



THE EFFECTIVENESS OF MONETARY POLICY ON ECONOMIC GROWTH IN NIGERIA (1987-2017)

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Abstract

The study intended to analyze the effectiveness of monetary policy on economic growth in Nigeria from 1987-2017. While, specific objective was to investigate the effectiveness of monetary policy on economic growth in Nigeria and examined the short and long run relationship between monetary policy and economic growth in Nigeria. The study utilized secondary sources of data. The study employed autoregressive distributive lag (ARDL) method to establish the effect of explanatory variable on dependent variable. Other estimation techniques used includes; co-integration (f-bound test), Augmented dickey Fuller unit root test, error correction model (ECM) and Descriptive analysis. Based on the finding, the study concluded that money supply has a negative insignificant effect on economic growth in the short and long run. Therefore, the study recommended that government the government should also endeavour to make the financial sector less volatile and more viable as it is in developed countries. This will allow for smooth execution of the Central Bank monetary policy.

Keyword: Monetary policy, Economic growth, Money Supply, F-Bound test, ECM

INTRODUCTION

The persistent low level of economic growth in Nigeria has been one of the subject matters of concern to economists and policy makers; this is caused on account of increasing unemployment rate, low level of investment, high rate of inflation and unstable foreign exchange rate. These perceived problems are being claimed to have caused a decline in the economic growth of Nigeria. It therefore, becomes necessary to highlight the monetary policy in Nigeria



and examine the extent to which it has actually contributed to the growth in the economy (Nwoko, Ihemeje, & Anumadu, 2016) In order to promote economic activities, Nigeria's economic policies have been concentrated on monetary policy which is done through money supply in order to enhance financial stability. Monetary policy is an economic strategy taken by the government normally through the apex bank of a nation – Central Bank to influence the economy. It is geared towards creating stability in the economy and fostering economic growth which have been the quest of every nation (Sulaiman & Migiro, 2014).

Monetary policy promotes sustained and continuous economic growth which implies the utilization of all the productive natural, human and capital resources in such a manner as to ensure a sustained increase in national and per capita income over time. This is achieved by maintaining equilibrium between the total demand for money; total production capacity and further creating favorable conditions for saving and investment. For bringing equality between demand and supply, flexible monetary policy is said to be the best course (Arawomo, 2016).

In Nigeria, the Central Bank of Nigeria (CBN) among others serves as the major agent for promoting monetary and price stability with an efficient and reliable means of financial system through the application of appropriate monetary policy instruments. Since its establishment in 1959, the Central Bank of Nigeria (CBN) has continued to play the traditional role expected of a central bank, which is the regulation of the stock of money in such a way as to promote the social welfare. This role is anchored on the use of monetary policy that is usually targeted towards the achievement of full-employment equilibrium, rapid economic growth, price stability, and external balance. Thus, inflation targeting and exchange rate policy have dominated CBN's monetary policy focus based on assumption that these are essential tools of achieving macroeconomic stability (Ajayi, 1999) .

The economy has also witnessed times of expansion and contraction but evidently, the reported growth is still a serious concern to the economist as there is evidence of growing poverty among the populace. The question is, should the period of growth be attributed to appropriate monetary policy? And should the periods of economic down turn be blamed on factors other than monetary policy ineffectiveness? What measures are to be considered if monetary policy would be effective in bringing about sustainable economic growth and development? These are the

The state of economic degradation brings about the need for appropriate and workable monetary policies to ensure that predetermined macroeconomic objectives are achieved. The monetary authority comes up with guidelines geared towards the enhancement and development of policy variable designed to ensure desirable performance of the banking industry and most importantly to advise the macroeconomic objectives (Ajibola & Adeyemi, 2018).

Despite the various monetary regimes that have been adopted by the Central Bank of Nigeria over the years, inflation still remains a major threat to Nigeria's economic growth. Nigeria has experienced high volatility in inflation rates. The growth of money supply is correlated with this high inflation episode because money growth was often in excess of real economic growth. Nigerian economy has also witnessed times of expansion and contraction with an unsustainable growth pattern. Thus, interest rate is an important determinant of economic growth in Nigeria (Adigwe, 2015).

Therefore, the question on whether or not monetary policy measures actually have an effect on the Nigerian economic growth remains unsolved. both at the industrial and agricultural sectors of the economy. This study is intended to guide the understanding of basic objectives of monetary policy, the problems of implementing the monetary policy objectives and proffer solutions to each of these problems. This study will also provide policy recommendations to monetary policy committee of the CBN on ways to make Nigerian economy vibrant through the monetary policy. It will also be a source of enlightenment for people and students outside the scope of economics for them to know more about the effectiveness of monetary policy and serve as a guide to the general public in appreciating the government policies and their implementations and the possible effect on the general welfare of the public.

LITERATURE REVIEW

Monetary Policy

Monetary policy is certainly one of the major drivers of economic growth and development through its impact on economic variables. Monetary policy is the deliberate use of monetary instruments (direct and indirect) at the disposal of monetary authorities such as central bank in order to achieve macroeconomic stability. Monetary policy is essentially the tool for executing the mandate of monetary and price stability. Monetary policy is essentially a programme of action undertaken by the monetary authorities, generally the central bank, to control and regulate the supply of money with the public and the flow of credit with a view to achieving predetermined macroeconomic goals (Dwivedi, 2005). The Central bank of Nigeria (CBN) explained monetary policy as deliberate and conscious action of the monetary authorities to influence the quantity, cost and availability and value of money credit in order to achieve desired macroeconomic objectives.

Economic Growth

The term economic growth means the increase in the overall productivity that is measured by the gross domestic product (GDP). Productivity means the tendency of a state to produce goods

and services from its own resources. Any rise in the productivity marks the increase in the economic growth. Ogbulu, (2012) defined economic growth as the sustained rise in the output of goods, services and employment opportunities with the sole aim of improving the economic and financial welfare of the citizens. Hardwick, (1994) have defined economic growth as an increase in a country's productive capacity, identifiable by a sustained rise in real national income.

Theoretical Review

The Keynesian Theory

Keynesians believed that expansionary monetary policy increases the supply of loanable funds available through banking system, causing interest rates to fall. With lower interest rate, aggregate expenditures on investment and interest-sensitive consumption goods usually increase, causing real GDP to rise. Hence, monetary policy can affect real GDP indirectly. In the Keynesian theory, monetary policy plays an important role in affecting economic activity, it contends that the change in the supply of money can permanently change such variables as the rate of interest, the aggregate demand and the level of employment, output and income level (Jelilov & Onder, 2016) .

The Classical Monetary Theory

The classical school evolved through joint efforts and contribution of economists like Jean Baptist Say, Adam Smith, David Richardo Pigou and others who shared the same beliefs. The classical model attempts to explain the determination, savings and investment with respect to money (Onyeiwu C. , 2012) . The classical economists' view of monetary policy is based on the quantity theory of money. The quantity theory of money is usually discussed in term of fisher's equation of exchange, which is given by the expression $MV = PY$. In the classical system, the main function of money is to act as medium of exchange, it determined the general level of prices in which goods and services will be exchanged (Jelilov & Onder, Entrepreneurship: Issues and Solutions Evidence From Nigeria., 2016) .They believe that the economy automatically tends towards full employment by laying emphasis on price level to control the rate of inflation

The Modern Approach to Monetary Policy

The modern economist rejects the Keynesian view that link between the supply of money and output is the rate of interest, this theory considered only two types of assets; bonds and speculative cash balances, and the allocation depended on the rate of interest which in turn

resulted in changes in output (Jhingan 2010). This theory is a restatement of the quantity theory in the modern terms, this theory view velocity of circulation as a stable function of a limited number of key variables, the velocity bears a stable and predictable relationship to a limited number of other variables, and determines how much money people will hold rather than motive for holding more and sees money as the main type of asset which yields a flow of services to its holders, according to the functions it performs(Friedman 1956).

Empirical Evidences

Monetary Policy is geared toward achieving the economic growth and economic performance. Alavinasab, (2016) examined the impact of monetary policy on economic growth in Iran by using time series data which appropriate with error correction model (ECM), the finding of regression shows that money supply, exchange rate and inflation had a long run significantly relationship on economic growth. Similarly, Onyeiwu, (2012) Examined the effectiveness of monetary policy on the Nigeria economy using Ordinary Least Squares (OLS) method to analyze data between 1981-2008. The result of the analysis shows that monetary policy represented by money supply exert a positive effect on GDP growth and balance of payment but negative effect on rate of inflation and he concluded that CBN monetary policy is effective in regulating the liquidity of the economy which affects some macroeconomic variables such as output, employment and price. Moreso, in the works of Amassoma, (2011) he examined the effect of monetary policy on macroeconomic variables in Nigeria for the period 1986 to 2009. The study adopted a simplified Ordinary Least Squared technique (OLS) 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 had a significant effect on exchange rate and money supply while monetary policy was observed to have an insignificant influence on price instability.

Similarly, Fasanya, (2013) examined the impact of monetary policy on economic growth in Nigeria. The study used time-series data covering the range of 1975 to 2010. The effects of stochastic shocks of each of the endogenous variables are explored using Error Correction Model (ECM). The study showed that long-run relationship exists among the variables. In addition, the core finding of this study showed that inflation rate, exchange rate and external reserve are significant monetary policy instruments that drive growth in Nigeria. Also, Adefeso, (2010) estimate the relative effectiveness of fiscal and monetary policy on economic growth in Nigeria using annual data from 1970-2007.

METHODOLOGY

Source of Data

The study relied on secondary data, which is time series in nature. The time series data covered a period of 30 years spanning through 1987-2017.

Model Specification:

In specifying our model, this study will adopt the model as specified by Adegbite, (2013), with some modifications and the inclusion of monetary policy ratio and liquidity ratio as some of the explanatory variables. This is to make the model more robust.

This is expressed functionally as;

$$RGDPGR_t = F (MSt, INTR_t, MPRT, INFRT, LRT) \dots\dots\dots (1)$$

The operational form of the model is stated thus:

$$RGDPGR_t = \beta_0 + \beta_1 M_{2t} + \beta_2 INTR_t + \beta_3 MPRT + \beta_4 INFRT + \beta_5 LRT + \mu_t \dots\dots\dots (2)$$

β_0 is the constant while $\beta_1 - \beta_5$ are the coefficients of the relationships between the independent variables and the dependent variable. μ is the stochastic error term for the time period covered by the study.

RGDP_t = Real Gross Domestic Product growth rate

M_{2t} = Money Supply

INTR_t = Interest Rate

MPRT= Monetary policy ratio

INFRT = inflation rate

LRT =liquidity ratio

β = intercept

μ = white noise or error term

Apriori Expectation

This refers to the supposed relationship between and or among the dependent or independent variables of the model as determined by the postulations of economic theory. We then differentiate partially with respect to each variable to obtain a-priori sign expectation of equation.

$$\frac{dGDP}{dM_2} = \beta_1 < 0 \quad i$$

dM_2

$$\frac{dGDP}{dINTR} = \beta_2 > 0 \quad ii$$

$dINTR$

$$\frac{dGDP}{dMPR} = \beta_3 < 0 \quad iii$$

$dMPR$

$$\frac{dGDP}{dt} = \beta_4 > 0 \quad \text{iv}$$

$\frac{dINFR}{dt}$

$$\frac{dGDP}{dt} = \beta_5 > 0 \quad \text{v}$$

$\frac{dLR}{dt}$

The expected a priori is that:

- β_0 is to take care of the constant variable;
- β_1 is the coefficient of money supply (M_2), which is expected to be less than zero ($\beta_1 > 0$) due to its negative relationship with the gross domestic product in Nigeria;
- β_2 is the coefficient of interest rate (INTR), which is expected to be greater than zero ($\beta_2 < 0$) due to its positive relationship with the gross domestic product in Nigeria;
- β_3 is the coefficient of monetary policy ratio (MPR), which is expected to be less than zero ($\beta_3 < 0$) due to its negative relationship with gross domestic product in Nigeria;
- β_4 is the coefficient of inflation rate (INF), which is expected to be greater than zero ($\beta_4 < 0$) due to its positive relationship with gross domestic product in Nigeria;
- β_5 is the coefficient of liquidity ratio (LR), which is expected to be greater than zero ($\beta_5 > 0$) due to its positive relationship with gross domestic product in Nigeria;

Estimation Techniques

Econometric techniques were used to analyse the objectives. Time series data covering a period of 30 years will be estimated using descriptive statistics and Auto Regressive Distributed Lag (ARDL) approach, and cointegration (F-bound test) to be computed by Eviews 10. This technique was chosen as it depicts long-run and short run relationship between variables. The following techniques of estimation are also employed in carrying out the Auto Regressive Distributed Lag (ARDL) analysis:

Unit Root Test

The specification of ADF test is given as follows;

$$\Delta Y_t = \alpha + \beta_t + \rho Y_{t-1} + \sum \delta \Delta Y_{t-1} + \mu_t \dots \dots \dots (3)$$

Where Y_t is the level of the variable under consideration, t denotes time trend and μ_t is error term assumed to be normally and randomly distributed with zero mean and constant variance. The optimal lag length would be chosen on the basis of Akaike Information Criterion (AIC). Before using the Autoregressive Distributed lag (ARDL) approach model, the study would test the time series properties of the data to check whether the univariate series were either $I(0)$ but not $I(2)$, which is a precondition before one can employ the ARDL approach.

Auto Regressive Distributed Lag (ARDL) technique

ARDL is preferable when dealing with variables that are integrated of different order, I(0), I(1), or combination of both and, robust when there is a single long run relationship between the underlying variables in a small sample size. The long run relationships of the underlying variables are detected through the F- statistics. In this approach, Long run relationship of the series is said to be established when the F- statistics exceed the critical value band.

The Error Correction Model Equation

The purpose of the error correction model is to indicate the speed of adjustment of a departure from long-run equilibrium. However, the greater the co-efficient of the parameter (which is always significantly negative and less than one) the higher the speed of adjustment of a departure from long-run equilibrium. The Error Correction model is represented as follows:

$$\Delta Y_t = \alpha_0 + b_1 \Delta X_t - \lambda \hat{u}_{t-1} + Y_t \dots \dots \dots (4)$$

RESULTS AND DISCUSSIONS

Table 1: Descriptive analysis

	GDPGR	INF	INTR	LR	M2	MPR
Mean	0.233150	0.207539	0.190565	0.458121	0.146412	0.138871
Median	0.191987	0.121685	0.179800	0.459500	0.131318	0.135000
Maximum	0.642376	0.767589	0.298000	0.641000	0.213073	0.260000
Minimum	0.057290	0.002236	0.135425	0.291000	0.091517	0.060000
Std. Dev.	0.134041	0.194246	0.035185	0.087523	0.039704	0.039617
Skewness	1.197848	1.571203	1.422835	0.092339	0.414838	0.656858
Kurtosis	4.330258	4.245466	4.786926	2.895506	1.686690	4.632954
Jarque-Bera	9.699050	14.75845	14.58413	0.058157	3.116977	5.673500
Probability	0.007832	0.000624	0.000681	0.971340	0.210454	0.058616
Observations	31	31	31	31	31	31

* Significant at 5% Level

Table 1, showed the average value of the series i.e mean of GDPGR, INF, INTR, LR, M2, MPR is (0.233150, 0.207539, 0.190565, 0.458121, 0.146412, 0.138871). Standard deviation is a measure of asymmetry of the distribution of the series around its mean (0.134041, 0.194246, 0.035185, 0.087523, 0.039704, 0.039617). The skewness of a normal distribution is zero. Positive skewness implies that the distribution has a long right tail and negative skewness

implies that the distribution has a long left tail. From the above table, all the variables have positive skewness and thus, they have long right tail.

Kurtosis measures the peakedness or flatness of the distribution of the series. If the kurtosis is greater than three, the distribution is peaked or leptokurtic relative to normal and if the kurtosis is lesser than three, the distribution is flat or platykurtic relative to normal. From the table, GDPGR, INFR, MPR and INTR has its value greater than three, thus it is peaked while M2 and LR are below three and are therefore flat or platykurtic. Jarque-Bera is a statistical test that determines whether the series is normally distributed. The null hypothesis here is that the series is normally distributed (i.e . skewness = 0) so as to be consistent with skewness test. The Jarque-Bera statistics here rejects the null hypothesis for GDPGR, INF, INTR since their probability values are low and accept the null hypotheses for LR, M2, MPR since their probability value are high. We therefore conclude that GDPGR, INF, INTR variables are normally distributed during the period 1987-2017.

Unit Root Test Result

The table below shows the result of the Augmented Dickey-Fuller (ADF) unit root test conducted on the variables.

Table 2: Result of unit root test

Variable	Level ADF Test Statistic	MacKinnon Critical Value at Level at 5% level	First Difference ADF Test Statistic	MacKinnon Critical Value at First Difference at 5% level	Decision
GDPGR	-3.092413	-2.963972	-3.092413	-2.963972	I(0)
M2	-1.033764	-2.963972	-4.923434	-2.967767	I(1)
LR	-3.153948	-2.963972	-6.071098	-2.967767	I(0)
INTR	-4.045988	-2.963972	-7.515661	-2.971853	I(0)
INF	-2.673698	-2.963972	-4.697771	-2.981038	I(1)
MPR	-2.957995	-2.963972	-7.572546	-2.967767	I(1)

*Significant at 5% level.

Table 2, showed the ADF Unit Root Test to determine the order of integration of the variables. The ADF was carried out at Level and at First-difference. The null hypotheses underlying the unit root testing is that the variables under investigation have a unit root and the alternate that there is no unit root. The ADF Unit Root results shows that GDPGR, LR and INTR are stationary

at level (i.e integrated at I (0)) while INF, M_2 and MPR are stationary at first difference (i.e integrated at I(1)) these result support the findings of (Umaru, 2012). This therefore implies that the variables specified to be used in this model are stationary and can be used to run any necessary analysis that is needed.

Table 3: Autoregressive Distributed Lag Model

Dependent Variable: D(RGDPGR)			
Method: ARDL			
Proxy for MONETARY POLICY			
Variable	Coefficient	t-Statistic	Prob.
C	0.011433	0.612591*	0.5507
D(GDPGR(-1))	-0.436799	-2.275174	0.0405
D(M2)	-4.361132	-3.396548	0.0048
D(M2(-1))	3.214744	1.734522	0.1065
D(M2(-2))	-1.690372	-1.078722	0.3003
D(MPR)	0.617197	0.872211	0.3989
D(MPR(-1))	-2.019162	-2.759728	0.0162
D(LR)	0.378127	1.457737	0.1686
D(LR(-1))	0.039688	0.198309	0.8459
D(LR(-2))	0.605989	2.729350	0.0172
D(INF)	0.978302	4.025635	0.0014
D(INF(-1))	-0.217245	-0.960358	0.3544
D(INF(-2))	0.517223	2.138722	0.0520
D(INTR)	1.480327	2.180125	0.0482
D(INTR(-1))	0.859909	1.361876	0.1964
R-squared	0.830619	F-statistic	4.553581
Adjusted R-squared	0.648209	Prob (F-statistic)	
Durbin-Watson Stat:	2.174435		0.004800
Breusch-Godfrey Serial Correlation LM:	0.134617	Prob(F-statistic)	0.8755

* Significant at 5% Level

Table 3 showed the estimated model, that money supply has a negative insignificant effect on economic growth in Nigeria in the short run for the period under review.

The coefficient of determination (R^2) and its adjusted R^2 are 0.83 and 0.64 respectively implying that there exists goodness of fit in the model. This means that about 83% of the variation in

economic growth is accounted for by variation in money supply, money policy rate, liquidity ratio, inflation rate and interest rate. The overall regression (F-Test) is significant at 5% level of significance implying that the joint effects of all the included variables were significant. The Durbin Watson statistic of 2.17 shows evidence of no autocorrelation in the model since it is approximately within the range of 2.

Error Correction Model

Table 4: Result of the Restricted Error Correction Model

Dependent Variable: D(GRGDP)			
Method: ARDL			
Proxy for monetary policy			
Variable	Coefficient	t-Statistic	Prob.
C	0.011433	0.825420	0.4240
D(INF, 2)	0.978302	8.339133	0.0000
D(INF(-1), 2)	-0.517223	-4.700530	0.0004
D(INTR, 2)	1.480327	4.604320	0.0005
D(LR, 2)	0.378127	2.834811	0.0141
D(LR(-1), 2)	-0.605989	-4.672174	0.0004
D(M2, 2)	-4.361132	-5.104495	0.0002
D(M2(-1), 2)	1.690372	1.860398	0.0856
D(MPR, 2)	0.617197	1.855299	0.0864
CointEq(-1)*	-1.436799	-9.670999	0.0000
R-squared	0.937369	F-statistic	29.93288
Adjusted R-squared	0.910998	Prob(F-statistic)	0.000000
Durbin-Watson Stat:	2.174435		
Breusch-Godfrey Serial Correlation LM: F-Stat	0.134617	Prob(F-statistic)	0.8755

Table 4, showed the result for the error-correction term (ECT) provides further direct evidence on the co-integration (i.e long run) dynamics that exist between Real Gross Domestic Product growth rate and its regressors in our model. The error correction coefficient is estimated to be -1.436799 (0.0000), which is reasonably large (and highly significant). This suggests that 100% of any disequilibrium between Real Gross Domestic Products and the regressors are corrected in one period (a year).

Table 5: F-bound test result

Panel A		
Test Statistic	Value	K
F-statistic	9.653679	5
Panel B		
Pesaran <i>et al.</i> (2001) critical values		
Critical Value Bounds	I(0)	I(1)
(at 5% Significance Level)	2.56	3.49

Table 5, showed the depicted that there is co-integration (long run relationship) as the value of the F-statistics is more than 5 percent Critical value bound of the Pesaran critical value. Therefore, we conclude that the independent variables (interest rate, inflation rate, monetary policy ratio, money supply and liquidity ratio) have a long run impact on the rate of growth. The economic implication of the result is that in the long-run, increase (decrease) in money supply, inflation rate, monetary policy ratio, interest rate and liquidity ratio will result to an increase (decrease) in economic growth in Nigeria.

CONCLUSION AND RECOMMENDATIONS

The findings of the study showed that monetary policy rate and money supply have insignificant negative effect on economic growth in Nigeria in the long-run whereas interest rate, liquidity ratio and inflation rate however have significant positive effects on growth in Nigeria between (1987-2017). On the overall, monetary policy explains 83% of the changes in economic growth in Nigeria. However, it is shown that monetary policy ratio causes economic growth meaning that there exists a uni-directional relationship between the two.

Based on the findings made in the course of this study, the study recommends that Government should embark on other measures besides monetary policy to promote economic growth. Such policies include increasing government spending on the productive sectors of the economy so as to promote economic growth, encouraging foreign direct investment (FDI) to boost domestic investments among others. Also, the Central Bank has to encourage the introduction of more financial instruments that are flexible enough to meet the risk preferences in the financial sector.

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