

Monetary Policy and Balance of Payment Position in Nigeria.

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Abstract

The achievement of a balance of payment in developing countries like Nigeria relies on adequate formulation of monetary policy by monetary authorities; thus, this study assessed the effect of monetary policy on the balance of payment position in Nigeria. Secondary data spanning the period of 2006 to 2019 were sourced and the model was analyzed using the Autoregressive Distributed Lag (ARDL) approach with money supply (MS), monetary policy rate (MPR), credit to core private sector (CCPS), credit to government (CG), exchange rate (EXCH) as independent variables and balance of payment as a percentage of gross domestic product (BOP) as the dependent variables. From the findings, the t- statistical value and the probability value are MS (-5.74; 0.000), MPR (-1.988; 0.006), CCPS (5.211; 0.000), CG (-5.78; 0.000), EXCH (6.38; 0.000) respectively, meaning that MS, MPR and CG exhibits a negative and significant relationship; CCPS and EXCH showed positive and significant relationship with BOP as a percentage of GDP. The study therefore concluded that monetary policy influences balance of payments significantly both in the short-run and long- run. It thus recommended that monetary policy rate should be set at a rate that would encourage lending and promote savings mobilization to ensure the flow of credit to core sector which in turn improves productivity, promote domestic consumptions and enhance trade and balance of payment performance.

Keywords: Balance of payment, Credit to government, Credit to private sector, Exchange rate, Monetary policy, Monetary Policy rate and Money supply.

Introduction

Monetary policy involves the adoption of monetary policy instruments to control and regulate the level of economic activities in order to maintain both internal and external stability. Nnanna (2001); Imoisi, Olatunji and Ekpenyong (2013) viewed monetary policy as a control of economic activities through the adoption of instruments to regulate and influence the value, supply and cost of money in the economy. Reduction of unemployment rate, maintenance of single digit inflation rate, economic growth stimulation and maintenance of balance of payment equilibrium are germane objectives of monetary policy in both developed and developing countries (Dare, 2019).

Monetary policy serves as a powerful tool for controlling both internal and external imbalances for the purpose of enhancing sustainable growth and development. The Nigerian economy that is blessed with abundance of resources has been experiencing continuous distortions in the overall balance of payment which has received attention from scholars and expert both locally and internationally (Celina, 2015).

Despite the different monetary policy stance of the Central Bank of Nigeria (CBN) to promote sound balance of payment, the nation has been experiencing deficit in the balance of payment. According to CBN report of 2018, the nation's current account balance has been fluctuating since 2008 to 2018 with rising and falling conditions.

In the recent years studies have been conducted on the effect of monetary policy on balance of payment in Nigeria. However, the reviewed literature used lending rate as a proxy for interest rate (Imoisi *et al*, 2013; Onuchuku, Chukueggu, Nenbe & Wosu, 2018; Imoughele & Ismaila, 2015; Dare, 2019). Also, Tijani (2014), Osinsanwo, Tella and Adesoye (2019) did not capture interest rate in their empirical model. However, monetary policy rate will be use in this study which is an important instrument used to influence other rates in the economy.

Also, domestic credit to private sector as important channel of monetary policy was not captured by the studies of Onuchuku *et al* (2018); Dare (2019). However, in this study, domestic credit would be disaggregated into credit to core sector and government sector as opposed to the study of Tijani (2014); Imoughele and Ismaila, 2015; Osinsanwo *et al* (2019). Also inflation rate, being an important macroeconomic variable will also be introduced into the model. Thus, this study examined the extent to which the monetary policy affects the balance of payment in Nigeria.

The following null hypotheses would be tested:

- i. Money supply has no significant effect on balance of payment in Nigeria
- ii. Monetary policy rate has no significant effect on balance of payment in Nigeria
- iii. Net domestic credit to core sector has no significant influence on balance of payment in Nigeria
- iv. Net domestic credit to government have no significant effect on balance of payment in Nigeria
- v. Exchange rate does not significantly influence balance of payment in Nigeria
- vi. Inflation rate has no significant influence on balance of payment in Nigeria

Empirical Review

By adoption of the generalized moment method of estimation (GMM) and Fixed effects ordinary least square (OLS), Adamu and Itsede (2010) investigated the monetary approach to balance of payment in West African Monetary Zone. It was indicated that log of GDP had positive effect on the change in net foreign assets. Also, domestic credit was found to have statistically significant and negative effect on balance of payment while inflation was found not to influence balance of payment position in the West African Monetary Zone.

In Ghana, Alexander (2013) investigated BOP Monetary approach from 1980 to 2010 using Dicker Fuller and OLS technique. It was revealed that inflation had insignificant effect on BOP while domestic credit significantly influenced BOP. Imoisi *et al* (2013) examined the role of monetary policy in achieving balance of payments stability in Nigeria from 1980 to 2010 using Ordinary Least Squares (OLS) technique. It was found that there is positive relationship between balance of payments and monetary policy instruments of money supply, exchange rate and interest Rate while money supply and interest rate being significant.

Similarly, Boateng and Ayentimi (2013) examined monetary approach to balance of payment in Ghana using annual time series data from 1980 to 2010. Result of the OLS showed that domestic credit, inflation, interest had negative and significant impact on balance of payment proxy by net foreign assets. Following the above study, Danjuma (2013) investigated the effect of money supply on balance of payment disequilibrium in Nigeria from 1986 to 2010. The study adopted Johansen Co-integration, vector error correction mechanism, impulse response function and variance decomposition and it was found that monetary policy significantly influenced balance of payment in Nigeria. Tijani (2014) investigated the channel through which monetary policy influence

balance of payment in Nigeria from 1970 to 2010 using OLS. It was found that domestic credit, exchange rate and balance of trade had positive effect on balance of payments while inflation rate and gross domestic product had negative effect on balance of payments.

Celina (2015) studied the effect of monetary policy on Nigerian balance of payment using OLS technique to analyze the time series data from 1980 to 2010. The result of the analysis indicated that the Money supply and exchange rate had positive effect on BOP while those of interest rate and gross domestic product were negatively related to BOP. Ajayi (2014) looked at the determinants of balance of payments in Nigeria from 1970 to 2010 analyzed with the aid of co-integration method. It was revealed that negative and significant relationship exists between monetary policy instruments (i.e. monetary policy rate and money supply) and balance of payment.

Imoughele and Ismaila (2015) examined the monetary policy phenomenon to balance of payment (BOP) in Nigeria using 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 showed that Long run relationship exists among the monetary policy variables and BOP. The major finding of the study revealed 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.

Onuchuku *et al* (2018) investigated the effect of monetary policy on Nigeria's balance of payments between 1980 and 2016 using times series data analyzed with dynamic ordinary least square. It was indicated that broad money supply, interest rate, exchange rate and gross domestic product had significant effect on balance of payments

Through the adoption of Auto Regressive Distributed Lad (ARDL) technique, Osinsanwo *et al* (2019) analyzed the impact of monetary policy on balance of payments adjustment in Nigeria 1980 to 2015. The study showed that money supply and trade balance had positive impact on balance of payments adjustment in Nigeria while domestic credit, exchange rate, inflation rate and gross domestic product had negative impact on balance of payments in Nigeria. Senyefia, Oduro and Eunice (2019) studied monetary approach to balance of payments (BOP) in Ghana based on monthly data from January 2006 to February 2018. The study employed Augmented Dickey Fuller, Phillips-Perron test and ARDL co-integration techniques. It was revealed exchange rate, net domestic credit, inflation rate and interest rate had significant influence on the BOP position in the long run.

Dare (2019) investigated the relationship between changes in monetary policy aggregates and balance of payments position in Nigeria using Augmented-Dickey Fuller Test, Bound Co-Integration Test and Autoregressive Distributed Lag technique to analyze the effect of money supply, exchange rate, balance of trade, inflation rate and interest rate on balance of payments position using annual data for the period stretching from 1986 to 2017. The result of the ARDL showed that money supply and balance of trade had positive and significant effect on balance of payments while exchange rate and interest rate had negative effect on balance of payments.

Materials and Methods

The research design for this study is ex-post facto research design which involves the use of historical data obtained from secondary sources to examine the relationships between the dependent variable (proxy as balance of payments) and the independent variables (proxy as money

supply, monetary policy rate, exchange rate, net credit to core sector, net credit to government) which is analyzed using econometric techniques.

Sources of Data Collection

The study makes use of time series data which ranges from 1986 to 2018. The macroeconomic data will be obtained from secondary sources which is Central Bank of Nigeria Statistical Bulletin (2018).

Model Specification

For the purpose of examining the effect of monetary policy on balance of payment in Nigeria, the study employed multiple econometric model. This is given as:

$$\text{BOPGDP} = f(\text{MS}, \text{MPR}, \text{NCCS}, \text{NCG}, \text{EXCH}, \text{INFR}) \quad (1)$$

This is econometrically given as

$$\text{BOPGDP} = \beta_0 + \beta_1 \text{MS} + \beta_2 \text{MPR}_t + \beta_3 \text{EXCH}_t + \beta_4 \text{NDCC}_t + \beta_5 \text{NCG}_t + \text{INFR}_6 + \mu \quad (2)$$

Where;

BOPGDP = Balance of Payments as Percentage of Gross Domestic Product

MS = Money Supply

MPR = Monetary Policy Rate

EXCH = Exchange Rate

NCCS = Net Domestic Credit to Core Sector

NCG = Net Credit to Government

INFR = Inflation Rate

β_0 = Intercept

$\beta_1 - \beta_6$ = Parameters of the explanatory variables

μ = Stochastic Error Term

Method of Data Analysis

The econometric model measuring the effect of the independent variables (money supply, monetary policy rate, exchange rate, net credit to core sector, net credit to government and inflation rate) on the dependent variable (balance of payment) was conducted using ordinary least square econometric techniques.

Given the nature of time series data which are usually characterized by unit root problem, the study employed the Augmented Dickey Fuller (ADF) unit root test to check the level of stationarity for the data employed in the study. Also, the study employed bound co-integration technique to ascertain if there is long run equilibrium association-ship among the variables captured in the model.

Autoregressive Distributed Lag technique was employed to assess the speed of adjustment between short run and long run model and to determine the short run and long run effect of money supply, monetary policy rate, exchange rate, net credit to core sector, net credit to government and inflation rate on balance of payments.

Result of the Findings

Table 1 presents the result of the descriptive statistics for the variables employed in this study. The result indicates that money supply and credit to core private sector have the highest mean value

followed by credit to government sector. These variables also have the high deviation from the mean value. The result also indicates that exchange rate is normally distributed.

Table 1: Descriptive Statistics

	BOPGDP	MS	MPR	CCPS	CG	EXCH
Mean	-12.01344	5931.465	13.77273	5633.081	1074.355	101.9850
Median	-1.839057	1505.964	13.50000	938.2712	306.0319	118.5669
Maximum	9.990883	25079.72	26.00000	21109.72	4875.570	306.0800
Minimum	-111.4600	23.80640	6.000000	18.29990	7.360300	2.020600
Std. Dev.	26.85604	7805.683	3.895291	7559.086	1440.218	86.01952
Skewness	-2.247111	1.135610	0.705133	1.012301	1.396619	0.658010
Kurtosis	7.645264	2.910403	4.748653	2.410382	3.845058	2.894124
Jarque-Bera	57.44270	7.103897	6.939126	6.114164	11.70991	2.396785
Probability	0.000000	0.028669	0.031131	0.047025	0.002866	0.301679
Observations	33	33	33	33	33	33

Source: Researcher's Computation, 2019

Also, money supply, monetary policy rate, credit to core private sector, credit to government, exchange rate and inflation rate are positively skewed while balance of payments as a percentage of gross domestic product is negatively skewed. However, balance of payments as a percentage of gross domestic product, monetary policy rate and inflation rate are leptokurtic while money supply, credit to core private sector and exchange rate are platykurtic. Finally, credit to government was mesokurtic,

Test of Stationarity: Augmented Dickey Fuller test

Table 2: Summary of the ADF Unit Root Test

Variables	Test Statistic	5% Critical Value	Prob.	Remarks
BOPGDP	-4.180616	-3.612199	0.0157	Stationary at First Diff.
MS	-4.180616	-3.612199	0.0157	Stationary at First Diff.
MPR	-3.746099	-3.557759	0.0334	Stationary at Level
CCPS	-5.965180	-3.562882	0.0002	Stationary at First Diff.
CG	-6.435925	-3.568379	0.0000	Stationary at First Diff.
EXCH	-4.191535	-3.562882	0.0124	Stationary at First Diff.
INFR	-6.365197	-3.612199	0.0001	Stationary at First Diff.

Source: Researcher's Computation, 2019

Table 2 presents the summary of unit root test for the macroeconomic variables using Augmented Dickey-Fuller test. The result of the Augmented Dickey-Fuller unit root test indicates that monetary policy rate is stationary at level while balance of payments as a percentage of gross domestic product, money supply, credit to core private sector, credit to government, exchange rate and inflation rate are not stationary at level.

However, when tested at first difference, balance of payments as a percentage of gross domestic products, money supply, credit to government, exchange rate and inflation rate are stationary at first difference as reported in Table 2.

Lag Selection Criterion

Table 3: Lag Result

Lag	LR	FPE	AIC	SC	HQ
0	NA	2.96e+28	85.42258	85.74639	85.52813
1	236.8894*	2.56e+25	78.28433	80.87476*	79.12875
2	62.74966	2.04e+25*	77.52377*	82.38082	79.10705*

Source: Researcher's Computation, 2019

The result of the lag selection criterion is presented in table 3. The result shows that the optimum lag is 2 according to the Akaike Information Criterion being the lowest lag value.

Result for Long-run Relationship

Table 4: Bound Co-integration Result

Test Statistic	Value	K
F-statistic	3.906177	6
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.12	3.23
5%	2.45	3.61
2.5%	2.75	3.99
1%	3.15	4.43

Source: Researcher's Computation, 2019

This study employs ARDL Bound Co-integration technique to determine the long run relationship among the variables. The Bound Co-integration result which is reported in Table 4 shows that there is long run relationship among the variables. This is evidenced as the F-statistic value of 3.906177 is greater than the lower bound critical value of 2.45 at 5%. Thus, it is concluded that there is a long run relationship among balance of payments as a percentage of gross domestic product money supply and credit to core private sector, money supply, credit to core private sector, credit to government, exchange rate and inflation rate

Autoregressive Distributed Lag Result

Table 5: Short Run Co-integrating Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(MS)	0.004403	0.001159	3.798718	0.0011
D(MPR)	-0.544748	0.346979	-1.569974	0.1321
D(CCPS)	0.007226	0.002451	2.947677	0.0080
D(CG)	-0.007534	0.002394	-3.146914	0.0051
D(EXCH)	0.498186	0.152733	3.261798	0.0039
D(INFR)	-0.425056	0.069736	-6.095202	0.0000
D(INFR(-1))	-0.818804	0.260100	-3.148036	0.0051
CointEq(-1)	-0.505793	0.159839	-6.605340	0.0000

Source: Researcher's Computation, 2019

Table 5 reports the result of the ARDL short run co-integration result. The result shows that money supply, credit to core private sector and exchange rate have positive and significant effect on balance of payments as a percentage of gross domestic product in Nigeria. This implies that increase in money supply; credit to core private sector and exchange rate will lead to increase in balance of payments in Nigeria

However, monetary rate, credit to government and inflation rate is found to have negative and significant effect on balance of payments as a percentage of gross domestic products. This indicates that increase in monetary rate; credit to government and inflation rate will lead to fall in balance of payments. Finally, it is revealed that the value of co-integrating equation is -0.505793 with a corresponding probability value of 0.0000 which implies that that the model has a self-adjustment mechanism in the short run. This implies that about 51% of any movements into disequilibrium in balance of payments are corrected for within one period. This implies that the dynamic shock in the short run disequilibrium will be corrected at speed of 51% towards equilibrium path in the long run.

Table 6: Long Run Coefficient

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MS	-0.009823	0.001710	-5.742941	0.0000
MPR	-0.515961	0.259490	-1.988369	0.0060
CCPS	0.006844	0.001313	5.211535	0.0000
CG	-0.007136	0.001233	-5.785610	0.0000
EXCH	0.471859	0.073952	6.380571	0.0000
INFR	0.583082	0.163994	3.555512	0.0020
C	-47.794412	7.391776	-6.465890	0.0000

Source: Researcher's Computation, 2019

The result of the long run relationship is reported in Table 6. The result shows that money supply has negative and significant effect on balance of payments as a percentage of gross domestic products in the long run with a coefficient of -0.009823. This implies that a unit increase in money supply will lead to 0.98% fall in balance of payments.

The result also shows that monetary policy rate has negative and significant effect on balance of payments as a percentage of gross domestic products with a coefficient of -0.515961 which implies that 1% increase in monetary policy rate will lead to 51% decrease in balance of payments in Nigeria.

Moreover, credit to core private sector is found to have positive and significant effect on balance of payments as a percentage of gross domestic product with a coefficient of 0.006844 which implies that a unit increase in credit to core private sector will lead to 67% increase in balance of payments in Nigeria.

Conversely, credit to government is found to have negative and significant effect on balance of payments as a percentage of gross domestic products which implies that a unit increase in credit to government will lead to 0.71% fall in balance of payments in Nigeria.

Exchange rate is also found to have positive and significant effect on balance of payments as a percentage of gross domestic product which implies that an increase in exchange rate will lead to 47% increase in balance of payments in Nigeria.

Finally, inflation rate is found to have positive and significant effect on balance of payments which implies that 1% increase in inflation will lead to 58% increase in balance of payments in Nigeria.

The T- Statistic

Table 7: The T- Statistic

Variables	Calculated T-statistic	T-statistic Critical value	P. Value	Decision
MS	-5.742941	2.060	0.0000	Reject H ₀
MPR	-1.988369	2.060	0.0060	Reject H ₀
CCPS	5.211535	2.060	0.0000	Reject H ₀
CG	-5.785610	2.060	0.0000	Reject H ₀
EXCH	6.380571	2.060	0.0000	Reject H ₀
INFR	3.555512	2.060	0.0020	Reject H ₀

Source: Researcher's Computation, 2019

Table 6 shows the t-statistics for the purpose of validating the research hypotheses stated in the research work. The table shows that the t-statistic value of all the independent variables are greater than the t-statistic critical value which leads to the rejection of the null hypothesis that money supply, monetary policy rate, credit to core sector and government, exchange rate and inflation rate all have no significant effect on balance of payment in Nigeria.

Residual Diagnostics Test

Table 8: Diagnostics Test Result

Tests	Observed value	P-value (Chi-square)
Breusch-Godfrey LM test for autocorrelation	5.418449	0.0666
Heteroskedasticity Test: Breusch-Pagan-Godfrey	15.23898	0.1236
Ramsey Reset Test	2.303010	0.0977

Source: Researcher's Computation, 2019

Table 8 presents the results of residuals diagnostics test for the model. The Breusch-Godfrey Lagrange Multiplier test (LM) revealed that the regression model is not serially correlated. The result of Breusch-Pagan-Godfrey test shows that there is no Heteroskedasticity in the regression model and that the model is Homoscedastic. Finally, it is revealed that there is no miss-specification in the model and the model is stable as shown by the Ramsey Reset Test.

Discussion of Findings

This study examines the effect of monetary policy on balance of payment in Nigeria. The result shows that money supply has negative and significant effect on balance of payments as a percentage of gross domestic product. The implication of this is that balance of payment is a monetary phenomenon in Nigeria and a contractionary policy by the monetary policy will lead to fall in economic activities and hence balance of payment is negatively affected. This study conforms to the empirical finding of Senyefia *et al* (2019), but negates that of Nwanosike, Uzochina, Ebenyi and Ishiwu (2017).

The result also shows that monetary policy rate has negative effect on balance of payments in Nigeria. The implication of this is that increase in monetary policy rate will make lending dearer to the real sector with resultant negative effect on trade performance and balance of payments. This result is in line with the empirical findings of Onuchuku *et al* (2018).

Moreover, credit to core private sector is found to have positive and significant effect on balance of payments. The implication of this is that increase in the flow of credit to important sector like agriculture and manufacturing will lead to increase productivity and thus promotes trade performance and balance of payments in the long run which agrees with the finding of Osinsanwo *et al* (2019).

Conversely, credit to government is found to have negative and significant effect on balance of payments in Nigeria this may be due to inability of government to improve the infrastructural facilities of the economy despite of the debt being obtained by government.

Exchange rate is also found to have positive and significant effect on balance of payments in Nigeria which suggested that the policy framework of ensuring stable exchange rate and provision of foreign exchange to real sector has the capacity to enhance balance of payments. However, this result does not agree with the finding of Osoro *et al* (2013), but conforms to that of Nwanosike *et al* (2017).

Conclusion

Thus, this study examined the impact of monetary policy on balance of payment in Nigeria. The implication of these findings is that monetary policy plays important role in reducing deficit in balance of payments. This can be achieved through various channels of monetary policy like credit to core private sector and government respectively. In line with findings, the study concluded that monetary policy influence balance of payments significantly both in the short-run and long-run.

Recommendations

Based on the findings of the study the following recommendations are made:

- i. Monetary authorities should embark on policy framework of using monetary policy judiciously to maintain internal stability and promote economic activities in order to influence payments positively in the long run.
- ii. Also, monetary policy rate should be set at the rate that would encourage lending and promote savings mobilization to ensure the flow of credit to core sector in order to improve productivity, promote domestic consumptions and enhance trade and balance of payment performance.
- iii. Government should ensure effective and judicious utilization of credit obtained through the provision of basic facilities that would support domestic production and simulate balance of payments.
- iv. Finally, policy that would promote exchange rate stability should be formulated. Exchange rate should be deregulated and foreign exchange should be provided to important sectors at lower rate by monetary authorities.

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