

Monetary Policy, Fiscal Policy Coordination and Inflation Control in Nigeria

Chinedu Jude Eze

M.Sc. student in Department of Economics, Ebonyi State University, Nigeria

Corresponding author's email: chinedujudeeze16@gmail.com

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Abstract

This study investigates the relationship between monetary policy and inflation dynamics in Nigeria from 1980 to 2023 using the Autoregressive Distributed Lag (ARDL) framework. The analysis incorporates inflation, money supply, interest rate, exchange rate, food imports, and energy costs as variables. Findings reveal a long-run cointegrating relationship between monetary policy and inflation. Money supply significantly increases inflation in the long run, while interest rate consistently reduces it in both the short and long run. Exchange rate depreciation exerts lagged short-run inflationary effects but shows a surprising negative long-run impact, suggesting structural adjustments. Food imports have an insignificant effect, indicating indirect rather than direct influence. Energy costs emerge as the strongest driver of inflation, highlighting persistent cost-push pressures. The study concludes that inflation in Nigeria is shaped by both monetary and structural factors, recommending tighter monetary control, energy sector reforms, and agricultural diversification to achieve price stability.

Keywords: Monetary policy, Inflation, Money supply, Interest rate, Exchange rate, Energy costs, Nigeria.

1. Introduction

Inflation has been a persistent macroeconomic challenge in Nigeria. Recent data from the National Bureau of Statistics (NBS) show that annual headline inflation peaked around 34.8% in late 2024, with food inflation significantly exceeding that level. According to the IMF's 2024 Article IV Consultation, inflation reached approximately 32% in February 2024, driven by high food prices ($\approx 38\%$) and loose financial conditions. These elevated inflation rates impose considerable burden on households, especially the poor, by eroding purchasing power and increasing cost of living.

Monetary policy, particularly via interest rate adjustments and control over the money supply, remains central to the government's inflation containment strategy. For example, recent policy actions have included tightening of the monetary policy rate (MPR) by several hundred basis points in 2023-2024. However, empirical studies suggest that monetary policy by itself may not fully explain inflation dynamics: for instance, *Macroeconomic Drivers of Inflation in Nigeria* (Njideka, Anicho, & Osigbeme, 2023) find that money supply and interest rate are significant, but other external factors also play major roles.

One such external factor is the exchange rate. Nigeria's unification of foreign exchange windows in mid-2023, coupled with recurrent naira depreciation, has raised costs of imports, including food

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and energy inputs. The weakened currency increases the local price of imported goods and raw materials, contributing to imported inflation. This is corroborated by studies such as *Asymmetric Pass-through Effects of Oil Price Shocks and Exchange Rates on Inflation in Nigeria* by Sa'ad, Usman, Omaye, & Yau (2023), which show exchange rate depreciation has a significant and asymmetric effect on inflation.

Energy costs are also important drivers. The removal of fuel subsidies, rising global oil prices, and adjustments in domestic energy pricing have led to increases in fuel and electricity tariffs, which feed through into transportation, production, and ultimately consumer price indices. A recent study, *Asymmetric Impacts of Retail Energy Prices on Inflation in Nigeria* (Ikue, 2024), focusing on 2010-2024, finds that increases in retail energy prices have pronounced inflationary effects, particularly on food inflation, whereas decreases in energy costs produce weaker deflationary effects.

Furthermore, food import dependence magnifies inflationary pressures when global food prices rise or when the domestic currency weakens. Empirical research shows that during periods of exchange rate stress or FX scarcity, imported food inflation sharply increases. While not all recent works use “food import” explicitly as a variable, they often include import price indices or related measures; for instance, the IMF reported that food price inflation was about 38% in early 2024 and was a major driver of headline inflation.

Another variable of relevance is past inflation itself (inflation inertia), which tends to persist due to expectations, wage-price spirals, and indexation. Many ARDL / NARDL studies (including oil price / energy price pass-through studies) include lagged inflation terms, showing significant persistence. As an example, in *Oil Prices and Inflation in Nigeria: An Empirical Analysis of Nonlinear Responses to Oil Price Changes* (Ihugba & Adefabi, 2024) the lagged dependent variable (inflation) has a strong positive influence on current inflation.

Furthermore, there are signs that recent reforms and macroeconomic stabilization efforts are beginning to moderate inflation. As of mid-2025, inflation has eased somewhat: for instance, in June 2025 it was reported at **22.22%**, down from ~34.19% in June 2024, likely due in part to foreign exchange stability and higher foreign reserves ($\approx$ US\$40.11 billion at one point). These trends suggest that policy, though under severe pressure from external and supply shocks, can have effect but that the speed, channels, and mediating variables matter.

Therefore, given this multifaceted environment monetary variables (money supply, interest rates), exchange rate fluctuations, energy pricing, and import dynamics it is essential to use empirical methods capable of capturing both short-run dynamics and long-run equilibrium relationships, as well as asymmetries and lagged effects. The ARDL models appear well-suited to this study,

Since the 1980s, inflation in Nigeria has remained persistently high, often exceeding the Central Bank of Nigeria's (CBN) target range of 6–9%. Average inflation between 1980 and 2023 stood at over 18% (NBS, 2023), with episodes of extreme volatility such as the hyperinflation of 1995 (72.8%), the food price spikes of 2008, and the recent surge above 30% in 2023. These recurring shocks highlight the inadequacy of existing policy measures to achieve price stability.

One major issue is the weak effectiveness of monetary policy transmission. Rapid expansion in money supply, partly driven by fiscal dominance, has consistently aggravated inflationary pressures (Adeleke & Alabi, 2021). Interest rate policy, expected to anchor inflation expectations, has also underperformed due to structural rigidities and the prevalence of negative real interest rates, which discourage savings and weaken investment efficiency (Okoye, Modebe, & Eze, 2020).

Exchange rate depreciation presents another dimension of the problem. The multiple exchange rate regimes operated over the years have amplified imported inflation, particularly in food and manufacturing inputs (Adewuyi & Arawomo, 2021). The heavy reliance on food imports makes the Nigerian economy especially vulnerable to global price shocks and exchange rate volatility.

In addition, energy costs have consistently acted as a source of cost-push inflation. Deregulation of petroleum product prices, persistent fuel scarcity, and rising electricity tariffs have translated into higher transport and production costs, which feed directly into general price levels (Ezeaku & Ibe, 2022). This is further compounded by infrastructural deficits that raise transaction costs across sectors.

Despite the abundance of empirical studies on inflation in Nigeria, most are limited in two ways. First, they tend to examine determinants of inflation in isolation rather than considering the joint effects of monetary, external, and structural factors. Second, many studies rely on static econometric models, overlooking the short- and long-run dynamics. Consequently, the persistent question remains: why has Nigeria's monetary policy remained largely ineffective in moderating inflation dynamics in the presence of exchange rate instability, food import dependence, and energy cost shocks between 1980 and 2023?

Hence, this study seeks to address this gap by applying a ARDL framework to examine the combined effects of money supply, interest rate, exchange rate, and food imports on inflation in Nigeria, with energy costs included as a control variable. As such, the objectives of the study are to examine the impact of money supply on inflation in Nigeria, to investigate the effect of interest rate on inflation in Nigeria, to examine the contributions of food imports to the inflation in Nigeria, and to examine the impact on exchange rate on the inflation in Nigeria.

This study focuses on the relationship between monetary policy and inflation dynamics in Nigeria over the period 1980–2023. The dependent variable is inflation (INF), while the independent variables include money supply (MS), interest rate (INR), food imports (FMP), and exchange rate (EXR). Energy costs (ENC) are incorporated as a control variable to account for cost-push influences on price levels. The study employs the Autoregressive Distributed Lag (ARDL) approach, which is suitable for analyzing both short-run fluctuations and long-run equilibrium relationships among variables with mixed orders of integration. The analysis relies primarily on secondary data from the Central Bank of Nigeria (CBN) Statistical Bulletin and World Bank World Development Indicators (WDI).

The study is subject to certain limitations. First, the reliance on secondary data means the analysis is constrained by the accuracy, frequency, and availability of official statistics, which may contain reporting gaps or measurement inconsistencies, especially in the earlier decades of the study period. Hence, the limitations were surmounted by collecting high-quality and reliable data on the

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variables of interest used in this study from reliable sources such as the World Bank and the Central Bank of Nigeria (CBN).

2. Literature Review

2.1 Conceptual Review

2.1.1 Inflation Dynamics

Inflation refers to a sustained increase in the general price level of goods and services in an economy. In Nigeria, inflation has been both demand-driven by excess liquidity and aggregate demand and cost-push, arising from exchange rate depreciation, imported food dependence, and rising energy costs. Inflation dynamics capture not only the rate of change in prices but also the responsiveness of inflation to shocks and policy measures over time (Njideka et al., 2023).

2.1.2 Money Supply (MS)

Money supply represents the stock of currency in circulation and demand deposits within an economy. Excessive monetary expansion tends to drive inflation by increasing aggregate demand beyond productive capacity. In Nigeria, fiscal dominance and deficit monetization have historically caused growth in money supply, fuelling inflationary pressures (Adeleke & Alabi, 2021).

2.1.3 Interest Rate (INR)

Interest rate is the cost of borrowing or the return on savings. In theory, higher interest rates reduce inflation by discouraging borrowing and reducing liquidity. However, in Nigeria, real interest rates are often negative, limiting their effectiveness as a monetary policy tool (Okoye, Modebe, & Eze, 2020).

2.1.4 Food Imports (FMP)

Food imports are critical in Nigeria's inflationary structure due to high dependency on foreign food supplies. Exchange rate depreciation directly raises the cost of imported food, transmitting external price shocks into domestic inflation (Adewuyi & Arawomo, 2021).

2.1.5 Exchange Rate (EXR)

The exchange rate measures the value of the naira against foreign currencies. Depreciation of the naira increases the cost of imports, particularly food and industrial inputs, thereby driving imported inflation. Exchange rate volatility also undermines inflation expectations (Sa'ad, Usman, Omaye, & Yau, 2023).

2.1.6 Energy Cost (ENC)

Energy costs, including fuel and electricity prices, represent an important supply-side determinant of inflation. In Nigeria, deregulation of petroleum products and removal of subsidies have triggered cost-push inflation through higher production and transport costs (Ezeaku & Ibe, 2022).

2.2 Theoretical Framework

Understanding the dynamics of inflation and the effectiveness of monetary policy in Nigeria requires grounding in established economic theories. This study draws on three major theories: the Quantity Theory of Money (QTM), the Structuralist Theory of Inflation, and the Cost-Push Inflation Theory.

2.2.1 Quantity Theory of Money (QTM)

The Quantity Theory of Money, popularized by Irving Fisher through the equation of exchange ($MV = PQ$), postulates that inflation is primarily driven by excessive growth in money supply relative to output. In this view, when monetary authorities expand the supply of money beyond the productive capacity of the economy, the inevitable outcome is a rise in the general price level. The theory underpins much of modern monetary policy design, particularly in inflation-targeting regimes (Mishkin, 2019). In the Nigerian context, the persistent growth in broad money supply due to fiscal dominance, deficit monetization, and weak policy coordination has often been associated with episodes of high inflation (Adeleke & Alabi, 2021).

2.2.2 Structuralist Theory of Inflation

The Structuralist perspective emphasizes that inflation in developing economies is not solely a monetary phenomenon but rather a consequence of structural bottlenecks. These include food supply rigidities, exchange rate misalignments, infrastructure deficits, and dependence on imports. According to this view, inflation results when the productive capacity of an economy cannot match growing demand due to deep-seated institutional and structural weaknesses (Chowdhury, 2021). For Nigeria, recurrent exchange rate crises, dependence on food imports, and rising energy costs have reinforced structural inflationary pressures that weaken the impact of traditional monetary policy instruments.

2.2.3 Cost-Push Inflation Theory

The Cost-Push Inflation Theory posits that rising production and distribution costs such as wages, raw material costs, and energy prices drive up the general price level independent of demand. This perspective highlights how shocks to supply-side variables, such as petroleum price deregulation or electricity tariff hikes, can translate directly into higher consumer prices. In Nigeria, repeated fuel subsidy removals and increases in energy tariffs have fuelled significant cost-push inflation (Ezeaku & Ibe, 2022).

2.2.4 Theory Underpinning the Study

While all three theories provide relevant insights, the Structuralist Theory of Inflation underpins this study. Nigeria's inflation dynamics are shaped not only by monetary expansion (QTM) and rising energy costs (cost-push) but also by deeper structural issues—such as food import dependence, exchange rate volatility, and infrastructural bottlenecks—that persistently undermine the effectiveness of monetary policy. By employing a ARDL framework, this study builds on the structuralist view to analyse how monetary, external, and structural factors interact in shaping inflation in Nigeria between 1980 and 2023.

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2.3 Review of Related Literature

Ikue (2024) provided further insights by examining the asymmetric impacts of retail energy prices on inflation in Nigeria between 2000 and 2022. Using a Nonlinear ARDL approach, the study revealed that increases in energy prices raised inflation significantly, while decreases in energy prices had little or no effect. This confirmed the asymmetric rigidity of inflation in Nigeria. However, the study narrowly focused on energy prices and did not integrate external factors such as exchange rate volatility or food imports, which are central to the present research.

Sa'ad, Usman, Omaye, and Yau (2023) analyzed the asymmetric effects of oil price shocks and exchange rate movements on inflation in Nigeria between 1980 and 2020. Applying a Nonlinear ARDL (NARDL) model, they found that exchange rate depreciation had a stronger inflationary impact than appreciation, while oil price increases raised inflation more sharply than declines reduced it. Their findings highlight the importance of capturing asymmetries in inflation modeling. However, their study was limited to external shocks, overlooking domestic monetary policy variables such as interest rates and money supply, which this research incorporates.

Obi and Okafor (2022) explored the contribution of food import dependence to inflation in Nigeria from 1981 to 2020. Using an ARDL bounds test approach, they showed that food imports significantly raised food inflation both in the short run and long run, confirming that Nigeria's overreliance on external food supplies amplifies vulnerability to global price shocks. However, their study narrowly focused on food imports without considering other structural drivers such as energy costs.

Ezeaku and Ibe (2022) investigated the impact of energy prices on inflation in Nigeria from 1995 to 2020 using the ARDL methodology. Their results indicated that increases in petroleum and electricity prices had significant cost-push effects on both headline and food inflation. They concluded that energy price deregulation and subsidy removals significantly fuel inflationary pressures in Nigeria. Nonetheless, their work did not consider monetary factors, leaving a gap in understanding how energy costs interact with money supply and interest rate policies.

Adeleke and Alabi (2021) investigated the relationship between money supply and inflation in Nigeria between 1981 and 2019. Using the Autoregressive Distributed Lag (ARDL) model, they established a strong long-run relationship, where broad money supply (M2) significantly increased inflationary pressures. In the short run, however, the effect was weaker, suggesting that monetary expansion takes time to fully transmit into price levels. Their study highlighted the persistent role of fiscal dominance in undermining monetary policy effectiveness but did not account for the influence of external variables such as exchange rate or food imports, leaving a gap this study addresses.

Adewuyi and Arawomo (2021) explored the impact of exchange rate volatility on Nigeria's inflationary dynamics between 1986 and 2018. Using the Generalized Autoregressive Conditional Heteroskedasticity (GARCH) model, they showed that persistent exchange rate depreciation significantly worsened domestic inflation, particularly through imported goods and services. Their results confirmed the sensitivity of inflation to Nigeria's external sector performance but

overlooked the role of monetary supply and interest rate interactions, which this study seeks to integrate within a unified framework.

Ebi and Emmanuel (2021) examined the effects of interest rate fluctuations on inflation and investment in Nigeria from 1980 to 2019 using cointegration and causality tests. Results indicated that higher interest rates dampen investment and aggregate demand, thereby exerting a weak disinflationary effect. However, persistent inflation expectations in Nigeria limited the effectiveness of interest rate adjustments as a policy tool. The study recommended a mix of monetary and fiscal policies but overlooked exchange rate instability as an external determinant of inflation.

Chukwu and Ifeanyi (2021) studied the effect of energy costs on Nigeria's inflation between 1995 and 2019, using the Phillips Curve framework within an ARDL model. Their findings revealed that increases in fuel and electricity prices triggered significant cost-push inflation, raising both headline and food inflation. They concluded that deregulation and subsidy removals exacerbate inflationary trends. While insightful, the study did not integrate monetary variables such as money supply and interest rates.

Khan, Khan, and Ahmad (2020) examined inflation dynamics in emerging economies using panel data from 1990 to 2017. Their results suggested that money supply growth, exchange rate volatility, and food import dependence were significant long-run drivers of inflation, with energy price shocks intensifying cost-push inflation. The study highlighted that developing economies share similar structural vulnerabilities to Nigeria, further justifying an integrated approach to analyzing inflation.

Okoye, Modebe, and Eze (2020) examined interest rate behaviour and inflation control in Nigeria from 1980 to 2017. Employing a cointegration and error correction framework, they found that real interest rates remained predominantly negative, weakening their role as an anti-inflationary tool. The findings emphasized that interest rate adjustments in isolation are insufficient to stabilize prices in Nigeria's structurally constrained economy. However, their study largely focused on monetary policy variables and did not incorporate cost-push factors such as energy prices, which this present research incorporates as a control variable.

2.4 Gaps in the Literature

Although prior studies have advanced knowledge on Nigeria's inflation dynamics, several gaps remain. First, most works focus on single variables such as money supply (Adeleke & Alabi, 2021), exchange rate (Adewuyi & Arawomo, 2021), or food imports (Obi & Okafor, 2022) without integrating monetary, external, and structural determinants within a unified framework. Second, interest rate policy has been studied (Okoye, Modebe, & Eze, 2020), but its interaction with structural cost-push factors like energy costs remains underexplored. Third, while exchange rate pass-through has been documented (Mbutor, 2019), few studies examine its combined effect with food imports and monetary expansion.

Methodologically, older studies rely on static or linear models, while newer works employ ARDL or NARDL but often on limited variables. Moreover, many studies stop at 2016 or 2020, omitting

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recent shocks such as COVID-19, fuel subsidy removals, and naira depreciation that pushed inflation above 30% in 2023–2024.

This study fills these gaps by applying a ARDL framework to jointly assess the effects of money supply, interest rate, exchange rate, and food imports on inflation in Nigeria from 1980 to 2023, with energy costs as a control variable.

3. Methodology

3.1 Research Design

The method adopted in this study is ex-post-facto research design. This is informed by the fact that the study involves cause and effect relationship with data that already existed and cannot be manipulated. The methodology involves a test of unit roots or test of stationarity or otherwise of the variables, using Augmented Dickey-Fuller test statistics. It is the result of this unit root tests that will determine the exact method to apply in the estimation of the parameters of the relationship.

3.2 Model Specification

The functional relationship between monetary policy and inflation is express as follows

$$INF = f(MS, INR, FMP, EXR, ENC) \quad (1)$$

Whereas the mathematical form of equation (1) is stated as thus

$$INF = MS + INR + FMP + EXR + ENC \quad (2)$$

Equation (2) is further stated in econometrics form as stated in equation (3)

$$INF_t = b_0 + b_1MS_t + b_2INR_t + b_3FMP_t + b_4EXR_t + b_5ENC_t + \varepsilon_t \quad (3)$$

Where:

INF = Inflation Rate

MS = Money Supply

INR = Interest Rate

FMP = Food Import

EXR = Exchange Rate

ENC = Energy Cost (Control Variable)

t = Time (in years)

ε = Error term

It is expected that the signs of the parameter estimates will conform to economic theory. Money supply is expected to be positively related to inflation, while interest rate is expected to be negatively related to inflation. Food imports, exchange rate, and energy cost are expected to have a positive effect on inflation in Nigeria. Hence, the a priori expectation is expressed as $MSt > 0$, $INR_t < 0$, $FMP_t > 0$, $EXR_t > 0$, $ENC_t > 0$

3.4 Sources of Data

The time series annual data is used for this study. The data is sourced from the World Bank and CBN Statistical Bulletin covering the period from 1980 to 2023.

3.5 Estimation Procedure

The estimation procedures to be employed for this study are as follows

3.6.1 Augmented-Dickey-Fuller (ADF) Unit Root Test

The Augmented-Dickey-Fuller (ADF) is used to test for the stationarity of the variables used in this study. The rationale for using ADF is because it is more reliable and also it is the most used unit root test in literature in comparison with other unit root tests. The Augmented Dickey-Fuller (ADF) test statistics shall be compared with the critical values at a 5% level of significance. In a situation whereby the ADF test statistics are greater than the critical values with consideration of the absolute values, the data at the tested order is said to be stationary. After the estimation, the study employed some diagnostic tests such as serial correlation, heteroscedasticity test, normality test, and Ramsey RESET test to evaluate the robustness of the empirical model.

4. Results

4.1 Descriptive statistics

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

Table 1: Descriptive statistics

Statistic	INF	LMS	INR	LFMP	EXR	LENC
Mean	18.87250	2.784536	0.390945	2.755112	149.5409	4.743051
Median	12.94178	2.671176	2.683386	2.783472	105.6746	4.743539
Maximum	72.83550	3.354288	18.18000	3.420003	536.8964	5.390142
Minimum	5.388008	2.204236	-65.85715	2.280216	49.77481	3.921599
Std. Dev.	16.14926	0.365049	13.76685	0.263916	113.8211	0.292130
Skewness	1.903238	0.187543	-2.793280	0.129484	1.886125	-0.439524
Kurtosis	5.619685	1.424308	13.74778	2.757045	5.887600	3.665556
Jarque-Bera	39.14536	4.809739	268.9949	0.231167	41.37485	2.228765
Probability	0.070800	0.090277	0.061004	0.890846	0.140537	0.328118
Sum	830.3900	122.5196	17.20156	121.2249	6579.800	208.6943
Sum Sq. Dev.	11214.33	5.730211	8149.620	2.995012	557075.8	3.669612
Observations	44	44	44	44	44	44

Source: Researcher's Estimate from EViews 9.0 (2025)

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Table 1 above shows the results and descriptive statistics of the variables used in this study. The table shows that inflation (INF) in Nigeria averaged 18.9%, with high volatility, reflecting persistent macroeconomic instability. Exchange rate (EXR) and interest rate (INR) were also highly volatile, while money supply (LMS), food imports (LFMP), and energy costs (LENC) were relatively stable. Skewness and kurtosis indicate non-normal distributions with extreme shocks, especially in inflation, interest rate, and exchange rate. These features justify the use of an ARDL framework to capture both short- and long-run effects.

4.2 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 and are presented in Table 2 below:

Table 2: ADF Unit Root Test of Stationarity of Time Series Data

ADF tests at Level				ADF tests at 1st Difference			
Series	ADF Statistic	5% Critical Level	p-Values	ADF Statistic	5% Critical Level	p-Values	Order of Integration
INF	-2.605400	-2.935001	0.1001	-3.067003	-2.943427	0.0380	I(1)
LMS	-0.266119	-2.941145	0.9207	-4.191112	-2.941145	0.0022	I(1)
INR	-4.807434	-2.931404	0.0003				I(0)
LFMP	-3.597135	-2.931404	0.0099	-	-	-	I(0)
EXR	-2.023619	-2.931404	0.2760	-4.546875	-2.933158	0.0007	I(1)
						0.000	I(1)
LENC	-2.238168	-2.931404	0.1963	-8.757195	-2.933158	0	

*NB: I(0) stands for stationary at level while I(1) stands for stationary at first difference. Source: Researcher's Estimate from EViews 9.0 (2025)

The Augmented Dickey-Fuller (ADF) unit root test presented in Table 2 of section 4.3 disclosed that inflation rate, money supply, exchange rate, and energy cost respectively were stationary at first difference whereas interest rate and food imports were stationary at a level. Hence, the ADF test results indicated that there exists a mixed order of integration among the variables under investigation, the ADF tests also revealed that none of the variables used in the study was stationary at the second difference.

4.3 Autoregressive Distributed Lag (ARDL) – Bound Test Result

The ARDL bounds test result used to test the presence of a long-run relationship between monetary policy and inflation in Nigeria is presented as thus,

Table 3: ARDL Bounds test result.

Test Statistic	Value	K
F-statistic	5.918752	5
Critical Value Bounds		

Significance	I0 Bound	I1 Bound
5%	2.62	3.79

Source: Researcher's Estimate from EViews 9.0 (2025)

The ARDL Bound test result presented in Table 4 of section 4.4 indicates that there was a presence of a long-run relationship existing between monetary policy and inflation rate in Nigeria at a 5% level of significance. On the other hand, it means that there is a presence of cointegration between monetary policy and inflation rate. The long-run relationship existing between monetary policy and inflation rate was informed by the value of the F-statistic (5.918752) which was greater than the value of the upper bound boundary (3.79) at a 5% level of significance. Hence, the null hypothesis for “no long-run relationship existing between monetary policy and inflation rate in Nigeria” was rejected at a 5% level of significance. Hence, the presence of a long-run relationship exists between monetary policy and inflation rate in Nigeria during the period under review.

4.4 Short-Run Impact of Monetary Policy on Inflation in Nigeria.

The short-run ARDL test result is presented as thus in Table 5

Table 4: ARDL Short-Run Impact and the Coefficient of ECM

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LMS)	7.599189	5.562563	1.366131	0.1817
D(INR)	-1.077592	0.158894	-6.781834	0.0000
D(LFMP)	-1.348776	5.246790	-0.257067	0.7988
D(EXR)	0.007226	0.025469	0.283729	0.7785
D(EXR(-1))	0.092057	0.038873	2.368142	0.0243
D(EXR(-2))	-0.083203	0.025447	-3.269616	0.0026
D(LENC)	-6.826749	9.204555	-0.741671	0.4639
CointEq(-1)	-0.654337	0.106616	-6.137350	0.0000

Source: Researcher's Estimate from EViews 9.0 (2025)

In the short run, interest rate changes significantly reduce inflation, while money supply, food imports, and energy costs show no immediate impact. Exchange rate effects are lagged: depreciation raises inflation after one period but partially corrects in the second lag. The error correction term confirms that about 65% of shocks to inflation are corrected each year, indicating rapid adjustment to the long-run equilibrium.

4.5 Long-Run Impact of Monetary Policy on Inflation in Nigeria

The long-run ARDL test result is presented as thus in Table 5

Table 5: ARDL Long Run Impact

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LMS	1.182369	0.178384	6.628228	0.0000
INR	-1.646845	0.296841	-5.547897	0.0000

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LFMP	-2.061287	7.948352	-0.259335	0.7971
EXR	-0.133985	0.046535	-2.879217	0.0115
LENC	30.30294	8.917653	3.398085	0.0040
C	47.297654	67.351201	0.702254	0.4878

Source: Researcher's Estimate from EViews 9.0 (2025)

The long-run result of this study as presented in Table 5 of section 4.6 generally revealed that the coefficients of money supply, interest rate, exchange rate, and energy costs respectively have significantly influenced inflation during the period under review. Nevertheless, the respective long-run impacts of these macroeconomic variables on inflation in Nigeria are indicated as follows:

(1) Money supply was statistically significant and impacted positively on inflation in Nigeria, such that every one percent increase in money supply brought about approximately 1.18 percent increase in inflation. This implies that expansionary monetary policy is a major driver of price instability in Nigeria.

(2) Interest rate was statistically significant and impacted negatively on inflation in the long run. The result revealed that every one percent increase in interest rate reduced inflation by approximately 1.65 percent, indicating that interest rate serves as an important monetary policy tool for long-run inflation control.

(3) Food imports impacted negatively but insignificantly on inflation in Nigeria. This suggests that food imports exert limited influence on long-run domestic inflationary trends.

(4) Exchange rate depreciation was statistically significant but impacted negatively on inflation in Nigeria. The result revealed that every one percent depreciation in exchange rate reduced inflation by approximately 0.13 percent. This unexpected outcome may be attributed to structural adjustments, import substitution policies, or monetary policy responses over time.

(5) Energy costs were statistically significant and exerted a strong positive impact on inflation. The result showed that every one percent increase in energy costs brought about approximately 30.30 percent increase in inflation in Nigeria. This underscores the persistent cost-push pressures from fuel and electricity pricing as a major long-run determinant of inflation.

Overall, the long-run results revealed that inflation in Nigeria is predominantly driven by monetary expansion and rising energy costs, while interest rate policy provides a stabilizing effect on inflation dynamics.

4.6 Post-diagnostic Tests

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

4.6.1 Serial Correlation Test

The Breusch-Godfrey serial correlation LM test result is presented as thus in Table 9

Table 6: Breusch-Godfrey Serial Correlation LM Test

F-statistic	0.080900	Prob. F(2,29)	0.9225
Obs*R-squared	0.227484	Prob. Chi-Square(2)	0.8925

Source: Researcher's Estimate from EViews 9.0 (2025)

The post-diagnostic result of serial correlation in Table 7 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.

4.6.2 Heteroskedasticity Test

The heteroskedasticity –Godfrey test result is presented thus in Table 8

Table 7: Heteroskedasticity –Godfrey Test

F-statistic	1.033657	Prob. F(9,31)	0.4364
Obs*R-squared	9.463817	Prob. Chi-Square(9)	0.3956
Scaled explained SS	5.758133	Prob. Chi-Square(9)	0.7639

Source: Researcher's Estimate from Eview 9.0 (2025)

The Breusch-Pagan-Godfrey test of Heteroskedasticity in Table 8 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.

4.6.3 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.

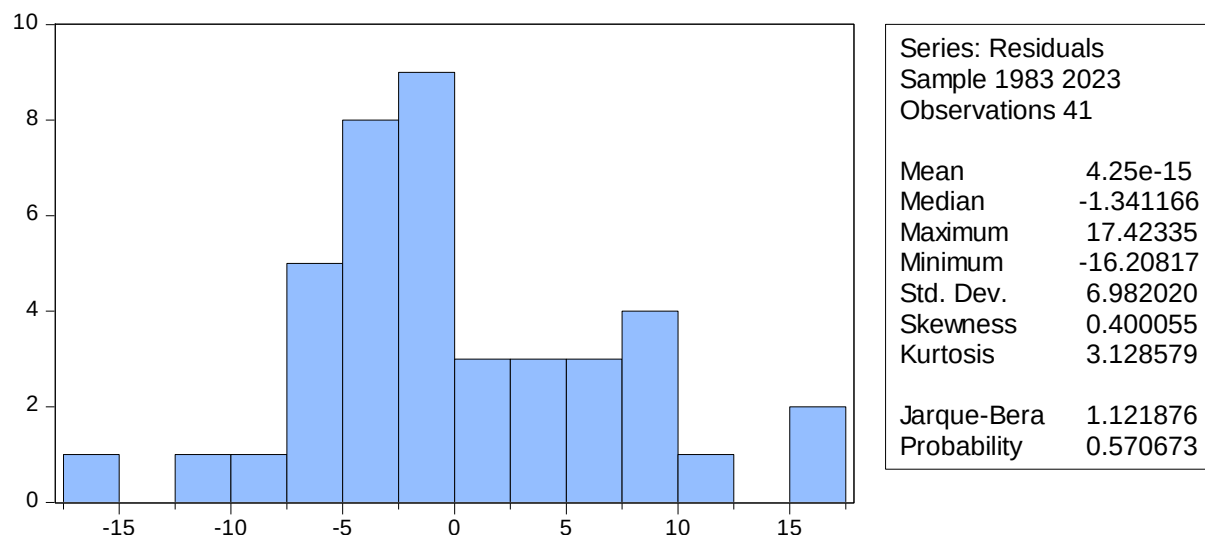


Figure 1: Histogram Normality Test

4.7 Test of Research Hypotheses and Discussion

The 5% level of significance with the probability values of the estimated coefficients of the variables is used by the study as the basis for rejecting or not rejecting the null hypothesis. Hence, the hypothesis of this study is rejected if the probability value(s) of its estimated coefficient(s) is less than a 5% level of significance and not rejected if otherwise. Therefore, the test of the hypotheses of this study is as follows:

(i) H_0 : There is no impact of money supply on inflation in Nigeria.

Hence, the long-run result of money supply presented in Table 6 of section 4.6 of this study, disclosed that the estimated coefficient was 1.182369 with a probability value of 0.0000. Therefore, since the probability value of the estimated coefficient of money supply was less than the chosen 5% level of significance, the study rejects the null hypothesis while the alternative hypothesis was not rejected; which revealed that money supply has a positive impact with the value of 1.18 percentage increase on inflation rate in Nigeria.

(ii) H_0 : There is no effect of interest rate on inflation in Nigeria.

The long-run result of the interest rate as presented in Table 6 of section 4.6 of this study revealed that the long-run estimated coefficient was -1.646845 with a probability value of 0.0000. Therefore, since the probability value of the estimated coefficient of the interest rate was less than a 5% level of significance; hence, the null hypothesis was rejected while the alternative hypothesis was not rejected which stated that interest rate has approximately a decrease of 1.65 percent effect on inflation rate in Nigeria during the period of the study.

(iii) H_0 : Food import has no contribution to the inflation in Nigeria

The long-run result of food import presented in Table 6 of section 4.6 of this study indicated that the long-run estimated coefficient was 2.061287 with a probability value of 0.7971. Then, since the probability value of the estimated coefficient of food import was not less than the chosen 5% level of significance, the null hypothesis was not rejected while the alternative hypothesis was rejected which revealed that the contribution of food import to inflation rate in Nigeria was statistically insignificant during the period of the study.

(iv) H_0 : There is no impact of exchange rate on inflation in Nigeria.

The long-run result of the exchange rate as presented in Table 6 of section 4.6 of this study revealed that the long-run estimated coefficient was -0.133985 with a probability value of 0.0115. Therefore, since the probability value of the estimated coefficient of the exchange rate was less than a 5% level of significance; hence, the null hypothesis was rejected while the alternative hypothesis was not rejected which stated that exchange rate has a decrease of 0.13 percent effect on inflation rate in Nigeria during the period of the study.

Form the test of hypotheses, first, the findings show that money supply has no significant short-run impact on inflation but exerts a strong and positive effect in the long run. This suggests that monetary expansion may not immediately translate into higher prices but, over time, sustained growth in liquidity fuels aggregate demand and price instability. This aligns with the Quantity Theory of Money (Friedman, 1963) and supports recent Nigerian evidence (Adeleke & Alabi, 2021; Ebi & Emmanuel, 2021), which highlight the inflationary consequences of deficit monetization and fiscal dominance. The result emphasizes the importance of long-term monetary discipline to stabilize prices.

Second, the results indicate that interest rates significantly reduce inflation both in the short run and long run. In the short run, a one-unit increase in interest rates lowers inflation, reflecting the effectiveness of monetary tightening in curbing excess liquidity. In the long run, the negative coefficient further highlights interest rate policy as a credible tool for maintaining price stability. This finding aligns with studies by Okoye, Modebe, and Eze (2020) and contrasts with earlier arguments that negative real interest rates undermine monetary policy effectiveness in Nigeria. It underscores the necessity of consistent and market-reflective interest rate policies.

Third, food imports were found to be negative and statistically insignificant in both the short and long run. This result suggests that, contrary to expectations, Nigeria's inflationary pressures are less directly driven by food import volumes. Instead, structural bottlenecks such as exchange rate volatility and distribution inefficiencies may overshadow the direct role of food imports. While previous studies (Obi & Okafor, 2022; Adewuyi & Arawomo, 2021) emphasized food import dependence as a driver of inflation, this study suggests the relationship may be more indirect, operating through exchange rate and energy costs.

Lastly, exchange rate shows dynamic effects: insignificant contemporaneous impact in the short run, but significant effects in its lags, indicating that depreciation transmits inflationary pressures with a time lag. Interestingly, in the long run, exchange rate depreciation exerts a negative effect on inflation, contrary to conventional pass-through expectations. This may reflect adaptive policy responses, import substitution effects, or structural adjustments in the economy over time. Similar findings were reported by Sa'ad, Usman, Omaye, and Yau (2023), who observed that the exchange rate–inflation nexus in Nigeria is complex and sometimes non-linear.

5. Conclusion

The study concludes that Nigeria's inflation dynamics are shaped by both monetary and structural forces. While money supply and energy costs are the key long-run drivers of inflation, interest rate remains an effective stabilizing tool. Exchange rate and food imports play a more complex role, exerting lagged or indirect effects. Overall, sustainable price stability in Nigeria requires a balanced policy mix that combines prudent monetary management with structural reforms in energy and agriculture. Based on these findings, the following policy recommendations are proposed:

1. Since money supply exerts a strong positive long-run effect on inflation, the Central Bank of Nigeria (CBN) should tighten control over liquidity growth and avoid excessive deficit monetization to achieve sustainable price stability.

Eze, C. J. (2026). Monetary Policy, Fiscal Policy Coordination and Inflation Control in Nigeria.

2. Given the significant negative relationship between interest rates and inflation in both the short and long run, CBN should adopt a more consistent and market-determined interest rate policy to strengthen the transmission of monetary policy.
3. As energy costs were found to be a major long-run driver of inflation, government should prioritize energy sector reforms, expand renewable energy investment, and provide targeted support to cushion the inflationary impact of fuel subsidy removals and electricity tariff hikes.
4. Since exchange rate depreciation exerts lagged inflationary effects, while long-run effects appear stabilizing, authorities should adopt a managed float regime with adequate reserves, diversify export earnings, and strengthen non-oil sectors to mitigate exchange rate pass-through to inflation.

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