An Empirical Assessment Of The Central Bank Of Nigeria's (CBN) Policy is Used to Analyze the Factors That Influence Monetary Policy and the Stability Of Nigeria's Economic Growth.

Sulaiman, T.H[1*], Ajiteru, S.A.R[2], Abalaka, J.N[3]

[1,3]Crown University, Faculty of Social Science, United States.

[2]Department of Political Science ,International Relations Achievers University, Owo,
P.M.B.1030 Owo Ondo,Nigeria.

staiwohassan99@yahoo.com[1*], ajiterudr.sheriffdeen@gmail.com[2], abalaka.james@yahoo.com[3]

Author Correspondence: staiwohassan99@yahoo.com[*]

Abstract.*This study examines the impact of the Central Bank of Nigeria's monetary policies on the Nigerian economy, specifically how these policies can be applied to foster economic growth. The research employs multiple regression models as the primary statistical method to analyze the relationship between key variables: money supply, average price levels, interest rates, labor force, and their effects on the Gross Domestic Product (GDP). Using data from 1981 to 2008, the study applies the Ordinary Least Squares (OLS) method to assess these effects comprehensively. The findings indicate that monetary policy, as reflected by money supply, positively influences GDP growth and improves the balance of payments, while also having a negative impact on inflation rates. The study suggests that the Nigerian money market should introduce a broader range of financial instruments to cater to the growing economy's needs. Additionally, the recommendations emphasize the importance of designing monetary policies that create a favorable investment climate by adjusting interest rates, currency rates, and liquidity management mechanisms. By fostering a well-regulated and flexible monetary system, the Central Bank can further enhance the economic stability and growth of Nigeria, supporting sustainable development in the long term.*

Keywords: *Economic growth, Financial innovation, Monetary policy, Real money demand, Transmission mechanism*

1. INTRODUCTION

Nigeria's economy, which depends heavily on imports, has challenges such as slow growth, erratic business cycles, and economic volatility (Sulaiman, 2023). Unemployment, inflation, inefficiency, and imbalance of payments are typically the outcomes of this. In one way or another, the government has regulated and managed the economy to ensure that resources are used and allocated effectively, maximizing the welfare of the populace. Abalaka (2023).

The Nigerian government implements three different kinds of public policies to achieve the goals of resource allocation and income distribution, much like any other developing nation (Sulaiman, 2022). Monetary, fiscal, and income policy tools are some examples of these public policy instruments. In order to accomplish specific macroeconomic goals, such as employment, economic growth and development, balance of payments stability, and a generally steady level of prices, the Nigerian government has historically depended on monetary policy. The rationale

behind the decision to adopt monetary policy is that it has significant effects on fiscal and income policy measures (Sulaiman, 2023).

According to Sulaiman (2023), monetary policy is the set of policies intended to control the value, supply, and cost of money in an economy in accordance with the volume of economic activity. It can be defined as the art of managing the flow and direction of credit and monetary facilities in order to promote stable prices and economic expansion (CBN 1992). Regarding whether government intervention through monetary policy will result in economic stabilization, economists cannot agree. Sulaiman (2023). The economy was split into various schools of thought as a result of this dispute. These three schools are the monetarist, Keynesian, and classical schools. They all have different opinions about how changes in monetary aggregates might impact economic stabilization. Ajiteru (2023).

According to the classicists, a change in the money supply will only have an impact on prices; it will have no influence on real demand, investment, or output because of the equation of exchange, the stability of the money velocity, and the presumption that the economy is operating at full employment. Conversely, the Keynesians think that changes in the money supply could result in an increase or a drop in Sulaiman's interest rate. A drop in interest rates will have an impact on total investment and increase total output and income. This is predicated on the idea that interest rates are the primary factor influencing investment in market economies. According to Sulaiman (2023), the investment process entails the use of labor and capital, which raises overall employment.

The money supply is the primary element influencing the health of the economy, according to monetarists. They think that when the money supply is expanded, nominal demand will rise, and where there is excess capacity, output will rise as well. According to monetarists, the expansion of the money supply will eventually be inflationary with little impact on aggregate demand, employment, or investment, according to Abalaka (2023).

Despite these disputes, monetary policy is nevertheless adopted by the Nigerian government and its monetary authority to control the economy. Therefore, the Central Bank of Nigeria (CBN) implements both contractionary and expansionary policies in order to manipulate the economic fluctuations that have been observed thus far (Sulaiman, 2023). This measure is being taken because developing economies have been successfully introducing and implementing monetary policy. Examining how changes in monetary policy (money supply) can be utilized to affect output is therefore required. Twenty-one years will be covered in the examination (Ajiteru 2023).

Stabilizing economic development is one of the main goals of Nigerian monetary policy in order to foster economic growth, the Nigerian government has implemented a number of monetary policies through the Central Bank of Nigeria over the years. The issue with Nigeria's economic growth endures despite the growing focus on monetary policy manipulation (Sulaiman, 2023). High unemployment, little investment, high inflation, and an unstable foreign exchange rate are some examples of these issues. Nigeria's economic growth is said to have rapidly slowed as a result of these alleged issues. Therefore, it becomes essential to draw attention to Nigeria's monetary policy and assess the degree to which it has truly aided in the expansion of the country's economy (Abalaka, 2023). This study looked at how much Nigerian output has been and can be influenced by changes in the money supply Sulaiman (2023).

Questions for Research

To accomplish the aforementioned goal, the following research questions will be useful.

1. How has Nigerian output been affected by monetary policy?
2. How much has interest rates impacted Nigeria's economic expansion?
3. What impact does the average price have on Nigeria's output level?
4. Has Nigeria's labor force contributed significantly to the country's economic growth?

Study Hypotheses

The following theories will be investigated in this investigation.

- **Ho1:** The amount of output and the money supply do not significantly correlate.
- **Ho2:** Interest rates have no discernible impact on economic expansion.
- **Ho3:** The average price has no discernible impact on output levels.
- **Ho4:** Economic growth is not much impacted by the labor force.

2. REVIEW OF LITERATURE

An overview of empirical research on money demand at the national and worldwide levels is provided in the section that follows.

International Empirical Studies Review

The limits testing method was used by Dagher and Kovanen (2021) to assess the stability of Ghana's long-term money demand. The findings offered compelling proof that, even in the face of significant shifts in the financial markets, there is a steady, well-defined long-term money demand, and that any departure from the equilibrium is only temporary (Sulaiman,

2023). Co-integration and error correction models were applied to time series data (annual observations) by Suliman and Dafaalla (2021) in order to analyze the money demand pattern in Sudan from 1960 to 2010. Real money balances and the explanatory variables have a long-term link, according to co-integration results.

Using co-integration and error correction models, Dritsaki and Dritsaki (2017) examined the stability of the money demand function in Turkey from January 1989 to May 2010 under the economic reforms and financial crises. They found a well-determined instability for the demand for narrow money and its dynamics, and according to the estimation of the impulse response functions, interest rates caused the largest shift in both money demand and industrial production (Ajiteru, 2023). The study concluded that the narrow money aggregate can be used as a target of monetary policy in Sudan based on monthly data from 1985 to 2010. Real money balances, prices, income, exchange rates, treasury bill rates, and financial innovation were found to be related over the long term by the results of the co-integration test. Long-term money demand was greatly impacted by all factors, but in the short term, policy must focus on boosting financial innovation, open market operations, and economic productivity in order to boost returns on alternative investments. Using annual data for the years 1981–2010, Mansaray and Swaray (2017) investigated the pace at which shifts in Sierra Leone's financial markets impacted money demand behavior and attempted to make inferences for monetary policy.

The short-run dynamics and long-term outcomes demonstrated that real gross domestic product, when co-integrated using the autoregressive distributed lag (ARDL) approach, Real money balances in Sierra Leone Sulaiman (2022) are significantly impacted by GDP, inflation, the real exchange rate, and foreign interest rates. Unidirectional causality between real balances and inflation and the real effective exchange rate, respectively, was found by the Granger causality test results. The findings indicated that the money demand was steady and that the monetary authorities should keep aiming for real money balances as a middle ground while establishing their framework for monetary policy. Bhatta (2013) used the annual data set from 1975 to 2009 to study the long-term stability problem of the money demand function in Nepal using ARDL modeling to co-integration. In the case of both narrow and broad monetary policy, the limits test demonstrated the existence of a long-term co-integrating relationship between the demand for real money balances, real GDP, and interest rates aggregates. The cumulative sum of recursive residuals (CUSUM) and cumulative sum of squares of recursive residuals (CUSUMSQ) test demonstrated that both the long-run narrow and broad money demand functions were stable. The findings demonstrated that the central bank can use the monetary

aggregates as intermediate targets for accomplishing the overarching economic goals and that the demand for money balance in Nepal is a predictable consequence of a few variables. Abalaka (2023).

Using the error correction version of the ARDL approach, Dharmadasa and Nakanishi (2013) examined the long-term money demand function for Sri Lanka, paying particular emphasis to the impact of the global financial crisis on money demand. The results highlighted the strong correlation between M1 money demand in Sri Lanka and real income and real exchange rates

as well as short-term interest rates, both domestic and foreign. The overall test result demonstrated that, in spite of the economic uncertainties brought on by the global financial crisis, Sri Lanka was able to maintain a steady money demand function. The need for money in Namibia was studied by Sheefeni (2018) and Sulaiman (2022). On quarterly data from 2000:Q1 to 2012:Q4, time series techniques such the unit root test, co-integration, and ARDL approach were applied. There was no co-integration between real money aggregates (M1 and M2), real income, inflation, and interest rates, according to the limits testing method of co-integration. As a result, it was impossible to determine if the demand for money function was stable.

Kapingura (2016) used quarterly data from 1994 to 2012 to investigate the stability of the money demand function in South Africa. The tests for Johansen co-integration and the long-term and short-term interactions between the variables were examined using the vector error correction model. In South Africa, the money demand function and its determinants have a long-term relationship, as demonstrated by the Johansen co-integration test. However, the CUSUM and CUSUMSQ revealed that the South African money demand function was unstable over the period from 2003 to 2007.

Kiptui (2016) examined the stability of the demand for money in Kenya using bounds testing techniques and an error correction model. The study indicated that the demand for broad monetary aggregates is stable, which indicates that monetary targeting is still important in the Kenyan setting. Özcalik (2016) used ARDL on Monthly data between 1995: Q4-2013: Q3 to study the long run and short run dynamics of M2 money macroeconomic variables (GDP, interest rate, and M2) and demand. According to Ajiteru (2023), the money demand function is stable in the first step according to the CUSUM and CUSUMSQ tests, but it is not stable in the second test, even in the short and long term.

Review of Literature and Theoretical Framework

Irving Fisher (see Diamond, 2003, p. 49) established the groundwork for the quantity theory of money with his equation of exchange Sulaiman (2023), which served as the inspiration for monetary policy. According to his theory, price is the only economic aggregate that is impacted by money. However, Keynes (1930) and other Cambridge economists provided additional clarification on the function of money in an economy by arguing that money has an indirect impact on other economic variables (p. 90) via affecting interest rates, which have an impact on economic agents' cash holdings and investment (Abalaka, 2023). According to Keynes, unemployment results from insufficient aggregate demand, which can be raised by expanding the money supply, which in turn leads to higher spending, more jobs, and economic expansion. He does, however, advise a suitable combination of fiscal and monetary measures because monetary policy may not always succeed in achieving its goal. Friedman (1968, p. 1–17) skillfully discussed the role of monetary policy, which is obviously influencing the volume, cost, and direction of the money supply. Friedman maintains that inflation is always and everywhere a monetary phenomenon while acknowledging that, in the short term, an increase in the money supply can lower unemployment but can also create inflation, hence the monetary authorities should carefully expand the money supply (Sulaiman, 2023).

Keynesian Monetary Policy Perspective

The idea that money and price have a direct and proportional relationship was not accepted by Keynesian theory. Sulaiman (2023). They both believe that it is indirect because of the interest rate. Additionally, they disagree with the idea that Y in the equation of exchange may be thought of as fixed as the economy is never at or close to the natural level of real GDP. Additionally, they disagree with the idea that money circulates at a constant speed (Ajiteru, 2023).

According to Keynesians, an expansionary monetary policy lowers interest rates by increasing the amount of loanable money accessible through the banking system. With less enthusiasm rate, total spending on investment and interest-sensitive consumer items often rises, leading to an increase in real GDP. Accordingly, monetary policy may have an indirect impact on real GDP (Sulaiman, 2023).

The Monetary Policy Monetarist Perspective

Milton Friedman is the leader of the Monetarist school of thought. This way of thinking is a contemporary take on traditional macroeconomics. They created a more nuanced and applicable form of the quantity theory of money. Like any other school of thought, Friedman (1963) acknowledged the necessity of an efficient monetary policy to stabilize an economy and focused on the money supply as the primary element influencing economic health. He also believes that the money supply should increase at a set rate to encourage a stable growth rate rate rather than being controlled and changed by the monetary authority or authorities (Sulaiman, 2023). Friedman also maintained that the money supply can be retained in a variety of forms, including cash, bonds, stocks, tangible assets, and human capital, since it may be demanded for purposes other than anticipated transactions. Every variation of this riches has a distinct yield and characteristic of its own. Abalaka (2023). In the end, these effects will boost output and aggregate money demand. The Monetarists admit that the economy could not always be functioning at real GDP full employment. Therefore, monetarists contend that by raising aggregate demand, expansionary monetary policies may raise real GDP levels in the near term. But over time, when the economy is functioning at They contend that the quantity theory is still a decent approximation of the relationship between the money supply, price level, and real GDP at the full employment level. Furthermore, according to Sulaiman (2023), expansionary monetary policy simply raises inflation over the long term and has little effect on real GDP levels.

Transition Mechanism for Monetary Policy

Under the monetarist and Keynesian schools of thought, the various transmission channels through which monetary policy influences economic activity have been thoroughly studied. According to the monetarist theory, a shift in the money supply inevitably affects the actual amount of money in circulation (Sulaiman, 2023). According to Friedman and Schwartz (1963), who describe this transmission mechanism, a broad open market operation by the central bank raises money supply, which also boosts commercial banks' reserves and credit-creation capacity, increasing the money supply through the multiplier effect. Banks and non-bank organizations buy securities with features similar to those sold by the Central Bank in order to decrease the amount of money in their portfolios, which in turn stimulates real sector activity. Tobin (1978), who studies the transmission effect in terms of asset portfolio choice, supports this approach by pointing out that monetary policy causes asset switching between

stocks, bonds, commercial paper, and bank deposits. He claims that rigid monetary policy limits lending to prime borrowers and business firms, excluding mortgages and consumer expenditures, because it impacts liquidity and banks' capacity to lend Consequently, effective demand and investment are reduced (Abalaka, 2023).

The Keynesians, on the other hand, believe that changes in the money supply enable financial market operations that impact interest rates, investment, output, and employment. This viewpoint is supported by (Modigliani, 1963), who also proposed the idea of capital restriction and claimed that bank lending behavior influences the transmission of monetary policy. According to their analysis of how bank and non-bank funds are used in response to tight monetary policy, Oliner and Rudebush (2020) find no discernible change in the use of either, but rather that larger firms push out small firms during these periods. Similarly, Gertler and Gilchrist (2021) support the idea that small businesses are more negatively impacted and that loan facilities decline during tight monetary policy by variations in aggregates connected to banks, such as the broad money supply. Additional research by Borio (2015), who examined the structure of credit to non-government borrowers in fourteen developed nations, found that it has been impacted by loan terms like interest rates, collateral requirements, and lending willingness (Ajiteru 2023).

The Experience of Nigeria

Maintaining domestic price and exchange rate stability has been the fundamental objective of monetary policy in Nigeria as it is essential to achieving sustained economic growth and the viability of the external sector (Sanusi, 2002, p. 1). Using the Jahansen maximum likelihood co-integration approach, (Adefeso and Mobolaji, 2010) demonstrated a long-term correlation between M2, government spending, economic growth, and openness. (Flunso and Ajisafe, 2002) note that monetary policy has a major influence on Nigeria's economic activity.

The relationship between financial innovations and monetary control is examined by Kogar (1995), who comes to the conclusion that central banks cannot implement effective monetary policy in a changing financial structure without establishing new policies and tools over time. This is because profit-seeking financial institutions alter or develop new tools to get around regulations or react to the state of the economy (Sulaiman, 2023).

When looking at how Nigerian monetary policy has changed over the last forty years, Nnanna (2021, P. 11) notes that while monetary management in Nigeria has been more successful during the financial sector reform era, which is marked by the use of indirect

monetary policy rather than direct monetary policy, tools, but the consequences of fiscal domination, political meddling, and the legal framework in which the Central Bank functions have reduced the efficacy of monetary policy. According to (Busari et al. 2019), monetary policy performs better in stabilizing the economy under a flexible exchange rate regime than under a fixed exchange rate system. It also promotes growth under a flexible rate regime, but it is accompanied by severe depreciation, which may cause the economy to become unstable. Therefore, monetary policy would be more effective in stabilizing the economy if it was used to directly target inflation rather than to directly stimulate growth. Abalaka (2023). They suggested that in order to achieve macroeconomic stabilization, monetary policy must be supplemented by other tools and measures. The same stride stresses (Batini, 2016, P. 32 and 35) that fiscal irresponsibility frequently limited monetary policy throughout the 1980s and 1990s. Although the situation improved in the latter half of the 1990s, it was short-lived since Batini characterized the monetary policy as being overly loose, which led to dismal inflation and exchange rate records. Monetary policies financed a high budget deficit that averaged 5.6 percent of annual GDP.   (Folawewo and Osinubi, 2021) looks into how the real exchange rate and inflation variability are impacted by monetary policy's goal of containing inflation and its intervention in the financing of fiscal deficits. A rational expectation approach that takes into account the exchange rate's fiscal role is used for the analysis. Ajiteru (2023).

The study illustrates the monetary authority's attempts to affect the financial volatility in both the real currency rate and the rate of inflation as a result of the government budget deficit being determined by the inflation-tax rate. The study shows that both the rate of real exchange and the volatility of inflation's own rate are impacted. The paper's policy consequence is that monetary policy should be established with a clearly defined goal in mind. According to Sanusi (2022, p. 18), the CBN's capacity to implement an efficient monetary policy in a rapidly integrated and globalized financial market environment is dependent on a number of elements, such as the establishment of a suitable legal framework, institutional structure, and a supportive political climate that permits the Bank to function in accordance with the Central Bank of Nigeria's ability to exercise its instrument and operational autonomy in decision-making, the extent to which fiscal and monetary policies are coordinated to ensure consistency and complementarity, the macroeconomic environment as a whole, including the depth, stability, and stage of development of the financial markets as well as the effectiveness of the payment and settlement systems, the level and sufficiency of information and communication facilities, and the availability of consistent, adequate, dependable, high-quality, and timely information.

Using Monetary Policy to Promote Economic Growth

After a time of macroeconomic imbalances, nations hoping to achieve sustainable economic growth must first stabilize, claims Anyanwu (2018). Effective monetary policy implementation is a key component of stable economic growth in Nigeria (Sulaiman, 2023). Impact on sustainable According to Anyanwu (2018), countries seeking sustainable economic growth after a period of macroeconomic imbalances must first get stabilized. In Nigeria, monetary policy effectively implemented is an important tool for stable economic growth. Growth began in Nigeria in the early 1980s with the introduction of the Structural Adjustment Programme (SAP), in response to the emergence and persistence of unstable macroeconomic instability. The program's monetary policy aimed to moderate inflation, increase domestic savings, allocate resources efficiently, improve capital inflow and local production and employment, and stabilize the Naira exchange rate macroeconomic instability's onset and durability. The goals of the Structural Adjustment Program's monetary policy were to stabilize the value of the Naira, improve capital inflow, boost local production and employment, increase domestic savings, allocate resources effectively, and moderate inflation. After a time of macroeconomic imbalances, nations hoping to achieve sustainable economic growth must first stabilize, claims Anyanwu (2018). Effective monetary policy implementation is a key component of stable economic growth in Nigeria (Sulaiman, 2023).

Changes in Money Demand and Their Main Causes

Monetary policy's main objectives are maximum employment, economic growth and development, and price (inflation, interest, and currency rates) stability. Achieving either objective is acceptable as long as it serves to prioritize price stability in in the long term. Central banks all throughout the world employ a variety of instruments, appropriate policy (operating) tools, and intermediate aims to accomplish these goals. The three most widely used tools are reserve requirements, discount policy, and open market operations. Others are unconventional instruments like development finance programs, forward guidance, negative interest rates, credit easing, quantitative easing, and signaling (Sulaiman, 2022). Monetary aggregates (M1, M2, M3, etc.) and short- and long-term interest rates are the most frequently used intermediate aims of monetary policy. Others include shifts in the exchange rate, inflation rate, and money supply. Ajiteru (2023).

The central bank of Nigeria is in charge of monetary policy, with the goals of preserving external reserves to protect the legal system's international value and guaranteeing monetary and price stability. tender money, issuing legal tender currency, encouraging a stable financial system, and serving as a banker to advise the federal government on matters of economics and finance. The monetary policy framework in use determines how well monetary policy works. These might be inflation-targeting or monetary-targeting. Operating targets, intermediate targets, and ultimate objectives are the steps used to carry out these goals. The intermediate aim in monetary targeting systems is still wide money, the operating target is reserve money, and the ultimate targets are output stabilization and inflation. According to Goldfeld (2018), the money demand function's stability is a prerequisite for monetary policy to be effective within a monetary targeting framework. The money demand function has employed a number of variables, and their changes over time are covered in Abalaka (2023).

Demand for Real Money

The desire for real money is utilized to determine the purpose of the transaction. Nigeria switched to using a more expansive definition of the demand for money, or M3, in July 2018. In Nigeria, M3 stands for M2 plus CBN notes that are owned by the general population who are not bank customers. Pension corporations are examples of non-bank publics. Commercial banks are the primary buyers of CBN bills, which they then resell to other banks. According to Sulaiman (2022), the demand for real money balances increases with transaction volume. According to the quantity theory of money demand, income and money demand are one-for-one. GDP growth has an impact on real money demand as well because increasing GDP would result in consumers to spend more. Where the central bank wants price stability, an increase in real money balance would cause it to implement monetary policy tightening Ajiteru (2023).

Real money demand in Nigeria increased over time, climbing continuously from ₦0.43 billion in 2010Q1 to ₦2.66 billion in 2014Q4. In 2016Q3, it dropped to its lowest point of ₦1.46 billion, but it rose to ₦1.54 billion the next quarter. It steadily improved, registering ₦3.01 billion in the second quarter of 2018. Despite the relative constancy in the demand for real money balances, real growth rate fluctuated considerably over time with the economy slipping into a recession in 2016Q2 and continuing this until 2017Q1 Sulaiman (2022). This pattern defies economic theory, which holds that GDP and real money demand are positively correlated; in a recession, GDP growth and real money demand are projected to drop but a surge is witnessed in real money demand at the expense of economic activity between 2017Q3 and 2018Q2 Abalaka, (2023).

Interest rate is projected to be adversely connected to all monetary aggregates (Sichei and Kamau, 2017). Hence, the higher the return on alternative assets, the smaller the incentive to keep money, ceteris paribus, and the more effective monetary policy would be, as the monetary authorities would have a more effective grasp over the macro economy. In this study, the interest rate was calculated using the rate on the Nigerian government's 91-day Treasury notes (TBR). According to Figure 2, the investment rate rose from 2010Q2 to 2011Q2, but it thereafter steadily decreased until 2014Q3. However, the rates dropped to a low of 4.9% in 2016Q1 after averaging 9.5% between 2014Q4 and 2015Q4. However, as of 2018Q2, interest rates on the 91-day Treasury bill had leveled down at an average of 11.7%. As seen below, there is a modest inverse link between the 91-day Treasury bill and actual money balances, with the exception of 2013Q1–2014Q1 and 2015Q1–2016Q2. This may be explained by the events leading up to the 2015 national and presidential elections, which caused a decline in capital flows and a rise in currency depreciation (Sulaiman, 2023).

Given how heavily the Nigerian economy depends on imports, the exchange rate is taken into account while determining the money demand function in that country. Almost Nigeria imports all of its commodities from around the globe, with the US, UK, China, India, EU, and a few West African nations ranking as its main trading partners. Therefore, it is crucial to consider how fluctuations in the naira's exchange rate affect the Nigerian economy and monetary policy (Sulaiman, 2022). Between 2010Q1 and 2014Q4, the average naira to US dollar exchange rate remained comparatively steady at the BDC segment of the foreign exchange market. However, the prices declined from ₦177.91/US$ in 2014Q4 to ₦210.70/US$ in 2015Q1 and then to ₦336.49/US$ in 2016Q2 as a result of the pressure on demand in the Nigerian foreign exchange market. The downward trend was exacerbated even further by the drop in inflow of foreign currency after the drop in the global price of crude oil. As the Bank switched to a more flexible currency rate mechanism in June 2016, this trend persisted, reaching ₦397.24/US$ in 2016Q3 and ₦444.22/US$ in 2016Q4. The Bank opened the Investors and Exporters window in April 2017 in an effort to further stabilize the market. This caused the exchange rate to increase by 23.9%, from ₦472.49/US$ in 2017Q1 to ₦381.21/US$ in 2017Q2, and then to ₦361.92/US$ in 2018Q2 (Ajiteru, 2023).

Innovation in Finance

The creation of new financial technologies, institutions, and markets, as well as financial instruments, is referred to as financial innovation. Innovation in processes, products, and institutions are all included. Financial innovation in the context of monetary policy

encompasses all e-based platforms in the Nigerian financial system when the cashless policy was put into effect (Abalaka, 2023). NIBSS Instant Payment (NIP) and NIBSS Electronic Funds Transfer (NEFT), mobile payments, truncation of checks, automated teller machines (ATMs), point of sale devices (POS), internet banking services, mobile cash, electronic bills, Remita, NIBSS Automated Payment Services (NAPS), and Central Pay are all included in this. Figure 4B illustrates how the value of financial innovation grew over time, from 2010Q1 to 2018Q2. NIP, Remita, and NEFT Ajiteru (2023) were the driving forces behind these financial breakthroughs.

Theoretically, a rise in financial innovation should lead to a decrease in cash holdings and a rise in the transitional motivation to spend money. This is due to the fact that people are then motivated to make additional transfers instead of carrying cash. Despite the growth in financial innovation, the figure below illustrates how currency outside of banks increased over time. This may be explained by the robust and growing informal sector as well as the rise in corrupt practices, which were primarily conducted with cash to avoid detection (Sulaiman, 2022).

Nonetheless, during the study period, the growth rate of financial innovation was 5.2% faster than that of money outside of banks.

It is anticipated that when nominal output rises and the nominal interest rate rises, the amount of money demand would rise and fall, respectively. Since bank deposits are similarly impacted by money demand, financial innovations would increase demand for deposits, resulting in a positive relationship between money demand and financial inventions. As a result, monetary policy would be more effective (Abalaka, 2023).

3. METHODS OF RESEARCH

The purpose of this study is to evaluate Nigeria's monetary policy critically in light of the nation's macroeconomic performance (Sulaiman, 2023).

The data gathered from publications of the National Bureau of Statistics and the Central Bank of Nigeria for a range of years from 1981 to 2008 are examined using the Ordinary Least Square (OLS), often known as regression analysis.

Three multiple regression models are used to illustrate the use of the Ordinary Least Square method. The money supply, cash ratio, and liquidity ratio serve as independent variables in each model, while the GDP, inflation rate, and balance of payments serve as dependent variables in model one, Sulaiman (2023), model two and model three, respectively.

Model Details

These three models, which use the liquidity ratio, money supply, and cash ratio as independent variables and the gross domestic product, inflation rate, and balance of payments total as dependent variables, are intended to capture how monetary policy affects Nigerian macroeconomic variables.

Model 1

$$Gdp = a0 + a1lr + a2M2 + a3Cr + Ui$$
……………………………………………..………………..(1)

Where gdp   - Gross Domestic Product
        Lr   -   liquidity ratio
        M_2 - Broad money supply
        Cr   -   cash ratio
a_o, a_1, $a_{2,}$ and a_3 -   parameters
        U_i -   Error term

Model II

$$inf = a0 + a1lr + a2M2 + a3Cr + Ui$$
…………………………………………..........(2)

Where gdp   - Gross Domestic Product
        Lr   -   liquidity ratio
        M_2 - Broad money supply
        Cr   -   cash ratio
a_o, a_1, a_2, and a_3 -   parameters
        U_i -   Error term

Model III

$$bop = a0 + a1lr + a2M2 + a3Cr + Ui$$
………………………………………….…..(2)

Where gdp   - Gross Domestic Product
        Lr   -   liquidity ratio
        M_2 - Broad money supply
        Cr   -   cash ratio
ao, a1, a2, and a3 -   parameters
        U_i -   Error term

Empirical Finding

The findings of the study's empirical analysis are presented in this section. First, the unit root is performed; then, regression, the Johansen co-integration result, and last, the vector error correction model (VECM). The empirical findings about the impact of monetary policy on the Nigerian economy are presented in this part by Sulaiman (2022). Unit root tests are performed to ascertain whether the macro variables are stationary or not. If they are not, we

proceed to ascertain the order of integration. The balance of payments (BOP), inflation rate (INFLR), economic growth (GDP), and the other different group of monetary policy variables are then tested for co-integration. Table 1 below shows the results of the tests for the variables' stationarity.

According to the test results, at Sulaiman (2022) levels, the null hypothesis of the unit root for the six-time series the liquidity ratio (LR), cash ratio, money supply (MS2), GDP, inflation rate (INFLR), and balance of payments (BOP) cannot be rejected. We tested the Augmented Dickey-Fuller (ADF) test at the initial stages as a result of this. According to the results in Table 1, the variables' null hypothesis can be disproved in the first difference (Abalaka, 2023). This indicates that while some of the variables are stationary at order two, others are integrated of order one or are 1(1) series and stationery at first difference.

Table 1: Unit Root Result

Variable	DF	ADF Test critical value	ADF Test Statistics	P-values	Order of Integration	ADF lags
Δ GDP (c)	5%	-2.9850	3.622099	0.0015	I (1)	1
	10%	-2.6318				
ΔINFLR (c)	5%	-2.9798	-2.934405	0.0075	I (1)	1
	10%	-2.6290				
ΔBOP (c)	1%	-3.7343	-4.529425	0.0002	I (2)	1
	5%	-2.9907				
ΔLQR (I)	5%	-2.9850	-2.94227	0.0075	I (1)	1
	10%	-2.6318				
ΔCASHR (I)	5%	-3.6219	-4.252270	0.0004	I (1)	1
	10%	-3.2474				
Δ MS$_2$ (I)	1%	-3.7497	-4.229205	0.0004	I (3)	1
	5%	-2.9969				

Source; Author's estimation using E-view 3.0

The 99%, 95%, and 90% critical values for the ADF statistics are displayed following each T-statistic in table 1's second column on the left. None of the variables were stationary at levels, as indicated by the results in table 1 above. The observed values (in absolute terms) of the ADF test statistics at the 1%, 5%, and 10% levels of significance can be compared to demonstrate this (Ajiteru 2018). There is evidence of non-stationary Sulaiman (2023) since the findings shows that none of the variables were stationary when they were differed at levels. However, while the money supply (MS2) and balance of payments (BOP) were differenced twice to achieve stationary, differencing once caused four variables (GDP, INFLR, CASHR, and LQR) to become stationary. Consequently, the null hypothesis is acceptable for the variables at levels to be non-stationary, and it is enough to deduce that the unit root exists at

levels. Consequently, every variable was compared, some were compared twice, and the ADF tests were performed on them; the outcome is displayed in table 1 above.

This shows that while some variables were stationary at first difference, others were more variable-dependent. Based on these grounds, we conclude that all of the variables are stationary and reject the null hypothesis that they are non-stationary. Additionally, this suggests that the variables are integrated of classes I (1) and II.

Cointegration Test Outcome

Following the creation of the variables' stationary state, we move on to to determine whether the variables are cointegrated. Cointegration indicates that the money supply, balance of payments, inflation rate, and economic growth all follow the same long-term trend and theoretical equilibrium. The Johansen and Juselius multivariate cointegration test Sulaiman (2023) was used to begin the cointegration study. At the five percent significance level, the maximum Eigen value statistics showed six cointegrating vectors, indicating a cointegration relationship between monetary policy and the various macroeconomic stability metrics.

Table1c Co-Integration Test

Sample: 1981 2007

Included observations: 28

Test assumption: Linear deterministic trend in the data Series: GDP INFLR BOP LQR CASHR MS Lags interval: 1 to 1

Eigenvalue	Likelihood Ratio	5 Percent Critical Value	1 Percent Critical Value	Hypothesized No. of CE(s)
0.935594	213.3558	94.15	103.18	None **
0.899440	144.7921	68.52	76.07	At most 1 **
0.836302	87.36713	47.21	54.46	At most 2 **

Presentation and interpretation of Regression Result

In this study, mathematical relationships between the variables are established. Available data on liquidity ratio (LR), cash ratio (CASHR), money supply (MS$_2$), gross domestic product, (GDP), inflation rate (INFLR) and balance of payment (BOP) were collected and used for the purpose of this analysis. Three multiple regression models were formed to capture the assumed relationship between these variables Sulaiman (2023).

Table 2.Presentation of Model 1 Result (GDP)

Variable	Coefficient	Std. Error	t-statistic	Prob.
C	-105615.6	1116194.0	-0.094621	0.9254
LQR	471.2586	23756.76	0.019837	0.9843
CASHR	38075.83	66199.74	0.575166	0.5708
MS_2	4.295952	0.157122	27.34147	0.0000

Source; Author's estimation using E-view 3.0

$R^2 = 0.971739$ $F(3, 27) = 263.6123$ $Adj.R^2 = 0.968053$ $DW = 1.382416$

Model Estimation

$GDP = -105615.6 + 471.259 \log (LQR) + 38075.8 \log (CASHR) + 4.296 \log (MS_2)$

$t = (-0.095)$ (0.020) (0.575) (27.34)

Where the variables remain as previously defined. The above table is the result of the static regression analysis where Gross Domestic (GDP) was regressed on liquidity ratio (LQR)., Cash ratio (CASHR) and money supply (MS_2). The a priori expectation of the estimate co efficient is; $\alpha_0 > 0$, $\alpha_1 > 0$, $\alpha_2 > 0$, $\alpha_3 > 0$.

Analysis of Result

The 5% threshold of statistical significance was selected to test the hypothesis because of the ambiguous quality of the data used in the investigation. The results of the regression indicate that GDP and the explanatory variables have a linear and proportionate connection (Sulaiman, 2022). The monetary policy variables of cash reserve, broad money supply, and liquidity ratio have been identified as explanatory variables. The co-efficient estimates' sign is appropriately assigned, indicating a positive correlation with economic growth and supporting earlier predictions. Together, the endogenous factors accounted for more than 97.2% of the variance in the dependent variable (GDP), according to statistical evidence derived from the examination of the coefficient of determination R2. The amount of the modified R2 (0.96805), which is greater than 96.8%, confirms the goodness of fit and shows that variances of more than 97.2% were not only due to the model's usage of numerous variables. The hypothesis that the equation is equal to zero can be rejected because the model estimate's F-statistic (263.6) is statistically acceptable. At the five percent significance level, the combined impact of the explanatory factors was statistically significant. Positive autocorrelation is present, according to the Durbin Watson test of autocorrelation (1.38), according to Abalaka (2023).

In particular, the money supply has a major positive influence on growth, whereas the liquidity ratio and cash reserve have a direct, albeit negligible, positive impact on growth at the 5% level of significance. Stated otherwise, the cash reserve and liquidity ratio were statistically

negligible and, as a result, have no discernible effect on development and growth, whereas the money supply in Nigeria is significantly correlated with economic growth. This supports the theory put forth by Ajiteru (2023) that monetary policy, or the money supply, significantly affects Nigeria's economic growth over the reviewed time.

The study's actual data shows that the money supply and economic growth are directly correlated, indicating that it promotes investment and productivity in products and services. Little reliance can be placed on the outcome because the liquidity ratio and cash reserve showed a positive but negligible relationship with growth. This can be seen as the anticipated changes in the economy as seen by the cash reserve policies and the monetary tool of the liquidity ratio for the periods covered are not being realized Sulaiman (2023).

Table 3. Model II Result (Inflation)

Variable	Coefficient	Std. Error	t-statistic	Prob.
C	5388053	18.24943	2.952450	0.0071
LQR	-0.561754	0.388416	-1.446270	0.1616
CASHR	-0.0000298	0.0000257	-1.159593	0.2581
MS_2	0.357663	1.082345	-0.330451	0.7441

Source; Author's estimation using E-view 3.0

$R^2 = 0.17622$ F, (3, 27) = 1.646024 DW = 1.028958 Adj. $R^2 = 0.068770$

Model Estimation

INFRL= 53.88053- 0.561754(LQR) – 0.357663 (CASHR) -0.0000298 (MS_2)

t = (2.952)   (-1.446270)   (-0.330451)   (-1.159593)

Where the variables remain as previously defined. The above table is the result of the static regression analysis where inflation rate (INFLR) was regressed on liquidity ratio (LQR), Cash ratio (CASHR) and money supply (MS_2). The a priori expectation of the estimate co efficient is; $\alpha 1 < 0$, $\alpha_2 < 0$, $\alpha_3 < 0$.

Analysis of Result 2

The calculated equation's overall statistical significance is unsatisfactory (F* = 1.65), and the endogenous variables' combined influence was also low (R2 = 0.176). This indicates that monetary policy changes collectively account for more than 17.6% of the variations in the inflation rate. This also shows that without other macro factors like government spending and investment, monetary policy by itself is unable to adequately control inflation in Nigeria. The study's findings also show that positive autocorrelations are present (Sulaiman, 2023).

According to Sulaiman (2023), the macroeconomic variable (inflation) has an indirect link with monetary policy, which is consistent with a priori predictions. This implies that monetary policy works to prevent inflation. Additionally, the analysis shows that a unit increase in monetary policy regulation lowers Nigerian inflation, while not very high. For example, a unit increase in the cash reserve and liquidity ratio of commercial banks contributes to a comparable unit decrease in inflation of 0.357 and 1.44, respectively. Sulaiman (2022) minimizes the tendency of excess liquidity in circulation to promote inflation in the macroeconomic environment. Furthermore, one could argue that both economic growth and successful monetary policy depend on a stable macroeconomic environment (Sulaiman, 2023).

Model III Table 4 (Balance of Payment)

Table 4 summarizes the findings of the regression between the dependent variable, the balance of payments, and monetary policy.

Table 4: Model III: Balance of payment

Variable	Coefficient	Std. Error	t-statistic	Prob.
C	-102969.6	637728.8	-0.161463	0.873
LQR	2257.852	13573.25	0.166346	0.8693
MS_2	0.652736	0.089771	7.271160	0.0000
CASHR	-15777.85	37822.72	-0.417153	0.6804

Source; Author's estimation using E-view 3.0

$R^2 = 0.707681$ F, (3, 27) = 18.56037 DW = 1.533354 Adj. $R^2 = 0.669552$

Model Estimation

BOP = -102969.6 + 2257.85 (LQR) + 0.652736 (MS_2) -

15777.85 CASHR) t = (-0.161)   (0.166346)   (7.271160)

(-0.417153)

The table above is the result of the regression analysis where Balance of Payment (BOP) was regressed on liquidity ratio (LQR), Cash ratio (CASHR) and money supply (MS_2). The a priori expectation of the estimate co efficient is; $\alpha_1 > 0$, $\alpha_2 > 0$, $\alpha_3 > 0$.

Analysis of Result 3

In this case, the empirical study's R2 result shows that the independent variables (monetary policies) together captured more than 70.8% of the variation in the balance of payments. The corrected R2 result (0.669), which explains more over 669.9% of the fluctuations in the balance of payments Sulaiman (2022), further supports this. Additionally,

the Durbin Watson statistics show minimal to no autocorrelation of the variables, and the entire model is statistically significant (F* = 18.56). With the exception of the cash ratio, all of the monetary policy components—the money supply and liquidity ratio—have a clear correlation with the balance of payments. The study's empirical data shows a significant and positive relationship between the money supply and the balance of payments (Sulaiman, 2023). Thus, this implies that money is really important Ajiteru (2018) discusses the role of supply in attaining a favorable balance of payments in foreign exchange transactions. The outcome also shows an indirect relationship between the cash reserve and the payment balance. The negative impact of strict monetary policy on resource mobilization, output, and export, which leads to distortion in the balance of payments equilibrium, is one tenable explanation for this observation. The liquidity ratio's relatively minor contribution to balance of payment transactions and the economy at large could be viewed as its direct but negligible effect. Additionally, it implies an unfavorable monetary policy that does not promote commerce (Sulaiman, 2023).

SYNOPSIS, CONCLUSIONS AND RECOMMENDATIONS

- This study examined how the monetary policies of the Central Bank of Nigeria (CBN) affected a few macroeconomic variables, including gross domestic balance of payments, inflation rate, and product from 1981 to 2008.

- The following is a summary of the main conclusions of an empirical investigation into the efficacy of the monetary policies of the Central Bank of Nigeria:

- Overall, it was discovered that the CBN's monetary policies have a significant impact on the nation's level of production. This outcome emphasizes the central bank's role in a country's process of national development;

- Additionally, the regression analysis showed that the Central Bank of Nigeria's implementation of several monetary policy measures had no discernible effect on inflation rate across the nation. According to this, Nigeria's inflation issue is caused by structural factors rather than monetary ones rigidity in the nation. This makes sense given that Nigeria is far from reaching full employment equilibrium and that the country's poverty index has been getting worse over time, meaning that a rise in GDP does not convert into better purchasing power. To properly equip the market to meet the challenges that lie ahead, much work remains to be done in the areas of raising public awareness,

strengthening the financial market's operations, expanding the market's depth and scope, and developing regulatory capacity.

- The empirical study also shows that cash and liquidity ratios have no effect on the balance of payments situation, indicating that monetary policy has not promoted a sound exchange rate system that would promote exports and deter unnecessary imports.

Conclusion

It is impossible to overstate the central bank's importance in controlling the economy's liquidity, which influences a number of macroeconomic factors like output, employment, and prices. In order to maintain economic stability, the Central Bank of Nigeria has implemented a variety of monetary policy management strategies over the years. It adopted a system of direct control through the issuance of credit guidelines and interest rate fixation prior to the structural adjustment of 1986, which marked the beginning of a period of financial deregulation. However, starting in the latter part of the 1980s, it adopted an indirect control system of management by using open market operations, the rediscount rate, and adjustments to the legal reserves requirement. However, in each of them, the achievement of the intended goals of Both internal and external factors, such as fiscal dominance, the undeveloped state of the financial markets, the external debt overhang, and fluctuations in the price of oil, have an impact on monetary policy.

Recommendation

It is evident from the results of this study, especially the regression models, that the development of the Nigerian economy depends heavily on the creation of an environment that is conducive to investment, which will undoubtedly promote economic growth and development. Hereby, the following suggestions are put forth:

1. By enabling the development of market-based interest rate and exchange rate regimes that draw in both local and foreign investments, generate employment, encourage non-oil exports, and revitalize the economy, monetary policies should be employed to create a favorable investment climate sectors that are currently functioning at a significantly lower installed capacity. The Central Bank must promote the development of additional financial products that are adaptable enough to satisfy the risk tolerance and level of sophistication of financial sector participants in order to fortify the industry.

2. As in industrialized nations, the government should also work to make the financial industry more viable and less volatile. This will enable the Central Bank's monetary

policies to be implemented smoothly. It would be beneficial for the operators to have more freedom to operate if the laws governing the operations of financial institutions were somewhat less restrictive.

3. The Central Bank ought to figure out how to improve funding and lower the amount of deficit financing of SMEs and the unorganized sector, and encourage their transition to the formal sector while simultaneously collaborating with the government to enhance the tax system to make the tax capacity approach the tax potential in order to minimize tax evasion and guarantee that the capital and ongoing government expenditures are properly balanced. This will boost exports, generate employment, and revitalize sectors that are currently operating much below installed capacity. Furthermore, the policies that are chosen at any given time should be infused with appropriate and outcome-oriented instruments. Lastly, the government ought to focus its efforts on raising the degree of development of the capital and money markets. This is due to a robust financial and capital market that offers a variety of both short and long-term finance are necessary for efficiency of the monetary system.

Table 5. Regression Result

variable	Co-efficient	t-values	p-values
Constant	-160.90	-3.17	0.006
Money Supply	-0.4675	-1.54	0.141
Average Price	0.5264	5.05	0.000
Interest Rate	-0.1052	-0.43	0.675
Labour Force	9.805	3.24	0.005
R^2 Adj.	99.0%		
R^2	98.8%		
F-Value	435.94		
P- Value	0.000		

Source: Author's computation. Significant at 5%

REFERENCES

Abalaka, J. N. (2023). An empirical analysis of the impact of external debt on Nigeria's economic growth: The nexus on VAR, cointegration, and VECM methodological approach. International Journal of Advanced Research in Statistics, Management and Finance, 10(1), 2315-8409. Retrieved from http://internationalpolicybrief.org/journals/internationalscientificresearchconsortium-journals/intl-jrnl-of-advresearch-in-stats-mgt-and-finance-vol10-no1-january2023

Ajiteru, S. A. R. (2023). An empirical analysis of the impact of external debt on Nigeria's economic growth: The nexus on VAR, cointegration, and VECM methodological approach. International Journal of Advanced Research in Statistics, Management and Finance, 10(1), 2315-8409. Retrieved from http://internationalpolicybrief.org/journals/internationalscientific-researchconsortium-journals/intl-jrnl-of-advresearch-in-stats-mgt-and-finance-vol10-no1-january-2023

Diamond, R. (2018). Irving Fisher on the international transmission of boom and depression through the money standard. Journal of Money, Credit and Banking, 35, 49.

Folawewo, A., & Osinubi, T. (2016). Monetary policy and macroeconomic instability in Nigeria: A rational expectation approach. Journal of Social Science, 12(2), 93-100.

Friedman, M. (2018). The role of monetary policy. American Economic Review, 58(1), 1-17.

Friedman, M., & Schwartz, A. (2018). Money and business cycles. Review of Economics and Statistics, 32, 32-64.

Gertler, M., & Gilchrist, S. (2021). Monetary policy, business cycles, and the behavior of small manufacturing firms (WP 3892). National Bureau of Economic Research, Cambridge, November.

Keynes, J. (2020). Treatise on money (p. 90). London: Macmillan.

Kogar, C. (2015). Financial innovations and monetary control. The Central Bank of The Republic of Turkey Discussion Paper No: 9515, May.

Modigliani, F. (2018). The monetary mechanism and its interaction with real phenomena. Review of Economics and Statistics, Supplement, 79-107.

Nnanna, O. (2021). The monetary policy framework in Africa: The Nigerian experience. Retrieved from http://www2.resbank.co.za/internet/publication..../Nigeria.pdf

Oliner, S., & Rudebusch, G. (2015). Is there a bank lending channel for monetary policy? Economic Review, Federal Reserve Bank of San Francisco, No. 2, 3-20.

Sulaiman, T. H. (2023). An empirical analysis of the impact of external debt on Nigeria's economic growth: The nexus on VAR, cointegration, and VECM methodological approach. International Journal of Advanced Research in Statistics, Management and Finance, 10(1), 2315-8409. Retrieved from http://internationalpolicybrief.org/journals/internationalscientific-researchconsortium-journals/intl-jrnl-of-advresearch-in-stats-mgt-and-finance-vol10-no1-january-2023

Tobin, J. (2018). A proposal for international monetary reform. Eastern Economic Journal, 4(3), 153-159.