



## Monetary Policy Rate and Economic Growth in Nigeria

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### ABSTRACT

This study empirically evaluated the effect of monetary policy rate (MPR) on Nigeria's economic growth using annual data spanning 2006-2020. The technique adopted in this paper is a simultaneous equation model using two Stage Least Squares (2SLS). Variables of interest were Broad money supply as a ratio of GDP (M2/GDP), Credit to the private sector as a ratio of GDP (CPS/GDP), Cash reserve ratio (CRR), Liquidity ratio (LQR), and Lending interest rate (LIR). The preliminary unit root test revealed stationarity at first difference. The weak instrument test result shows a robust instrument at 10 and 20%. While the residual result indicates an absence of heteroskedasticity in the model. The findings revealed that monetary policy rate has a negative but significant effect on economic growth, Real Exchange Rate (REXR) has an inverse relationship and significant effect on economic growth while inflation (INFL) has a negative and insignificant impact on economic growth. Given that monetary policy rate significantly impacts economic growth in Nigeria, the paper recommended that the Central bank of Nigeria should ensure that the fixing of the monetary policy rate is such that it enables the flow of credit in the desired direction to boost investment and economic activities in the economy; by identifying the Monetary Policy Rate threshold that is suitable for price stability, investment and output growth.

**Keywords:** Monetary Policy Rate, Monetary Policy Committee, Two Stage Least Squares, Instrumental Variable and Economic Growth.

**JEL Classifications:** E2, E4, E5, C3, C22, C26

### 1. INTRODUCTION

One of the significant mandates of the Central Bank of Nigeria (CBN) through its Monetary Policy Committee (MPC), is to systematically identify a policy rate that can ensure price stability and impact economic growth without necessarily affecting other macroeconomic variables adversely. This policy rate is the Monetary Policy Rate (MPR). The MPR is a practical signaling device that permits banks to borrow and lend around this rate with a corridor of +100 bp to -700 bp. The MPR on itself does not have a direct effect on economic growth but an indirect impact through some instrumental variables such as broad money supply GDP ratio (M2/GDP), credit to the private sector GDP ratio (CPS/GDP), Liquidity ratio (LR), Cash reserve ratio (CRR), Lending interest rate (LIR), open market operation (OMO) etc. It is the rate that controls the amount of money in circulation at any given time. However, to avoid adverse implications of induced cycles of economic bubble arising from lowering interest rates, the current

trend by monetary authorities worldwide is to move policy rates towards the level of inflation (Khan and Qayyum, 2006).

Generally, this policy action of adjusting short-term interest rates by monetary authorities is transmitted to the real sector through different channels such as the interest rate channels, wealth channels, and credit channels by affecting aggregate consumption and investment (McKinnon, 1973; Levine, 1997; King and Levine 1993; Kar and Pentecost, 2001; Schmidt-Hebbel and Luis, 2002). Monetary authorities generally use monetary policy instruments, including interest rates, to achieve stable prices and output (Alade, 2015). Although achieving stability in the economy through monetary policy rates is not a straightforward task; Central Banks do not only set these monetary policy rates (MPRs) by merely manipulating banking system reserves, but they do this through announcement effects.

The fact is that, often, when Monetary Policy Committee (MPC) desires to notify the market about a surge in prices, it adopts the

communicate technique. A communicate is issued to keep rates on hold rather than raising the headline Monetary Policy Rate (MPR) itself. This is done in a bid to keep the growth path of the economy unhindered. On conviction that the economy’s growth is continuing, the rates are eventually raised. The prevailing anchored money market interest rate known as Monetary Policy Rate (MPR) replaces the Minimum Rediscount Rate (MRR) due to the latter’s failure to serve as an appropriate anchor for other interest rates. An increase in MPR by the Central Bank is an indication of a contractionary monetary policy, while a decrease implies an expansionary monetary policy. An adjustment in the Monetary Policy Rate (MPR) is of great significance to the economy because it impacts growth, credit and price developments, as well as money market interbank interest rate.

Monetary authority in Nigeria, through the Central Bank of Nigeria’s Monetary Policy Committee should identify the monetary policy Rate (MPR) threshold that is suitable for price stability, investment and output growth in Nigeria, given that the main aim of monetary policy that cuts across the mandate of most Apex Banks is to keep prices relatively stable, which is the driving force to achieving sustainable growth. In addition to the maintenance of price stability, it is within the purview of the Central Bank in an increasing number of economies to maintain a stable exchange rate between countries’ currencies (Iyoha, 2004). However, despite regular meetings of the monetary policy committee (MPC) and different monetary policy rates (MPRs) over the years, inflation and exchange rates, in Nigeria have been increasing astronomically. Table 1 shows the disparity between the monetary policy rate and actual exchange rate and consumer price index (CPI) proxy for inflation, for selected years in Nigeria.

From Table 1, in the first quarter of 2008, the monetary policy rate (MPR) was 10.25%, while the real exchange rate (REXR) and CPI were 29.70974 and 19.70974 respectively. However, during the fourth quarter of the same year, MPR reduced from 10.25% to 9.75%, but the real exchange rate and CPI remained unchanged. Again, in the first quarter of 2009, MPR reduced from 9.75% in the fourth quarter of 2008 to 6% while the exchange rate and CPI increased from 29.70974 to 37.22543, and 19.70974 to 21.98378, respectively. Finally, during the first quarter of 2019, MPR rose to 14% while the exchange rate rose to 85.26175, and CPI rose to 67.25813, respectively. But in the fourth quarter of 2019, MPR reduced from 14% to 13.5% but exchange rate and consumers’ price index remained unchanged.

Figure 1 explains further, the disparity between MPR and some macroeconomic variables like inflation and exchange rate. It implies that MPR is not effective enough to achieve the desired

**Table 1: Trends in monetary policy rate (MPR), real exchange rate (REXR) and consumers price index (CPI) for some selected years**

Years	MPR	REXR	CPI
2008Q1	10.25	29.70974	19.70974
2008Q4	9.75	29.70974	19.70974
2009Q1	6	37.22543	21.98378
2009Q4	6	37.22543	21.98378
2019Q1	14	85.26175	67.25813
2019Q4	13.5	85.26175	67.25813

Sources: Authors’ computation using data from CBN Bulletin and WDI 2019

macroeconomic objectives of price and exchange rate stability in the economy. Thus, this study was motivated to investigate the impact of monetary policy rate (MPR) on Nigeria’s economic growth to provide more empirical insights. Variables used in this study are: inflation, real exchange rate, and the growth rate of gross domestic product (GDP). However, since MPR has an indirect impact on Growth via some instrumental variables, the under listed instrumental variables are employed in this study for the empirical investigation.

- Cash reserve ratio (CRR).
- Lending interest rate (LIR).
- Liquidity ratio (LQR).
- Broad money supply GDP ratio (M2/GDP).
- Credit to the private sector GDP ratio (CPS/GDP).

In Nigeria, the Monetary Policy Committee (MPC), is the back bone of the Central Bank of Nigeria in its quest to contribute towards stabilizing the country’s macroeconomic environment. The committee meets quarterly, except otherwise, in the events of an emergency. The committee comprises ten (10) members with the Governor of the Central Bank of Nigeria as chairman. As the highest policy making organ of the CBN the committee ensures that the Central Bank strives hard to achieve its objective of price stability and economic growth in general.

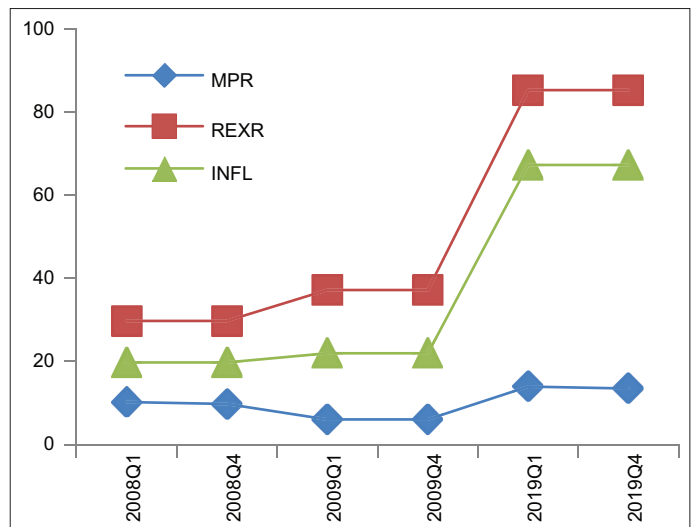
The main objective of this paper therefore, is to examine the impact of Monetary Policy Rate on Nigeria’s economic growth. The rest of the paper is structured as follows: section two considers related theoretical and empirical literature on the subject matter; section three provides the study’s research methodology, section four focuses on results presentation and discussion of findings, while section five summarizes and concludes the paper.

## 2. THEORETICAL FRAMEWORK AND LITERATURE REVIEW

### 2.1. The Keynesian Theory of Interest Rate

The Keynesian theory of interest rate was contained in Keynes celebrated masterpiece, “The General Theory of employment

**Figure 1:** The Graphical relationship between MPR, REXR and INFL



Source: Authors’ Computation (2022)

Interest and Money” published in 1936. The publication of this book, brought a paradigm shift in economic theory, making Keynesianism to be widely embraced by nation states as the bedrock of macroeconomic policy. Interest rate is cardinal in the Keynesian analysis. According to Keynes (1936), interest rate determines the level of investment, employment and output in the economy. In this respect, the growth of the economy is closely linked to interest rate as it is used by the monetary authority to influence allocation of resources and production activities. Keynes viewed interest rate as the reward for parting with liquid cash for a specific period. Interest rate measures the unwillingness of those who possess liquid cash to part with their liquidity over a period of time. According to Keynes, the factor that determines interest rate is the willingness to have money in cash form or be ready to part with it. He called this, liquidity preference. Keynes saw liquidity preference as a determining factor of the amount of money that is held by the masses when the prevailing interest rate ( $r$ ) is known. If ‘ $M$ ’ is the amount of cash to hold, therefore liquidity preference is a function of interest rate, i.e.

$$M = f(r) \quad (1)$$

Keynes identified three motives of liquidity preference, namely transaction, precautionary and speculative motives. If  $M_x$  represents transaction and precautionary motives of demand for money and  $M_q$  represents speculative motive then the equation for the demand for money or liquidity preference is specified as:

$$M = M_x + M_q \quad (2)$$

While Keynes was of the view that the transaction and precautionary motives were largely influenced by income, the speculative motive depends on interest rate. This is symbolically represented in equation (3):

$$M = M_x + M_q = L_x(Y) + L_q(r) \quad (3)$$

Where  $M$ , is the total demand for money,  $M_x$  is the transaction and precautionary demand for money which depend on income ( $Y$ ) and which is equal to the liquidity function  $L_x(Y)$ ; and  $M_q$  is the speculative demand for money which is influenced by interest rate and is equal to the liquidity function,  $L_q(r)$ . Equation (3) specifies demand for money as a function of choices between  $L_x$  and  $L_q$  (Appelt, 2016).

In the Keynesian liquidity theory, Keynes argued that the supply of money and the demand for money determine interest rate. Essentially, the monetary interest rate theory proposed by Keynes finds relevance in the marginal efficiency of capital to impact economic activities (McKinnon, 1973; Michael and Giovanni, 2005). For example, an increase in money supply decreases interest rate which creates a positive impact on marginal efficiency of capital and whose multiplier effects are increase in economic activities such as: expansion in investments, increase in aggregate demand for goods and services, increase in employment, income and overall economic growth. On the other hand, the reverse will be the case if there is an increase in interest rate.

## 2.2. Empirical Literature Review

In this section, several empirical works were reviewed trying to ascertain the impact of monetary policy rate on macroeconomic variables. The following are some of the empirical works reviewed.

Alade (2015), determined an optimal threshold for the Central Bank of Nigeria’s Monetary Policy Rate (MPR), using threshold techniques that give adequate procedural means for estimation and inference. The findings showed various optimal MPR levels for different macroeconomic aggregates such as: 10% for GDP growth, 9% for investment, 15% for external reserves and 8% for inflation. The study further observed that setting a threshold for monetary policy rate should be dependent on a forward guidance monetary policy communication approach based on outcomes in output, investment, foreign reserves, inflation and inflation expectations. The findings as well, suggest the existence of a tradeoff in policy choices.

In a related study, Anowor and Okorie (2016) re-assessed the impact of monetary policy on Economic growth in Nigeria using an ECM and time series annual data from 1982-2013. The findings revealed that a unit rise in Cash Reserve Ratio (CRR) led to approximately 7 units rise in economic growth in Nigeria, and concluded that CRR should be given prompt attention as a monetary policy tool in Nigeria due to its efficacy in economic stabilization.

Adigwe et al. (2015), undertook a critical examination of monetary policy and economic growth in Nigeria, using Ordinary Least Squares (OLS) method with time series data from 1980 - 2010. The study showed that monetary policy shows positive effect on GDP growth but negatively impacts inflation rate.

Akinjare et al. (2016) examine the effectiveness of monetary policy on Nigeria’s economic development. The study employed OLS as a method of analysis, using time series data. The result showed that interest rate, exchange rate, and supply of money significantly impact the economy, while inflation rate was not a statistically significant variable in influencing economic development in Nigeria. Again, Imoisi et al. (2014), evaluated monetary policy effect on selected macroeconomic variables such as: GDP, unemployment, inflation and BOP, using annual data spanning 1970 – 2012; and adopting co-integration and the Error Correction Model. The results revealed the existence of a long-run relationship between monetary policy variables and the selected macroeconomic variables. It was also revealed that monetary policy showed a moderate impact on the selected macroeconomic variables in Nigeria. The conclusion reached was adequate sanitization of the banking environment by the CBN in order to improve the efficacy of monetary policy in Nigeria.

Enock and Nicholas (2017), surveyed the existing literature on the nexus between monetary policy and economic growth and maintained that the link between the two is inconclusive. However, despite the inconclusiveness, the study showed that majority of the findings in the literature supported the relevance of monetary policy in driving growth in financially developed economies with

fairly independent Central Banks while the nexus was weaker in developing economies with relatively underdeveloped financial markets that are weakly integrated to the world market.

Finally, Ayinde and Adekunle (2017), examined the relationship between monetary policy efficiency and inclusive growth in Nigeria using Data Envelopment Analysis (DEA) approach from 1980-2015. The results of the DEA showed that Nigeria monetary policy requires some level of amendment before efficiency can be achieved to affect inclusive growth. Again, the SVAR framework results indicate that the shock from money supply and financial openness substantially impact inclusive growth.

### 2.2.1. Research gap

From the foregoing empirical literature, almost all the studies examined the effects of monetary policy, as an aggregation of instruments, on economic growth. But this study departs from other studies by specifically evaluating the impact of monetary policy rate (MPR) on growth of the Nigerian economy using Two-stage Least Squares (2SLS) instrumental variable approach, which none of the reviewed studies in Nigeria has used. While monetary policy aims at controlling the quantity and availability of money in the economy and the conduit by which new money is supplied; monetary policy rate is the interest rate at which the apex bank lends to other banks and the bench mark rate which determines the flow of credits to various sectors of the economy to stimulate investment and hence growth. The specific evaluation of the impact of this bench mark rate on growth, upon which all other rates are pegged in the economy, is the point of departure of this study which to the best of our knowledge has not been investigated by previous studies in Nigeria.

## 3. RESEARCH METHODOLOGY

This study employed Two-stage Least Square (2SLS) instrumental variable approach as its methodology. The 2SLS estimation technique is a statistical procedure that is used in the analysis of structural equations. This technique is an augmentation of the ordinary least square (OLS) method. It is used when a correlation exists between the dependent variable's error term and explanatory variables. Furthermore, it is useful when there are feedback loops in the model Thornton (1990).

The choice of this econometric technique is based on the fact that most economic models are endogenous. That is, a theoretical relationship that does not follow the path of  $Y_t$  (dependent variable) being regressed on  $X_t$  (independent variable), in which we can assume that the  $Y_t$  variable is determined by (but does not jointly determine)  $X_t$  (Wooldridge, 2009). Below is a structural equation model for multiple regression analysis, forming the framework on which this paper is based.

$$Y_t = \alpha_0 + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \varepsilon_t \quad (4)$$

Where:  $Y_t$  = dependent variable,  $\alpha_0$  = intercept,  $\beta_1$ ,  $\beta_2$  and  $\beta_3$  are variable coefficients,  $X_1$ ,  $X_2$  and  $X_3$  = regressors and  $\varepsilon_t$  = error term.

$Y_t$  and  $X_1$  variables are endogenous, while the  $X_2$  variable is exogenous. Wooldridge (2009) stated that the endogenous

character of  $X_1$  shows that if OLS estimates the above equation, the point estimates will be biased and inconsistent since the error term will be correlated with  $X_1$ . Therefore, as a corrective measure, we employ an instrument for  $X_1$  (i.e., correlated variable with  $X_1$ ); but not correlated with the error term. Specifying the endogenous explanatory variable in respect of the exogenous variables, including the instrument ( $\lambda_1$ ) we have:

$$X_{1t} = \alpha_0 + \varphi_1 X_{2t} + \varphi_2 \lambda_{1t} + \mu_{1t} \quad (5)$$

Where:  $\alpha_0$  = intercept,  $\varphi_1$  and  $\varphi_2$  = instrumental variables coefficients, and  $\mu_{1t}$  = instrumental model error term.

### 3.1. Model Specification

To evaluate the impact of monetary policy rate on economic growth in Nigeria, we specify the following functional model, which is anchored on the Keynesian theory of interest rate.

$$GRGDP = f(MPR, CPI, REXR) \quad (6)$$

$$MPR = f(GRGDP, REXR, CPI, LIR, M2/GDP, CPS/GDP) \quad (7)$$

Where:  $GRGDP$  = Growth Rate of Real GDP (proxy for economic growth),  $MPR$  = Monetary Policy Rate;  $CPI$  = Consumer Price Index (Proxy for inflation);  $EXR$  = Real Exchange Rate;  $LIR$  = Lending Rate;  $M2/GDP$  = Ratio of broad money supply to GDP,  $CPS/GDP$  = Private sector credit to GDP ratio. Equation 6 is transformed into an econometric form as follows:

$$GRGDP_t = b_0 + b_1 MPR_{t-1} + b_2 CPI_{t-1} + b_3 REXR_{t-1} + \varepsilon_t \quad (8)$$

However, if we choose to estimate the above model using OLS, there is a tendency for the problem of endogeneity to occur; since  $MPR$  is determined by many other factors such as lending interest rate ( $LIR$ ), Credit to the private sector as a ratio of GDP ( $CPS/GDP$ ), broad money supply as a ratio of GDP ( $M2/GDP$ ), liquidity ratio ( $LR$ ), cash reserve ratio ( $CRR$ ), and Open market operation ( $OMO$ ), etc. Thus applying OLS would yield biased inferences. Moreover, the general fundamental challenges associated with the use of OLS in estimating most economic relationships, which include non-linearity in most economic relationships, the possibility of high correlation between a subset of the explanatory variables, discriminatory results for simultaneous equations, and the problem of endogeneity; have made the use of OLS non reliable. Thus, the instrumental variable (IV) approach has come to be an effective technique of resolving issues with endogenous effect. Also, the estimators used in our study are either IV or the Generalized Method of Moment (GMM). Making use of the GMM estimator, we can resolve the issues of heteroskedasticity and autocorrelation that may occur in the error structure by using the consistent estimator. The 2SLS-GMM presents some efficiency gains over the traditional IV estimator derived from the optimal weighting matrix (Iyoha and Ekanem, 2004).

Based on the explanation made above,  $MPR$  is taken as endogenous variable in this study. There are however, some other factors that directly impact the behaviour of  $MPR$  as an endogenous variable, known as the instruments; making the impact of  $MPR$  on economic

growth to be directly linked to the exogenous effect from these instrumental variables. This relationship is expressed in equation (9) as follows:

$$\text{MPR} = \alpha_2 + \alpha_1 \text{INFL}_{t-1} + \alpha_2 \text{REXR}_{t-1} + \alpha_3 \text{LIR}_{t-1} + \alpha_4 \text{M2/GDP}_{t-1} + \alpha_5 \text{CPS/GDP}_{t-1} + \alpha_6 \text{CRR}_{t-1} + \alpha_7 \text{RGDP}_{t-1} + \varepsilon_t \quad (9)$$

Where: INFL = inflation rate; CRR = cash reserve ratio; and all other variables are as defined earlier.

## 4. RESULTS AND DISCUSSION

### 4.1. Unit Root Test

The nature of most time series data which more often than not are non-stationary has made it imperative to conduct unit root test to ensure that they are stationary. If the variables are found to be stationary at their level form, inferences obtained from the Two Stage Least Squares model are considered valid. However, if the series exhibits non-stationarity properties, it becomes imperative to carry out a first-order stationarity test. If stationarity is attained, the series can be said to be free from unit root. This study used the Augmented Dickey-Fuller (ADF) and the Phillips-Perron (PP) unit root testing procedures to ascertain the level of stationarity of the series. The null hypothesis is that the variables under investigation have a unit root against the alternative that maintains that, it does not. The ADF and PP unit root test results of the variables under study are displayed in Tables 2 and 3 respectively.

From the ADF unit root results in Table 2, none of the variables was stationary at level. While MPR was stationary at first difference, the rest of the other variables were stationary at their second difference. In order to have complete confidence in the unit root results, we re-examined the data using the Phillip-Perron stationary test and the findings are presented in Table 3.

The result obtained in Table 3 showed that all the variables were stationary at the first difference, which implies that they are integrated of order one, that is, I(1). Since Phillips-Perron unit root results are more robust, this study relies on them for analysis.

### 4.2. Presentation of Regression Results

The estimated regression results are presented in Table 4 below.

### 4.3. Results and Discussion of Findings

Table 4 presents the empirical results of the study. The result outputs are for the OLS and 2SLS which is an extension of the OLS method. The result revealed that almost all the variables were consistent with a priori expectation and impacted significantly

economic growth except for inflation. However, despite the robustness of the results, the diagnostic residual test conducted, showed the absence of normality and existence of serial correlation but equal variance. This may not be unrelated to the endogeneity problem between the regressors. Thus, inferences from the results were regarded as unreliable, prompting the estimation of the instrumental variables (IV) output to correct for these deficiencies. Using the Durbin-Wu-Hausman test, also referred to as the Regressor Endogeneity test to assess both the OLS and the 2SLS outputs, confirms the endogeneity status of monetary policy rate (MPR) at the 10 per cent significance level earlier hypothesized. In addition, to provide diagnostic information on the instruments used in estimating our model, the weak instrument diagnostic test was conducted using the Cragg-Donald F- statistic, Stock-Yogo critical values and the Moment Selection Criteria (MSC).

The test procedure is: Reject H0 if  $gmin \geq dbias$ , TSLS (b; K2, n,  $\delta$ ),

Following the Cragg-Donald F-statistic results, the Stock-Yogo relative bias is less than the F-statistic for 2SLS at the 10% significance level. Furthermore, the F-statistic is greater than the Stock-Yogo relative size at the 20% significance level for both approaches. Thus, we reject the null hypothesis that the instruments are weak and validate the alternative that they are not. This result further validates the superiority of the IV estimation technique to the OLS approach in this study. Hence, we conclude that the instruments are potent in neutralizing the endogeneity effect in the model. Moreover, the residual test conducted on the 2SLS output validates the absence of serial correlation in the error term. Also, the test shows no heteroskedasticity in the model, which implies the model can be relied upon in policy formulation hence there is no need for 2SLS-GMM.

#### 4.3.1. 2SLS output analysis

From the results, we observed that the coefficient of the control variables in the model such as the real exchange rate was negative and has a significant effect on growth of the Nigeria economy. Again, 1 year lag of real exchange rate has a positive and significant impact on economic growth. Also, inflation as one of the control variables has a negative but insignificant impact on growth of Nigeria's economic growth of the Nigerian economy for the period under investigation.

MPR, the primary variable, has a negative coefficient (-0.808507) and significant impact on Nigeria's economic growth with a probability value of 0.007 (Table 4). The negative sign of the MPR is in line with a priori expectation. An increase in MPR which is the bench mark rate for other interest rates, will cause a rise in

**Table 2: ADF unit root test results**

Variables	ADF at level. ( ) Critical values at 5%*	ADF 1 <sup>st</sup> Diff. ( ) critical values at 5%*	ADF 2 <sup>nd</sup> Diff. ( ) critical values at 5%*	Remark
MPR	(1.392306) -2.925169*	(6.883085) -2.926622*	-	I (1)
RGDP	(1.973718) -2.931404*	(1.251951) -2.931404*	(20.84441) -2.931404*	I (2)
INFL	(1.357310) 2.931404*	(0.462578) -2.931404*	(48.26803) -2.931404*	I (2)
EXR	(0.398623) -2.931404*	(2.007086) -2.931404*	(12.18433) -2.931404*	I (2)

\*Denotes critical values at 5% confidence levels. Values in ( ) represent ADF test statistics. Source: Authors' computation (2022)

them and a disincentive to investment thus leading to a decline in economic growth. For example, if MPR increases, lending interest rate will also increase leading to fall in investment and economic growth. This negative effect can be linked to the exogenous variables that impact the monetary policy rate (MPR). Thus,

when high inflation, high real interest rate, and high lending rate, Cash reserve ratio, and liquidity ratio are present in the economy, they will negatively impact the ability of the financial institutions to grant credit to the private sector. When there is a reduction in the quantum of credit to the private sector, the productivity level is expected to drop. Thus, unemployment will ensue in the economy, and aggregate economic growth declines (Odhiambo, 2007; 2008). It is therefore suggested that if the monetary policy rate (MPR) set by the monetary policy committee is lower than the current rate of 11.50%, its impact on economic growth will be more robust. Also, while real exchange rate (REXR), one of the control variables has a negative and significant impact on economic growth, the other control variable, inflation (INFL) has a negative but statistically insignificant impact on economic growth. However, the lagged value of REXR exhibits a positive and significant impact on economic growth in Nigeria; this implies that the prevailing exchange rate of the Nigerian naira to the U.S. dollar affect the Economy of Nigeria significantly affects

**Table 3: Phillips-Perron unit root test results**

Variables	PP Stat at level. ( ) Critical values at 5%*	PP 1 <sup>st</sup> Diff. ( ) critical values at 5%*	Remark
MPR	(-2.610097) -3.508508*	(-6.809539) -3.510740*	I (1)
RGDP	(-2.383178) -3.508508*	(-6.645221) -3.510740*	I (1)
CPI	(-1.605536) -3.508508*	(-13.54126) -3.510740*	I (1)
EXR	(-1.562891 ) -3.508508*	(-7.766123) -3.510740*	I (1)

\*Denotes critical values at 5% confidence levels. Values in ( ) represent PP test statistics.  
Source: Authors' computation (2022)

**Table 4: Estimated regression output**

Dependent Variable: GRGDP				
Instrument specification: REXR INFL M2GDP CPSGDP CRR LIR INFL(-1) MPR(-1) REXR(-1) GRGDP(-1) @TREND				
OLS output		2SLS output		Prob.
Variables	Coefficient	Variables	Coefficient	
Intercept	17.01375	C	17.29007 (9.349552)	0.0000
MPR	-0.771457	MPR	-0.808507 (-5.035838)	0.0007
REXR(-1)	0.037126	REXR(-1)	0.037484 (2.130719)	0.0619
REXR	-0.044021	REXR	-0.043359 (-2.624711)	0.0276
INFL	-0.153149	INFL	-0.157685 (-1.327118)	0.2172
Note: values in parentheses are t-statistic.				
R. Squared	0.924310	R. Squared	0.923853	
Adj. R squared	0.890670	Adj. R squared	0.890009	
		F-Statistic	27.79362	0.000047
Residual test				
JB Normal test	0.0343968	JB Normal test	0.255388	
BG Serial correlation test				
Obs R- Square	2.652159	Obs R- Square	3.012437	
Heteroskedasticity test.				
Obs R-Square	4.988902	Obs R-Square	4.740475	
IV Diagnostic test: 2SLS				
Endogeneity test				
Endogenous variable				
MPR		Weak instrument		
Diff. J stat. 3.664582		Cragg-Donald F-stat. 16.85004		
J. Stat Summary		Stock-yogo TSLS (relative bias)		
Restricted J. Stat. 8.938016		Critical value		
Unrestricted J. Stat. 5.273434		5%	20.25	
		10%	11.39	
		20%	6.69	
		30%	4.99	
Yogo - Stock critical value (size)				
		10%	33.84	
		15%	18.54	
		20%	13.24	
		25%	10.50	
Moment selection criteria				
SIC Based		-13.23163		
HQIC		-8.412067		
Relevant MSC		-14.21583		

the macroeconomic performance of the country. This result is consistent with the findings of Imoisi et al. (2014), who found that monetary policy variables exerted some impact on selected macroeconomic variables including Gross Domestic Product (GDP) in Nigeria. Our results showed that monetary policy rate has a negative and significant impact on economic growth in Nigeria.

## 5. CONCLUSION

The paper empirically examined the impact of monetary policy rate (MPR) on economic growth in Nigeria using annual data for the period, 2006-2020. The paper adopted a simultaneous equation model, precisely the 2SLS technique. The instrument variables used are Broad money supply to GDP ratio (M2/GDP), Credit to the private sector as a ratio of GDP (CPS/GDP), Cash reserve ratio (CRR), Liquidity ratio (LQR) and Lending interest rate (LIR). The preliminary test result for PP revealed that the data were all stationary at first difference. The weak instrument test result shows that the instrumental variables in the analysis were robust instruments at 10 and 20%. The residual results indicate that there is absence of heteroskedasticity in the model. The findings of this paper further revealed that monetary policy rate showed negative and significant impact on economic growth in Nigeria. Real exchange rate (REXR) exhibited negative but significant impact on the Economy while one year lagged value of REXR has a positive and significant impact on the Economy. It was only inflation, though consistent with a priori expectation that was not statistically significant. This implies that it has little or no impact on growth.

Given the significant impact of monetary policy rate on economic growth in Nigeria, the Central bank of Nigeria, through its Monetary Policy Committee should ensure that the fixing of the monetary policy rate is such that it enables the flow of credit in the desired direction to boost investment and economic activities in the economy. In this regard, since low MPR encourages GDP growth, Monetary Policy Committee (MPC) should identify the Monetary Policy Rate (MPR) threshold that is suitable for maintaining price stability, investment and output growth in the economy.

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