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Impact Factor: 4.428

The Nexus between Central Bank Monetary Policy and Inflation Control in Nigeria

Author's Details:
[(1)]**Adebayo Oluwaseun Rapheal-**University of Ibadan, Nigeria
Oluwaseunadebayo100@gmail.com
[(2)]**Olawunmi Samson Dare-**Ekiti State University, Nigeria
Olawunmisamson@gmail.com

Abstract
This research work examines the Nexus between central bank monetary policy and inflation control in Nigeria from the period of 1981 to 2018. The data for this study were sourced from the World Development Indicators and the Central Bank of Nigeria statistical bulletin from 1981 to 2018. The variables used were broad money supply, interest rate, inflation rate, exchange rate, and liquidity ratio. The study employed quantitative tools of data analysis and was based on standard econometrics principles. The estimation techniques used were the Augmented Dickey-Fuller unit root test, Johansen co-integration test, and Vector Error Correction Model (VECM). In addition, tests for heteroscedasticity and autocorrelation were conducted. The study finds that there is a negative relationship between exchange rate, liquidity ratio, and economic growth in Nigeria while the findings further reveal that there is a positive relationship between broad money supply, interest rate, and inflation in the country. The monetary authority should re-evaluate the effectiveness and potency of the monetary policy rate as a tool to curb inflation in Nigeria during and after the study period especially now that the occurrence of the COVID-19 pandemic has shown the world the need to exercise a lot of caution in formulating policies in Nigeria and globally

Keywords: *Monetary policy, Nigeria, Economic growth, Inflation, Interest rate, Money supply, Exchange rate, Liquidity ratio.*

1. INTRODUCTION

In any given society the quest for better living conditions has continued to play a significant role as such man endeavors to achieve acceptable goals by evolving various programs of action. These actions relate to the efficient allocation of resources since these resources are scarce relative to the demand for them. To satisfy these goals governments use various policies. Attainment of a very high level of economic development has been accepted as a major goal of national policy. Monetary policy is a measure that governments adopt to control, stimulate, structure, or restructure their economy, to attain macroeconomic objectives of the economy.

Monetary policy refers to the deliberate and conscious action of the monetary authority to regulate the cost, value, and supply of money within the economy; this is done to achieve the macroeconomic policy of full employment, price stability, stable and sustainable economic growth, equitable distribution of income, equilibrium in the balance of payment and low level of inflation. It is a calculated measure undertaken by the monetary authority (central bank) to stimulate and synchronize the macroeconomic variables to produce a macroeconomic desirable effect and avoid the macroeconomic undesirable effect.

Many researchers in the field of economics and social sciences have attempted to discuss the subject matter in relevant literature. According to Nwankwo (2000), monetary policy refers to any conscious action undertaken by the monetary authorities to change or regulate the availability, quantity, cost, or direction of credit in any economy, to attain stated economic objectives. The monetary policy implemented by the Central Bank of Nigeria has a greater multiplier on the economic and financial outcomes of the country. The economist widely believed that monetary policy can contribute to sustainable economic growth that can bring about economic development in the long run by maintaining price stability and lowering the interest rate with adequate control of inflation. Hence, government manages the economy through the combination of monetary policy and fiscal policy.

Monetary policy has thus been known to be a vital instrument that a country can deploy for the maintenance of domestic price and exchange rate stability as a critical condition for the achievement of sustainable economic growth and external viability [Adegbite & Alabi, 2013]. Monetary policy may be inflationary or deflationary depending upon the economic condition of the country. Contractionary policy is enforced to squeeze down the money supply to curb inflation and expansionary policy is to stimulate economic activity to combat unemployment in recession. The action is carried out by changing the money supply and/or interest rates to manage the quantity of money in the economy.

However, despite a series of efforts in policy terms put in place by the monetary authorities to regulate the economy and actions of the federal ministry of finance which controls the government fiscal policy, Nigeria's economic growth has been epileptic and inconsistent. This has been a result of a lack of policy harmonization by the monetary authorities and federal ministry of finance in the use of monetary policy instruments and fiscal policy instruments.

In common parlance, inflation is said to be a continuous rise in the price of goods and services, to give a robust and more encompassing definition of inflation economists believe that it is an economic situation in which the supply of goods and services is unable to keep pace with the expansion of demand for such goods. This situation will lead to a condition where much money will be chasing fewer goods thereby the law of demand will set in and the price of such goods will increase due to the competition in demand.

According to Masha (1995), inflation in Nigeria is driven by both the demand and supply sides. The demand-side pressures arise from charges in monetary aggregates while the supply-side pressure arises from silent structural characteristics of the economy. Scholars agree that increases in prices of goods and services, income levels, capital inflow, persistent deficit budgeting, and increased money supply among others are some of the causes of inflation in Nigeria.

Inflation has remained a chronic problem in Nigeria’s economy for decades. It has been apparent in Nigeria from the outset of her national life as it was propelled in the 1960s through the monetary policy adopted by the government to stimulate development after independence (Bayo 2005). According to Ojo (2000), inflation is not a new word in the economy and not rightly bad, but the case of Nigeria is severe and may destabilize the entire economic framework if it is not well-checked. Nigeria has experienced all manner of inflationary episodes, from creeping to moderate and from high to galloping (Olubusoye & Oyaromade, 2008).

The monetarist proclaims that inflation is purely a domestic monetary-driven phenomenon. That is, inflation arises when the central bank creates an excessive supply of money over its demand. As a result, abundant credit will be extended by the public sector pushing up the aggregate demand (Akinboade et al., 2004). With no parallel reaction from the production side, the increase in aggregate demand will force the prices to go up (Pindiriri, 2012).

Monetarists stress the adoption of restrictive monetary policy as a short-run strategy for dealing with inflation.

However, irrespective of the policy thrust of policymakers in controlling inflation, just a little has been achieved in curbing the threat of inflation in the Nigerian economy as inflation is the leading cause of economic impedance and social and political unrest in developing countries like Nigeria (Philip, Christoper and Pius, 2014). Furthermore, the paraphernalia of general price increases include a continuous fall in the purchasing power of money, inequality in the distribution of income, loss of social welfare due to price increases, and a fall in reserves and investments (Philip et al. 2014). Hence, Inflation causes excessive relative price variability and misallocation of resources.

2.0 REVIEW OF LITERATURE

2.1 Monetary Policy

Monetary policy refers to the measures designed to regulate the value, supply, and cost of money in an economy so that it will match the level of economic activities. In another exposition, it is described as an act of controlling the direction and movement of economic resources and credit facilities in pursuance of the price stability objective of the government and to accelerate economic growth, CBN (1992). Another definition of monetary policy suggests that it is a major economic stabilization weapon that involves measures, designed to regulate and control the volume, cost, availability, and direction of money and credit in an economy to achieve some specified macroeconomic policy objectives reviewed by (Sulaiman, 2006).

Monetary policy is maintained through actions such as modifying the interest rate, buying or selling government bonds, and changing the amount of money banks are required to keep in the vault (bank reserves). Broadly there are two types of monetary policy, expansionary and restrictive. Expansionary monetary policy is used to overcome recession or a deflationary gap, it increases the money supply to lower unemployment, boost private sector borrowing and consumer spending, and stimulate economic growth. It is often referred to as “easy monetary policy”. Restrictive monetary policy is used to overcome an inflationary gap, it slows the rate of growth in the money supply or outright decreases the money supply to control inflation; while sometimes necessary restrictive monetary policy can slow economic growth, increase unemployment, and depress borrowing and spending by consumers and businesses. The combination of these measures is designed to regulate the value, supply, and cost of money in an economy, in line with economic activities. Excess supply of money will result in an excess demand for goods and services, prices will rise and balance of payment will deteriorate. The challenges of monetary policy effectiveness rest wholly on monetary authorities. The performance of the monetary has greatly improved in recent times, with inflation at moderate levels accompanied by the high growth of domestic output.

They are broadly divided into two categories, namely: direct instruments and indirect

Instruments

i. Quantitative or indirect: Indirect Instruments of monetary policy involve controlling the price or quantity of base money. Indirect monetary policy instruments include; open market operations (OMO), monetary policy rate (MPR), reserve requirements, discount window operations, and repurchase agreements. This is the current trend in monetary policy formulation and implementation because it provides a liberalized environment necessary for the efficient allocation of savings and credit in the economy.
ii. Selective or direct: Direct or selective instruments of monetary policy are directives given by the central bank to control the quantity and prices of financial assets/liabilities of deposit money banks (DMBs) and discount houses. These include interest rate fixing and credit ceilings. These may prove very useful in controlling price, the quantity of deposit or credit, and the direction of credit particularly in periods of

temporary shocks. They may also be most effective and practicable in underdeveloped financial markets and in jurisdictions where the central bank lacks adequate techniques of indirect control. The downsides of direct controls are the absence of competition, inefficient use of resources, and distortion of markets.

The instruments are bank rate policy, open market operations, change in reserve ratios, selective credit controls, etc.

2.1.1 Inflation rate

Inflation refers to changes in general price levels. Inflation is usually something that economists take very seriously and inflation control is often the primary goal to attain (Adebayo, 2016). Rising inflation usually hurts stock returns. When inflation increases, prices get higher, and this implies that consumers no longer can afford to buy goods and services to the same extent as they could before. The effects of inflation on the economy are diverse and can be both positive and negative. The negative effects are, however, most pronounced and comprise a decrease in the real value of money as well as other monetary variables over time. As a result, uncertainty over future inflation rates may discourage investment and savings, and if inflation levels rise quickly, there may be shortages of goods as consumers begin to hoard out of anxiety that prices may increase in the future.

2.1.2 Interest rate

Interest rate refers to the rate at which lenders are willing to extend credit to borrowers. Interest rates as set by the Central Bank of Nigeria (CBN) have a direct relationship with the economy as a whole and hence the stock market. When the economy is stagnating and not growing as desired by the CBN and monetary authorities, the CBN has the option to use expansionary monetary policy. It implies that the CBN increases the supply of money and hence lowers the interest rates to, for instance, raise inflation. The expected outcome is that money will become cheaper and thus create demand for consumer goods and investors to start investing and spending, thereby stimulating the economy. If the CBN, on the other hand, wants to slow down economic activity, it can reduce the money supply in the economy and increase the bank rate (Jahan, 2012).

2.2 Review of empirical literature

Okotori (2019) examined “the dynamics of monetary policy and inflation in Nigeria”. Monthly data was used from 2009-2017. Augmented Dickey-Fuller (ADF) unit root test, Johansen cointegration test, and Error Correction Model (ECM) were employed. The findings showed all variables were stationary in the first order except money supply and exchange rate which were stationary in the second order. Johansen's test showed that there is a long-run equilibrium between the variables and concluded that money supply, exchange rate, monetary policy rate, treasury bills rate, reserve requirement, and liquidity ratio have a significant impact on the inflation rate. The study recommended that the CBN should stay focused on its current exchange rate policy and make unobstructed use of monetary policy tools to maintain the inflation threshold in Nigeria.

Adodo, Akindutire & Ogunyemi (2018) investigated the “effectiveness of monetary policy and control of inflation in Nigeria” using annual data from 1985 to 2016. Augmented Dickey-Fuller (ADF), Vector Error Correction Model (VECM), and Johansen co-integration test were employed. The outcome of the unit root test at 1st difference discovered money supply, exchange rate, and interest rate were stationary while the outcome of the Johansen co-integration test revealed that there is a long-run equilibrium relationship among the variables. The outcome of the VECM revealed money supply and interest rates are statistically significant in explaining the variation in the Inflation rate while the exchange rate is insignificant in explaining the variation in the Inflation rate. It was settled that monetary policy is partially effective in controlling inflation in Nigeria and

suggested that the monetary authority should adopt adequate indirect instruments for the aim of controlling the volume of money in circulation for efficient and effective control of the inflation rate in Nigeria. Interest rates should be completely favorable to make a strong monetary policy instrument for regulating price levels and economic activities. The money market and its instruments should be sufficiently developed to make it an effective control mechanism for inflation in Nigeria. A vigorous and effective exchange rate regime should be deployed by regulatory authorities to ensure the stability of exchange rate capable of controlling inflationary pressure in the economy

Okwori & Abu, (2017) investigated "the efficacy of monetary policy in curbing inflation in Nigeria". Annual time series data was used between 1986-2015. Vector Error Correction Model was adopted. The study discovered that monetary policy is significant in curbing the inflation threshold in Nigeria, though the effect of monetary policy variables is weak in controlling inflation as a result of the large proportion of the informal sector which results in a high currency outside bank economy that is majorly not affected by monetary policy tools. The Monetary Policy Rate (MPR) is not statistically significant which has also affected its transmission mechanism to commercial banks' interest rates. The study recommended that the CBN should narrow the asymmetric corridor around the MPR to check commercial banks' excess reserves.

Required cash ratio and liquidity ratios should be adjusted regularly to curtail banks' excess reserves. The CBN should embark on enlightenment campaigns in financial literacy to buttress the popularity of monetary policy tools while commercial banks should expand their coverage to reduce the number of unbanked and underbanked persons in the economy to reduce the dominance of the informal sector.

Nwosa and Oseni (2012) examined "monetary policy, exchange rate, and inflation rate in Nigeria" using annual time series data spanning from 1986-2010. The paper adopted a Cointegration and Multi-Variate Vector Error Correction Model techniques. The result revealed that there exists at least a co-integrating vector among the variables and the VECM estimate showed that a unidirectional causation exists from exchange rate and inflation rate to short-term interest while bidirectional causality exists from inflation rate to exchange rate. The exchange rate and inflation rate granger caused a change in monetary policy stance. The study recommended appropriate regulation and management of both the exchange rate and inflation rate.

Chinaemerem and Akujuobi (2012) assessed "Inflation Targeting and Monetary Policy Instruments in Nigeria and Ghana". Three Vector Auto-Regressive (VAR) Models were built. The VAR two-variable model including money supply and prices shows that inflation is an inertial phenomenon in Nigeria and Ghana. It also shows that money innovations are not strong and statistically important in determining prices when compared with price shocks themselves. In the short run, innovations in prices are mostly explained by their shocks, and the monetary policy instruments have little or no effect on prices. The study concluded that the policy linkage between inflation and monetary policy instruments in Nigeria and Ghana is not strong in the short run. The study recommended amongst others that the monetary authorities must reduce the influence of inflationary expectations by pursuing more transparent policies. This should be done by frequently informing the public about the changes in monetary policy and explaining the reasons for those changes.

Odior (2012) assessed "Inflation Targeting in an Emerging Market: VAR and Impulse Response Function (IRF) Approach in Nigeria" using annual data from 1970 to 2010. The VAR and IRF techniques were used to estimate the consumer price index, broad money supply, exchange rate, gross domestic product, and government expenditure. The results showed that money supply and past levels of inflation have the potential to cause significant changes in inflation in Nigeria and therefore recommended that more policy attention be given to broad money supply, exchange rate, gross domestic product, consumer price index, and government expenditure to have stable inflation rate in Nigeria.

3.0 Methodology

3.1 Model Specification

= (, , ,)

The model can be written explicitly as:

Ln = + + + + + ...(1)

Where:

INF= Inflation Rate

INT= Interest Rate

MS= Money Supply

= Exchange Rate

=Liquidity Ratio

= Stochastic error term **Where:**

β_0, - β_4 = parameters estimate in the model ε = Stochastic error term

3.2 Apriori Expectation

Ln _____ < 0

Ln _____ > 0

Ln _____ > 0

Ln _____ > 0

Ln _____ < 0

4.0 RESULT AND DISCUSSION

4.1 Descriptive Statistics

Table 4.1 Descriptive Statistics on the variables used for estimation

	LNEXR	LNINF	LNINT	LNLR	LNMS
Mean	3.400138	2.685637	2.837162	3.826277	27.36507
Median	4.573729	2.542763	2.866145	3.833503	27.47022
Maximum	5.722899	4.288204	3.454738	4.175925	31.04491
Minimum	-0.481739	1.684176	2.187922	3.370738	23.44712
Std. Dev.	1.958408	0.700898	0.295047	0.210625	2.597031
Skewness	-0.786082	0.835631	-0.694328	-0.230178	-0.081020
Kurtosis	2.286742	2.781174	3.224386	2.609097	1.606760
Jarque-Bera	4.719028	4.498252	3.132969	0.577493	3.115010

Probability	0.094466	0.105491	0.208778	0.749202	0.210661
Sum	129.2052	102.0542	107.8121	145.3985	1039.873
Sum Sq. Dev.	141.9083	18.17654	3.220947	1.641430	249.5490
Observations	38	38	38	38	38

Source: Author's computation 2021

Table 4.1 shows the summary statistics of the data employed in the model. The value of the mean showed that the money supply has the highest mean among all the variables, which is then followed by the liquidity ratio, Exchange Rate, Interest rate, and Inflation rate in Nigeria. Furthermore, the minimum and maximum change ranges from positive to positive in all cases for all the variables except for the exchange rate. The implication of this is that the variables are increasing over time. The table also, revealed that the price of money supply has the highest standard deviation of 1.958408. This finding implies that money supply is the most volatile variable used in the study.

The table, based on the values of skewness showed that all the variables except inflation are negatively skewed i.e. are skewed to the right. Kurtosis showed the degree of peakedness of each distribution. It shows that all the variables are platykuritc except interest rate because they have a value that is lower than 3.

4.2 Unit Root

Table 4.2: Augmented Dickey-Fuller unit root test result

Variables	Le el		First difference		I(d)
	Intercept and trend	Prob.	Intercept and trend	Prob.	
LNEXR	-1.307798	0.8704	-5.475474	0.0004***	I(1)
LNINF	-4.436434	0.0859	-6.784463	0.0000***	I(1)
LNINT	-2.000829	0.5822	-4.635887	0.0079***	I(1)
LNLR	-3.239050	0.0923	-6.560856	0.0000***	I(1)
LNMS	-2.304898	0.4208	-4.537950	0.0207**	I(1)

Source: Author's computation 2021
Note * (**) (***) denotes null hypothesis at 10%, 5% and 1% respectively

Table 4.2 shows the Augmented Dickey-Fuller unit root test for liquidity ratio, Exchange Rate, Money supply, Interest rate, and Inflation rate. The decision of the Augmented Dickey-Fuller unit root test was based on a 5% significant level (0.05). When the probability of the is greater than 5% (0.05) we accept the null hypothesis that the variables have unit roots. However, if the probability value is less than 5% (0.05) we accept the alternative hypothesis that the variables are stationary. We can see from the table that all the variables are stationary at first difference because the probability values are less than 5% (0.05). In other words, the variables have a unit root in them and are stationary at first difference. Because the probability values are stationary at the first difference, we proceed to check if the variables can co-integrate in the long run (have a long-run relationship). The Johansen Co-integration test is used to show if there is a long-run relationship among the variables.

4.3: Johansen Co-Integration Test Result

Table 4.3: Johansen Co-Integration test

Hypothesized No of (CE)	Eigenvalue	Trace Statistic	5% Critical value	Probability value.*
None *	0.589155	75.12489	69.81889	0.0177
At most 1	0.480803	43.99102	47.85613	0.1102
At most 2	0.238959	21.04948	29.79707	0.3546
At most 3	0.173085	11.49211	15.49471	0.1830
At most 4 *	0.129156	4.840254	3.841466	0.0278

Trace test indicates 1 co-integrating eqn(s) at the 0.05 level

*** denotes rejection of the hypothesis at the 0.05 level**

****MacKinnon-Haug-Michelis (1999) p-values**

Table 4.4 depicts the Johansen system co-integration test results. The result indicates that there exist three co-integrating equations because the trace statistics (43.99102) is lower than the Critical value (47.85613) at 5%. It can be revealed that the null hypothesis of no co-integration is rejected at a 5% level of significance. Therefore, the variables are co-integrated in the long run (have a long-run relationship). In essence, there is evidence of co-integration among the variables. After determining if the variables have a long-run association in the long run, we proceed to estimate the long-run equation and short-run equation.

4.4 Long-Run Estimates

Table 4.4: Estimated long-run parameters

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNINT	-1.861964	0.730277	-2.549669	0.0156
LNEXR	-0.411978	0.292782	-1.407116	0.1687
LNLR	-0.507141	0.505523	-1.003201	0.3231
LNMS	0.148654	0.186008	0.799182	0.4299
C	-3.323755	6.752870	-0.492199	0.6258
R-squared Adjusted R-squared S.E. of regression Sum squared resid Log-likelihood F-statistic Prob(F-statistic)		0.733781 0.653027 0.605769 12.10955 -32.19142 4.133320 0.008000	Mean dependent var S.D. dependent var Akaike info criterion Schwarz criterion Hannan-Quinn criteria.	2.685637 0.700898 1.957443 2.172915 2.034106

Source: Authors' computation

*** (**) (***) denotes significances at 10%, 5% and 1%**

The table shows the estimated long-run relationship liquidity ratio, Exchange Rate, Money supply, Interest rate, and Inflation rate in Nigeria. It's obvious from Table 4.4. Interest rate was found to have a negative and significant relationship with interest rate in the country. This means when interest increases in the long run, the level of inflation reduces. When interest rate increases, it reduces the chances of getting loanable funds and ultimately reduces the money in circulation. When this happens, the money in circulation reduces and this reduces the money which may be chasing fewer goods thereby reducing the level of inflation in the country.

Furthermore, exchange rate also has a negative relationship with the level of inflation in the short run. Although based on the probability value it is not significant, and it also goes against the general belief of a positive relationship when the exchange rate increases the level of inflation in the country. In the same vein, the liquidity ratio was found to hurt the inflation in the country. When the liquidity ratio increases, the inflation level reduces in the country. The liquidity ratio allows for a reduction in the money in circulation, thereby reducing the demand-pull inflation in the country. it was also discovered that money supply has a positive effect on the level of inflation in the country. When the money supply increases, the inflation level in the country increases. This is a result of the fact that more money may be cashing fewer goods into the economy.

Finally, the independent variables jointly explained about 73% of changes in economic growth. The reported f-statistics and probability revealed that the coefficient of determination is significant in itself, thus validating the goodness of fit of the model.

4.5 Short-Run Estimates and Error Correction Model

Table 4.5: Estimated short-run parameter

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNINT)	1.130577	0.751099	1.505231	0.1421
D(LNEXR)	-0.403819	0.361402	-1.117368	0.2722
D(LNLR)	-0.300136	0.431021	-0.696337	0.4912
D(LNMS)	0.178698	0.435266	0.410548	0.6841
ECM(-1)	-0.743030	0.174515	-4.257687	0.0002

Source: Authors' computation

*** (**) (***) denotes significance at 10%, 5% and 1%**

In the short run estimates of interest rate were found to have a negative relationship with interest rate. This is however different from the long-run estimate and it also contradicts the Apriori expectation of a negative relationship between inflation and interest rate in the short run. The exchange rate and liquidity ratio just like in the long run was found to hurt the inflation level. This indicates that when the exchange rate and liquidity ratio increase in the short run, the inflation rate. The sign of the error correction term is correct and statistically significant at a 95% confidence level; this signifies that the estimated model truly converged, and the estimated parameters are unique. The equilibrium correction term (ECM) shows that about 72% of disequilibrium in economic growth due to a one-time temporary shock to the Nigerian economy is corrected in a year **4.6 Post Estimation Tests**

Table 4.6.1 Autocorrelation Test

Statistics	Estimates	Probability
F-statistic	0.365596	0.6991
Obs*R-squared	0.989702	0.6097

Source: Author's computation

Table 4.6.1 presents the result of the serial correlation test conducted to ascertain whether there is a significant correlation between successive values of the error term of the estimated model. The null hypothesis tested is that there is no serial autocorrelation between successive values of the error term. The test presented two statistics that are asymptotically equivalent for evaluating the presence of serial autocorrelation. Specifically, table 7 reported statistics values of 0.365596 and 0.989702 for F-statistics and obs*R-square alongside probability values of 0.6991and 0.6097, thus the probability values revealed that there is not enough evidence to reject the null hypothesis that there is no serial autocorrelation between the residual terms. That is, there is no serial autocorrelation between the residual terms.

Table 4.6.2 Heteroskedasticity White Test

Statistics	Estimates	Probability
F-statistic	3.322900	0.0195
Obs*R-squared	16.64924	0.0545
Scaled explained SS	27.09382	0.0013

Source: Author's computation

Table 4.7.2 presents the result of the heteroskedasticity test conducted to ascertain whether the variance of the error term (u) is the same for all values of the explanatory variables. The null hypothesis tested is that there is no heteroskedasticity between successive variance of the error term. From Table 4.7.2, the two statistics reject the null hypothesis of heteroskedasticity. Thus, the variance of the error term is homoscedastic.

4.7 Discussions of FindiNGS

This research investigates the impact of monetary policy on inflation in Nigeria. Secondary data was used. The data was obtained from the Central Bank Statistical Bulletin 2020. The study harnesses E-views 9 to carry out the econometric analysis. The study presents a descriptive analysis of variables, regression analysis, and important post-estimation tests. The descriptive statistics found the variables used in the study to be well-behaved. The descriptive statistics of the data were also performed to understand how the data behaves. If the data are normally distributed or subjected to fluctuation.

To guide the choice of estimation technique to use and also prevent spurious regression, the unit root test was also performed using the Augmented Dickey-Fuller unit root test. The result showed that the variables were integrated in the same order i.e. I(1). Because the variables were integrated in the same order the appropriate technique to check the long-run relationship is the Johansen Co-integration test.

The Johansen Co-integration test result revealed that there exists one co-integrating equation Meaning there is a long-run relationship. Hence, we proceed to estimate the long-run and short-run equations in the model. The estimation shows that in the long run and short run, both liquidity and exchange rate had a negative relationship with inflation. On the other interest rate and money, supply was seen to have a positive effect on inflation in Nigeria... The ECM shows that about 0.72 discrepancies among the variables in the equation in each period are eliminated. This also revealed that 0.72 or 72 percent level of adjustment is needed each year among the variables to address the short-run instability in the series. This adjustment will be completed in a year.

Finally, to ensure that the equations estimated are free from problems such as autocorrelation, and heteroskedasticity and that the model can be used for forecasting different post estimates tests were carried out. All the post-estimation tests were found to be insignificant given the null hypothesis. The model is normal and stable, devoid of serial autocorrelation and heteroskedasticity. This implies that the residue term follows a normal distribution, there is no serial autocorrelation, the variance of the error term is homoscedastic and the model as a whole is stable.

5.0 CONCLUSION AND RECOMMENDATIONS

From the long-run estimates, interest rate and money supply had a positive relationship with inflation in the country. While the effect of liquidity ratio and exchange rate hurt inflation. Hence we can conclude that the exchange rate serves as a means of controlling inflation in the country. The study however recommended that The monetary authority should re-evaluate the effectiveness and potency of monetary policy rate as a tool to curb inflation in Nigeria during and after the study period especially now that the occurrence of the COVID-19 pandemic has shown the world the need to exercise a lot of caution in formulating policies in Nigeria and globally.

The current study recommends that for the state to realize a stable rate of inflation the central bank should focus on the Reserve ratio requirement and develop best practices towards its implementation to have sustainable inflation levels. Taking into consideration the importance of a sustainable inflation level, it is imperative that the monetary policy committee that makes the decision use the Reserve ratio requirement which is the best technique and tool available to them to ensure that they make informed decisions. The reserve ratio requirement is not flawless and should be applied with the necessary understanding and discretion.

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