

Effect of exchange rate on inflation in Nigeria

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Abstract

Previous studies on inflation determinants in Nigeria present mixed findings. For instance, Ilemona and Ibrahim (2017) and Inam (2015) report that the exchange rate and money supply exert a negative and insignificant influence on inflation. Conversely, Nuhu (2021) finds these same variables to have a positive and significant impact. Building on these divergent results, this study examines the impact of exchange rate, money supply, interest rate, and government expenditure on Nigeria's inflation rate, utilising annual secondary data from 1995 to 2024. The ARDL model and the ECM were employed to capture both short-term and long-term dynamics among the variables. Findings reveal that the Exchange Rate significantly and positively affects Inflation at the first lag, while at the second lag, its effect remains positive but insignificant. In the long run, however, the Exchange Rate shows a negative, insignificant relationship with inflation. Government Expenditure and Money Supply both show positive and significant long-term effects on inflation, whereas Interest Rates display a negative but insignificant impact. The ARDL bounds test confirms the existence of a long-run equilibrium relationship among the variables under study. The study recommends that policymakers strengthen their understanding of exchange rate transmission mechanisms. The Central Bank of Nigeria should adopt measures to control money supply growth, while the government should streamline public sector spending to ease inflationary pressures.

Keywords: Inflation; Exchange Rate; Money Supply; Interest Rate; Government Expenditure; ARDL; ECM; Nigeria.

JEL Classification: E31, E52, E62, F31, C32, O55

1. Introduction

The exchange rate holds a central role in achieving national economic objectives, as it directly influences both domestic and international economic activities, including foreign investment and trade. This explains why researchers, investors, and policymakers closely monitor exchange rate movements.

Among macroeconomic indicators, the exchange rate is one of the most scrutinised and actively managed by governments. However, due to the market's inherent structural dynamics, exchange rate volatility is difficult to measure precisely as it fluctuates unpredictably (David 2016). Economists agree that prolonged and substantial exchange rate misalignment is increasingly viewed as a driver of macroeconomic instability, a phenomenon that is supported by Nigeria's current economic challenges. To restore external balance, experts advocate for a combination of demand management strategies and a devaluation of the exchange rate. Every area of the foreign currency market in Nigeria has seen a steady decrease in the value of the naira, including the official, Bureau de Change, and the parallel markets.

Inflation, on the other hand, is a widespread phenomenon affecting countries across the globe, with variations in its duration, causes, and impact depending on each nation's economic conditions. Regardless of a country's level of development, emerging economies consistently experience rising prices. While inflation may appear irregular in some

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nations, it remains persistent in others. A key priority for economic policy in both advanced and developing nations is to maintain stable growth alongside low, single-digit inflation. This is because high inflation can disrupt the effective functioning of a market economy (Alabi, 2021). Moreover, inflation significantly undermines per capita income, a concern that has long preoccupied researchers, policymakers, and governments, due to its historical connection with economic well-being.

Ensuring a stable and efficient financial system across the country is one of the monetary policy committee's duties in Nigeria. The Central Bank of Nigeria endeavours to maintain and advance price stability (CBN Act, 2017). This is because it is thought that monetary policies help the economy grow sustainably and then expand by increasing the value of money and preventing inflation and other macroeconomic hazards. On September 24, 2024, the Monetary Policy Rate (MPR) was increased by the Central Bank in an effort to decrease the amount of money in circulation in the economy to 27.25% from 26.75% by 50 basis points (CBN 2024).

The depreciation of the Nigerian naira began in 1986 with the introduction of the Structural Adjustment Programme (SAP), a pivotal moment in the country's economic history over the past three decades. A central feature of the reform was the move away from fixed exchange rates toward a more flexible, market-driven exchange rate system. This transition was based on the assumption that flexible exchange rates would stimulate sustainable growth. However, the anticipated multiplier effects closely reflect the country's current economic challenges.

The adoption of a floating exchange rate system in 1986 marked a significant shift in Nigeria's monetary policy, following a decline in the naira's value from ₦0.61 in 1981 to ₦2.02 in 1986. By 1990, the exchange rate had depreciated further, dropping from ₦7.91 to ₦81.20 per dollar by 1995. In 1994, however, a guided deregulation policy was introduced, pegging the naira at ₦21.886. Subsequent years saw continued depreciation: ₦93.95 in 1999, ₦120.97 in 2002, ₦129.02 in 2003, and ₦135.50 in 2004. Although there was a temporary appreciation in 2005 to ₦132.15 and in 2008 to ₦118.57, the global financial crisis in late 2008 triggered a renewed decline, reaching ₦150.01 by the end of 2009. From 2013 onwards, the naira continued its downward trajectory, falling to ₦157.30 in 2013, ₦158.55 in 2014, and ₦193.28 in 2015. In 2016, exchange rates rose from ₦197 in Q1 to ₦283 in Q2, and stabilised at ₦305 in Q3 and Q4 (CBN, 2020). More recently, in early 2023, the exchange rate experienced dramatic and unpredictable fluctuations, ranging from ₦1000 to ₦1900 per dollar, which led to a severe economic crisis and a noticeable decline in living standards.

The devaluation of the Nigerian currency through the SAP programme encouraged imports, diminished the competitiveness of non-oil exports, and increased reliance on foreign inputs rather than fostering domestic production. When a country imports more than it exports, it experiences an unfavourable balance of payments (BOP), which generally leads to a depreciation of its currency in international markets and subsequently causes inflation domestically.

1.1. Statement of the problem

The fluctuation of exchange rates in Nigeria has been a major concern for businesses, policymakers, and households due to its possible impact on inflation. Nigeria, being an import-dependent economy, is highly sensitive to exchange rate movements, as the cost of imported goods and services directly affects domestic price levels. Despite efforts by the Central Bank of Nigeria (CBN) to stabilise the exchange rate through monetary policies such as the Second-Tier Foreign Exchange Market (SFEM) in 1986 (SFEM), Nigerian Autonomous Foreign Exchange Market (NAFEM) in 2017 and most recently the willing buyer, willing seller exchange rate model aimed at bridging the gap between the official exchange rates and the black market rates (CBN 2023), inflation remains persistently high, raising questions about the effectiveness of these policies.

The current economic situation in the country, in relation to the exchange rate and inflation rate, motivates this study to ascertain why Nigeria's monetary authorities are working so hard to maintain the exchange rate balances and raise living conditions for the populace. This study aims to investigate the impact of exchange rate fluctuations on inflation in Nigeria, focusing on how the exchange rate, money supply, interest rate, and government expenditure influence price stability in Nigeria.

Objectives of the study

The broad objective of this study is to examine the effect of the exchange rate on inflation in Nigeria, while the specific objectives are to:

- Examine the impact of the exchange rate on inflation in Nigeria.
- Examine the impact of money supply on inflation in Nigeria.

- Analyse the impact of other drivers of inflation, such as interest rate and government expenditure in Nigeria.

1.2. Statement of hypothesis

To evaluate and efficiently analyse the objective of this study, the following hypotheses were formulated as guides, and they are all in null forms:

- H_{01} : The exchange rate does not have any significant effect on the inflation rate in Nigeria.
- H_{02} : Money supply does not have any long-run significant effect on the inflation rate in Nigeria.
- H_{03} : The interest rate does not have any long-run significant effect on the inflation rate in Nigeria.
- H_{04} : Government expenditure does not have any long-run significant effect on the inflation rate in Nigeria.

2. Literature review

2.1. Concept of Inflation

Inflation is a phenomenon that affects everybody in one way or another. Following Blanchard (2006), inflation refers to a continuous rise in the general level of prices within the economy. It is the persistent tendency for the general price to rise.

Inflation occurs when the prices of goods and services consistently increase over time.

As published by the Nigeria Bureau of Statistics (NBS), in January 2024, the headline inflation rate increased to 29.90% relative to the December 2023 headline inflation rate, which was 28.92%. Looking at the movement, the January 2024 headline inflation rate showed an increase of 0.98% points when compared to December 2023. This means that the general price of goods and services has increased by an additional 0.98% from the previous month.

Macroeconomists consider two measures to be measures of the price level. These measures are the GDP deflator and the Consumer Price Index. As a measure of the general price level, the GDP deflator is defined as: $P_t = \text{Nominal GDP}_t / \text{Real GDP}_t$. The GDP deflator gives the average price of final goods produced in the economy (Vancouver Community College), while the Consumer Price Index (CPI) measures the average change over time in the prices paid by consumers for a representative basket of goods and services (U.S. Bureau of Labour Statistics). The CPI measures inflation as experienced by consumers in their day-to-day living expenses.

Inflation has significant effects on the economy, primarily by decreasing the purchasing power of money and affecting various aspects of financial stability and economic activity. It can lead to higher interest rates, reduced consumer spending, and increased inequality, while also impacting businesses and the value of assets (Bashir 2022). Inflation affects different people differently. This is because of the fall in the value of money. When prices rise, or the value of money falls, some groups of society gain, some lose, and some stand in between. The fixed-income earners lose during inflation, while the flexible-income group gain during inflation.

Inflation can be either anticipated or unanticipated. When it is anticipated, all groups and individuals in the economy expect it and can gain full compensation for it. In this case, the inflation will have no appreciable effect on the distribution of income and wealth in the economy (Gulde 1995). However, when it is unexpected due to certain reasons, such as economic agents failing to predict the inflation rate, there will be a redistribution effect; that is, some people will gain while some will lose (Doepke and Schneider 2006). Some of the possible redistribution effects of anticipated inflation are: Inflation redistributes income from fixed-income earners to flexible-income earners, lenders lose, and borrowers gain, as the real value of the loan will be less than the initial value when the loan was given out; equity holders or investors gain during inflation. Inflation boosts business activities and increases the profitability of the company.

A standard approach to analysing the causes of inflation is to examine the link between the money supply (M) and the general price level (P) using the accounting identity called the "Equation of Exchange" $MV=PY$. Where V denotes the income velocity of money (the number of times per year the average naira turns over in transactions for final goods and services), and Y denotes the economy's real income (as measured by real GDP). V is defined as PY/M , the ratio of nominal income to money balances. The quantity theory of money maintained that a higher or lower level of M does not cause any permanent changes in Y or in the desired V, in other words, it does not permanently affect the real demand to hold money. It follows that, in the long run, a larger M means a proportionally higher P.

Friedman (1992) argued that “Inflation is always and everywhere a monetary phenomenon”. This implies that sustained inflation has historically always been due to sustained money supply growth, not to sustained velocity growth or sustained negative growth in real income. Other causes of inflation include: an increase in public expenditure, an increase in consumer spending, cheap monetary policy, expansion of the private sector, which tends to raise aggregate demand, repayment of public debt, national calamities, supply chain disruptions, etc.

2.1.1. Headline vs Core inflation

Headline inflation measures the total inflation rate, including all items in the Consumer Price Index (CPI), such as food and energy. It reflects the overall cost of living and can be highly volatile due to fluctuations in fuel and food prices (Kenton and Boyle, 2024). Core inflation excludes food and energy prices to provide a more stable measure of long-term inflation trends. Since food and fuel prices tend to fluctuate due to external factors like weather or geopolitical events, core inflation helps policymakers and economists focus on underlying inflationary pressures (The Economic Times, 2021).

2.1.2. Exchange Rate

The exchange rate is the relative price of one currency expressed in terms of another currency (or group of currencies). The exchange rate is the price of foreign currency. That is the price at which one currency is exchanged for another currency. Exchange is the amount of a country's currency that can be exchanged for another country's currency. For example, the exchange rate between the Euro and the US dollar is usually stated in dollars per euro (\$/€); an increase in this exchange rate from, say, \$2.10 to say \$2.50 is a depreciation of the dollar. The exchange rate between the Nigerian Naira and the US dollar is usually stated in naira per dollar (₦/\$); an increase in this exchange rate from, say, ₦108 to ₦110 is an appreciation of the dollar (Sesan 2013).

The exchange rate is a vital macroeconomic indicator used in determining the overall performance of an economy. It remains a key price variable in any economy and performs the dual role of maintaining international competitiveness and serving as a nominal anchor for domestic prices (Mordi, 2006). The exchange rate is usually defined under two major conventions: the direct or indirect method. The direct convention expresses the exchange rate as the price of home currency in terms of one unit of foreign currency, e.g., N1550=\$1, while the indirect convention expresses the exchange rate as the price of foreign currency in terms of one unit of home currency, for example, N1=\$0.00064.

These conventions are particularly important when emphasising the performance of a currency, that is, in terms of appreciation or depreciation, concerning the exchange rate regime in practice, and in analysing a country's monetary policy. Under the direct convention, as practised in Nigeria, the exchange rate is assumed to appreciate or depreciate when the number of units of the naira decreases or increases, respectively, in relation to the foreign currency.

2.1.3. Exchange Rate System

An exchange rate system governs how currencies are valued relative to one another, facilitating international transactions. It consists of rules, arrangements, and institutions that enable payments between nations. There are two primary types:

2.1.4. Fixed Exchange Rates

A fixed (or pegged) exchange rate is set and maintained by a country's central bank against a major currency like the U.S. dollar, euro, or yen. To uphold this rate, the central bank actively buys and sells its currency in exchange for the pegged currency. If, for example, it is determined that the value of a single unit of local currency is equal to US\$3, the central bank will have to ensure that it can supply the market with those dollars (Mitchell 2024). Maintaining stability requires high foreign reserves, which allow the bank to regulate the money supply and counter inflation or deflation by releasing the reserve into and out of the market. If needed, the central bank can adjust the official exchange rate to accommodate economic shifts. This system provides predictability in trade and investment but demands careful monetary management (Fapetua, Oluwoleb, Olokoyoc, Olabisid and Owoeye 2023).

2.1.5. Floating/Flexible Exchange Rates

A floating exchange rate, on the other hand, is determined by market forces, specifically supply and demand in the foreign exchange market (FasterCapital 2025). Unlike a fixed rate, monetary authorities do not set the exchange rate but let it adjust naturally. It is often called “self-correcting” because fluctuations help balance trade and employment. For example, if a currency's demand drops, its value falls, making imports more expensive and encouraging domestic production and job growth.

2.1.6. Nominal vs Real Exchange Rate

The nominal exchange rate represents the amount of domestic currency required to buy one unit of a foreign currency. It indicates the current market value of a currency, without taking inflation or differences in purchasing power into account. It simply reflects the market price of a currency at a given time (Borad, 2022). The real exchange rate, on the other hand, accounts for inflation and represents the actual purchasing power of a currency against another. It helps determine how many goods and services in one country can be exchanged for those in another country (Quickonomics 2022).

2.1.7. Exchange Rate Pass-Through (ERPT)

ERPT is the degree to which changes in an exchange rate affect the prices of goods, both for imports and exports. Goldberg and Knetter (1997) defined exchange rate pass-through (ERPT) as the percentage change in local currency import prices resulting from a one per cent change in the exchange rate between the exporting and importing economies. ERPT is generally used to refer to the effect of exchange rate changes on import and export prices, consumer prices, investments or trade volumes (Frimpong and Adam, 2010). When the value of a currency fluctuates, it can lead to either an increase or a decrease in the cost of foreign goods for domestic consumers or businesses. Exchange Rate Pass-Through (ERPT) measures how exchange rate fluctuations affect the prices of imported and exported goods. Its impact depends on market conditions, supply chain costs, and company pricing strategies.

There are two types of ERPT: Partial and full ERPT. With partial pass-through, changes in the exchange rate only slightly impact consumer prices. This happens when businesses absorb some of the exchange rate shifts to remain competitive. On the other hand, full pass-through occurs when currency shifts are fully reflected in consumer prices, making imports more expensive or cheaper depending on currency movements (Gratton 2024).

2.2. Review of Theories

2.2.1. The Classical theory of inflation

This was the view of classical economists, which was propounded by Irving Fisher in 1911. According to this theory, inflation occurs in direct proportion to an increase in the money supply, given the level of output. The classical theory of inflation derives from the quantity theory of money. This was illustrated using the equation of exchange of Fisher. The Fisher equation is given as: $MV=PT$

Where; M = Money Supply, P = Price level, V = Velocity of circulation, T = Volume of Transaction

Given that the velocity and volume of transactions are held constant and the economy is in full employment, the rate of increase in money supply leads to the same level of increase in price level. Their conclusion suggests that controlling inflation requires reducing the money supply, based on the assumption that the economy always operates in equilibrium. According to the classical view, an increase in money supply leads to higher demand for goods, pushing prices up until equilibrium is restored without affecting the real economy (Mason 1996).

The classical theory has some merit in the domestic and external economy. In the domestic economy, the theory links money supply directly to price levels, making inflation easier to anticipate and control. It encourages fiscal discipline by advocating for limited government interference and balanced budgets, which can reduce long-term inflationary pressures. It supports long-run neutrality of money; it suggests that money only affects prices, not output or employment in the long run, which is useful for long-term economic planning (Adeniyi 2024). On the external economy, it stabilises a country's currency; when inflation is low and predictable, foreign investors gain confidence in the currency, boosting foreign direct investment, it encourages trade competitiveness, maintaining low inflation preserves export price stability, and reduces volatility in international trade markets (Louis 2023).

The classical theory model has some shortcomings, as it often struggles with real-world complexities. The theory neglects Short-Term Fluctuations, it assumes full employment and ignores demand-side shocks, which are crucial during recessions, it overemphasises monetary factors of inflation and downplays the role of cost-push factors, like rising wages or commodity prices, it calls for minimal government intervention, which may hinder proactive responses during economic crises, it overlooks economic rigidities like price stickiness and wage constraints, which can slow the adjustment process. On the external economy, the theory ignores global price movements, it doesn't account for external inflationary pressures like imported goods or global commodity shifts, and it over-relied on a stable money supply, which may lead to undervaluation or overvaluation of currency, affecting trade balances (FasterCapital 2024).

2.2.2. *The Keynesian Theory of Inflation.*

The Classical economists argue that inflation stems from an excess money supply, whereas Keynesians believe that inflation results from rising aggregate demand and higher production costs. Keynes developed an alternative theory emphasising economic rigidities, particularly in the labour market, where workers resist wage cuts, and firms may increase output rather than adjust prices (Sesan 2013). Keynes classified inflation into two types: Demand-Pull inflation and Cost-Push inflation (Madito 2017). Demand-pull inflation occurs when aggregate demand exceeds supply, especially near full employment. Some causes of the demand-pull inflation include tax cuts, lower interest rates, increased exports, and government borrowing. A cut in personal income tax would increase disposable income and contribute to a rise in consumer expenditure (Rehal 2024). A reduction in the interest rate might encourage an increase in investment as well as lead to greater consumer spending on consumer durables (Perry 2016). A rise in foreigners' income may lead to an increase in exports of a country. On the other hand, Cost-Push Inflation is driven by rising production costs, mainly wage increases. Strong labour unions demanding higher wages above productivity can accelerate inflation (Madito 2017).

Keynesian theory of inflation has some advantages for the domestic and external economy. In the domestic economy, the theory recognises the impact of short-term fluctuations and suggests the use of fiscal policies to stabilise demand. It prioritises job creation and full employment, making inflation a manageable consequence of economic growth. It advocates active government intervention, especially in times of recession or high unemployment, to restore stability. Externally, it allows governments to adjust spending and taxation to address global trade shocks and currency fluctuations, and it helps in maintaining demand for exports during global downturns through stimulus policies (Investopedia Team; Accounting Insights Team).

The Keynesian theory has some limitations, particularly when imbalances emerge. Excessive government spending may cause deficits and unsustainable debt levels. The theory focuses heavily on demand-side causes of inflation and underplays cost-push factors (like rising input costs). It focuses more on short-term and sometimes undermines long-term price stability in favour of short-term stimulus. Externally, large deficits may erode investor confidence, weaken the currency and increase import costs. Stimulating domestic consumption may lead to increased imports, widening trade imbalances (Jahan, Mahmud, and Papageorgiou 2014).

2.2.3. *Monetarist Theory of Inflation*

The monetarist view is a modified version of the classical quantity theory of money. The monetarist, led by Milton Friedman, holds that the general price level rises only due to an increase in the money supply. Hence, their dictum "Inflation is always an everywhere monetary phenomenon and can only be produced by a more rapid growth in the quantity of money than in output (Friedman 1970).

Merits of the monetarist theory include: Clear policy direction; the theory offers a straightforward link between money supply growth and inflation, making central bank policies more transparent. It makes inflation controls predictable. Inflation can be easily predicted, and price stability can be maintained. The theory promotes free markets and limited fiscal involvement, allowing private sector efficiency. Externally, it encourages exchange rate stability; control of inflation through money supply helps in maintaining consistent exchange rates and boosting investor confidence. It improves trade relations and enhances foreign investment (Pettinger 2017; CFI team 2025).

The monetarist theory of inflation falls short in addressing the dynamic aspects of real-world economies. The theory is too simplified; the theory assumes a direct and stable relationship between money supply and inflation, which isn't always the case due to the velocity of money. It disregards demand shocks. The theory is limited in crises; restrictive monetary policy may worsen recessions or slow recovery during economic downturns. Externally, the theory is vulnerable to global economic shock; focusing only on domestic money supply ignores imported inflation from rising global commodity prices. Strict monetary targets can restrict exchange rate flexibility, affecting competitiveness. Hesitation to expand the money supply could hamper responses to global economic shocks, like pandemics or financial crises (FasterCapital 2025; CPI Team 2025).

2.2.4. *The Elasticity Approach*

The elasticity approach is associated with the Marshall-Lerner condition. It studies the conditions under which exchange rate changes restore equilibrium in the Balance of Payment (BOP) by devaluing a country's currency. It states that: If the sum of price elasticities of exports and imports ($ex + em$) is greater than 1, devaluation will improve the BOP. If the sum is less than 1, devaluation will worsen the BOP. If the sum equals 1, devaluation will have no effect (Timothy, Mbah and Chigozie 2016). However, economists agree that high inflation can still worsen the BOP, even if the Marshall-

Lerner condition is met, and that devaluation often worsens the BOP in the short run before correcting itself in the long run.

The elasticity theory on the domestic economy has some advantages to the domestic and external economy, which include: The theory helps governments decide whether devaluation or revaluation will be beneficial for correcting trade deficits. It focuses on market responses. It promotes export; it encourages policies that make exports more competitive through pricing strategies. Externally, it improves the trade balance. It encourages efficient resource allocation and fosters Global Competitiveness. The elasticity theory has some limitations, such as elasticity uncertainty; in reality, determining accurate elasticity values is difficult and varies over time. The theory is ineffective in the short term; if demand is inelastic in the short run, devaluation may worsen the trade balance before it improves. Currency depreciation can lead to higher import costs, increasing domestic inflation. Externally, the theory neglects capital flows, it overlooks supply-side constraints like inadequate infrastructure or low productivity that hinder export growth and it may lead to trade wars as competing countries might respond with trade barriers or currency manipulations, reducing effectiveness (Prati, Ricci, Christiansen, Tokarick, and Tressel 2011).

2.2.5. The Monetary Approach

The theory is grounded in classical economic thought and widely adopted by the monetarists. The monetary approach treats the balance of payments as a monetary phenomenon and centres on the relationship between domestic money supply and demand (Timothy, Mbah and Chigozie 2016). The monetary policy is effective under a flexible exchange rate regime but ineffective under a fixed exchange rate regime (Jhingan 1983). Consider the effect of monetary policy under floating exchange rates with relative capital mobility. If the government increases the monetary base, the interest rate will fall, and income will rise. With a fall in interest rate, capital will flow out of the economy, leading to an increase in the demand for foreign currency, and the country's exchange rate will depreciate. Hence, export volume will rise and import volume will fall as a result of the depreciating exchange rate; the product market improves as the BOP also improves, giving rise to both internal and external balance.

Merits of the monetary approach on the domestic economy include: Clear monetary linkage; the model directly connects money supply to external sector performance, allowing central banks to manage inflation and deficits simultaneously. It encourages responsible money creation and control, helping to fight inflation (Osuka, Otiwu and Kalu 2024). Externally, it makes the exchange rate predictable. It focuses on global price stability. It supports international monetary cooperation, especially under fixed exchange rate systems. It reduces the need for trade restrictions. The monetary approach has some limitations on the domestic economy, such as assuming stable money demand; in reality, demand for money varies due to tech, preferences, and income changes. It neglects real sector variables; the model overlooks trade policies, productivity, and investment, which heavily influence the balance of payments. It doesn't adapt well to economies in transition or with financial market imperfections. Externally, it is less effective in handling sudden trade shocks, exchange rate volatility, or capital flight in the short run. It ignores capital account effects; it focuses mainly on the current account, leaving out portfolio flows and foreign investment. It assumes free capital mobility and price flexibility, which is rare in many developing nations (Macdonald and Taylor 1993).

2.3. Empirical Review

Numerous empirical studies that have been undertaken to identify the possible determinants of inflation in Nigeria and elsewhere have identified the exchange rate as an inflation-determining variable. Olabisi and Akeju (2024) examined the relationships between exchange rate volatility, inflation, and the Nigerian economy and determined the impact of the interaction of exchange rate volatility and inflation on the Nigerian economy and concluded that exchange rate volatility and inflation adversely affect the growth of the Nigerian economy. Orisdare and Olofin (2024) investigated the impact of exchange rate volatility on productivity in Nigeria. The findings from the study revealed that exchange rate volatility negatively impacts productivity in Nigeria in both the short run and the long run. Falana, Akinsanya, Awoyinka, Sopelu, Adewoye and Lawal (2024) evaluated the impact of exchange rate volatility on food price inflation in Nigeria. Findings from the study revealed that a notable positive correlation exists between exchange rate volatility and food price inflation. Mbwambo and Mchukwa (2024) examined the effects of exchange rate volatility and inflation on Tanzania's trade balance. Findings from the study revealed that, in the long run, Inflation, Foreign Direct Investment, and Gross Domestic Product have a positive impact on the trade balance, while the Exchange Rate exerts a negative influence.

Harnphattananusorn (2023) investigated the impact of exchange rate volatility on Thailand's economic growth. The findings of the study suggested that exchange rate volatility has a negative impact on Thailand's economic growth. The analysis also revealed a positive relationship between inflation and economic growth. Umoru, Akpoviroro, and Effiong (2023) examined the determinants of exchange rate volatility based on evidence from selected African countries: Niger,

Sudan, Cameroon, Equatorial Guinea, Tunisia, Congo, and Côte d'Ivoire and concluded that the determinants of exchange rate volatility among African countries vary depending on the specific country. Citci and Kaya (2023) analysed the impact of exchange rate uncertainty on inflation, considering 149 countries over the period 1980-2017. The result from the study showed that exchange rate uncertainty has a significant and positive effect on inflation. Olamide, Ogujiuba, and Maredza (2022) examined the influence of exchange rate instability on the inflation growth nexus of the Southern African Development Community region. Findings from the study revealed that exchange rate instability affects the economic growth of the SADC negatively.

Bashir (2022) investigated the impact of inflation on economic growth in Nigeria. Findings from the ARDL model employed revealed that inflation, interest rate and money supply exert a significant negative impact on economic growth, while government consumption expenditure exerts a significant positive impact on economic growth. Musa (2021) examined the effect of exchange rate volatility on inflation in Nigeria. The results from VECM indicated that money supply (MS) and nominal exchange rate (NER) exerted a positive and significant effect on the inflation rate in Nigeria during the period under investigation. Yakub, Sani, Obiezue and Aliyu (2019) investigated the impact of exchange rate volatility on trade flows in Nigeria. The study found that exchange rate volatility affected Nigeria's trade flows negatively in the short run but did not in the long run.

Gidigbi, Babarinde and Lawan (2018) investigated the impact of exchange rate volatility pass-through on price inflation in Nigeria. The findings indicated that exchange rate volatility does not have a short-run effect on inflation in Nigeria, but rather other factors, such as trade openness, foreign direct investment, government expenditure and money supply, contributed to changes in inflation more significantly than exchange rate volatility. Ilemona and Ibrahim (2017) assessed the impacts of Exchange Rate Volatility on Inflationary Rate in Nigeria. The study found that exchange rate volatility has a negative relationship with inflation. Inam (2015), reached similar conclusion the influence of exchange rate volatility on inflation in Nigeria.

2.4. Gaps in the Literature

Former studies on the impact of the exchange rate on inflation in Nigeria have some limitations. Most researchers like Musa (2021), Olabisi and Akeju (2024), Ilemona and Ibrahim (2017) and Inam (2015) in their studies considered interest rate, Fiscal deficit, import, export, gross capital formation and official exchange as their independent variables. The influence of government expenditure on inflation was not considered. Findings from their study are conflicting, while Ilemona and Ibrahim (2017) and Inam (2017) found that the exchange rate and money supply have a negative and insignificant effect on inflation in Nigeria, Nuhu (2021) found that the exchange rate and money supply have a positive and significant effect on the inflation rate in Nigeria. Given this weakness in the literature, this study takes a step further and examines how the exchange rate, money supply, interest rate and government expenditure influenced the inflation rate in Nigeria, utilising yearly secondary data from 1995 to 2024. The Auto-Regressive Distributed Lag Model (ARDL) and the Error Correction Model (ECM) will be employed to determine the long-run relationship between the variables.

2.5. Theoretical Framework

The study will rely on the Monetarist theory championed by Milton Friedman. The theory assumes that inflation and the exchange rate are determined by the relationship between the domestic money supply and demand. The theory holds that the general price level rises only due to an increase in the money supply. When a country expands its monetary policy, it leads to higher inflation, which in turn depreciates the country's currency. On the other hand, when a country tightens its monetary policy, it reduces inflation, which in turn appreciates the country's currency and helps maintain a stronger currency in the international market. It is presumed that the monetary policy is effective under a flexible exchange rate regime; hence, it is justifiable to adopt the monetary theory for this study, as Nigeria currently operates a flexible (floating) exchange rate system.

3. Methodology

The study is designed to address the fundamental research questions raised, the objectives, and make a decision on the hypotheses stated. However, the study specified the autoregressive distributed lag (ARDL) model because it enables the study to analyse both the short and long run effects among the variables in the model.

3.1. Model Specification

The relationship that exists between the exchange rate and inflation rate in Nigeria is dynamic, which means the two variables influence each other in dynamic ways, and this dynamic relationship catalysed the interest of this study to

take a step further and examine how the exchange rate, money supply, interest rate and government expenditure influenced the inflation rate in Nigeria. Therefore, a model is adapted from Olabisi and Akeju (2024) titled; The Impact of Exchange Rate Volatility and Inflation on the Nigerian Economy. The econometric model is as follows;

$$GDP_t = a_2 + \sum_{i=1}^k b_2 EXC_{t-1} + \sum_{i=1}^k c_2 INFR_{t-1} + U_{t2} \dots \dots \dots (3.1)$$

3.2. Auto-Regressive Distributed Lag Model (ARDL)

$$INFL_t = f(EXC, INTR, MS, GEXP) \dots \dots \dots (3.2)$$

$$INFL_t = a_3 + \sum_{i=1}^k b_3 INFL_{t-1} + \sum_{i=1}^k c_3 EXC_{t-1} + \sum_{i=1}^k d_3 INTR_{t-1} + \sum_{i=1}^k e_3 MS_{t-1} + \sum_{i=1}^k f_3 GEXP_{t-1} + U_{t3} \dots \dots \dots (3.3)$$

Error Correction Model (ECM)

$$\Delta INFL_t = a_0 + \sum_{i=1}^a (\partial_0 \Delta INFL_{t-1}) + \sum_{i=0}^b \partial_1 \Delta EXC_{t-1} + \sum_{i=0}^c \partial_1 \Delta INTR_{t-1} + \sum_{i=1}^k e_3 MS_{t-1} + \sum_{i=1}^k f_3 GEXP_{t-1} + \mu ECM_t \dots \dots (3.4)$$

Where: INFL = Inflation rate, EXC = Exchange rate, INTR = Interest rate, MS = Money Supply

GEXP = Government Expenditure, U_t = Error term

3.3. Unit Root Test

Two standard procedures of unit root test namely the Augmented Dickey Fuller (ADF) and Phillips-Perron (PP), tests will be employed as a prior diagnostic test before the estimation of the model to examine the stochastic time series process properties of exchange rate volatility and inflation in Nigeria. This enables us to avoid the problems of spurious result that are associated with non-stationary time series models.

3.3.1. Cointegration Test

The Cointegration Test is employed to determine the number of co-integrating vectors using Johansen's methodology with two different test statistics namely the trace test statistic and the maximum Eigen-value test statistic. The trace test (x trace) tests the null hypothesis that the number of distinct cointegrating vectors is less than or equal to q against a general alternative $q = r$. The maximum eigenvalue test ($\lambda \max$) test the null hypothesis that there are several cointegrating vectors against the alternative that $r + 1$ cointegrating vector.

Johansen and Juselius co-integration methodology takes its starting point in

$$Y_t = A_1 Y_{t-1} + \dots + A_p Y_{t-p} + \beta X_t + v_t \dots \dots \dots (3.5)$$

Where,

Y_t is a k vector of non-stationary $I(1)$ variables

X_t is a d vector of deterministic variable

β is the cointegrating vector

V_t is a vector of white noise disturbance term.

4. Results and discussion

4.1. Descriptive Analysis

Table 1 Descriptive Analysis

	INFR	INTR	MS	GEXP	EXC
Mean	12.24393	21013.98	7887.653	1367.836	200.5350
Median	11.95000	26181.08	3889.925	800.7350	149.6300
Maximum	22.40000	42495.16	53258.01	6335.580	552.5100
Minimum	5.400000	3544.490	343.6700	212.9300	86.90000
Std. Dev.	4.793285	13015.88	10859.64	1667.008	125.7268
Skewness	0.213233	-0.049058	2.789634	2.028004	1.296349
Kurtosis	2.077126	1.605638	11.96168	5.927353	3.623842
Jarque-Bera	1.205831	2.279516	130.0132	29.19069	8.296470
Probability	0.547214	0.319896	0.000000	0.000000	0.015792
Sum	342.8300	588391.3	220854.3	38299.41	5614.980
Sum Sq. Dev.	620.3407	4.57E+09	3.18E+09	75030721	426795.2
Observations	30	30	30	30	30

Author computation: E-views 12 Result

Table 1 above shows the descriptive statistical characteristics of the variables included in the study. From table 1, the skewness, which measures the asymmetry distribution of variables around their mean, is normally distributed and positive for all the variables. When skewness is positive, it has a long right tail. A negative skewness is indicated by a long left tail, while zero skewness means the distribution is normal. Thus, the variables Government Expenditure (GEXP) (2.028004), Money supply (MS) (2.789634) and Exchange rate (1.296349) have a long right tail, while Interest rate (-0.049058) had a long left tail, and Inflation rate (0.213233) had a normal distribution. Similarly, the Jarque-Bera statistics of normality show that GEXP, MS, EXC, IFR and INTR were normally distributed from the corresponding probability, which is greater than 0.05 p/value.

From Table 1, the Government Expenditure (GEXP) mean value was 1367.836; its maximum and minimum values were 6335.580 and 212.9300, respectively. It also has a standard deviation value of 1667.008, implying that Government Expenditure (GEXP) was well dispersed from the mean value and normally distributed. The skewness statistic had the value of 2.028004 and was positively skewed. The kurtosis statistic was 5.927353, meaning that the distributions of the variable were normally distributed. The Jarque-Bera statistics of government expenditure (GEXP) were 29.19069 with a probability value of 0.00000, which equally justified that the variable was significant and normally distributed. More so, the Exchange rate (EXC) mean value was 200.5350, its maximum and minimum values were 552.5100 and 86.90000, respectively. It also has a standard deviation value of 125.7268, implying that the Exchange rate (EXC) was well dispersed from the mean value and normally distributed. The skewness statistic had the value of 1.296349 and was positively skewed. The kurtosis statistic was 3.623842, meaning that the distributions of the variable were normally distributed. The Jarque-Bera statistics for the Exchange rate (EXC) were 8.296470, with a probability value of 0.015792, indicating that the variable was both significant and normally distributed. Furthermore, the Interest rate (INTR) mean value was 21013.98, its maximum and minimum values were 42495.16 and 3544.490, respectively. It also has a standard deviation value of 13015.88, implying that the Interest rate (INTR) was well dispersed from the mean value and normally distributed. The skewness statistic had the value of -0.049058 and was negatively skewed. The kurtosis statistic was 1.605638, meaning that the distribution of the variable was not normally distributed. The Jarque-Bera statistic of Interest rate (INTR) was 2.279516 with a probability value of 0.319896, which equally justified that the variable was significant but not normally distributed. Also, the Money supply (MS) mean value was 7887.653, its maximum and minimum values were 53258.01 and 343.6700, respectively. It also has a standard deviation value of 10859.64, implying that the Money supply (MS) was well dispersed from the mean value and normally distributed. The skewness statistic had the value of 2.789634 and is positively skewed. The kurtosis statistic was 11.96168, meaning that the distributions of the variable were normally distributed. The Jarque-Bera statistics of Money supply (MS) were

130.0132 with a probability value of 0.00000, which equally justified that the variable was significant and normally distributed. Lastly, the Inflation Rate (INFL) mean value was 12.24393; its maximum and minimum values were 22.40000 and 5.400000, respectively. It also has a standard deviation value of 4.793285, implying that the Inflation Rate (INFL) was well dispersed to the mean value and normally distributed. The skewness statistic had the value of 0.213233 and was positively skewed. The kurtosis statistic was 2.077126, meaning that the distributions of the variable were normally distributed. The Jarque-Bera statistics of Inflation Rate (INFL) were 1.205831 with a probability value of 0.547214, which equally justified that the variable was insignificant and not normally distributed.

4.2. Data Analysis - Trend Analysis

4.2.1. Money supply (MS)

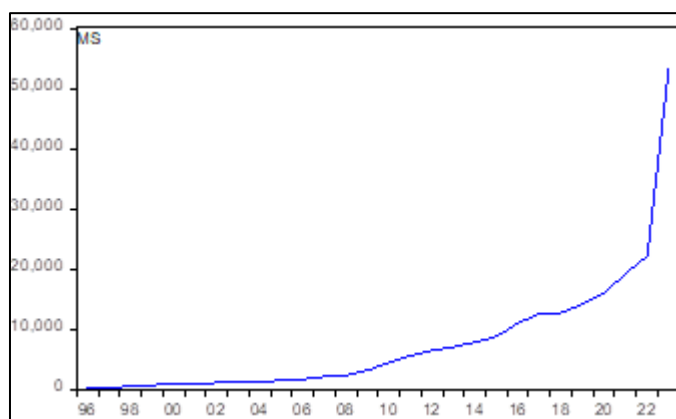


Figure 1 Trend Analysis: Money supply (MS),

Figure 1 illustrates the trend of Money supply (MS), which started with a steady increase until 2009, followed by a rapid increase until 2018. However, by 2021, the Money supply (MS) experienced a sharp increase, continuing until 2024.

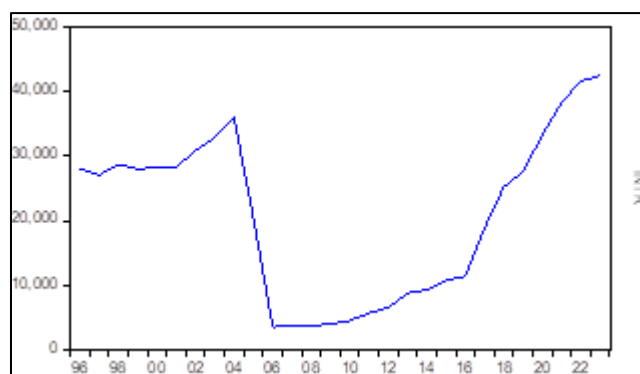


Figure 2 Trend Analysis: Interest rate (INTR)

Figure 2 illustrates the trend of Interest rate (INTR), which started the journey with a steady increase from the beginning, witnessed a very sharp decrease in the year 2005, then started increasing gradually from 2011 up to 2015. However, the Interest rate (INTR) started increasing at an increasing rate from 2016 till year 2024.

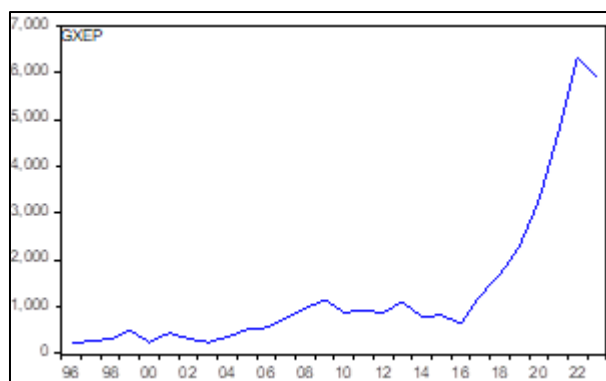


Figure 3 Trend Analysis: Government Expenditure

Figure 3 illustrates the trend of Government Expenditure (GEXP), which started the journey with a steady increase at an increasing rate until the year 2016, with a sharp increase in the year 2016 and began to rise very sharply in the year 2017 up to the year 2021, then decreased in the year 2022.

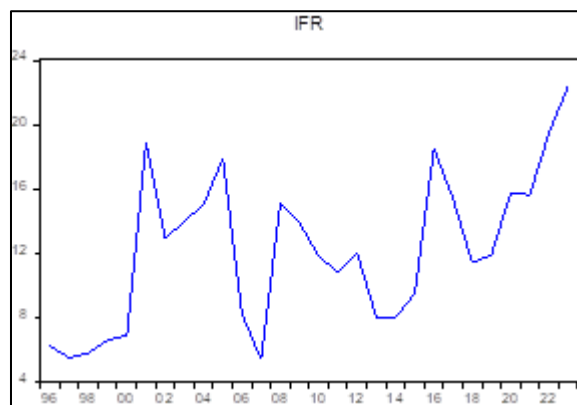


Figure 4 Trend Analysis: Inflation rate (IFR)

Figure 4 illustrates the trend of Inflation rate (INFL), was characterized by a zig-zag pattern of movement started the journey with a steady decrease at a time then increasing with a sharp rate in the year 2000, then a sharp decrease down to year 2002, then raised again in year 2003 with a major decline in year 2005, then rose again in year 2007 and then struggled till year 2015 before started increasing again. Also, had a very sharp decline year 2017, then rose again in 2019 till 2024.

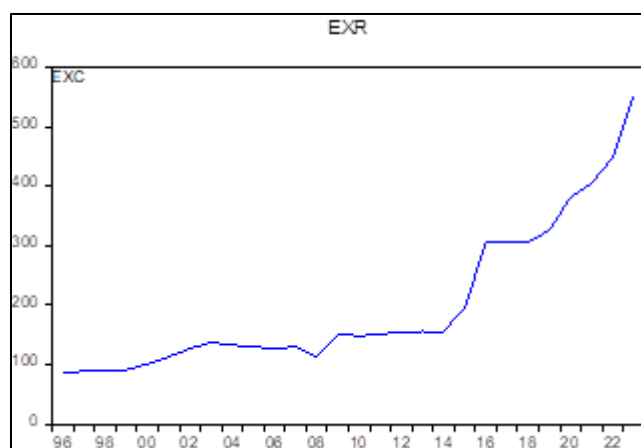


Figure 5 Trend Analysis: Exchange rate (EXC)

Figure 4.5 illustrates the trend of the Exchange rate (EXC), which started the journey with a steady increase at an increasing rate until 2014, with a sharp increase in 2015, and continued to increase at an increasing rate up to 2024.

4.3. Pre-Estimation Test

4.3.1. Unit Root Test

The Augmented Dickey Fuller (ADF) unit root test was employed to test for the integrated level and the stationarity of the variables. This study employed the ADF test on the data to ensure that the variables are stationary, because working with non-stationary data makes the result of the regression spurious: Table 2 below shows the unit root result.

Table 2 Augmented Dickey Fuller Test for Unit Root

Variables	ADF Stat	Critical value 1%	Critical value 5%	Critical value 10%	Order of Integration
Δ GEXP	-3.882016	-4.440739	3.632896	-3.254671	I (0)
Δ INTR	-3.636593	-4.374307	-3.603202	-3.238054	I (1)
Δ MS	-2.702502	-2.674290	-1.957204	-1.608175	I (1)
Δ IFR	-5.290142	-3.724070	-2.986225	-2.632604	I (1)
Δ EXC	-3.831436	-4.356068	-3.595026	-3.233456	I (1)

Table 2 above shows the result of the ADF test on all the variables such as GEXP, INTR, MS, EXC and INFL. The test was carried out with trend and intercept. The result revealed that all the variables INTR, MS, EXC and INFL Variables were stationary at integrated of order (1), but GEXP became stationary at level (0).

4.3.2. Co-integration Model ($INFL = f(GEXP, EXC, MS, INTR)$)

The Wald Test (Bound Test) approach to co-integration seeks to confirm if there is a long-run relationship among the variables in the model. This is done by testing if the coefficients are jointly equal to zero in our estimated model or not.

Table 3 Co-integration for Model One

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	4.149394	10%	2.2	3.09
k	4	5%	2.56	3.49
		2.5%	2.88	3.87
		1%	3.29	4.37
Actual Sample Size	30		Finite Sample: n=30	
		10%	2.525	3.56
		5%	3.058	4.223
		1%	4.28	5.84

From Table 3, the ARDL bound F-statistic result shows that the result confirms the presence of a long-run relationship among the variables for the period under consideration in Nigeria. This is because the F-statistic (4.149394) is greater than the upper and lower bounds of 2.56 and 3.49, respectively, at 5%. This means that there exists a co-integrating relationship among the variables in the model. i.e there is a long-run relationship among the variables.

4.3.3. Model Estimation

Table 4 ARDL ECM Model: $INFL = f(GEXP, EXC, MS, INTR)$

Dependent Variable: LN(D(INFL))				
Method: Least Squares				
Date: 20/08/25 Time: 04:45				
Sample (adjusted): 1995 2024				
Included observations: 30 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	539.0590	888.9358	0.606409	0.5634
LN(D(IFR(-1)))	2.508253	60.82391	0.041238	0.9683
LN(D(IFR(-2)))	8.910297	42.68243	0.208758	0.8406
D(MS(-1))	1.395219	0.588555	2.370586	0.0496
D(MS(-2))	0.228147	0.299883	0.760784	0.4716
LN(D(INTR(-1)))	-0.031096	0.025496	-1.219639	0.2621
LN(D(INTR(-2)))	-0.062690	0.039512	-1.586609	0.1566
D(GEXP(-1))	1.784096	1.512205	1.179797	0.2766
D(GEXP(-2))	1.523462	1.127295	1.351431	0.0186
LN(D(EXC(-1)))	15.19240	12.06249	1.259475	0.0482
LN(D(EXC(-2)))	15.63331	10.87312	1.437794	0.1937
IFR(-1)	63.02010	93.23536	0.675925	0.5208
MS(-1)	0.170954	0.239177	0.714759	0.0979
INTR(-1)	-0.024990	0.017366	-1.438982	0.1933
GEXP(-1)	1.641532	0.904659	1.814531	0.0125
EXC(-1)	-4.378836	17.24281	-0.253951	0.8068
ECT(-1)	-0.163444	0.758980	-1.532905	0.0092
R-squared	0.842931	Mean dependent var		226.0621
Adjusted R-squared	0.483918	S.D. dependent var		515.6248
S.E. of regression	370.4190	Akaike info criterion		14.85167
Sum squared resid	960471.9	Schwarz criterion		15.68612
Log likelihood	-161.2200	Hannan-Quinn criter.		15.07305
F-statistic	2.347908	Durbin-Watson stat		2.234691
Prob(F-statistic)	0.008011			

Considering the first model, which is the result shows that (INFL) strongly influences itself. This means that the past realisation of $INFL(-1)$ is associated with a 250.8% increase in the present value of (INFL), all things being equal. However, the result equally shows past realisation of $INFL(-2)$ is associated with an 891% increase in the present value of INFL, all things being equal. On the part of Money supply (MS), it shows that a unit change in Money supply $(MS)(-1)$ will cause an increase of 139.5% in (INFL), all things being equal. Also, the past realisation of Money supply $(MS)(-2)$ was associated with a 22.8% increase in the present value of Inflation rate (INFL), all things being equal. More so, considering the impact of Interest rate (INTR), it shows that a unit change in Interest rate $(INTR)(-1)$ will cause a

decrease of 3.1% in Inflation rate (INFL) in Nigeria, all things being equal. Also, the past realisation of Interest rate (INTR)(-2) was associated with a 6.2% decrease in the present value of Inflation rate (INFL), all things being equal.

Furthermore, on the part of Government expenditure, it shows that a unit change in the present value of Government expenditure (GEXP)(-1) will cause an increase of 178.4% in the Inflation Rate (INFL) in Nigeria, all things being equal. However, the past realisation of Government expenditure (GEXP)(-2) was associated with a 152.3% increase in the present value of Inflation Rate (INFL), all things being equal.

Lastly, on the part of the Exchange Rate (EXC), it shows that a unit change in the Exchange Rate (EXC)(-1) will cause an increase of 1519% in the Inflation Rate (INFL) in Nigeria, all things being equal. However, the past realisation of Exchange Rate (EXC)(-2) was associated with a 1563% increase in the present value of Inflation Rate (INFL), all things being equal.

4.4. ECM Impact

Considering the value of Error Correction Test, which justified the long-run association among the variables and equally measures the speed of adjustment of the model towards equilibrium, the result (0.163444) with (0.0092) p/value shows that, model is converging towards the long run and if there is any disequilibrium at the short run, the model will adjust back to the equilibrium at the speed of 16.3%.

4.5. Serial Correlation Test

Table 5 Serial Correlation Test for $INFR = f(MS, INR, GEXP, EXC)$

Breusch-Godfrey Serial Correlation LM Test:			
Null hypothesis: No serial correlation at up to 2 lags			
F-statistic	13.47382	Prob. F(4,5)	0.0097
Obs*R-squared	20.24385	Prob. Chi-Square(4)	0.0000

Table 5: The result for Breusch-Godfrey Serial Correlation LM Test in Table 4.5 shows that the observed R^2 (20.24385) is higher than the probability value (0.0000), which means that the Model is free from serial correlation.

4.5.1. Interpretation and Discussion of the Result

From the coefficients of the estimated ARDL model for the study, for instance, the current value Inflation rate (IFR) at first revealed a positive impact on the current value of the Inflation rate (IFR) in Nigeria with (2.508253). A unit percentage change in the Inflation rate (IFR) at first lag will cause a 250% increase in the current Inflation rate (IFR), all things being equal. In the same direction, the second lag revealed a positive impact by causing an increase of 891% in the current Inflation Rate (IFR). More so, it was equally discovered that, in relation to the long-run relation, there was a positive relationship and was statistically insignificant; this is contrary to the findings of Onwuka (2022), who analysed the impact of External Debt Burden and Infrastructural Development Nexus in Nigeria: inflation rate was found to have a negative impact on its current value.

Inflation rate (IFR) in Nigeria was positively impacted by the Government Expenditure (GEXP) with the coefficient of the historical past values of Government Expenditure (GEXP)(-1) (1.784096) first lag and positively impacted by the coefficient of the historical past values of Government Expenditure (GEXP)(-2) (1.523462) second lag. Nonetheless, it was discovered that, in relation to the long run relationship, there was positive and statistically significant relationship between inflation rate and government expenditure in Nigeria. This is in consonance with the findings of Otaokpukpu, Anicho and Ugboada (2023) and Sesan (2013).

The coefficients of the estimated ARDL model for the study of interest rate (INTR) at first revealed a negative impact on the current value of the Inflation rate in Nigeria with (-0.031096). A unit change in interest rate (INTR) at first lag will cause a 3.1% decrease in the Inflation rate, all things being equal. Also, the second lag revealed a negative impact by causing a decrease of 6.2% in the Inflation rate. The result was in the same vein as the findings of Bashir (2022) and Ilemona and Ibrahim (2017).

Furthermore, coefficients of the estimated ARDL model for the study of Money supply (MS) at first lag revealed a positive impact on the current value of the Inflation rate in Nigeria with (1.395219). A unit change in Money supply (MS) at first lag will cause a 139.5% increase in the Inflation rate, all things being equal. Moreover, the second lag revealed a positive impact by causing an increase of 22.8% in the Inflation rate. Nonetheless, it was discovered that, in relation to the long-run relationship, there was a positive relationship and it was statistically significant at 10%, which is in line with the findings of Musa (2021) and Gidigbi, Babarinde and Lawan (2018).

Lastly, coefficients of the estimated ARDL model for the study of the Exchange rate (EXR) at first lag revealed a positive and significant impact on the current value of the inflation rate in Nigeria with (15.19240). A percentage unit change in the Exchange rate (EXR) at first lag will cause a 1519% increase in the inflation rate, all things being equal. This is in line with the findings of Musa (2021). The second lag revealed a positive, but insignificant impact on the current Inflation rate in Nigeria. More so, it was equally discovered that, in relation to the long-run relation, there was a negative relationship and it was statistically insignificant, which is in line with the findings of Olamide, Ogujiuba, and Maredza (2022), and Inam (2015).

5. Policy implication of the findings

The strong positive coefficients on lagged inflation (IFR) suggest high inflation inertia. This implies that once inflation rises, it tends to persist, making it harder to control. The Central Bank of Nigeria (CBN) must adopt preemptive and sustained monetary tightening to curb inflation early before it becomes rooted. The negative relationship between interest rate (INTR) and inflation supports the effectiveness of interest rate hikes in reducing inflation. The CBN should consider raising interest rates during inflationary periods to dampen demand and stabilise prices. The positive and statistically significant impact of money supply (MS) on inflation confirms the classical quantity theory of money. There's a need for strict control of monetary expansion. Unchecked liquidity injections, especially through deficit financing, can fuel inflation.

The strong positive short-run and long-run effects of government expenditure (GEXP) on inflation suggest that fiscal expansion contributes to price instability. The government should restructure public spending, prioritising capital expenditure over recurrent spending, and ensure that fiscal stimulus is not inflationary. The extremely high short-run coefficient (15.19240) of the exchange rate (EXC) indicates that exchange rate fluctuations have a dramatic impact on inflation, likely due to Nigeria's import dependence. Policymakers must stabilise the exchange rate through external reserve management, export diversification, and reducing reliance on imported goods.

The findings also suggest that short-term shocks dominate inflation behaviour. Therefore, short-term policy interventions (e.g., interest rate adjustments, foreign exchange interventions) may be more effective than long-term structural reforms in curbing inflation in the short term.

6. Conclusion and recommendations

This study explored the relationship between the exchange rate and inflation in Nigeria. To conduct this research, annual data on inflation, exchange rates, money supply, interest rates, and government expenditures were collected from 1995 to 2024. The econometric results demonstrated that exchange rate movements have a significant and positive impact on inflation in Nigeria at the first lag, and a positive but statistically insignificant impact at the second lag. However, the long-run effect of the exchange rate on inflation was negative and not statistically significant. An initial rise in exchange rates tends to increase production costs due to lower productivity and over-reliance on imported commodities, which then leads to inflationary pressures in the short run. Eventually, as productivity improves in the future, the effect of the exchange rate on inflation becomes negative. Additionally, the analysis suggests that inflation in Nigeria is also influenced by other key factors, particularly the expansion of the money supply and government expenditure. Given the above findings, it is recommended that policymakers should deepen their understanding of the Exchange Rate Transmission Channels, the Central Bank of Nigeria should implement measures to regulate the growth of the money supply, the government should streamline the Public Sector by reducing the size of the public sector to alleviate the fiscal burden of government expenditure and strategic efforts should be directed toward enhancing productivity across key sectors.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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