

Money Supply and Inflation Rate Dynamics in Nigeria

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ABSTRACT

This study examined money supply and inflation rate dynamics in Nigeria over the period 2010M1 to 2025M12, with a view to identifying the monetary transmission mechanisms through which variations in monetary and fiscal policy instruments influence domestic price stability. The study employed the autoregressive distributed lag (ARDL) to establish both the long-run and short-run relationships between Consumer Price Index and Narrow Money (M1), Inter-Bank Rates (INB), Treasury Certificates (TC), Nigerian Treasury Bills (NTBs), Ways and Means Advances (WAMA) and Bureau de Change Average Exchange Rate (AEXR). The findings from the ARDL long run and bound test revealed that M1 and AEXR exert significant positive long-run effects on inflation during the study period. The second-step ECM results further confirmed a valid error correction mechanism, indicating that about 3.8% of short-run disequilibrium is corrected within one period, thereby establishing the existence of a stable long-run relationship between inflation and its determinants. These results underscore the complex interaction of monetary aggregates and exchange rate dynamics in driving Nigeria's inflationary process. The study concluded that inflation in Nigeria is structurally influenced by both demand-pull and cost-push factors, reflecting excessive monetary expansion and exchange rate volatility. Recommendations drawn from the findings suggest the need for a coordinated monetary-fiscal policy mix, effective management of money supply, and credible exchange rate stabilization measures. Furthermore, reforms aimed at deepening the financial market and enhancing the effectiveness of open market operations are necessary to strengthen the inflation-targeting framework in Nigeria.

Keywords: Money Supply, Inflation Rates, Nigeria

INTRODUCTION

Due to the persistent increases in prices of goods and services in the Nigerian economy, inflation has become a major topic of discussion among households and the media, as its consequences become increasingly inescapable in the country's daily life. The price increase, in turn, leads to a decline in aggregate demand of citizens. These basic needs of the populace include food, shelter, and the infrastructural development of the country at large (Charles et al., 2022). The Nigerian economy has experienced several economic recessions since independence. The first was in 1967, followed by 1975 and 1978, then 1981 to 1983, and the global economic meltdown of 2008/2009. The recent economic recession was in 2016/2017 and during covid-19 pandemic of 2020. The boko-haram insurgency, farmers-herders conflict, and 2023 deregulation of the downstream oil sector as well as the floating of the domestic currency in less than two decades. In one way or the other, this has slowed down economic activities in the country, and it has led to output gap. However, despite Central Bank of Nigeria intervention in the critical sectors of the economy, inflation has continued to increase (Kwode, 2024).

Inflation continues to become a subject of debate and counter debate among economists and researchers due to its role in stabilizing macroeconomic variables. Stable Inflation is also necessary for monetary and price stability, as well as economic growth (Agu & Oshim, 2024).

The phenomenon of inflation constitutes a major economic challenge that must be addressed with strong and decisive measures. It has an undesirable unique characteristic, that is, money as the medium of exchange loses its real value. Researchers have divergent empirical research result on the determinants of inflation in Nigeria, some validated monetarist view while others validated Keynesian school of thought. Some selected studies that agree with the monetarist view include Agu and Oshim (2024), who found that ways and means advances have

a positive and significant effect on the inflation rate in Nigeria. Babatunde and Doguwa (2012) stated that the high inflation events in the country since the 1970s was driven by the growth of money supply in the economy. Okotori (2019) found that money supply has a significant and effective impact on the inflation rate in Nigeria for the period under review. Sola and Peter (2013) indicated that there is a positive relationship between money supply and inflation in Nigeria. Bawa et al. (2016) showed compelling evidence of money supply, lending credence to the dominance of the monetarist proposition on inflation dynamics in Nigeria.

Other studies that validated Keynesian theory are, Charles et al. (2022) empirically proved that demand–pull and cost–push factors are responsible for inflation in Nigeria. Inim et al. (2020) showed that poor infrastructural development, exchange rate, political instability, corruption, and double taxation significantly stimulate inflation rather than just money supply. Akinbobola (2012) confirmed that Nigerian inflation is due to hiccups in the supply chain of goods (output). Odusanya and Atanda (2010) found that GDP (output) have significant effect on current inflation rate in Nigeria in the short run. Udo et al. (2019) opined that inflation is caused by political instability, corruption, poor basic infrastructure among others rather than money supply. Furthermore, other scholars attributed fiscal rascality to the cause of inflation in Nigeria. Anayochukwu (2012) observed that there is a positive relationship between fiscal deficit and inflation in Nigeria, confirming fiscal deficit causes inflation. Obviously, inflation in Nigeria is fiscal and monetary policy influence (Alexander et al., 2015).

There is no consensus among researchers as which theory is majorly responsible for inflation in the Nigerian economy. Therefore, this study wants to empirically examine whether inflation in Nigeria is largely influenced by monetary factors or combination of the monetary, fiscal, and external factors. Finally, inflation in Nigeria is like an uncured disease that require constant and continuous research.

The major objective of this study is to establish relationship between money supply and inflation in Nigeria.

LITERATURE REVIEW

Concept of Inflation

In the field of economics, there is no universally accepted definition of inflation, and interpretations often vary among scholars from different geopolitical contexts. Historically, inflation has been understood from three perspectives. Initially, in the mid-18th century, it referred to a rise in the money supply, particularly currency in circulation that was not backed by metallic money. Over time, this definition evolved to describe an increase in the money supply not offset by a corresponding increase in the demand for money, resulting in a general rise in prices.

By 1997, Bryan defined inflation as a rise in the overall price level (Hansen & Newman, 2022). Austrian economists and monetarists, including Friedman (1963, 1968), have consistently emphasized that inflation is primarily a monetary phenomenon, asserting that only changes in the money supply can lead to a general increase in prices. Mises (1953, p. 240) defined inflation as an increase in the money supply not matched by a rise in money demand, thereby reducing the purchasing power of money. Rothbard (2009, p. 990) similarly defined inflation as an increase in fiduciary media, explicitly excluding increases in the stock of species. Furthermore, Hülsmann (2008) demonstrated that the effects of money creation vary depending on the conditions under which money is produced.

In contemporary terms, inflation is understood as a general, continuous, and persistent rise in the price level of goods and services in an economy, representing a central concern for all economic stakeholders (Bawa et al., 2016). Nigeria has experienced four major events of inflationary pressures more than 30 per cent since 1970. In 1975, 1984, 1988/89 and 1992-1995 with inflationary pressures of 33.7, 41.2, 50.0 and 70.0 per cent, respectively (Omotoso & Doguwa, 2012). These inflationary pressures were due to drought in northern Nigeria, excess monetization of foreign inflows from oil sales, failure of Federal Government to pay ways and means credit facility from CBN among others.

Decade wise analysis of average inflation showed that 1980-1989, 1990-1999, 2000-2009 and 2010-2020 posted 30.57, 30.97, 12.41 and 11.94 per cent, respectively. From the data, it shows that in the larger part of 1980-1999,

inflation rate was more than thirty per cent while from 2000 to 2020, inflation rate was less than twenty per cent. Before 1999, the economy was managed under military rule while from 2000-2020, the economy is under civilian rule. Based on this evidence, it is coherent to say that Nigerian economy is better Managed under democratic dispensation. From experience and analysis, one could deduce that periods of high inflation in Nigeria were associated with periods of specific government policy changes, shocks to food prices and lack of coordination between monetary and fiscal policies (Omotoso & Doguwa, 2012).

The consequences of persistent increases in the general price level include the discouragement of long-term planning, a reduction in savings and capital accumulation, a decline in investment, and distortions in the distribution of real income, which often result in the misallocation of resources, among other effects (Kiganda, 2014). The earliest known discussions on measuring changes in the prices of a basket of goods and services using a single index date back to the eighteenth century (O'Neill, Ralph, & Smith, 2017). Several price indices are used to measure price movements, including the producer price index, import and export price indices, purchasing power parity, and the house price index, among others. However, the consumer price index (CPI) remains the most widely accepted and commonly used measure of inflation by statistical agencies and scholars worldwide.

There are three principal methods for calculating the Consumer Price Index (CPI), namely the Laspeyres, Paasche, and Drobisch indices. In Nigeria, the National Bureau of Statistics (NBS) adopts the Laspeyres method in the computation of the CPI. The CPI is a statistical measure based on the prices of a representative basket of consumer goods and services, which are collected periodically and computed for a given period, usually monthly. It measures changes in the price level of a weighted average market basket of goods and services purchased by households.

CPI numbers were moderate from January 2010 to June 2024 at 13.88 per cent to 98.49 per cent. Due to policy shift in 2023: deregulation of the downstream oil sector and liberalization of the local currency, CPI increased to 131.17 per cent in December 2025. Prices of goods and services in the basket continue to increase through the years 2023 to 2025 (NBS website). CPI is used to proxy inflation because it is the most often used economic indicator for identifying periods of inflation (or deflation); changes in CPI reflect changes in the cost of living and are commonly used as a measure of inflation rate, among other things (Omotosho and Doguwa, 2012).

Contextual Review of Money Supply and Inflation Trends in Nigeria

Nigeria's money supply has exhibited rapid growth in recent years, reflecting both domestic and external factors. Broad money (M3), which captures currency in circulation, demand deposits, savings, and quasi-money, has expanded significantly. For instance, the Central Bank of Nigeria (CBN) reported that money supply rose from ₦53.14 trillion in January 2023 to ₦93.72 trillion in January 2024, representing a year-on-year increase of approximately 76 percent (Centre for the Study of the Economies of Africa [CSEA], 2024). By March 2025, broad money had reached ₦114.22 trillion, an increase of about 24 percent relative to March 2024 (Punch newspaper, September 11, 2024).

The drivers of this monetary expansion are primarily linked to increases in net domestic assets (NDA), including rising credit to government because of persistent fiscal deficits, and changes in net foreign assets (NFA) arising from exchange rate valuation effects, (CSEA, 2024). Fiscal dominance has been a recurring theme, as the CBN has often accommodated deficit financing through ways and means advances and other quasi-fiscal operations.

Despite the implementation of contractionary monetary measures such as increases in the Monetary Policy Rate (MPR)—which rose from 18.75 percent in early 2024 to 27.5 percent in 2025—and stringent cash reserve requirements (CRR), excess liquidity continues to characterize the Nigerian financial system (Punch newspapers, 2025). Although some moderation has been observed, with a slight month-on-month decline in money supply in February 2025 (ACIOE, 2025), the overall year-on-year growth trajectory remains historically high.

Inflation in Nigeria has mirrored the dynamics of money supply but is also strongly influenced by structural and external shocks. Headline inflation reached 34.60 percent as at November 2024, one of the highest rates recorded

in decades (YCharts, 2024). Food inflation, transportation costs, and energy prices have been the main drivers, reflecting the removal of fuel subsidies, currency devaluation, and persistent supply chain disruptions (Ayenigba, 2025).

Although monetary expansion contributes to demand-pull inflation, Nigeria's inflationary episodes are also driven by exchange rate pass-through effects, particularly given the economy's high dependence on imports of food, fuel, and intermediate goods (Budget Office of Kano State, 2024). In addition, insecurity and poor infrastructure have constrained food supply and production, thereby amplifying cost-push inflationary pressures.

While inflationary pressures intensified throughout 2023 and early 2024, some moderation has been observed in 2025. For example, headline inflation declined to 20.12 percent in August 2025, following months of elevated rates, partly due to tighter monetary policy, exchange rate stabilization, and statistical base effects (Reuters, 2025). Nevertheless, inflation expectations remain elevated, creating the risk of a wage-price spiral and complicating macroeconomic stabilization.

The interaction between money supply and inflation in Nigeria reveals a pattern of positive long-run correlation. Rapid monetary expansion, particularly through fiscal accommodation, tends to translate into persistent inflationary pressures (Okeke, 2023; Olaoye & Anyanwu, 2024). However, in the short run, the relationship is less straightforward, as external shocks, exchange rate fluctuations, and structural rigidities often overshadow the immediate effect of monetary growth (Ibrahim et al., 2017).

Recent evidence underscores that the effectiveness of monetary tightening has been constrained by fiscal dominance and supply-side shocks. For instance, while CBN raised policy rates aggressively and increased reserve requirements, inflation remained high because subsidy removal and naira depreciation created powerful cost-push pressures (Ayenigba, 2025). Consequently, the inflationary process in Nigeria cannot be explained solely by changes in money supply but rather by a combination of monetary, fiscal, and structural factors.

THEORETICAL REVIEW

Monetarist Theory

The monetarist theory is largely attributed to Milton Friedman (1963), an American economist and recipient of the Nobel Prize in Economic Sciences in 1976. In his seminal work, *A Monetary History of the United States, 1867–1960*, Friedman demonstrated the central role of monetary policy in the emergence and, arguably, the deepening of the Great Depression. Drawing insights from Keynesian economics, Friedman developed the monetarist framework, which emphasizes the importance of monetary policy and asserts that changes in the money supply exert both short-run and long-run effects on the economy. Variations in the money supply are argued to influence the general price level.

More broadly, monetarists contend that inflation arises when the monetary authority supplies money more than its demand, thereby increasing the availability of credit and stimulating aggregate demand beyond the productive capacity of the economy. In fulfilling its mandate, the monetary authority can expand or contract the money supply through policy instruments, including the manipulation of interest rates.

The central bank of a country can influence interest rates by adjusting the Monetary Policy Rate (MPR), either upward under a contractionary stance or downward under an expansionary stance. The MPR serves as the anchor policy rate through which monetary authorities regulate liquidity conditions, control money supply, and influence inflation. Changes in the MPR transmit to other interest rates in the economy, such that an increase in the MPR generally leads to higher market interest rates. This, in turn, reduces the volume of credit available to businesses and households, dampens aggregate demand, and ultimately moderates inflationary pressures. Conversely, a reduction in the MPR lowers interest rates, encourages borrowing and investment by consumers and firms, boosts aggregate demand, and supports economic growth. As emphasized by Friedman (1963), inflation is always and everywhere a monetary phenomenon in the sense that it is and can be produced only by a more rapid increase in the quantity of money than output.

Empirical Review

Inflation has been a major economic variable that researchers have kept close eyes on and continue to explore due to its direct or indirect effect on socio-economic factors in mostly developing countries like Nigeria. Several studies have been carried out on inflation in Nigeria. Some of these studies validated monetarist view while others validated Keynesian theory.

Ayenigba (2025) empirically examined ‘a decade of fuel price fluctuations: the trend and their inflationary effects in Nigeria (2014-2024)’ using annual data and a simple linear regression model, finding a very strong positive correlation ($r = 0.93$) and high explanatory power ($R^2 = 0.871$), with each ₦1 increase in fuel price raising inflation by 0.0245%; the study attributes the 2023–2024 inflation surge largely to subsidy removal and recommends phased reforms and energy diversification. While this provides valuable insight into cost-push inflation, its bivariate design and omission of monetary and exchange-rate variables form part of its limitation. Ayenigba’s model risks omitted-variable bias, spurious correlation due to trending data, and underestimation of monetary policy and exchange-rate channels, suggesting that fuel-price shocks, though significant, operate within a broader macro-financial context where money supply and forex pressures often amplify or even overshadow energy-cost effects.

Azubike and Roland (2025) explored the ‘effects of monetary policy on inflation in Nigeria’, using data covering the period 1986 to 2023. The study employed the Vector Auto regression (VAR) model. The empirical result showed that monetary policy rate and money supply have positive effects on inflation whereas, interest rate and liquidity ratio exert negative effect on inflation in Nigeria with liquidity ratio being statistically significant. The authors recommended that Central Bank of Nigeria should maintain stable monetary policy rate that would encourage the real sector to borrow from financial institutions to keep money supply at moderate state to discourage inflation. The limitation of this study is the use of annual data while the variables used are available on monthly and quarterly period. This may not capture the monetary policy transmission mechanism accurately. For further studies, it is important to take into cognizance the frequency of the variables that are used in the model.

Ekpo and Udobia (2025) studied the ‘dynamic interaction between fiscal deficit and inflation in Nigeria: evidence from ARDL bounds test’, from 1981 to 2024. The authors used GDP growth, CPI inflation, fiscal deficit as a ratio of GDP, and exchange rate in the model. ARDL bounds test was applied to investigate the short-run and long-run relationships between the variables of interest. The result revealed that, in the long run, there was a positive but statistically insignificant relationship between fiscal deficit and inflation in Nigeria. The authors suggested for a genuine synergy between the fiscal and monetary policy to ensure discipline and moderate deficit financing to avoid persistent inflationary pressures that could negatively affect the purchasing power of Nigerians. To use ARDL, stationarity of the variables should be a mixture of ‘at levels and order one’. However, the authors went ahead to use ARDL even though the stationarity test of the variables were of order one. It is advisable to use other methodologies like Engle and Granger whenever the stationarity of the time series data is of order one.

Agu and Oshim (2024) examined the ‘effect of deficit budget financing sources on inflation rate in Nigeria’ using annual data from 2011 to 2020. The Authors used external debt, ways and means advances, and treasury bills as independent variables of the study, while inflation rate was the dependent variable. Ordinary Least Square multiple regression technique was used to empirically test whether deficit financing is responsible for inflation in Nigeria. The result of the study revealed that ways and means advances is the major determinant of inflation rate in Nigeria. The Authors recommended that government should respect the limit set by 2007 CBN ACT in respect of ways and means advances. The limitation of this study is the use of annual data over a relatively short time frame (10 years), this may not be sufficient to capture the full dynamics of inflation, especially considering that inflation is affected by both short-term shocks and long-term trends. Again, the authors did not include other significant macroeconomic variables that could also affect inflation, such as narrow money supply and exchange rates. By omitting these variables, the study may suffer from omitted variable bias, which could distort the results. Furthermore, ordinary least squares technique was used for the analysis, and it has limitations, particularly when dealing with time-series data. This study will be improved upon in this thesis by using a more

frequency data (monthly), monetary variables like narrow money and exchange rates will be included in the model and more advanced time-series techniques like autoregressive distributed lag (ARDL) models which are better suited for non-stationary and short-term dynamics will be used for the analysis.

Kwode (2024) studied 'Central Bank intervention schemes and inclusive growth in sub-Saharan Africa: empirical evidence from Nigeria', annual secondary data spanning from 2008 to 2018 as well as primary data. The study investigates one of the largest intervention programs in the region- Central Bank of Nigeria's intervention programs, its relationship with inclusive growth, achievements, impacts and challenge. A combination of primary and secondary data was analyzed using chi square and rank correlation coefficient. The results revealed a positive relationship between central bank intervention and inclusive growth but showed insignificant impact on Nigeria's economy. The study recommends- enhanced monitoring, evaluation and strengthen the capacity of the Development Finance Institutions (DFIs). Since data is available for the intervention programmed, there is no need for the primary data, for there may be biased responses and ultimately give spurious result.

Soliman et al. (2023) studied the 'asymmetric effects of energy inflation, Agri-inflation and CPI on agricultural output: evidence from NARDL and SVAR models for the UK', using monthly data between February 2015 and October 2022. The study revealed increase in energy inflation, agflation and CPI, adversely affect agricultural output, while decreases in energy inflation, agflation and CPI positively affect agricultural output in the UK. The Authors recommendation to hedge fund managers, institutional investors and economic policymakers is to imbibe the culture of hedging and portfolio risk diversification strategies. The omission of key macroeconomic variables like monetary policy rates and narrow money supply in Soliman et al.'s study highlights a gap that needed to be filled up. This gap will be bridged by including variables like monetary policy rate and narrow money in the model to advance what Soliman et al did.

Kuma and Gata (2023) empirically test the 'factors affecting food price inflation in Ethiopia: An autoregressive distributed lag approach' using time series annual data spanning from 1990 to 2021. The study showed that domestic food price, annual rainfall, interest rate and money supply affected food price inflation positively and significantly in the Ethiopian economy. The studies suggestion to monetary authority is to tighten monetary policies, while to the fiscal authority is to equate population growth with the overall economy and finally, increase the use of irrigation technologies in drought-prone areas to ensure abundant food supply. The limitation of the study is the use of annual data by the authors which may result to inability to capture short-term fluctuations in inflationary pressures. Inflation is often influenced by rapid and volatile movements in money supply and exchange rates, which can occur monthly, therefore, the limitations will be improved upon by expanding the scope of the data from January 2010 to June 2024. This will lead to a more granular analysis of how inflation reacts to changes in macroeconomic variables like narrow money, treasury bills, and bureau de change exchange rates.

Charles et al. (2022) used annual time series data covering the period of 1981 to 2017 to explore 'the determinants of inflation in Nigeria'. The research makes use of Auto-Regressive Distributed Lag (ARDL) methodology. The study discovered that demand-pull and cost-push factors are responsible for inflation in Nigeria. The Authors recommended that government should provide social infrastructure that would encourage private investment in Nigeria. The period covered by Charles, Gilbert and Emerenini in their study does not include some critical recent economic events in Nigeria. Post-2017, Nigeria has experienced notable economic challenges, including significant exchange rate depreciation, increased government borrowing through ways and means advances, the COVID-19 pandemic, deregulation of the downstream sector and liberalization of the domestic currency. These events have had significant inflationary effects, which the study by Charles et al. (2022) does not capture. For this reason, the new study extends its data up to June 2024 to incorporate these newer inflationary pressures, providing more up-to-date and relevant insights. For example, the rise in ways and means advances in recent years and the volatility in bureau de change exchange rate is likely to have played a more prominent role in driving inflation in Nigeria since 2017.

Duodu et al. (2022) examined 'money supply, budget deficit and inflation dynamics in Ghana: an empirical investigation'. The Authors employed Granger causality test and the vector error correction model (VECM) on

the quarterly time series data spanning from 1999Q1 to 2019Q4. The paper showed that inflation exerts a positive and negative effect on budget deficit and money supply, respectively. The Researchers advised the government of Ghana to reduce its budget deficit significantly and minimize bureaucratic tendencies in ministries, departments, and agencies. The limitation of the study by Duodu, Baidoo, Yusif and Frimpong is failure to differentiate between different forms of money supply, narrow money, or broad money. In the study under review, more focus will be given to narrow money which provides a better understanding of liquidity-driven inflation.

Adaramola and Dada (2020) used annual time series data from 1980–2018 to find out the ‘impact of inflation on economic growth: evidence from Nigeria’. The Authors employed ARDL on real gross domestic product (GDP), inflation rate, interest rate, exchange rate, degree of economy’s openness, money supply, and government consumption expenditure. The findings revealed that interest rate and money supply depict a positive and significant impact on economic growth in Nigeria. The study recommended that a more pragmatic effort is needed by the monetary authorities to target inflation to prevent its adverse effect by ensuring a tolerable rate that would stimulate the economic growth of Nigeria. The limitation of the study is the inclusion of broad money supply which has the elements of illiquid asset that is not easily convertible. For better predictor of short-term inflationary pressures, narrow money will be included in the thesis which represents the most liquid form of asset, that is cash and demand deposits.

Maitra and Hossain (2020) used annual data from 1981 to 2017 to explore 'causes and anti-inflationary policy perception' in India. The authors used CPI as endogenous variable while broad money, interest rate and exchange rate were the exogenous variable. They used VAR model to verify whether the three schools of thought of inflation (structuralist, globalist, and monetarist) hold in India. The outcome of the research showed that structuralist and globalist views were rejected in India during the study period, however, monetarist views hold. The authors recommended that there should be a structural and political reform in India as well as economic coordination between monetary and fiscal authorities to curb inflation. The focus on the official exchange rate in Maitra and Hossain's study overlooks the importance of parallel or informal exchange rates in countries like Nigeria, where the bureau de change (BDC) exchange rate plays a significant role in price formation. The BDC rate often reflects real market conditions more accurately than the official exchange rate, particularly when there is a foreign exchange shortage. For Nigeria, where a large proportion of goods are imported, fluctuations in the BDC exchange rate can have an immediate impact on inflation, a crucial factor missing from their study. This important variable will be included in the thesis to improve the earlier studies.

Inim et al. (2020) examined the ‘other determinants of inflation in Nigeria’. The Authors used autoregressive distributed lag (ARDL) method on quarterly data from January 1999- December 2018. Findings showed that structural imbalances and rigidity in the economy significantly stimulate inflation rather than just money supply. The study recommends that non-monetary factors of instigating inflation should be controlled, and security expenditure should be review along with-related mechanisms to achieve low inflation at single digits at most and economic growth and development. The absence of ways and means advances as a variable in their study has limited the outcome of the empirical findings considering government borrowing from the Central Bank of Nigeria (CBN) through ways and means advances in recent years. This has led to excessive money creation and ultimately fuel inflation. Ways and means advances will be included in the thesis to take care of the limitation in Victor et al. studies.

Okotori (2019) explored ‘the dynamics of monetary policy and inflation in Nigeria’ using monthly data from 2009-2017. The Authors used Johansen cointegration test and the model revealed that money supply, exchange rate, monetary policy rate, treasury bills rate, reserve requirement and liquidity ratio have significant and effective impact on the inflation rate in the Nigerian economy. This research revealed that CBN should stay focused on its current foreign exchange rate policy as well as making an unrestricted use of the monetary policy tools in its attempt to arrive and remain at a single digit inflation threshold for Nigeria. It is true that Okotori acknowledges the importance of the monetary policy rate (MPR), however, the study did not fully explore the interaction between the MPR and other variables, such as ways and means advances. Therefore, increased government borrowing through ways and means advances as we witness today in Nigeria can undermine the effectiveness of the MPR, leading to liquidity overhang and contributing to inflation despite tight monetary

policy. For this reason, ways and means advances will be included in the thesis to test the efficacy of the monetary policy rate.

Gaps in Literature

A review of the empirical literature reveals that numerous studies have examined the relationship between money supply and inflation rate dynamics in Nigeria and other economies. However, this study contributes to the existing literature by incorporating the unofficial exchange rate and interbank interest rate into its empirical model. The unofficial exchange rate plays a significant influence on foreign exchange market activities in Nigeria. In addition, while most previous studies cover periods ending in or before 2022, the scope of this study is extended to December 2025.

Furthermore, the study period encompasses several major macroeconomic and policy events, including the post-global financial crisis period of 2009, the 2010 gross domestic product (GDP) rebasing exercise, the economic recession of 2016–2018, the COVID-19 pandemic in 2020, the deregulation of the downstream petroleum sector, and the liberalization of the domestic currency. Collectively, these developments represent an unprecedented concentration of economic shocks and policy shifts within a single period in Nigeria’s economic history. Most of the empirical studies reviewed only partially cover this period, thereby creating a gap that the present study seeks to address.

Therefore, this study carefully selected this period to analyze money supply and inflation rate dynamics in Nigeria. In addition, Autoregressive Distributed Lag model framework and Error Correction Model (ECM) were used for the analysis.

METHODOLOGY

Research Design

In examining the impact of money supply on the inflation rate in Nigeria, this study adopts an ex-post facto research design. This approach is appropriate given the use of time series data. The chosen methodology is intended to analyze how the independent variables namely, narrow money (M1), Interbank Interest Rates (INB), Nigerian Treasury Certificates (NTC), Nigerian Treasury Bills (NTBs), Ways and Means Advances (WAMA), and the Average Exchange Rates (AEXR) affect inflation in the Nigerian economy over the study period.

3.2 Model Specification

The model for this work is an adaptation of the model employed by Adjei (2018), where broad money growth, domestic credit to the private sector, broad money per centage of gross domestic product, and domestic gross product per capita were used as inflation determinants for Ghanaian economy and its relationship with Friedman’s theory of inflation.

$$INF = f (BMG, IMPTS, DCPS, BM/GDP, \& GDP/CAP) \text{ -----}3.1$$

In econometric format, equation (i) can be stated as:

$$INF_t = \beta_0 + \beta_1 \text{LnBMGR}_t + \beta_2 \text{LnIMPTS}_t + \beta_3 \text{LnDCPS}_t + \beta_4 \text{LnBM/GDP}_t + \beta_5 \text{LnGDP/CAP}_t + \mu_r \text{ -----}3.2$$

Where,

INF = inflation;

BMG = Broad Money Growth;

IMPTS= Imports of Goods & Services;

DCPS = Domestic Credit to the Private Sector;

BM/GDP = Broad Money per centage of Gross Domestic Product;

GDP/CAP= Gross Domestic Product Per Capita;

Ln= Natural Logarithm;

β_0 = Constant Term and T= time.

This study adapted the model employed by Adjei (2018), where narrow money, treasury certificate, Nigeria treasury bills, Central Bank of Nigeria ways and means advances, and bureau de change average exchange rate are used to analyze money supply and inflation rate dynamics in Nigeria. Based on Adjei (2018) work, the model is therefore specified as follows:

$$CPI_t = \beta_0 + \beta_1 M_{1t} + \beta_2 INB_t + \beta_3 TC_t + \beta_4 NTBS_t + \beta_5 WAMA_t + \beta_6 AEXR_t + \mu \text{-----} 3.3$$

Where,

B_i = The Estimated Parameters /Coefficients of the Variables;

β_0 = Constant Term;

T= Time;

μ = Error term;

CPI = Consumer Price Index;

M1= Narrow Money;

INB =Interbank Rates;

NTBs = Nigerian Treasury Bills;

AEXR = Bureau de Change Average Exchange Rate;

WAMA= Central Bank of Nigeria Ways and Means Advances; and

TC= Treasury Certificate.

Table 3.1: A Priori Expectations of the Parameters.

Dependent Variable	Signs/Relationship	Alternative	Independent Variables
INF	Positive (+ve)	$\beta_1 > 0$	M1
INF	Positive (-ve)	$\beta_1 > 0$	INB
INF	Negative (-ve)	$\beta_2 < 0$	TC
INF	Positive (+ve)	$\beta_1 > 0$	AEXR
INF	Negative (-ve)	$\beta_2 < 0$	NTBS
INF	Positive (+ve)	$\beta_1 > 0$	WAMA

Nature and Sources of Data

This study employs monthly time series secondary data spanning from January 2010 to December 2025, comprising a total of 192 observations. This period captures significant monetary and fiscal interventions, during which authorities injected liquidity into critical sectors of the economy that were considered too risky for lending

by other depository corporations. The study period also coincides with the 2010 GDP rebasing exercise, which positioned Nigeria as the largest economy in Africa, as well as the aftermath of the 2008/2009 global financial crisis. Furthermore, it encompasses the domestic economic recession of 2017–2018, the economic disruptions caused by the COVID-19 pandemic, the deregulation of the downstream petroleum sector, and the liberalization of the domestic currency. Collectively, these events represent a series of unprecedented economic challenges, making this period particularly relevant for analyzing inflation dynamics in Nigeria

The independent variables in the model are M1, INB, TC, NTBS, WAMA and AEXR. Data are sourced from CBN statistical bulletin and NBS website. These data were processed using EViews 13 econometric package and excel software.

Estimation Procedure

To ensure the reliability and validity of the empirical results, this study follows a structured estimation procedure consistent with standard time series econometric practices. Given that macroeconomic time series data are often characterized by trends and non-stationarity, preliminary tests are conducted to avoid spurious regression results. The estimation procedure therefore involves unit root testing, cointegration analysis, and residual diagnostic checks.

Justification of Estimation Technique

It should be noted that ARDL estimation method can be regarded as an appropriate one for conducting the analysis because it provides the researcher with an opportunity to employ variables of different orders of integration. In other words, the ARDL approach can be employed if the variables involved are integrated at levels (I(0)), differenced once (I(1)), or both of the above options, on condition that none of the variables used is of order two (I(2)). In this way, one gets an obvious advantage comparing to conventional approaches to cointegration analysis, such as the Engle-Granger or Johansen methods, since the requirement is that all the variables must be integrated of the same order. Moreover, the bounds testing strategy within the ARDL model framework makes it possible to estimate simultaneously both the short-run and long-run relationships within a single specification.

Yet another strength associated with the use of the ARDL method is that it is very flexible with regard to handling small samples of data. In contrast to other econometric methods, which depend on large samples of data to generate valid estimates, the ARDL technique can efficiently estimate with consistency even with few data points. According to Nkoro & Uko (2016), ARDL models generally provide accurate and dependable estimates regardless of sample size. Therefore, the use of the ARDL approach is justified in this particular study. Additionally, the ARDL technique minimizes the risk of encountering the problem of endogeneity through correct specification of lag values in the dependent and independent variables.

Data Presentation and Analysis

Descriptive Statistics

Table 4.1: Descriptive Statistics of Selected Variables

Statistics	CPI	M1	INB	TC	NTBS	WAMA	AEXR
Mean	44.020	14080706.41	13.565	2281723.5	9.179	5388380.62	506.216
Median	33.285	9390636.22	11.575	1704394.8	10.015	2886304.64	360.971
Maximum	131.166	42142000.4	64.588	8389712.6	19.07	26947167.65	1736.33
Minimum	13.877	4753532.02	0.000	873.14	0.03	32781.06	151.847
Std. Dev.	31.091	10366202.62	9.312	2307934.8	5.006	6870977.59	445.518
Skewness	1.317	1.443	1.453	0.991	-0.121	1.498	1.566
Kurtosis	3.772	3.866	7.051	2.948	1.950	4.251	4.252
Jarque-Bera	60.334	72.702	198.927	31.485	9.279	84.344	91.082

Probability	0.000	0.000	0.000	0.000	0.009	0.000	0.000
Observations	192	192	192	192	192	192	192

Source: Computed by author using EViews 13

The descriptive statistics presented in Table 4.1 provide critical insights into the dynamics of money supply and inflation in Nigeria. The variables under consideration include Consumer Price Index (CPI), Narrow Money Supply (M1), Interbank Rates (INB), Nigerian Treasury Bills (NTBs), Treasury Certificates (TC), Central Bank of Nigeria Ways and Means Advances (WAMA), and Bureau de Change Average Exchange Rate (AEXR). The summary statistics are based on 192 observations for each variable.

The average CPI during the study period is 44.02%, with a median of 33.28%. The maximum value of 131.16% and minimum of 13.87% highlight significant volatility. The standard deviation of 31.09% further confirms this variability. The skewness (1.31) and kurtosis (3.77) suggest a right-skewed distribution with fat tails, indicating occasional spikes in CPI. The Jarque-Bera test strongly rejects normality ($p = 0.000$), suggesting that consumer price index shocks are not uncommon. Economically, this reflects the country's vulnerability to inflationary pressures potentially driven by macroeconomic shocks, fiscal imbalances, or monetary expansion.

M1 has an average value of approximately ₦14.08 trillion, with a median of ₦9.39 trillion. The wide range between the minimum (₦4.75 trillion) and maximum (₦42.14 trillion) values indicates substantial growth in liquidity. The standard deviation (₦10.36 trillion) confirms high variability. A positive skewness (1.44) and leptokurtic kurtosis (3.86) suggest periods of rapid expansion in money supply. The Jarque-Bera statistic confirms non-normality. This trend implies that monetary policy has been significantly expansionary, potentially contributing to inflationary pressures, especially when not aligned with output growth.

The mean NTB rate is 9.17%, slightly below the median (10.01%), indicating a few very low observations. With a standard deviation of 5.00% and a range from 0.03% to 19.07%, NTBs display substantial variability. The distribution is mildly left-skewed (-0.12) and platykurtic (1.95), suggesting limited extreme movements. The p -value (0.000) implies non-normality. Economically, fluctuations in NTB rates signal dynamic liquidity management by monetary authorities. Extremely low rates in certain periods might reflect loose monetary conditions, raising concerns about inflationary consequences.

The average interbank rate during the study period is 13.56%, with a median of 11.57%. The maximum value of 64.58% and minimum of 0.00% highlight significant volatility. The standard deviation of 9.31% further confirms this variability. The skewness (1.45) and kurtosis (7.05) suggest a right-skewed distribution with fat tails, indicating occasional spikes in inflation. The Jarque-Bera test strongly rejects normality ($p = 0.000$), suggesting that CPI shocks are not uncommon. Economically, this reflects the country's vulnerability to inflationary pressures potentially driven by macroeconomic shocks, fiscal imbalances, or monetary expansion.

TCs average ₦2.28 trillion, with a range from ₦873.14 million to ₦8.38 trillion. The standard deviation (₦2.30 trillion), skewness (0.99), and kurtosis (2.94) indicate moderate variability and a tendency toward right skewness. The non-normal distribution ($p < 0.01$) suggests episodic spikes in TC issuance. The economic implication is that TCs have been used intermittently as a financing tool, and their issuance may have contributed to increasing liquidity in the system.

The mean WAMA is ₦5.38 trillion, while the median is substantially lower at ₦2.88 trillion, showing a recent surge in borrowing. The maximum (₦26.95 trillion) and minimum (₦32.78 billion) values, along with a standard deviation of ₦6.88 trillion, illustrate sharp variability. The right-skewed (1.49) and leptokurtic (4.25) distribution confirms this trend. The highly significant Jarque-Bera statistic underscores non-normality. The economic implication is worrisome: increased reliance on central bank financing reflects fiscal dominance, where monetary policy is influenced by fiscal needs, often leading to inflation.

The average exchange rate is ₦506.21/\$, with a wide range from ₦151.85/\$ to ₦1736.33/\$. The high standard deviation (₦445.51), skewness (1.56), and a moderate kurtosis (4.25) indicate significant volatility and frequent

large depreciations. The Jarque-Bera test confirms strong non-normality. This suggests a persistent depreciation trend, likely due to macroeconomic instability, oil price shocks, or capital flight. Such volatility can exacerbate inflation through increased import costs and decreased investor confidence.

The analysis indicates that Nigeria’s inflation dynamics are strongly influenced by growth in money supply, fiscal operations, and exchange rate fluctuations. The persistent rise in M1 and WAMA highlights monetary expansion and fiscal reliance on central bank funding, both of which fuel inflation. Volatile NTB and TC rates, along with erratic exchange rates, complicate monetary policy transmission. The data suggest a macroeconomic environment characterized by fiscal dominance, weak monetary control, and vulnerability to external and internal shocks. Addressing these challenges requires coordinated fiscal-monetary policies, improved public finance management, and robust exchange rate frameworks.

Correlation Matrix Test

Table 4.2: Correlation Matrix Test

	CPI	M1	INB	TC	NTBS	WAMA	AEXR
INF	1.000000	0.990195	0.422383	-0.38462	0.226443	0.368961	0.971405
M1	0.990195	1.000000	0.435352	-0.46097	0.255844	0.328164	0.979410
INB	0.422383	0.435352	1.000000	0.011399	0.605927	-0.133400	0.485005
TC	-0.38462	-0.46097	0.011399	1.000000	0.197639	-0.224810	-0.382279
NTBS	0.226443	0.255844	0.605927	0.197639	1.000000	-0.563870	0.339338
WAMA	0.368961	0.328164	-0.13340	-0.22481	-0.56387	1.000000	0.250324
AEXR	0.971405	0.979410	0.485000	-0.38227	0.339338	0.250324	1.000000

Source: Computed by author using EViews 13

From table 4.2, all the coefficients of the variables in the model are positive, indicating a positive relationship with CPI. However, TC has a negative relationship with INF.

Unit Root Results

Variable	Levels I(0)			First Difference I(1)			
	Test statistic	5% Level of Significance.	Prob. Value	ADF statistic	5% Level of Significance.	Prob. Value	Order of Integration
CPI	-4.5531	-3.4352	0.0017	-2.0140	-3.435	0.5859	I (0)
M1	0.8325	-3.4340	0.9998	-6.9022	-3.4340	0.0000	I (1)
INB	-5.0428	-3.4336	0.0003	-9.9741	-3.4341	0.0000	I (0)
TC	-1.8236	-3.4335	0.6896	-12.963	-3.4336	0.000	I (1)
AEXR	-1.0613	-3.4335	0.9317	-13.565	-3.4336	0.000	I (1)
NTBS	-1.9437	-3.4335	0.6276	-14.233	-3.4336	0.000	I (1)
WAMA	-1.8037	-3.4335	0.6993	-13.656	-3.4336	0.000	I (1)

Source: Computed by author using EViews 13

Variable	Levels I(0)			First Difference I(1)			
	Test statistic	5% Level of Significance.	Prob. Value	ADF statistic	5% Level of Significance.	Prob. Value	Order of Stationarity
CPI	5.0357	-3.4335	1.0000	-11.08	-3.4336	0.000	I (1)
M1	0.7837	-3.4335	0.9997	-16.49	-3.4336	0.0000	I (1)
INB	-9.153	-3.4335	0.0000	-45.70	-3.4336	0.0001	I (0)

TC	-1.831	-3.4335	0.6855	-12.94	-3.4336	0.000	I (1)
AEXR	-1.201	-3.4335	0.9068	-13.60	-3.4336	0.000	I (1)
NTBS	-1.961	-3.4335	0.6180	-14.23	-3.4336	0.000	I (1)
WAMA	-1.730	-3.4335	0.7339	-13.79	-3.4336	0.000	I (1)

Source: Computed by author using EViews 13

To avoid publishing a spurious econometric result, time series data must be stationary either at level or first difference. Augmented Dickey-Fuller (ADF) and Phillip Perron (PP) are used to test for stationarity. The results as displayed in tables 4.2a and 4.2b indicate that all the variables in the model are stationary at I (1), with the probability values less than 5 per cent in both ADF and PP tests. However, CPI and INB are stationary at I (0) with probability values less than 5 per cent. Since the order of integration of the variables are both I (0) and I (1), Autoregressive Distributed Lag Bound test estimation technique became appropriate and is employed to test for cointegration and estimation of the model.

Model Estimation

Autoregressive Distributed Lag Test for Cointegration

The cointegration result is displayed in table 4.3 and it showed the mixture of order of stationarity: I (0) and I (1), which are referred to as lower bound and upper bound values.

Table 4.3: ARDL Test for Cointegration

Test Statistic	Value	Signif.	I(0)	I(1)
Sample size:188				
F-statistic	23.123217	10%	2.120	3.230
k	6	5%	2.450	3.610
		1%	3.150	4.430
t-statistic	6	10%	-2.570	-4.040
K		5%	-2.860	-4.380
		1%	-3.430	-4.990

Source: Extract from computer on regression of data using EViews version 13.

Ho: there is no cointegration.

H1: there is cointegration.

The decision rule for cointegration using ARDL is that, if the F-statistic is lower than the lower bound value at the level of significance, we accept the null hypothesis that there is no cointegration, but if the F-statistic lies between the upper and lower values, it is undecided. But if it is higher than the upper bound value, there is cointegration.

From table 4.4, F-statistic at 23.123217 is much higher than the upper bound value of 4.430, we therefore reject the null hypothesis, and we conclude that there is cointegration, confirming the existence of long run relationship among the variables in the model.

Autoregressive Distributed Lag Long Run Form

Table 4.4: Long Run Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
M1 (-1)	3.40E-06	6.16E-07	5.528779	0.0000

INB	-0.121705	0.122913	-0.990176	0.3234
TC	9.19E-07	5.50E-07	1.672161	0.0962
NTBS (-1)	-0.278358	0.342054	-0.813783	0.4168
WAMA (-1)	4.39E-07	2.71E-07	1.619116	0.1072
AEXR	0.048784	0.022073	2.210108	0.0283

Source: Computed by author using EViews 13

The coefficient of M1 at lag 1 is positive (3.40E-07), highly significant, suggesting that an increase in money supply contributes to higher inflation in the long run. The t-statistic (5.52) is relatively strong, the significance level ($p = 0.000$) indicates that the effect is statistically meaningful. This supports the monetarist proposition that “inflation is always and everywhere a monetary phenomenon” (Friedman, 1963). Expansion in narrow money directly increases liquidity in the economy, raising aggregate demand beyond available supply, and thereby fueling inflationary pressures.

The coefficient of inter-bank rates (-0.121705) is negative and insignificant at thirty-two per cent ($t = -0.99017$; $p = 0.3234$). This finding suggests a weak long-run interest-rate transmission to consumer prices in Nigeria within the present specification, consistent with the prominence of cost-push and external drivers of inflation and with potential attenuation from financial-intermediation frictions. This suggests that inter-bank rates do not influence inflation in the long run.

The coefficient of TC (9.19E-07) is positive and insignificant at five per cent level ($t = 1.67$; $p = 0.0962$). This suggests that Treasury Certificates, another short-term financing instrument, do not influence inflation in the long run.

NTBs at lag 1 exhibit a negative coefficient (-0.278358) with weak insignificance ($t = -0.813783$; $p = 0.4168$). This finding suggests that Treasury bill issuance is intended for liquidity management instrument in Nigeria. This could be due to the contractionary effect of short-term debt financing when proceeds are used to sterilize liquidity.

The coefficient of WAMA at lag 1 (4.39E-07) is positive and statistically insignificant ($t = 1.619116$; $p = 0.1072$). This finding implies that fiscal deficit financing through Central Bank overdrafts exerts a weak inflationary effect in Nigeria. This study is in contrast with the popular fiscal dominance hypothesis (Sargent & Wallace, 1981). Though monetization of fiscal deficits expands money supply outside the regular monetary control framework, however, it does not weaken the efficacy of monetary policy transmission mechanism and ultimately, WAMA does not influence inflation in the long run.

The coefficient of AEXR (0.048784) is positive, highly significant ($t = 2.210108$; $p = 0.0283$), and economically important. This result highlights the strong pass-through effect of exchange rate depreciation on domestic prices in Nigeria. Given the country’s import dependence, especially on consumer and intermediate goods, a depreciation of the naira increases the cost of imports, which is transmitted into general price levels. This aligns with exchange rate pass-through theories (Goldberg & Knetter, 1997), which emphasize the inflationary consequences of exchange rate instability in open economies.

The ARDL regression confirms the existence of a long-run equilibrium relationship between inflation and the monetary and exchange rate pass-through variables in Nigeria. The results suggest that both monetary expansion via M1 and exchange rate depreciation, significantly contribute to inflationary pressures. This implies that inflation in Nigeria is not driven by a single factor but emerges from the interaction of monetary growth, and external vulnerabilities.

The strong role of exchange rate pass-through reflects Nigeria’s structural import dependence. Thus, the long-run determinants of inflation in Nigeria are both demand-side (money supply) and cost-push (exchange rate depreciation).

Autoregressive Distributed Lag Short Run

Table 4.5: Error Correction Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D (CPI (-1))	-0.017709	0.064343	-0.275237	0.7835
D (CPI (-2))	-0.447207	0.068661	-6.513305	0.0000
D(M1(-3))	1.55E-07	6.66E-08	2.324940	0.0213
INB	-0.004688	0.004527	-1.035488	0.3019
TC	3.54E-08	3.02E-08	1.171612	0.2430
D(NTBs)	0.068547	0.022474	3.050011	0.0026
D (WAMA (-2))	-8.51E-08	1.89E-08	-4.502298	0.0000
AEXR	0.001879	0.000498	3.773982	0.0002
C	-0.153748	0.048505	-3.169731	0.0018
CointEq(-1)*	-0.038517	0.002975	-12.94772	0.0000

Source: Computed by author using EViews 13

The ARDL regression model incorporating the error correction mechanism (ECM) was estimated to capture both the short-run dynamics and the long-run adjustment of inflation in response to changes in selected monetary and fiscal policy variables in Nigeria. The dependent variable is the Consumer Price Index (CPI), while the explanatory variables include the Narrow Money (M1), Inter-bank Rates (INB), Treasury Certificates (TC), Nigerian Treasury Bills (NTBs), Ways and Means Advances (WAMA), and Bureau de Change Average Exchange Rate (AEXR), and the error correction term [ECM (-1)].

The coefficient of the constant term (-0.153748) is negative and statistically significant at the 5 per cent level, suggesting that even in the absence of changes in the selected policy variables, there exists a baseline upward pressure on inflation in Nigeria. This outcome is indicative of structural or inertial inflationary tendencies that persist within the economy. The coefficient of Narrow Money [D-M1(-3)] is positive (1.55E-07) and statistically significant ($p=0.0080$). This implies that growth in the money supply contributes to inflationary pressures in the short run. The result is consistent with the monetarist proposition that an expansion of money supply, when not accompanied by a corresponding increase in productive output, translates into excess demand which raises the general price level.

In the short run, the ARDL estimation reveals that the inter-bank rate (INB) carries a negative but statistically insignificant coefficient (-0.004688 ; $t = -1.035488$; $p = 0.3019$), indicating that variations in money market rates exert no meaningful immediate impact on consumer price movements in Nigeria. Although the negative sign aligns with theoretical expectations that tighter short-term funding conditions could momentarily dampen demand-driven inflation, the absence of statistical significance suggests that short-run price behavior is predominantly shaped by other factors beyond interest-rate fluctuations. This result is consistent with structural characteristics of the Nigerian economy, such as weak monetary transmission mechanisms, cost-push pressures, and a high degree of import dependence, where short-run inflation dynamics are typically driven by exchange rate movements, supply disruptions, and administrative pricing rather than by inter-bank market conditions. Consequently, the finding implies that the inter-bank rate does not serve as an effective short-run policy lever for stabilizing consumer prices within the period under review.

Ways and Means Advances [D-WAMA (-2)] exert an inverse relationship with CPI in the short-run during the review period, however, it has statistically significant effect on inflation (coefficient = $-8.51E-08$; $p = 0.000$). This result is somewhat counterintuitive, as ways and means advances is typically expected to worsen inflation through the growth of money supply and budget deficit financing. The negative relationship observed here may suggest that, during the period under study, ways and means advances coincided with contractionary monetary policy of the Central Bank, this has moderated the effect of increased money supply in the economy.

The Bureau de Change Average Exchange Rate (AEXR) displays a positive and statistically significant long-run coefficient (0.001879; $p = 0.002$). This outcome aligns with expectations for an import-dependent economy such as Nigeria, where episodes of exchange rate depreciation typically intensify inflationary pressures through imported inflation and the exchange rate pass-through mechanism. The positive coefficient therefore indicates that, over the study period, exchange rate depreciation contributed to higher consumer prices, reinforcing the role of external cost shocks in domestic inflation dynamics.

The coefficient of Nigerian Treasury Bills D(NTBs) is positive (0.068547) and statistically significant ($p = 0.0026$). Theoretically, Treasury Bills serve as an instrument for absorbing excess liquidity and controlling inflation. However, the positive association found in this study suggests that Treasury Bill operations may have been insufficient to curtail inflationary pressures, possibly due to the fiscal–monetary interplay in Nigeria where reliance on domestic debt issuance contributes indirectly to inflation. Treasury Certificates (TC)] also have a positive and statistically insignificant effect on inflation (coefficient = 3.54E-08; $p = 0.2430$). The relatively low coefficient indicates that changes in Treasury Certificates exert no influence on inflation dynamics in the short run. This finding highlights that TC does not influence inflation in the short-run, as fiscal financing through such instruments may not increase money supply as well as drive up the price level.

Finally, the error correction term [ECM (-1)] is negative (-0.038517) and statistically significant ($p = 0.0000$), thereby confirming the existence of a long–run equilibrium relationship among the variables. The coefficient implies that approximately 3.8 per cent of the disequilibrium in inflation is corrected within each period. This speed of adjustment is relatively slow, indicating that inflationary shocks in Nigeria persist for some time before convergence towards the long–run equilibrium path is achieved. In summary, the findings reveal that both monetary and exchange rate pass–through variables exert significant short–run effects on inflation in Nigeria. Narrow money supply and average exchange rate depreciation contribute positively to inflationary pressures, while the inter-bank rates; treasury certificate; Nigerian treasury bills; and ways and means advances are either exhibiting an unexpected negative relationship or are not statistically significant. The significance and negativity of the error correction term further validate the presence of a long–run equilibrium adjustment process, albeit with a slow speed of correction. This finding reinforces the need for disciplined monetary policy, prudent fiscal management, and robust macroeconomic coordination to achieve price stability in Nigeria.

Post Estimation Diagnostics

Residual Diagnostic

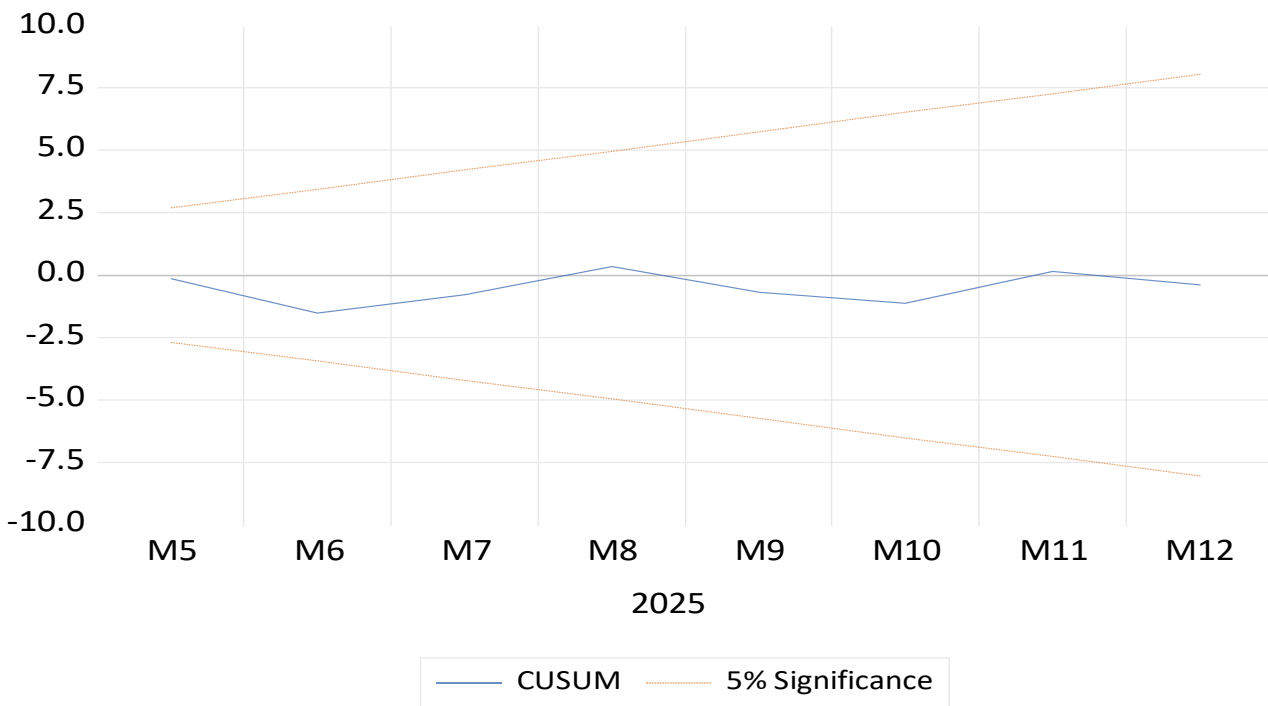
Residual diagnostic tests result help to confirm if the assumption of the Ordinary Least square estimates is satisfied. The error term must not be serially correlated, not heteroscedastic, and normally distributed.

Table 4.6: Residual Diagnostic Result

Test	Prob. F / Statistic	Prob. Value
Breusch-Godfrey Serial Correlation LM Test	0.8672	0.8583
Heteroskedasticity Test (ARCH)	0.003	0.003
Jarque-Bera Test (Normality)	—	0.0000

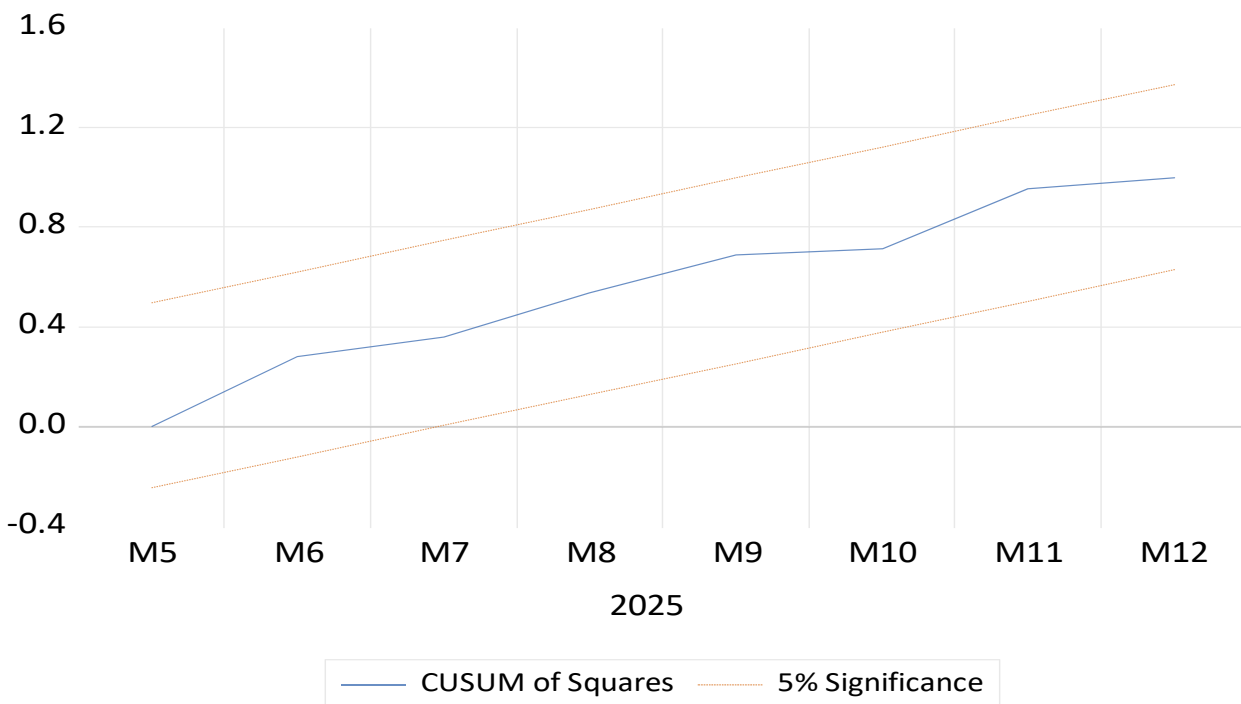
Stability of the Model

To test the stability of the estimated equations and parameters, cumulative sum (CUSUM) and Cumulative sum of squares (CUSUMSQ) tests were carried out. CUSUM test is based on the cumulative sum of the equation errors in the regression. On the other hand, CUSUMSQ used recursive double errors. The equation parameters are considered unstable if the whole sum of recursive errors falls outside the two critical lines. From Fig. 4.8, the CUSUM test was stable throughout the study period as the movement lies between 5% critical bounds. From fig. 4.9, CUSUMSQ was also stable during the period under review.



Source: Computed by author using EViews 13

Figure 4.8: Cumulative Sum



Source: Computed by author using EViews 13

Figure 4.9: Cumulative Sum of Squares

DISCUSSION OF FINDINGS

The findings of this study give a more profound insight into the factors that influence inflation in Nigeria, with a focus on the interaction between policy variables, including Narrow Money (M1), Inter-bank Rates (INB), Ways and Means Advances (WAMA), Treasury Bills (NTBs), Treasury Certificates (TC), and the Bureau de Change Average Exchange Rate (AEXR), and inflation. Both the short-run dynamics explained by the error

correction model (ECM) and the long-run dynamics described by the bound test reveal the various channels through which inflation can be achieved in Nigeria. The following section presents an analysis of these empirical findings in relation to the policy implications that can be drawn from them.

The findings indicate a positive and statistically significant association between the variables of money supply and inflation in the short run, as well as proof of bidirectional causation between them. The results support the monetarist theory, according to Friedman (1968), who posited that “inflation always and everywhere is a monetary phenomenon.” The process occurs through the effect of liquidity creation, whereby an increase in M1 leads to higher purchasing power, greater aggregate demand, and increased price levels due to supply-side limitations. In Nigeria, where there are frequent structural barriers affecting production, an increase in money supply easily becomes inflationary.

From the empirical results, it is clear that WAMA does not have any statistically significant impact on inflation for the period under investigation. From the above finding, it can be concluded that the contractionary nature of monetary policy adopted by the Central Bank of Nigeria was able to control inflation arising from expansionary fiscal policies due to use of WAMA. In effect, the findings fail to support the hypothesis of fiscal dominance advanced by Sargent and Wallace (1981) that excessive reliance on the monetary financing of fiscal deficit leads to high levels of inflation. Even though the Nigerian government continued to exceed the statutory limits on the issue of Ways and Means Advances, hence the expansion of the monetary base, the Central Bank of Nigeria has on numerous occasions adopted contractionary monetary policies in order to fight the inflation that resulted from these actions. However, past studies have shown that breach of statutory borrowing ceilings and over-reliance on central bank financing erode monetary credibility of the Central Bank of Nigeria and makes its achievement of primary mandate, price stability, difficult.

The findings indicate that both NTBs and TCs have insignificant influence on inflation rates. Although TC has a positive influence, NTB at lag one has an inverse relationship with inflation. These results contradict theoretical predictions because treasury bills are expected to be used as liquidity instruments. Nonetheless, in Nigeria’s case, the issue of domestic debt instruments has been multifunctional; apart from financing government expenditure, domestic debt has always been used as a means of monetary policy. This may be attributed to the fact that the domestic debt instruments were used primarily for liquidity management purposes and not for financing government deficits. The current research contradicts Catao and Terrones (2005). According to these authors, persistent government deficits that are financed by the issuance of domestic debt are associated with high levels of inflation in developing countries. In this respect, the problem facing policymakers is how to maintain the management of domestic debt instruments such that they continue to play the role of anti-inflationary instruments. For this purpose, cooperation between DMO and CBN becomes imperative.

The exchange rates movements affect the inflation only unilaterally, in line with the theory of the exchange rates pass through. In Nigeria, depreciation of the naira makes the imports of products more expensive and causes price growth among consumers. Similar conclusions were reached by Obadan (2006) and Aliyu et al. (2009), who highlighted the importance of the exchange rate shocks for generating inflation in Nigeria. Absence of reverse causality indicates that the exchange rates policy is not directly determined by inflation; instead, exchange rate fluctuations can be attributed to external reserves, oil price movements, and monetary policy interventions. Hence, stable exchange rate will help to minimize inflationary pressure. In order to achieve such an outcome, government should diversify exports and rely less on oil, accumulate foreign currency reserves to ensure stability amid any external shocks, and manage the exchange rate openly. Of course, certain degree of flexibility in managing exchange rate may be needed eventually, but now Nigeria needs measures aimed at preventing excessive volatility that directly affects inflation.

Essentially, the analysis indicates that inflation in Nigeria is not a consequence of a single channel but is rather due to the relationship between monetary expansion and changes in the exchange rate. The study thus lends credibility to a mixed approach that combines both the monetarist and exchange rate transmission theories. In the first place, money supply growth provides evidence for the monetarist theory, which holds that inflation is strongly associated with liquidity expansion. In the second place, the presence of inflation in the wake of tighter policies and the significance of exchange rates reinforce structuralist theory.

CONCLUSION AND RECOMMENDATIONS

Conclusion

The results of this study show that inflation in Nigeria is a persistent and multicausal process, which is mainly caused by the impact of money supply increase and depreciation of the exchange rate. As it follows from the results of this research, it is impossible to say that price increases are due to money supply only, since inflation in Nigeria is likely to rise because of a small amount of export-oriented production that leads to lower foreign-exchange receipts and thus higher exposure to external shocks. Thus, the link between domestic monetary situation and problems of foreign exchange supply plays a significant role in explaining the problem.

Thus, the results prove that excess liquidity generated by increased narrow money causes inflation demand. Moreover, depreciation of the exchange rate results in a transmission of external price shocks into the economy.

The fact that shocks are persistent and that the speed of adjustment is low, according to the results of the error correction model, shows that the problem of managing inflation in Nigeria cannot be solved by using such an instrument as monetary tightening. The conclusion that can be drawn is that inflation in Nigeria is not a “purely monetary phenomenon”.

Recommendations

Based on the findings of this study, the following recommendations are made:

1. The Central Bank of Nigeria should manage its liquidity by improving open market operations, sterilization and cash reserve requirements to avoid excess growth of the supply of money. Monetary expansion should be in harmony with the productive capacity of the economy to ensure that inflation is avoided.
2. Stabilization of the exchange rate should be achieved through export diversification, effective foreign reserves management and clear foreign exchange management policies. In the short-run, policies should be designed to curb excessive volatility to mitigate exchange rate pass-through into the inflation rate.
3. Sustained low inflation requires coordination between fiscal and monetary policies. There needs to be fiscal consolidation and prudent monetary policy. Import substitution will stabilize the exchange rate and minimize exchange rate pass-through into inflation.

REFERENCES

1. ACIOE. (2025). Nigeria's money supply records slight moderation in February 2025. Association of Chartered Institute of Online Economists.
2. Adaramola, A. O., & Dada, O. (2020). Impact of inflation on economic growth: Evidence from Nigeria. *Journal of Economics and Development Studies*, 8(2), 45–60.
3. Agu, C., & Oshim, E. (2024). Ways and means advances and inflation rate in Nigeria. *Journal of Economics and Sustainable Development*, 15(2), 45–58.
4. Agu, S. U., & Oshim, F. O. (2024). Effect of deficit budget financing sources on inflation rate in Nigeria. *Nigerian Journal of Economic Studies*, 19(1), 77–94.
5. Akinbobola, T. O. (2012). The dynamics of money supply, exchange rate and inflation in Nigeria. *Journal of Applied Finance and Banking*, 2(4), 117–141.
6. Aliyu, S. U. R., Yakub, M. U., Sanni, G. K., & Duke, O. O. (2009). Exchange rate pass-through in Nigeria: An empirical analysis. *Central Bank of Nigeria Economic and Financial Review*, 47(3), 1–25.
7. Alexander, A., Musa, A., & Salihu, B. (2015). Fiscal and monetary policy interaction and inflation dynamics in Nigeria. *CBN Journal of Applied Statistics*, 6(1), 85–107.
8. Anayochukwu, O. B. (2012). Fiscal deficits and inflation in Nigeria: The causality approach. *International Journal of Scientific & Technology Research*, 1(8), 6–12.
9. Ayenigba, A. (2025). Inflation dynamics and supply-side shocks in Nigeria. *Nigerian Economic Review*, 18(2), 44–61.

10. Ayenigba, B. (2025). A decade of fuel price fluctuations: The trend and their inflationary effects in Nigeria (2014–2024). *Journal of Energy Economics and Policy*, 15(1), 1–18.
11. Azubike, C., & Roland, E. (2025). Effects of monetary policy on inflation in Nigeria. *Central Bank Review of Economics*, 12(2), 33–52.
12. Babatunde, M. A., & Doguwa, S. I. (2012). Money supply and inflation in Nigeria. *CBN Economic and Financial Review*, 50(1), 65–83.
13. Bawa, S., Abdullahi, I. S., & Ibrahim, A. (2016). Analysis of inflation dynamics in Nigeria (1981–2015). *CBN Journal of Applied Statistics*, 7(1), 255–276.
14. Bryan, M. F. (1997). Inflation and the price level debate. In A. Hansen & P. Newman (Eds.), *Modern perspectives on inflation theory*. Routledge.
15. Central Bank of Nigeria. (2025). Statistical bulletin and money supply data. CBN.
16. Centre for the Study of the Economies of Africa. (2024). Nigeria's monetary expansion and inflationary pressures. CSEA.
17. Charles, J., Effiong, E., & Okon, A. (2022). Demand-pull and cost-push determinants of inflation in Nigeria. *Nigerian Journal of Economic and Social Studies*, 64(3), 201–219.
18. Charles, M., Okafor, I., & Ibrahim, L. (2022). Determinants of inflation in Nigeria. *African Journal of Economic Review*, 10(3), 120–138.
19. Catao, L. A. V., & Terrones, M. E. (2005). Fiscal deficits and inflation. *Journal of Monetary Economics*, 52(3), 529–554. <https://doi.org/10.1016/j.jmoneco.2004.06.003>
20. Duodu, E., Baidoo, S., Yusif, H., & Frimpong, K. (2022). Money supply, budget deficit and inflation dynamics in Ghana: An empirical investigation. *Journal of African Macroeconomic Studies*, 9(4), 201–220.
21. Ekpo, A. U., & Udobia, P. (2025). Dynamic interaction between fiscal deficit and inflation in Nigeria: Evidence from ARDL bounds test. *International Journal of Financial Economics*, 11(1), 25–44.
22. Hansen, A., & Newman, P. (2022). *Modern perspectives on inflation theory*. Routledge.
23. Ibrahim, M., Yakubu, M., & Suleiman, A. (2017). Money supply and inflation nexus in Nigeria: A short-run and long-run analysis. *CBN Journal of Applied Statistics*, 8(1), 125–147.
24. Inim, V., Ekpe, S., & Essien, U. (2020). Other determinants of inflation in Nigeria. *Nigerian Economic and Financial Review*, 58(2), 99–118.
25. Kiganda, E. O. (2014). Effect of inflation on economic growth in Kenya. *Journal of World Economic Research*, 3(6), 95–103.
26. Kwode, I. E. (2024). Inflationary trends and monetary policy response in Nigeria. *African Journal of Economic Review*, 12(1), 33–49.
27. Kwode, P. (2024). Central Bank intervention schemes and inclusive growth in Sub-Saharan Africa: Empirical evidence from Nigeria. *African Development Review*, 36(2), 145–163.
28. Kuma, T., & Gata, T. (2023). Factors affecting food price inflation in Ethiopia: An autoregressive distributed lag approach. *Ethiopian Journal of Economics*, 31(1), 55–73.
29. Ludwig von Mises. (1953). *The theory of money and credit*. Yale University Press.
30. Maitra, B., & Hossain, M. (2020). Causes and anti-inflationary policy perception in India. *Journal of Asian Economics*, 71, 101–115.
31. Milton Friedman. (1963). *Inflation: Causes and consequences*. Asia Publishing House.
32. Milton Friedman. (1968). The role of monetary policy. *American Economic Review*, 58(1), 1–17.
33. National Bureau of Statistics. (2025). Consumer price index reports and inflation statistics. NBS.
34. Obadan, M. I. (2006). Overview of exchange rate management in Nigeria from 1986 to date. *CBN Economic and Financial Review*, 44(3), 1–23.
35. Odusanya, I. A., & Atanda, A. A. (2010). Analysis of inflation and its determinant in Nigeria. *Pakistan Journal of Social Sciences*, 7(2), 97–100.
36. Okeke, C. (2023). Fiscal accommodation and inflation persistence in Nigeria. *African Journal of Economic Policy*, 30(1), 77–95.
37. Okotori, C. A. (2019). Money supply and inflation nexus in Nigeria. *International Journal of Innovative Finance and Economics Research*, 7(1), 34–42.
38. Okotori, S. (2019). Dynamics of monetary policy and inflation in Nigeria. *CBN Economic and Financial Review*, 57(4), 1–20.

39. Olaoye, F., & Anyanwu, K. (2024). Monetary growth and inflation transmission mechanism in Nigeria. *Journal of African Macroeconomic Studies*, 12(3), 88–109.
40. O'Neill, R., Ralph, J., & Smith, P. (2017). *Measuring inflation: The consumer price index and its applications*. Oxford University Press.
41. Omotosho, B. S., & Doguwa, S. I. (2012). Understanding the dynamics of inflation volatility in Nigeria: A GARCH perspective. *CBN Journal of Applied Statistics*, 3(2), 51–74.
42. Punch Newspapers. (2024, September 11). Nigeria's broad money supply rises sharply amid fiscal expansion.
43. Punch Newspapers. (2025). CBN tightening measures and liquidity conditions in Nigeria.
44. Reuters. (2025). Nigeria's inflation rate slows amid tighter monetary policy and exchange rate stabilization.
45. Sargent, T. J., & Wallace, N. (1981). Some unpleasant monetarist arithmetic. *Federal Reserve Bank of Minneapolis Quarterly Review*, 5(3), 1–17.
46. Sola, O., & Peter, A. (2013). Money supply and inflation in Nigeria: Implications for national development. *Modern Economy*, 4(11), 161–170.
47. Soliman, A., Khan, R., & Patel, S. (2023). Asymmetric effects of energy inflation, Agri-inflation and CPI on agricultural output: Evidence from NARDL and SVAR models for the UK. *Energy Economics Letters*, 8(3), 210–229.
48. Udo, A. B., Effiong, C. E., & Akpan, J. E. (2019). Political instability and inflation in Nigeria. *International Journal of Development and Economic Sustainability*, 7(3), 15–29.
49. YCharts. (2024). Nigeria inflation rate historical data. <https://ycharts.com>