



## FINANCIAL DEEPENING AND INFLATION IN NIGERIA

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### Abstract:

This study examined the effect of financial deepening on inflation in Nigeria over the period 1981-2023. The researcher gathered data on the inflation rate, private sector credit as a percentage of GDP, broad money supply as a percentage of GDP, exchange rate, and monetary policy rate from reports by Nigeria's central bank. The main method used was the Autoregressive Distributed Lag Bounds testing technique to analyze the data. The results showed there is a long-term link between the variables studied. In the long run, private sector credit as a percentage of GDP and exchange rates had a negative and significant effect on inflation. On the other hand, broad money supply as a percentage of GDP and the monetary policy rate had a positive and significant effect on inflation. In the short run, private sector credit as a percentage of GDP and exchange rate had a positive and significant impact on inflation. However, broad money supply as a percentage of GDP and the monetary policy rate had a negative and significant relationship with inflation during the study period. The study concluded that financial deepening is not always helpful; its effect depends on how well the financial system is structured and how efficient it is. The study stressed the need for a coordinated and comprehensive policy approach to maintain price stability. Keeping prices stable in Nigeria requires not only careful monetary policies but also structural changes that improve credit distribution, boost financial intermediation, and help stabilize the exchange rate. Therefore, financial deepening should focus on efficiency and productivity to support long-term, inflation-free economic growth in Nigeria.

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## 1. Introduction

Financial deepening has attracted considerable attention in economic literature because of its role in promoting economic growth, improving resource allocation, and enhancing the efficiency of financial intermediation. This concept means that financial institutions, markets, and tools in an economy get bigger and more developed, which leads to more people having access to financial services and more economic activities being handled with money. (McKinnon, 1973; Shaw, 1973; George-Anokwuru, 2026). People often use different measures to show how developed a financial system is, such as the ratio of broad money supply to GDP ( $M2/GDP$ ), loans given to the private sector, bank deposits, stock market value, and other ways to show how well the financial sector is doing (King & Levine, 1993; Levine, 2005; Ogunleye, 2019; George-Anokwuru, 2026).

Furthermore, financial deepening helps an economy grow by making it easier to save money, invest in useful projects, lower the costs of doing business, spread out risks better, and build up more capital over time (Levine, 1997). When the financial system is deeper, it can collect more savings and use them more effectively, which can affect how much things cost in the economy. Inflation, on the other hand, is the sustained increase in the general price level of goods and services, which can be influenced by monetary, fiscal, and structural factors (Adeniran & Ajayi, 2020).

One of the main ways financial deepening affects inflation is through the credit channel. When financial deepening happens, more credit becomes available to businesses and households. With easier access to loans, companies can grow their production, and people can spend more. In the short term, if the increase in credit is bigger than the growth in actual goods and services produced, it can cause demand-pull inflation. This happens when total demand goes up faster than total supply (Nwankwo, 2017). On the other hand, if credit is given wisely to areas that produce goods and services, it can increase supply and help keep prices stable, showing that financial deepening can have both positive and negative effects on inflation.

Another pathway through which financial deepening influences inflation is through the liquidity channel, which is connected to the money supply ( $M2$ ) in the economy. A stronger financial system makes money move faster and circulate more. If the amount of money in the economy rises without a matching increase in goods and services, it can lead to higher prices (Friedman, 1968). In Nigeria, periods of rapid financial deepening have sometimes coincided with increases in broad money, contributing to inflationary pressures.

Financial deepening usually results in banking systems that are more competitive and efficient, which can help bring down interest rates. When interest rates are lower, it becomes cheaper for businesses and people to borrow money, which can lead to more investment and spending (Sanusi, 2014). While this can help the economy grow, if demand increases too quickly compared to what the economy can supply, it can lead to higher inflation. This shows how financial deepening connects to money conditions and overall price levels in an indirect way.

Financial deepening can also affect how people expect inflation to change. When financial markets are more developed, they provide clearer information about the economy, helping people form more accurate expectations. But if there is rapid growth in credit or money supply that seems hard to sustain, businesses and households may expect higher inflation in the future. As a result, they might raise prices and wages before it actually happens (Iyoha, 2016). In Nigeria, inflation expectations are especially important because of past periods of high inflation, which means financial deepening can have a bigger effect on actual price levels.

Interestingly, many developing countries, including Nigeria, have made changes to their financial systems to make them stronger and support long-term economic growth. In Nigeria, the process of financial deepening has changed a lot since the Structural Adjustment Programme (SAP) started in 1986. This programme aimed to make the financial sector more open and efficient (Adelegan, 2010). After that, more reforms were introduced, such as merging banks in 2005, efforts to include more people in financial services, new ways of using technology in banking, mobile payment systems, and a policy to reduce the use of cash introduced by the Central Bank of Nigeria (CBN). These changes have helped increase the amount of money in the economy, loans to businesses, savings in banks, and other signs that the financial system is becoming more developed.

Even though there has been some progress in developing the financial sector, inflation is still a big problem in Nigeria's economy. High and ongoing inflation causes uncertainty, makes people less willing to save or invest, messes up how resources are used, and hurts the well-being of people, especially those with low incomes (Dornbusch, Fischer, & Startz, 2018). Because of this, keeping prices stable is one of the main goals of monetary policy in Nigeria. Nigeria has had many periods of high inflation caused by several reasons, such as too much money in the economy, falling currency value, big government spending gaps, increasing energy costs, insecurity, problems on the supply side, and bad happenings in the global economy (CBN, 2024; National Bureau of Statistics - NBS, 2024). In recent years, the pressure of inflation has become stronger, causing serious issues for economic stability and long-term growth. The fact that inflation keeps happening even with different monetary policies has worried both government officials and experts about what is making prices go up in the country.

The link between financial deepening and inflation has been widely discussed in economics. Some economists, like those in the monetarist group, believe that financial deepening can lead to inflation. They say that when money supply and credit grow too fast, it boosts overall demand more than the economy can produce, which can push prices up. This idea is supported by the quantity theory of money, which suggests that if the money supply grows faster than the economy's output, it will create inflation (Fisher, 1911; Friedman, 1968). So, if financial deepening leads to a lot more money being available, it can cause prices to rise.

On the other hand, some researchers, including Levine (2005) and Khan, Senhadji, and Smith (2006), think that financial deepening can actually help reduce inflation. They argue that a better financial system makes it easier for money to flow to productive areas,

which helps the economy grow. This growth can reduce inflation by meeting demand with more supply. Also, a strong financial system can make monetary policies more effective, helping central banks control prices better. The Nigerian situation offers a good example to look at how financial growth relates to inflation. Even though the total money in circulation, bank savings, and loans to businesses have grown a lot over time, inflation has stayed high and unpredictable. This brings up key questions about whether financial growth leads to higher inflation or helps keep the economy stable.

The available research on how financial deepening relates to inflation shows mixed results and isn't clear-cut. Some studies say that financial deepening can lead to higher inflation by increasing the money supply and making more money available (Ndebbio, 2004; Kilic & Ozcan, 2018), while others argue that developing the financial sector makes monetary policy more effective and helps control inflation (Levine, 2005; Khan *et al.*, 2006). These different findings suggest that the connection between financial deepening and inflation might depend on the country, its institutions, and the time period being studied. Based on this, this study looked at the relationship between financial deepening and inflation in Nigeria from 1981 to 2023. The study aimed to find out if financial deepening leads to higher inflation or helps keep prices stable in Nigeria.

## **2. Literature Review**

### **2.1 Conceptual Clarification**

#### **2.1.1 Financial Deepening and Inflation**

Financial deepening refers to the expansion, diversification, and improvement of financial institutions, financial markets, and financial instruments in an economy, which increases the availability and accessibility of financial services (George-Anokwuru, 2026). It reflects the extent to which financial systems mobilize savings, distribute resources efficiently, and facilitate investment and economic activities in an economy. In simple terms, financial deepening occurs when the financial sector grows relative to the overall economy and provides more financial services to households, businesses, and government (Levine, 2005; George-Anokwuru, 2026).

Financial deepening is often associated with the development of a strong and efficient financial system that encourages savings and investment. As financial markets and institutions expand, they provide more opportunities for individuals and businesses to access credit and financial services. This process improves capital allocation by directing funds from surplus economic units (savers) to deficit units (investors), thereby promoting economic growth and development (McKinnon, 1973; George-Anokwuru, 2026). Another important aspect of financial deepening is the improvement in the range and sophistication of financial instruments and services available in an economy. These include banking services, capital market instruments, insurance products, and digital financial services. When these financial products expand and become more accessible, economic agents can manage risks more effectively, mobilize savings efficiently, and finance productive investments (Levine, 2005; George-Anokwuru, 2026).

Financial deepening is commonly measured using indicators such as the ratio of broad money supply (M2) to Gross Domestic Product (GDP), credit to the private sector as a percentage of GDP, and stock market capitalization relative to GDP. These indicators reflect the size and efficiency of the financial system and its ability to support economic activities. A higher ratio generally indicates a more developed and deeper financial system (King & Levine, 1993; George-Anokwuru, 2026). In developing economies such as Nigeria, financial deepening is often pursued through financial sector reforms, banking sector expansion, financial liberalization, and policies that promote financial inclusion. These reforms aim to improve financial intermediation, increase access to credit, and enhance the stability and efficiency of the financial system. A deeper financial system can stimulate investment, improve productivity, and support sustainable economic growth (Karimo & Ogbonna, 2017).

However, financial deepening may also have macroeconomic implications, particularly for inflation and financial stability. An expansion of credit and money supply associated with financial deepening can stimulate aggregate demand and potentially lead to inflationary pressures if not properly regulated by monetary authorities. Policymakers must therefore ensure that financial deepening is accompanied by prudent monetary and fiscal management to mitigate potential inflationary pressures.

On the other hand, inflation refers to a persistent and sustained increase in the general price level of goods and services in an economy over a period of time. When inflation occurs, the purchasing power of money declines, meaning that a given amount of money can buy fewer goods and services than before. Inflation is therefore an important macroeconomic indicator that reflects changes in the cost of living and the overall stability of an economy (Mankiw, 2019). Inflation is usually measured using price indices such as the Consumer Price Index (CPI) and the Producer Price Index (PPI). These indices track the average change in the prices of a basket of goods and services consumed by households or produced by firms. When the CPI rises over time, it indicates that the general price level in the economy is increasing, which is interpreted as inflation (Blanchard, 2017).

Economists generally classify inflation based on its causes. One common type is demand-pull inflation, which occurs when aggregate demand in the economy exceeds aggregate supply. This situation often arises when consumer spending, government expenditure, or investment increases rapidly, leading to higher demand for goods and services and consequently higher prices (Mankiw, 2019). Another type is cost-push inflation, which occurs when the cost of production increases. Rising wages, higher energy prices, or increased costs of raw materials can force producers to raise the prices of their goods and services in order to maintain profit margins. In such cases, inflation originates from the supply side of the economy rather than from increased demand (Blanchard, 2017).

Inflation can also be explained from the monetary perspective, particularly through the monetarist view, which argues that inflation is primarily caused by excessive growth in the money supply relative to the growth of real output. When too much money circulates in the economy without a corresponding increase in production, the excess

liquidity leads to higher prices (Friedman, 1968). In developing economies such as Nigeria, inflation is often influenced by multiple factors, including exchange rate depreciation, fiscal deficits, supply shortages, and rapid growth in money supply. Persistent inflation can have negative economic consequences such as reducing purchasing power, discouraging savings, increasing uncertainty for investors, and slowing economic growth. However, a moderate level of inflation is sometimes considered beneficial because it can encourage investment and economic activity when properly managed by monetary authorities (Mishkin, 2016).

## **2.2 Theoretical Framework**

Attempts to explain how and why financial systems evolve to become more inclusive, efficient, and sophisticated over time and how this transformation affects inflation, are sometimes referred to as theories of financial deepening. Therefore, this study examined the financial liberalization theory (McKinnon–Shaw Hypothesis) and the quantity theory of money.

### **2.2.1 Financial Liberalization Theory (McKinnon–Shaw Hypothesis)**

The financial liberalization theory was developed by Ronald I. McKinnon and Edward S. Shaw in 1973. The theory emerged as a critique of the heavy government control over financial systems in many developing countries. According to the theory, policies such as interest rate ceilings, high reserve requirements, and directed credit programmes distort the financial market and reduce the efficiency of financial intermediation (McKinnon, 1973; Shaw, 1973). McKinnon and Shaw argued that financial markets function better when interest rates are determined by market forces rather than government regulation. In Nigeria, the financial sector was highly regulated before the mid-1980s, with the government controlling interest rates and credit allocation through institutions such as the Central Bank of Nigeria. These controls limited the development of the financial sector and reduced the ability of banks to mobilize savings effectively (Ogwuma, 1996).

A central concept of the McKinnon–Shaw hypothesis is financial repression, which refers to policies that restrict the functioning of financial markets. These policies often result in artificially low interest rates that discourage savings and reduce the supply of loanable funds for investment (Shaw, 1973). When real interest rates become negative due to high inflation, individuals prefer to hold assets such as cash, foreign currency, or real estate instead of depositing money in banks. In Nigeria, financial repression was evident in the period prior to the introduction of financial reforms in 1986. Regulated interest rates often failed to keep pace with rising inflation, leading to negative real returns on savings. This discouraged financial savings and weakened the capacity of financial institutions to provide credit to productive sectors of the economy (Arestis & Demetriades, 1997).

The McKinnon–Shaw theory proposes that removing financial repression through liberalization encourages savings mobilization and enhances the efficiency of financial institutions. When interest rates are allowed to reflect market conditions, savers receive

higher returns on deposits, which increases the volume of funds available for investment (McKinnon, 1973). This process leads to financial deepening, defined as the expansion of financial institutions, financial assets, and financial services relative to the size of the economy. In Nigeria, financial liberalization began during the implementation of the Structural Adjustment Programme, which aimed to deregulate interest rates, promote competition among banks, and improve the efficiency of the financial system. These reforms contributed to the expansion of the banking sector and increased the availability of credit to the private sector, thereby promoting financial deepening (Soyibo & Adekanye, 1992).

According to the McKinnon–Shaw hypothesis, financial deepening improves the allocation of financial resources by channeling savings into productive investment. Financial institutions play a crucial role in mobilizing savings from surplus units and directing them toward deficit units that require funds for investment (Levine, 2005). As financial markets expand, businesses gain better access to credit, which supports capital formation, productivity growth, and economic development. In Nigeria, financial deepening has facilitated increased access to bank credit for firms and households. The growth of deposit money banks and other financial institutions has improved the mobilization of savings and enhanced the capacity of the financial system to finance economic activities (Nnanna, 2004).

While financial liberalization promotes financial deepening, it can also influence inflation dynamics. A liberalized financial system may increase the availability of credit and expand the money supply, particularly when banks aggressively extend loans to the private sector (Fry, 1997). If the expansion of credit is not matched by growth in real output, the result may be increased inflationary pressure. In Nigeria, the Central Bank of Nigeria uses monetary policy tools such as interest rates and open market operations to regulate liquidity in the financial system. A deeper financial system enhances the effectiveness of these policy tools because monetary policy can be transmitted more efficiently through well-developed financial markets (Nnanna, 2004).

The McKinnon–Shaw Financial Liberalization Theory suggests that financial liberalization can stimulate financial deepening by encouraging savings mobilization and improving financial intermediation. In Nigeria, reforms aimed at deregulating interest rates and strengthening financial institutions have contributed to the growth of the financial sector. However, the theory also emphasizes the importance of sound financial regulation and macroeconomic stability to prevent excessive credit expansion and inflation (Arestis & Demetriades, 1997). Therefore, while financial deepening can support economic development in Nigeria, policymakers must ensure that financial sector expansion is accompanied by effective monetary policy and prudent banking supervision to maintain price stability.

### **2.2.2 Quantity Theory of Money**

The theory was developed by classical economists and later popularized by Irving Fisher, who formulated the famous equation of exchange. The theory states that the general price level in an economy is directly proportional to the quantity of money in circulation,

assuming the velocity of money and the volume of transactions remain constant (Fisher, 1911). According to this perspective, when the supply of money increases faster than the growth of goods and services, the result is inflation. This theory is fundamental in explaining how financial sector developments that increase money supply may influence inflation. A key expression of the Quantity Theory of Money is the equation of exchange, which shows the relationship between money supply and economic activity.  $MV = PT$

In this equation,  $M$  represents the money supply,  $V$  represents the velocity of money (the rate at which money circulates in the economy),  $P$  represents the general price level, and  $T$  represents the volume of transactions or output in the economy (Fisher, 1911). The equation implies that if the velocity of money and output remain relatively stable, an increase in money supply will lead to a proportional increase in the price level. This forms the theoretical basis for understanding the relationship between monetary expansion and inflation.

The quantity theory of money also provides insight into the role of financial deepening in the economy. Financial deepening refers to the expansion of financial institutions, financial instruments, and financial services that increase the level of financial intermediation in an economy (Levine, 2005). As financial systems develop, they mobilize more savings and increase the availability of credit to households and businesses. While this process enhances investment and economic growth, it may also increase the money supply through the credit creation process of banks. In Nigeria, financial deepening has occurred through the expansion of deposit money banks, financial markets, and financial instruments under the supervision of the Central Bank of Nigeria. As banks mobilize more deposits and extend credit to the private sector, the money supply in the economy increases. According to the Quantity Theory of Money, if the increase in money supply exceeds the growth of real output, the result will be rising price levels and inflation (Mishkin, 2016).

Furthermore, the relationship between financial deepening and inflation in Nigeria can be explained through the transmission mechanism of monetary policy. When financial institutions expand their lending activities, more money enters the economy through credit creation. If the productive sector does not absorb this credit effectively to increase output, excess liquidity may lead to demand-pull inflation. This situation has been observed in Nigeria during periods of rapid credit expansion, where increased liquidity in the financial system contributed to inflationary pressures (Nnanna, 2004).

However, financial deepening can also help control inflation if it improves the effectiveness of monetary policy. A well-developed financial system allows the Central Bank of Nigeria to transmit monetary policy more efficiently through interest rates, open market operations, and reserve requirements. When financial markets are efficient and well regulated, increases in money supply can be directed toward productive investments that expand output and reduce inflationary pressures.

In inference, the quantity theory of money provides a useful framework for understanding the relationship between financial deepening and inflation in Nigeria. While financial deepening promotes savings mobilization, credit expansion, and economic growth, it may also increase the money supply and contribute to inflation if not

properly managed. Therefore, effective monetary policy and strong financial regulation are essential to ensure that the expansion of the financial sector contributes to economic development without generating excessive inflation.

Empirically, only a hand full of empirical studies have examined the relationship between financial development and inflation. These studies indicate that financial deepening has significant macroeconomic implications, including its potential effects on inflation and economic stability. For instance, Ewubare (2014) looked at how financial deepening affected inflation in Nigeria from 1980 to 2012 using a special statistical method called the Auto-regressive Distributed Lag Model. The findings showed that in the short term, the number of imports and the exchange rate (when looked at one and two periods back) were important in explaining changes in the consumer price index. However, other variables didn't have a big effect on the CPI. The study also found that in the short run, financial deepening measures like the ratio of money supply to GDP and private sector credit to GDP didn't significantly change the consumer price index. But in the long run, import levels, the prime lending rate, and the exchange rate did have a significant impact. Also, when money supply to GDP increased, and private sector credit to GDP increased, it led to higher prices. A test called variance decomposition showed that shocks to financial deepening (FD1) rarely caused changes in the price level. However, shocks to the private sector credit to GDP ratio (FD2) were more likely to cause changes in prices, both in the short term and long term.

Alimi (2014) looked at how inflation and financial development are connected in Nigeria from 1970 to 2012. The author used three things to show financial development: money as a share of GDP, quasi money as a share of GDP, and credit to the private sector as a share of GDP. The study found that inflation had a bad effect on financial development during this time. This means that when the economy isn't doing well, it can hurt financial development, which is important for economic growth and income inequality. Also, the study found that financial development had a negative effect on growth, meaning that inflation affects economic growth by going through the financial sector.

Sargolzaei and Bahrololoum (2019) studied how inflation affects the relationship between financial development and economic growth in OPEC countries from 1970 to 2015. They used a method called Panel Smooth Threshold Regression (PSTR) to look at how inflation changes this relationship. Their results showed that the key inflation rates were 20.33 and 20.36, depending on which measure of financial development they used. They found that when inflation goes over these thresholds, financial development no longer helps economic growth and might even slow it down.

Okumoko and Koginam (2021) used a vector autoregressive method to look at how financial deepening is linked to inflation volatility in Nigeria between 1986 and 2020. Their findings showed that the consumer price index had the biggest impact on inflation volatility, followed by the ratio of credit to the private sector compared to GDP. They also found no clear cause-and-effect relationship between financial deepening and inflation. However, they did notice that changes in the exchange rate had a one-way effect on inflation.

Kalu, Eneoli, and Ukpere (2024) looked into the connection between Consumer Price Index indicators and financial deepening in Nigeria from 1961 to 2022 using an Autoregressive Distributed Lag Model. Their results showed that the monetization ratio (BMR) and bank development (CPSGDP) had a significant and moderate effect on inflation during that time. This was because the consumer price index was responsive to the financial deepening activities happening in Nigeria.

In Nigeria, George-Anokwuru (2026) studied the influence of financial deepening on poverty reduction from 1981 to 2022. The researcher used ARDL method as the main tool for analysis. The ARDL Bounds test found that there is a long-term link between the variables studied. The outcomes revealed that in both the short and long terms, private sector credit as a percentage of GDP has a positive effect on reducing poverty. On the other hand, broad money supply as a percentage of GDP has a negative effect on poverty, though it was more significant in the short run. When looking at covariate variables, the study found that in the short run, both the monetary policy rate and inflation rate had a positive impact on poverty. This means that high inflation and high interest rates hurt the poor. However, in the long run, the monetary policy rate had a positive effect on poverty, while inflation had a negative effect. The study suggested that financial deepening has the potential to reduce poverty in Nigeria. If financial deepening is properly developed, it could help lower the rate of poverty in the country.

### **2.3 Research Gap**

Existing research on financial deepening in Nigeria has mostly looked at how it connects with economic growth, reducing poverty, and improving human development. While some studies have explored the link between financial deepening and inflation, the results are not clear or strong enough. Many past studies used different ways to measure financial deepening or looked at short periods, which might not show the full picture of how the financial sector's development affects inflation over time. Also, Nigeria's financial sector has been changing quickly because of digital finance, efforts to include more people in finance, and banking reforms. This means there's a need for more research on how financial deepening influences price stability. This study addressed that by providing real evidence on how financial deepening affects inflation in Nigeria, using data from 1981 to 2023.

#### **2.3.1 Stylized Issues on Indicators of Financial Developments in Nigeria**

The indicators of financial development in Nigeria have exhibited considerable fluctuations over time, reflecting changes in monetary and financial market conditions. In 2011, for instance, the financial sector recorded a mixed performance, with both positive and negative developments. The ratio of broad money supply (M2) to nominal Gross Domestic Product (GDP) stood at 36.4 percent in 2011, representing a decline from 39.5 percent recorded in 2010. In contrast, aggregate money market capitalization increased by 24.7 percent by the end of 2011, largely driven by increases in government bonds, treasury bills, and commercial paper. Interest rates on fixed-income securities, particularly government bonds and treasury bills, were also higher in 2011 than in the

preceding year. Although the yield curve remained normal for most of the year, it became inverted towards the end of 2011, indicating a tightening of monetary policy by the Central Bank of Nigeria. Similarly, the Nigerian Stock Exchange recorded a mixed performance during the year, reflecting varying conditions across the financial market (CBN, 2011; George-Anokwuru, 2026).

In 2013, Nigeria's financial development indicators recorded a mixed performance, with both positive and negative developments across the financial sector. The ratio of broad money supply to nominal GDP declined marginally to 19.3 percent compared with the level recorded at the end of 2012. Similarly, the ratio of claims on the private sector to GDP (CP/GDP), which reflects the banking sector's capacity to provide credit to the private sector, stood at 20.4 percent, slightly below the 20.9 percent recorded in the previous year. In contrast, the value of money market assets increased by 10.0 percent, largely due to higher holdings of Nigerian Treasury Bills, bankers' acceptances, commercial papers, and Federal Government bonds. Returns on fixed-income securities declined during the year, while most money market interest rates were lower than their corresponding levels in 2012, suggesting increased liquidity within the banking system. The Nigerian Stock Exchange, however, recorded improved performance, as major market indicators generally exhibited upward movements during the year (CBN, 2013; George-Anokwuru, 2026).

In 2014, Nigeria's financial sector recorded a mixed performance, with improvements in some indicators alongside weaknesses in others. Financial intermediation efficiency, measured by the ratio of currency outside banks to broad money supply (M2), improved as the ratio declined from 9.2 percent in 2013 to 7.6 percent in 2014. Similarly, the ratio of broad money supply to nominal GDP increased to 21.0 percent, representing a 1.7 percentage-point rise over the level recorded at the end of 2013. The ratio of claims on the private sector to GDP (CPS/GDP), which indicates the banking system's capacity to provide credit to the private sector, also increased marginally from 20.0 percent to 20.1 percent. In addition, total money market assets expanded by 12.4 percent, driven mainly by increased holdings of Nigerian Treasury Bills, bankers' acceptances, commercial papers, and Federal Government bonds. However, yields on fixed-income securities increased during the year, largely reflecting the effects of the Central Bank of Nigeria's tight monetary policy stance and excess liquidity conditions, which constrained market activities. Most money market interest rates remained relatively stable during the first ten months of the year but increased towards the end of 2014 following a 100-basis-point increase in the benchmark interest rate to 13.0 percent. In contrast, the Nigerian Stock Exchange experienced a weak performance, with most major market indicators recording declines during the year (CBN, 2014; George-Anokwuru, 2026).

In 2015, Nigeria's financial sector recorded a mixed performance, with both positive and negative developments across key indicators. The financial sector's relative importance in the economy, measured by the ratio of broad money supply to GDP, remained unchanged at 21.0 percent, the same level recorded in 2014. The banking system's overall credit provision improved, as the credit-to-GDP ratio increased from

21.4 percent to 22.7 percent. However, credit to the private sector, measured as a proportion of GDP, declined marginally from 20.1 percent in 2014 to 19.7 percent in 2015. This decline was largely attributed to the substantial increase in credit extended to the Federal Government, which may have reduced the availability of funds for private-sector activities. Financial intermediation efficiency also improved marginally, as the ratio of currency outside banks to broad money supply declined from 7.6 percent in 2014 to 7.3 percent in 2015. Nevertheless, overall financial savings weakened during the year. In contrast, total money market assets increased by 22.1 percent, driven mainly by higher holdings of bankers' acceptances, certificates of deposit, and Federal Government bonds. Performance on the Nigerian Stock Exchange was mixed: although the total market capitalisation of listed equities increased marginally by 0.8 percent, the All-Share Index, aggregate trading volume, and value of transactions declined compared with their respective levels in the previous year (CBN, 2015; George-Anokwuru, 2026).

In 2016, Nigeria's financial sector recorded a mixed performance, with improvements in some indicators accompanied by weaknesses in others. The ratio of broad money supply (M2) to GDP increased to 23.1 percent, compared with 21.3 percent recorded at the end of 2015. Similarly, the banking system's contribution to economic activity improved, as the credit-to-GDP ratio rose to 26.7 percent from 23.0 percent in the previous year. Credit to the core private sector also increased, reaching 21.2 percent of GDP, compared with 19.2 percent in December 2015. Despite these improvements, indicators of financial intermediation efficiency showed some deterioration. The ratio of currency outside banks (COB) to M2 declined to 7.8 percent, while the COB-to-GDP ratio stood at 1.8 percent, compared with 7.3 percent and 1.6 percent, respectively, in 2015. Although total financial savings, including quasi-money, increased marginally from their December 2015 level, their share of GDP remained relatively stable at 12.13 percent, slightly below the 12.17 percent recorded in 2015. Foreign currency deposits constituted a significant component of financial savings, increasing to 4.5 percent of GDP from 4.0 percent in December 2015. Money market activities expanded considerably during the year, with total money market assets increasing by 35.5 percent relative to the end of 2015. This growth was driven largely by increased issuances and holdings of Treasury Bills and government bonds. In contrast, activity on the Nigerian Stock Exchange weakened. The total value of listed securities and the All-Share Index declined by 4.8 percent and 6.2 percent, respectively. Although the volume of securities traded increased marginally by 3.2 percent compared with the previous year, the total value of transactions declined substantially by 39.6 percent (CBN, 2016; George-Anokwuru, 2026).

In 2017, Nigeria's financial sector recorded an overall decline in several key indicators of financial development, although some aspects of the sector improved. The ratio of broad money supply (M2) to GDP declined to 20.3 percent, compared with 23.2 percent recorded at the end of December 2016. Similarly, the banking system's capacity to support economic activity weakened, as the aggregate credit-to-GDP ratio fell from 26.5 percent to 23.3 percent. Credit to the private sector as a proportion of GDP also declined from 21.7 percent to 19.2 percent during the year. Despite the decline in credit provision, financial intermediation efficiency improved, as reflected in the reduction of

the currency outside banks-to-M2 (COB/M2) ratio from 7.7 percent in 2016 to 7.1 percent in 2017. Money market activities, however, contracted substantially, with total money market assets declining by 61.1 percent relative to the level recorded at the end of 2016. This contraction was largely associated with reductions in Nigerian Treasury Bills and Federal Government of Nigeria (FGN) bonds. In contrast, the Nigerian Stock Exchange recorded a strong performance in 2017, with most major market indicators showing significant improvements. The total market capitalisation of listed securities and the All-Share Index increased by 41.6 percent and 42.3 percent, respectively. Similarly, the total volume and value of securities traded rose by 4.7 percent and 121.7 percent, respectively, compared with their levels in the preceding year (CBN, 2017; George-Anokwuru, 2026). In 2018, Nigeria's financial sector recorded a mixed performance, with improvements in some indicators alongside declines in others. The relative importance of the banking sector increased, as the ratio of broad money supply (M3) to GDP rose to 26.2 percent, representing a 0.9 percentage-point increase over the level recorded at the end of 2017. Financial savings also improved during the year, while financial intermediation efficiency strengthened, as indicated by the decline in the currency outside banks-to-broad money supply (COB/M2) ratio from 6.2 percent in 2017 to 5.7 percent in 2018. Despite these improvements, access to financial resources weakened. The aggregate credit-to-GDP ratio declined to 21.6 percent from 22.8 percent in 2017, while credit to the private sector as a proportion of GDP fell from 19.6 percent to 17.8 percent. Similarly, the ratio of banking system assets to GDP decreased from 45.2 percent at the end of 2017 to 42.6 percent in 2018. Total money market assets also contracted marginally by 1.9 percent compared with the previous year, largely due to reductions in bankers' acceptances and Nigerian Treasury Bills. The structure of the banking sector remained unchanged, with 27 licensed banks operating during the year. The Nigerian Stock Exchange, however, experienced a challenging year, as most major market indicators declined. The total market capitalisation of listed securities and the All-Share Index fell by 41.6 percent and 42.3 percent, respectively. Although the volume of securities traded increased marginally by 0.8 percent, the total value of securities traded declined by 6.2 percent compared with the preceding year (CBN, 2018; George-Anokwuru, 2026).

In 2019, Nigeria's financial sector recorded a mixed performance, with improvements in some indicators accompanied by declines in others. The relative importance of the banking sector declined, as reflected in the decrease in the ratio of broad money supply (M3) to GDP from 25.8 percent in 2018 to 24.1 percent in 2019. Financial savings also weakened slightly, with the quasi-money-to-GDP ratio falling from 17.5 percent to 16.8 percent during the period. However, financial intermediation efficiency improved marginally, as indicated by the increase in the currency outside banks-to-broad money supply (COB/M2) ratio from 5.7 percent in 2018 to 5.82 percent in 2019. The banking system's contribution to economic activity improved during the year, with the ratio of domestic claims to GDP increasing from 22.3 percent in 2018 to 25.1 percent in 2019. Similarly, credit to the private sector as a proportion of GDP increased marginally from 18.4 percent to 18.5 percent. Money market interest rates remained relatively low, reflecting prevailing liquidity conditions, and were generally below their

levels in 2018. Total money market assets increased by 6.2 percent during the year, while the number of licensed banks rose from 27 in 2018 to 29 in 2019. Performance in Nigeria's capital market remained mixed. Although the stock market closed the year on a relatively positive note, the NSE All-Share Index recorded a negative annual return. In addition, the total volume and value of securities traded declined by 20.8 percent and 19.7 percent, respectively, compared with the preceding year (CBN, 2019; George-Anokwuru, 2026).

In 2021, Nigeria's financial sector remained relatively resilient, as reflected in the performance of key financial development indicators. Financial savings continued to expand, as evidenced by the increase in the ratio of other deposits (OD) to GDP from 14.4 percent in 2020 to 14.8 percent in 2021. The ratio of banking system assets to GDP remained unchanged at 67.3 percent, suggesting relative stability in the overall size of the financial sector. Similarly, claims on other sectors (COS) and claims on the private sector (CPS), measured as proportions of GDP, increased to 20.3 percent and 13.8 percent, respectively, from 19.6 percent and 12.3 percent in 2020. These increases reflected the continued efforts of the financial system to provide credit and support economic activities. However, financial intermediation efficiency showed a marginal change during the year. The ratio of currency outside banks (COB) to broad money supply (M2) increased slightly to 6.7 percent from 6.6 percent at the end of December 2020, indicating a modest rise in the proportion of currency held outside the banking system (CBN, 2021; George-Anokwuru, 2026).

In 2022, Nigeria's financial sector continued to demonstrate resilience, as reflected in the performance of key financial development indicators. Financial savings maintained an upward trend, as the ratio of other deposits (OD) to GDP increased from 15.2 percent in 2021 to 15.6 percent in 2022. Similarly, the ratio of banking system assets to GDP rose from 67.3 percent to 71.4 percent during the period, indicating an expansion in the relative size of the banking sector and continued strength in the financial system. These developments suggest that the financial sector maintained a relatively stable and growing position in supporting economic activities during the year (CBN, 2022; George-Anokwuru, 2026).

## **2.4 Stylized Facts on Inflation in Nigeria**

The steady increase in the prices of goods and services in Nigeria is a major concern for everyone residing and doing business in Nigeria. In truth, Nigeria's increasing inflation rate has drawn a lot of attention. Since 1980, Nigeria has experienced high and unpredictable inflation. For example, data from the Central Bank of Nigeria's statistical reports show that in 1980, 1981, 1982, 1983, 1984, and 1985, the inflation rates were 9.90%, 20.90%, 7.70%, 23.20%, 39.60%, and 5.50%, respectively. The inflation rate dropped a little in 1986, reaching 5.40%. In 1987, when the Structural Adjustment Programme was ongoing in Nigeria, the inflation rate rose to 10.20%. In 1988 and 1989, inflation was 38.20% and 40.90%, respectively. It went down to 7.50% in 1990. In 1991, 1992, 1993, and 1994, the inflation rates were 13.00%, 44.50%, 57.20%, and 57.00%, respectively. According to available data, inflation in Nigeria reached its highest level in 1995 (George-Anokwuru & Inimino, 2025). In that year, the country's inflation rate was 72.80 percent.

It went down to 29.30 percent in 1996. The high inflation in 1995 and 1996 was because of a lot of problems in the Nigerian banking industry during those years (Gbosi, 2015).

In 1997 and 1998, the inflation rates were 8.50 and 10.00 percent, respectively. The inflation rate dropped a lot in 1999 and 2000. Those years had inflation rates of 6.60 and 6.90 percent. The tight monetary and fiscal policies used by the authorities during this time could be the reason for this drop. However, the continued high inflation rate is still a concern. In 2001, 2002, 2003, 2004, and 2005, the inflation rates were 18.90, 12.90, 14.00, 15.00, and 17.90 percent, respectively. The inflation rate dropped sharply in 2006 and 2007, reaching 8.20 and 5.40 percent. In 2008, 2009, 2010, 2011, and 2012, inflation rates were 11.60, 12.50, 13.70, 10.80, and 12.20 percent. In 2013, 2014, 2015, 2016, and 2017, the rates were 8.50, 8.10, 9.01, 15.70, and 16.50 percent. In 2018, 2019, and 2020, the inflation rates were 12.10, 11.4, and 13.25 percent. In 2021, 2022, and 2023, the inflation rate rose sharply to 16.95, 18.85, and 24.16 percent, respectively (CBN, Various Issues; George-Anokwuru & Inimino, 2025).

Inflation is harmful because it affects people with fixed incomes the most, as it lowers their real income. This happens because during inflation, the value of money goes down. One effect of inflation is that it changes how income is shared. When there's inflation, borrowers usually benefit while lenders lose out. Inflation also moves money from private individuals to the government. Taxes are based on income, so during inflation, people may end up in higher tax brackets. Another problem is that inflation lowers the amount of savings in the country. It's often said that higher interest rates encourage saving, so lower returns on savings lead to less saving overall. Inflation is also bad because it leads to wasteful behaviour, risky activities, and careless spending. It makes speculation more profitable than productive work, which weakens the economy. In Nigeria, rising prices have led some people to turn to illegal ways to get money, which has increased crime in the country (George-Anokwuru & Inimino, 2025).

### 3. Materials and Methods

The study adopted an ex-post facto research design and employed annual time-series data covering the period from 1981 to 2023. Although the study initially intended to use a longer period spanning 1960 to 2024, data limitations and the unavailability of consistent and reliable observations for some of the variables necessitated the adoption of the 1981–2023 period. Consequently, the analysis was based on the available and consistent data for the selected variables. The data were obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin. Furthermore, the study developed an econometric model to examine the effect of financial deepening on inflation in Nigeria. Based on the functional relationship identified between inflation and financial deepening, the study established a link among the variables in accordance with the conceptual framework, theoretical perspectives, and empirical evidence reviewed. Specifically, the study adapted the model proposed by George-Anokwuru (2026), which examined the relationship between poverty incidence and key financial and monetary indicators, namely broad money supply as a percentage of GDP, private sector credit as a percentage

of GDP, monetary policy rate (interest rate), and inflation rate, all measured in percentage terms. In order to have a robust analytical framework, the present study used the inflation rate as the dependent variable and included the exchange rate as one of the explanatory variables. Therefore, the model for this study is presented thusly:

$$INF_t = \alpha_0 + \alpha_1 M_3/GDP_t + \alpha_2 CPS/GDP_t + \alpha_3 MPR + \alpha_4 EXR + e_t \quad (1)$$

Where: INF is the inflation rate (in %),  $M_3/GDP$  = broad money supply as a ratio of GDP in %,  $CPS/GDP$  = private sector credit as a ratio of GDP in %, MPR = monetary policy rate – interest rate (in %), EXR = exchange rate (N/\$),  $\alpha_0$  = intercept parameter,  $e$  = error term,  $\alpha_1 - \alpha_4$  = slope parameters.

### 3.1 Expected sign of the Coefficients

It is expected that  $\alpha_1$ ,  $\alpha_2$  and  $\alpha_4 > 0$ ; while  $\alpha_3 < 0$ .

### 3.2 Techniques of Data Analysis

The analytical techniques employed in the study include the Augmented Dickey-Fuller (ADF) unit root test and the Autoregressive Distributed Lag (ARDL) approach. The ADF test is used to examine the stationarity properties of the variables and determine whether the time-series data exhibit a unit root. Establishing the order of integration of the variables is essential to ensure that the regression results are reliable and not spurious. The general specification of the Augmented Dickey-Fuller (ADF) test is expressed as follows:

$$\Delta y_t = \alpha_0 + \alpha_1 y_{t-1} + \sum \alpha_i \Delta y_i + \delta_t + u_t \quad (2)$$

Where (y) represents the time-series variable, (t) denotes the linear time trend,  $\Delta$  is the first-difference operator,  $\alpha_0$  represents the constant term, n denotes the optimal lag length, and u is the random error term. To examine both the short-run and long-run relationships between financial deepening and the inflation rate, the study employed the Autoregressive Distributed Lag (ARDL) modelling approach. The ARDL framework is appropriate because it accommodates variables with different orders of integration, provided that none is integrated of order two, (I(2)). It also enables the simultaneous estimation of short-run dynamics and long-run relationships within a single model. The ARDL model specified for the study is presented as follows:

$$\begin{aligned} \Delta INF_{t,j} = & C_0 + C_1 INF_{t-1,j} + C_2 CPS/GDP_{t-1,j} + C_3 M_3/GDP_{t-1,j} + C_4 MPR_{t-1,j} \\ & + C_5 EXR_{t-1,j} + \sum_{i=1}^{n1} a_{1i,j} \Delta INF_{t-1,j} + \sum_{i=0}^{n2} a_{2i,j} \Delta CPS/GDP_{t-1,j} \\ & + \sum_{i=0}^{n3} a_{3i,j} \Delta M_3/GDP_{t-1,j} + \sum_{i=0}^{n4} a_{4i,j} \Delta MPR_{t-1,j} + \sum_{i=0}^{n5} a_{5i,j} \Delta EXR_{t-1,j} \\ & + \lambda ECM_t - 1 + \mu_t \end{aligned} \quad (3)$$

Where  $\Delta$  denotes the difference operator,  $\mu_t$  represents white noise or a random error term,  $n$  denotes the optimal lag length, the coefficients of  $\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5$  capture the short-run dynamics of the model, whereas  $c_1, c_2, c_3, c_4, c_5$  represent long-run elasticities of the respective explanatory variables.  $ECM_{t-1}$  denotes the error correction term derived from the cointegration relationship. The error correction coefficient, represented by  $(\lambda_1)$  indicates the speed at which deviations from the long-run equilibrium relationship are corrected following a short-run disturbance. The coefficient is expected to be negative and statistically significant. A negative and significant  $ECM_{t-1}$  coefficient indicates that deviations from the long-run equilibrium are corrected over time, thereby ensuring that the variables gradually converge back towards their long-run equilibrium relationship.

#### 4. Results and Discussion

This section presents a detailed analysis of the observed trends in inflation (INF), private sector credit as a ratio of GDP (CPS/GDP), broad money supply as a ratio of GDP (M3/GDP), exchange rate (EXR), and monetary policy rate (MPR) in Nigeria over the period 1981–2023. The focus is on understanding how the evolution of financial deepening indicators relates to inflation dynamics.

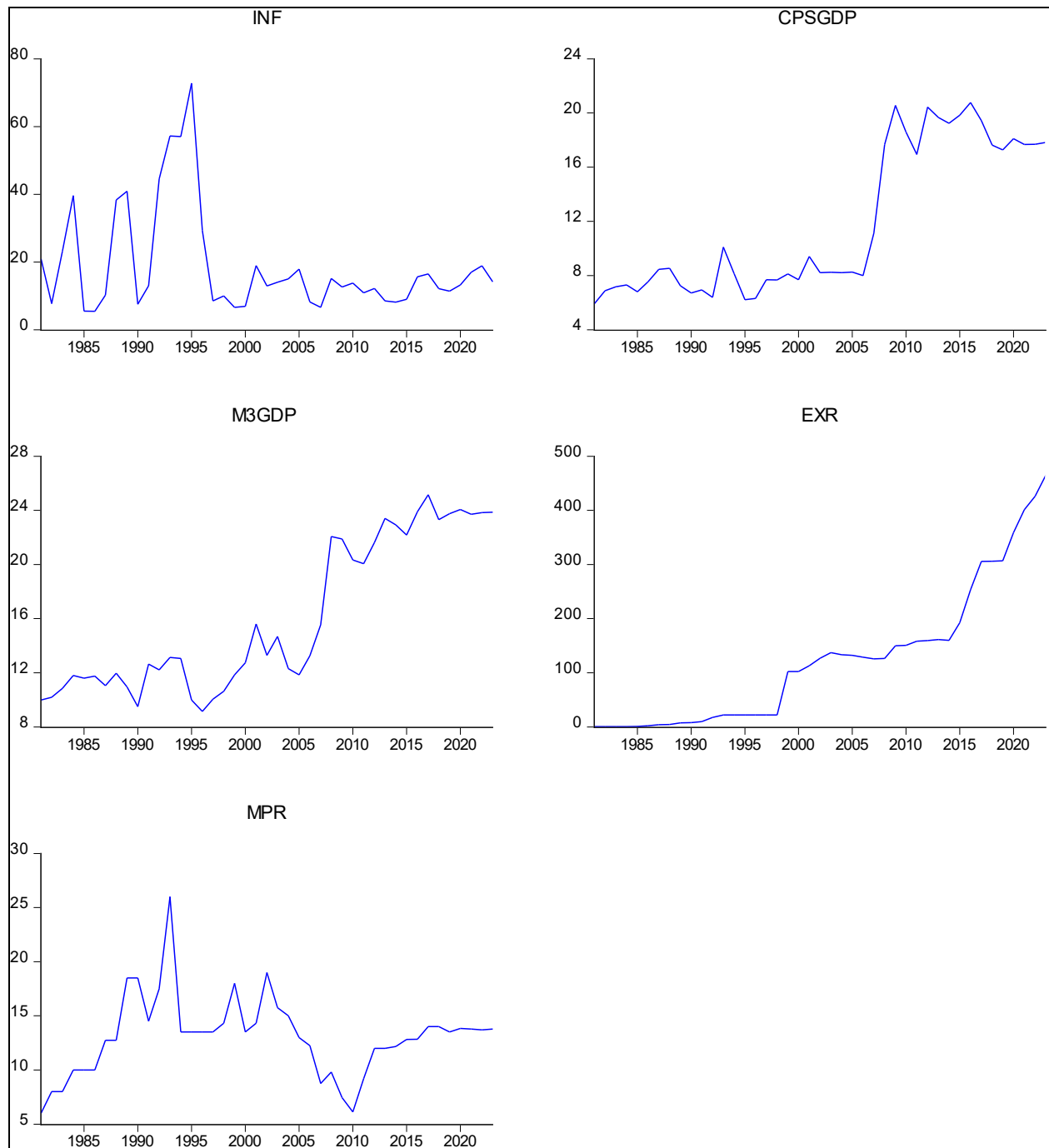
##### 4.1 Inflation Dynamics (INF)

The inflation trend in Figure 1 reveals a highly volatile macroeconomic environment during the 1980s and mid-1990s. Inflation rates fluctuated significantly, with a pronounced peak in the mid-1990s, indicating severe macroeconomic instability. This period is characterized by weak monetary control and structural imbalances within the economy. Following this episode, inflation declined sharply in the late 1990s, suggesting a phase of macroeconomic stabilization. However, from the early 2000s onward, inflation exhibits a more moderate but persistent pattern, fluctuating within a relatively narrower range. Despite reduced volatility, inflation does not converge to low single-digit levels, indicating the presence of underlying structural pressures. Overall, the inflation trend transitions from extreme instability to controlled persistence, reflecting partial success in macroeconomic management but continued vulnerability to internal and external shocks.

##### 4.2 Private Sector Credit and Financial Deepening (CPS/GDP)

In Figure 1, the ratio of private sector credit to GDP remains relatively low and stagnant from the 1980s through the early 2000s, indicating a shallow financial system with limited intermediation capacity. This suggests that the financial sector played a minimal role in supporting productive economic activities during this period. A significant structural shift is observed in the mid-2000s, where CPS/GDP increases sharply. This upward movement reflects a period of financial deepening, likely associated with banking sector reforms that enhanced the capacity of financial institutions to extend credit. However, beyond this phase of rapid expansion, the trend stabilizes, with CPS/GDP fluctuating within a narrower range. This suggests that while financial deepening improved, it did

not maintain a continuous upward trajectory, indicating possible constraints in sustaining credit growth.



**Figure 1:** The trends of inflation rate (INF), private sector credit as a ratio of GDP in % (CPS/GDP), broad money supply as a ratio of GDP in % ( $M_3$ /GDP), exchange rate (EXR) and monetary policy rate (MPR) in Nigeria from 1981 to 2023.

### 4.3 Broad Money Supply ( $M_3$ /GDP) and Liquidity Expansion

In Figure 1, the trend in  $M_3$ /GDP shows a gradual increase from the 1980s, reflecting a steady process of monetization. Unlike CPS/GDP, which exhibits a discrete jump,  $M_3$ /GDP follows a more continuous upward trajectory. The increase becomes more

pronounced after the mid-2000s, indicating acceleration in liquidity expansion within the economy. This suggests that financial deepening in Nigeria has been driven not only by credit expansion but also by broader increases in money supply. In the post-2010 period, M3/GDP stabilizes at relatively high levels, indicating that the economy has reached a higher degree of monetization. However, the stabilization also implies that further expansion in money supply has slowed, even as liquidity remains substantial.

#### **4.4 Exchange Rate Movement (EXR)**

In Figure 1, the exchange rate trend reveals a persistent and sustained depreciation of the domestic currency. Prior to the mid-1990s, the exchange rate remained relatively low and stable, reflecting a more controlled external environment. From the late 1990s onward, the exchange rate began a steep upward trajectory, indicating continuous depreciation. This trend intensified after 2015, with the exchange rate rising sharply to its highest levels within the study period. The pattern suggests that Nigeria has experienced prolonged external sector pressures, leading to a weakening of the domestic currency over time. The absence of any sustained reversal indicates that exchange rate depreciation has become a structural feature of the economy.

#### **4.5 Monetary Policy Rate (MPR) Dynamics**

In Figure 1, the MPR series exhibits considerable volatility during the 1990s, with sharp increases and decreases reflecting an unstable monetary policy environment. A notable peak occurs in the mid-1990s, consistent with efforts to respond to high inflation during that period. In the early 2000s, the MPR declines, indicating a shift toward a more accommodative monetary stance. However, from around 2010 onward, the policy rate becomes more stable, generally maintained within a moderate to high range. This shift suggests a transition toward a more structured and predictable monetary policy framework, with less frequent and less extreme adjustments in response to macroeconomic conditions.

#### **4.6 The Synthesis of Trends**

A joint examination of the variables in Figure 1 reveals important patterns in the relationship between financial deepening and inflation in Nigeria. Financial deepening, as measured by CPS/GDP and M3/GDP, becomes more pronounced from the mid-2000s onward, indicating an expansion of the financial sector. At the same time, inflation, while less volatile than in earlier periods, remains persistent, suggesting that increased financial depth has not been accompanied by a proportional reduction in price instability. Additionally, the continuous depreciation of the exchange rate coincides with periods of rising liquidity and sustained inflation, indicating a possible interaction between external sector dynamics and domestic monetary conditions. Furthermore, the stabilization of the monetary policy rate in the later period reflects an attempt to manage these evolving dynamics within a more consistent policy framework.

In summary, the observed trends indicate that:

- 1) Financial deepening in Nigeria accelerated notably after the mid-2000s.

- 2) Inflation transitioned from high volatility to moderate persistence.
- 3) Broad money supply expanded steadily, reflecting increased liquidity.
- 4) The exchange rate followed a continuous depreciation path.
- 5) Monetary policy became more stable but remained relatively tight.

These stylized facts provided the foundation for evaluating the implications of financial deepening on inflation dynamics in Nigeria from 1981 to 2023.

#### 4.7 Descriptive Statistics for Underlying Series

This study used descriptive statistics to describe the basic features of the data in the study. Specifically, the essence of the descriptive statistics is to ascertain the stability of the time series.

**Table 1:** Descriptive Statistics Results

|              | INF      | CPS/GDP  | M3/GDP   | EXR      | MPR      |
|--------------|----------|----------|----------|----------|----------|
| Mean         | 18.77953 | 11.82721 | 15.99326 | 124.9126 | 13.05442 |
| Median       | 13.25000 | 8.260000 | 13.13000 | 125.8300 | 13.50000 |
| Maximum      | 72.80000 | 20.77000 | 25.16000 | 465.1900 | 26.00000 |
| Minimum      | 5.400000 | 5.920000 | 9.150000 | 0.610000 | 6.000000 |
| Std. Dev.    | 15.53751 | 5.491636 | 5.589679 | 129.2888 | 3.728839 |
| Skewness     | 1.884104 | 0.508169 | 0.431992 | 1.043230 | 0.729772 |
| Kurtosis     | 5.895725 | 1.439181 | 1.456741 | 3.244319 | 5.065758 |
| Jarque-Bera  | 40.46411 | 6.215473 | 5.604542 | 7.906635 | 11.46241 |
| Probability  | 0.000000 | 0.044702 | 0.060672 | 0.019191 | 0.003243 |
| Sum          | 807.5200 | 508.5700 | 687.7100 | 5371.240 | 561.3400 |
| Sum Sq. Dev. | 10139.40 | 1266.639 | 1312.270 | 702055.4 | 583.9781 |
| Observations | 43       | 43       | 43       | 43       | 43       |

Source: Author (2026).

The descriptive statistics reported in Table 1 indicate that the inflation rate (INF), private sector credit as a ratio of GDP in % (CPS/GDP), broad money supply as a ratio of GDP in % (M3/GDP), exchange rate (EXR) and monetary policy rate (MPR) averaged 18.77953, 11.82721, 15.99326, 124.9126 and 13.05442, respectively. The standard deviation reveals that the inflation rate, private sector credit as a ratio of GDP in %, broad money supply as a ratio of GDP in %, and the monetary policy rate converged around their mean. Meanwhile, the exchange rate did not converge around its mean.

The Skewness test results show positive values for all the series, meaning that they have high tails. Variables of financial deepening - private sector credit as a ratio of GDP in % (CPSGDP) and broad money supply as a ratio of GDP in % (M2GDP) are platykurtic relative to normal, since their values for kurtosis 1.439181 and 1.456741 are less than 3. This suggests that the variables have short and thin tails, and their central peaks are lower and broader. Moreover, the inflation rate and monetary policy rate have leptokurtic distributions relative to the normal, since their values for kurtosis 5.895725 and 5.065758, respectively, are greater than 3. This indicates a flatter-than-normal distribution, and the variables have large tails. That is, they have longer and fatter tails, and their central peaks are higher and sharper. At the same time, the exchange rate is mesokurtic since its

kurtosis value is equal to three. This means that it has a normal curve; it is neither flat nor peaked.

The probability of the Jarque-Bera statistic suggests that the inflation rate, private sector credit as a ratio of GDP in % (CPSGDP), exchange rate and monetary policy rate are not normally distributed at the 5% level, as their deviation from normality, as measured by the test statistic, is statistically significant. However, broad money supply as a ratio of GDP in % (M2GDP) is normally distributed. Therefore, the study concludes from the revealed statistical properties of the time series that some of the variables are not normally distributed, which may have resulted from the problem of unit roots. This necessitated the unit root test for stationarity, as shown in Table 2.

**Table 2:** Unit Root Test Outcome via Augmented Dickey-Fuller

| Variables | Level form     |                   | First difference |                   | Order of integration |
|-----------|----------------|-------------------|------------------|-------------------|----------------------|
|           | ADF Statistics | 5% Critical Value | ADF Statistics   | 5% Critical Value |                      |
| INF       | -3.143430      | -2.933158         | -                | -                 | 1(0)                 |
| CPS/GDP   | -0.980213      | -2.933158         | -5.334850        | -2.935001         | 1(1)                 |
| M3/GDP    | -0.739509      | -2.933158         | -6.204884        | -2.935001         | 1(1)                 |
| EXR       | 3.071535       | -2.933158         | -4.408356        | -2.935001         | 1(1)                 |
| MPR       | -3.389303      | -2.933158         | -                | -                 | 1(0)                 |

**Recall:** INF, CPS/GDP, M3/GDP, EXR and MPR as defined previously.

**Source:** Author (2026).

The results of the Augmented Dickey-Fuller (ADF) unit root test presented in Table 2 indicate that, at the 5% significance level, the Monetary Policy Rate (MPR) and Inflation Rate (INF) are stationary at levels, that is,  $I(0)$ . This implies that their ADF test statistics exceed the corresponding 5% critical values. In contrast, Credit to the Private Sector as a percentage of GDP (CPS/GDP), Broad Money Supply as a percentage of GDP (M3/GDP), and the Exchange Rate (EXR) become stationary only after first differencing and are therefore integrated of order one,  $I(1)$ . The combination of variables integrated at levels  $I(0)$  and at first difference  $I(1)$  satisfies the conditions for applying the Autoregressive Distributed Lag (ARDL) modelling approach to investigate the existence of a long-run relationship among the variables.

**Table 3:** ARDL Bounds Test for Co-integration

| Model                             |             | F-Statistic = 8.404792 |
|-----------------------------------|-------------|------------------------|
| INF= F(CPS/GDP, M3/GDP, EXR, MPR) |             | K = 4                  |
| Critical Values                   | Lower Bound | Upper Bound            |
| 5%                                | 2.56        | 3.49                   |

**Recall:** INF, CPS/GDP, M3/GDP, EXR and MPR as defined previously.

**Source:** Author (2026).

The results of the ARDL bounds test for cointegration indicate the existence of a long-run relationship among inflation (INF), credit to the private sector as a percentage of GDP (CPS/GDP), broad money supply as a percentage of GDP (M3/GDP), exchange rate

(EXR), and monetary policy rate (MPR). This conclusion is supported by the calculated F-statistic of approximately 8.4, which exceeds the upper-bound critical value at the 5% significance level. Consequently, the null hypothesis of no long-run relationship among the variables is rejected. The presence of cointegration therefore confirms that the variables share a stable long-run equilibrium relationship, providing a basis for examining both their short-run dynamics and long-run effects within the ARDL framework.

**Table 4:** Estimated ARDL Long-Run Coefficients. Dependent Variable: INF ARDL (4, 4, 4, 4, 2)

| Regressors | Coefficient | t-Statistic | P-Value |
|------------|-------------|-------------|---------|
| CPS/GDP    | -19.95772   | -2.879385   | 0.0109  |
| M3/GDP     | 30.06145    | 3.080172    | 0.0072  |
| EXR        | -0.527213   | -3.527035   | 0.0028  |
| MPR        | 4.954937    | 3.365395    | 0.0039  |

**Recall:** INF, CPS/GDP, M3/GDP, EXR and MPR as defined previously.

**Source:** Author (2026).

The long-term coefficient estimates presented in Table 4 indicate that credit to the private sector as a ratio of GDP (CPS/GDP) and the exchange rate (EXR) have a negative relationship with the inflation rate in Nigeria. In contrast, broad money supply as a ratio of GDP (M3/GDP) and the monetary policy rate (MPR) exhibit positive relationships with inflation. The results further indicate that the explanatory variables exert statistically significant effects on the inflation rate in the long run. This suggests that sustained changes in private sector credit, broad money supply, exchange rate, and monetary policy rate have important implications for inflationary dynamics in Nigeria. Therefore, developments in these financial and monetary indicators are relevant to the determination and management of inflation over the long term.

**Table 5:** Error Correction Representation for the Selected ARDL Model ARDL (4, 4, 4, 4, 2)

| Regressors                                                                                                                                                                         | Coefficients | t-Statistic | P-Value |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-------------|---------|
| CPS/GDP                                                                                                                                                                            | 5.795257     | 3.469952    | 0.0032  |
| M3/GDP                                                                                                                                                                             | -6.857743    | -4.045470   | 0.0009  |
| EXR                                                                                                                                                                                | 0.200719     | 2.658803    | 0.0172  |
| MPR                                                                                                                                                                                | -2.594393    | -4.744101   | 0.0002  |
| ECM (-1)                                                                                                                                                                           | -0.712744    | -8.135584   | 0.0000  |
| <b>R-squared</b> = 0.858851, <b>D-W stat.</b> = 1.716812,<br><b>Adjusted R-squared</b> = 0.744587, <b>Akaike info criterion</b> = 7.042223,<br><b>Schwarz criterion</b> = 7.810020 |              |             |         |

**Recall:** CPS/GDP, M3/GDP, EXR and MPR as defined previously.

**Source:** Author (2026).

Table 5 presents the short-run dynamic coefficients associated with the long-run relationship established through the Error Correction Model (ECM). The Error Correction Term (ECT) has the expected negative sign and is statistically significant, indicating that the model converges towards its long-run equilibrium following short-run deviations. This implies that temporary changes in the inflation rate are gradually corrected over

time, thereby restoring equilibrium in the long run. The significant ECT therefore confirms the existence of an adjustment mechanism through which short-run disequilibrium is corrected towards the long-run relationship. Furthermore, the Durbin-Watson (DW) statistic, which is approximately 2.0, suggests that the model does not suffer from a serious problem of serial autocorrelation. Furthermore, the model demonstrates a strong explanatory power, as indicated by an R-squared value of approximately 0.74. This implies that about 74% of the variations in the inflation rate during the period under investigation are explained by the variables included in the model, while the remaining 26% is attributable to other factors not captured in the model and is represented by the error term. Generally, the ECM results indicate a good fit and provide evidence of meaningful short-run dynamics alongside the established long-run relationship.

The coefficients of private sector credit as a ratio of GDP in % and the exchange rate are positive in the short run. Specifically, the coefficient of private sector credit as a ratio of GDP indicates that a 1% % increase in private sector credit relative to GDP is associated with an approximately 5.795% increase in the inflation rate, *ceteris paribus*. Also, currency depreciation will increase the domestic price of imported goods and intermediate inputs, thereby contributing to cost-push inflation. Interestingly, the coefficients for private sector credit as a ratio of GDP in % and exchange rate are statistically significant. Therefore, it was concluded that private sector credit as a ratio of GDP in % and exchange rate have a strong or significant connection with the inflation rate in Nigeria during the period of study. This result matches the findings of Ogbuagu and Ewubare (2014), who studied the impact of financial deepening on inflation in Nigeria from 1980 to 2012 using an Auto-regressive Distributed Lag Model. They found that the ratio of private sector credit to GDP and the exchange rate significantly generated consequent increases in prices. From the above, the empirical results indicate that private sector credit (CPS/GDP) exerts a positive and significant influence on inflation in the short run. This suggests that increases in credit to the private sector tend to raise aggregate demand more rapidly than aggregate supply, thereby generating inflationary pressures. In the context of Nigeria, this outcome reflects structural inefficiencies in the allocation of credit, where financial resources are not sufficiently channeled toward productive sectors capable of expanding output. Instead, credit growth may be directed toward consumption and import-dependent activities, amplifying demand-side pressures on prices. From a policy perspective, this finding underscores the need to move beyond aggregate credit expansion toward targeted financial deepening. Policymakers should prioritize improving the quality of credit allocation by promoting lending to sectors with high productive capacity, such as agriculture and manufacturing. Strengthening credit monitoring frameworks and enhancing institutional mechanisms for risk assessment would also help ensure that credit growth translates into real sector development rather than inflation. Similarly, the positive relationship between exchange rate (EXR) and inflation confirms the presence of significant exchange rate pass-through in Nigeria. Currency depreciation increases the domestic price of imported goods and intermediate inputs, thereby contributing to cost-push inflation. Given Nigeria's heavy

reliance on imports, this channel plays a critical role in shaping inflation dynamics. The policy implication is that exchange rate management must be an integral component of inflation control. Efforts to stabilize the exchange rate through improved foreign exchange market efficiency, accumulation of external reserves, and export diversification are essential. Without addressing exchange rate volatility, monetary policy interventions may have limited effectiveness in achieving price stability.

Furthermore, the coefficients of broad money supply as a ratio of GDP in percentage and the monetary policy rate have negative signs in the short run. What this implies is that, when there is a one percentage point increase in broad money supply as a ratio of GDP in percentage, it will lead to a decrease in the inflation rate by 6.857743 percent. Also, a percentage increase in the monetary policy rate will reduce the inflation rate in Nigeria by about 2.594393 percent. These outcomes show that broad money supply as a ratio of GDP in percentage and the monetary policy rate have helped to reduce the inflation rate in Nigeria during the period studied. The negative association between broad money supply (M3/GDP) and inflation in the short run deviates from conventional monetary theory. This inverse relationship suggests that increases in money supply may be associated with improved liquidity conditions that facilitate production and ease supply constraints. In this context, financial deepening through increased monetization appears to support economic activity in a manner that mitigates inflationary pressures. This finding implies that monetary expansion is not inherently inflationary in an underdeveloped financial system. Rather, when properly intermediated, increased liquidity can enhance efficiency and stimulate output growth. Consequently, policymakers should adopt a balanced approach to monetary expansion, ensuring that increases in money supply are aligned with improvements in financial intermediation and productive capacity. In addition, the negative relationship between the monetary policy rate (MPR) and inflation confirms the effectiveness of interest rate adjustments as a short-run stabilization tool. An increase in MPR reduces inflation by constraining borrowing, lowering aggregate demand, and anchoring inflation expectations. This indicates that the monetary authority retains a degree of control over inflation through conventional policy instruments. However, the reliance on high interest rates to curb inflation presents potential trade-offs, particularly in terms of reduced investment and slower economic growth. Therefore, while MPR remains a critical policy lever, its use should be carefully calibrated to avoid adverse effects on the real sector.

Considering the synthesis of policy implications, taken together, the short-run ARDL results highlight the complex nature of the relationship between financial deepening and inflation in Nigeria. The findings suggest that financial deepening is not uniformly beneficial; its impact depends largely on the structure and efficiency of the financial system. Credit expansion, when poorly allocated, can exacerbate inflationary pressures, whereas broader liquidity growth may support disinflation through supply-side improvements. The dominant role of the exchange rate in influencing inflation underscores the importance of external sector stability in macroeconomic management. While monetary policy tools such as the monetary policy rate (MPR) remain effective,

their impact is conditioned by structural factors, including exchange rate dynamics and the quality of financial intermediation.

In conclusion, the policy implications of the short-run ARDL results emphasize the need for a coordinated and multidimensional policy framework. Achieving price stability in Nigeria requires not only prudent monetary policy but also structural reforms aimed at improving credit allocation, enhancing financial intermediation, and stabilizing the exchange rate. In this regard, financial deepening should be pursued with a focus on efficiency and productivity to ensure that it contributes to sustainable, non-inflationary economic growth.

#### 4.8 Post Estimation Diagnostic Tests Results

Diagnostic tests were conducted in this study to assess the reliability, adequacy, and validity of the estimated model for drawing meaningful conclusions and making policy recommendations. Several diagnostic procedures were employed for this purpose. The Wald test was used to examine the validity of the imposed coefficient restrictions, while the Breusch–Godfrey (B-G) Lagrange Multiplier (LM) test was applied to determine whether the model suffers from serial correlation. The Breusch–Pagan–Godfrey test was employed to examine the presence of heteroskedasticity and determine whether the residuals of the ECM have constant variance. In addition, the normality test was used to ascertain whether the residuals are normally distributed. The results of these diagnostic tests are presented in Tables 6, 7, and 8, while the normality test is illustrated in Figure 1.

**Table 6: Wald Test Result**

| Wald Test:         |          |         |             |
|--------------------|----------|---------|-------------|
| Equation: Untitled |          |         |             |
| Test Statistic     | Value    | Df      | Probability |
| F-statistic        | 373.2735 | (5, 16) | 0.0000      |
| Chi-square         | 1866.367 | 5       | 0.0000      |

Source: Author (2026).

The results presented in Table 6 indicate that the model is statistically significant, with an F-statistic of approximately 373 and a probability value of 0.0000. Since the probability value is below the 5% significance threshold (0.05), the null hypothesis is rejected. This implies that the explanatory variables, when considered jointly, have a statistically significant effect on the inflation rate in Nigeria over the period under investigation.

**Table 7: Breusch-Godfrey Test for Serial Correlation**

| Breusch-Godfrey Serial Correlation LM Test: |          |                     |        |
|---------------------------------------------|----------|---------------------|--------|
| F-statistic                                 | 0.119928 | Prob. F(2,14)       | 0.8879 |
| Obs*R-squared                               | 0.656918 | Prob. Chi-Square(2) | 0.7200 |

Source: Author (2026).

The results displayed in Table 6 show that the error correction model does not have a serial autocorrelation issue. This is because the chi-square value and the probability associated with it are higher than 0.05.

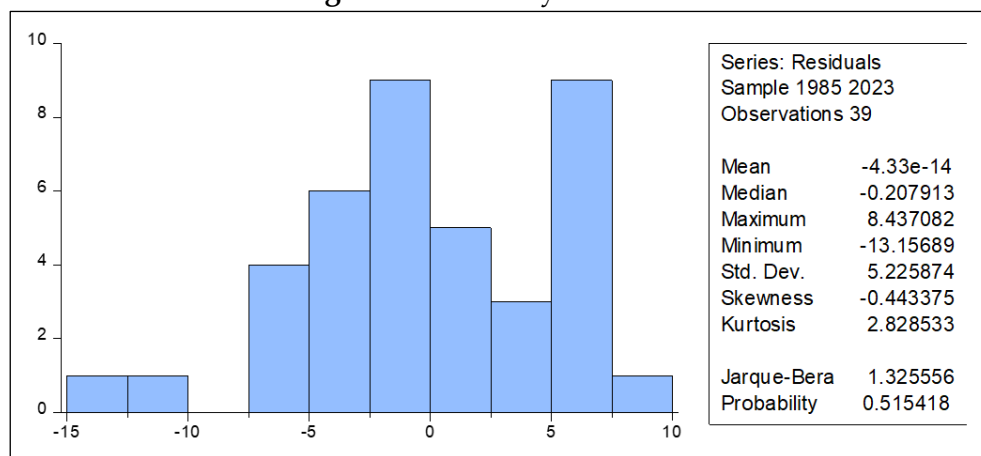
**Table 8:** Autoregressive Conditional Heteroskedasticity Test Result

| Heteroskedasticity Test: Breusch-Pagan-Godfrey |          |                      |        |
|------------------------------------------------|----------|----------------------|--------|
| F-statistic                                    | 0.917451 | Prob. F(22,16)       | 0.5824 |
| Obs*R-squared                                  | 21.75477 | Prob. Chi-Square(22) | 0.4746 |
| Scaled explained SS                            | 3.347635 | Prob. Chi-Square(22) | 1.0000 |

Source: Author (2026).

The Breusch-Pagan-Godfrey test result in Table 8 confirms that the error correction model is free from heteroskedasticity, which suggests that the variance of the residual in the inflation rate model is homoscedastic over the period covered in this study.

**Figure 1:** Normality Test Result



Source: Author (2026).

The results illustrated in Figure 1 indicate that the residuals of the ECM are normally distributed at the 5% significance level. This conclusion is supported by the Jarque-Bera test, which reports a probability value of approximately 0.52, exceeding the 0.05 significance threshold. This implies that the residuals of the estimated ECM follow a normal distribution.

## 5. Conclusion and Recommendations

Although considerable research has examined the relationship between financial development, economic growth, and human development, relatively limited attention has been devoted to the effect of financial development on inflation in Nigeria. Moreover, the existing theoretical perspectives provide divergent explanations, while empirical studies have produced mixed and inconclusive findings. This study therefore sought to provide further empirical evidence by examining the Nigerian economy while incorporating key control variables, particularly the Monetary Policy Rate (MPR) and exchange rate. The study utilised data obtained from publications of the Central Bank of Nigeria (CBN), covering inflation rate, private sector credit as a ratio of GDP in %, broad money supply as a ratio of GDP in %, Monetary Policy Rate, and exchange rate. The Autoregressive Distributed Lag (ARDL) approach was employed to investigate both the

short-run and long-run relationships between financial development and inflation in Nigeria. The results showed that in the long run private sector credit as a ratio of GDP in % and exchange rates have negative and significant relationship with inflation rate. However, broad money supply as a ratio of GDP in % and monetary policy rate has positive and significant relationship with inflation rate. In the short run, private sector credit as a ratio of GDP in % and exchange rate exert a positive and significant influence on inflation rate in Nigeria during the period of study. At the same time, broad money supply as a ratio of GDP in percentage and monetary policy rate has negative and significant relationship with inflation rate during the period of study. The study settled that financial deepening is not uniformly beneficial; its impact depends largely on the structure and efficiency of the financial system. Credit expansion, when poorly allocated, can exacerbate inflationary pressures, whereas broader liquidity growth may support disinflation through supply-side improvements. The dominant role of the exchange rate in influencing inflation underscores the importance of external sector stability in macroeconomic management. While monetary policy tools such as the monetary policy rate (MPR) remain effective, their impact is conditioned by structural factors, including exchange rate dynamics and the quality of financial intermediation. The study emphasised the need for a coordinated and multidimensional policy framework to achieve price stability. Achieving price stability in Nigeria requires not only prudent monetary policy but also structural reforms aimed at improving credit allocation, enhancing financial intermediation, and stabilizing the exchange rate. In this regard, financial deepening should be pursued with a focus on efficiency and productivity to ensure that it contributes to sustainable, non-inflationary economic growth.

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### **Conflict of Interest Statement**

The author declares no conflicts of interest.

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