Error Correction Modelling of Monetary Policy Instruments Behavior and Inflation Dynamics in Nigeria

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ABSTRACT

Monetary policy measures are fundamental macroeconomic plots towards inflation control in an ecosystem. Thus, the paper investigated the impact of monetary policy instruments and inflation dynamics in Nigeria from 1991 - 2024. Monetary policy instruments captured as independent variables are, money supply, exchange rate, monetary policy rate, and treasury bills rate, the dependent variable is the consumer price index as a proxy for inflation dynamics. The ECM approach was specified and estimated after pre-estimation tests were conducted. The ECM result revealed varying effects of monetary policy tools on inflation dynamics, as all shows negative impacts on inflation. Some post diagnostics checks were performed to determine the reliability and dependability of the result. On the strength of the findings, the study recommends among others for conscious regulation of money supply and other rates in the ecosystem.

Keywords: treasury bills, consumer price index, exchange rate pass-through, money supply

INTRODUCTION

Despite various efforts by the Central Bank of Nigeria (CBN) to control inflation through monetary policy, including changes in the Monetary Policy Rate (MPR), exchange rate management, and adjustments in the money supply, inflationary pressures have persisted, raising concerns about the effectiveness of these policies, Nigeria continues to experience significant inflationary pressures (Oisaozoje, Ekong & Orebiyi, 2024). Over the past four decades, the country has witnessed fluctuations in inflation rates, reflecting the complex interplay of domestic and external factors.

The effectiveness of monetary policy in stabilizing prices remains questionable, as inflation has often deviated from the CBN's targets. For instance, between 1981 and the mid-1990s, Nigeria experienced episodes of high inflation, reaching as high as 72.8% in 1995 due to factors like excessive money supply and exchange rate volatility (CBN, 2022). Following economic reforms, inflation declined in the late 1990s but resurged in the early 2000s, fluctuating between 6.9% and 18.9%, driven by fiscal expansion, exchange rate depreciation, and increases in money supply (Ojo, 2021). Moderate inflation characterized the period from 2006 to 2014, supported by relatively prudent monetary policies, despite a moderate increase during the global financial crisis in 2008-2009 (Ogunyemi & Ajayi, 2022). However, mid-2010s saw a surge, reaching 15.7% in 2016, primarily due to global oil price declines and exchange rate depreciation (Okafor, 2019). The double-digit inflation persisted into the 2020s, exacerbated by the COVID-19 pandemic, food supply constraints, and foreign exchange pressures, with inflation rising to 18.8% in 2022 (Eze & Okoye, 2023). This upward trend reflects structural issues, external shocks, and policy limitations, underscoring the need for a comprehensive analysis of the impact of key monetary policy variables on Nigeria's inflation trend over this extended period

Objectives

This paper examines monetary policy instruments and their impact on the inflation dynamics in Nigeria from 1991 to 2024. The paper has the following specific objectives: i. assess the impact of Money Supply on the inflation rate in Nigeria ii evaluate the effect of the Exchange Rate on the inflation rate in Nigeria. Iii investigate

how the Treasury Bills Rate affects the inflation rate in Nigeria.

Theoretical Framework: Quantity Theory of Money

The Quantity Theory of Money (QTM) serves as the primary theoretical framework for this study on the performance of monetary policy and inflation trends in Nigeria. At its core, the QTM establishes a direct relationship between the money supply and the price level within an economy, encapsulated in the equation $MV = PY$ 2.2

where M represents the money supply, V denotes the velocity of money (the rate at which money circulates in the economy), P is the price level, and Y signifies real output or GDP. This equation illustrates that if the velocity of money remains constant, an increase in the money supply will lead to a proportional increase in the price level, assuming that real output does not change.

According to the QTM, inflation can arise from excessive growth in the money supply relative to the economy's capacity to produce goods and services. This relationship highlights the significance of monetary policy instruments, such as the money supply and the monetary policy rate, in influencing inflation. When central banks expand the money supply through mechanisms like open market operations or lowering interest rates, it can result in increased liquidity in the economy, potentially driving up demand and leading to higher price levels if supply does not keep pace. In the context of Nigeria, where monetary policy decisions have historically responded to external shocks (such as fluctuations in oil prices) and domestic economic challenges, understanding the implications of changes in money supply is crucial.

The QTM also accounts for the role of expectations in inflation dynamics. As agents in the economy anticipate future inflation, they may adjust their behavior, demanding higher wages or increasing prices, which can lead to a self-fulfilling prophecy of inflation. This aspect is particularly relevant for analyzing inflation trends in Nigeria, where inflation expectations can be influenced by external factors such as exchange rates and global economic conditions. By examining how monetary policy instruments influence inflation through the lens of QTM, this study aims to contribute to a deeper understanding of the interplay between monetary policy performance and inflation trends in Nigeria from 1981 to 2023.

Empirical Literature Review

Edeh (2024), explored the impact of monetary policy pass-through on inflation in selected sub-Saharan African (SSA) countries from 1987 to 2022. The study employed a Panel Vector Error Correction Model (PVECM) to analyze inflation as the dependent variable, with lending rate, deposit rate, nominal effective exchange rate, broad money supply, and credit to the private sector serving as the independent variables for monetary policy transmission. The findings indicated that inflation responded positively to shocks in both the lending rate and broad money supply over a 10-year period, while the deposit rate, nominal effective exchange rate, and credit to the private sector exhibited mixed elastic responses, both positive and negative. Moreover, the interest rate channel, represented by the lending rate, emerged as the most effective transmission mechanism, as evidenced by the variance decomposition results. This was followed by broad money supply, nominal effective exchange rate, deposit rate, and credit to the private sector.

Emerenini and Eke (2021) conducted a study on the determinants of inflation in Nigeria using monthly data from January 2007 to August 2014. They employed the Ordinary Least Squares (OLS) method due to its Best Linear Unbiased Estimator (BLUE) property. The findings revealed that expected inflation, exchange rate, and money supply had a significant influence on inflation, while the annual treasury bill rate and monetary policy rate, though correctly signed, did not significantly impact inflation during the period examined. The model indicated that the explanatory variables accounted for 90% of the variation in inflation, whether increasing or decreasing. Additionally, the co-integration test confirmed the existence of a long-term relationship among the variables.

Musa (2021) examined the interrelationship between interest rate and inflation rate in Nigeria. The study made use of Johansen co-integration tests. Coefficient estimates were based on vector error correction and vector autoregression models. Findings established that interest rates were weak instruments to curb inflation in the short

run but inclined to be significant and relevant instruments in the long run. Moreover, inflation rate responses to interest rates were weak in the short run but proved strong in the long run.

Angelina and Nugraha (2020) analyzed the effects of monetary policy on inflation and the national economy using Bank Indonesia's Annual Report data. The study employed time series data and applied the Two-Stage Least Squares (TSLS) method for simultaneous equation analysis. The results indicated that the money supply had a significant positive impact on inflation, both in the current and previous periods. The SBI rate negatively affected inflation, while the exchange rate had a significant positive effect. However, the national economy did not have a significant impact on inflation. The study concluded that increases in the money supply, either in the present or previous periods, led to higher inflation, while a rise in the SBI interest rate reduced inflation. An appreciation in the exchange rate also led to inflation. For Indonesia's economy, domestic and foreign investments (both current and past) and labor significantly influenced economic performance, but the inflation rate had no substantial effect on the broader economy.

Bashir and Sam-Siso (2020), employing the Auto-Regressive Distributed Lag (ARDL) approach, investigated the effectiveness of monetary policy in stimulating macroeconomic performance during economic downturns in Nigeria. The study's findings, both in the short and long run, reveal significant dynamics shaping inflationary trends in Nigeria. In the short term, factors such as the lag value of inflation rate, exchange rate appreciation, and unexpected appreciation (indicated by the shift dummy) were identified as potential contributors to reducing the inflation rate. On the other hand, a lower Monetary Policy Rate (MPR) and a higher volume of money in circulation were observed to stimulate inflation. In the long run, exchange rate appreciation emerged as a significant constraint on inflation rate, while growth and unemployment were influenced by currency depreciation in the Nigerian context. Moreover, the study highlighted that money supply had a negative impact on GDP growth but acted as a stimulant for inflation and unemployment rates.

Nazifi and Ozovehe (2020) empirically analysed the effect of monetary policy on inflation in Nigeria; 1970 – 2018. The estimated Autoregressive Distributed Lag (ARDL) results showed that there is cointegration between monetary policy variables and inflation rate in Nigeria. The results revealed that Monetary Policy Rate (MPR) was statistically significant in the short run after first difference, which indicates that monetary policy rate (MPR) exerts significant effect on inflation in Nigeria in the short run.

Mohammed, Luqman and Ibrahim (2019). conducted a study examining the trend of monetary policy and the inflationary process in Nigeria from 1981 to 2016. The study utilized the Augmented Dickey Fuller (ADF) test and Ordinary Least Square (OLS) regression for analysis. Despite the monetary policy authorities' efforts to address inflation in Nigeria through various strategies over the years, the empirical results indicated a lack of positive outcomes of monetary policy on inflation control. The study found that the adoption of monetary targeting was not effective in controlling inflation, as interest rate, money supply, and real GDP were identified as causes of inflation in the Nigerian economy. The results of finding further suggested that the monetary policy rate did not prove to be more effective than the minimum rediscount rate in curbing inflation in Nigeria. The study also highlighted strong evidence of the importance of money supply in the inflation process, supporting the dominance of the monetarist proposition on inflation in Nigeria.

Ashiru (2022) investigated the impact of money supply on food inflation in Nigeria, utilizing monthly data from January 1996 to December 2021. The study employed the Augmented Dickey-Fuller test to check the stationarity of both money supply growth and food inflation. An Autoregressive Distributed Lag (ARDL) model was then specified to capture both the immediate and lagged effects of money supply on food inflation, with the model estimated using the Ordinary Least Squares (OLS) technique. The findings revealed that money supply had an immediate (contemporaneous) effect on food inflation, but no significant lagged effect was found. The study concluded that controlling money supply growth is an effective strategy for managing food inflation in Nigeria.

Akinbobola (2022) explored the dynamics of money supply, exchange rate, and inflation in Nigeria using a Vector Error Correction Model (VECM). The results showed that both money supply and exchange rate exerted significant negative effects on inflationary pressures in the long run. In contrast, real output growth and foreign price changes had positive effects on inflation over the same period. These findings highlight the importance of managing money supply and exchange rates to mitigate inflation in the Nigerian economy.

Deborah and Seun (2020) conducted an evaluation of the effects of monetary policy on price stability in Nigeria spanning the period from 1981 to 2016. The study utilized the consumer price index as the dependent variable, with money supply, interest rate, exchange rate, Gross Domestic Product (GDP), and treasury bill rates as independent variables. Secondary data were sourced from the Central Bank of Nigeria Statistical Bulletin and World Bank Development Indicators. Employing the Auto Regressive Distributive Lag (ARDL) model, the research found that all the time series data exhibited non-stationary characteristics according to the unit root test. In both the short-run and long-run, the study revealed that exchange rate, money supply, GDP, and open market operations significantly influenced price stability in Nigeria. However, interest rate was found to be significant only in the short-run.

Oladosu and Oladele (2020) evaluated the effects of monetary policy on price stability in Nigeria for the period 1981-2016, employing the Auto Regressive Distributive Lag (ARDL) model. The study revealed significant effects of exchange rate, money supply, GDP, and open market operations on price stability in both the short-run and long-run, while interest rate was significant only in the short-run.

Adodo, Akindutire and Ogunyemi (2019) conducted a study to assess the effectiveness of monetary policy in controlling inflation in Nigeria. The study employed the Augmented Dickey-Fuller (ADF) test, Johansen Co-integration, and Error Correction Model (ECM) to analyze the impact of money supply, interest rate, and exchange rate on inflation rate in Nigeria.

Audu and Amaegberi (2023) explored the relationship between exchange rate fluctuations and inflation targeting in Nigeria, using the inflation rate as the dependent variable, while exchange rate and interest rate served as the explanatory variables. The data analysis employed an Error Correction Mechanism (ECM) and revealed that interest rates have a positive influence on inflation, while the exchange rate negatively affects it. However, the study's model might have omitted important variables, as it only considered exchange and interest rates as determinants of inflation, excluding other critical factors like money supply, GDP, and average rainfall.

Liu and Ma (2023) studied the correlation between exchange rates and inflation in both China and the United States. The study employed bootstrap rolling-window approach to found evidence of challenging factor to the validity of the purchasing power parity (PPP) theory over the entire examined period. Notably, the study found that there is severity in the influence of exchange rate on inflation rate than the influence of inflation rate on exchange rate in US and China. The negative effect of the China-US exchange rate on inflation becomes more pronounced between 2006 and 2014. Additionally, it is observed that inflation is more significantly influenced by the exchange rate in the United States compared to China. The positive effect of US inflation on the China-US exchange rate is found to exist only from January to July 2019, while the negative impact of China's inflation on the exchange rate is evident from August 2008 to July 2010 and from September 2010 to May 2011.

Observed variations in the short and long terms, with persistent asymmetric effects of real exchange rates identified in Indonesia and Singapore in the long run. Irrespective of the inflation targeting or non-targeting regime, the study highlighted that oil price shocks emerged as the most crucial factor with the largest impact on inflation in ASEAN-5 economies. Money supply and output growth were also found to have significant positive effect on inflation, with results varying among countries. These insights contribute to a deeper understanding of the dynamics of ERPT and its implications for inflation in the context of ASEAN-5 economies.

Ezebilo, Benedict, and Yakubu (2023) empirically examined the relationship between Nigeria's monetary policy and food inflation using a quantitative research method grounded in an ex-post facto research design. The study applied a Non-linear Autoregressive Distributed Lag (NARDL) model to assess the impact of monetary policy on food inflation in Nigeria over the period from 1980 to 2021. Food inflation (FINF) was the dependent variable, while exogenous variables included Treasury Bills Rate (TBR), Exchange Rate (EXG), Monetary Policy Rate (MPR), and Broad Money Supply (M2). The researchers utilized time series data from sources such as the World Bank Data Repository (WDI), the National Bureau of Statistics, and the Central Bank of Nigeria's (CBN) Statistical Bulletin. The findings revealed that the exchange rate significantly and negatively affects food prices in Nigeria. Additionally, there is a long-term relationship between Nigeria's monetary policy rates and food

inflation. The results indicated that both money supply and monetary policy rate exert a positive and significant impact on food inflation in the country.

Using the Autoregressive Distributed Lag (ARDL) model, Ibrahim and David (2022) conducted an examination of the effectiveness of monetary policy rates, treasury bills rates, and liquidity ratio in controlling inflation in Nigeria using annual data spanning from 1981 to 2019. The results obtained from the estimated Autoregressive Distributed Lag (ARDL) model indicated that both in the long run and short run, monetary policy rates had an insignificant positive impact on inflation rates, thereby posting ineffectiveness of monetary policy rate in inflation control. Furthermore, treasury bills rates were found to be effective only in the short run, as lagged treasury bills rates demonstrated a significant negative impact on inflation in the short run. On the other hand, liquidity ratio proved effective only in the long run, exhibiting an unfavorable effect on inflation control in the short run.

METHODOLOGY

Model Specification

Building on the work of Adodo, Akindutire, and Ogunyemi (2019), this study modifies their model and specifies a dynamic model to investigate the relationship between monetary policy instruments and inflation proxied by consumer price index in Nigeria. The model is expressed as follows:

$$CPI = \beta_0 + \beta_1 M2 + \beta_2 EXR + \beta_3 TBR + \epsilon t \qquad\qquad 1$$

where:

CPI represents the inflation rate, M2 is the broad money suppl   y, EXR is the exchange rate,

TBR is the treasury bill rate,

β_0 is the constant term,

β_1, β_2, and β_3 are the coefficients for the respective independent variables,

ϵt represents the error term.

The ECM version of the model.

$$\Delta CPI_t = \alpha_{02} \sum\ \ + \sum_{i=1}^{q} \alpha_{2i}\Delta M2_t + \sum_{i=1}^{r} \alpha_{3i}\Delta EXR_t + \sum_{i=1}^{s} \alpha_{4i}TBR_{t-1} + \sum_{i=1}^{t} \lambda ECT_{t-1} + \mu_{2t} \qquad 2$$

Where; $\alpha_{1i}, \alpha_{2i}, \alpha_{3i}, \alpha_{4i}, \alpha_{5i}, \alpha_{6i}$ are the short run dynamic coefficients. $\lambda = (1 - \sum_{i=1}^{p} \delta_i)$ which is the speed of adjustment parameter with a negative sign. $ECT = (CPI_{t-i} - \theta X_t)$ for model 1, where θ is the long run parameter

Apriori Expectation

The expected signs of the coefficients of the explanatory variables are:

$\beta_1 = \frac{\partial CPI}{\partial MS} > 0$: it is expected that an increase in the money supply will lead to a rise in inflation.

$\beta_2 = \frac{\partial CPI}{\partial EXR} > 0$: It is expected that a higher exchange rate (meaning the Naira depreciates) is likely to increase inflation,

$\beta_3 = \frac{\partial CPI}{\partial TBR} < 0$: It is expected that a rise in the treasury bill rate is expected to reduce inflation

RESULTS

Unit Root Test

Table 1. ADF Unit Root Test Result

| Variables | ADF Unit Root Result | | | | | | Order of integration |
| | At Level | | | At First Difference | | | |
	T – stat	Cri. (5%)	P-value	T – stat	Cri (5%)	P-value	
CPI	-3.57797	-2.986225	0.0139				1(0)
M2	-3.17748	-2.957110	0.0308				1(0)
EXR	-1.89160	-2.957110	0.3319	-5.57024	-2.96041	0.0076	1(1)
TBR	-2.10100	-2.957110	0.2456	-6.70104	-2.96041	0.0000	1(1)

Source: Researcher's computation using Eviews, 10 2025

The unit root test results from the ADF (Augmented Dickey-Fuller) test indicate the order of integration for each variable The CPI and M2 variables are stationary at levels,I(0) with p-values of 0.0139 and 0.0308, respectively. On the other hand, EXR (Exchange Rate), , and TBR (Treasury Bill Rate) are stationary at first difference I(1)

Tables 2. VAR Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-456.2697	NA	45012791	31.81171	32.04745	31.88554
1	-321.8891	213.1554	24566.39	24.26822	25.68266*	24.71120
2	-286.1575	44.35656*	13879.26*	23.52810	26.12125	24.34024
3	-256.5580	26.53741	16528.45	23.21090	26.98275	24.39220
4	-212.4312	24.34585	15122.65	21.89181*	26.84236	23.44226*
* indicates lag order selected by the criterion						

Source: Researcher's computation using Eviews, 2025

The lag selection criteria table shows the results for various lag lengths based on different statistical measures, with a focus on the AIC (Akaike Information Criterion). The AIC is used to identify the optimal lag length by minimizing the value. From the table, we observe that the AIC is lowest at lag 4, with a value of 21.89181, suggesting that a lag length of 4 is the most appropriate for this analysis, as it minimizes the AIC relative to other lags.

Table 3 ECM and Long Run Estimation Results

ECM Estimation				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.***
D(M2)	0.081087	0.047418	2.710049	0.0153
D(M2(-1))	0.107222	0.044701	2.398646	0.0353
D(EXR)	-4.460446	2.787162	-2.600354	0.0278
D(EXR(-1))	-3.718455	2.806787	-3.324809	0.0121
D(TBR)	-0.981998	0.336038	-2.922282	0.0139
D(TBR(-1))	-0.575358	0.239361	-2.403722	0.0350
CointEq(-1)*	-0.573383	0.030143	5.751953	0.0001
R-squared	0.88096	Adjusted R-squared		0.772168
F-statistic	1357.739	Durbin-Watson stat		2.035517
Prob(F-statistic)	0.000000			

Source: Researcher's computation using Eviews, 10.0 2025

The ECM estimation results indicates that broad money supply (M2) has a positive and significant short-run impact on consumer price index, as a one unit increase in money supply will cause a (0.081087), percent increase in consumer price index ceteris paribus, and is statistically significant as indicated by the prob. Value of ($p = 0.0153$). The one-period lag of M2 also revealed that a one unit increase in the previous lag will cause a 0.107222 increase in consumer price index ceteris paribus and is statistically significant with a prob. Value of ($p = 0.0353$), suggesting that past changes in money supply influence current inflation rate significantly. This finding aligns with Ashiru (2022), who found that money supply had an immediate impact on food inflation. However, it contrasts with Clement (2019), who discovered that money supply had a negative and insignificant impact on inflation in both the short and long run.

Exchange rate (DEXR) shows negative and statistically significant effect on inflation, This implies that one percent increase in in exchange ratee will cause (-4.460446) percentage fall in consumer price index ceteris paribus .The one-period lag of exchange rate indicates that one percent increase in previous period will result to (-3.718455) percent fall in consumer price index ceteris paribus, This suggests that exchange rate fluctuation in both current and lag periods triggers a decline in consumer price index in the short run. This result is consistent with Akinbobola (2022), who maintained that exchange rate exerted a reducing effect on inflation in the short run. However, it contrasts with Liu (2023), who argued that exchange rate in the short run fuel inflation in China and the US.
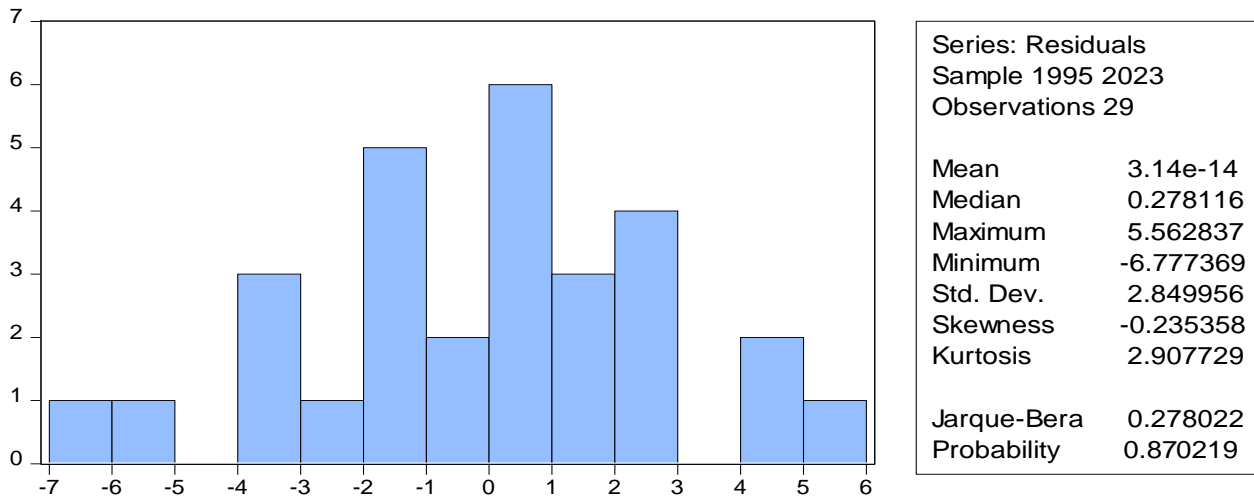
The Treasury Bill Rate (TBR) in both current and lagged period is significant. However, it implies that a one percent increase in TBR will influence a(-0.981998) percent decline in consumer price index and (-0.575358) percent in the lag period ceteris paribus This suggests that increasing the sale of TBR helps to reduce inflation as a contractionary measure This finding supports Ibrahim and David (2022), who observed that TBR was effective in controlling inflation in the short run. However, it differs from Emerenini and Eke (2021), who argued that that TBR had no significant effect on inflation.

The error correction term (CointEq(-1)) is negative and highly significant (-0.573383, $p = 0.0001$), indicating that there is a strong and stable long-run relationship between the explanatory variables and inflation. This suggests that deviations from the long-run equilibrium correct at a speed of 57.3% annually.

The model demonstrates a strong explanatory power, as indicated by the R-squared value of 0.88096, meaning that 88% of the variations in inflation are explained by the independent variables. The F-statistic (1357.739) with a probability value of 0.0000 indicates that the overall model is highly significant, meaning the independent variables jointly have a strong impact on inflation. Furthermore, the Durbin-Watson statistic (2.0355) suggests the absence autocorrelation in the model, thus establishing the reliability of the estimates.

DIAGNOSTIC TEST

Figure 1: Histogram Normality Test

Series: Residuals	
Sample 1995 2023	
Observations 29	
Mean	3.14e-14
Median	0.278116
Maximum	5.562837
Minimum	-6.777369
Std. Dev.	2.849956
Skewness	-0.235358
Kurtosis	2.907729
Jarque-Bera	0.278022
Probability	0.870219

Source: Researcher's computation using Eviews,10, 2025

The Jarque-Bera (JB) test result shows a JB statistic of 0.278022, with a corresponding p-value of 0.870219. Since the p-value is greater than the 5% significance level, indicates that the residuals from the model are normally distributed

Table 4.Breusch-Godfrey Serial Correlation Test

F-statistic	0.030731	Prob. F(2,9)	0.9698
Obs*R-squared	0.196701	Prob. Chi-Square(2)	0.9063

Source: Researcher's computation using Eviews,10, 2025

The Breusch-Godfrey serial correlation test results show an F-statistic of 0.030731 with a p-value of 0.9698 and an Obs*R-squared of 0.196701 with a p-value of 0.9063. Both p-values are much higher than the 5% significance level, indicating that there is no significant serial correlation in the residuals. This suggests that the model does not suffer from autocorrelation, and the estimated coefficients are unbiased and efficient, meeting one of the key assumptions for reliable regression analysis.

Table 5. Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.105156	Prob. F(17,11)	0.4446
Obs*R-squared	18.29086	Prob. Chi-Square(17)	0.3707
Scaled explained SS	2.510211	Prob. Chi-Square(17)	1.0000

Source: Researcher's computation using Eviews, 2025

The Breusch-Pagan-Godfrey heteroskedasticity test results show an F-statistic of 1.105156 with a p-value of 0.4446 and an Obs*R-squared of 18.29086 with a p-value of 0.3707. Since the p-values for both tests are greater than 0.05, we fail to reject the null hypothesis of homoskedasticity. This means there is no evidence of heteroskedasticity in the model's residuals, suggesting that the variance of the errors is constant across observations and the model is correctly specified in terms of error variance.

Table 6. Ramsey RESET Test Result

Omitted Variables: Powers of fitted values from 2 to 3			
	Value	df	Probability
F-statistic	3.456469	(2, 9)	0.0770

Source: Researcher's computation using Eviews, 10. 2025

The Ramsey RESET test results show an F-statistic of 3.456469 with a p-value of 0.0770. The p-value is above the 5% significance level, suggesting that there is evidence against the null hypothesis of no misspecification in the model. Hence, the model is well specified.

Figure 2 CUSUM and CUSUM of Squares Test Results

Source: Researcher's computation using Eviews, 2025

The CUSUM and CUSUM of Squares tests are graphical tools used to assess the stability of the model. If the CUSUM and CUSUM of Squares lines stay within the 5% significance bounds, it indicates that the model is stable. As no critical boundaries are exceeded in the graphical plots (as inferred), we conclude that the model remains stable throughout the sample period. The diagnostic tests further confirm that the model's residuals are normally distributed, with no evidence of serial correlation or heteroskedasticity. Additionally, the model is correctly specified, and the stability tests (CUSUM and CUSUM of Squares) show that the model is stable.

CONCLUSION AND RECOMMENDATIONS

Conclusion

This study explored the effects of key monetary policy instruments, Money Supply, Exchange Rate, Monetary Policy Rate (MPR), and Treasury Bill Rate (TBR),on inflation in Nigeria from 1991 to 2024. The findings revealed that while the MPR and TBR significantly influenced inflation in line with economic theory, the Exchange Rate did not have a significant long-term impact, contrary to the expected positive relationship. Additionally, Money Supply showed a positive and significant effect on inflation in the short run, supporting the a priori expectation that an increase in money supply would drive up inflation. The study underscores the importance of effectively managing monetary policy instruments, particularly the MPR and Money Supply, to control inflation in Nigeria. However, the insignificance of the Exchange Rate in the long run calls for further investigation into its broader implications for the Nigerian economy. Despite some limitations, the findings contribute to a deeper understanding of how monetary policy tools interact with inflation and offer valuable insights for policymakers.

Recommendations

Based on the findings, the following policy recommendations are made:

1. All inflation reducing variables exchange rate and treasury bills rates should be properly coordinated by monetary authorities to maintain a sustainable threshold that will not trigger inflation. The Central Bank of Nigeria (CBN) should consider adjusting the treasury bill rates and exchange rate as tools for inflation control. An increase in MPR could help reduce inflation by discouraging borrowing and reducing money supply, which can stabilize the economy.

2. Monetary authorities should determine per time the volume of money supply to the economy with less capability to induce inflationary pressures to the economy.

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