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Impact Of Monetary Policy Instruments On Balance Of Payments In Nigeria

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Abstract
The study strives to determine the impacts of monetary policy instruments on balance of payments in Nigeria between 1980 and 2019. It aimed at ascertaining the impact of cash reserve requirements, exchange rate, inflation rate, interest rate and money supply on balance of payments in Nigeria. Use were made of secondary data obtained from Central Bank of Nigeria's statistical bulletin. The study employed regression method of analysis anchored on the monetary theory of balance of payment. The regression model was estimated using vector error correction method. Findings unveil that cash reserve requirement, exchange rate, and money supply are statistically significant and as such, impact on balance of payments in Nigeria. The results further show that inflation rate and interest rate are statistically insignificant though in tandem with theoretical expectations. This implies that not all monetary policy instruments impact on the balance of payments in the long run and short run. The study recommends that monetary authorities allow for a credit economy where the monetary policy committee's decision significantly impacts the nation's economic activities. The authorities should ensure stability in the money supply, which may trigger the nation's cash reserve requirement and exchange rate for stability in the balance of payment.

Keyword*: Nigeria, monetary policy instruments, balance of payments, credit economy*

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I. Introduction

A nation's balance of payment plays a role in evaluating the nations development level as it emphasizes the production and sale of products and services of that country with relation to other countries. This international trade, enhancedthrough globalization and trade liberalization, continues to improve daily through technological advancement.

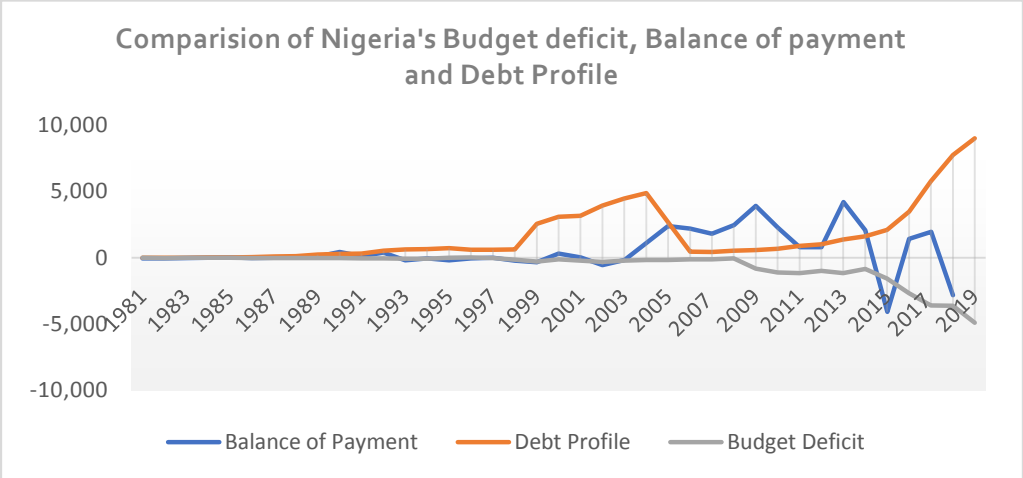
Yousif and Musa (2017) postulate that the balance of payment is a systematic record of economic transactions between an economy and the rest of the world. It is an annual statement that records the financial statement of transactions that occurs between a nation and other nations. It explains a nation's economic trade position with relation to other nations of the world,which could either be negative, positive, or constant by providing information on the nation's exports, imports, capital movements, earnings of domestic assets owned by foreigners, and official transactions by the apex bank. A positive balance of payments, also called a balance of payment surplus, indicates that a nation's exports supersede its imports,explaining that a nation is making significant international trade gains. In contrast, a negative balance of payment, otherwise known as balance of payment deficit, indicates that a nation is making losses in its international trade as its imports exceed its exports. A constant balance of payment, on the other hand, explains that the imports and exports of a nation in its international trade are at par.

The balance of Payment transaction is categorized under three accounts: the current account, capital account, and the errors and omissions accounts. The current account shows the visible and invisible exports and imports of a country. The capital account, also called the financial accounts, shows the capital expenditure and income carried out by a country by giving a short description of the net financial flow of public and private

investment into an economy. On the other hand, errors and omissions may or may not appear in the balance of payment account for the year. It dictates the imbalance in the BOP statement.

Nigeria enjoyed a trade surplus from 1989-1992, recording N127 billion. It slumped into a deficit between 1993 and 1999, recording N53 billion and N327 billion negative values in 1996 and 1999, respectively. There was a severe slump in the BOP between 2014-2016 as a result of the oil market failure. The nation undertook high public borrowing and large payment arrears on its international trade to finance its shortfalls as its foreign reserves continued to decline, thus deepening its high debt profile, which was between N1,632 million and N3,479 million within the period. Since then, the debt profile has continued to be on the rise with its budget deficit increasing by an average of 35%. Figure 1 below explains this trend.

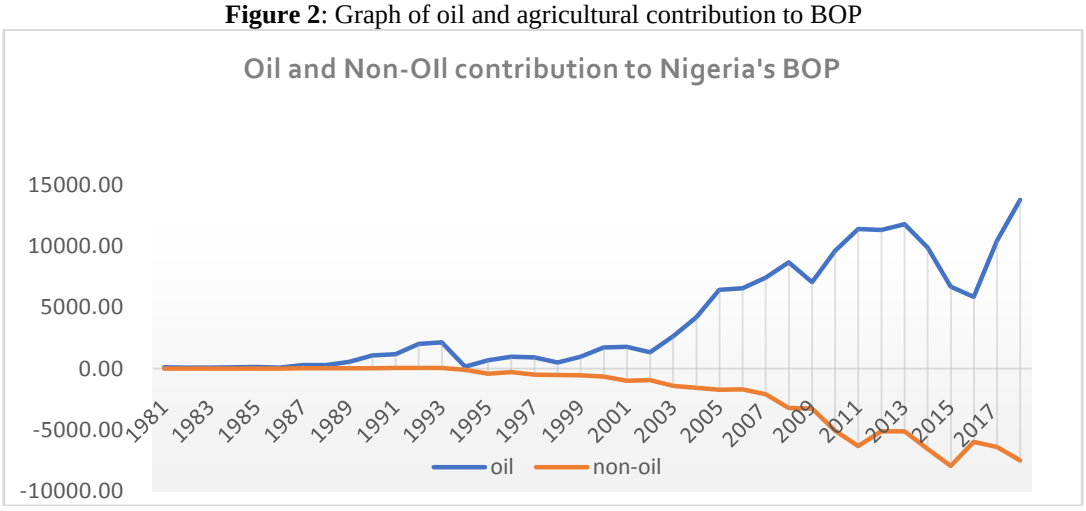
Figure 1: Graph of the budget deficit, balance of payment, and debt profile.



Source: CBN Statistical Bulletin 2020

The concern is that Nigeria's balance of payment over the years has been fluctuating. Between 1960-1977, Nigeria enjoyed a positive balance of payment as it was more focused as an agrarian economy as agriculture contributed about 60% to its total exports. By the mid-90s' Nigeria became an oil-exporting nation improving its balance of payment by more than 149% following the crude oil glut. Presently, the nation's balance of payment has been fluctuating due to the highly volatile crude oil nature. In 1998, there was a crisis in the crude oil market, causing the nation's oil revenue to drop by 46%. By 2000, oil and gas contributed about 98% to the nation's total export and about 83% to its total foreign reserves, leaving the remaining to the non-oil sector (Umeh, 2019). The nation's BOP worsened after the oil market failure in 2014, contributing to N9,862 million, which is a 16% decline from the previous year. Though the nation's balance of payment account improved in 2017, it finally slumped in 2019 due to the emergence of coronavirus pandemic by the end of the year.

Figure 2: Graph of oil and agricultural contribution to BOP



Source: CBN Statistical Bulletin 2020

Figure 2 above depicts the trend in the oil and non-oil sector in Nigeria between the period 1981-2019. The continuous decline in the non-oil sector between 2007-2018accounts for the rapid drop in Nigeria's BOP from 2015-2018, as shown in figure 2 above. Nwanosike et al. (2017) posit that the nation BOP continues to suffer as the nation's exports are highly dependent on the oil and gas sector (which constitutes about 93.8% of its total export as of 2019). Therefore, the graph postulates that the non-oil sector contributes to a positive balance of payment in Nigeria.

However, various factors affect a nation's balance of payment, such as exchange rate, structure of the economy, and inflation rate, amongst others. Most of these factors constitute monetary policy instruments. Mordi (2009) defines monetary policy as measures taken by the apex bank to regulate the value, supply, and cost of money consistent with the expected level of economic activities without necessarily generating undue pressure on the domestic prices and exchange rate. Use is also made of the monetary policy instruments by the apex bank to achieve a nation's macroeconomic objectives, primarily the maintenance of domestic price level and exchange rate stability. These objectives are significant because they are critical factors for attaining sustainable economic growth and external sector viability. Monetary policy instruments could either be direct or indirect. Direct instruments include credit ceilings, cash reserve requirements, administrative fixing of interest rate and exchange rate, sectoral credit allocation, and outstanding deposits' imposition. On the other hand, indirect instruments are open market operations (OMO), discount rate, discount window operations, and moral suasion.

The persistence in the fluctuation of the balance of payment despite the expansionary or contractionary monetary policy implemented continues to drive the inquiry of whether these monetary policies impact the nation's balance of payment and hence the investigation of this study.

Objectives of the study

The broad objective of this study is to determine empirically the impact of monetary policy instruments on balance of payments in Nigeria. However, the specific objectives are:

i. To determine the extent to which Cash Reserve Requirements influence balance of payments in Nigeria.
ii. To determine the extent to which Exchange rate influences balance of payments in Nigeria.
iii. To asertain the extent to which Inflation rate influences balance of payments in Nigeria.
iv. To asertain the extent to which Interest rate influences balance of payments in Nigeria
v. To determine the extent to which Money supply influences balance of payments in Nigeria.

Research Questions

The following research questions were made to guide this study:

i. To what extent does Cash Reserve Requirements influence balance of payments in Nigeria.
ii. To what extent does Exchange rate influences balance of payments in Nigeria.
iii. To what extent does Inflation rate influences balance of payments in Nigeria.
iv. To what extent does Interest rate influences balance of payments in Nigeria
v. To what extent does Money supply influences balance of payments in Nigeria.

Significance of the Study

The benefits of monetary policy cannot be over emphasized considering its general perceived roles in achieving economic growth, maintain equilibrium in the economy by combating elements of depression, inflation or deflation, equity in income and addresses issues of poverty and promote socioeconomic development in Nigeria.

The research findings will be of importance to policy makers at national level as they design policies aimed at enhancing economic stimulation and growth. The Central Bank of Nigeria (CBN) especially will find the outcome of this study useful in gauging its performance and determining the level of input it would have to make to impact positively on the economy.

Students, academics and other scholars who wish to undertake further research on monetary policy will find the literature arising from this study to be of great value as it will be added to existing literature.

II. Reviews Of Relevant Literature

In evaluating monetary policy instruments' impact on the nation's balance of payment, mixed results were obtained from previous empirical analyses. Some studies maintained the theoretical underpinnings of the model of the paper while others did not. One such study is that of Fleermuys (2005) on Namibia between 1993-2003. Fleermuy's study showed that monetary policy does not determine the nation's balance of payment. Although the study revealed that some variables suggested by the monetary policy approach play a significant role in the balance of payment, the disequilibrium of the balance of payment could not be canceled out by monetary actions laid waste to the claims of previous results.

Nonetheless, this view was in contrast to the study conducted by Dhilwayo. Dhilwayo (2006) analyzed the monetary approach to Zimbabwe's Balance of Payment between 1990-2001 using multivariate cointegration and Error Correction Model (ECM). The result concluded that money is a significant player in the nation's balance of payments, and through appropriate financial programming and monetary targeting, Zimbabwe's balance of payment disequilibrium can be adjusted.

A foreign study carried out by Ali (2012) performed an empirical test on the monetary approach to Pakistan's balance of payment for 1992-2010 employing the reserve flow equation. The study tested whether excess money supply played a significant role as a disturbance by using the cointegration test and Error Correction Model. The result showed that monetary variables play a significant role in determining the nation's balance of payments. In a more recent approach, Braima and Korsu (2013) also investigated the existence of balance of payment as a monetary phenomenon in Serra-Leone between 1970-2010. After employing the cointegration approach, Error Correction Model (ECM), and the Philip-Perron test, to test for stationarity in the data, the study concluded that the monetary policy's consistencies reduce the balance of payments deficit.

Again, Devereux and Genber (2012) analyzedusingthe open macroeconomics model in China's case using VECM. The study discovered that expansionary monetary policy generates growth in both output and permanent price level in the short-run period. It equally found an international imbalance hasa highlysignificant effect on China's exchange rate appreciation. A later study carried out in Ghana counteracted these findings. Boateng and Ayentimi (2013) examined the monetary approach tothe balance of payments in Ghana using a time series dataset covered 1980-2010. The OLS empirical results showed that the balance of payment of Ghanais not wholly a monetary phenomenon

Coppin (2014), who examined the relationship between the two variables in Barbados, realized that the level of an economy's openness has much impact on the nation's reserves. The study carried out by Spanos and Taylor (2014) gave credence to this result. The study, which examined the same variables in the United Kingdom employing the Ordinary Least Square (OLS) approach on a time series variables (1995-2001), realized that monetary policy significantly impacts the nation's balance of payment. The study recommended that efficient utilization of the economy's financial flows should exist among the monetary authorities and financial institutions.

Furthermore, Ghigoric (2014) examined the exchange rate and trade balance, checking out Serbia's J-curve effect. The study showed that exchange rate depreciation in Serbia improved the balance of payments in the long run while giving rise to a J-curve effect in the short run. Both Johansen and ARDL approach gave similar long-run estimates showing that real depreciation improved trade balance. The corresponding ECM and impulse reaction function indicated that followingthe currency depreciation, trade balance first deteriorates before improving after that, thereby exhibiting the J-curve pattern.

Further investigation to establish the balance of payment through the monetary approach was carried out by Osoro (2013) in Kenya. The study utilized the annual data spanning from 1963-2012. The study utilized cointegration and ECM test and found out that some of the variables were non-stationary and insignificant in determining the study's long-run impact, whereas other variables suggested some cointegration level in the BOP position. This result indicates that shocks in the balance of payments are necessitated by foreign direct investment inflow, exchange rate movement, and trade balance.

This study was also tested domestically and indicated mixed results as some agreed with the relationship while the others disagreed. Ditimi, Wosa and Olaiya (2011) appraised the effects of the monetary policy instruments on BOP in Nigeria throughout 1986-2009. The study adopted the OLS approach and found that monetary policy has impressed the implementation of various policy initiatives and has experienced sustained expansion over the years. They noted that their findings imply that monetary policy has a significant influence in maintaining price stability and good BOP within the Nigerian economy and concluded that for monetary polciy to improve its performance, there is the need o reduce excessive government expenditure and align fiscal policy along with monetary policy measure.

Unaimikogbo and Enoma (2011) evaluated monetary policy instruments' effect on the balance of payment in Nigeria with a simulation equation model, 1986-1997, using OLS estimation technique of data analysis. The study found that both policies contribute significantly to the balance of payments. They concluded that monetary variables are more effective and dependable than fiscal variables in effecting economic activities changes.

The study by Ajie and Nenbee (2010) examined the monetary management policy and balance of payments in Nigeria from 1970-200. The study utilized cointegration and ECM. Findings from the result showed that the balance of payments could be explained through the monetary approach. Therefore, they recommended that the CBN take proactive measures to bring about equilibrium in the balance of payments, which can be achieved through macroeconomic policies.

Danmola, Akonji, Olateju and Olubunkola (2013) examined the impact of monetary policy on the current account's components for the periods 1970-2010 in Nigeria. The study employed Johansen Cointegration, OLS, and ECM. The study confirms a log-run relationship between monetary policy and

components of the current account under consideration. Money supply positively influences all the variables except the exchange rate. The study further shows that the money supply significantly influenced exports, imports, CPI, and industrial output.

Iyoboia and Olarinde (2013) investigated the impact of exchange rate depreciation in the BOP of Nigeria over 1961-2012. The analysis was based on a multivariate VEC framework. The balance of payments, exchange rate, and other associated variables was found in a long-term equilibrium relationship. The empirical results are in favor of bi-directional causality between the balance of payments and other variables employed. Results of the Generalized Impulse Response function suggests that one standard deviation innovation on the exchange rate reduces the positive balanceof payments in the medium and long term. In contrast,the decomposition results indicated that a significant variation in Nigeria's balance of payments was not due to changes in exchange rate movements. The policy implication was that exchange rate depreciation, which has been more critical in Nigeria since the mid-1980s, was not very useful in promoting the country's positive balance of payments.

Tijani (2013) empiricallyanalyzedthe balance of payments adjustment mechanism using Nigeria's monetary channel from 1970-2010. The regression analysis found a positive relationship between the balance of payments and credit to the private sectors, exchange rate, and balance of payments. In contrast,the inflation rate and GDP have a negative effect and concluded that monetary measuresconstitute immensely to the balance of payments, cause a disturbance, and serve an adjustment mechanism to balancepayment equilibrium depending on its application and policy mix by the monetary authority.

Danjuma (2013) evaluated whether excess money supply has played a significant role in the disequilibrium of the balance of paymentin Nigeria during 1986-2010. Using Johannsen cointegration, VECM, and Impulse Response function and variance decomposition, the result confirms that Nigeria's balance of payments is not purely a monetary phenomenon. It recommended that monetary authority in the county should consider monitoring budget deficit because this also causes domestic credit increase.

Kpansung (2013) opined that any observed disequilibrium in the balance of payments could be eliminated through manipulations of monetary variables, especially domestic credit, under a fixed exchange rate regime, absence of sterilization by the monetary authorities, and stable demand for money function. The study concluded that for Nigeria to avoid a crisis in the balance of payment, the domestic credit growth should be curtailed so that economic agents can limit their consumption relative to their income to reverse the pressure on the current account of the balance of payment.

Imoughele and Ismailal (2015) investigated the monetary policy impact on the Balance of Payment of Nigeria from 1986-2013. Using the ECM technique, theresult showed that a long-run relationship exists among monetary policy variables and BOP. The exchange rate, broad money supply, and credit loaned to private sectors constitute major monetary factors that impact seriously on BOP in Nigeria.

Ajayi (2015) examined the determinants of the balance of payments in Nigeria between 1970-2010 using the cointegration method to assess the long-run impact of macroeconomic variables and found a significant negative relationship between monetary policy instruments (MPR and Money Supply) and balance of payments. The study concluded that a more extensive exchange rate and a lesser monetary policy rate would raise Nigeria's balance of payments.

Osisanwo, Maku, Ajike and Egwuonwu (2015) explored the impact of balance of paymentsdeficit and monetary policy on Nigeria's economic growth from 1980-2013 employing the dynamic econometric model. The result showed a long-run relationship between the balance of payments and monetary policy in Nigeria. It recommended that the central authority adopt a policy of export promotion and a flexible exchange rate regime.

Pronso, Inaya and OKoe (2016) examined the relationship between the balance of paymentand monetary policy in Nigeria using OLS techniques of multiple regression models with statistical time-series data from 1980-2015. The estimated result shows a positive relationship between the dependent variable (BOP) and the independent variables (Money supply, interest rate, and exchange rate). s

III. Data And Methodology

Data used to analyze this study was obtained from the Central Bank of Nigeria Statistical Bulletin between 1980 and 2019.

This model's theoretical framework is based on the monetary theory of the balance of payment, which regards the balance of payment as a monetary phenomenon.This model was adopted by Pronso, Inaya and Okoye (2016), who recommended that apex banks should complement monetary policy with effective fiscal policy to ensure growth and development.

The model by Pronso et al.is specified functionally as

$$BoP = f(EXR, INT, MS) \quad \ldots (1)$$

Where BOP = Balance of payment, which represented the endogenous variable; while EXR =exchange rate; INT = Interest rate; and MS= Money supply, were made the exogenous variables.

To suit this study's purpose, modification was made of the model above to accommodate other variables (inflation and cash reserve requirement), that play a vital role in determining the nation's balance of payment. Thus, the new model is stated as follows:

$$BoP = f(CRR, EXR, INF, INT, MS) \quad (2)$$

Econometrically, the equation can be expressed in its linear form as:

$$BoP = \beta_0 + \beta_1 CRR + \beta_2 EXR + \beta_3 INF + \beta_4 INT + \beta_5 MS + \mu \quad \ldots (3)$$

where

BoP: Balance of payment

CRR: Cash Reserve Requirement, and β_1 coefficient of CRR.

EXR: Exchange rate, and β_2 coefficient of EXR.

INF: Inflation rate, and $\beta_3$coefficient of INF.

INT: Interest rate, and β_4 coefficient of INT.

MS: Money supply proxied as M2, and β_5 coefficient of MS.

β_0: intercept. β_1, β_2, β_3, β_4, β_5: parameters. μ: error term. This variable is also called the stochastic or disturbance term. It contains unobserved factors that affect the model.

The study adopts ARDL and ARDL bounds test because of its characteristics of evaluating the model variables' long- and short-run impacts. Also, the ARDL model does not consider the various problems that arise from the evaluation of a model with a different order of integration amongst its variables.

Therefore, the ARDL model is expressed as

$$\Delta BoP_t = \alpha_0 + \sum_{i=o}^{c} \alpha_{1i} \Delta BoP_{t-1} + \sum_{i=o}^{d} \alpha_{2i} \Delta CRR_{t-1} + \sum_{i=o}^{e} \alpha_{3i} \Delta EXR_{t-1} + \sum_{i=o}^{f} \alpha_{4i} \Delta INF_{t-1} + \sum_{is=o}^{g} \alpha_{5i} \Delta INT_{t-1} + \sum_{i=o}^{h} \alpha_{6i} \Delta MS_{t-1} + \beta_1 BoP + \beta_2 CRR + \beta_3 EXR + \beta_4 INF + \beta_5 INT + \beta_6 MS + \mu \quad \ldots (4)$$

This approach allows the model to take any number of lags needed to capture its modelling framework.

From Equation (4), the terms with the summation signs and α are the short-run ECM dynamic coefficients, while the terms with the β are the long-run dynamic multipliers. a_0 and μ represent the constant and the error terms, respectively.The first difference operator is represented withΔ, and the alphabets"c to h" represents the ECM's lag lengths.

Three steps are going to be takento estimate this model. First, the long-run relationship would be estimated. The ARDL bounds test would be used to ascertain the cointegration among the variables. While conducting this test, if the *F*-statistics is lower than the lower boundary, there is no cointegration. There is cointegration if the *F*-statistics is higher than the upper boundary, while the test is inconclusive if the *F*-statistics is higher than the lower boundary but higher than the upper boundary.

The second step is to estimate the long-run model using the lag lengths of the ECM below

$$\Delta BoP_t = \alpha_0 + \sum_{i=o}^{c} \alpha_{1i} \Delta BoP_{t-1} + \sum_{i=o}^{d} \alpha_{2i} \Delta CRR_{t-1} + \sum_{i=o}^{e} \alpha_{3i} \Delta EXR_{t-1} + \sum_{i=o}^{f} \alpha_{4i} \Delta INF_{t-1} + \sum_{i=o}^{g} \alpha_{5i} \Delta INT_{t-1} + \sum_{i=o}^{h} \alpha_{6i} \Delta MS_{t-1} + \mu \quad \ldots (5)$$

Finally, the short-run parameters would be obtained by estimating the ECM associated with the long-run estimates. The model is specified as follows:

$$\Delta BoP_t = \alpha_0 + \sum_{i=o}^{c} \alpha_{1i} \Delta BoP_{t-1} + \sum_{i=o}^{d} \alpha_{2i} \Delta CRR_{t-1} + \sum_{i=o}^{e} \alpha_{3i} \Delta EXR_{t-1} + \sum_{i=o}^{f} \alpha_{4i} \Delta INF_{t-1} + \sum_{i=o}^{g} \alpha_{5i} \Delta INT_{t-1} + \sum_{i=o}^{h} \alpha_{6i} \Delta MS_{t-1} + v_1 ECM_{t-1} + \mu \quad \ldots (6)$$

From Equation (6), ECM represents the ECT of the short-run dynamic model. The speed of adjustment of the short-run model is represented by v_1

Table 1. Unit Root Test at 5% Significance Level

Variable	Level Form		First Difference		Second Difference		Order of Integration
	ADF Statistic	ADF Critical Value	ADF Statistic	ADF Critical Value	ADF Statistic	ADF Critical Value	
BoP	-2.90	-2.95	-11.79	-2.94	-	-	I (1)
CRR	-11.79	-2.94	-	-	-	-	I (0)
EXR	0.77	-2.94	-5.26	-2.94	-	-	I (1)
INF	-2.91	-2.94	-5.67	-2.94	-	-	I (1)
INT	-2.69	-2.94	-6.88	-2.94	-	-	I (1)

MS	7.41	-2.94	-	-	-	-	I (0)

Source: Researchers estimation using EViews 10.1.

Table 2. ARDL Bounds Test

			Critical Value Bounds		
Test Statistic	Value	*K*	Level of Significance (%)	I(0)	I(1)
F-statistic	15.31015	5	10	2.08	3.00
	15.31015	5	5	2.39	3.38
	15.31015	5	2.5	2.7	3.73
	15.31015	5	1	3.06	4.15

Source: Researchers estimation using EViews 10.1.

IV. Results And Discussion

We begin by presenting the cointegration test and unit root tests conducted on our variables. This is important to avoid running spurious regression.

Unit Root Test

The study tested for stationarity (unit root) amongst the variables to avoid spurious results. This test was done by checking for the order of integration among the individual series by using the Augmented Dickey-Fuller (ADF) test. According to the ADF test, a null hypothesis of the existence of stationarity is rejected when the absolute value of the ADF statistic is lesser than that of the critical value, and therefore accepted if otherwise.

The summary of the ADF test using SIC criterion is reported in Table 1.The result shows that the variables are integrated of order zero and one, signifying that the variables are integrated at level form and first difference.

Cointegration Test

According to Dickey et al. (1979), a lack of cointegration suggests that such variables in the model have no long-run relationship existing between them. The cointegration is test is essential as failure to account for stationarity amongst the variables of a model may cause misspecification, thereby allowing for spurious regression (Engel and Granger, 1987).

This study employs the ARDL Bounds test to estimate the cointegration test, given that the specified models for this study are mixed equation models. The ARDL Bounds test is employed under the assumption that the series are co-integrated if the calculated F-statistics is greater than the Critical value at 5% level of significance. The results are presented in Table 2, which shows that the calculated F-statistics (15.3) exceeds the upper-bound F-critical value at 5% level of significance. Therefore, the result supports the rejection of the null hypothesis and concludes that there is a long-run relationship between the variables.

Model Estimation and Interpretation

The long-run estimates of the ARDL model are presented in Table 3 below. The results show a statistically significant relationship among most variables except inflation (INF) and interest rate (INT).

The R_2 in Table 3 is 0.982582, which implies that the model explains 98 percent of the total variation in the balance of payment (BoP). The coefficient (c) is estimated at 40.65units with a statistically insignificant t-value of 0.08, showing a positive but statistically insignificant relationship between monetary policy instruments and balance of payment, meaning that on average, without the interference of the independent variables, the balance of payment may increase by 40.65 units.

Cash reserve requirement (CRR), exchange rate (EXR) and money supply (MS) are statistically significant to monetary policy instruments at -5.37units, 10.88units and 0.83 units, respectively. The negative relationship existing between CRR and BoP is in line with the apriori expectation such that an increase in the cash reserve requirement leads to a decline in the balance of payment, signifying that thereduction in the ability to pay for purchased goods and services leads to a deficit in the balance of payment in the long run. The money supply is also in tandem with the apriori expectation, in the long run, signifying that an increase in the supply of money in the economy leads to an improvement in the nation's balance of payment. Meanwhile, the positive relationship between exchange rate and balance of payment goes against apriori expectation. This relationship may exist because the country gains more profit due to an increase in the exchange rate when it exports its products, like crude oil, to other countries.

Furthermore, though statistically insignificant, inflation rate and interest rate are in tandem with theoretical expectations as an increase in either of the variables causes a decline in the balance of payment by 2.00 units and 3.87 units, respectively. This means that the more inflation rate and interest rate rises, the more the deficit in the balance of payment increases. The inflation rate and interest rate play significant roles in the trend of the balance of payment. In international trade, a nation with a high inflation rate posits a higher price in goods and services, signifying a more expensive trade as it devalues the home currency, thus causing BOP to decrease. The increase in interest rate, on the other hand, triggers a decline in BoP as the cost of borrowing increases.

Table 3. The Long-run ARDL Results

Variable	Coefficient	Std. Error	*t*-Statistic	Prob.
CRR	-5.378270	1.633094	-3.293302	0.0081
EXR	10.88143	3.896297	2.792762	0.0190
INF	-2.009665	6.338571	-0.317053	0.7577
INT	-3.878658	26.74936	-0.145000	0.8876
MS	0.832962	0.315589	2.639389	0.0248
C	40.65352	482.8355	0.084197	0.9346
R-squared = 0.982582			Prob(*F*-statistic) =0.000005	

Source: Researchers estimation using EViews 10.1.

Table 4. Error Correction Model Estimates

Variable	Coefficient	Std. Error	*t*-Statistic	Prob.
D(BOP(-1))	0.513185	0.091245	5.624245	0.0002
D(CRR)	-1.474532	0.305880	-4.820620	0.0007
D(CRR(-1))	-1.399424	0.321213	-4.356678	0.0014
D(CRR(-2))	5.856578	0.467118	12.53769	0.0000
D(CRR(-3))	2.299490	0.509165	4.516197	0.0011
D(EXR)	-5.414171	4.158693	-1.301892	0.2221
D(EXR(-1))	-7.867987	4.370175	-1.800383	0.1020
D(EXR(-2))	-15.19948	3.256611	-4.667269	0.0009
D(EXR(-3))	-15.16665	4.285391	-3.539151	0.0054
D(INT)	1.348616	13.95320	0.096653	0.9249
D(INT(-1))	10.34814	14.51846	0.712758	0.4923
D(INT(-2))	17.66663	14.11019	1.252047	0.2390
D(INT(-3))	32.04602	13.50904	2.372191	0.0391
D(MS)	-0.009108	0.093717	-0.097183	0.9245
D(MS(-1))	-0.023104	0.102628	-0.225126	0.8264
D(MS(-2))	-1.455996	0.124418	-11.70244	0.0000
D(MS(-3))	-1.233912	0.150992	-8.172011	0.0000
ECM	-0.881032	0.067281	-13.09479	0.0000

Source: Researchers estimation using EViews 10.1.

The Error Correction Model was estimated to ascertain how the variables adjust to long-run equilibrium through short-run dynamics. The summary of the ECM is presented in Table 4.The ECM for the balance of payment equation is negative and statistically significant, which further lends credence to the cointegration among the variables under investigation. This means that deviations in the short run among the co-integrated processes are corrected in the long run to attain a stable equilibrium.

As presented in Table 4, the ECM for the balance of payment is 88 percent. This suggests that about 88 percent of the last quarter's disequilibrium is corrected in the current quarter, respectively. Hence, when the balance of payment is above or below its equilibrium level, it adjusts by approximately 88 percent within the first quarter to ensure full convergence to its equilibrium level.

Specification and Diagnostic Test

The diagnostic test of the model in Table 5 indicates that the model is normally distributed. The Ramsey reset test revealed an absence of specification error in the model.The heteroskedasticity test revealed that the residuals are homoscedastic, as there is no presence of heteroskedasticity. Finally, the Breusch–Godfrey test rejects the null hypothesis of the residuals being serially uncorrelated.

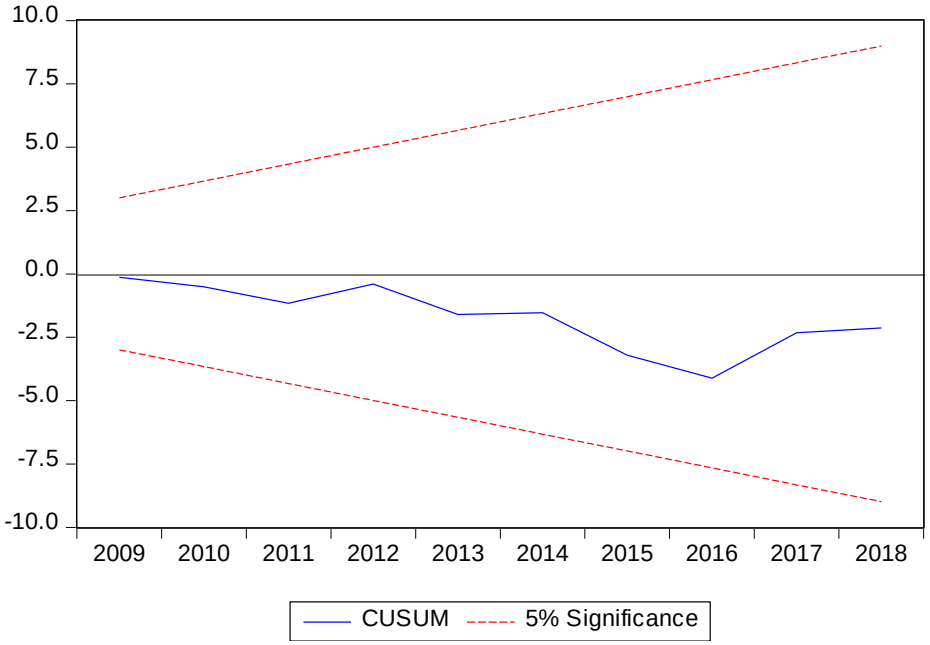
Table 5. Specification and Diagnostic Test Estimates

Test	Statistic	*p*-Value)
Jacque–Bera test	JB	2.084984 (0.352575)
Ramsey RESET test	*F*-statistic	0.568087 (0.4703)
White heteroskedasticity test	*F*-statistic	0.582253 (0.8632)
Breusch–Godfrey LM test	*F*-statistic	19.64821 (0.0008)

Source: Researchers estimation using EViews 10.1.

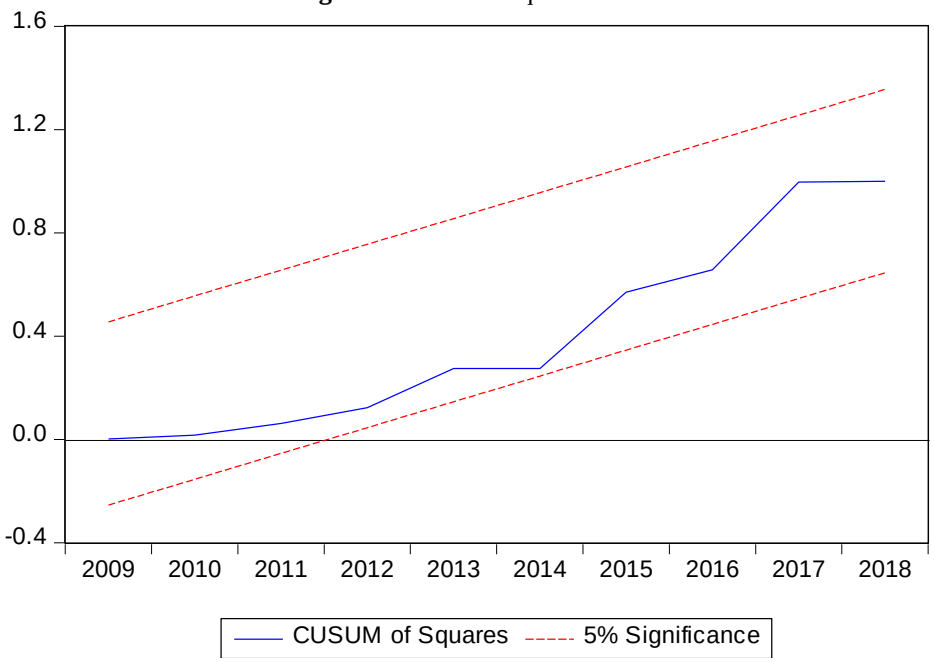
The cumulative sum (CUSUM) test and the CUSUM of squares test were adopted to analyze the model's stability. The results are presented as follows:

Figure 3. CUSUM Test



Source: Researchers estimation using EViews 10.1.

Figure 4. CUSUM Squares Test



Source: Researchers estimation using EViews 10.1.

Figures 3 and 4 are estimated at 5 percent level of significance. From Figures 3 and 4, it can be inferred that the model is stable for the period under study since the CUSUM and the CUSUM squares did not go outside the critical lines.

V. Conclusion and Policy Recommendation

This study analyzed the impact of monetary policy instruments on the balance of payment in Nigeria between 1981-2019. The ARDL and bounds test approach was adopted for the achievement of the study's objective. The study revealed that not all monetary policy instruments impact the balance of payment in the long run and short run. According to the study results, all the monetary policy instruments except interest rates have a short-run causality to balance of payment. Consequently, in the long run, monetary policy instruments, except interest rates, impact the nation's balance of payment. We think that the interest rate action in both the short and long run may result from the economy's general functioning that emphasizes the insignificant contribution of interest rate on economic activities since the nation does not follow the standard theory of a credit economy.

Since the result depicts that primary monetary policy instruments determine the balance of payment, this study recommends that monetary authorities allow for a credit economy where the monetary policy committee's decision significantly impacts the nation's economic activities. It also recommends that monetary authorities ensure stability in the money supply, which may trigger the nation's cash reserve requirement and exchange rate and ensure stability in the balance of payment.

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