



Impact of Monetary Policy on Economic Growth in Nigeria: 1985-2022

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

The study examined the impact of monetary policy on economic growth in Nigeria, using annual data spanning the period 1985 to 2022. One of the major objectives of monetary policy in Nigeria is economic growth but despite the various monetary efforts that have been adopted by the Central Bank of Nigeria over the years, inflation remains a major threat to Nigeria's economic growth. Despite the increased focus on monetary policy adoption in Nigeria, the country's economic growth remains an issue. High unemployment, low investment, high inflation, and an unstable foreign exchange rate are examples of such issues. These alleged issues are said to have contributed to Nigeria's rapid drop in economic growth. The objective of this paper is to examine the relationship between economic growth, exchange rate, inflation rate, interest rate, and money supply in Nigeria. In this regard, the study employed the Autoregressive-Distributed Lag (ARDL) approach and established a long-run relationship between economic growth and interest rate, inflation, exchange rate, and money supply. Specifically, the findings suggested that in the long run only interest rate has significant effects on economic growth while exchange rate, money supply, and interest rate have a positive relationship with the dependent variable, it was only the inflation rate that has a negative relationship with economic growth in Nigeria. Given the important role of interest rates in

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promoting economic growth, the study recommends that a significant decrease in interest rates will lead to an increase in the growth of the economy as the reduced interest rate will serve as bait for investors in the Nigerian economy.

Keywords: Monetary policy; economic growth; money supply.

JEL Classification: E52; A1; E51.

1. INTRODUCTION

Monetary policy as a technique of economic management to bring about sustainable economic growth and development has been the pursuit of nations and formal articulation of how money affects economic aggregates dates back to the time of Adams Smith and later championed by the monetary economists. Thus, macroeconomic instability scourging economies all over the world is not a new phenomenon. Over three decades ago, it has manifested itself in several forms ranging from trade cycles to inflation, unemployment, balance of payment deficits, and many more. Thus, these conditions sometimes degenerate into economic recession as the case may be all over the world. Reducing this wreck has therefore given birth to the formulation of various policies to address the problem. Prominent among these policies is the monetary policy.

“However, the Central Bank of Nigeria (CBN) has been saddled with the responsibility of formulation and implementation of this policy which involves the regulation of the supply of money as well as the direction of credits in the country since its establishment in 1959 by the Central Bank Act of 1958. This traditional role has been made possible through the use of various monetary policies for the achievement of full-employment equilibrium, rapid economic growth, price stability, and maintenance of the balance of payment equilibrium in agreement with the expected level of economic activity in the country” [1,2,3,4].

Monetary policy objectives are adjudged to be paramount in the achievement of both internal and external balance as well as in the promotion of the economic growth of a nation. Nevertheless, it should be noted that both the monetary policy and macroeconomic policies of governments all over the world, developed and developing ones can be diverse in terms of the effects of monetary policy measures employed. Generally, the prevailing economic situation of a nation (whether in a recession or a boom)

dictates the monetary policy to be used in an economy to achieve the stated monetary objectives in the country, either expansionary or contractionary.

For a desirable outcome of monetary policy, the nominal rate of GDP growth should not be less than the rate of inflation. If the effect of monetary easing on inflation is stronger than its effect on growth, it will lead to a higher level of poverty. In other words, a positive real rate of growth in GDP is the indicator of an effective monetary policy. This target can be achieved if monetary expansion leads to an enhancement in business activities. The volume of external trade and the creation of new business entities are the indicators of enhancement in business activities, while a higher rate of GDP growth can lead to alleviation of poverty. Mehar [5,6] has analyzed “the effects of monetary policy on poverty. The accelerated growth in investment and control over inflation are the twin objectives of a monetary policy while growth in investment is closely related to the creation of employment opportunities. Any policy instrument that affects inflation or unemployment will also affect the level of poverty because the magnitude of poverty is determined by the level of unemployment and inflation. In fact, the effectiveness of monetary policy depends on the utilization of domestic credit to the private sector in the enhancement of economic and business activities”.

“Money supply by definition comprises narrow money and broad money. Narrow money includes currency in circulation with non-bank public and current account balances with banks. While broad money includes narrow money in addition to savings and time deposits as well as foreign-denominated account balances” [7]. “Broad money therefore represents the total volume of money available in the economy. Excess money supply or liquidity may arise in the economy when the amount of broad money is over and above the level of total output (economic activity), a situation that may lead to high prices of goods and services or inflation, if not controlled through monetary policies. The implication of this is that there should be a stable

relationship between the quantity of money supply and economic activity. The above presents a strong presumption that monetary policy can be linked to economic growth as it influences aggregate demand and supply which would ultimately affect the growth of the economy" [8].

"With developing countries like Nigeria putting in more effort to achieve economic growth, the goals of monetary policy in Nigeria have been to achieve both price and exchange rate stability. The actuality, on the other hand, has fallen far short of expectations. Inflation rates in Nigeria have been highly volatile since the early 1970s, with four significant episodes of high inflation totaling more than 30%. Money supply increase has been linked to high inflation episodes because money growth has often outpaced real economic growth. However, some indicators reflecting the economy's fundamental characteristics can be observed before the increase in the money supply. Some of these are supply shocks, which can be caused by starvation, currency devaluation, or changes in trade arrangements. In 1976, the first period of 30% inflation occurred (12-month moving average)" [9]. Drought in northern Nigeria, which has hurt agricultural productivity and increased the cost of agri-food, causing a significant increase in the share of the simple consumer budget, is one of the most frequently cited explanations for this inflation. Furthermore, there was an excessive monetization of oil export proceeds during this time, which may have given inflation a monetary aspect.

"Interest rate is the primary instrument of the price stability target of monetary policy as the interest rate channel is recognized by most economists as the most effective channel of monetary policy transmission" [10]. "Monetary policy has been found to influence macroeconomic variables such as employment creation, gross domestic product growth, price stability, and equilibrium in the balance of payment in developing countries" (Precious, 2014). "Economic growth is the increase in the amount of goods and services in a country at a time resulting in an increase in the real per capita income of a country over time. Economic growth implies raising the standard of living of the people and reducing inequalities in income distribution" [11]. Interest rate refers to the price of money and credit. It is the rate charged by suppliers of money and credit. Those borrowers for investment and consumption spending pay

interest for the use of credit, as such increase in interest rates discourages borrowers from borrowing from banks and a reduction in interest rates encourages borrowing from banks.

"The Keynesians on the other hand believe that variations in money supply could lead to an increase or decrease in interest rate. A decrease in interest rate will affect aggregate investment and enhance aggregate income and output. This is based on the belief that interest rate is the key determinant of investment in the market economy. The investment process involves the employment of factors such as labor and capital which lead to an increase in total employment" [12].

1.1 Problem Statement

"Despite the increased focus on monetary policy manipulation in Nigeria, the country's economic growth remains an issue. The high inflation rate, low investment, and increasing unemployment rate are the major challenges faced by the Nigerian economy and these factors over time have slowed the pace of Nigerian economic progress" [13]. "In 1990 the economic growth rate which was 1.36% dropped to 1.19% in 1999 as the result of the increase in the unemployment rate from 3.35% to 17.5% and the inflation rate was 6.62%, in 2004 and 2008 there was a drop in growth rate from 6.58% to 6.41% with an increase in unemployment and inflation rate to 14.7% and 11.58% respectively" (CBN, 2019). "As a result of a decrease in the unemployment rate to 7.8% and the inflation rate to 8.06%, there was an increase in economic growth to 12.91% in 2014. In 2019 the GDP growth rate was 2.21% when the unemployment rate increased to 8.53% and inflation to 11.4%" (CBN, 2019). Over the years there has been an unstable exchange rate regime which also poses a threat to economic growth.

In Nigeria, various regimes of monetary policy instruments have been used on one occasion or the other. On a few occasions, the monetary policy is tight while at other times it is loose. Also, there has been periods of expansion and contraction in the economy but the overall effect has been minimal as the Nigerian economy is still overwhelmingly beset with the macroeconomic problems of unemployment, low investment, and high inflation episodes which have caused it to fall back into retarded growth and recession. Consequently, it becomes sacrosanct to examine the effectiveness of the

Central Bank of Nigeria's monetary policies over the years with the specific objective of assessing the impact of monetary policy instruments (money supply, interest rate, exchange rate, and inflation) on the economic growth of Nigeria between 1985 and 2022.

1.2 Research Questions

In this paper, the following questions are addressed:

- i. To what extent does money supply (M2) affect economic growth in Nigeria?
- ii. What is the impact of interest rates on economic growth in Nigeria?
- iii. How does the inflation rate affect economic growth in Nigeria?
- iv. What is the effect of the exchange rate on economic growth in Nigeria?

1.3 Objectives

The main purpose of this study is to examine the impact of monetary policy on economic growth in Nigeria. The specific objectives are to:

- i. examine the extent to which money supply (M2) affects economic growth in Nigeria
- ii. investigate the impact of interest rates on economic growth in Nigeria
- iii. evaluate how the inflation rate affects economic growth in Nigeria
- iv. Assess the effect of the exchange rate on economic growth in Nigeria

1.4 Hypotheses

The following hypotheses were tested in the course of this paper.

H₀₁: There is no significant relationship between money supply (M2) and economic growth in Nigeria.

H₀₂: Interest rate has no significant impact on economic growth in Nigeria.

H₀₃: There exists no significant relationship between the inflation rate and economic growth in Nigeria

H₀₄: Exchange rate does not significantly affect economic growth in Nigeria.

1.5 Significance of the Study

This paper extended the scope to 2022 which to the best of the researcher's knowledge is the most recent study on the subject area, this paper also included relevant variables like exchange

rate which was not included in the previous work of others. The inclusion of the exchange rate is highly significant to decipher how stable and economy can be and how strong their naira is as compared to other countries, this shows that the economy is making progress, thus, increasing the per capita income of that country. Also, this research work is of great importance to different groups of people which include the government, researchers, monetary authorities, etc. Firstly, it will provide an adequate overview of monetary policymaking to monetary authorities and serve as useful guidelines for the formation of monetary policies that will affect growth and investments given its benefits and projected usefulness to the Nigerian economy; the conclusions from this paper are of importance, not only for Nigeria as an economy but also for other developing countries around the globe. Also, it will add to existing knowledge on the benefits of monetary policy in an economy and how monetary policy can be of impact in Nigeria, thereby serving as a Gap for further research.

1.6 Scope of the Study

The paper is concerned with the impact of monetary policy on economic growth in Nigeria covering the period 1985 to 2022. The reason for choosing this time series is because it covers both the civilian and military administrations, thus allowing for a thorough investigation of the monetary policy's role in promoting economic growth dynamics in Nigeria. To assess the monetary policy's contribution to economic growth in the country, this paper employs money supply (M2), interest rate, exchange rate, and inflation rate as proxies for monetary policy, while economic growth (GDP) serves as the dependent variable under scrutiny.

2. MATERIALS AND METHODS

2.1 Conceptual Review

Monetary policy: Lyndon and Godspower[14] describe "monetary policy as the economic actions taken by the monetary authorities usually through the apex bank of a country to control the value, supply, and cost of money in the economy in order to achieve set macroeconomic objectives decided upon by the government. Monetary policy is a deliberate action of the monetary authorities to influence the quantity, cost, and availability of money credit in order to achieve the desired macroeconomic objectives of internal and external balances" [CBN, 2011]. In a

similar study, Nwoko, Ihemeje, and Anumadu[12] defined “monetary policy as the combination of measures designed to regulate the value, supply, and cost of money in an economy in consonance with the level of economic activities”. As opined by Ndife[15] “monetary policy refers to discretionary control of the money supply by Central Banks with a view to achieving desired economic objectives. It consists of actions of monetary authorities designed to influence the behavior of the monetary sector towards achieving monetary and price stability”. “The goal of monetary policies in most countries includes- the maintenance of balance of payments equilibrium, price stability, output growth, sustainable development, and promotion of employment” (Ayodeji and Oluwole, 2018). “Monetary policy is the macroeconomic policy laid down and carried out by the central bank of a nation” [16].

Economic growth: Timothy [17] describes “gross domestic growth (economic growth) as the monetary worth of all commodities and services generated in an economy during a given period, usually a year”. “Economic growth is defined as a steady increase in the output of goods, services, and job opportunities with the express purpose of improving citizens' economic and financial well-being” [18]. “Economic development is a major topic in economics, and it is regarded as one of the required conditions for achieving greater social welfare outcomes, which is the primary goal of economic policy. As a result, it is a necessary component of long-term development. Economic growth is a rise in per capita income which connotes an increase in the total output of an economy per person all things being equal” [19]. “It is the process whereby the real per capita income of a country increases over a long period of time” [20].

2.2 Empirical Review

Igbafé[17] examined “the effectiveness of monetary policy in stimulating economic growth in Nigeria between 1990 and 2019, thus utilizing secondary data. The paper utilized the ARDL Bounds testing approach as the variables are of mixed order and error correction mechanism. The ARDL Bounds Test result indicated that there is a long-run relationship among the variables with the lower bound and upper bound less than the calculated 5% level of significance. The paper recommended that the government through its monetary authorities should reduce

interest rates and decrease reserve requirements to stimulate economic growth in Nigeria”.

Adeagbo [16] examined “the effect of monetary policy on economic growth in Nigeria for a period of 48 years (1971-2018). The paper utilized ordinary least squares as a method of analysis. The analysis depicts that a long-run relationship exists among the variables and that some explanatory variables (Monetary policy rate, Interest rate, Investment to productive sector) present a positive but non-significant effect on economic growth while the real exchange rate has a negative impact on economic growth in Nigeria. However, money supply, which is another explanatory variable has a positive significant effect on economic growth. The paper recommends that the government and relevant monetary authorities should make the financial sector less volatile and ensure the effective monitoring of money supply levels, among others”.

Lyndon and Godspower[14] carried out “an empirical analysis of monetary policy and economic growth in Nigeria using data from 2000 to 2017. The paper adopted gross domestic product (GDP) as a proxy for economic growth and the dependent variable, while broad money supply (BMS), interest rate (INT), cash reserve ratio (CRR), and liquidity ratio (LQR) were used as proxies for monetary policy and the independent variables. The paper employed descriptive statistics and multiple regression techniques based on the E-views 12 software as methods of data analysis. The results showed that all the independent variables had a significant positive effect on gross domestic product, a proxy for economic growth except the cash reserve ratio which had an insignificant negative link with gross domestic product. In total, the findings of the paper established that monetary policy had a significant link with economic growth. The paper recommended that monetary policy authorities should ensure general stability in broad money supply, try to maintain a stable interest rate regime as well as a stable liquidity position, and put sound monetary policies in place to direct the flow of funds to highly productive sectors to spur growth in the economy”.

2.3 Gaps in the Literature

Ofuegbo (2017) found that “in Nigeria monetary policy appears to have some setbacks; because, of inconsistent government policy, inability to

implement the formulated policies, political and economic instability, absence of workable long-term development plans, and corruption at all levels of government, etc". Studies by Balogun [21] reveal a negative and significant relationship between real gross domestic product and cash reserve requirement, while the study conducted by Charles [22] found a positive significant impact of monetary policy on economic growth. Therefore, there is no consensus on the impact of monetary policy on economic growth in Nigeria. It is against this background that this study attempts to investigate empirically the impact of monetary policy on economic growth in Nigeria using time series data covering 1985 to 2022 as a contribution to fill that research gap and also extending the scope to 2022 which to the best of the researcher's knowledge is the most recent study on the subject area. Also, this paper utilized four explanatory variables including the exchange rate which was lacking in addition to the previous studies to decipher how it affects our economy[23,24].

2.4 Theoretical Underpinning

"The theoretical framework that underpins this paper hinges on the monetarist theory. The monetarist theory of economic growth was led by monetarists such as Friedman, who emphasized that money supply is the critical factor affecting the economic well-being of a nation" (Friedman, 1974). "This implies that in order to promote a steady rate of growth in an economy, the money supply has to grow at a fixed rate rather than being regulated and controlled by the monetary authorities (the apex banks). Friedman argued that money supply is a substitute, not just for bonds, but also for goods and services. Therefore changes in money supply would have both direct and indirect impacts on spending and investments in a manner that the demand for money would depend on the rates of return on different competing assets. This theory therefore contends that changes in money supply are the

However, the ARDL model is thus;

$$\Delta RGDP_t = \beta_0 + \sum_{g=1}^k \beta_1 RGDP_{t-g} + \sum_{h=1}^l \beta_2 INTR_{t-h} + \sum_{i=1}^m \beta_3 EXR_{t-i} + \sum_{j=0}^n \beta_4 MS_{t-j} + \sum_{j=0}^n \beta_5 INFR_{t-j} + \beta_6 \Delta RGDP_{t-1} + \beta_7 \Delta INTR_{t-1} + \beta_8 \Delta EXR_{t-1} + \beta_9 \Delta MS_{t-1} + \beta_{10} \Delta INFR_{t-1} + \epsilon_t \quad (3)$$

Below is the ARDL ECM model

$$\Delta RGDP_t = \beta_0 + \sum_{g=1}^k \beta_1 \Delta RGDP_{t-g} + \sum_{h=1}^l \beta_2 \Delta INTR_{t-h} + \sum_{i=1}^m \beta_3 \Delta EXR_{t-i} + \sum_{j=0}^n \beta_4 \Delta MS_{t-j} + \sum_{j=0}^n \beta_5 \Delta INFR_{t-j} + \delta u_{t-1} + \epsilon_t \quad (4)$$

most important determinants of economic growth" (Friedman, 1974).

2.5 Methods and Model Specification

This paper examines the impact of monetary policy on economic growth in Nigeria and because it is a cause-and-effect relationship that observes an existing situation and searches back in time for a causal agent, the research design is the ex-post facto design.

This paper uses time series data covering a period of 38 years from 1985 to 2022. The research made use of secondary data on monetary policy and economic growth. The researcher sources relevant data which were obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin of various issues and the National Bureau of Statistics.

The paper avoided spurious results by utilising Augmented Dickey-Fuller (ADF) test to identify the order of integration and the required condition that the ARDL can be applied is that the variables are stationary within I(0) and I(1) because the above this levels of integration, the ARDL cannot be applied.

2.6 Model Specification

$$RGDP = f(INTR, MS, INF, EXR) \dots\dots\dots (1)$$

Where;
 LogRGDP = Log of Real Gross Domestic Product
 INTR = Interest rate
 LogMS = Log of Money Supply
 INF= Inflation
 EXR= Exchange rate

In linear stochastic forms:

$$RGDP = \beta_0 + \beta_1 INTR + + \beta_2 MS + \beta_3 INF + \beta_3 EXR u_{t-1} \dots\dots\dots (2)$$

The model above is the unrestricted error correction. The negative sign of the coefficient of the error correction term ECM (-1) shows the statistical significance of the equation in terms of its associated t-value and probability value.

Where

Δ = first differencing operator

U_t = white noise or disturbance term

B_0 = is the intercept

$\beta_1, \beta_2, \beta_3, \beta_4 \dots$ are the coefficient to be estimated

3. DATA PRESENTATION AND ANALYSIS

The descriptive results presented in Table 1 indicate that the Real Gross Domestic Product (RGDP) in Nigeria during the period of 38 years (1985-2022) has minimum and maximum values of 9.75% and 11.23% respectively. Real gross domestic averaged 10.49% during the period with a standard deviation of 0.52%, implying that the data deviate from both sides of the mean by 9.97%. This suggests that RGDP in Nigeria is relatively widely dispersed during the period under investigation. The implication of this disparity depicts fluctuations in the growth of gross domestic output which has relatively remained poor over the years. The fluctuations in RGDP may also be attributed to inconsistent policy changes that characterized different administrations in Nigeria over time. Skewness, which measures the shape of the distribution revealed that a coefficient of 0.097019 (which is greater than zero) implied that though RGDP is positively skewed, it is not symmetrical around the mean and thus deviating from normal distribution. Kurtosis, the value of 1.417159, it implied that RGDP is platykurtic (fat or short-tailed) meaning that the distribution is not peaked relative to the normal distribution. The descriptive normality results also showed that RGDP is

normally distributed. This was captured by the Jarque-Bera probability value of 0.133556, found to be greater than 0.05.

Thus, Table 1 further showed that INTR during the period has minimum and maximum values of 9.3% and 29.8% respectively. The average value of INTR during the period is 18.46553% (which is quite high) with a standard deviation of 4.370604%, implying that the data deviate from both sides of the mean by 14.094926%. This suggests that the data from the INTR variable is not widely dispersed from the mean during the sample period, as the standard deviation was found to be lower than the mean value. The skewness coefficient of 0.677828 suggests that the data is positively skewed and does not comply with the symmetrical distribution assumption. A kurtosis value of 4.012711 (found to be greater than 3) implied that INTR is leptokurtic (slim or long-tailed) implying that the distribution is peaked relative to the normal distribution. Also, the p-value of 0.103638 for Jarque-Bera implies that the Gaussian distribution assumption of normal data was met at a 5% level of significance.

Furthermore, MS, INFR, and EXR have minimum and maximum values of (3.104587, 10.85927), (5.400000, 72.80000), and (0.990000, 447.1300) respectively. While their average values are 7.396006, 18.54737, and 138.4779 during the period under investigation. The kurtosis for money supply is 1.727431 implying that MS is platykurtic (fat or short-tailed) meaning that the distribution is not peaked relative to the normal distribution. While that of INFR is 5.874625 greater than 3 depicting that inflation is leptokurtic (slim or long-tailed). And of course, kurtosis for EXR is 3.389658 which is mesokurtic (equal to 3).

Table 1. Summary of descriptive statistics for the variables

	RGDP	INTR	MS	INF	EXR
Mean	10.49632	18.46553	7.396006	18.54737	138.4779
Median	10.45895	17.77000	7.620906	12.95000	126.9500
Maximum	11.23568	29.80000	10.85927	72.80000	447.1300
Minimum	9.750924	9.250000	3.104587	5.400000	0.990000
Std. Dev	0.524503	4.370604	2.504472	16.08613	121.0765
Skewness	0.097019	0.677828	-0.288265	1.919433	1.029823
Kurtosis	1.417159	4.012711	1.727431	5.874625	3.389658
Jarque Bera	4.026473	4.533697	3.090380	36.41724	6.957124
Probability	0.133556	0.103638	0.213271	0.000000	0.030852

Source: Researcher's computation, using E-views 12, 2023

Table 2 depicts the results of the unit root test indicating varying levels of integration. Interest rate shows unit roots at levels and others show at first difference.

The co-integration test result shows that the F-statistic value of 6.192231 is greater than the lower (I(0)) and upper bound (I(1)) critical values 2.26 and 3.48 respectively at the 5% significance level. Thus, the null hypothesis of no long-run relationship is rejected at the 5% level. It can therefore be inferred that the variables are co-integrated, and as such there is a long-run equilibrium relationship between monetary policy and economic growth output between 1985 and 2022.

The ARDL-ECM results in Table 4, it could be observed that the ratio of real gross domestic product (RGDP) contributed positively and insignificantly to economic growth, in the period as captured by its coefficient value of 0.043161 and a p-value of 0.7553. Further, it was found that interest rate (INTR) contributed positively to economic growth as captured by its positive coefficient values of 0.004749 and a p-value of 0.0019 which was statistically significant during the period of investigation. Money supply with a negative coefficient of -0.005643 and a p-value of 0.8575 means that there is a negative and insignificant relationship with economic growth during the period. Thus, the coefficient value of the inflation rate showed that it has a negative relationship with economic growth but contributed significantly to RGDP this means that a little amount of inflation is needed in the economy which is an indicator to the business people that their economy of interest is actually progressing and there is money there, indicating further that when they do business they will be patronized, that is their business will not shut down, evident in this is the negative coefficient of -0.002537 and a p-value of 0.0000 being statistically significant during the current period.

The variable of the exchange rate (EXR) was found to have a positive association with a coefficient value of 2.16E-05 and a p-value of 0.8161 with RGDP meaning that there is a positive relationship between RGDP and exchange rate. Also, the P-value of the F-statistics of the model is significant indicating a goodness of fit of the model. Furthermore, the R-squared of 0.881256 suggests that about 88% of variation in RGDP is explained by the model while 12% is explained by variables outside the model.

From the foregoing, we can aver that interest rate and exchange rate have a positive relationship with the dependent variable, that is, Real Gross Domestic Product; but it was found that only interest rate is statistically significant while exchange rate is insignificant. Hence, we can submit that interest rate has a positive and statistically significant relationship with RGDP as against our initial hypothesis that there is no significant relationship between monetary policy and economic growth. Since the exchange rate was insignificant we rejected the alternative hypothesis and accepted the null hypothesis of no relationship. Thus, we accept our alternative hypothesis of a relationship between monetary policy and inflation and reject the null hypothesis of no relationship even though it has a negative association with the dependent variable. However, we accept our null hypothesis of no relationship between monetary policy and exchange rate during the period under investigation. We can submit that some of the variables of monetary policy have a positive and statistically significant relationship with economic growth in Nigeria.

Also, the plot of the cumulative sum control (CUSUM) test result remains within their critical values represented by the two straight lines indicating that the coefficients are constant (Fig.1).

Table 2. Summary of Unit Root Test Results

Variables	ADF		
	ADF Values	Critical Values	Order of Int.
RGDP	-3.956208	-3.540328	1
INTR	-3.417467	-2.945842	0
INFR	-4.460966	-3.580622	1
EXR	-5.543064	-3.540328	1
MS	-4.951840	-3.540328	1

Source: Researcher's computation, using E-views 12, 2023

Table 3. Summary of Bound Test

F-Bounds Test		Null Hypothesis: No levels of relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	6.192231	10%	1.9	3.01
k	4	5%	2.26	3.48
		2.5%	2.62	3.9
		1%	3.07	4.44

Source: Researcher's computation, using E-views 12, 2023

Table 4. Summary of ARDL-ECM

Variable	Coefficient	Std. Error	T. Statistics	Probability
D(PRGDP(-1))	0.043161	0.136141	0.317029	0.7553
D(INTR)	0.004749	0.001278	3.717098	0.0019
D(LMS)	-0.005643	0.030932	-0.182423	0.8575
D(INFR)	-0.002537	0.000445	-5.695163	0.0000
EXR**	2.16E-05	9.12E-05	0.236406	0.8161
R-squared	0.881256			
Adjusted R-squared	0.829628			
Prob(F-statistic)	0.000000			
Long run ARDL				
Variable	Coefficient	Std. Error	T. Statistics	Probability
INTR	0.542812	0.216000	2.513012	0.0231
LMS	0.357097	0.358911	0.994947	0.3346
INFR	-0.197462	0.160410	-1.230984	0.2361
EXR	0.001636	0.007330	0.223137	0.8263

Source: Researcher's computation, using E-views 12, 2023

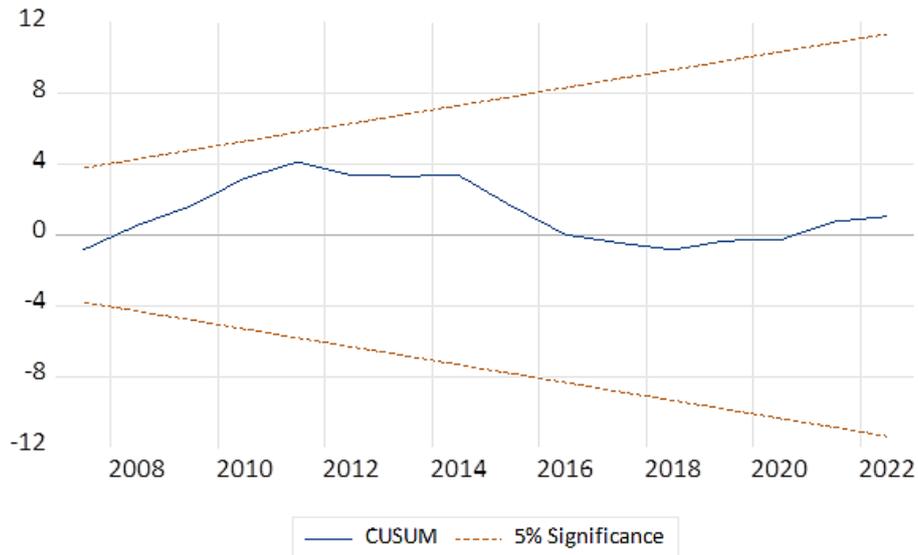


Fig.1. Stability test result

Table 5. Diagnostic test

Test type	F-Statistics
Heteroskedasticity Test	0.0766
Breusch-Godfrey Serial Correlation LM	0.6489

Source: Authors compilation, 2023 (Eviews-12)

Table 6. ECM Result

Variable	Coefficient	Std. Error	T. statistics	Probability
CointEq(-1)*	-0.014887	0.001473	-10.10371	0.0000

Source: Authors compilation, 2023 (Eviews-12)

The diagnostic test result indicates that the residuals of the ARDL specification are not affected by auto-correlation, heteroskedasticity, or misspecification.

From the above result, ECM is statistically significant, less than one, and negative which shows that there is a high speed of adjustment from the short run to the long run of the model.

4. DISCUSSION OF FINDINGS

The short-run result revealed a positive and significant relationship between RGDP and INTR with their coefficient and probability as 0.004749, 0.0019. Further, the result revealed a negative and insignificant relationship between RGDP and MS with a coefficient and probability of -0.005643, 0.8575; it also unveiled a negative and significant relationship with INFR with a coefficient and probability of -0.002537, 0.0000. It further disclosed that the exchange rate has a positive and insignificant relationship with RGDP. This indicates that during the review period interest rate had a relevant contribution to real gross domestic product, hence, by having a positive association. Interest rate and exchange rate has a positive influence which may likely be the result of some good policies that were implemented during the review period. However, the low output of the real GDP, which results in a low standard of living, unemployment, and poverty amongst others is a result of poor implementation of economic policies, poor technology, poor investment, inadequate funding, and poor infrastructures amongst others. In the short run, an ECM value of -0.014887 indicates that the adjustment from economic disequilibrium to stability will take Nigeria 14.89% of the time. This suggests that the likelihood of the nation escaping any state of disequilibrium such as stagflation or recession is positive.

In the long run, it was discovered that real gross domestic product has a positive influence on the variables of monetary policy except for inflation which has a negative association. The implication of this finding is that monetary policy has the capacity to influence greatly the output of the economy with good and sound government

policies, and implementation to help take our economy to the next level.

However, real gross domestic product has a positive relationship with monetary policy according to the findings of the paper. According to the findings, an increase in monetary policy will lead to an increase in economic growth. The positive influence was found to be statistically insignificant (P-value 0.7553<0.05).

According to the coefficients, every 1% increase in monetary policy will result in an increase of 43,161,000 in economic growth. Lyndon's [14], research work establishes a positive association between monetary policy and economic growth and found out that monetary policy had a significant link with economic growth. That is, monetary policy intervention plays a crucial role in economic growth and development.

5. CONCLUSION AND RECOMMENDATION

The paper therefore concludes that Nigeria's economy has not been performing well due to the fluctuations in the exchange rate, interest rate, money supply, and inflation while over the years; the government has made considerable efforts to increase the GDP in Nigeria. On the basis of the empirical findings the following recommendations are proffered;

- i. Monetary policy authorities should ensure that there is a significant fall in interest rates which will lead to an increase in the growth of the economy as reduced interest rates will serve as bait for investors.
- ii. The government should also protect our exchange rate as a continuous fall or rise in it discourages investors as it brings about uncertainty thus delaying them from taking relevant and major decisions.
- iii. The money supply should also be increased significantly so that there will be money in the economy, this will lead to an increase in employment and poverty reduction amongst others.
- iv. The government through the Central bank should approximately release the quantity of money that the economy needs so that it

won't exceed the economic activities thus leading to inflation.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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