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# Effects of Monetary Policy Instruments on Price Stability in Nigeria (2001-2018)

[1]Nwambeke, G. C., [2]Oko, Roseline. A., [3]Aleke, Stephen Friday, [4]Nwakaego Promise Edeogu; and [5]Onyedikachi, Chikezie O.
[1]*Department of Banking and Finance, Faculty of Management Sciences, Ebonyi State University, Abakaliki.*
[2-5]*Department of Banking and Finance, Faculty of Management Sciences, Alex Ekwueme Federal University Ndufu Alike Ikwo, Ebonyi State.*

**ABSTRACT**
This study investigated the effectsof monetary policy instruments on price stability in Nigeria. The specific objectives of the study were to examine the effect of monetary policy rate, open market operation and cash reserve requirement on price stability in Nigeria.The study adopted Expost facto research design while data generated for the period 2001-2018 from Central Bank of Nigeria Statistical Bulletin were analyzed using Ordinary Least Square Regression Model with the aid of Statistical Package for Social Sciences (SPSS Version 20). The study found that monetary policy rate has negative and significant effect on price stability in Nigeria while open market operation and cash reserve ratio have positive and significant effect on price stability in Nigeria. The implication of the finding is that a unit increase in monetary policy rate will lead to decrease in price stability while a unit increase in open market operation and cash reserve ratio will lead to increase in price stability in Nigeria. The study conclude that monetary policy instruments significantly affect price stability in Nigeria.The study recommended thatMonetary Policy Committee of the Central Bank of Nigeria should continue with the periodic adjustment of monetary policy rate decisions made on behalf of the government with a view to achieving price stability and that the Central Bank of Nigeria should increase the use of Open Market Operation as monetary policy instrument to achieve price stability in the economy.
**KEY WORDS:** Monetary policy rate, Open market operation, Cash reserve requirement, Price stability

## I. INTRODUCTION

### 1.1 Background of the Study

One of the major objectives of the Central Bank of Nigeria (CBN) is to maintain monetary and price stability. The CBN is empowered to carry out this monetary policy responsibility through the provisions of the Banks and Other Financial Institutions Decree (BOFID) No. 25, 1991 (as amended) and the CBN Decree No. 24, 1991 (as amended).Monetary policy refers to the combination of measures designed to regulate the value, supply and cost of money in an economy in consonance with the level of economic activities (Folawewo and Osinubi, 2008). Monetary policy can also be described as the art of controlling the direction and movement of monetary and credit facilities in pursuance of stable price and economic growth in the economy (CBN, 1992). Monetary policy entails the discretionary (expansionary or contractionary) use of money market instruments by theCentral Bank or the monetary authority of a country to control the supply of money, availability of money and cost of money with the aim of achieving price stability which will lead to economic growth. Expansionary monetary policy is pursued by the CBN if it desires to regulate price stability through increase in money supply. On the other hand, contractionary monetary policy is pursued if the CBN desires to regulate price stability through decrease in money supply.

In Nigeria the CBN employs money market instruments such as monetary policy rate (MPR), cash reserve ratio (CRR) and open market operations (OMO) to achieve the objectives of monetary policy (Ajayi, 2012).Monetary policy is concernedwith the measures taken to regulate the supply of money, the cost and availability of credit in the economy(Ahuja, 2011).One of the primary objective of monetary policy is to achieve pricestability.

Price stability refers to the general level of prices in the economy. It describes the situation where prices of goods and services in an economy change slowly, or do not change at all. Price stability is essential to achieving high level of economic activity and employment. A positive change in price level can be described as inflation whereas decrease in prices is referred to as deflation. Inflation and deflation are key monetary/financial occurrences that have costs on the economy of any nation across the globe. Inflation rate refers to the general increase in prices of goods and services over a period of time in a given territory. Price stability which refers to

changes in prices of goods and services is measured using Consumer Price Index (Sulaiman, 2012). The Consumer Price Index (CPI) is the official price index currently used in Nigeria to measure price changes. According to the Nigerian Bureau of Statistics "the CPImeasures the average change over time in prices of goods and services consumed by people for day-to-day living. When prices are unstable, such changes may eventually lead to reduction in individual purchasing power and also decline in the value of money which have a number of serious consequences on the economy.

**1.2 Statement of the Problem**

In Nigeria, different types of monetary policy have been adopted and applied. Sometimes, tight monetary policy has been adopted and at other times loose monetary policy instrument has been adopted mainly to stabilize prices. Tight monetary policy is undertaken by the CBN by raising the rates of the monetary policy instruments whereas loose monetary policy is pursued by the CBN through reduction in the rates of the monetary policy instruments. Unfortunately, irrespective of these different forms of monetary policies adopted and implemented over the years; priceshas remained highly unstable in Nigeria.

Given the importance of price stability in an economy like keeping the value of money stable, eliminating cyclical fluctuations, reducing inequalities of income and wealth, encouraging economic growth and promoting economic welfare;it has become worrisome that achieving relative stability in prices of goods and services in Nigeria appears not to have been achieved by the monetary authorities.

Even though, the CBNhave strived to achieve price stability using monetary policy instruments (monetary policy rate, open market operation and cash reserve ratio), high inflation rate still persists.The CBN through the Monetary Policy Committee (MPC) manipulates the monetary policy instruments to achieve the desired policy objective of the government which is price stability.However, it seems that the CBN has not achieved the desired result since the monetary policy has not been able to curb price instability in Nigeria. This study therefore, investigates the effectsof monetary policy instruments on price stability in Nigeria.

**1.3 Objectives of the Study**

The broad objective of the study is to investigate the effectsof monetary policy instruments on price stability in Nigeria.

The specific objectives of the study are as follows:

i. To determine the effect does monetary policy rate on price stability in Nigeria.
ii. To ascertain the effect of open market operation on price stability in Nigeria.
iii. To examine the effect of cash reserve ratio on price stability in Nigeria.

**1.4 Research Questions**

i. What effect does monetary policy rate has on price stability in Nigeria?
ii. What effect does open market operation has on price stability in Nigeria?
iii. What effect does cash reserve ratio has on price stability in Nigeria?

**1.5 Research Hypotheses**

The following hypotheses were formulated in null forms to guide the study.

$HO_1$: Monetary policy rate has no significant effect on price stability in Nigeria.

$HO_2$: Open market operation has no significant effect on price stability in Nigeria.

$HO_3$: Cash reserve ratio has no significant effect on price stability in Nigeria.

## II. REVIEW OF RELELATED LITEATURE

**2.1 Conceptual Review**

**2.1.1 Monetary Policy in Nigeria**

Monetary policy refers to the combination of discretionary measures put in place to regulate and control money supply in an economy by monetary authorities, with the aim of achieving desired macroeconomic goals. Nzotta and Okereke (2009) defined monetary policy as any conscious action undertaken by the monetary authorities to regulate the availability, quantity, cost or direction of credit in any economy, in order to achieve stated economic objective. The objectives of monetary policy include the achievement of the following: price stability; accelerated economic growth; exchange rate stability; balance of payment equilibrium and high level of employment (CBN, 2011). The monetary policy instruments used by CBN to achieve these objectives are classified into direct control mechanism (qualitative mechanism or portfolio constraint technique) and the indirect control mechanism (quantitative mechanism or market intervention mechanism). The direct control measure were used in Nigeria up to 1994 before it was abolished and they include: selective credit controls, special deposits, moral suasion, administered interest rate regimeand other measures (Babatunde and Kehinde, 2016). The indirect monetary policy instruments used by CBN to influence money supply are Open Market

Operation (OMO), Monetary Policy Rate (MPR), Reserve Requirements (Cash Reserve Ratio and Liquidity Ratio).

### 2.1.2 Monetary Policy Rate in Nigeria

Central Banks use monetary policy rate (MPR) previously known asminimum rediscount rate (MRR) or panel rate, to lend money to financially sound Deposit Money Banks (DMBs)at a most favourable rate. CBN (2011) defined monetary policy rate as the rate at which the CBN lend money to DMBs in Nigeria. in other words, MPR refers to the interest charged by CBN to discount short-term bills such as treasury bills and certificate of deposit for DMBs. The MRR/MPR serve as the nominal anchor ratethat gives direction to the money market, thus affecting the supply ofmoney and monetary aggregate and full employment as well as thegross domestic product.

### 2.1.3 Open Market Operations in Nigeria

Open market operation (OMO) was formally introduced in Nigeria in 30th June, 1993 as a monetary policy tool. The CBN applies OMO by using her discretion to sale or purchase of securities particularly treasury bills and other eligible securitiesin the open market with a view to influencing the availability and costs of liquidity in the system. OMOis the most vital and flexible instrument ofmonetary policy in Nigeria. Central banks can increase the amount of money in theeconomy by purchasing securities and may also sell securities to reduceliquidity in the system. The instruments that are frequently used for thepurpose of expansionary or contractionary monetary policy includecentral bank bills, treasury bills, certificate of deposit and commercial papers.

### 2.1.4 Cash Reserve Ratio in Nigeria

This is a situation where the central bank mayrequire the DMBs to hold a fraction of their deposit liabilities as vault cash,and or deposits with it. This vault cash when held subject to prescribed ratio set by CBN affects the volume of disposable funds available for DMBs to extend to her customers. The implication is that this cash reserve ratio limits the amount of loansthat banks can extend to the domestic economy and thus limit the supplyof money.

### 2.1.6 Price Stability in Nigeria

Price stability is a state of low and stable inflation which has no substantial effect on people's economic condition.Price stability is the general level of prices in the economy. It is a situation where prices in an economy change slowly, or do not change at all (Nwamuo, 2018). It also connotes avoiding a prolonged inflation or deflation. Price stability helps in achieving high level of economic activity and employment. It means that prices on average are stable over time. The positive change in price level can be referred to as inflation. Inflation is the rate at which the general price of goods and services is rising over a period of time, which may eventually lead to reduction in individual purchasing power and also decline in the value of money. Inflation and deflation are key monetary/financial occurrences that have costs on the economy of any nation across the globe (Akarara andAzebi, 2018).

Price stability was proxied with Consumer Price Index (CPI). According to the Nigerian Bureau of Statistics "the CPI measures the average change over time in prices of goods and services consumed by people for day-to-day living". To do this, samples of goods and services that are representative of the Nigerian economy are put together and referred to as a market basket, and the price of the basket are computed and compared over time. The CPI is a combination of statistical techniques and economic theory to analyze sample data from field/survey, in producing weighted measure of the average change in price in the economy. All the selected items are captured using weighting method to see their relevance in the entire index. To compute changes in price, informants move across the country to obtain data from the field, which are then aggregated for the computation of the CPI.

## 2.2 Empirical Review

Nwamuo(2018) investigated the impact of monetary policy on price stability in Nigeria from 1981 – 2015. Specifically, the study examined the impact of money supply, liquidity ratio and cash reserve ratio on price stability in Nigeria. Multiple regression model was estimated using ordinary least squaremethod and the result revealed that money supply and liquidity ratio have significant impact on pricestability in Nigeria. The implication of the finding is that money supply and liquidity ratio are the monetary policy instruments that significantly influence price stability in Nigeria.The study recommended that the Central Bank of Nigeria should adoptappropriate monetary policy by reducing money supply and increasing the liquidity ratio in other to reduce price instability in Nigeria.

AkararaandAzebi (2018) investigated the effect of selected monetary policy tools on the control of inflation in Nigeria using monthly data generated for the period January, 2009 to December, 2016.The study examined the effect of treasury bill rate, exchange rate, money supply and monetary policy rate on inflation in Nigeria using Error Correction Model (ECM). It was found thattreasury bill rate is an effective tool in controlling inflation both in the short and long run, exchange rate and money supply are very effective monetary policy tools in the control of inflation in the short run whilemonetary policy rate is effective in the long run. It was recommended that the monetary authority in Nigeria should use exchange rate and money supply to control inflationon a short-term basis, treasury bill rate should be used to control the rate of inflation both in the short and long-run while monetary policy rate should be used to control inflation on long-term basis.

Babatunde and Kehinde (2016) examined the impact of monetary policy on price stability in Nigeria from 1970 - 2014. The study specifically investigated the impact of interest rate and exchange rateon price stability (inflation rate) in Nigeria. The data obtained were analyzed using ordinary least square regression (OLS) model. The study found that exchange rate and money supply have significant impact on price stability in Nigeria both in the short-run and long-run. It was concluded that reducing money supply and interest rate can check inflation rate in Nigeria. The study recommended that policy reforms that will ensure that interest rate are determined by the forces of demand and supply should be pursued by the government.

Ngerebo (2016) examined the effectiveness of monetary policy in controlling inflation in Nigeria from 1985 - 2012. The investigated the relationship between monetary policy rate, prime lending rate, maximum lending rate, treasury bill rate, growth of narrow money supply, net domestic credit, growth of broad money supply, net credit to government and credit to private sector on inflation rate. Data generated were analyzed using ordinary least square estimation techniques. The study found that monetary policy rate, net domestic credit and treasury bill rate have no statistically significant effect on inflation in Nigeria while growth of broad money supply, credit to private sector, growth of narrow money supply, net credit to government have statistically significant effect on inflation in Nigeria. It was concluded that some monetary policy instruments in Nigeria are effective in managing inflation while others are not. The study recommended that monetary authorities should evolve and sustain monetary policies that will reduce inflation rate in Nigeria.

Sulaiman (2015) investigated the price stability effect of monetary policy in Nigerian economy over the period 1981-2012.Specifically, the study examined the effect of treasury bill rate, interest rate, exchange rate and liquidity ratio on price stability in Nigeria. Error Correction Mechanism(ECM) model was employed after conducting a number of diagnosis test were carried out.The study found that treasurybill rate and interest rate have significant effect on price stability in Nigeria while exchange rate and liquidity ratio have no significant effect on price stability in Nigeria. The implication of the finding is that monetary policy has not played prominent role in ensuring price stability in Nigeria. It was recommended that restricted monetary policies should be put in place so as to moderate prices to a reasonable low level and the interest rate policies should be implemented in a way that will strengthen thepurchasing power of the Naira.

Oseni (2013) studied the impact of monetary policy and foreign exchange policy on price stability in Nigeria over the period 1970 – 2009. The study examined the impact of monetary policy rate and foreign exchange rate on consumer price index. Ex-post facto research design was adopted while ordinary least square technique was used to estimate the multiple regression model. The study found that monetary policy rate and foreign exchange rate have significant impact on consumer price index. It was concluded that foreign exchange rate was more effective than monetary policy rate in achieving price stability in Nigeria.The study recommended that the Central Bank of Nigeria should evolve appropriate monetary policies that will enhance price stability.

Onyeiwu (2012) examined monetary policy shock on Nigerian economy. Using OLS method to analyze data between 1981 and 2008, the result showed that monetary policy exerts a positive impact on GDP growth and balance of payments but a negative impact on the rate of inflation. The findings suggest that monetary policy has affected economic growth positively but could not ensure price stability.

## 2.3 Theoretical Framework

### 2.3.1 Quantity Theory of Money

The study adopted the quantity theory of money propounded by (Friedman, 1956)**).** Quantity theory of money states that price level is determined by the quantity of money available. This theory is mathematically expressed as follows:

$MV = PY$ ... 1

Where;

M=Nominal quantity of money supplied.

V = Velocity of money.

P =Price level.

Y=Real output.

Quantity theory of money assumes that velocity of money (V) and real output (Y) are constant since physical capital, human capital, labour and technology determine the level of output. With this assumption; quantity theory of money can be expressed as:

M =P … 2

This suggests that both quantity of money supplied (M) and price level (P)move in the same direction. This implies that price level (CPI) rises as a result of an increase in the quantity of money supplied. It equally implies that a fall in the quantity of money supplied reduces price levels. This theory is relevant for the study because it has demonstrated how changes in money supply are transmitted into price movements.

## III. METHODOLOGY

### 3.1 Research Design

This study adopted the *Ex-Post Facto* research design. The justification for adopting *Ex-Post Facto* research design is that it is a realistic approach to solving business and social science problems using records of past events to predict future events (Agbadudu, 2002).

### 3.2 Sources of Data

Data were collected from CBN Statistical Bulletin for the period 2001-2018.

### 3.3 Description of Model Variables

Price Stability (Dependent variable):Price stability is a state of low and stable inflation which has no substantial effect on people's economic condition.It is a situation where prices in an economy change slowly, or do not change at all. Price stability was proxied as Consumer Price Index (CPI). TheCPI is the official price index currently used in Nigeria to measure the average change over time in prices of goods and services consumed by people for day-to-day living.

Monetary Policy Rate (MPR) (Independent variable):MPR is the interest rate at which the CBN lend money to financially sound Deposit Money Banks (DMBs). The MPR gives direction to the money market and influences money supply and monetary aggregate in Nigeria.

Open Market Operation (OMO) (Independent variable):OMO is an important and flexible instrument of monetary policy used by the CBN to achieve expansionary or contractionary monetary policy. The Central banks can increase or decrease the amount of money in circulation in the economy by purchasing or selling securities (central bank bills, treasury bills and commercial papers) to the public.

Cash Reserve Ratio (CRR) (Independent variable):This is the ratio of the deposit liabilities of DMBs held as vault cash with the CBN. CRR influences money supply by limiting the amount of loans that banks can extend to the domestic economy and thus limit the supply of money.

### 3.4 Model Specification

The study adopted multiple regression model. The model specifies that;

$Y = \beta o + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \mu_t$ … 1

Where; Y = Dependent Variable; $X_1$ … $X_3$ = Independent Variables; $\beta_1$ … $\beta_3$ = Coefficient of parameter estimates; $\beta o$ = Constant term, $\mu_t$ = Stochastic Error Term.

The model variables were represented in multiple linear regression form as follows:

$CPI_t = \beta o + \beta_1 MPR_t + \beta_2 \log OMO_t + \beta_3 CRR_t + \mu_t$ … 2

Where; $CPI_t$ = Consumer Price Index; MPR= Monetary Policy Rate,OMO = Open Market Operation, CRR =Cash Reserve Ratio. OMO variable was logged to bring it at par with the other variables (CPI, MPR, CRR)in the model which are in rates and ratio.

### 3.5 Method of Data Analysis

The study used descriptive test to examine the characteristics (mean, standard deviation, variance etc.) of the variables while diagnostic tests (Correlation) was used to ascertain the nature of relationship between the dependent and independent variables.Ordinary Least Square (OLS) Regression Analysis was used to test the hypotheses on the effect of monetary policy instruments on price stability in Nigeria.The probability values and the coefficients were used for decision making on the statistical significance of the results obtained. The decision rule is to accept the alternate hypothesis and reject the null hypothesis if the P-value is less or equal to 0.05 (chosen level of significance).

## IV. RESULTS

### 4.1 Descriptive Results

**Table 1: Descriptive Statistics**

| | CPI | LOGOMO | MPR | CRR |
|---|---|---|---|---|
| Mean | 123.4461 | 9.143536 | 12.44000 | 9.005556 |
| Std. Dev. | 70.09234 | 0.965602 | 3.502055 | 8.951863 |
| Skewness | 0.041031 | -0.447992 | 0.104562 | 0.648778 |
| Kurtosis | 2.525301 | 2.195015 | 3.298185 | 1.675392 |
| Sum Sq. Dev. | 83519.91 | 15.85060 | 208.4946 | 1362.309 |
| Observations | 18 | 18 | 18 | 18 |

**Source: Author's Computation, 2019 (E-views 10.0)**

Table 1 shows the selected statistical summary of the data employed in this study. As observed, the consumer price index (CPI) being the dependent variable has the highest mean value of 123.45 whereas the mean for the logged value of open market operation (OMO) variable was 9.144; MPR (12.44) and credit reserve requirement (CRR) was 9.006 respectively. The standard deviation is a measure of spread which tells us how the data is spread out. If the standard deviation is low, it means that the data is closely clustered around the mean or the distance of the values from the mean. A high value of standard deviation indicates that the data are dispersed over a wide range of values. As seen in the table 1, the standard deviation for the dependent variable (CPI) is moderately low compared to the mean value (70.09<>123.45); it is lowest in open market operation (OMO) at (0.97<>9.145), is however very high for credit reserve ratio (CRR) at (8.95<>9.01). Extreme spread (high standard deviation) in a given series does not affect the fitness of the model except where the variables affected are key variables.

The analysis also looked at the value of the Skewness which measures the dispersion away from the mean value.The benchmark for symmetrical distribution is based on how close the individual values are to zero. Information from the table 1 showed that, in terms of skewness; the consumer price index (CPI), open market operation (OMO) and MPR have values closer to zero (0.041031, -0.447992 and 0.104562 respectively) which implies that their data are normally distributed. The only exception is the cash reserve requirement variable (CRR) whose value are moving away from zero (0.645778). It was concluded in the analysis that the data were normally distributed and not skewed. The implication of non-skewed data is that it improves the reliability of decisions which are based on it.

### 4.2 Correlation Test

The correlation test was used to examine the nature and strength of the relationship that exist between the dependent variable (CPI) and the independent variables (MPR, OMO and CRR). The result of the correlation test is shown table 2:

**Table 2: Correlation Matrix**

| | CPI | MPR | logOMO | CRR |
|---|---|---|---|---|
| CPI | 1.000000 | -0.064023 | 0.889334 | 0.920841 |
| MPR | -0.064023 | 1.000000 | -0.359446 | 0.138899 |
| LOGOMO | 0.889334 | -0.359446 | 1.000000 | 0.769107 |
| CRR | 0.920841 | 0.138899 | 0.769107 | 1.000000 |

**Source: Author's Computation, 2019 (E-views 10.0)**

As observed, the correlation was positive between consumer price index (CPI) and open market operation (OMO) and cash reserve requirement (CRR), with a very high strength at (0.889334 and 0.920841) respectively. This indicates that CRR and OMO have positive relationship with CPI. However, MPR has negative relationship with CPI. When variables have high correlation coefficients then there is the possibility of high impacts of the independent variables on the dependent variable except in situations where there is serial correlation which pose a problem to the effectiveness of a model. Serial correlation arises where the model's explanatory variables also depend on the changes in the explained variable.

### 4.3Estimation Result

In order to achieve the research objectives, the effect estimation of the independent variables on the dependent variable was conducted using the Ordinary Least squares (OLS) technique to produce the regression coefficients.

**Table 3: Ordinary Least Square (OLS)Result**

| Variable | Coeff. | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| MPR | -2.868338 | 1.323395 | -2.167409 | 0.0467 |
| LOGOMO | 11.14838 | 2.022196 | 5.513007 | 0.0001 |
| CRR | 6.394395 | 0.668212 | 9.569416 | 0.0000 |
| R-squared | **0.908218** | | | |

**Source: Author's Computation, 2019 (E-views10.0)**

From table 3, it could be observed that MPR has a negative sign with a magnitude (coefficient value) of -2.868338. This shows that changes in MPR leads to negative movement of the consumer price index variable. Precisely, increases in MPR decrease the consumer price index by 2.87 units. The effect of monetary policy rate on price stability is negative and significant because the T-value (-2.167409) is greater than 2.00 and the probability value (0.0467) is less than the 5% significance level of 0.05.

Open market operation (OMO) appeared with a positive sign; this indicates that variations in (OMO) variables leads to increases in consumer price index (CPI). The estimated coefficient of 11.14838 implies that increases in open market operation by monetary authority increases the consumer price index by 11.15 units. The positive sign and a probability value of 0.0001 imply that open market operation activities of the monetary authority have positive and significant effect on consumer price index movements in the period under review.

The result also shows that cash reserve requirement of banks (CRR) bears a positive sign. The coefficient has a magnitude of 6.394395.The implication therefore is that there is a positive and significant effect of cash reserve requirements on the consumer price index.

A model has a reliable goodness of fit where the coefficient of determination($R^2$) is high, in which case it has the implication of being employed in policy decision-making. The model has a goodness of fit $R^2$ = 0.908218.This is interpreted to mean that 90.82% of variations in consumer price index are accounted for by variations in the regressors (credit reserve requirement, open market operation and MPR) as specified in this model. In the normal workings of the economy, movements in the consumer price indices responds to changes and controls from the open market activities of monetary authorities (issuance of bonds, treasury bills, tampering with the monetary policy rate, etc), depending on the current threshold of the CPI and the felt economic implications. Requiring higher reserves from the deposit money banks implies that their ability to make credit available is hampered, thus availability of credit facilities to consumers is affected; this could ultimately spiral on the consumer price index as it drops down.

## V. SUMMARY, CONCLUSION AND RECOMMENDATIONS

### 5.1 Summary of Findings

1. The study found that monetary policy rate (MPR) with t-value **(**-2.167409) and p-value (0.0467) has negative and significant effect on price stability in Nigeria.
2. The study found that open market operation (OMO) with t-value **(**5.513007) and p-value (0.0001) has positive and significant effect on price stability in Nigeria.
3. The study found that cash reserve ratio (CRR) with t-value **(**9.569416) and p-value (0.0000) has positive and significant effect on price stability in Nigeria.

### 5.2 Conclusion

The study concluded that monetary policy rate has negative and significant effect on price stability in Nigeria. This implies that a unit change in MPR by CBN will decrease the consumer price index by 2.87%. The study equally concluded that open market operation (OMO) of the monetary authority have positive and significant effect on consumer price index. The implication is that a unit change in open market operation by the CBN will increase the consumer price index by 11.15%. It was further concluded that cash reserve ratio has positive and significant effect onprice stability in Nigeria. The implication is that a unit change in cash reserve ratio bythe CBN will increase the consumer price index by 6.39%.

### 5.2 Recommendations

The study recommended as follows:

1. That the Central Bank of Nigeria should consider the price stability implications of monetary policy rate decisions made on behalf ofthe government over a given period of time.
2. That the Central Bank of Nigeria should increase the use of Open Market Operation as monetary policy instrument to achieve price stability in the economy.

**3.** That the regulatory and supervisory framework for the financial sector should be strengthened to ensure that banks maintain the cash reserve ratio required by the CBN with a view to ensuring price stability.

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**APPENDIX I**

**TABLE 1: RAW DATA FOR ANALYSIS**

| YEAR | CPI | MPR | CRR | OMO |
|---|---|---|---|---|
| 2001 | 39.53 | 20.5 | 1.4 | 2075.395 |
| 2002 | 44.34 | 16.5 | 1.4 | 1710.046 |
| 2003 | 54.89 | 15 | 2.5 | 1864.398 |
| 2004 | 60.39 | 15 | 2.5 | 3402.267 |
| 2005 | 67.37 | 13 | 2 | 4406.731 |
| 2006 | 73.13 | 10 | 2 | 10034.51 |
| 2007 | 77.93 | 9.5 | 3 | 8688.985 |
| 2008 | 89.66 | 9.75 | 3 | 10203.96 |
| 2009 | 102.15 | 6 | 1.3 | 9057.81 |
| 2010 | 114.22 | 6.25 | 1 | 8767.693 |
| 2011 | 125.97 | 12 | 8 | 16750.71 |
| 2012 | 141.06 | 12 | 12 | 20680.45 |
| 2013 | 152.29 | 12 | 12 | 15062.62 |
| 2014 | 164.44 | 13 | 20 | 14583.36 |
| 2015 | 180.15 | 11 | 22.5 | 16492.27 |
| 2016 | 213.56 | 14 | 22.5 | 24738.62 |
| 2017 | 246.38 | 13.8 | 22.5 | 33944.93 |
| 2018 | 274.57 | 14.62 | 22.5 | 40673.93 |

**Source: CBN Statistical Bulletin, 2018**

**APPENDIX 2**

**TABLE 2: DESCRIPTIVE STATISTICS**

| | CPI | LOGOMO | MPR | CRR |
|---|---|---|---|---|
| Mean | 123.4461 | 9.143536 | 12.44000 | 9.005556 |
| Median | 108.1850 | 9.222158 | 12.50000 | 3.000000 |
| Maximum | 274.5700 | 10.61334 | 20.50000 | 22.50000 |
| Minimum | 39.53000 | 7.444276 | 6.000000 | 1.000000 |

| | | | | |
|---|---|---|---|---|
| Std. Dev. | 70.09234 | 0.965602 | 3.502055 | 8.951863 |
| Skewness | 0.041031 | -0.447992 | 0.104562 | 0.648778 |
| Kurtosis | 2.525301 | 2.195015 | 3.298185 | 1.675392 |
| Jarque-Bera | 1.816386 | 1.088091 | 0.099485 | 2.578677 |
| Probability | 0.403252 | 0.580396 | 0.951474 | 0.275453 |
| Sum | 2222.030 | 164.5837 | 223.9200 | 162.1000 |
| Sum Sq. Dev. | 83519.91 | 15.85060 | 208.4946 | 1362.309 |
| Observations | 18 | 18 | 18 | 18 |

**Source: Author's Computation, 2019 (E-views 10.0)**

**TABLE 3: CORRELATION TEST**

| | CPI | MPR | LOGOMO | CRR |
|---|---|---|---|---|
| CPI | 1.000000 | -0.064023 | 0.889334 | 0.920841 |
| MPR | -0.064023 | 1.000000 | -0.359446 | 0.138899 |
| LOGOMO | 0.889334 | -0.359446 | 1.000000 | 0.769107 |
| CRR | 0.920841 | 0.138899 | 0.769107 | 1.000000 |

**Source: Author's Computation, 2019 (E-views 10.0)**

**TABLE 4: OLS RESULT**

Dependent Variable: CPI
Method: Least Squares
Date: 10/19/19 Time: 15:15
Sample: 2001 2018
Included observations: 18

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| MPR | -2.868338 | 1.323395 | -2.167409 | 0.0467 |
| LOGOMO | 11.14838 | 2.022196 | 5.513007 | 0.0001 |
| CRR | 6.394395 | 0.668212 | 9.569416 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.908218 | Mean dependent var | 123.4461 |
| Adjusted R-squared | 0.895980 | S.D. dependent var | 70.09234 |
| S.E. of regression | 22.60623 | Akaike info criterion | 9.225340 |
| Sum squared resid | 7665.625 | Schwarz criterion | 9.373735 |
| Log likelihood | -80.02806 | Hannan-Quinn criter. | 9.245802 |
| Durbin-Watson stat | 0.787067 | | |

**Source: Author's Computation, 2019 (E-views 10.0)**