

## AN EVALUATION OF THE INFLUENCE OF MONEY MARKET INSTRUMENTS ON ECONOMIC GROWTH IN NIGERIA

**Udude Celina Chinyere<sup>1</sup>, Nwibo Nneamaka Fidelia<sup>2</sup>, Nnabu, B. Eze<sup>3</sup>; Anthony O. Amadi<sup>4</sup> Apolonia Amadi<sup>5</sup>**

<sup>1, 2, 3&4</sup>Department of Economics, Ebonyi State University, Abakaliki, Ebonyi State, Nigeria

<sup>5</sup>Federal University of Science and Technology (FUTO), Owerri, Imo State.

**Correspondence:** [celinaudude@gmail.com](mailto:celinaudude@gmail.com)

### Abstract

*This study investigates the impact of monetary policy variables on economic growth in Nigeria from 1981 to 2022 focusing on money supply, exchange rate, interest rate, and inflation rate. A comprehensive analysis covering both short-run and long-run perspectives reveals intriguing insights into the interactions between these financial factors and economic growth. The broad objective of the study was to investigate the impact of monetary policy variables on economic growth in Nigeria. The Ex-Post Facto research design was employed in the study whereas the Autoregressive Distributed Lag (ARDL) model was used to analyze the impact of monetary policy variables on economic growth. The study uncovers that money supply has a positive and significant impact on economic growth, implying that maintaining a balanced and effective monetary policy is vital for stimulating economic growth in Nigeria. A favorable exchange rate is found to be positively associated with economic growth, underlining the importance of exchange rate stability for attracting foreign investments and boosting exports. However, the research also highlights the adverse effect of high-interest rates on economic growth, emphasizing the need for careful management of interest rates to avoid hindering investment and consumption. On the other hand, moderate inflation rates are positively linked to economic growth, suggesting that policymakers should target a balanced inflation rate that supports economic growth. The study concludes that monetary policy variables play a pivotal role in shaping economic growth in Nigeria and offers recommendations for policymakers to optimize these variables to foster sustainable economic growth. Furthermore, it calls for further research to delve deeper into the effectiveness of specific monetary policy tools and their interaction with fiscal policies.*

**Keywords:** money market, economic growth, money supply, inflation rate, exchange rate.

### Introduction

Monetary policy is important to maintain stability in the general price level, promote output growth and employment, and adjust to macroeconomic growth (Friedman, 2000). Developing economies face challenges of growth, stability, and structural transformation, which have not been adequately addressed by fiscal and monetary policies (Bodunrin, 2016). These economies are often vulnerable to external shocks and internal destabilizations, resulting in high levels of unemployment, low income, inequality, and poverty. The Nigerian economy is particularly volatile due to its dependence on oil revenue, and experiences instability through rising inflation, massive unemployment, low output, and dwindling foreign reserves, leading to unstable exchange rates (Nwaogwugwu, 2018).

From 1990 to 2020, Nigeria implemented various monetary policies in response to different economic challenges. In the early 1990s, the country faced a severe economic crisis due to declining oil prices, which led to high inflation, currency devaluation, and a balance of payments crisis (Adeniyi, 2020). To address these challenges, the government adopted a Structural Adjustment Program (SAP), which

included monetary and fiscal policies aimed at reducing inflation and stabilizing the economy. During the 2000s, Nigeria experienced a period of sustained economic growth, which was supported by prudent monetary and fiscal policies. The Central Bank of Nigeria (CBN) adopted an inflation-targeting framework in 2006, which aimed to maintain inflation within a target range of 6-9%.

Also, the country has also faced various economic challenges during this period, such as the global financial crisis of 2008 and 2009, which led to a decline in oil prices and reduced government revenues. In response, the government implemented expansionary fiscal policies, such as increased public spending and borrowing, which led to a rise in public debt. In recent years, the government has implemented various reforms aimed at improving the effectiveness of monetary and fiscal policies (Ezeaku, 2020). The CBN has introduced several measures to enhance financial stability, such as the introduction of a cashless policy, the development of a credit reporting system, and the establishment of a regulatory framework for mobile money services. The government has also implemented fiscal reforms, such as the introduction of a Treasury Single Account (TSA) to improve transparency and accountability in public financial management (Mogaji, 2020).

However, Nigeria continues to face various economic challenges, such as high inflation, low productivity, and high unemployment. The government and the CBN have implemented various policies to address these challenges, such as the adoption of a flexible exchange rate regime, the introduction of a loan-to-deposit ratio (LDR) policy to boost lending to the real sector, and the establishment of an infrastructure development fund to finance critical infrastructure projects (Ogundipe&Akinbobola, 2020). This has adversely affected both the market for foreign exchange, money, and goods and the expected role of the market in allocating resources efficiently (Onyewu, 2012). There is an urgent need for government to effectively implement monetary policy to increase economic growth. It is against this problem that this study seeks to provide answer to the following research questions: The following questions guide the study: (1) To what extent does money supply impact on economic growth in Nigeria?(2)To what degree does exchange rate affect economic growth in Nigeria?(3)What is the degree of impact of interest rate on economic growth in Nigeria?(4)What is the degree of inflation rate on economic growth in Nigeria?

## **Literature Review**

Adesoye, Maku, and Atanda (2021) used the VAR to examine monetary policy and growth in Nigeria and the result shows that there is a long-term relationship between currency variables and economic growth in Nigeria. However, as real output growth is not a top indicator for any of the monetary variables included in its analysis, the level of economic growth should not be used as a barometer to set key monetary policy rates.

Charles and Onyeiwu (2021) in their analysis of Nigeria's monetary policy and economic growth, examined the impact of monetary policy on the Nigerian economy. The Ordinary Least Squares (OLS) method was used to analyze the data between 1981 and 2018. The results show that monetary policy based on money supply has a positive impact on GDP growth and the balance of payments, but a negative impact on price inflation.

Micheal and Ebibai (2020) used OLS regression analysis to investigate the impact of monetary policy on selected macroeconomic variables in Nigeria, including GDP, inflation, and the balance of payments. The findings acknowledged that a favorable investment climate in Nigeria would boost the country's GDP growth rate.

Adeniyi (2020) examined the relationship between monetary policy and economic growth in Nigeria. The study found that monetary policy had a positive impact on economic growth in Nigeria in both the short and long run. Specifically, the study found that an increase in money supply had a positive impact on economic growth, while an increase in interest rates had a negative impact on economic growth.

Alabi and Olarinde (2020) investigated the relationship between fiscal policy and economic growth in Nigeria. The study found that government spending and taxation had a significant impact on economic growth in Nigeria, with government spending having a positive impact and taxation having a negative impact. The study also found that the impact of fiscal policy on economic growth varied by sector, with government spending having a stronger positive impact on the service sector compared to other sectors.

Umar and Murtala (2020) investigated the impact of monetary policy on economic growth in Nigeria using the Autoregressive Distributed Lag (ARDL) approach over the period 1981-2017. The findings indicate that monetary policy had significant impacts on economic growth in Nigeria in the short run and the long run. The study further reveals that government spending has a stronger positive impact on economic growth than taxation. The study concludes that the Nigerian government should focus on using fiscal policy to stimulate economic growth, especially through increased government spending on sectors that have a higher multiplier effect on economic growth, such as infrastructure development.

Mahonnye and Tenda (2019) examined the exchange rate impact on output and inflation. This research looked at the inflationary effect of currency devaluation and its contractionary effect on real output growth in Zimbabwe. The study used quarterly data from 1990 – 2006 and used the Johansen co-integration regression test and Vector Error Correction Model (VECM). The study found that in both the short run and long run, fluctuations in the real exchange rates are significant for real output growth and expansion.

Akpan and Atan (2011) investigated the effect of exchange rate movement on economic growth in Nigeria. A Generalised Method of Moments (GMM) technique was employed. The estimation results suggest that there is no evidence of a strong direct relationship between changes in exchange rate and output growth. Rather, Nigeria's economic growth has been directly affected by monetary variables.

Roland (2012) investigated the effect of interest rate fluctuation on the economic growth of Nigeria between 1970 and 2010. The study employed the ordinary least square (OLS) techniques, and the findings showed that there was an inverse relationship between interest rate and economic growth in Nigeria during this period in another study.

Ugwuanyi (2012) examined the interest rate deregulation and bank leading in Nigeria within the period 1987 to 2011. The study employed the ordinary least square (OLS) technique and the findings revealed that interest rate deregulation had a significant impact on bank leading rate and hence on investment decisions in the Nigeria economy.

Jeremiah and Emmanuel (2015) investigated the nature of the relationship between the inflation rate and economic growth rate from 1982 to 2014. The study made use of secondary data sourced from the Central Bank of Nigeria (CBN), Statistical Bulletin, and the National Bureau of Statistics (NBS). The Ordinary Least Square (OLS) logged multiple regression was employed with Gross Domestic Product (GDP) as the dependent variable and Inflation Rate (INFR), Exchange Rate (EXCHR), Input of Labour, and Input of Capital served as the explanatory variables. Our results showed that the inflation rate in line with a priori expectations had a positive relationship but was non-significant with the economic growth rate. And recommended that for sustainable economic growth to be achieved in Nigeria, the level of inflation should be stabilized by the monetary authorities.

## Theoretical Framework

The theories in which this study is anchored include the monetarists theory and the Romer model of endogenous growth theory. These theories provide a sufficient explanation of the relationship between the monetary policy variables and economic growth in Nigeria.

### Monetarists Theory

Friedman (1963) spearheaded this approach. He noted that the supply of money plays a significant and dominant role in influencing the extent of the well-being of any economy. He therefore advocated a fixed rate of money supply rather than allowing the monetary authorities to either alter or regulate its supply so as to enhance genuine economic progress., Keynes has earlier punctured this position he asserted that monetary policy works only through an indirect mechanism of interest rate and therefore not effective alone. Friedman in His response to this establishes that money supply is not and cannot be the only alternative for bonds but there are other commodities and services. He concluded that both direct and indirect impact on expenditure and investment in an economy is a function of variation in the supply of money. The above theory is significant to the present study as it discussed the importance of money supply on economic development cum wellbeing of the masses. Thus, the manifestation of economic growth results in overall sectors of the economy as well as the wellbeing of the citizens.

### Romer Model of Endogenous Growth Theory

Romer's Model is based on a view of the economy that incorporates two important points. First, it views technological progress as a product of economic activity. Previous theories treated technology as a given, or a product of non-market forces. Romer's Model under endogenous growth theory internalizes technology into a model of how markets function. Second, this growth theory holds that, unlike physical objects, knowledge and technology are characterized by increasing returns, and these increasing returns drive the process of growth Balami (2006).

This new theory addresses the fundamental questions about what makes economies grow: Why is the world measurably richer today than a century ago? Why have some nations grown more than others? The essential point of Romer's Growth Theory is that knowledge drives growth. Because ideas can be infinitely shared and reused, we can accumulate them without limit. They are not subject to what economist's call "diminishing returns." Instead, the increasing returns to knowledge propel economic growth. This growth theory helps us make sense of the on-going shift from a resource-based economy to a knowledge-based economy. It underscores the point that the economic processes that create and diffuse new knowledge are critical to shaping the growth of nations, communities, and individual firms.

## Methodology

The study adopted and modified the model used by Umar and Murtala (2020) who investigated the impact of monetary policy on economic growth in Nigeria using the Autoregressive Distributed Lag (ARDL) approach. The model is expressed as follows:

$$GDP = f(MS, EXR, INT, INF) \quad (1)$$

Equation 1 reads that Gross Domestic Product is a function of money supply, interest rate, inflation rate, and liquidity ratio. In order to capture the influence of the stochastic or random variable, the equation is explicitly transformed as

$$GDP_t = \beta_0 + \beta_1 MS_t + \beta_2 EXR_t + \beta_3 INT_t + \beta_4 INF_t + U_t \quad (2)$$

Where; GDP= Gross Domestic Product, MS = Money Supply, EXR= Exchange Rate, INT =Interest Rate, INF= Inflation Rate,  $B_0$ = Constant,  $B_1, B_2, B_3, B_4$  are Parameter Estimates,  $U_i$ =Error Term.

### A Priori Expectation

Theoretically, the study expects all the independent variables except interest rate and inflation to have a positive relationship with economic growth (GDP). The a priori is expressed as:  $M2 > 0$ ,  $EXR > 0$ ,  $INT < 0$ ,  $INF < 0$ .

### Results and Discussions

The results obtained by engaging econometric techniques in the study are presented and discussed in line with the objectives of the research below:

#### Descriptive Analysis of the Variables

The descriptive statistics of the data used in the study are presented in table 1 thus

**Table 1: Descriptive statistics**

	LGDP	LM2	EXR	INT	INF
Mean	8.875395	6.960491	115.1510	17.35524	18.91429
Median	9.183158	7.231711	115.2550	16.92000	12.94500
Maximum	12.12458	10.65534	401.4700	31.65000	72.84000
Minimum	4.936702	2.672078	0.610000	8.920000	5.390000
Std. Dev.	2.460171	2.738674	117.6181	4.787515	16.45689
Skewness	-0.295516	-0.173005	0.976637	0.361206	1.882747
Kurtosis	1.650587	1.594422	3.068445	3.659156	5.450724
Jarque-Bera	3.797910	3.666900	6.684933	1.673643	35.32375
Probability	0.149725	0.159861	0.035350	0.433085	0.000000
Sum	372.7666	292.3406	4836.340	728.9200	794.4000
Sum Sq. Dev.	248.1501	307.5137	567194.7	939.7322	11104.00
Observations	42	42	42	42	42

Source: Researcher's Estimate from Eview 9.0, 2023

Table 1 above shows the descriptive statistics of the variables used in this study. The table disclosed the results of common statistics such as the mean, median, standard deviation, and Jarque-Bera, among other variables used in the study. Among all the descriptive statistics presented in table 1, the interest of this study is in the mean and the Jarque-Bera statistics which measure the normality of the distribution of the variables used in the study against unexpected outliers. Hence, the mean value of money supply (M2) has the lowest average score with a value of approximately 6.96, followed by gross domestic product (GDP); interest rate (INT), and inflation rate (INF) with the values of 8.8, 17.3, and 18.9, respectively, whereas the exchange rate has the mean value of 115.1.

The normality test of the variables used in the study revealed that the data used for the variables in the study were normally distributed except that of the exchange rate and inflation. Therefore, the non-normality data were treated against expected outliers in the data of the variables used for the study.

**Unit Root Test Results**

The Augmented Dickey-Fuller (ADF) unit root test with trend and intercept is employed to test for the stationarity of the time series data used are presented in table 3 below:

**Table 3: ADF Unit Root Test of Stationarity of Time Series Data**

ADF tests at Level				ADF tests at 1 <sup>st</sup> Difference			
Series	ADF Statistic	5% Critical Level	p-Values	ADF Statistic	5% Critical Level	p-Values	Order of Integration
LGDP	-0.867281	-3.529758	0.9497	-3.674039	-3.529758	0.0363	I(1)
LM2	-0.088558	-3.526609	0.9934	-4.213745	-3.529758	0.0100	I(1)
EXR	-0.539725	-3.529758	0.9771	-4.776177	-3.529758	0.0023	I(1)
INF	-4.102088	-3.529758	0.0132	-	-	-	I(0)
INT	-0.542719	-1.950117	0.4751	-2.581163	-1.950117	0.0113	I(1)

\*NB: I(0) stands for stationary at level while I(1) stands for stationary at first difference.

Source: Researcher’s Estimate from Eview 9.0, (2023)

The Augmented Dickey-Fuller (ADF) unit root test presented in Table 3 of section 4.3 disclosed that inflation was stationary at a level whereas the gross domestic product, money supply, exchange rate, and interest rate respectively were stationary at first different. Therefore, the ADF unit root results revealed that the variables used in the study have mixed order of integration such as at level and first difference.

The Phillip-Perron unit root tests were used to confirm the authentication of the ADF unit root test result. Hence, the Phillip-Perron unit root test results are presented in table 4 thus

**Table 4: Phillips-Perron Unit Root Test of Stationarity of Time Series Data**

ADF tests at Level				ADF tests at 1 <sup>st</sup> Difference			
Series	ADF Statistic	5% Critical Level	p-Values	ADF Statistic	5% Critical Level	p-Values	Order of Integration
LGDP	-1.130778	-3.526609	0.9108	-3.674039	-3.529758	0.0363	I(1)
LM2	-0.088558	-3.526609	0.9934	-4.213745	-3.529758	0.0100	I(1)
EXR	0.068522	-3.526609	0.9958	-4.776177	-3.529758	0.0023	I(1)
INF	-4.082439	-3.526609	0.0136	-	-	-	I(0)
INT	-2.123345	-3.526609	0.5176	-7.121270	-3.529758	0.0000	I(1)

\*NB: I(0) stands for stationary at level while I(1) stands for stationary at first difference.

Source: Researcher’s Estimate from Eview 9.0, (2023)

The Phillip-Perron test results for the stationarities of the time series data used in this study presented in table 4 revealed that there exists a mixed order of integration among the variables used in the study likewise that of the ADF unit root test. For instance, inflation was stationary at the level whereas gross domestic product, money supply, exchange rate, and interest rate respectively were stationary at the first difference.

Therefore, both the ADF and the Phillip-Perron test results agreed that there exists a mixed order of integration among the variables and also none of the variables used in the study was stationary at the second difference.

### **Autoregressive Distributed Lag (ARDL) – Bound Test Result**

The ARDL bounds test result used to test the presence of long-run relationship in the study is presented thus

Table 5: ARDL Bounds test result.

Test Statistic	Value	K
F-statistic	4.856901	4
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.45	3.52
5%	2.86	4.01
2.5%	3.25	4.49
1%	3.74	5.06
10%	2.45	3.52

Source: Researcher's Estimate from Eview 9.0 (2023)

The ARDL Bound test result presented in table 5 of section 4.4 indicates that there was a presence of a long-run relationship existing between monetary policy variables and economic growth in Nigeria at a 5% level of significance. On the other hand, it means that there is a presence of cointegration between the monetary policy variables and economic growth. The long-run relationship existing between the monetary policy variables and economic growth is a result of the fact that the value of the F-statistic (4.856901) was greater than the value of the upper bound boundary (4.01) at a 5% level of significance. Hence, the null hypothesis for “no long-run relationship existing between monetary policy variables and economic growth in Nigeria” is rejected at a 5% level of significance.

### **Short-Run Impact of Agricultural Output on Economic Growth in Nigeria.**

The short-run ARDL test result is presented in Table 6

**Table 6: ARDL Short -Run Impact and the Coefficient of ECM**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LGDP(-1))	1.523798	0.296042	5.147239	0.0013
D(LGDP(-2))	1.245759	0.259049	4.808970	0.0019
D(LGDP(-3))	0.880550	0.195565	4.502582	0.0028
D(LGDP(-4))	0.280828	0.148145	1.895635	0.0998
D(LM2)	0.140075	0.087251	1.605434	0.1524
D(LM2(-1))	0.259308	0.141109	1.837646	0.1087
D(LM2(-2))	0.306646	0.109120	2.810181	0.0261
D(LM2(-3))	0.173758	0.135974	1.277875	0.2420
D(LM2(-4))	0.123853	0.099081	1.250012	0.2515
D(EXR)	-0.003205	0.000638	-5.025386	0.0015
D(EXR(-1))	0.001661	0.000827	2.008241	0.0846
D(EXR(-2))	-0.001925	0.000631	-3.048483	0.0186
D(EXR(-3))	-0.000821	0.000624	-1.315823	0.2297
D(INT)	-0.010158	0.003254	-3.122003	0.0168
D(INT(-1))	-0.002429	0.003926	-0.618808	0.5556
D(INT(-2))	-0.009064	0.004178	-2.169802	0.0666
D(INT(-3))	-0.010512	0.005222	-2.013260	0.0840
D(INT(-4))	-0.012145	0.005514	-2.202816	0.0635
D(INF)	0.004175	0.001039	4.017604	0.0051
D(INF)	-0.003255	0.001235	-2.634516	0.0337
D(INF)	0.001007	0.001003	1.003512	0.3490
D(INF)	-0.001933	0.001105	-1.749904	0.1236
D(INF)	0.004939	0.000937	5.272499	0.0012
CointEq(-1)	-0.431667	0.158897	-2.716652	0.0299

Source: Researcher’s Estimate from Eview 9.0 (2023)

The short-run coefficients and the Error Correction Mechanism (ECM) results presented in table 6 indicated that economic growth lagged in one, two, and three periods were statistically significant and impacted positively on the current values of economic growth in Nigeria. The result indicated that a one percent increase in economic growth lagged one, two, and three periods bringing about approximately 152%, 124%, and 88% increase respectively in current economic growth in Nigeria.

The short-run impact of money supply on economic growth shows that money supply was statistically significant and impacted positively on economic growth in Nigeria during the period of the study. The result indicated that a one percent increase in money supply lagged two periods brought about approximately 30% increase in economic growth in Nigeria.



The result of the short-run effect of the exchange rate on economic growth as presented in table 6, revealed that the exchange rate was statistically significant and impacted positively on economic growth in Nigeria during the period of the study. The result revealed that every one percent increase in exchange rate brought about approximately 0.32% increase in the economic growth in Nigeria.

On the other hand, the short-run impact of interest rate on economic growth revealed that interest rate has a negative impact on economic growth in Nigeria. This further shows that a 1% increase in interest rate will bring about a 1.01% decrease in economic growth in Nigeria.

More so, the short-run effect of inflation indicated that inflation has a positive effect on economic growth in Nigeria, such that a 1% increase in inflation brings about a 0.41% increase in economic growth.

However, the result further revealed that the sign of the co-integration coefficient also recognized as the Error Correction Mechanism (ECM) was negative, fractional, and also statistically significant. On the other hand, the value of ECM being negative fractional, and statistically significant means that monetary policy variables and economic growth in Nigeria are cointegrated in the long run. The result of the error correction mechanism indicates that approximately 43% of the discrepancy between the short-run and long-run values is corrected annually.

### **Long-Run Impact of Agricultural Output on Economic Growth in Nigeria**

The long-run ARDL test result is presented in Table 7

Table 7: ARDL Long Run Impact

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LM2	0.996246	0.053173	18.736051	0.0000
EXR	0.001311	0.000928	1.413009	0.2005
INT	-0.112443	0.040490	-2.777035	0.0274
INF	-0.020113	0.004156	-4.840007	0.0019
C	2.557951	0.118446	21.595862	0.0000

Source: Researcher's Estimate from Eview 9.0 (2023)

The long-run coefficients of the variables used in the study as presented in table 7 of section 4.6 generally revealed that the coefficients of money supply, exchange rate, interest rate, and inflation respectively have an effect on economic growth in the long run. Nevertheless, the long-run impacts of monetary policy variables on economic growth in Nigeria during the period of the study indicated that:

Money supply was statistically significant and impacted positively on economic growth in Nigeria, such that, every one percent increase in money supply brought about a 99% increase in economic growth in Nigeria.

The exchange rate was statistically significant and impacted positively on economic growth in the long run. The result revealed that a one percent increase in the exchange rate brought about a 0.13% increase in economic growth in Nigeria.

Interest rate impacted negatively on economic growth. The result further indicated that a 1% increase in interest rate, brought about an 11% decrease in economic growth in Nigeria during the period under review.

Inflation was statistically significant and impacted negatively on economic growth in Nigeria such that, every one percent increase in inflation brought about a 2.01% decrease in economic growth in Nigeria.

**Post-diagnostic Tests**

The post-diagnostic tests of the results are presented below:

**Serial correlation Test**

The Breusch-Godfrey serial correlation LM test result is presented in table 9

Table 9: Breusch-Godfrey Serial Correlation LM Test

F-statistic	2.415355	Prob. F(2,21)	0.1137
Obs*R-squared	14.106540	Prob. Chi-Square(2)	0.5286

Source: Researcher’s Estimate from Eview 9.0 (2023)

The post-diagnostic result of serial correlation in table 9 above revealed that there was no presence of serial correlation because both the probability values of F-statistic and observed R-square respectively are more than 5% level of significance.

**Heteroskedasticity Test**

The heteroskedasticity –Godfrey test result is presented thus in table 10

**Table 10: Heteroskedasticity –Godfrey Test**

F-statistic	0.876990	Prob. F(28,7)	0.6328
Obs*R-squared	28.01413	Prob. Chi-Square(28)	0.4637
Scaled explained SS	0.899312	Prob. Chi-Square(28)	1.0000

Source: Researcher’s Estimate from Eview 9.0 (2023)

The Breusch-Pagan-Godfrey test of Heteroskedasticity in table 10 also revealed that there was no presence of Heteroskedasticity because the probabilities of the F-statistic and that of the observed R square respectively are higher than the 5% level of significance.

### Histogram Normality Post-Diagnostic Test

The histogram normality test presented in figure 1 below shows that the residual of the model was normally distributed because the probability of the Jarque-Bera is greater than a 5 percent level of significance.

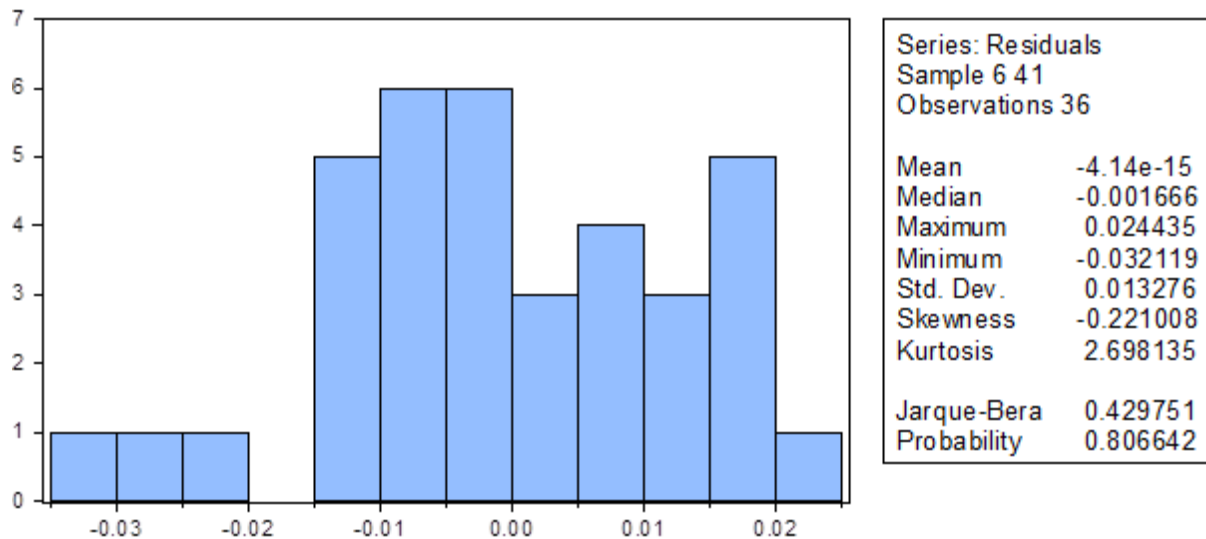


Figure 1: Histogram Normality Test

### Conclusion

Based on the findings of this study, several conclusions are drawn such as:

Monetary policy variables play a crucial role in shaping economic growth in Nigeria. Money supply and exchange rates have a positive impact, while interest rates and inflation rates have varying effects.

Maintaining a balanced and effective monetary policy is vital for promoting economic growth. Policymakers should pay attention to money supply, exchange rates, and interest rates to create an environment conducive to growth.

Exchange rate stability is particularly important for economic growth. A favorable exchange rate can boost economic activity, making exports more competitive and attracting foreign investment.

High-interest rates can be detrimental to economic growth by discouraging investment and consumption. Policymakers should consider measures to keep interest rates at levels that support economic growth.

## Recommendations

Based on the study's findings and conclusions, the following recommendations are offered:

**Monetary Policy Management:** The Central Bank of Nigeria should continue to pursue a balanced and effective monetary policy that ensures a stable money supply.

**Exchange Rate Management:** The government should aim to maintain a favorable and stable exchange rate, as this can significantly contribute to economic growth.

**Interest Rate Control:** Policymakers should carefully manage interest rates to ensure they do not hinder economic growth. Lowering interest rates in some cases may be necessary to stimulate investment and consumption.

**Inflation Targeting:** While moderate inflation can support economic growth, policymakers should continue to target a balanced inflation rate that is neither too high nor too low.

## References

- Abeng, M. O. (2016). Financial sector reform outcomes in Nigeria: A quantitative evaluation. *CBN Bullion*, 30(2), 53-69.
- Adegbeni, J. O. (2013). Financial deepening and economic development of Nigeria: An empirical investigation. *African Journal of Accounting, Economics Finance and Banks Research*, 5(5), 125-146
- Adeolu, A.M, (2012). Fiscal/monetary policy and economic growth in Nigeria: A theoretical exploration. *International Journal of Academic Research in Economics and Management Sciences*, 1(5), 2226-3624.
- Adeniyi, O., Omotosho, B. S. & Akanbi, T. A. (2020). Monetary policy and economic growth in Nigeria: A Time Series Analysis. *Journal of Applied Economic Sciences*, 15(3), 59-68.
- Akinbonola, T. (2012). The dynamics of money supply, exchange rate and inflation in Nigeria. *Journal of Applied Finance and Banking*, 2 (4), 117-141.
- Akpan, E.O. & Atan, J. A. (2011). Effect of exchange rate movement on economic growth in Nigeria, *CBN Journal of Applied statistics*, (2), 1 – 14.
- Alabi, J. O. & Olarinde, M. O. (2020). Fiscal policy and economic growth in Nigeria: an empirical investigation. *Journal of Economics and Management*, 38, 10-26.
- Alkswani, M. A. (2018). The twin deficits phenomenon in petroleum economy: Evidence from Saudi Arabia. *Economic Research Forum, Conference Paper*, No. 072000001.
- Aliyu, U. R. & Englama, A. (2019). Is Nigeria ready for inflation targeting, *Journal of Money, Investment and Banking*. 11, 27-44.
- Amassoma, D. (2011). An appraisal of monetary policy and its effect on macro-economic stabilization in Nigeria, *Journal of Emerging Trends in Economics and Management Sciences*, 2(3), 232-237.

- Ansari H. A. (2010). The fiscal-monetary policy and economic growth in Nigeria: Further empirical evidence. *Pakistan Journal of Social Sciences*, 7(7), 138- 142.
- Apinara, P.A. (2015). The challenge of monetary policy since 1986: *CBN Economic and Financial Review*, 31(4), 321 – 339.
- Azeez, B.A., Kolapo, F.T&Ajayi, L.B (2012).Effect of exchange rate volatility on macroeconomic performance in Nigeria.*Interdisciplinary Journal of Contemporary Research in Business*.4(1), 149155.
- Bastie C. (2020). Ex post factor design [https:// on line – thesis. Com](https://on-line-thesis.com)
- Balami, D.H. (2016). Macroeconomic theory and practice. Maiduguri: Salawe prints, Off Leventies.
- Bodunrin, O. S. (2016). The impact of fiscal and monetary policy on Nigerian economic growth.*Munich Personal RePEc Archive*, 3(1), 1-21
- Central Bank of Nigeria.(CBN, 2011).Monetary and fiscal policy coordination.*CBN Journal of Applied Statistics*, 2(2), 115-122.
- Central Bank of Nigeria, (2016). *Central Bank of Nigeria Annual Report and Statement of Account*, Abuja: CBN.
- Dimitrijevic, S. & Lovre, N. (2012). Exchange rate anomalies in the industrial countries: A solution with a structural var approach.*Journal of Monetary Economics*, 4(5), 561 586.
- Ebiringa, O. T.; Onuorah, A. C. & Obi, H. K. (2014). Behavioral pattern of monetary policy variables and effects on economic growth: an econometric investigation of Nigeria. *Journal of Economics and Sustainable Development*, 5(1), 11-20.
- Edeme, R. K., Ehikioya, I. L. & Uduh, D. M. (2018).Relative impact of fiscal and monetary policy on the growth of small and medium scale enterprises in Nigeria.*Quantitative Economics Research*, 1(1), 1-12.
- Enahoro, J. A. (2012). Operational performance of fiscal and monetary policies in Nigerian financial institutions, *Asian Economic and Financial Review*, 3(1), 62-74.
- Ezeaku, H. C., Nwanna, G. O. & Okafor, R. E. (2020). Fiscal policy and unemployment rate in Nigeria: An autoregressive distributed lag (ARDL) bounds testing approach. *American Journal of Economics*, 10(2), 98-108.
- Fadare, S. N. (2010). Overview of monetary policy in Nigeria.*CBN Economic and Financial Review*, 45(4), 223-234.
- Friedman, Milton. (1956).The role of monetary policy *American Economic Review*, 58(1), 1 17
- Gonzalo, J. (1994). Five alternative methods of estimating longrun equilibrium relationship.*Journal of Econometrics, Elsevier*, 60(2), 203-233.
- Granger, C. W. J. (1969).Investigating causal relations by econometric models and cross spectral methods, *Econometrica*, 3(5), 424–438.
- Isedu, M. (2013).Effects of monetary policy on macro economic performance: The case of Nigeria. *A Thesis Submitted in Partial Fulfillment of the Requirements of the University of Greenwich for the*

Degree of Doctor of Philosophy.

- Idris, M. & Bakar, R. (2017). Fiscal operations and macroeconomic growth: The Nigerian experience. *International Journal of Business, Management and Social Research*, 3(1), 162-178.
- Imoisi, A. I. (2013). An appraisal of fiscal policy measures and its implication for growth of the Nigerian economy. *Journal of Advances in Management and Applied Economics*, 3(4), 193-204.
- Jhingan, M. L. (1991). *Monetary and banking international trade*. New Delhi: Hamsphire. V r i n d a Publications (P) Ltd.
- Johansen, S. (1991). Statistical analysis of cointegration vectors, *Journal of Economic Dynamics and Control*, 12, 231-254.
- Johansen, S., & Juselius, K. (1994). Maximum likelihood estimation and inference on cointegration-with application to the demand for money, *Oxford Bulletin of Economics and Statistics*, 52, 169-210.
- Kahn, M. (2010). Real and nominal effects of central bank monetary policy *Journal of Monetary Economics*, 5(49), 1493-1519.
- Koshy, M. (2012). Monetary policy: stabilizing prices and output. *Finance and Development, International Monetary Fund*.
- Mahonnye, N., & Tenda, Z. (2019). Exchange rate impact on output and inflation: A historical perspective from Zimbabwe. *African Journal of Science, Technology and Development*, 2(4), 23-41.
- McDonald, M (2017). The exchange rate, the balance of payments, and monetary and fiscal policy under a regime of controlled floating. *Scandinavian Journal of Economics*, 7(8), 29-48.
- Michael, B. & Ebibai, T. S. (2014). Monetary policy and economic growth in Nigeria. *Asia Economic and Financial Review*, 4(1), 20-32.
- Moshood, S. (2016). *Macro economics; theory and practical*. Lagos: Banism prints Gowon estate,
- Mogaji, P. B., Adetula, D. T. & Olaoye, O. A. (2020). Examining the impact of fiscal policy on economic growth in Nigeria. Ovidius University Annals, *Economic Sciences Series*, 20(2), 407-416.
- Nwako, N.M., Ihemeje, J.C. & Anumadu, E. (2016). The impact of monetary policy on the economic growth of Nigeria. *An International Multi-disciplinary Journal, Ethiopia*, 10(3), 1-15.
- Nwankwoeze, I. (2011). The impact of money supply on economic growth in Nigeria. *A thesis submitted to the department of Economics, Faculty of Management and Social Sciences, University of Jos*.
- Nwaogwugwu, I. C. (2018). The effects of monetary and fiscal policy on the stock market in Nigeria. *Journal of Economics*, 6(1), 79-85.
- Nwafor, M. C. (2018). Effect of naira rate on economic growth in Nigeria. *International Journal Banking and finance Research*, 4(1), 58-66.
- Okwo, I. M., Eze, F. & Nwoha, C. (2012). Evaluation of monetary policy outcomes and its effect on price stability in Nigeria, *Research Journal Finance and Accounting*, 3 (11), 37-47.
- Okwu, A. T.; Obiakor, R. T.; Falaiye, O. B. & Owolabi, S. A. (2017). Empirical analysis of the effects of

- monetary policy innovations on stabilization of commodity prices in Nigeria. *European Journal of Economics, Finance and Administrative Sciences*. 32, 64-79.
- Olopade, T. & Olopade, H. A. (2019). An institutional analysis of the monetary to the balance of payments, *Journal of Economic Issues*, 24(2), 433-441
- Ogundipe, A. A. & Akinbobola, T. O. (2020). An appraisal of monetary policy on economic growth in Nigeria. *Asian Economic and Financial Review*, 10(7), 765-774.
- Onyeiwu, C., (2012). Monetary policy and economic growth of Nigeria, *Journal of Economics and Sustainable Development*, 3(7), 62 -70.
- Onwukwe, N.U. (2011). *Fundamentals of macroeconomics*. Abakaliki: Econas Company Nig
- Owolabi, O. & Adegbite, A. (2013). Money, Finance and Development, Journal of Economics Ibadan: Ibadan University Press.
- Umaru, A. & Zubairu A. A. (2012). Effect of inflation on the growth and development of the Nigerian economy (An empirical analysis), *International Journal of Business and Social Science*, 3 (10), 183-193.
- Umar, H. & Murtala, K. B. (2020). Fiscal policy and economic growth in Nigeria: An ARDL approach. *Global Business Review*, 21(4), 981-994.