Available online at www.elixirpublishers.com (Elixir International Journal)

Finance Management

Elixir Fin. Mgmt. 118 (2018) 50940-50946

ISSN: 2229-712X

The Responsive of Inflation to Selected Monetary Policy Instrument in Nigeria-Empirical Analysis

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ARTICLE INFO

Article history:

Received: 13 April 2018;

Received in revised form:

20 May 2018;

Accepted: 30 May 2018;

Keywords

Monetary policy,
Transmission,
Mechanism,
Inflation,
Money supply,
Economic growth.

ABSTRACT

This study examines the responsiveness of inflation to monetary policy in Nigeria. The specific objective was to determine empirically the extent to which monetary policy had helped in achieving general price stability in Nigeria within the chosen scope. Data for the study were obtained from secondary sources. The ordinary least square, Augmented Dickey Fuller (ADF) unit root test, Johansen Co-integration test, as well as parsimonious Error Correction Mechanism method were adopted to analyse the data. The results revealed that the impact of regulatory instrument on inflation was relatively low indicating that monetary policy was not a good predictor of inflation rate in Nigeria. Results also revealed non-stationarity at level form rather stationary after first differencing; and integrated at order one 1(1). Further revelations indicated that a long-run relationship existed among the variables and showed the presence of one co-integrating vector in the model. The study offers some important policy implication: the government should complement monetary policy with fiscal policy to attain macro-economic objectives, diversifying the economy and encourage local productivity to stabilize prices.

1.0 INTRODUCTION

The Nigerian economy has been plagued with several challenges over the years. Nigeria has not been able to effectively tap or harness her economic potentials for rapid economic development inspite of frequent changes in monetary and other macro-economic policies (Ogwuma, 1996). Monetary policy is therefore defined as a combination of measures designed to regulate the value, supply and cost of money in the economy in consonance with the expected level of economic activities (CBN, 1995). It is the deliberate use of monetary instruments at the disposal of monetary authorities such as Central Bank in order to achieve macroeconomic stability.

Monetarist strongly believe that monetary policy exact greater impact on economic activity as unanticipated change in the stock of money affects output, prices and growth. Monetary policy is essentially the tool for executing the mandate of monetary and price stability. It is essentially a program of action undertaken by monetary authorities to control and regulate the supply of money and flow of credit to achieve predetermined objectives (De Gregorio (1993).

The importance of monetary policy implementation in any economy cannot be over emphasized as excess supply of money would result in excess demand for goods and services resulting to inflation and deterioration of balance of payment position. On the other hand, inadequate supply of money could induce stagnation in the economy thereby retarding growth and development. Consequently, monetary authorities must strive to keep the supply of money at an appropriate rate to ensure price stability and sustained economic growth.

In Nigeria, the achievement of price stability is predicated on monetary policy stance (Idowu, 2010, Nenbee and Madume 2011). Also the major objectives of monetary policy are the attainment of price stability and sustainable economic growth. The associated objectives are those of full employment, stable long-term interest rates and real exchange rates. In pursuing these objectives, the CBN recognizes the existence of conflicts among the objectives necessitating at some point some sort of trade-offs (Uchendu, 2010). The Bank manipulates the operational target (Monetary Policy Rate, MPR) over which it has substantial direct control to influence the intermediate target (broad money supply M2) which in turn impacts on the ultimate objective price stability and sustainable growth (Okafor, 2009, Uchendu, 2009).

The Central Bank of Nigeria (CBN), achieves the monetary policy goals through the amount of money supplied. Money supply comprises narrow and broad money. Narrow money includes currency in circulation and demand deposit in the banks. The broad money (M_2) includes narrow money (M_1) plus savings and time deposits as well as foreign denominated deposits (CBN, 2011).

The broad money measures the total volume of money supply in the economy. Thus excess liquidity may arise in the economy when broad money is over and above the output level. This causes inflation. The need to regulate money supply is based on the fact that there a stable relationship between the quantity of money supply and economic activity and that if its supply is not regulated it generates inflation (Sanusi, 2009; Soludo; 2009, CBN, 2010).

There is a consensus that price instability undermines the role of money as store of value and frustrates investment and growth. (Nnanna, 2001). The primary and current monetary framework focuses on the maintainance of price stability, stable exchange rate and promotion of economic growth.

The problem statement of this research is centered on the fact that inflation rate in Nigeria has been fluctuating taking

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both upward and downward trend over time. It stood 15.60 percent in February 2010, but decreased to historic single digit of 9.30 percent in August 2011. It bounced back to a double digit of 11.9 percent in February 2012 to become the 5th highest in the world and second to Venezuela with the world's inflation rate of 24.60 percent among the oil producers (CBN, 2015).

This situation agitates the mind of the researcher and casts doubts on the potency of monetary policy as a tool for price stability or inflation control in Nigeria. Therefore, the major objective of this paper is to empirically determine the extent to which monetary policy has helped in achieving relative price stability in Nigeria within the sample period. It is therefore hypothesized in the null form that monetary policy does not have any significant impact on price stability in Nigeria.

2.0 REVIEW OF EMPIRICAL LITERATURE

A decibel of theoretical and empirical literature exists on the exciting fields of the relationship between monetary policy and inflation. From the empirical angle, Emmanuel (2000) examines the impact of monetary policies on inflation in Nigeria for the period of 1980-1995. The variables employed in the study were domestic credit, exchange rate, gross domestic product and money supply (M2). Applying the ordinary least squares (OLS) techniques, the findings showed that exchange rate and M2 had a negative impact on inflation, however, while exchange rate was significant in explaining inflation for the period M_2 was not. On the other hand, both domestic credit and gross domestic product were positively significant in explaining inflation in Nigeria.

However, Itua (2000) in his work on the structural determinants of inflation in Nigeria between 1981 and 1998 combined the conventional causes of inflation demand pull, cost push structural as inflation over the years in Nigeria has been determined by all the three alternating at various times. Therefore, variables like fiscal deficits and money supply (M1) will be used to depict the demand pull factors, the percentage contribution of agriculture to the Gross Domestic Product (GDP) to highlight the structural factor while exchange will show the cost push factor.

Terlumum (2004) investigates the relationship between price volatility expectations and monetary policy in Nigeria. The study applied the maximum likelihood estimator, and the generalized autoregressive conditional heteroscedasticity (GARCH) model to estimate the steady state model of inflation. The Gauss-Siedel algorithm was applied for forward-looking expectations with actual inflation series as start values. The study found that inflation expectation and price volatility not only influenced the contemporaneous inflation, it also resulted in persistence interest rate differential and monetary growth, thus compromising the objective of monetary policy.

Bayo (2005) also investigates the determinants of inflation in Nigeria between 1981 and 2003. It revealed that all explanatory variables (fiscal deficits, money supply, interest and exchange rates) significantly and positively impacted on the rate of inflation in Nigeria during the period. The research contributed to the idea that the causes of inflation in Nigeria are multi-dimensional and dynamic.

Amassoma, et al (2011) appraise monetary policy development in Nigeria and also examined the effect of monetary policy on inflation in Nigeria for the period of 1986 to 2009. The study adopted a simplified Ordinary Least Squared technique and also conducted the unit root and co-integration tests. The findings of the study showed that monetary policy have witnessed the implementation of various policy initiatives and has therefore experienced sustained improvement over the years. The result also shows that monetary policy has a significant effect on inflation. The implication of this finding is that monetary policy has had a significant influence in maintaining price stability within the Nigeria economy. The study concluded that for monetary policy to achieve its other macroeconomic objective such as economy growth; there is the need to reduce the excessive expenditure of the government and align fiscal policy along with monetary policy measure.

Chimaobi and Igwe (2010) made attempt to offer evidence on the causal long term relationship between money growth and inflation in Nigeria using Augmented Dickey-Fuller (ADF) and Philip-Perron (PP) test. The results point to a close long-term relationship between inflation and money growth. The causal long term relationship between money growth and inflation which was tested using Pair wise Granger causality test indicated that money supply causes inflation rate which means that the level of money supply in the Nigerian economy will determine the level of inflation. It revealed a bilateral/feedback causality proving that the changes that occur in inflation could be explained by its lagged values and also the lag values of money supply and in the same vein changes that occur in money supply is explained by its lagged values and the lagged values of inflation.

Bakare (2011) in his work examined the determinants of money supply growth and its implications on inflation in Nigeria. He showed that credit expansion to the private sector determines money supply growth by the highest magnitude in Nigeria. The results also showed a positive relationship between money supply growth and inflation in Nigeria. It demonstrated that a one (1) percent rise in money supply in the current period leads to 5.6 percent rise in inflation. Overall, his finding discovered that changes in money supply are concomitant to inflation in Nigeria and strongly support the need for regulating money supply growth in the economy. This affirms the usual argument of the Monetarist school of thought that says money matters.

Success, et al (2012) examines the impact of monetary policy instrument on inflation in Nigeria during the period 1980-2010. The framework for analysis involves the estimation of inflation function derived from the monetary theory of inflation. The study employed classical least squares method with the aid, granger causality. Stationarity test and correlogram which minimize the possibility of estimating spurious relations, while at the same time retaining long-run information in the work; as well as the nature of causality between independent variables and dependent variable of the functions specified in the model. The results of the analysis show that the liquidity ratio and interest rate turnout to be the leading monetary policy instruments that can be employed to combat inflation in Nigeria. It was also revealed that, unethical banking practices by Nigerian commercial banks has rendered cash reserve ratio, broad money supply and exchange rate impotent resulting to in effective monetary policy in Nigerian economy.

Kumapayi, et al (2012) explores the efficacy in the effective operation of monetary policy in Nigeria with emphasis on inflation. A number of monetary variables which include domestic credit, interest rate, exchange rate and broad money supply were employed for the study.

Additionally, fiscal deficit and trade openness were included as a function of inflation in Nigeria. A simple linear regression was adopted for the study and results reveal that domestic credit, fiscal deficit and a one year lag of inflation are statistically significant in explaining inflation in Nigeria.

Odior (2012) analyses the impact of monetary policy on inflation in Nigeria using a portfolio approach. The generalized Method of Moments (GMM) model was modeled to analysis the nature of the relationship where inflation was presumed to depend upon changes in various indicators of monetary policy and a list of instrumental variables (IV) which were estimated over the period 1970-2010. Integral to this process was to determine if there exist a stable relationship between various measures of money supply, the monetary base and the instrumental variables, given a switch by the Central Bank from a direct to an indirect policy regime. In the results, it was found that there exist partial stable relations between indicators of monetary policy and inflation despite regime shifts over the sample period. This approach produced a scientific framework that could be used to predict the money multiplier derived from the broad money and could be used to forecast inflation on an annual basis with reasonable accuracy at least in the medium term and projections in the monetary policy.

3.0 RESEARCH METHODOLOGY AND SOURCES OF DATA

The acceptability and reliability of any research findings depend on the design as well as the appropriateness of the models specified and the analytical tools employed. In view of the fact that this research utilizes secondary data, the ex-post-facto research design was employed. Secondary data were collected from Central Bank of Nigeria statistical bulletin; financial reviews and annual reports, National Bureau of statistics etc. data on variables relating to inflation rate, monetary policy indicators (1981-2014) were collected and analysed.

3.1 SPECIFICATION OF THE MODEL

A study of this nature concerning monetary policy in relation to price, could be based on economic variables such as money supply, monetary policy rate, treasury bill rate, and cash reserve requirement. This is because monetary policy is concerned with regulation of value, supply and cost of money in an economy. The functional relationship between the dependent and independent variables is stated as follows:

$$infl = f(m2, mpr, tbr, crr) \quad (1)$$

Transforming to multiple relationship, we have

$$inf = b_o + b_1 m2 + {}_2 mpr + b_3 tbr + b_4 crr + u_t \quad (2)$$

Where
infl = Inflation Rate
m2 = Broad Money Supply
mpr = Monetary Policy Rate
tbr =Treasury Bill Rates
crr = Cash Reserve Requirement
U_t =Stochastic Variable
b_1- b4 = Coefficients/Parameters
the appriori expectation becomes
$b_1 > 0$, $b_2 < 0$, $b_3 < 0$, $b_4 < 0$.

3.2 METHOD OF DATA ANALYSIS

The research work will employ the following methods; unit root tests, co-integration test, and Error Correction Mechanism (ECM).

3.2.1 UNIT ROOT TEST

The time series properties of the variables would be checked using the Augmented Dickey Fuller (ADF) test to establish the order of stationarity. This was to avoid the problem of spurious regression estimates. A series that exhibits a stochastic trend, or simply wanders around at random will not be stationary and cannot be forecast far in the future. Stationary series will constantly return to a given value and no matter the starting point, in the long-run, it is expected to attain that value (Hall, 2001). Therefore, before applying this test, we determine the order of integration of all variables using unit root tests by testing for null hypothesis $H_o: \beta = 0$ (i.e β has a unit root), and the alternative hypothesis is $H_1: \beta < 0$

3.2.2 JOHANSEN COINTEGRATION METHOD

The basic argument of Johansen's procedure is that the rank of matrix of variables can be used to determine whether or not the two variables are co-integrated. The Johansen methodology was adopted here follows dynamic vector autoregressive regression (VAR) which explores cointegration. The essence is to capture the causal dynamics relationship between government expenditure and economic growth, and at the same time to observe the long run and short dynamics. For instance, given a VAR with possible long run cointegration amongst a set of variables.

Therefore, we start with the Johansen co-integration equation which starts with the vector auto regression (VAR) of order p is given by:

$$y_t = \mu + A_1 y_{t-1} + \ldots\ldots\ldots + A_p y_{t-p} + \varepsilon_t \quad (3)$$

Where y_t is a $(n \times 1)$ vector of variables under considertion in log form that are integrated at order one-commonly denoted 1(1), n=5 A_p are the parameters to be estimated, ε_t are the random errors. This (VAR) can be re-written as;

$$\Delta y_t = \mu + \prod y_{t-1} + \sum_{i=1}^{p=1} \Gamma_i \Delta y_{t-i} + \varepsilon_t \quad (4)$$

Where, $\prod = \sum_{i=1}^{p} A_i - 1$ and $\Gamma_i = -\sum_{j=i+1}^{p} A_j$ (5)

If the coefficient matrix $\prod$ has reduced rank $r < n$, then there exist $n \times r$ matrices of α and β each with rank r such that

$$\Pi = \alpha\beta' \quad (6)$$

Where r is the number of co-integrating relationship, the element is α is known as the adjustment parameters in the vector error correction model and each column of β is a counteracting vector. It can be shown that, for a given r, the maximum likelihood estimator of β define the combination of y_{t-1} that yield the r largest canonical correlations of Δy with y_{t-1} after correcting for lagged differences and deterministic variables when present. The two different likelihood ratio test of significance of these canonical correlations are the trace test and maximum eigenvalue test, shown in equation 5 and 6 respectively below

$$\lambda_{trace}(r) = -T \sum_{i=r+1}^{n} \ln(1 - \hat{\lambda_i}) \quad (7)$$

and

$$\lambda_{max}(r, r+1) = -T ln(1 - \hat{\lambda}_{r+1}) \quad (8)$$

Here, T is the sample size and $\hat{\lambda}_i$ is the i^{th} ordered eigenvalue from the Π matrix in equation 2 or largest canonical correlation. The trace tests the null hypothesis that the number of r co-integrating vector against the alternative hypothesis of n co-integrating vector where n is the number of endogenous variables. The maximum eigenvalue tests the null hypothesis that there are r counteracting vectors against an alternative of $r+1$ (see Brooks 2002).

After testing for integration among the variables, the long run coefficients of the variables are the estimated. This study uses Akanke information criteria for selected the optimal lag length. The existence of integration between the variables implies that causality exists in at least one direction. The short run equilibrium relationship is tested using vector error correction model (VECM). The idea behind this is that it has been observed recently that the body of statistical estimation theory is based on asymptotic convergence theorems which assume that series are stationary. VECM is restricted VAR that has integration restriction built into the specification. The VECM analysis in this study is based on equation 2 and it involves five counteracting vector as thus:

$$\Delta lninfl_t = \alpha_0 + \sum_{i=1}^{n} \beta_{1i} \Delta lninfl_{t-1} + \sum_{i=0}^{n} \beta_{2i} \Delta lnm2_{1_{t-1}} + \sum_{i=0}^{n} \beta_{3i} \Delta lnmpr + \sum_{i=0}^{n} \beta_{3i} \Delta lntbr_{2_{t-1}} + \sum_{i=0}^{n} \beta_{3i} \Delta lncrr_{2_{t-1}} + \lambda_1 ecm_{t-1} + \mu_t \quad (9)$$

ecm_{t-1} is the error correction term obtained from the counteraction model. The error coefficients (λ_1) indicate the rate at which the counteraction model corrects its previous period's disequilibrium or speed of adjustment to restore the long run equilibrium relationship.

A negative and significant ecm_{t-1} coefficient implies that any short run movement between the dependent and explanatory variables will converge back to the long run relationship.

4.1 DATA ANALYSIS AND DISCUSSION OF FINDINGS

In table A, the estimated model showed that R-squared co-efficient of determination is 30.5 per cent while the adjusted R-squared is 29.6 percent.This means that monetary policy variables included in the model accounted for 30.5 per cent variations in inflation, and therefore monetary policy alone cannot be used to predict inflation in Nigeria. The model is significant given the probability of F(stat) of 0.04572. Money supply appears insignificant with positive value while mpr, tbr, and crr show negative signs in line with appriori expectation. However, the impact of ,mpr, m2, tbr and crr are not significant. The Durbin-Watson statistic of 1.18 indicates presence of positive auto-correlation. Given the above results, the level series OLS regression results should be taken with some caution since there may be some time dependence in the level series data which could lead to some estimation errors. Hence the need to examine more vigorously the stationarity properties of the level series data.

4.2 UNIT ROOT TEST

In this study, the ADF unit root test was adopted, to test for the time series properties of the model variables. The hypothesis is that the variables have a unit root.

The results of Augmented Dickey Fuller unit root test on table B above shows that the hypothesis of unit root is rejected since all the variables were stationary at first differencing as their ADF statistics were more negative than their critical values at both 5% and 1%. Thus all the variables are integrated of order one i.e 1(1) and this suggests long-run relationships among the variables since the variables are integrated of the same order

Table A: Level series OLS Multiple Regression Results

Dependent variable: INFR
Method: Least Square
Date 02/04/2016: Time 1:35
Sample: 1981-2014
Included observation: 34

Variables	Coefficient	Std. error	t-stat.	prob
m_2	0.053135	0.039832	1.333973	0.1934
mpr	-0.050568	0.064734	-0.781002	0.4416
tbr	-0.000228	0.001124	-0.202956	0.8407
crr	-0.040024	0.034076	-0.24675	0.6446
C	10.72323	0.293019	36.5457	0.0427

R-Squared	0.305070	Mean dep. Var.	0.27324
Adj-R-Squared	0.29642	S.D. dep. Variable	5.6204
S.E. of Reg.	0.46246	Akaka info. crit.	6.6704
Sum sq. resid.	6.4254	Schwartz crit.	6.20165
Log. Likelihood	-16.2405	Hannan- duinn crit.	5.76620
F- statistic	2.34052	Durbin Watson Stat.	1.18562
Prob (F-stat)	0.04572		

Source: Author's computation

Table B: ADF Unit Root Test Results.

Variable	Lag Length	ADF Statistics	1% Critical Level	5% Critical Level	Order of Integration	Remarks
Infl	1	-8.74007	-3.50446	-2.70456	1(1)	Stationary
M2	1	-5.72107	-3.56407	-2.75640	1(1)	Stationary
Mpr	1	-6.21406	-3.64460	-2.74667	1(1)	Stationary
Tbr	1	-6.30046	-3.54006	-2.7654	1(1)	Stationary
crr	1	-4.70047	-3.54068	-2.7565	1(1)	Stationary

Source: Author's computation

4.3 CO-INTEGRATION TEST

A necessary condition for co-integrating test is that each of the variables be integrated of the same order.

From the Johansen's co-integration results on table C above, there is evidence of a long-run relationship among the variables in the model, as the results indicate at least one co-integrating equation used to model the relationship between monetary policy and inflation.

4.4 ERROR CORRECTION MECHANISM (ECM)

The (ECM) is meant to tie short-run dynamics of the co-integrating equations to their long-run static disposition. In order to capture the short-run fluctuations, the ECM was employed and the results are shown below: The result from table D, shows that about 21 per cent of total variation in inflation rate in Nigeria is caused by the monetary policy indicators. The remaining of about 79 per cent is largely due to factors exogenous to the model but accounted for by the error term.

This means that that monetary policy alone cannot effectively capture inflation control in Nigeria. It needs to be complimented with fiscal policy. The model is significant looking at the prob (F-stat.) of 0.044. The DW statistic of 2.12 indicates absence of series and auto correlation. Money supply at lag 1 has positive relationship with inflation. This confirms with the result of Masha (1999), Madu (1998). The mpr, tbr and crr show negative relationship with inflation as expected. The impacts of mpr, m2, tbr and crr on inflation were not significant.

5.0 CONCLUSION AND RECOMMENDATIONS

The results indicate that there is negative and insignificant relationship between treasury bill rate (tbr), cash reserve requirement (crr), monetary policy rate (mpr) and inflation. Also there is positive and insignificant relationship between money supply and inflation. The conclusion drawn from our results is that the impact of monetary policy on inflation

Table C: Johansen Co-integration Test Results.

Date 02/04/2016: Time 1:38
Sample (adjusted): 1984-2014
Included observation: 31 after adjustments
Trend assumption: Linear deterministic trend
Series: infl, m2, mpr, tbr, crr
Lag interval (in first difference): 2 to 2
Unrestricted co-integration Rank Test (Trace)

Hypothesized no of CE(s)	Elgen value	Trace Statistic	0.05 critical value	Prob.**
None*	0.74360	96.31042	64.7240	0.0002
At most 1	0.52340	46.7404	46.7420	0.0512
At most 2	0.35120	25.1240	28.6704	0.1420
At most 3	0.247102	11.3204	16.5702	0.1704
At most 4	0.08112	2.71142	3.7408	0.0874

Trace test indicates 1 co-integrating equation at 0.05 level
* indicates rejection of the hyp. at the 0.05 level
** mackinnon-Haug-Michelis (1999) P-values
Unrestricted co-integration Rank Test (Max. Elgen Value)

Hypothesized no of CE(s)	Elgen value	Max-Eigen Value	0.05 critical value	Prob.**
None	0.74360	48.2744	32.6404	0.0005
At most 1	0.52340	21.3704	26.4406	0.2042
At most 2	0.35120	15.0247	20.1407	0.3612
At most 3	0.247102	7.4205	13.2706	0.3322
At most 4	0.08112	2.8405	3.7402	0.0832

Max-elgen test indicates 1 co-integrating equation(s) at 0.05 level
* denotes rejection of the hyp. at 0.05 level
** Mackinnon-Haug-Michelis (1999) P-values

Source: Author's computation

Table D: The Parsimonious Error Correction Results.

Dependent variable: Δ (INFL)
Method: Least Square

Variables	Coefficient	Std. error	t-stat.	prob
Δ (infl(1))	-0.04224	0.241007	-0.17640	0.84405
Δ (m2(-1))	2.43E-07	4.24E-O7	-0.05124	0.71240
Δ (mpr(-3))	-0.61442	0.61240	-1.00640	0.62112
Δ (tbr(-4))	-0.158424	0.47647	0.30224	0.71245
Δ (crr(-3))	-0.18426	0.35241	0.52146	0.6224
ecm(-1)	-0.84247	0.35171	-2.31140	0.02124
C	0.35640	0.71126	0.511246	0.6107
R-Squared	0.30402	Mean dep. Var.	0.26124	
Adj-R-Squared	0.21124	S.D. dep. Variable	4.2645	
S.E. of Reg.	3.9404	AKaike info. crit.	5.67007	
Sum sq. resid.	394.124	Schuartz crit.	6.1007	
Log. Likelihood	-84.5640	Hannan-duinn crit.	5.6640	
F- statistic	2.3940	Durbin Watson Stat.	2.12407	
Prob (F-stat)	0.4402			

Source: Author's computation

is relatively low in Nigeria indicating that monetary policy is not a good predictor of inflation rate in Nigeria the null hypothesis is accepted. This further implies that monetary policy needs to be complemented with appropriate fiscal policy measures to realize its ultimate goals.

Based on the findings; the following recommendations are put forward. First; government should reduce the level of deficit financing, improve finding of informal sector to check inflation. Second, there is need for monetary and fiscal policies to compliment each other for effective inflation control in Nigeria. Third, government should give adequate support to domestic production of goods and services to avoid over dependence on imported goods. This will reduce the rate of imported inflation in the country. Finally, the ongoing cash-less policy of the Central Bank of Nigeria (CBN) should be sustained to reduce volume of cash or liquidity in the economy.

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Appendix (Data)
Monetary Policy And Inflation (1981-2014).

Years	INFLATION(%)	M_2 ₦M	MPR (%)	TBR (%)	CRR (%)
1981	7.75	16161.7	6	5	9.5
1982	10.25	18093.6	8	7	10.7
1983	10	208791.1	8	7	7.1
1984	12.5	23370	10	8.5	4.7
1985	9.25	26277.6	10	8.5	1.8
1986	10.5	27389.8	10	8.5	1.7
1987	17.5	33667.4	12.75	11.75	1.4
1988	16.5	45446.9	12.75	11.75	2.1
1989	26.8	47055	18.5	11.75	2.9
1990	25.5	68662.5	18.5	11.75	2.9
1991	20.1	87499.8	14.5	15	2.9
1992	29.8	12085.5	17.5	21	4.4
1993	18.32	198479.2	26	26.9	6
1994	21	266944.9	13.5	12.5	5.7
1995	20.18	318763.5	13.5	12.5	5.8
1996	19.74	370333.5	13.5	12.5	7.5
1997	13.54	427931.3	13.5	12	7.8
1998	18.29	525637.8	14.31	12.95	8.3
1999	21.32	699733.7	18	17	11.7
2000	17.98	1036077	13.5	12	9.8
2001	18.29	1315869	14.31	12.95	10.8
2002	24.55	1599485	19	18.88	10.6
2003	20.71	1985192	15.75	15.05	10
2004	19.18	2263588	15	14.21	8.8
2005	17.95	2814846	13	7	9.7
2006	17.26	4027902	10	8.8	2. 6
2007	16.94	5809827	9	6.91	2.8
2008	15.14	8550430.3	9.75	7.65	1.7
2009	19	10730800	7.44	6.13	1.3
2010	17.59	115255.3	6.25	10.25	1.0
2011	16.02	12172.49	12	16.75	8.0
2012	16.79	13895.39	12	17.2	12.0
2013	15.06	15160.29	12	13.34	12.0
2014	16.04	17170.48	13.5	13.20	12.0

Source: CBN Statistical Bulletin (various issues)