183 converges in distribution to a chi-square random variable with degrees of freedom equal to
184 the number of the excluded lagged variables regardless of whether the process is stationary,
185 possibly around a linear trend or whether it is cointegrated. The Toda Yamamoto procedure
186 avoids the bias associated with unit roots and cointegration tests as it does not require pre-
187 testing of cointegrating properties of the system. In our case, TY version of $\text{VAR}(k + d_{\max})$
188 can be written as:
189

$$
\begin{bmatrix} bop_t \\ exc_t \\ inf_t \\ int_t \\ ms_t \end{bmatrix} = \begin{bmatrix} a_1 \\ a_2 \\ a_3 \\ a_4 \\ a_5 \end{bmatrix} + \begin{bmatrix} A_{11,1} & A_{12,1} & A_{13,1} & A_{14,1} & A_{15,1} \\ A_{21,1} & A_{22,1} & A_{23,1} & A_{24,1} & A_{25,1} \\ A_{31,1} & A_{32,1} & A_{33,1} & A_{34,1} & A_{35,1} \\ A_{41,1} & A_{42,1} & A_{43,1} & A_{44,1} & A_{45,1} \\ A_{51,1} & A_{52,1} & A_{53,1} & A_{54,1} & A_{55,1} \end{bmatrix} \begin{bmatrix} bop_{t-1} \\ exc_{t-1} \\ inf_{t-1} \\ int_{t-1} \\ ms_{t-1} \end{bmatrix} + \dots + \begin{bmatrix} A_{11,k} & A_{12,k} & A_{13,k} & A_{14,k} & A_{15,k} \\ A_{21,k} & A_{22,k} & A_{23,k} & A_{24,k} & A_{25,k} \\ A_{31,k} & A_{32,k} & A_{33,k} & A_{34,k} & A_{35,k} \\ A_{41,k} & A_{42,k} & A_{43,k} & A_{44,k} & A_{45,k} \\ A_{51,k} & A_{52,k} & A_{53,k} & A_{54,k} & A_{55,k} \end{bmatrix}
$$

$$
\begin{bmatrix} bop_{t-k} \\ exc_{t-k} \\ inf_{t-k} \\ int_{t-k} \\ ms_{t-k} \end{bmatrix} + \begin{bmatrix} A_{11,p} & A_{12,p} & A_{13,p} & A_{14,p} & A_{15,p} \\ A_{21,p} & A_{22,p} & A_{23,p} & A_{24,p} & A_{25,p} \\ A_{31,p} & A_{32,p} & A_{33,p} & A_{34,p} & A_{35,p} \\ A_{41,p} & A_{42,p} & A_{43,p} & A_{44,p} & A_{45,p} \\ A_{51,p} & A_{52,p} & A_{53,p} & A_{54,p} & A_{55,p} \end{bmatrix} + \begin{bmatrix} bop_{t-p} \\ exc_{t-p} \\ inf_{t-p} \\ int_{t-p} \\ ms_{t-p} \end{bmatrix} + \begin{bmatrix} e_{1,t} \\ e_{2,t} \\ e_{3,t} \\ e_{4,t} \\ e_{5,t} \end{bmatrix} \dots\dots\dots\dots (1)
$$

Where the error term ξ_t follows a multivariate Gaussian distribution with zero mean and constant variance. That is:

$$\varepsilon_t = WN(0, \Omega) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(2)$$

The study adopted Toda and Yamamoto VAR in order to avoid integration complexity among variable that is it can be used at any order of integration, level, first difference or second difference and improve the power of granger-causality test. It has the advantage of making parameter estimation valid even when the VAR system is not co-integrated. However, before estimating the model there is need to conduct pre-estimation test such as lag selection criterion to determine the optimum lag based on the information criterion, unit root tests correlation matrix among others, then the estimation of the Toda and Yamamoto VAR and the post-estimation test.

4.0 Result and Discussion

This section presents the analysis of the data and the discussion of the findings. The analysis is carried out on the basis of pre-estimation, estimation and post estimation.

4.1 Pre-Estimation Test

The method adopted to describe the data employed in this study is the statistical. This is based on statistics such as mean, maximum, minimum, standard deviation, skewness, kurtosis, and Jarque-Bera statistics. Table 4.1 gives the results of the statistical method.

Table 4.1-Statistical Description of Data

	MS	BOP	EXC	INF	INT
Mean	4145.943	-12136.11	124.9245	19.24210	18.60338
Median	878.4573	-53.15200	91.50000	12.19500	17.98000
Maximum	18901.30	4698.047	490.4100	72.72900	29.80000
Minimum	22.29924	-179648.0	49.73000	3.226000	9.250000
Std. Dev.	5900.166	37013.72	90.85436	18.05661	4.183256
Skewness	1.315530	-3.599437	2.473603	1.643526	0.461365
Kurtosis	3.299203	15.64250	9.651419	4.511769	4.163947
Jarque-Bera	9.057166	273.3897	88.75846	16.90812	2.849680
Probability	0.010796	0.000000	0.000000	0.000213	0.240547

Source: Output from the E-view (2018)

Table 4.1 shows the summarized descriptive statistics computed on the series of money supply, balance of payment, exchange rate, inflation rate and interest rate. It is remarkable that both the median and average values are positive except in balance of payment. It was also observed that there is a significant margin between the median and mean. This implies that these variables displayed an increasing tendency through the period of investigation. Thus, there is statistical evidence that since the period of 31 years money supply, exchange rate, inflation rate and interest rate have been increasing. Although, the result show that there

is decrease in balance of payment as indicated by the negative minimum value, mean value and median value. Looking at the range of these variables, money supply has the largest range from 18901.30 to 22.29924, followed by balance of payment with the range from 4698.047 to -179648.0. These ranges associate with standard deviations 5900.166 and 37013.72 respectively. These appear to be the largest standard deviations observed among the variables. Thus, balance of payment and money supply are the most volatile variables.

In a different token, interest rate has the lowest range and volatility. The scale of skewness with respect to balance of payment is -3.599437 and this implies that the variable is negatively skewed and as such, it exhibits large value over a long portion of the sampling period. On the contrary, money supply, exchange rate, inflation rate and interest rate are positively skewed and have large values over a short period. The values of kurtosis for all the variables are larger than 3 and this shows that they are leptokurtic, and therefore, they have tin tail in their distribution pattern, suggesting that there are presence of outliers or large values in the expected future date. Finally, the probability values corresponded to Jarque-Bera statistics with respect to money supply, balance of payment, exchange rate, and inflation rate are less than 5 percent, meaning that the distribution pattern of these variables is not normal. However, the probability value in respect to interest rate is larger than 5 percent. This implies that the variables are normally distributed.

Summarily, the statistical description of the data is not enough to conclude that the data is fit for analysis. Thus, to confirm the possibility of fitting the data into regression equations for estimation purpose the researcher conducts pre-estimation test such as optimum lag criterion, unit root test using Augmented Dickey-Fuller (ADF) method and correlation analysis for perfect collinearity test. In actual sense, test for lag selection precedes the unit root test. The maximum lag selection test based on all information criteria for the specified variables is conducted and the results are depicted in table 4.2 below.

Table 4.2 Optimum Lag Selection for the Specified Variables

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-970.8146	NA	1.16e+23	67.29756	67.53330	67.37139
1	-866.2151	165.9164	4.94e+20	61.80794	63.22238*	62.25092
2	-832.9294	41.32015*	3.30e+20*	61.23651*	63.82966	62.04865*

*Note that: * indicates lag order selected by the criterion, LR: sequential modified LR test statistic (each test at 5% level), FPE: Final prediction error, AIC: Akaike information criterion, SC: Schwarz information criterion and HQ: Hannan-Quinn information criterion.*
Source: Output from the E-view (2018)

The optimum lag is given by the smallest value of the information criteria. In the table above all the information criteria- FPE, AIC, SC and HQ have the smaller value at lag 2; implying that 2 is the optimum lag selected by these information criteria. Thus, the AR framework that gives rise to unit root test and Toda and Yamamoto VAR approach are operationalized using lag 2 as the optimal lag. Table 4.3 provides the summarized results of the unit root test, while tables 4.4 display the correlation matrix for multicollinearity test.

Table 4.3-ADF Unit Root Test wrt BOP, EXC, INF, INT and MS

Variable	ADF-Stat	5% CV	P-Value		Order Int.
BOP	-4.515824	-2.963972	0.0012		I(0)
EXC	-5.823590	-2.963972	0.0000	I(0)	
INF	-4.929199	-2.967767	0.0004		I(1)
INT	-4.094458	-2.963972	0.0035	I(0)	

265 MS	-3.333427-2.967767	0.0224	I(2)

Source: Output from the E-view (2018)

The ADF unit root test is conducted to verify the order of integration of each variable. The outputs of the test are the ADF statistics, the 5 percent critical values and probability value, which are presented in table 4.3. The null hypothesis here is that the series is not stationary or the series has a unit root. The result shows that that all the variables were not stationary at level but also at first and secondary differences, indicating that these variables are multi-leveled integrated. However, in order to estimate the long-run relationship among the variables theToday-Yamamoto vector autoregressive will be used. Thus, the result of correlation is reported below;

Table 4.4-Correlation Test wrt BOP, EXC, INF, INT and MS

	BOP	EXC	INF	INT	MS
BOP	1	-0.1550	0.0885	0.1694	0.2383
EXC	-0.1550	1	-0.2141	-0.6075	-0.0418
INF	0.0885	-0.2141	1	0.4290	-0.3368
INT	0.1694	-0.6075	0.4290	1	-0.2388
MS	0.2383	-0.0418	-0.3368	-0.2388	1

Source: Output from the E-view (2018)

Table 4.3 reports the correlation coefficients used to study the extent of association among the variables for the period thirty-one years. The interpretation of the Pearson correlation would follow Guilford rule of thumb which is < 0.2 is a negligible correlation, 0.2 to 0.4 is low correlation, 0.4 to 0.7 is a moderate correlation, 0.7 to 0.9 is a high correlation, > 0.9 is a very high correlation. The result shows that the correlation between the independent variables and dependent variable used in the model is generally weak. The largest correlation coefficients exist between the exchange rate and interest rate (60.75%). Also, the correlation matrices does not reveals that two explanatory variable are perfectly correlated. This means there is absence of multicollinearity problem among the variables. Fulfilling this condition coupled with the fact that the variables are multileveled stationary. Other pre-requirements for the Toda and Yamamoto VAR are that the VARprocess must be ergodic (stationary) and the error term must be IID compliant. The test for ergodicity and LM serial correlation are carried out and reported in table 4.5 below;

Table 4.5 Showing LM Serial Correlation Test

Lags	LM-Stat	Prob
1	16.37206	0.3058
2	18.20055	0.4442
3	20.54292	0.2256

Source: Output from the E-view (2018)

The study examined the LM statistics up to lag 3 and the statistics appear to be very small; while the corresponding p-values are respectively larger 5 percent. In view of this, the null hypothesis of no serial correlation cannot be rejected. The residuals are independently spread. The test for ergodicity is carried out by computing the root of the AR polynomial and it is shown in the figure below.
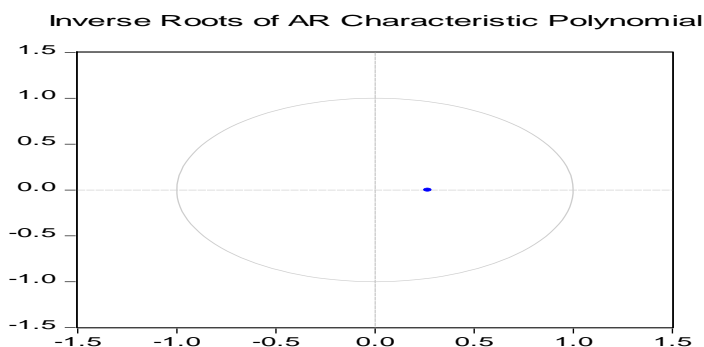
Figure4.1 Stability of Balance of payment-macroeconomic forces *VAR Process*

4.2 Estimation Test

This section documents long-run relationship between the balance of payment and exchange rate.

Table 4.6-Nature of the Long Run Relationship between BOP, EXC, INF, INT and MS

Variables	Coefficients	Std.Error	T-statistics
EXC(-1)	328.8089	(121.946)	[2.69635]
INF(-1)	2627.977	(305.230)	[8.60982]
INT(-1)	-6891.437	(1187.52)	[-5.80322]
MS(-1)	-18.08256	(4.49397)	[-4.02374]

Source: Output from the E-view (2018)

The long run coefficients with respect to exchange rate, inflation rate, interest rate and money supply are 328.8089, 2627.977, -6891.437 and -18.08256 respectively and their associated t-values are 2.69635, 8.60982, -5.80322 and -4.02374.This implies that in the long run exchange rate and inflation rate will significantly increase with an increase in the balance of payment while interest rate and money supply will significantly decrease with an increase in the balance of payment. Thus, exchange rate and inflation rate have positive and significant effect on balance of payment while interest rate and money supply have negative but significant effect on balance of payment. The researcher equally examine cause and effect; between each pair of the variables using the Granger causality technique. The results are shown in table 4.7 below;

Table 4.7   Granger Causality between Pair of BOP, EXC, INF, INT and MS

Equation/Excluded	Chi2	Df	Prob.
BOP			
EXC	23.00231	2	0.0000
INF	74.32527	2	0.0000
INT	48.42528	2	0.0000
MS	29.20201	2	0.0000
ALL	23.77173	8	0.0000
EXC			
BOP	10.20283	2	0.0061
INF	5.536933	2	0.0628
INT	1.932215	2	0.3806
MS	0.769732	2	0.6805
ALL	23.77173	8	0.0025

8

INF				
BOP	1.140298	2	0.5654
EXC	0.809292	2	0.6672
INT	3.287370	2	0.1933
MS	2.571267	2	0.2765
All	15.71572	8	0.0466
INT				
BOP	28.23277	2	0.0000
EXC	9.686730	2	0.0079
INF	4.884183	2	0.0870
MS	3.655805	2	0.1608
All	64.52731	8	0.0000
MS				
BOP	0.327715	2	0.8489
EXC	2.700630	2	0.2592
INF	1.463007	2	0.4812
INT	4.911477	2	0.0858
All	10.12276	8	0.2565

Source: Output from the E-view (2018)

In the first compartment, all p-values are significant this implies that the null hypothesis that the excluded variable does Granger cause equation variable is rejected at 95 percent confidence. The explanation for this is that implies that balance of payment can be used to explain the future behaviour exchange rate, inflation rate, interest rate and money supply. Also, exchange rate appears to be a useful tool for predicting balance of payment in the second compartment of the result since the p-value is significant at 5% but cannot be used to predict the future behavior of inflation rate, interest rate, and money supply. In the third compartment, all p-values are not significant and this implies that inflation rate cannot be used to predict balance of payment, interest rate, exchange rate and money supply in the future. The result in the fourth compartment reveals that interest rate can only predict the future behavior of balance of payment and exchange rate but cannot be used to predict inflation rate and money supply. The fifth compartment shows that money supply cannot be used to predict balance of payment, exchange rate, inflation rate and interest rate in the future since none of the p-values is significant at 5%.

4.3   Post Estimation Test

This section confirms the validity of the model. The result is presented in the table 4.8 below;

Table 4.8 Diagnostic Test of the ARDL Specification

Root	Modulus
0.089104 - 0.633288i	0.259842
0.089104 + 0.633288i	0.259842
0.576031 - 0.821460i	0.703298
0.576031 + 0.821460i	0.803298
-0.795977 - 0.213358i	0.824076
-0.795977 + 0.213358i	0.824076
0.014801 - 0.348282i	0.348597
0.014801 + 0.348282i	0.348597
0.005133 - 0.082247i	0.082407
0.005133 + 0.082247i	0.082407

Source: Output from the E-view (2018)
From the result, it reveals that the model is stable since none of the modulus value is greater than one. This implies that meaningful generalization can be drawn it.

4.4   Discussion of Result

The study found that exchange rate and inflation rate have positive and significant effect on balance of payment while interest rate and money supply have negative but significant effect on balance of payment. The positive effect of exchange rate support Marshall-Lerner condition which states that the currency devaluation as a result increase in the exchange rate will eventually improve the balance of payments because the price of exports will decline and this will increase demand for these exports. This conforms to the finding of Osoro (2012). Also, positive effect of inflation rate on balance of payment was revealed and this supports the Purchasing Power Parity theory which stressed that when the price of a good differs between two countries' markets because of high inflation, it creates an incentive for profit-seeking individuals to import the good in the low price market and resell it in the high price market. This conforms to the finding of Gureech, (2014). The negative effect of interest rate and money supply on balance of payment does not concurs with the monetary approach to balance of payment that puts emphasis that a country balance of payment is essentially a monetary phenomenon and any observed disequilibrium in the balance of payments can be eliminated through manipulation of monetary variables especially interest rates and money supply. This does not conform to the finding of Gureech, (2014). More so,exchange rate cannot be used to predict the future behaviour of inflation rate, interest rate, and money supply. Inflation rate cannot be used to predict interest rate, exchange rate and money supply in the future. Interest rate can predict exchange rate but cannot be used to predict inflation rate and money supply. Money supply cannot be used to predict exchange rate, inflation rate and interest rate in the future. This contradicts the submission of Rabin and Yeager (1982) who found that monetary approach is compatible with the elasticity and absorption approaches to balance-of-payments analysis. The explanation for this is that the monetary expansion as a result from exchange-rate pegging produces an excess supply of money and inflationary pressure.

5.0 Conclusion and Recommendation

From the findings, the study reveals mixed relationship between exchange rate, inflation rate, money supply and interest rate. Also, there is no relationship among the inflation rate, exchange rate and money supply but however, weak relationship exists between the exchange rate and interest rate. Thus, the study concludes that government should encourage export and restrict importation of goods and services in the country and this will reduce dependency on foreign goods and service and improve the domestic value of naira in the country. Also, there exist an interaction among elasticity, absorption and monetary approaches. In view of this, the study recommends that monetary policy made by Central Bank of Nigeria should not be tailored only to money supply but also ensuring higher output, stabilization of inflation pressure, flexible interest rate and employment among others in the country in order to enhance favourable balance of payment. The study is limited to Nigeria, thus other studies can expand the scope and focus on more countries in Africa in order to contribute to literature in this area.

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