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Monetary Policy Effectiveness in Nigeria's Inflationary Crisis: The Quantity Theory of Money Under Scrutiny

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About Article

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ABSTRACT

Within the last ten years, the Nigerian economy has witnessed an unprecedented rise in the general price level which has adversely eroded past gains recorded to stabilize the economy. This study explores how effective the usage of monetary policy instruments (MPI) is in achieving stable price level. Time series data on variables of interest were sourced from the database of Nigeria's Central Bank (CBN) and even the Development Indicators of the World Bank (WDI) from the year 1986 until the year 2023. This study conducted a stationarity test by employing the root test of ADF unit, while the model of Auto Regressive Distributed Lag (ARDL) was estimated with the aim of establishing the long-term relationship of the series. The results indicate Broad Money Supply (M3) and external debt positively affect inflation within Nigerian economy. Findings also indicate that real interest rate (RINT) as well as Exchange rate were significant but influences inflation negatively both on the short and long-term. These findings confirm the applicability of the postulations of the quantity theory of money in Nigeria's inflationary crisis as well show external debt as having significant inflationary effect. The implication is that Inflation in Nigeria can significantly be tackled with MPI and a mix of fiscal policy tools to improve the productive capacity as well as achieve low price level and a stable Nigerian economy. This study thus recommends to the authorities on Monetary matters, that they should consider reviewing existing interest rates and then peg it at level that will reduce the inflation being experienced as well drive both local and foreign investment. Also, deliberate efforts must be put in place to regulate money supply and debt accumulation so as to bring macroeconomic instability to a significantly reduced level.

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1. INTRODUCTION

Achieving relative price stability is key in ensuring smooth functioning of every economy. One of the central focuses of policy makers in developing economy is the constitution and enforcement of key macroeconomics policies that are targeted at attainment of a steady state for prices and a low level of inflation rate. Policy makers in recent times have intensified effort in adopting appropriate policies to combat inflation and ensure price stability. Some economies in their pursuit of relatively low and stable prices, rely more on the control of money aggregate, while others gradually realign their focus on interest rate (Ejedegba, 2024; Ozili, 2024; Libman, 2020; Taylor, 2019).

Analysis of inflation in Nigeria shows that from a single digit inflation figure in 2007, inflation rose to double digit of 11, 10 & 12% in 2008, 2010 & 2012 respectively. This is followed by a reversal to single digit between 2013-2015. However, from 2015 up till 2025, inflation has experienced a gradual upward trajectory approaching an all-time high, recorded to be 24% in 2023. The Headline inflation rate observed in June 2025 decreased to 22.22%, in juxtaposition to the 22.97% that was recorded in May 2025. In June 2025 core inflation was 22.76% (year on year).

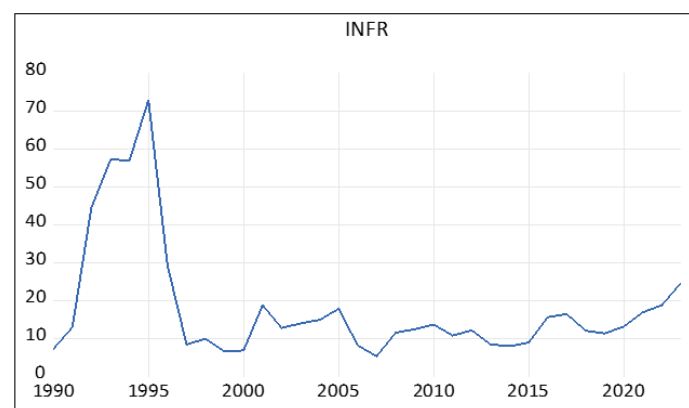


Figure 1. Inflation trend in Nigeria (1990-2024)

Source: Author's Computation (2025)

The period of single digit inflation rate witness better performance of key macroeconomic fundamentals. However, the economy within the last one decade continues to experience gradual deterioration and abysmal performance of macroeconomic indicators. During inflationary periods, there is a rise in the cost associated with holding money, resulting in inefficient utilisation of tangible assets in economic activities. It is consequently evident, that inflation heavily weakens money's purchasing power, implicatively causing a drop in the citizen's standard of living (Gbadebo, 2015; Orubu, 2009; Odeniran & Olaoye, 2015). With Nigeria's inflation rate at 20.12% as at August 2025, the need of establishing a benchmark becomes apparent. But this is made possible through key fiscal and monetary policies. The framework of setting such benchmark is hinged on some prerequisites: transparency, accountability and credibility of the monetary authority (Abayomi, 2022).

A key policy framework employed by policy makers in curtailing persistent rise in price level is monetary policy that employs key instruments of monetary policy, especially those concerning

Money Supply as well as Interest rate. The formulation and management or regulation of instruments of monetary policy in achieving macroeconomic prosperity is designated under the CBN's authority. It is evident that the monetary authority has enacted and implemented policy measures needed to curb the various macroeconomic challenges arising from the inflationary menace; however, the efficacy of these measures of enacting monetary policy is not felt yet as the nation is still plagued with high level of inflation. Economic theory posits that monetary policy wanes inflationary pressure; however, research based on systematic observation and experimentation continue to present opposing evidence.

In this study therefore, the aim is to evaluate how applicable MPI are in achieving reduced inflation rate and stabilization of the economy. Hence, the major focus is providing answers to these questions: Has various manipulations of monetary instruments resulted in significant reduction in inflation rate? Does the assertion of the quantity theory of money hold in Nigeria's economy? Thus, this study is an attempt in reassessing the validity of the quantity of money theory through the investigation of how effective and efficient the monetary policy is in tackling inflation currently ravaging the country Nigeria. The remaining parts of this article are structured as thus: in the second section of this study, the review of literature is presented, Section three and section four discuss the methods and the results respectively while in Section five, the concluding remarks is presented.

2. LITERATURE REVIEW

2.1. Conceptual review

Inflation is the continuous and retained increase in the overall level of goods prices as well as services within a given economy, which is reflected in the noticeable reduction in the purchasing power of money (Onwubuariri, 2021; Orubu, 2009). Price stability does not imply that the price of services and goods within an economy remains completely unchanged; rather, a moderate level of inflation is often seen as normal or even necessary for the development of growing economies, provided that such inflation remains within a low single-digit range. This degree of price increase supports economic growth while maintaining stability (Hameed, 2010). Inflation causes inefficiencies in how resources are distributed within an economy. It disproportionately affects the most vulnerable populations, generates uncertainty, and arbitrarily reallocates income and wealth. Elevated inflation levels disrupt the efficient operation of a market economy, weakening macroeconomic stability and hindering the possibility of achieving sustained, rapid economic growth (Ibrahim *et al.*, 2022).

Inflation targeting according to Bernanke (1999) is the framework where a central bank announces specific-number-based targets for inflation. The bank clearly states that its long term goal is to retain a low and stable inflation rate. A key part of this, is the monetary policy horizon, which refers to the amount of time the central bank gives itself to bring inflation back to its target after a shock. (Arestis & Sawyer, 2003; Svensson, 2009). Central banks will predict where inflation is headed and compares its prediction to its official target. If the prediction is higher or lower than the target, the central bank adjusts it



policies to bring inflation back in line. Central banks that use Inflation Targeting believe this method works better in the long-term than other methods used by other banks. This approach can be especially helpful for developing countries that have high inflation or struggle with large external economic shocks and macroeconomic policy design (Lin & Ye, 2009; Thornton, 2016). For example, Nigeria has recently adopted this system. In late 2023, the central bank began to set explicit inflation objectives for the coming year. It now uses its policy tools to meet these targets, while being careful to account for the time delay between making a change in policy and seeing what impacts the changes would have on the economy (especially with outputs and prices).

CBN (2011) and Brock (2024) have posited that monetary policy could be seen as a purposeful action through which monetary authorities aimed at influencing the quantity, cost and how available money is, as well as credit, all geared towards achieving the desired macroeconomic objectives of internal and external balances. Also, in order to accomplish the main macroeconomic objectives of inflation, consumption, growth and liquidity, a government according to The Economic Times (2018) uses monetary policy, which essentially entails controlling the money supply and interest rate.

According to Mordi (2009), it has been observed that monetary policy is a combination of actions and/or collection of tools created by the Central Bank towards controlling the value, supply and even cost of money in accordance with the economy's capacity to absorb or the anticipated level of economic activity without mandatorily placing unnecessary pressure on domestic prices or even the exchange rate. The resultant goal of monetary policy, however is to guarantee that the macroeconomic governmental goals of the attainment of stability in price and exchange rate, improved growth output, full employment of resources, payment equilibrium, promotion of a reliable financial system and dependable growth and development, are all consistent with the domestic liquidity expansion goal (Agénor & Pereira da Silva, 2012). It is therefore known that monetary policy depends of the status of the interdependency between the rates of interest in an economy. This means as Smithin (2007) puts it, the price at which money can be lent, and the total supply of money. It employs a range of techniques to manage one or even a combination of the factors influencing things like; unemployment, inflation, economic growth, and even the exchange rates in juxtaposition with other currencies. In using monetary policy to tackle inflation, the monetary authority gradually increases the monetary policy rate and reduce excess liquidity buy also increasing bank's reserve rationing.

2.2. Theoretical review

There is currently a large and expanding body of work done on the interrelationship between monetary policy tools and inflation. A key theory on this relationship is the well known Quantity Theory of Money (QTM). In this theory, money growth is regarded as the major driver of inflation. Friedman (1968, 1969) famously posits that inflation is monetary phenomenon, irrespective of where and when, and that monetary policy actions becomes visible only after a lag that

is long, variable and definitely affects economic conditions. The theory suggests that growth of money is a major cause of inflation even on longer time horizons by assuming a consistent long-term interdependency between the money quantity and prices. Money is endogenous to the economy, according to the Keynesian and New Keynesian schools of taught, causality would move from inflation to money growth.

Another hypothesis of inflation is the demand-pull theory. According to Ndidi, (2013), the Keynesian and monetarist perspectives are the two subcategories of the demand-pull theory. Demand-pull inflation is regarded as the type of inflation that occurs when a country's total demand increases or when the growth of the economy accelerates beyond its long-term growth rate. This is caused by an increase in one or more of the elements in the theoretical equation, including government expenditure $C + I + G + NX$, investment, and consumption. Demand-pull inflation appears more quickly when the economy has a significant imbalance between its aggregate supply (AS) and demand (AD), emanating as excessive demand. This condition benefits the companies, just as the Keynesian theory of Interest, Money and Employment, posits that it is possible to successfully lessen the demand pressure on the economy by lowering each demand theory component, consequently raising government taxes.

Despite this, the most well-known of these guidelines is the Taylor rule used for determining interest rates (Taylor, 1996). This rule reflects the preferences and actions of monetary authorities and specifies how much the prime rate should be adjusted by the central bank in order to annul the shift in output, inflation, and other macroeconomic factors. Specifically, the rule also requires that the central bank boost the prime rate by more than 1% for every 1% increase in inflation. In order to determine the best rule for establishing the prime rate in response to economic shocks, this method of monetary policy analysis by central banks starts theoretically from the central bank defining its objective function. The Taylor rule therefore gives a general rule with enough evidence from advanced countries on how the central banks should determine prime rate.

2.3. Empirical review

Vast empirical literature exists on the subject but few would be reviewed. For instance, Oladejo *et al.* (2025) assessed the lacuna that exist between inflation, growth of GDP, and even monetary policy in place in Nigeria, that focuses on how effective the Monetary Policy Rate (MPR) is in the management of core and even food inflation. Employing time series data on Nigeria over a period covering 2006 to 2023, and adopting the model termed autoregressive distributed lag (ARDL) of estimation, the outcomes illuminated the fact that MPR has negative and significant effect on core inflation and also has limited impact on food inflation. The study thus recommends that macroeconomic policy making should follow a detailed approach, that combines monetary policy with reforms in agricultural practices as well as regulatory oversight in the bid to stabilize prices. The findings by Akande *et al.* (2024) using the factor augmented vector autoregression (FAVAR) also affirm the effectiveness of monetary policy in the control of inflation in Nigeria.



Also, applying the model of Autoregressive distributed lag, Eggon and Sabo (2022) assessed the effect that the management of monetary policy has on the inflation situation in Nigeria using time series data gathered from 1985 to 2019. They also discovered that as monetary policy and even foreign exchange rates impacts inflation negatively, broad money supply has been observed to have a positive effect on inflation. Similarly, the findings from the study of Okotori (2019) on the dynamics occurring between monetary policy and inflation in Nigeria from the year 2009 to 2017, they employed test of Johansen's Cointegration and model of Error Correction (ECM) and showed that money supply and exchange rates impact positively, while Interest rate impacts negatively on inflation rates in Nigeria. The cointegration test further confirms a long-term interrelationship between the inflation and every other variable adopted.

The empirical evidence from a study by Asue & Ikyaator (2023) utilising the structural vector autoregressive (SVAR) model for examining how external debt influenced inflation in Nigeria for the period of 1981 to 2020, suggesting that an increase in external debt service led to an increase in the nation's inflation. The effectiveness of employing monetary policy as an inflation preventing instrument in Nigeria's economy was investigated by Gbadebo and Mohammed (2015). Employing quarterly time series data that spans from Q1 1980 to Q4 2012, the projected result shows that interest rates, exchange rates, supply of money, and oil prices are the primary causes of inflation in the Nigerian economy during the period under review. Their study found that while a short-term increase in income promotes inflation, effective use of the gain would lower inflation. Also, both on the short and even the long terms, the variable money supply has significantly reduced inflation. The findings imply that monetary impulses have been observed to be the primary cause of Nigeria's inflation scenario. Therefore, anti-inflationary monetary policy measures are significant tools and ways of achieving structural and economic stability.

However, the findings of Adebisi (2009) were not in consonance with Gbadebo *et al.* (2015). The study by Adebisi (2009) indicated in the short-run, that the interest rates and exchange rates are some examples of monetary policy tools that have little to no impact on prices. Through this they suggested that there is a weak and unpredictable short-term policy interdependency between inflation and the monetary policy tools in both Ghana and Nigeria. The empirical results of Aigbedion (2017) tend to support these findings. Using unrestricted Vector Auto Regressive methodology, Aigbedion (2017) stated that the response of inflation to improvements or innovations in the money supply (liquidity channel) or even the interest rate (interest rate channel) have less of an impact on inflation. Additionally, the CPI's reaction to progressive innovation in output is often counterintuitive, suggesting that a rise in productivity, as opposed to a drop in prices, increases pressure of inflation on the economy, whereas output's reaction to CPI shocks is observed to be more consistent and provides a dynamic link.

This study adds to the already existing literature by employing more recent dataset for understanding how effective monetary policy on Nigeria's inflationary crisis while accounting for the role of external debt as this variable has been given no significant attention by vast studies on inflation in Nigeria.

2.4. Theoretical framework

The model for the study is built around the standard Quantity theory of money (QTM). This theory by Friedman (1968, 1969); famously propounds that inflation is a known monetary phenomenon, every time and everywhere, and that it is a central tenet of monetary economics. QTM states that the growth of money is a key driver of inflation. and that monetary policy actions also have effects on economic conditions only after a long and variable lag is experienced (Friedman, 2010). It implies that inflation in the long-term is primarily due to money expansion and it operates on the assumption that there is a stable long-term correlation between the supply of money as well as prices. At the inception of money growth, it was held that money growth causes inflation.

3. METHODOLOGY

This study utilized the model known as Generalized Autoregressive Conditional Heteroscedasticity (GARCH1,1) to establish the dynamic series for inflation rate and interest rate. Subsequently, the generated volatile form of inflation rate was integrated into a model termed the Auto-Regressive Distributed Lag (ARDL). This study therefore, uses the ARDL model analysis after Gbadebo & Mohammed (2015). Prior to the estimation using the ARDL, preliminary test such as the Augmented Dickey Fuller test (ADFT) of Stationarity, descriptive statistics and ARDL Bounds Cointegration test (ARDLBCT) were used to validate the use of ARDL as the stationarity test result revealed that the variables of interest were stationary at levels and first difference. This aforementioned ADFT is used in testing the variable's stationarity. The data used for the analysis are known as time series data, and therefore it becomes pertinent to test if its probability distribution remains constant at varying times as non-stationary series can cause a spurious regression (Gujarati, 2009; Ijokoh, 2024; Ishioro; 2022).

3.1. Model specification

Therefore, the chosen model's purpose is to capture the short-term dynamics and long-term interdependencies occurring between inflation (Dependent Variable) and monetary policy represented by key MPI like Broad Money supply (M3), Interest Rate (INTR), Exchange Rate (EXRT) and External Debt (EXBT). The theoretical model to be estimated is represented as-

$$\text{INFLR} = F(\text{M3}, \text{INTR}, \text{EXRT}, \text{EXDBT}) \quad \dots(1)$$

The econometric form of model 1 takes an Auto-Regressive Distributed Lag Form and is specified as

$$\text{INFR}_t = \beta_0 + \beta_1 \text{M3}_t + \beta_2 \text{RINT}_t + \beta_3 \text{EXRT}_t + \beta_4 \text{EXDBT}_t + \mu_t \quad \dots(2)$$

Where,

INFLR = Inflation Rate

M3 = Broad Money-Supply

RINT = Real Interest-Rate

EXRT = Exchange Rate

EXDBT = External Debt

μ = Stochastic Error Term

3.2. Nature, source and description of variables

This study employed annual time series data that were gotten from the World Bank Development Indicators (WDI, 2024).



Table 1. Measurement of Variables

| Variables | Symbol | Definition | Source of Data |
|--------------------|--------|---|----------------|
| Inflation Rate | INFLR | Inflation, consumer prices (annual %) | WDI |
| Money Supply | M3 | Broad money (current LCU) | WDI |
| Real Interest Rate | RINT | This is the benchmark interest which forms other variants of interest rate and its adjusted for inflation | WDI |
| Exchange Rate | EXRT | Official rate of exchange (LCU per US\$ and period average) | WDI |
| External Debt | EXDBT | External debt stocks, and total (DOD, current US\$) | WDI |

Source: Author's Computation (2025).

3.3. ARDL Cointegration Bound Test

Cointegration among time series indicates that these variables under consideration hold a long-term interdependency. In order to establish this, the study made use of the ARDLBCT method established by Pesaran *et al.*, (2001). The aim is to assess if there exists a long-term interdependency between the variables included in the model. Cointegration analysis also helps in clarifying long-term interrelationship between integrated variables.

The long-term form of this model can be specified as-

$$\Delta INFL_t = \beta_0 + \sum_{t=1}^k \beta_1 \Delta M3_{t-1} + \sum_{t=1}^k \beta_2 \Delta RINT_{t-1} + \sum_{t=1}^k \beta_3 \Delta EXRT_{t-1} + \sum_{t=1}^k \beta_4 \Delta EXDBT_{t-1} + ECM_{t-i} + \mu_t \quad \dots(4)$$

From equation 4, β_0 is the intercept and μ_t represents the stochastic error term (SET) that is normally and independently distributed alongside zero mean as well as constant variance.

The cointegration bound test entails testing the null hypothesis $\beta_0 = \beta_1 = \beta_2 = \beta_3 = \beta_4 = 0$ indicating that there is no observed cointegration between inflation dynamics and monetary policy proxied by the included regressors.

The corresponding Error Correction Model is specified as

$$\Delta INFL_t = \beta_0 + \sum_{t=1}^k \beta_1 \Delta M3_{t-1} + \sum_{t=1}^k \beta_2 \Delta RINT_{t-1} + \sum_{t=1}^k \beta_3 \Delta EXRT_{t-1} + \sum_{t=1}^k \beta_4 \Delta EXDBT_{t-1} + ECM_{t-i} + \mu_t \quad \dots(5)$$

Equation (5) serves as the instrument of the analysis to empirically assess what short-run effects that monetary policy has on inflation rate in Nigeria within this study's period under review. This coefficient of the ECM measures the speed at which the adjustment is expected to be negative and less than one as this measures the statistical significance of this equation as shown in the t-value and even the probability value at a significance level of 5%.

To test the null hypothesis regarding non-stationarity, the ADF model is generally specified as

$$\Delta Y_t = \beta_1 + \beta_2 t + \delta Y_{t-1} + \sum_{i=1}^m \alpha_i \Delta Y_{t-i} + \varepsilon_t \quad \dots(6)$$

ε_t represents error term that is normally and also independently distributed alongside zero mean as well as the constant variance.

4. RESULTS AND DISCUSSION

4.1. Test of descriptive statistic

Table 2. Results of the descriptive statistics

| | INFR | BRMS | RINT | EXDBT | EXRT |
|--------------|----------|-----------|-----------|----------|-----------|
| Mean | 18.08467 | 28.80456 | 3.070617 | 24.37143 | 4.534531 |
| Median | 12.87658 | 28.90154 | 5.685580 | 24.25240 | 4.861535 |
| Maximum | 72.83550 | 31.58586 | 18.18000 | 25.35897 | 6.054390 |
| Minimum | 5.388008 | 24.77598 | -31.45257 | 23.58499 | 2.084216 |
| Std. Dev. | 16.10793 | 2.083895 | 10.14020 | 0.439479 | 1.127625 |
| Skewness | 2.198991 | -0.337055 | -1.368915 | 0.660430 | -0.716955 |
| Kurtosis | 6.826438 | 1.799232 | 5.544833 | 3.037822 | 2.322402 |
| Jarque-Bera | 46.72782 | 2.607367 | 19.21134 | 2.400891 | 3.458453 |
| Probability | 0.000000 | 0.271530 | 0.000067 | 0.301060 | 0.177422 |
| Sum | 596.7940 | 950.5504 | 101.3304 | 804.2570 | 149.6395 |
| Sum Sq. Dev. | 8302.893 | 138.9637 | 3290.360 | 6.180536 | 40.68924 |
| Observation | 33 | 33 | 33 | 33 | 33 |

Source: Eviews12 Computation by the Researcher



Table 2 presents the descriptive statistics of the aforementioned model. The statistics reveal that average growth of inflation rate dropped from 18 percent to a low of 5 percent accompanied by high volatility, going by the magnitude of the standard deviation. When the inflation was growing annually at 18 percent average, external debt and money supply were growing in tandem at an average of 24 percent and 28 percent respectively, however with low magnitude of volatility judging by their standard deviation. It can be concluded from the descriptive statistics that inflation rate rose in tandem with money supply and external debt.

As table 2 demonstrates, inflation recorded the highest figure on the average, followed by RINT and external debt in that order. The series- BRMS, EXDBT and RINT indicate significant deviation from their mean as revealed by their standard deviation.

While BRMS, EXRT and RINT are negatively skewed, the series- INFR & EXDBT are positively skewed.

Conclusively, the results present a normal distribution going by the Jarque-Bera and probability statistics.

4.2. Test of unit root

Table 3. Test Summary of Unit Root result using ADF

| Variable | Statistics ADF Test | Mackinnon Critical Values | | | Prob. (values) | Integration Order | Remark |
|----------|------------------------|---------------------------|----------|----------|-------------------|----------------------|------------|
| | | 1% | 5% | 10% | | | |
| INFLR | 4.645182 | 3.653730 | 2.957110 | 2.61734 | 0.0008 | I(1) | Stationary |
| M3 | 5.474146 | 3.689194 | 2.971853 | 2.625121 | 0.0001 | I(0) | Stationary |
| RINT | 4.415413 | 3.670170 | 2.963972 | 2.621007 | 0.0015 | I(1) | Stationary |
| EXRT | 3.903894 | 3.661661 | 2.960411 | 2.619160 | 0.0055 | I(1) | Stationary |
| EXDBT | 3.977513 | 3.653730 | 2.957110 | 2.617434 | 0.0044 | I(1) | Stationary |

Source: E-views 12 Computation of the Author (2025)

From the test of unit root via the Augmented Dickey Fuller test, it is indicated that Inflation (INFL), RINT, External Debt (EXDBT), and Exchange Rate (EXRT) were not stationary at 1%, 5% and 10% significant levels: indicating the presence of unit root. However, Broad Money Supply (M3) was stationary at levels which suggests the absence of Unit root in MS3. With Unit root presence in INFL, RINT, EXRT and EXDBT, the first difference was conducted.

From table (3) above specifically showing ADF test of stationarity, the findings indicate that the variables which were not stationary at prior levels became stationary immediately after first difference of each variable. Therefore INFL, RINT, EXRT and EXDBT are stationary just at the first difference I(1). In conclusion Broad Money Supply is stationary at the level I(0), while INFL, RINT, EXRT and EXDBT, are I(1) at 1%, 5% & 10 critical level.

4.3. Result of the ARDLBCT

Table 4. ARDLBCT Results

| Asymptotic Critical Values | | | | |
|----------------------------|-------|---------|------|------|
| | Value | Signif. | I(0) | I(1) |
| F-Statistic | 7.86 | 10% | 3.03 | 4.06 |
| | | 5% | 3.47 | 4.57 |
| K | 4 | 2.5% | 3.89 | 5.07 |
| | | 1% | 4.4 | 5.72 |

Source: E-views 12 Computation by Author (2025)

Table 4 contains the ARDLBCT findings. The empirical estimates from the bounds test indicate there is the presence of cointegration within the variables in this study. This is evident because the calculated F-statistic of 7.86 exceeds the threshold of critical values at levels of significance 1%, 5% and 10%. We then reject the null hypotheses and at the same time confirmed that cointegration exists between the variables. i.e. the variable in question namely inflation rate, interest rate, money supply, external debt and exchange rate in Nigeria are cointegrated. Having certified that these variables are cointegrated, we then proceed with the Auto- Regressive Distributed Lag (ARDL) approach in estimating the model.

4.3. ARDL Model Estimation Results

Table 5 shows the short-term ARDL estimates. The ARDL short-term estimates indicate that three period lag of broad money supply has been observed to have a significantly positive effect on inflation rate. Specifically, on average, one percent decrease in money supply leads to 21.7% regression on inflation rate; an indication that the money supply holds a significantly positive effect on inflation rate on the short-term. Intuitively, monetary policy measures aimed at mopping up the economy's excess liquidity, in will significantly decrease inflation thereby leading to economic stability. These findings are consistent with empirical studies of Eggon & Sabo (2022), Okotori (2019), Gbadebo & Mohammed (2015).

The short run coefficient of RINT confirms an inverse nexus between interest and inflation rates. The ARDL estimates suggest that on average, when a percentage raise is seen in the RINT, there will be a significant regression in inflation to the



Table 5. Auto Regressive Distributed Lag (ARDL) Short Run Estimates

Dependent Variable: INFLT
Method: ARDL
Sample: 1990 – 2023

ARDL-Short-Run Model Estimate

| Variables | Coefficients | Standard Error | t-Statistic | Probability |
|----------------|--------------|----------------|-------------|-------------|
| D(LNM3) | -0.042510 | 44.04974 | -0.000965 | 0.9993 |
| D(LNM3(-1)) | 70.46957 | 48.80151 | 1.444004 | 0.1920 |
| D(LNM3(-2)) | -49.85976 | 47.71872 | -1.044868 | 0.3308 |
| D(LNM3(-3)) | 217.1528 | 42.40809 | 5.120552 | 0.0014 |
| D(DRINT) | -2.966038 | 0.209905 | -14.13040 | 0.0000 |
| D(DRINT(-1)) | 1.451403 | 0.270645 | 5.362751 | 0.0010 |
| D(DRINT(-2)) | 1.420411 | 0.234044 | 6.069000 | 0.0005 |
| D(DRINT(-3)) | 0.852811 | 0.249568 | 3.417145 | 0.0112 |
| D(LNEXRT) | -66.58963 | 28.80194 | -2.311984 | 0.0540 |
| D(LNEXRT(-1)) | 187.4127 | 35.21467 | 5.322006 | 0.0011 |
| D(LNEXRT(-2)) | 96.36767 | 25.87724 | 3.724033 | 0.0074 |
| D(LNEXRT(-3)) | 136.0576 | 24.41852 | 5.571901 | 0.0008 |
| D(LNEXDBT) | -25.53065 | 27.81678 | -0.917815 | 0.3892 |
| D(LNEXDBT(-1)) | 69.11910 | 29.83897 | 2.316404 | 0.0537 |
| D(LNEXDBT(-2)) | -67.84117 | 31.73742 | -2.137576 | 0.0699 |
| D(LNEXDBT(-3)) | 70.02935 | 27.52218 | 2.544470 | 0.0384 |
| ECM(-1) | -0.642541 | 0.057478 | -11.17891 | 0.0000 |

Table 6. Long-Term-ARDL Estimates

| Variable | Coefficient | Standard Error | t-Statistic | Probability |
|------------------------|-------------|----------------------|-------------|-------------|
| LNLM3 | 15.87448 | 16.26522 | 0.975977 | 0.3616 |
| DRINT | -5.658994 | 0.893341 | -6.334640 | 0.0004 |
| LNEXRT | -382.0800 | 87.43260 | -4.369994 | 0.0033 |
| LNEXDBT | 68.00671 | 25.41125 | 2.676244 | 0.0317 |
| R- Squared | 0.982216 | Mean Dependent Var. | | -23.96167 |
| Adjusted R- Squared | 0.956348 | S. D. dependent var. | | 102.6475 |
| S.E. of the regression | 21.44609 | Durbin Watson stat | | 2.140542 |
| Sum Squared resid | 5059.280 | Log-likelihood | | 2.140542 |

Source: Author's Eviews 12 Computation (2025)

tune of 2.97 percent in the current period. Also, the impact tends to be significantly positive in the 1-3 period lags. Implicatively, this finding shows that interest rate is a significant monetary tool that can be used by the monetary authority to stem the inflationary pressure being witness in the Nigerian economy. However, while interest rate has the potency to reduce inflation, continuous increase tends to be inflationary as high interest rate has implications for borrowing costs, consumption, savings and investment and ultimately inflation rate. Therefore,

a highly volatile interest rate can be inflationary in Nigeria's economy. The findings of Oladejo *et al.* (2025), Eggon & Sabo (2022) strongly support this short run result.

From the Table 5, it can be observed that exchange rate impacts inflation significantly in varying degrees both positively and negatively in Nigeria. The indicators of exchange rate (EXRT) proved to have a negative and statistically significant in accounting for changes in the rate of inflation on the short-term within the current period. Specifically, the coefficient of EXRT



suggests a percentage increase in exchange rate (appreciation) will cause at least a 6.6 percentage decrease inflation rate in the current period. Considering that Nigeria is an import dependent economy, this finding is an indication that appreciation of the local currency will make import cheaper, lower production cost and ultimately reduce inflation rate.

However, the impact tends to increase inflation rate in a period lag as well as up to 3 period lag. Specifically, increase in exchange rate in the 1, 2 and 3 period lags will tend to increase inflation rate by 18.7, 9.6 and 13.6 percent respectively. This means that, theoretically and empirically, exchange rate stability are effective monetary strategies in inflation control.

The short run coefficient of external debt shows that though its contemporaneous effect on inflation is negative and insignificant, a period lag effect of external debt on inflation is positive as well as statistically significant. This short run estimate reveals that 1-period lag of external debt by one percent, will cause inflation to increase significantly by 6.9 percent in the short run. Also, a 2 and 3 period lag of external debt have a significant influence that is negative and positive on inflation rate. These indicates that external debt can have varying effects on inflation in the short-term.

From these estimated results, ECM's coefficient holds statistical significance and has appropriate negative sign at 5% which is required for dynamic stability. The adjustment coefficient speed was also found to be -0.64. This is an indication that in the current period, around 64 percent disequilibrium errors on the short run will then be accounted for by adjusting annually to change the long run equilibrium. The implication is that a well-coordinated monetary, fiscal and exchange rate policies can result in meaningful inflation stabilization within a short run period if these policy measures are effectively implemented.

4.4. Long run results

Table 6 holds the empirical results of long run ARDL form regression model highlighting broad money supply, interest rate, exchange rate, as well as even external debt as they relate to the inflation dynamics in play in Nigeria's economy.

The result reveals that broad money supply as well as external debt are related positively to rate of long run inflation. However, while external debt asserts a significantly positive effect on inflation rate, the coefficient and probabilities values of broad money supply (M3) indicate that supply of money does not have a significant effect on the long-term inflation in Nigeria for the period under the review. Implicatively, this finding elucidates that the supply of money, if left unchecked has the potency of increasing inflation rate insignificantly in the long run. These findings underscore the imperativeness of effective liquidity management wherein Nigeria's central Bank must maintain a credible monetary stance aimed at mopping up excess liquidity during period of inflation. These findings corroborate the findings of Gbadebo *et al.* (2019) and Eggon *et al.* (2022), inferring that reduction in money supply remains a vital policy instrument in the sustenance of relative price stability. The aforementioned finding is however not corroborative of the short run findings, indicating the effectiveness of money supply control in keeping inflation shocks in check only in the short-run. However, the CBN must adopt a balanced approach

where in liquidity tightening is prioritise in the short run while formulating medium to long term framework that check persistent monetary overshooting

The long-term estimates for EXRT indicate that exchange rate is a very vital monetary tool that can be employed in inflation control. The estimate shows that an appreciation of the local currency (naira) by one percent, will consequently cause a significant reduction in the long run inflation's rate to the tune of 38.2 percent. Therefore, it safe to conclusively state that a stable and predictive exchange rate regime would yield significant inflation reducing benefits. Implicatively, policy measures that enhance inflow of foreign exchange, augment the country's external reserves, diversify export and reduce pressure on the naira should be prioritize.

Further findings from the long run results also confirms an inverse nexus existing among interest and inflation rates. The findings also suggest that a single percent increment in interest rate would consequentially cause an average significant reduction of inflation by 5.65 percent on the long run. Implicatively, this policy proves that the monetary authority in Nigeria (CBN) can significantly lower the rate of inflation through increase in interest rate. Higher interest can be employed as a tool to manage inflation as its adjustment has great implication for borrowing costs, consumption, savings and investment and ultimately inflation rate. The alternate signs in different period suggests the need for the CBN to maintain interest rate stability as well as avoid abrupt and highly volatile adjustments of monetary policy rates (MPR).

The estimated results seem plausible considering that 95 percent of variability of the dependent-variable (INFLR) is elucidated by the included independent-variables as captured by the adjusted R-squared. Thus the coefficient of Durbin Watson statistics also suggest that auto-correlation problem is absent in the model.

4.5. Post Estimation diagnostic test

Table 7. Summary results from the test of breusch-godfrey serial correlations LM

| | | | |
|---------------|----------|---------------------|--------|
| F- statistic | 0.259415 | Prob. F(2,5) | 0.7813 |
| Obs*R-squared | 2.632307 | Prob. Chi-Square(2) | 0.2682 |

Source: Eviews 12 computation by Author (2025)

The p-value of the F-statistic obtained from the test of Breusch-Godfrey LM for ascertaining autocorrelation exceeds 5%, signifying the non-rejection of the stated null hypothesis. This null hypothesis concretises the absence of autocorrelation in residuals, and this is an outcome that is quite desirable. Consequently, this model is free of autocorrelation and this validate the reliability of the regression results.

4.6. Test of jarque-berra normality

The observations from the test of Jarque-Bera normality as shown in Fig 2 indicate that the p-value recorded as 0.093047 in this study surpasses the 5% significance level. Consequently, suggesting that the residuals follow a quite normal distribution, thus there is no evidence of non-normality.



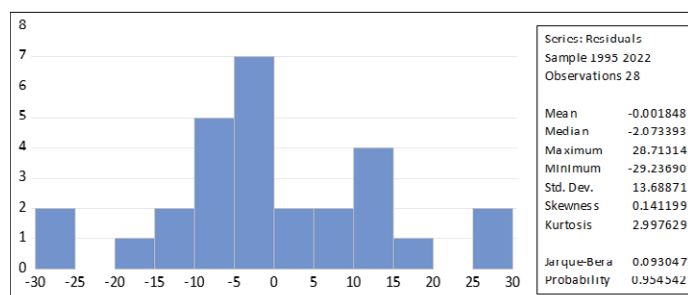


Figure 2. Test of jarque-bera normality

Source: Eviews12 Computation by Author (2025)

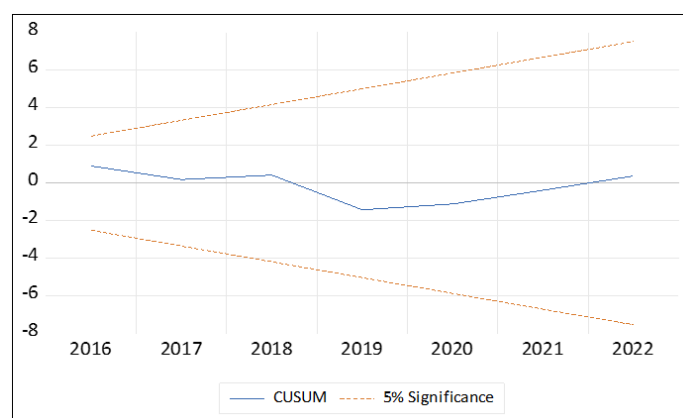


Figure 3. Test of Cumulative Sum (CUSUM)

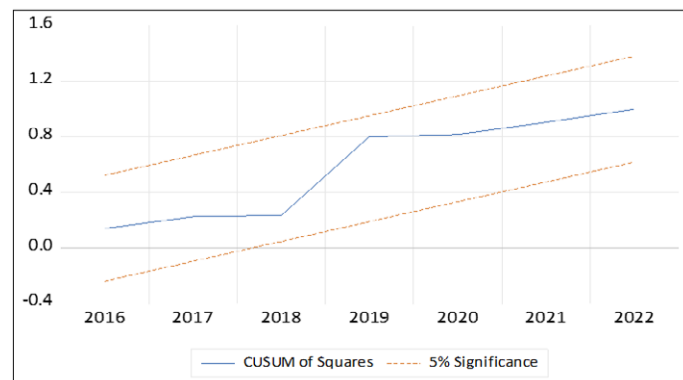


Figure 4. Test of Cumulative Sums of Square (CUSUM-SQUARE)

4.7. Stability test

Figures 3 and 4 show plots of the cumulative sums of recursive residuals as well as the cumulative sums of the squares of recursive residuals respectively, indicating a test of stability (graphical). This is visible from the clear oscillation of the calculated statistics from the quite critical bounds at the 5% significance level. Since the CUSUM and CUSUM-Square plots are within specified lines, then this equation is specified correctly and the model is deemed to be stable

5. CONCLUSION

This study has examined monetary policy for its effectiveness as a tool of Inflation Dynamics in Nigeria. Relative price stability is

key in ensuring smooth functioning of every economy and this has necessitated the postulation and implementation of vital macroeconomics policies that comprises of the monetary and even the fiscal policies aimed at the attainment of low inflation and relatively stable conditions in the general price level. The study also used the ARDL model in its analysis and the empirical findings proved that money supply and external debt have a significant and positive impact on Nigeria's inflationary situation. In the study it has also been empirically shown that inflation in Nigeria is both a monetary and fiscal issue that can be managed by policy mix. This study empirically ascertains the inflationary inducing tendencies of external debt. Implicatively the finding in this study posits that measures centred around monetary policy alone cannot help in curbing the inflationary trend currently being experienced in the nation's economy. From the set of findings emanating from this study, it is therefore recommended to Monetary authority, that they should consider a review off existing interest rate and peg it at level that will reduce the inflation being experienced as well drive both local and foreign investment. Also, Monetary policy (increasing MPR) should be accompanied with well thought out fiscal measures that will help augment the supply side so as to promote the capacity of production of the economy as the strategy will help at achieving low inflation and also promote economic growth. The coefficient of money supply and external debt which is positive, suggest that deliberate efforts must be put in place to regulate money supply and debt accumulation. If left uncontrolled, it can be a causative agent of macroeconomic instability. Also, there is an imminent need to determine other non-monetary determinants of inflation in Nigeria. These may include fluctuation in crude oil price and PMS price etc. as these have far reached implications on inflation in Nigeria. The is also need for coordinated government policies to ensure optimal agricultural productivity which is an effective strategy in reducing food inflation. as exogenous shocks such as insecurity are completely out of the reach of monetary policy tools and highlight.

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