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Monetary Policy, Inflation and Economic Growth in Nigeria (1981-2022)

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***Abstract* – Inflation has been regulated over the years by Central Bank of Nigeria (CBN) via monetary instruments like the monetary policy rate (MPR). Nigeria's inflation in the last couple of years however, has been sporadically increasing beyond the monetary authority's control. Nigeria's inflation rate accelerated to 27.33% in November 2023 from its previous figure of 22.41% as at May, 2023. Data culled from the National Bureau of Statistics (NBS) showed that the country's GDP growth rate slowed from 3.11% to 2.31% in May, 2023. The monetary policy committee (MPC) in an attempt to fight inflation has hiked the MPR 7 consecutive times from 11.5% to 18.75% in 2023. Despite all the rate hikes inflation has continued its continuous rise and has been gradually eating into the country's GDP, making households and families to reach poverty level because of the increase in prices of goods and services. The issue of monetary policy instability and high inflation has passed a major concern to Policy makers, Academics and also the Nigerian Economy, hence, this paper examined how monetary policy and inflation could influence Nigerian economic growth. Variables utilized for the study included; monetary policy rate, exchange rate, money supply and Inflation; which were examined against economic growth represented as gross domestic product (GDP). Secondary annual data from 1981 till 2022 and sources from the CBN statistical bulletin were utilized in the study. The sources data were analyzed using the multiple regression technique. Findings showed that monetary policy and inflation rate had negative impact on economic growth for the period under review. However, money supply and exchange rate had positive impacts on Nigeria's economic growth. The Granger Causality test shows that both monetary policy, inflation do not granger cause GDP in Nigeria. The findings thus recommend that government should reduce food inflation and insecurity and also foster infant industry to start production in local industries so that they can begin to increase export and reduce import and proffer solutions to set Open Market Operations rate close to Monetary policy rate so that it can capture economic realities with regards to inflation.**

Keywords – Monetary Policy, Inflation, Economic Growth, Monetary Policy Rate, Money Supply, Exchange Rate, Gross Domestic Product, Nigeria.

I. INTRODUCTION

Background to the Study

Monetary policy helps contain inflationary trends in developing countries like the Nigerian economy, even though since the launch of different financial sector reform programs in 1986, there has been a noticeable improvement in this area. According to Goshit (2006), ensuring a healthy and stable financial sector has been a challenging issue for the monetary authorities. He conducted a theoretical analysis of the causes of the financial sector's instability in Nigeria and its consequences for the development of the economy. This is a result of the financial sector's quick deregulation, lax monetary policy, excessive government expenditure, banking misconduct, excessive political meddling in banking operations, as well as the financial institutions' subpar internal governance. This controversy on efficacy and influence of monetary policy coupled with the state of the Nigerian economy in spite of regular application of monetary policy framework has nonetheless had to contend with several issues.

It makes sense that the Central Bank of Nigeria is putting increased emphasis on price stability as a result of its importance in maintaining macroeconomic stability for long-term growth in output and employment (Nasko, 2016). On the other hand, economists dispute whether the primary objectives of macroeconomic policies should be price stability and money supply, or whether these objectives should be secondary to more general monetary policy objectives (Nwosa et al, 2011).

Since fiscal and monetary policies are intertwined, except for the tools and execution authority, they are best offered as complete packages to emerging nations like Nigeria. The frequency with which it is applied and the tools it uses are changed by the relative simplicity of its decision-making process, and the fundamental characteristics of the sector through which it is transmitted to the real economy – the financial system – make monetary policy appear to be more effective in correcting short-term macroeconomic maladjustments.

Ufoeze et al (2018), posited that monetary control framework seems to have failed to achieve the set monetary targets as their implementation became less effective with time. The rigidly controlled interest rate regime and the non-harmonization of fiscal and monetary policies may have contributed immensely to the adverse effect of constraining growth of the money and capital market. This is why it is important to look into how well monetary policy works in conjunction with market mechanisms to reduce inflation in the Nigerian economy.

In Nigeria and other developing economies, inflation has grown to be such a severe and divisive issue since the middle of the 1980s. Even though there has always been inflation in Nigeria, the latest rates have many people quite worried. A declining trend in inflationary rates over the study period (1986-2022) has resulted in significant economic inefficiencies. Even when the oil bubble burst, the naira's sustained overvaluation in the 1980s which sporadically rose in 1990s created major production and consumption distortions due to the country's strong import

dependence, which resulted in balance of payments deficits. As a result, loans were obtained to cover these deficiencies.

The Economic Recovery Emergency Fund of 1986, which was created by monthly deductions of 1% of employee pay, was intended to stop Nigeria's inflationary trends. This significantly and steadily decreased the working class's purchasing power. However, because the earnings of business entities and the pricing of goods were not under control, the policy measures failed. Because of this, as prices increased, the labor unions pushed for greater salaries, which led to an increase in prices (Agba, 1994).

Both internal and external reasons can be used to explain why Nigeria's monetary policy management on economic growth have performed unsatisfactorily. On the domestic front, corruption, bad leadership, resource mismanagement, and bank failures have resulted in insufficient funding for productive sectors, particularly the manufacturing sub-sector, which has led to poor performance and worsened Nigeria's economic performance. Due to an excess of manufactured goods imports versus exports, there has been a persistent decline in the value of the naira on the international front.

Statement of the Problem

Many Nigerians currently live in this reality as the nation struggles with high inflation rates. The efficiency of monetary policy in containing inflation and its subsequent impact on overall economic growth are two important aspects impacting the nation's economic performance.

During the period under review (1981–2022), there was price stability from the early 1980s, but as time went on, inflation spiked up in 1986 where there have been rapid increasing trends in inflation rates leading major economic distortions. Before 1986, direct monetary control was used in achieving price stability in Nigeria, while the emphasis shifted to market mechanisms after the 1986 market liberalization (Uchendu, 2009). Prior to 1986, direct monetary instruments such as selective credit controls, administered interest and exchange rates, credit ceilings, cash reserve requirements and special deposits to combat inflation and maintain price stability were employed.

The fixing of interest rates at relatively low levels was done mainly to promote investment and growth. Occasionally, special deposits were imposed to reduce the amount of excess reserves and credit creating capacity of the banks (Uchendu, Okafor 2009). The continued under valuation of the naira in 1980s, even after the collapse of the oil boom engendered significant economic distortions in production and consumption as there was a high rate of dependence on import which led to balance of payment deficits. This resulted into taking loans to finance such deficits.

An example was the Paris Club loan, which was a mere $5.39billion in 1983 and subsequently rose to $21.6billion in 1999. CBN, (2011). Nigeria, one of Africa's major economies with a GDP projected to reach over $400 billion in 2020, has become one of the continent's most dynamic economies. Nigeria has recently encountered substantial difficulties with its stability and economic progress Agba (1994). Annual inflation in Nigeria increased in June 2023, reaching 22.79%, the highest level since September 2005, contrary to estimates of 22.9% and in October 2023, we have inflation reaching 27.33% in November 2023. The cost of food and non-alcoholic drinks increased the most (25.3% versus 24.8% in May now it is 31.52% in November). The monetary policy committee (MPC), in an attempt to fight inflation, has gone from 11.5% in 2022 to 18.75% in 2023.

The study intends to investigate the impact of monetary policy and inflation on economic growth in Nigeria because, despite having abundant oil reserves, the country has experienced high inflation rates that have made it difficult for citizens to afford necessities and have stifled the economy's growth.

Research Questions

1. What is the impact of monetary policy rate on economic growth in Nigeria?
2. What is the impact of inflation on economic growth in Nigeria?
3. What is the causal relationship that exists among monetary policy, inflation and economic growth in Nigeria?

Objectives of the Study

The main objective of this study is to examine the impact of monetary policy and inflation on economic growth in Nigeria: an empirical investigation. However, the specific objectives of the study are as follows:

1. To examine the impact of monetary policy rate on economic growth in Nigeria
2. To examine the impact of inflation on economic growth in Nigeria
3. To evaluate the causal relationship that exists among monetary policy, inflation and economic growth in Nigeria.

Research Hypotheses

In order to reach logical conclusions, the following hypotheses are tested:

Hypotheses 1

H0: There is no impact of monetary policy rate on economic growth in Nigeria.

H1: There is an impact of monetary policy rate on economic growth in Nigeria.

Hypotheses 2

H0: There is no impact of inflation on economic growth in Nigeria.

H1: There is an impact of inflation on economic growth in Nigeria.

Hypotheses 3

H0: There is no causal relationship that exists among monetary policy, inflation and economic growth in Nigeria.

H1: There is a causal relationship that exists among monetary policy, inflation and economic growth in Nigeria

Significance of the Study

The findings on this research are of significant importance to Policy makers and Central Banks in Nigeria because it broadens their knowledge to understand the relationship between monetary policy, inflation and economic growth, it also aids to achieve certain policies which could be effective while managing inflationary pressures.

As regards to the economic stability in Nigeria, the achievement of price stability and the management of inflation depends heavily on monetary policy. High and unpredictable inflation can reduce purchasing power, interfere with economic planning, and produce economic uncertainty. Policymakers can better manage these dynamics and aim towards a more stable economic environment by researching how monetary policy affects inflation.

The findings of this study can provide valuable insights for policy makers, particularly those at the government and the Central Bank of Nigeria. They may create and put into action more effective policies to produce stable and sustained economic growth.

Finally, this research work will be useful to students and researchers who might wish to undertake study and research work in this area.

Scope of the Study

This study examines the impact of monetary policy and inflation on economic levels in Nigeria between 1981 and 2022 reason being that Nigeria witnessed stability of price in 1981, then it also witnessed first shock to exchange rate of naira against the dollar in 1986 when naira was devalued from 89 kobo to 2 Naira but it escalated significantly in 1990 where naira fell to at about N9 to $1, it was the moment the Nigerian economy began to witness the significant decline of the Naira against the dollar continuously till this day, before then the naira was approximately between 56 kobo to 89 kobo but after 1985, in 1986, the jump between 1985 and 1990 was so sporadic that was why this study is picking the year 1981, to see the period where naira was stable into 1986 into where naira began to see some inflationary impact from the result of the shock in exchange rate that affected economic growth till 2022 and the naira has continued to devalue. For this study, secondary time series data on monetary policy and inflation are required gotten from CBN statistical Bulletin.

Organization of the Study

This study is structured in five chapters.

The study's introduction, background to the study, research problem statement, research questions, research objectives, research hypotheses and scope are all included in the first chapter. The second chapter comprises of the conceptual and theoretical framework, as well as a review of related literatures. The methodology, which is covered in Chapter 3, comprises of the research design, sources of data, model specifications and data analysis techniques. The data analysis, hypotheses testing and results interpretation are covered in chapter 4. Finally, chapter 5, comprises of the summary, conclusion, contribution to knowledge, limitation to the study, suggestion for further studies and policy recommendations.

II. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

Introduction

The objective of this section is to review an array of empirical literature on the impact of monetary policy and inflation on economic growth. This chapter will review theories that relate to the study's subject and additional publications on the topic. This chapter will however be broken into four pieces in order to accomplish the literature review and theoretical framework. The introduction is covered in section one, section two examines the conceptual framework, section three covers empirical literature and section four covers the theoretical framework.

Conceptual Review

The connection between monetary policy, inflation and economic growth is explained by some concepts. This clarifies the meaning of the term monetary policy rate, inflation, money supply, exchange rate and gross domestic product.

- **Monetary Policy**

To attain desired macroeconomic goals of internal and external balances, the monetary authorities intentionally act to impact the amount, price, and availability of money and credit CBN (2011). The definition of monetary policy was given as "Any policy measure designed by the federal government through the CBN to control cost availability and supply of credit." It was also known as the CBN's management of the money supply and interest rates to curb inflation and maintain the stability of an economy's currency flow (CBN, 2006).

Ogunjimi (1997) distinguishes three types of monetary policy decisions to be made - the amount of money in circulation; the level of interest rate; and the functioning of credit markets and the banking system. The combination of these measures is intended to control the value, supply, and cost of money in an economy in accordance with the degree of economic activity.

According to Abeng (2006), monetary policy is only valid in a highly commercialized economy. Monetary policy's effectiveness is limited if the economy is not monetized. For example, in a developing economy when a major share of production is produced in the subsistence sector, money supply is independent. As a result, monetary policy would not be a stronger instrument for managing the economy.

The same three monetary policy instruments are used by all central banks, although most have many more. They all support a healthy economy by managing bank reserves. The monetary authorities have six basic instruments at their disposal. It first creates a reserve requirement, defining the amount of money that must be held in reserve each night by

banks. If it weren't for the reserve requirement, banks would lend all of the money you've contributed. Since not everyone needs the entire amount of money every day, banks may safely lend out the bulk of people's savings.

The CBN mandates that banks maintain a minimum number of deposits in reserve. They thus have sufficient funds on hand to pay for the majority of redemption requests. To reduce liquidity, the Fed can, for example, raise the reserve requirement. The Fed only does this as a last option since it involves a lot of paperwork. Managing bank reserves is made easier by using the Fed funds rate. This is the interest rate that banks charge each other to store their excess cash overnight. The objective for this rate is established during the Federal Open Market Committee's eighth annual session, all other interest rates, such as those for bank loans and mortgages, are influenced by the Fed funds rate. The discount rate is the Fed's third instrument. That is how the fourth weapon of the Fed, the discount window, charges banks to borrow money.

The discount rate is set by the Federal Open Market Committee at a half-point premium above the federal funds rate. The Fed favors banks borrowing from one another. Fifth, the Fed purchases and sells Treasury and other assets from its affiliate banks through open market operations. Without altering the reserve requirement, this affects the number of reserves that banks now hold. Sixth, to control monetary policy, several central banks employ inflation targeting. It creates the impression that they desire some inflation. The Federal Reserve set a target core inflation rate of 2%. If people are aware of price increases, they are more inclined to purchase. To combat the financial crisis of 2008, the Federal Reserve also developed a number of new measures. Both the Term Auction Lending Facility and the Commercial Paper Funding Facility were among them.

A detailed examination of these definitions of monetary policy reveals that monetary policy essentially entails altering the amount of money in the economy in order to achieve some combination of inflation and production stabilization. Most economists believe that in the long term, output, as measured by GDP, is stable, hence changes in the money supply only produce price changes. However, because prices and wages do not normally adapt quickly, changes in the money supply might have an impact on the real production of goods and services in the near run (Koshy, 2012).

- **Inflation**

Inflation, according to Jhingan (2002), is the overall level of prices growing steadily and visibly. Prices rising aren't always referred to as inflation. As a result, an increase in the overall level of prices must be constant, long-lasting, and sustainable in order to be considered inflation. The price increase should affect almost all goods and shouldn't be short-lived. Inflation is defined more precisely by Dernburg and McDougall (1980) as a consistent rise in prices as measured by an index like the Consumer Price Index (CPI) or by the implicit price deflator for Gross National Product Jhingan (2002).

A more accurate definition of inflation would thus be a persistent increase in the general level of prices at a pace that is deemed to be excessive and consequently unacceptable Hameed (2010). One of three approaches can be used to determine the inflation rate. These are the implicit deflator for the gross national product (GNP), the producer price index (PPI), and the consumer price index (CPI). Due to their period-to-period swings, the two latter methodologies (CPI and PPI) are regarded as direct indicators of inflation. None of the three does a better job of explicitly tracking inflation than the others. Nigeria utilizes the Consumer Price Index (CPI) technique to measure inflation even though it is the least effective of the three since it is currently and readily available on a monthly, quarterly, and yearly basis CBN (1991). This study attributes inflation to monetary policy. This means that keeping inflation under control depends on how well monetary policy is implemented.

High inflation in an economy has a favorable impact on the growth of the domestic economy by lowering the rate of unemployment, according to ideas presented by Phillips (1958). Likewise, Prasanna & Gopakumar (2010) stated that countries with high inflation experience a decline in the pace of economic growth; as a result, inflation adversely affects economic growth. According to Kilindo (1997), low domestic savings, balance of payments deficits, poor agricultural production, rising governmental expenditure, and falling industrial capacity utilization are all factors that limit a country's ability to thrive economically. When there is inflation in the economy, the purchasing power of a particular number of naira’s decreases over time. Assuming that N100.00 can buy two loaves of bread in the present period, if the price of bread doubles in the future period, some N100.00 can buy one loaf but in a very small size. Two factors must be considered while defining inflation. Inflation uncertainty, according to Fischer (1993), is the main sign of economic instability and has a detrimental impact on a nation's capacity to build its economy. Nevertheless, Dotsey & Sarte (2000) proposed that variations lead to economic development via a drive for precautionary saving. Consistent increases in the cost of products and services are, in the opinion of Awogbemi & Taiwo (2012), the greatest problems facing all economic units, because of this, every country works to attain pricing stability, which is essential for fostering national economic progress.

They highlighted monetary policy, fiscal policy, and a nation's balance of payments situation as three of the changeable causes of inflation. They maintained that inflation is caused by an increase in the money supply in their explanation of the monetary policy as one of the factors determining inflation. According to the authors, an economy's underlying characteristics that create inflation are tied to fiscal policy. They stated that fiscal policy includes budget deficits for the government, which are

frequently financed by the creation of new money in less developed nations, which in turn causes inflation. The balance of payments situation, on the other hand, was dependent on the exchange rate. If the exchange rate falls, inflation will result, which may be expressed as increased import costs or as an accelerated wage bill Akinbobola (2012).

Awogbemi & Ajao (2011) further highlighted that price increases for products and services are frequently seen as unproductive and detrimental to a country's economy. The impact of inflation on government income is by far the most important factor. The government's revenue declines if inflation is more than was previously anticipated. According to Kevin & Liu (2004), the two main goals of many central banks worldwide have been inflation stability and output gap reduction. Achieving the best monetary policy rules is the primary goal of every central bank. The standard of life index, consumer price index, cost of production index, and producer price index are virtually always used in policy practice and academic research to monitor inflation targets, whether they are explicit or implicit. It was asserted that the majority of nations who have implemented an explicit inflation targeting policy target inflation or its variations than those that have not.

- **Economic Growth**

Economic growth is defined as a persistent increase in the output of products, services, and job opportunities with the primary purpose of enhancing residents' economic and financial well-being Ogbulu & Torbira (2012. Hardwick, Khan and Langmead (1994) defined economic growth as an increase in a country's productive potential, as evidenced by a persistent rise in real national income. Economic development is an important topic in economics and is seen as one of the required conditions for achieving greater social welfare outcomes, which is the primary goal of economic policy. It is thus a necessary component of long-term growth. Gross Domestic Product (GDP) measures a country's economic growth.

According to Dernburg and McDougall (1980) and Jhingan (2002), economic growth is the rise in an economy's potential output caused by an increase in the stock of labor and capital as well as an increase in their respective productivity.

It is associated to a continuous quantitative growth in a nation's per-capital production together with an increase in its population, capital stock, consumption, and volume of agricultural commerce. It is significant to note that neither a person nor a nation may export goods that they did not manufacture.

- **Money Supply**

Money supply refers to the total stock of money accessible in an economy at any particular time. It includes both tangible cash, such as coins and notes, and larger varieties, such as demand deposits stored in banks. Money supply is an important indication of an economy's liquidity and monetary health since it drives economic activity, inflation, and interest rates. It is divided into levels, such as M1 (currency and demand deposits) and M2 (M1 plus savings deposits and small-time deposits). Understanding the dynamics of monetary policy, financial stability, and overall economic performance within a country's financial ecosystem is aided by understanding the money supply. An increase in the supply of money typically lowers interest rates, which in turn, generates more investment and puts more money in the hands of consumers, thereby stimulating spending. Businesses respond by ordering more raw materials and increasing production. The increased business activity raises the demand for labor.

The opposite can occur if the money supply falls or when its growth rate declines. Banks lend less, businesses put off new projects, and consumer demand for home mortgages and car loans declines. Change in the money supply has long been considered to be a key factor in driving economic performance and business cycles. Macroeconomic schools of thought that focus heavily on the role of money supply include Irving Fisher's Quantity Theory of Money, Monetarism, and Austrian Business Cycle Theory. Historically, measuring the money supply has shown that there are relationships between money supply and inflation and between money supply and price levels.

- **Interest Rate**

The real interest rate is the most important factor in capital investment choices. An interest rate is the cost or price associated with borrowing money or the compensation received for lending money. It is expressed as a percentage and reflects the cost of using funds over a specific period. Interest rates influence borrowing and lending decisions, impacting various economic activities and financial markets. An interest rate is the cost or price of borrowing money or the payment made for lending money. It is stated as a percentage and represents the cost of spending funds over a set period of time. Interest rates have an impact on borrowing and lending choices, as well as on numerous economic activities and financial markets. (Bernanke, 2015)

- **Exchange Rate**

Exchange rate is the trade-off of one currency for another at a relative price, the relative price is considered the value of that currency in the forex market. An exchange rate (also known as a foreign exchange rate, forex rate, FX rate, or Agio) between two currencies is the cost of exchanging one currency for another. It is also known as the worth of one country's currency in terms of foreign exchange rates for another currency (Suvendu Narayan Roy, 2021). There are two widely known exchange rate ideas, namely real and nominal exchange ratee, the nominal takes into account the actual rate of the currency in the foreign exchange market, while the real exchange rate is the rate at which a market basket of goods can be exchanged for a market basket of goods in the other country.

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Exchange rate fluctuations is a continuous occurring phenomenon in the Nigeria economy. It has a significant impact on international trade, investment and the overall economy. Exchange rate policy refers to how a government regulates the exchange rate of its currency in the foreign exchange market. The three basic forms of exchange rate regimes are fixed or pegged exchange rate systems, free-floating or flexible exchange rate systems, and hybrid or managed float exchange rate systems.

Conceptual Framework

The relationship between Monetary Policy, Inflation and economic growth is depicted by the diagram below. It clarifies the relationship between GDP and Monetary policy, Inflation, Money Supply, Exchange rate and Interest rate.

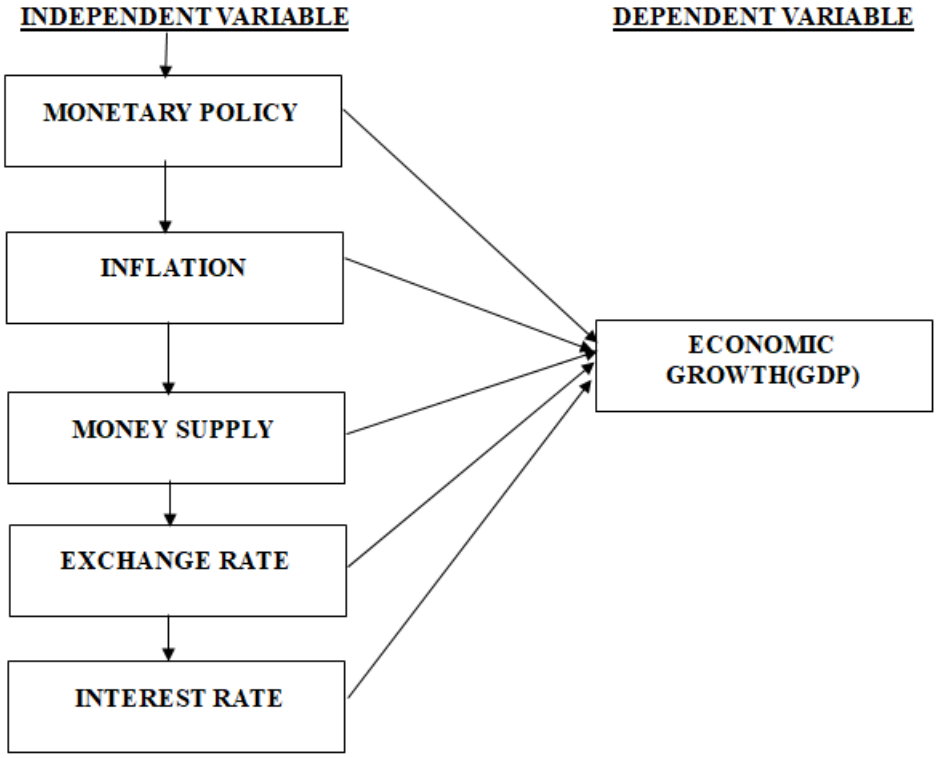

Figure: Conceptual Framework Source: Author

In Nigeria, there is a complex relationship between monetary policy, inflation, and economic growth. The Central Bank of Nigeria's monetary policy, which affects the money supply and interest rates, has an impact on the state of the economy. The Central Bank modifies these instruments in order to accomplish its two goals: promoting sustainable economic growth and preserving price stability (i.e., containing inflation). Reducing interest rates has the potential to boost economic growth by encouraging borrowing, investment, and consumption. But there could be inflationary pressures if the money supply is increased too much. It's important to strike the correct balance since too loose a monetary policy can encourage inflation while too tight a policy might hinder growth. As a result, efficient monetary policy management is critical for Nigeria to establish a harmonious balance between limiting inflation and encouraging economic growth.

Interest rate cuts frequently boost borrowing, consumption, and investment. Lower interest rates can make borrowing more accessible for firms and consumers, potentially increasing economic activity and boosting GDP growth.

Monetary policy has a negative relationship with GDP because when the Central Bank raises interest rates as part of its monetary policy, it can make borrowing more expensive for businesses and individuals. This can lead to reduced spending and investment, which can then slow down economic growth and potentially lower GDP.

Money supply has a positive relationship with GDP because when there's more money available, people and businesses have more purchasing power, which can lead to increased spending and investment. This increases economic activity can contribute to higher GDP.

Exchange rates impact a country's exports and imports. A depreciation of the domestic currency can make exports cheaper for foreign buyers and imports more expensive for domestic consumers, potentially boosting a country's exports and reducing imports, contributing positively to GDP, although it is influenced by multiple factors.

Inflation is generally considered to have a negative relationship with GDP because it can erode the purchasing power of consumers and businesses. When prices rise too

quickly, it can reduce the amount of goods and services people can afford, leading to a decrease in consumption. This decrease in consumption can then have a negative impact on economic growth.

Theoretical Review

- **Keynesian Theory of Inflation**

According to Keynesian economics, price changes in the short term are not directly influenced by changes in the money supply. Instead, inflation that is readily apparent is the product of economic demand pressures manifesting themselves as price increases. When total demand rises above the economy's capacity to meet it (its potential production), inflation picks up speed. Therefore, every factor that raises total demand has the potential to increase prices Sullivan et. al (2003). Long-term, however, aggregate demand can only be maintained beyond productive capacity by accelerating the amount of money in circulation above the actual growth rate of the economy.

Another possible reason, though considerably less frequent, is a sharp fall in the demand for money, as was the case during the Black Death in Europe or immediately before Japan was defeated in 1945 in the Japanese controlled regions. When governments fund expenditures during a crisis, such as a civil war, by creating an excessive amount of money, the impact of money on inflation is most apparent. Hyperinflation can result from this occasionally, when prices might double in a month or even every day Hanke and Steve (2012). A key factor in setting moderate levels of inflation is also believed to be the money supply, but opinions on its significance vary. Monetarist economists, for example, feel that the relationship is quite strong; Keynesian economists, on the other hand, often stress the importance of aggregate demand in determining inflation rather than the money supply. That is, for Keynesians, the money supply is basically one of several factors influencing aggregate demand.

Some Keynesian economists also disagree with the concept that central banks have complete control over the money supply, stating that central banks have minimal power since the money supply responds to the demand for commercial bank credit. This is known as the idea of endogenous money, and it has been actively championed by post-Keynesians since the 1960s.

This viewpoint is not widely held; banks produce money by providing loans, but the aggregate amount of these loans decreases when real interest rates rise. As a result, central banks may impact the money supply by making money less expensive or more expensive, hence boosting or decreasing its creation. The link between inflation and unemployment, known as the Phillips curve, is a key notion in inflation research. According to this paradigm, there is a trade-off between price stability and employment. As a result, some amount of inflation may be seen beneficial in order to reduce unemployment. The Phillips curve model accurately represented the 1960s US experience but failed to explain the 1970s stagflation. Thus, current macroeconomics characterizes inflation using a Phillips curve, which can move as a result of supply shocks and structural inflation. The former relates to occurrences such as the 1973 oil crisis, whereas the latter alludes to the price/wage spiral and inflationary expectations, which suggest that inflation is the new normal. As a result, the Phillips curve solely captures the triangle model's demand-pull component.

Another term to consider is potential output (also known as "natural gross domestic product"), which is the amount of GDP at which the economy is producing at its optimal level given institutional and natural restrictions. (This level of production corresponds to the Non-Accelerating Inflation Rate of Unemployment, NAIRU, sometimes known as the "natural" or full-employment unemployment rate.)

If GDP exceeds its potential (and unemployment is below the NAIRU), the theory predicts that inflation would rise as suppliers raise their prices and built-in inflation increases. If GDP falls below its potential level (and unemployment exceeds the NAIRU), inflation will slow as providers try to fill spare capacity by decreasing prices and weakening built-in inflation. Coe and David (1985). However, one issue with this theory for policymaking purposes is that the precise amount of potential production (and of the NAIRU) is typically uncertain and tends to shift over time. Inflation also appears to behave asymmetrically, increasing faster than it declines. It can vary as a result of policy: for example, high unemployment under British Prime Minister Margaret Thatcher may have resulted in an increase in the NAIRU (and a decrease in potential) since many of the jobless were structurally unemployed, unable to find jobs that matched their talents. A rise in structural unemployment means that a smaller proportion of the labor force can find work at the NAIRU, where the economy can avoid entering the region of increasing inflation.

- **The Keynesian Theory of Money**

The monetarists' hypothesis that there are direct and proportionate relationships between the amount of money in circulation and the level of prices was refuted by the Keynesian theory. According to this school of thought, the relationship between changes in the money supply and the level of prices is never proportional and always indirect through the interest rate. Because it incorporates both monetary theory and the theory of output and employment through the interest rate, the Keynesian theory is well known. According to Keynesian theory, as money supply increases, the interest rate will decrease, which will lead to an increase in investment and overall demand, which will enhance production and employment in the economy.

The theory, on the other hand, recognized the association between the financial and real sectors of the economy as an economic reality explaining the equilibrium connection between the money and commodities markets. The Keynesian theory also examined the connection between money supply and price level in both full employment and unemployment scenarios, which is an essential part of the theory. As a result, prices won't vary for as long as there is

unemployment, employment, and output since they will always move in proportion to changes in the amount of money. A change in the amount of money, however, causes a corresponding change in the price level when there is full employment. The approach, according to Olafin (2001), highlights the possibility that the goals of full employment and price stability cannot be met.

- **Neoclassical Growth Model (Robert Solow and Trevor Swan)**

Neoclassical Growth Theory is an economic model of growth that outlines how a steady economic growth rate results when three economic forces come into play: labor, capital, and technology. The simplest and most popular version of the Neoclassical Growth Model is the Solow-Swan Growth Model. The theory postulates that short-term economic equilibrium is a result of varying amounts of labor and capital that play a vital role in the production process. The theory argues that technological change significantly influences the overall functioning of an economy. Neoclassical growth theory outlines the three factors necessary for a growing economy. However, the theory puts emphasis on its claim that temporary, or short-term equilibrium, is different from long-term equilibrium and does not require any of the three factors.

Production Function in the Neoclassical Growth Model

The Neoclassical Growth Model claims that capital accumulation in an economy, and how people make use of it, is important for determining economic growth.

It further claims that the relationship between capital and labor in an economy determines its total output. Finally, the theory states that technology augments labor productivity, increasing the total output through increased efficiency of labor. Therefore, the production function of the neoclassical growth model is used to measure the economic growth and equilibrium of an economy. The general production function in the neoclassical growth model takes the following form:

$$Y = AF(K, L)$$

Where: Y – Income, or the economy's Gross Domestic Product (GDP)

K – Capital

L – Amount of unskilled labor in the economy

A – Determinant level of technology

Also, because of the dynamic relationship between labor and technology, an economy's production function is often re-stated as Y = F (K, AL). This states that technology is labor augmenting and that workers' productivity depends on the level of technology.

Assumptions of the Neoclassical Growth Model

Capital vulnerable to decreasing returns: Assuming a closed economy, it is a key tenet of the neoclassical growth model that capital (K) is subject to declining returns.

influence on total production: As long as labor is stable or constant, the last unit of capital amassed will always have a less influence on total output than the one before it.

The economy's stable state: In the near term, the economy transitions into a "steady-state" economy, where the economy is stable, or in other words, in a largely constant condition, as diminishing returns take effect and slow down the rate of expansion.

Key Conclusions of the Neoclassical Model of Growth

The neoclassical growth model explains how total output relates to economic development in factor inputs such as capital, labor, and technological advancement. The production growth rate at steady-state equilibrium in a steady-state equilibrium, the growth rate of total production is always independent of the rate of savings and equal to the growth rate of the labor force or population. An elevated amount of steady-state per capita income: Although the rate of savings has no effect on the steady-state economy's growth rate of total output, it does enhance the total capital per person, which boosts the steady-state level of per capita income and, consequently, total income.

Long-term growth rate: Only technical advancement or regression can predict the long-term growth rate of an economy.

- **Monetarist inflation theory Friedman (1867-1960)**

Monetarists argue that the speed with which the money supply expands or contracts is the most important factor driving inflation or deflation. They believe fiscal policy, or government spending and taxation, is ineffectual in managing inflation. The monetarist economist Milton Friedman famously declared, "Inflation is always and everywhere a monetary phenomenon." Friedman et al (1963). According to monetarists, the empirical study of monetary history demonstrates that inflation has always been a monetary phenomenon. Simply put, the quantity theory of money states that any change in the amount of money in a system changes the price level. This theory begins with the exchange equation:

$$MV = PQ$$

Where; M is the nominal quantity of money;

V is the velocity of money in final expenditures;

P is the general price level;

Q is an index of the real value of final expenditures;

In this formula, the general price level is related to the level of real economic activity (Q), the quantity of money (M) and the velocity of money (V). The formula is an identity because the velocity of money (V) is defined to be the ratio of final nominal expenditure to the quantity of money (M).

Monetarists assume that the velocity of money is unaffected by monetary policy (at least in the long run), and the real value of output is determined in the long run by the productive capacity of the economy. Under these assumptions, the primary driver of the change in the general price level is changes in the quantity of money. With exogenous velocity (that is, velocity being determined externally and not being influenced by monetary policy), the money supply determines the value of nominal output (which equals final expenditure) in the short run. In practice, velocity is not exogenous in the short run, and so

the formula does not necessarily imply a stable short-run relationship between the money supply and nominal output. However, in the long run, changes in velocity are assumed to be determined by the evolution of the payment's mechanism. If velocity is relatively unaffected by monetary policy, the long-run rate of increase in prices (the inflation rate) is equal to the long-run growth rate of the money supply plus the exogenous long-run rate of velocity growth minus the long run growth rate of real output (Mankiw, 2002).

- **Monetary Policy Transmission Mechanism**

The monetary policy transmission mechanism is a concept that describes how changes in a central bank's monetary policy activities, such as interest rates or money supply, affect the economy as a whole. It includes the channels through which monetary policy impacts numerous economic variables, such as exchange rates. The transmission mechanism explains how changes in policy impact variables like as interest rates, borrowing costs, investment, consumption, and aggregate demand. It analyses the short- and medium-term consequences, as well as the channels via which policy changes are transferred to the actual economy.

The monetary policy transmission mechanism is intrinsically tied to inflation. It operates through several channels, such as the interest rate channel and the exchange rate channel. By adjusting interest rates, central banks can influence the cost of borrowing and lending, which in turn affects consumer and business spending. Additionally, changes in interest rates can impact exchange rates, potentially influencing the prices of imported goods and services. An understanding of these transmission channels is crucial for central banks when implementing monetary policy measures to achieve their inflation targets. Modigliani (1963) upholds this view yet presented the idea of capital proportioning and said the eagerness of banks to loan influences money related arrangement transmission.
The method through which changes in the central bank's monetary policy measures, such as interest rate adjustments, impact the broader economy is referred to as the monetary policy transmission mechanism.

- **Endogenous Growth Theory**

The Endogenous Growth Theory states that economic growth is generated internally in the economy, i.e., through endogenous forces, and not through exogenous ones. The theory contrasts with the neoclassical growth model, which claims that external factors such as technological progress, etc. are the main sources of economic growth. The defining feature of the economic models commonly known as 'new growth theory' is their ability to anticipate long-run increase in per capita consumption based on capital stock buildup (Dowrick, 1993). According to this hypothesis, human capital investment, research and development, and technological innovation fuel economic growth. It also implies that economic growth is self-sustaining, because increasing investment in these sectors leads to additional economic growth.

This theory suggests monetary policy can be very important in promoting these endogenous growth variables. To promote sustainable economic growth, the central bank can enact policies that incentivize investments in education, research and development, and technological innovation. The difficulty, though, is in keeping a careful balance to prevent an overabundance of money supply, which could result in inflation. Thus, endogenous growth theory-aligned monetary policy execution can effectively reduce inflationary pressures while fostering an environment where innovation and the development of human capital drives economic expansion.

Key Policy Implications of Endogenous Growth Theory
If government actions are taken to increase market competition and encourage the development of new goods and services, they can increase an economy's growth rate.
Investment in the "knowledge industries" of telecommunications, health care, and education yields growing returns when scale is increased. Technology advancement for the economy depends critically on private sector investment in R&D.

- **Quantity theory of Money**

According to the Quantity Theory of Money (QTM), the amount of money is the major driver of the price level, or the value of money, and any change in the quantity of money causes an exact direct and proportionate change in the price level. The QTM may be traced back to Irving Fisher's famous equation of exchange: MV=PQ, where M represents the stock of money, V represents the velocity of circulation of money, Q represents the volume of transactions that occur during the given period, and P represents the general price level in the economy. By replacing Y (total amount of goods and services traded for money) for Q, the exchange equation becomes: MV=PY. The addition of Y establishes a connection between the monetary and real sides of the economy.

However, under this perspective, P, V, and Y are decided endogenously inside the system. The variable M is the policy variable, which is determined exogenously by the monetary authorities. Monetarists highlight those changes in the supply of money impact just the price level or the monetary side of the economy, leaving the real sector completely isolated. This means that changes in the money supply have no effect on the real output of goods and services, but only on their values or the prices at which they are traded. The focus on long-run supply-side aspects of the economy rather than short-run dynamics is a key feature of the monetarist model (Dornbush et al, 1996).

Theoretical Framework
This study will be based on three theories from which my models would be explained. Here we will focus on Monetary Policy Transmission Mechanism, Endogenous Growth Theory and Quantity Theory of Money. Monetary Policy Transmission Mechanism; When the Central Bank modifies interest rates, it influences borrowing costs and spending. Lower interest rates can increase investment and

consumption, potentially enhancing economic development. However, if the additional money supply is excessive, it may lead to inflationary pressures. As a result, the relationship between monetary policy, inflation, and economic growth in Nigeria is dependent on the efficiency of interest rate adjustments in balancing growth stimulation with inflation control.

Endogenous Growth Theory; Endogenous growth theory, which is frequently used to explain the relationship between monetary policy, inflation, and economic growth in Nigeria, asserts that endogenous forces like as human capital, technological progress, and innovation drive long-term economic growth. The theory argues that in the Nigerian setting, monetary policy might play a critical role in supporting these endogenous growth determinants. The central bank can contribute to long-term economic growth by enacting policies that encourage investment in education, research and development, and technological innovation. The issue, however, is to maintain a careful balance in order to avoid an excess of money supply, which could lead to inflation. Monetary policy execution that is consistent with the ideas of endogenous growth theory can thus foster an environment in which innovation and human capital development drive economic expansion while moderating inflationary pressures.
Quantity theory of money: By highlighting the importance of the central bank's control over the money supply, the Quantity Theory of Money is used to explain the relationship between monetary policy, inflation, and economic growth. Effective monetary policy execution in accordance with the Quantity Theory entails regulating money creation to facilitate real economic growth while avoiding inflationary pressures. Maintaining a stable and prosperous economic climate in Nigeria requires striking a balance between money supply, inflation, and economic development.

- **Empirical Review**

One of the most significant economic factors that might affect any nation's economic operations is inflation. As a result, there is much empirical research on the factors that influence inflation.

In their study, Khan and Schimmelpfennig (2006) compared the relative weights of monetary and structural supply-side factors on inflation in Pakistan. The specification of a stylized inflation model takes into account the currency rate, common monetary variables (such as money supply and credit to the private sector), and the wheat support price, a supply-side element that has drawn significant interest in Pakistan. Every month from January 1998 to June 2005, the model is calculated. The findings show that recent inflation has been mostly driven by monetary variables, with a lag of around a year. Short-term changes in the price of wheat support have an impact on inflation, but not long-term changes. Furthermore, if monetary policy is accommodating, the wheat support price only counts in the medium term.

Amarasekara (2009) investigated how Sri Lanka's monetary policy affected inflation and economic growth. Using a vector autoregressive (VAR) framework with two lags, the effects of changes in the money supply, exchange rates, and interest rates on inflation and economic growth were examined. The analysis used quarterly, seasonally adjusted data for Sri Lanka's real GDP from 1978 to 2005 for variables including interest rate, money supply, inflation, and real GDP. According to study findings, Sri Lanka's inflation does not decrease as a result of contractionary monetary policy measures. Furthermore, after a contractionary reserve shock, inflation decreased as soon as the exchange rate increased and interest rates likewise increased.

Ani (2021) examined at how monetary policy affected economic growth in Nigeria during the country's post-structural adjustment program. We used secondary data for the years 1985–2015. The Central Bank of Nigeria (CBN) Statistical Bulletin and the National Bureau of Statistics (NBS) were the sources from which the statistics were taken. The model's parameters were numerically estimated using linear regression and the Ordinary Least Squares (OLS) approach. The results showed that during Nigeria's post-structural adjustment program, which ran from 1986 to 2015, a large money supply had a favorable and noteworthy impact on economic growth. During that same time period, Nigeria's economic growth was significantly impacted negatively by interest rates, whereas inflation was positively but not significantly impacted by inflation.

Lungu et al. (2012) investigated the trends in Malawi's demand for money from 1985 to 2010. They specifically wanted to address two goals: estimating the money demand function and determining the stability of the money demand function. Real money balances, real GDP, inflation, the TB rate, the exchange rate, and a gauge of financial depth are all included in their model. The model's results demonstrated that lagged money balances, pricing, and financial innovation are the primary drivers of short-run dynamics. The exchange rate, income, and TB rate, however, were not significant, according to their findings. The error correction term was large and negative, suggesting that following a shock, the variables revert to equilibrium. They discovered that the predicted VECM was stable using characteristic roots.

Muhammed et al. (2021) investigated the effects of monetary policy on the Nigerian economy using annual data from 1981 to 2016. To do this, the time series data for the years 1981 to 2016 were analyzed using the vector error correction mechanism (VECM), the augmented Dickey-Fuller unit root test, and the ordinary least squares (OLS) approach. The analysis's conclusion demonstrates that while the money supply, as a proxy for monetary policy, has a negative effect on the rate of inflation, it has a positive effect on GDP growth. The study's recommendations were that the money market should offer more financial instruments that meet the needs of investors and that monetary policy should support a favorable investment

climate by setting appropriate interest rates, exchange rates, and liquidity management mechanisms.

In Pakistan, Gul et al. (2012) conducted research on the effects of monetary instruments on macroeconomic variables such as inflation, interest rates, real GDP, exchange rates, and money supply. The link between the aforementioned factors was examined using OLS. Data from 1995 to 2010 were taken from a secondary source. The study's findings revealed a high positive association between the money supply and inflation but a weak negative correlation with output. Pakistan's output is also harmed by the exchange rate. However, in Pakistan's situation, a positive interest rate shock (contractionary monetary policy) increased the price level. Tightening monetary policy is supposed to reduce inflation.

Asuquo (2012) investigated the impact of monetary policy on price stability in Nigeria. He examined shocks in monetary policy and its responses to inflation, market interest rate, and exchange rate. The monetary policy rate was used as a proxy for monetary policy indicators. Secondary data were collected from December 2006 to February 2012. The year 2006 was chosen because it was when the monetary policy rate was introduced. A structural VAR framework was used to estimate the model. Results from the study revealed that the market interest rate and exchange rate were more responsive to shocks in the monetary policy rate than inflation in Nigeria. Furthermore, expected changes in inflation cannot be guaranteed by variations in the monet ary policy rate.

Other instruments, mainly, reserve requirements and open market operations used along with the monetary policy rate can effectively reduce inflation in Nigeria. Ahiabor (2012) focused mainly on the effect of monetary policy on inflation in Ghana. Variables such as interest rate, inflation, money supply, and exchange rate were studied. The research adopted secondary data sources from 1985 to 2009 and critically analyzed the variables quantitatively. Findings from the study confirmed a theoretically expected long-run positive correlation between inflation and money supply, an inverse relationship between inflation and interest rate, as well as, a positive relationship between inflation and exchange rate in Ghana.

The impact of financial sector reforms on the stability of the money demand function in Nigeria is examined by Ogunsakin & Awe (2014). Real wide money balances, inflation, the currency rate, foreign interest rates, savings deposit rates, Treasury bills, and a dummy for the post-liberalization era are all included in their estimation of a parsimonious error correction model (ECM). They discover that real GDP, inflation, foreign interest rates, Treasury bill rates, and savings deposit rates are the key predictors of money demand in Nigeria. Since the demand for money function remained consistent throughout the revisions, a stability test demonstrates that adopting monetary targets is still necessary.

Mohanty et al. (2011) explore a possible nonlinear relationship between inflation and growth in India using quarterly series and infer that the inflation rate of 4 to 5.5 percent may be considered as an inflation threshold. Though their empirical investigation does not find conclusive evidence of the existence of an inflation threshold, they opine that an inflation rate of less than 5.5 percent impact positively on Indian economic growth, while the relationship changes once the 5.5 percent level is exceeded.

Salami and Kelikume (2010) use annual data for the period 1970 to 2008 and 1980 to 2008 to estimate an inflation threshold for Nigeria. For the period 1970 to 2008, an inflation threshold of 8 percent is detected, while for 1980 to 2008 an insignificant threshold of 7 percent is established. In a similar study for Nigeria using annual data from 1970 to 2006, Bassey and Onwioduokit, (2011) use the framework of Li (2005) to investigate the relationship between inflation and economic growth as well as detect an appropriate threshold. Having established the presence of a negative relationship, they identify a statistically insignificant threshold level of 18 percent and establish that inflation rates below the threshold are growth-propelling. Also, employing the threshold regression model developed by Khan and Senhadji (2001) on a mixture of quasi and actual quarterly data spanning 1981 to 2009, Bawa and Abdullahi (2012) estimate a higher threshold inflation level of 13 percent when compared with Salami and Kelikume's point estimate, but a lower threshold when compared with the point estimate suggested by Bassey and Onwioduokit.

Najid & Uma-Tul (2012) examined the relationship between inflation and gross domestic product in Pakistan for the period 1971-2011. The Granger Causality test and Ordinary Least Square (OLS) method were employed in the analysis. The variables used in the investigation include the gross domestic product (GDP) as the dependent variable, whereas the independent variable was the inflation rate (INF). The empirical results of the Granger causality test showed that GDP causes inflation. The results of OLS revealed that a positive relationship exists between inflation and economic growth in Pakistan.

Omeke and Ugwuanyi (2010) tested the relationship between money, inflation and output by employing cointegration and Granger-causality test analysis. The findings revealed no existence of a cointegrating vector in the series used. Money supply was seen to Granger because both output and inflation. The result suggest that monetary stability can contribute towards price stability in Nigerian economy since the variation in price level is mainly caused by money supply and also conclude that inflation in Nigeria is too much extent a monetary phenomenon. They find empirical support in context of the money-price-output hypothesis for Nigerian economy. M2 appears to have a strong causal effect on the real output as well as prices.

Muhammad et al. (2011) studied the impact of inflation on GDP in the economy of Pakistan from 1972 to 2010, using

the ordinary least square (OLS) technique. The variables used in the investigation include gross domestic product (GDP) growth rate used as the dependent variable; whereas consumer price index (CPI) proxied for inflation, trade openness (OPNS), and investment growth rate (INVG) were used as the independent variables. The results showed that inflation has a negative and significant impact on the growth of the Pakistan economy.

Srithilat and Sun (2017) used co-integration and the Error Correction Model to examine the impact of monetary policy on economic development in Lao PDR from 1989 to 2016. The study found that, in the long term, money supply, interest rate, and inflation rate all have a negative influence on real GDP per capita, whereas only the real exchange rate has a positive sign.

Adegbite and Alabi (2013) conducted an empirical investigation of monetary policy and economic development in Nigeria from 1970 to 2010. In the data analysis, the ordinary least squares approach with multiple regressions was used. The dependent variable in the first equation was manufacturing output, whereas the independent variables were money supply, inflation, exchange rate, and interest rate. The dependent variable in the second equation was money supply, whereas the explanatory variables were inflation rate, exchange rate, and gross domestic product. However, interest rates have a big impact on industrial production, whereas interest rates have a significant impact on money supply. The results also demonstrated that the combined effect of the factors had a substantial influence on the respective dependent variables. Following the outcome of that study, it was, therefore, concluded that exchange rate stability has played a key role in keeping inflation low for most of the transition period, and that the range of monetary policy instruments available to the authorities has widened in recent years and this has been associated with more stable and predictable changes in money supply and the price level.

Ezeanyeji & Ugochukwu (2015) investigated the effect of inflation on economic growth in Nigeria from 1991 to 2013 using the Ordinary Least Square (OLS) method of a simple regression model. The variables used in the investigation include gross domestic product (GDP) as the dependent variable, whereas inflation rate (INF) is the independent variable. The results showed that inflation hurts economic growth in Nigeria. The study reviewed a wide range of empirical studies on the impact of inflation on economic growth across the countries of the world. Despite the several empirical studies conducted on the subject matter, the studies on the subject matter in Nigeria are scanty and showed the existence of contradictory findings in the economy, which motivated the research study on the subject.

Hameed et al. (2019) in presenting a review on how the decisions of monetary authorities influence macro variables like GDP, money supply, interest rates, exchange rates and inflation using the method of least square OLS found that tight monetary policy (in term of increase interest rate) had significantly negative impact on output, therefore asserting that increase in money supply has strong positive impact on inflation but affects output negatively. In addition to this exchange rate was found to be negatively related to output.

Micheal and Ebibai (2014), examined the impact of monetary policy on selected macroeconomic variables such as gross domestic product, inflation and balance of payment in Nigeria using OLS regression analysis. The result shows that the provision of investment friendly environment in Nigeria will increase the growth rate of GDP.

Onyeiwu (2012) examined the impact of monetary policy on the Nigeria economy using Ordinary Least Squares (OLS) method. The result showed that monetary policy represented by money supply exert a positive impact on GDP growth and balance of payment but negative impact on rate of inflation and he concluded that CBN monetary policy is effective in regulating the liquidity of the economy which affects some macroeconomic variables such as output, employment and prices.

Fasanya et al. (2013) have examined the impact of monetary policy on economic growth in Nigeria. The study used time-series data covering the range of 1975 to 2010. The effects of stochastic shocks of each of the endogenous variables are explored using Error Correction Model (ECM). The study showed that long-run relationship exists among the variables. In addition, the core finding of this study showed that inflation rate, exchange rate and external reserve are significant monetary policy instruments that drive growth in Nigeria.

Owalabi and Adegbite (2014) examined the impact of monetary policy on industrial growth in Nigerian economy using multiple regression analysis. They analyzed the relationship between manufacturing output, treasury bills, deposit and lending, and rediscount rate and industrial growth, and found that the variables had significant effects on the industrial growth.

Akujobi (2012) investigated the impact of monetary policy instrument on economic development of Nigeria using multiple regression technique and found that treasury bill, minimum rediscount rate and liquidity rate have significant impact on economic development of Nigeria.

Adaramola and Dada (2020) examine the effect of inflation on economic growth from 1980 to 2018. Time series data on inflation rate, government consumption expenditure, exchange rate, supply of money, rate of interest, degree of openness and real GDP was utilized for the study. The study employed ARDL model, test for normality, cumulative sum test, heteroscedasticity test, and serial correlation LM test. Results found that interest rate and money supply have a direct linkage with the economic growth; while, exchange rate and inflation have an inverse relationship with economic growth.

Dagher and Kovanen (2011) analyze the stability of the money demand function in Ghana using a bounds testing procedure developed by Pesaran et al, (2001). They estimated an Auto-Regressive Distributive Lag (ARDL) model which includes changes in broad money, its lags, and current and lagged values of the explanatory variables. The explanatory variables include income, exchange rate, deposit rate, TB rate, US TB rate, and the US Libor rate. They find that the TB rate, US TB rate, and the Libor rate have no significant impact on the demand, while income and exchange rate were found to have significant effects. Specifically, they found that depreciation increases money demand as is the increase in incomes. Furthermore, they found a faster convergence of the ECM to equilibrium once there is a misalignment. Using a CUSUM and CUSUM squares test on the residuals of the ECM model, they found that the money demand was stable.

Chukuigwe (2018) analyzed the impact of monetary and fiscal policies on non-oil exports in Nigeria from 1974 to 2003. Using Ordinary Least Squares estimation, the study revealed that both interest rate and exchange rate, both proxies for monetary policy negatively affect non-oil exports. Similarly, budget deficits—proxy for fiscal policy also had a negative effect on non-oil exports. He therefore recommended the introduction of new strategies for monetary policy implementations to address this problem.

Odeniran and Udeaja (2010) examined the relationship between monetary policy development and economic growth in Nigeria, using Granger causality tests in a vector autoregressive (VAR) framework, over the 1960 period to 2009. The results indicated a bidirectional causality between some of the proxies of monetary policy development and economic growth.

Balogun, E. (2007) using a simultaneous equation model to test the hypothesis of monetary policy effectiveness in Nigeria found that rather than promoting growth, past domestic monetary policy has been a source of stagnation and persistent inflation in the country. In addition, the impact of monetary policy on growth in Nigeria generated large volumes of empirical studies with mixed findings using cross-sectional, time series and panel data.

Ayodeji and Oluwele (2018) analyzed the impact of monetary policy on economic growth in Nigeria by developing a model that is able to investigate how monetary policy of the government has affected economic growth through the use of multi-variable regression analysis. They proxied the variables of monetary policy instruments to include: Money Supply (MS), Exchange Rate (ER), Interest Rate (IR), and Liquidity Ratio (LR).

Economic growth was represented by Gross Domestic Product (income) at constant prices. Unit root test was conducted and all their estimating variables were stationary at first difference except the component of interest rate which shows that their model interpretation would not be spurious and a true representation of the relationships that exists between the explained and explanatory variables. Error Correction Model was introduced in their estimation in order to have a parsimonious model. From their result, two variables (money supply and exchange rate) had a positive but fairly insignificant impact on economic growth.

Measures of interest rate and liquidity ratio on the other hand, had a negative but highly significant impact on economic growth. In addition, Engle-Granger co-integration test was done and showed the existence of a long run relationship between monetary policy and economic growth in Nigeria. Granger causality test was done on their variables and the results showed the existence of a uni-directional causality between money supply and economic growth, economic growth granger causing liquidity ratio and exchange rates while a bidirectional causality exists between interest and economic growth.

Amassoma, (2011) using the simplified Ordinary Least Squared technique for the period 1886 to 2009 examined the effect of monetary policy on macroeconomic variables in Nigeria. In his results, monetary policy was found to have a significant effect on both exchange rate and money supply but not on price stability.

Chude and Chude (2015) employ time-series data from 2000 to 2009 using ordinary least squares regression estimation technique to examine the influence of inflation on economic growth of Nigeria. The result indicates the positive and significant relationship between inflation, exchange rate and growth of the economy.

Aminu and Anono (2012) carried out empirical analysis of the effect of inflation on the Growth and Development of the Nigerian economy. The study used time series data from 1970 to 2010. The objective was to investigate the impact of inflation on economic growth and development in Nigeria. The variables used in the study include GDP which is the Gross Domestic product (output) and also serves as a dependent variable while inflation serves as independent variable. The study used Augmented Dickey – fuller technique in testing the unit root property of the series and Granger causality test of causation between GDP and inflation. The result shows that inflation is statistically insignificant and positive. The positive impact of inflation on economic growth in Nigeria is in line with the finding of Olu and Idih (2015). The result of causality suggests that GDP causes inflation and not inflation causing GDP.

Olu and Idih (2015), investigated the nature of the relationship between inflation and economic growth in Nigeria using annual time series data from 1980 to 2013. The variables used for the study are Gross Domestic Product (GDP) as a dependent variable, while the independent variables are: Inflation rate, Exchange Rate (EXCHR), input of labor and Capital. The study used the Ordinary Least Square to capture the impact of the dependent variable on the independent variables. The result shows that inflation has positive impact on the economic growth in Nigeria. The positive impact of inflation on

economic growth is in line with the finding of Aminu and Anono (2012). The major limitation of this study is that it fails to test unit root properties of the series.

Ajisafe and Folorunso (2002) reviewed the effectiveness of monetary and fiscal policy on economic activity in Nigeria using co-integration and error correction modeling techniques using time series data for the period 1970 to 1998. It was revealed that monetary rather than fiscal policy exerts a greater impact on economic activity in Nigeria while reaching a conclusion that past emphasis on fiscal measures by the government has led to greater distortion in the economy.

Lou and Iddah (2015), investigated the nature of the relationship between inflation and economic growth in Nigeria using annual time series data from 1980 to 2013. The variables used for the study are Gross Domestic Product (GDP) as a dependent variable, while the independent variables are: Inflation rate, Exchange Rate (EXCHR), input of labor and Capital. The study used the Ordinary Least Square to capture the impact of the dependent variable on the independent variables. The result shows that inflation has positive impact on the economic growth in Nigeria. The positive impact of inflation on economic growth is in line with the finding of Aminu and Anon (2012). The major limitation of this study is that it fails to test unit root properties of the series.

Umaru and Zubairu (2012) used the Augmented Dickey-Fuller technique to test the unit root property of the series and the Granger causality test to determine the impact of inflation on economic growth and development in Nigeria between 1970 and 2010. The unit root findings indicate that all variables in the model are stable, and the Causality results indicate that GDP drives inflation rather than inflation causing GDP. The findings also demonstrated that inflation had a favorable influence on economic growth through increasing productivity and production levels, as well as the development of total factor productivity. A positive performance of an economy in terms of per capita growth may thus be linked to the country's inflation rate.

Anidiobu et al. (2018) determine the influence of inflation on the economic growth of Nigeria using descriptive and ordinary least squares on the data for the period 1986–2015. The result indicates that inflation rate depicts an insignificant positive relationship, exchange rate shows a significant positive relationship, while there is a negative in significant relationship between interest rate and growth of Nigeria economy.

Idris and Suleiman (2019) investigate the influence of inflation on economic growth of Nigeria from 1980 to 2017. The study employs vector error correction mechanism on variables selected, which are gross domestic product, inflation rate, interest rate, and exchange rate in the country. Findings reveal long run relationship among the variables and that inflation rate and interest rate affect the economic growth of Nigeria significantly and negatively in the long run.

Literature Gap

This study seeks to address the year gap in Najid, A. et al. (2012) as it doesn't cover the post pandemic period. The study also bridged the year gap by augmenting the difference between 2012 and 2022, hence the study bridged the year gap between the work of Najid, A. et al. (2012) in 2012 and 2022.

Summary

This chapter's literature review analyzed papers connected to the research problem, including the theoretical foundation that supports the study and research works on Monetary Policy, Inflation and Economic Growth in Nigeria. The conceptual review discusses the dependent and independent variables of the research, as well as how they relate to one another. The theoretical framework is carried out to show the review in which the study has been built on. The empirical review is added to show reviewed literature on the research topic. The empirical review shows the results of related research carried out on the topic. The gaps in literature contain the gaps in the studies reviewed that this research hopes to fill.

III. RESEARCH METHODOLOGY

Introduction

This chapter provides insight on the methods considered in the study. The instruments as well as the methods used for the data collection and analysis will be discussed. The chapter will be divided into three sections;
Introduction, contains research design, discusses the method of data collection, discusses the method of data analysis and justification of method.

Research Design

This study is founded on Ex Post Facto Research Design bearing in mind that, the study attempts to explore cause and effect relationships where causes already exist and cannot be manipulated. The investigation will make advantage of what is already in place and go in reverse to determine why we are looking at an empirical examination of how inflation and monetary policy affect Nigeria's economic development. The study is quantitative and data analysis is carried out using econometric method to find the relationship between monetary policy, inflation and economic growth in Nigeria. We choose to use the following variable deployment to obtain these fits: growth domestic product as the explained variable, while money supply, monetary policy rate, inflation and exchange rate are the independent variables used in the analysis. This chapter also covers procedures or methods for data analysis, model specifications, and data collecting and collection strategies.

Methods of Data Collection

The study used secondary source of data collection. The data will be annual time series for Gross Domestic Product

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(GDP), Money Supply (MS), Monetary Policy Rate (MPR), Inflation (INF) and Exchange Rate (EXG) from the period of 1981 to 2022. All the variables are sourced from CBN annual statistical bulletin (2022).

Model Specification

The model to be used in this study was adapted from the work of Nasko (2016). The model considered GDP as Gross Domestic Product was the dependent variable while Money Supply, Interest rate and Inflation are the explanatory variables. The model can be specified in equation as:

GDP =β0 + β1M2t + β2INTRt + β3INFt + et …… (1)

Where:

GDP: Real Gross Domestic Product

M2 is Money Supply;

INTR is Interest Rate;

INF is inflation rate;

β0 = intercept term

β1 to β5 = coefficient of the variables

et = Error term/ disturbance

For this study, the model will be modified as follows:

MODEL 1: For Objective 1

GDP = β0 + β1MPR + β2MS + β3EXG + et……..…(2)

Where:

Gross domestic product = GDP

Monetary policy rate = MPR

Money supply = MS

Inflation = INFL

Exchange rate = EXG

β0 = Intercept of the relationship

β1 = Coefficient of monetary policy rate

β2 = Coefficient of Money Supply

β3 = Coefficient of Exchange Rate

et = Error term/ disturbance

MODEL 2: For Objective 2

GDP = β0 + β1INF + β2 MS + β3 EXG + et……...……. (3)

Where:

Money supply = MS

Inflation = INFL

Exchange rate = EXG

β0 = Intercept of the relationship

β1 = Coefficient of Inflation

β2 = Coefficient of Money Supply

β3 = Coefficient of Exchange Rate

et = Error term/ disturbance

MODEL 3: For Objective 3

GDP = β0 + β1INF + β2MPR + et……...……. (4)

Where:

Inflation = INFL

Monetary Policy Rate = MPR

β0 = Intercept of the relationship

β1 = Coefficient of Inflation

β2 = Coefficient of Monetary Policy Rate

et = Error term/ disturbance

Method of Data Analysis

This research will employ statistics and econometric tools to analyze the data. The statistics tools will comprise of descriptive statistics, graphs and charts, while the econometric tools include regression analysis, unit root test and granger causality test. It attempts to assess monetary policy, inflation and economic growth in Nigeria. In order to analyze monetary policy, inflation and economic growth in Nigeria, gross domestic product was chosen as the dependent variable in this study, and inflation, monetary policy rate, exchange rate, and money supply were captured as the independent variables. The study primarily examines the impact of these four variables on long-term domestic product growth.

- **Unit Root Test**

Unit Root or preliminary test are routine tests on time series data to ascertain if individual series are stationary which aid the application of the appropriate estimation technique. In practice, the choice of the most appropriate unit root test is difficult. Enders (1995) suggested that a safe choice is to use both types of unit root tests the Augmented Dickey Fuller (ADF) (1981) test. If they reinforce each other, then we can have confidence in the results. This will be done to ensure that there is no spurious regression. Spurious regression occurs when two stationary variables that are not related to each other produce a significant relationship. Therefore, to test for series stationarity, the ADF test would be conducted. The unit root tests would be performed at level and at first difference for both with the intercept, and with the intercept and trend term. The test is based on three forms of regression equations;

When series is without constant and trend we have the following:

$$\Delta Y_t = \partial Y_{t-1} + u_t \ldots\ldots (5)$$

When series is with constant we have:

$$\Delta Y_t = \alpha + \partial Y_{t-1} + u_t \ldots\ldots (6)$$

When series is with constant and trend we then have the following:

$$\Delta Y_t = \alpha + \beta_t + \partial Y_{t-1} + u_t \ldots\ldots (7)$$

The hypothesis is:

H0: δ=0 (unit root) (non-stationary)

H1: δ≠0 (has no unit root) (stationary)

To test the hypothesis, the regression equation are estimated using Augmented Dicky-Fuller(ADF) tau statistic t* (critical value) that δ is equal to zero.

Decision rule;

If t*> ADF do not reject null hypothesis – series is non-stationary

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If t*< ADF reject null hypothesis – series is stationary
The essence of this test is to avoid spurious regression (statistically significant relationship when there is none) when non stationary series are used in a regression model.

- **Ordinary Least Square**

In order to facilitate the estimation of the time series data generated for the study, the Ordinary Least Square method for multiple regressions shall be employed. This method of analysis is employed because it is unbiased, it is fairly simple to understand when compared with some other econometric technique for analyzing data, and it only requires a fairly amount of data. The least square has been used in a wide range of economic relationship with fairly satisfactory result, and despite the improvement of computational equipment and of statistical information which facilitates the use of other more elaborate econometric techniques, OLS is still one of the most commonly used method in estimating relationship in econometric models. OLS is an essential component of investigating other econometric techniques (Koutsoyiannis, 1977).

The general purpose of multiple regressions is to learn more about the relationship between the dependent variable GDP and the independent variables Monetary Policy rate, Inflation Rate, Money supply and Exchange Rate. This reason this method is chosen is because it is the best linear unbiased estimator (BLUE).

- **Granger Causality Test**

The issue of causality relationship as proposed by Granger (1963) is useful in analysing how a time series can be used to forecast another. Thus, a variable X_t is said to Granger-cause another series Y_t, if given the past of Y_t, past values of X_t can help forecast Y_t. The Granger Causality test will be used to estimate the causal relationship between monetary policy, inflation and economic growth in Nigeria. Thus, the model for our 3rd objective involve the following pair of regressions:

$$GDP_t = \sum_{j=1}^{n} \beta j\, MPR_{t-j} + \sum_{j=1}^{n} \delta j\, INF_{t-j} + \mu_{it} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (8)$$

Where:

$\beta j, \delta j = Coefficients$

H0: There is no causal relationship that exists between monetary policy, inflation and economic growth.
H1: There is a causal relationship that exists between monetary policy, inflation and economic growth.
Decision rule: if the p-value < α then reject the null hypothesis.

Granger causality can occur even if there is no cointegration among the variables. A unidirectional causality means a variable y granger causes x or a variable x granger causes a variable y and not vice versa. A bidirectional causality arises when a variable x granger causes a variable y, and a variable y granger causes a variable x, while independence in causality means there is no relationship between the variables x and y.

IV. DATA PRESENTATION AND ANALYSIS OF RESULT

Introduction

The objective of this chapter is to present the data analysis, result and discussions. To achieve that, the chapter is divided into seven sections. Following this introduction, section two presents the descriptive statistics of the variables used in the study. Section three presents the result of the unit root test. Section four presents the result of the Regressions Analysis for Model 1. Section five presents the result of the Regression Analysis of Model 2. Section six presents the result the Granger causality test. Section seven presents the discussion on the findings and section eight presents the test of the hypothesis of the study.

Presentation and Analysis of Results

- **Descriptive Statistics**

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Table 1: Summary Statistics of the Variables (1981- 2022) Source: Author's computation using E-Views 9.0

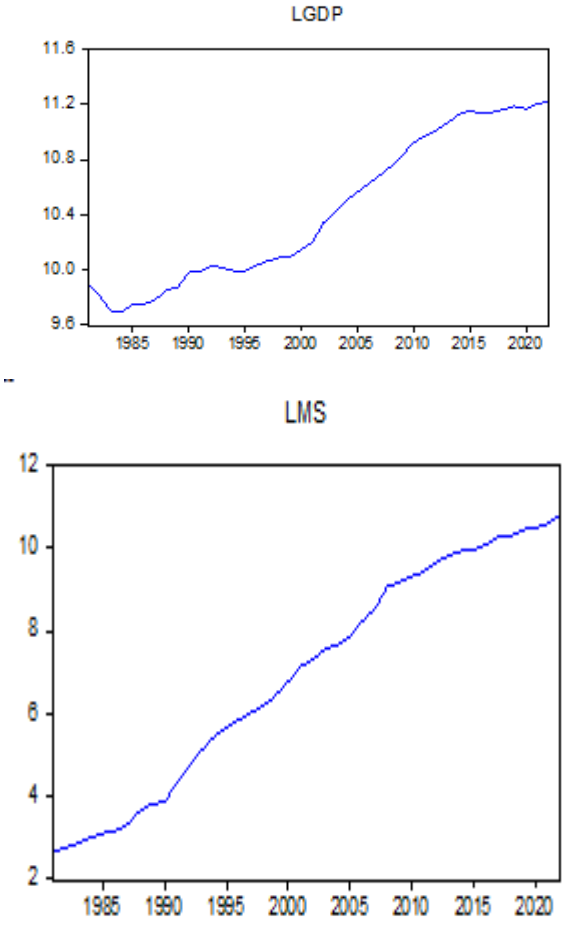
	LGDP	LMS	MPR	INF	EXG
Mean	10.42752	6.963851	12.96429	31.58381	116.2837
Median	10.27250	7.231713	13.00000	13.36000	115.2551
Maximum	11.22194	10.79683	26.00000	538.0000	449.0500
Minimum	9.693476	2.672158	6.000000	5.710000	0.610025
Std. Dev.	0.542231	2.743429	3.917430	81.69557	120.6341
Skewness	0.223965	-0.168656	0.765614	5.873163	1.070109
Kurtosis	1.459138	1.597614	4.649426	36.89645	3.405296
Jarque-Bera	4.506071	3.640812	8.864212	2252.155	8.303392
Probability	0.105080	0.161960	0.011889	0.000000	0.015738
Sum	437.9557	292.4817	544.5000	1326.520	4883.917
Sum Sq. Dev.	12.05461	308.5825	629.1964	273640.8	596655.6
Observations	42	42	42	42	42

Source: Author's Computation using E-Views version 9

Table 1 presents the result of the descriptive statistics. The dependent variable economic growth proxied by Gross Domestic Product (GDP), the independent variables Monetary Policy Rate, Inflation, Money Supply (MS) and Exchange Rate (EXG). The result shows that the mean value of EXG transaction is the highest at 116.2837, while MS has the lowest mean value at 6.963851. The result also shows that all variables have positive median values. Inflation (INF) has the highest maximum value of 538.0000 while Money Supply (MS) has the lowest minimum value of 10.79683. The value of EXG has the highest standard deviation, while GDP has the least value of standard deviation.

The value of Inflation (INF), Exchange rate (EXG) and Monetary Policy Rate (MPR) all shows kurtosis which is greater than 3, hence it is Leptokurtic. GDP (Economic Growth) and M2 (Money Supply) all shows kurtosis which is less than 3, meaning they are platykurtic and they have fewer extreme outliers than the normal distribution.
All the variables show positive skew distributions except Money Supply (M2), which implies that the mass of the distribution is concentrated on the left, while Money Supply (M2) has negative skewness. This means that the distribution is concentrated to the right.

The Jarque-Bera probability shows that GDP (Economic Growth) and Money Supply (MS) are normally distributed as their probability values are greater than 5% (p >0.05), while other variables i.e., Monetary Policy Rate (MPR), Exchange Rate (EXG) and Inflation (INF) are not normally distributed as their probability values are lesser than 5%.



- **Graphical Analysis of The Time Series Data**

Figure 2: Annual Time series Trend for the variables

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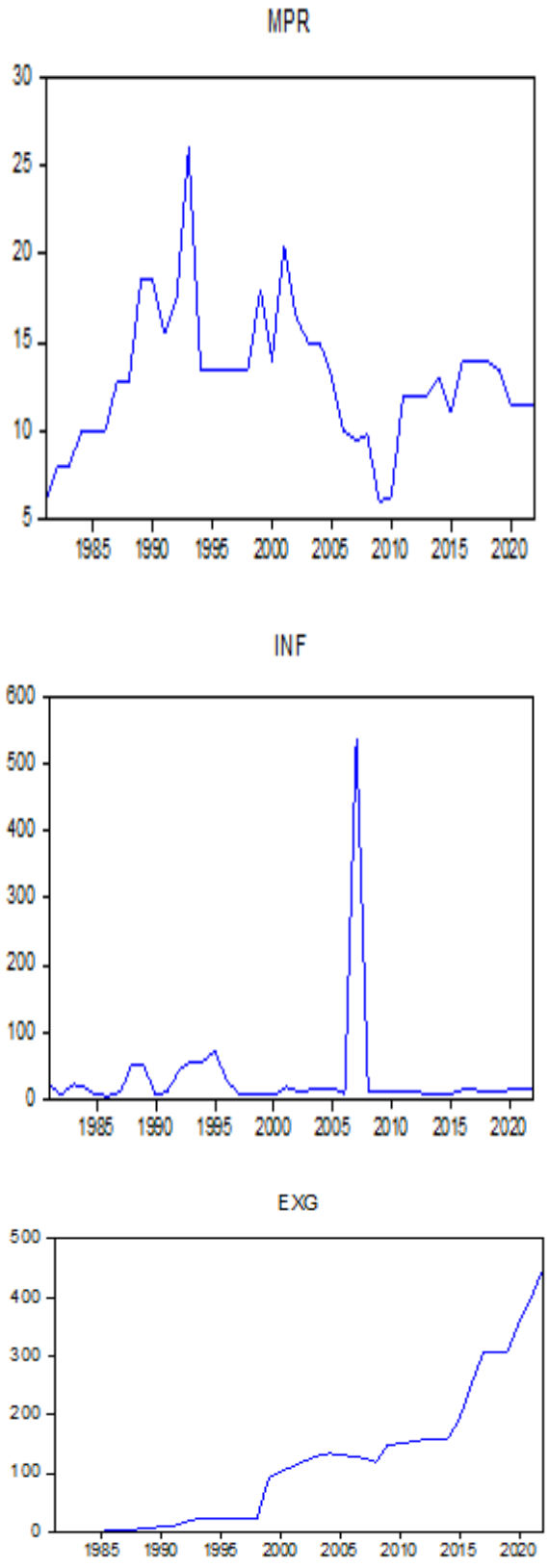

Figure 2 shows trends in the values of annual time series of all the variables used in the study: Economic growth (LGDP), Inflation (INF), MPR (Monetary Policy Rate), MS (Money Supply) and Exchange Rate (EXG) used in the study. The plot indicates an upward movement trend in GDP (Economic Growth), MS (Money Supply) and EXG (Exchange rate), while Inflation (INF) and Monetary Policy Rate (MPR) indicate a fluctuating movement.

- **Result of Unit Root Test**

The results of the Augmented Dickey- Fuller (ADF) unit root test is presented in Table 4.2.3. The result shows that all variables are non-stationary at levels except INF, therefore we cannot reject the null hypothesis at 5% confidence level for those variables. However, the results show the variables LGDP, LMS, EXG and MPR are stationary at first difference at 5% confidence level. Hence our unit root test shows that our variables are in mixed order of integration.

Table 3: Result of the ADF Unit Root Test Variable Levels

Variable	Levels t-statistics	Probability	t-statistics 1st difference	Probability	Order of Integration
LGDP	1.931907	0.6173	-3.901036	0.0212	1(1)
LM2	-0.175504	0.9915	-4.303645	0.0078	1(1)
EXG	0.687310	0.9995	-4.651876	0.0031	1(1)
INF	-6.385020	0.0000	-	-	1(0)
MPR	-3.387130	0.0671	-8.861782	0.0000	1(1)

Source: Author's computation using E-Views 9.0

- **Result of Regression Analysis for Model 1**

Table 4 presents the result of the Regression Analysis for model 1. The result shows that there is a positive and significant relationship between Money Supply and GDP, implying that a unit change in Money Supply will lead to an increase in GDP by 15.99% The result shows that there is a negative and significant relationship between Monetary Policy Rate and GDP implying that a unit change in Monetary Policy Rate will lead to a decrease in GDP by 1.19%. The result shows that there is a positive and significant relationship between Exchange rate and GDP implying that a unit change in Exchange rate will lead to an increase in GDP by 0.079%.

Table 4: Result of the Ordinary Least Square Regression analysis for Model 1

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Dependent Variable; LGDP				
Independent Variables	Coefficients	Std. Error	t-statistics	Prob
LM2	0.159961	0.013458	11.88557	0.0000***
EXG	0.000797	0.000307	2.598978	0.0132***
MPR	-0.011947	0.004560	-2.619870	0.0126***
C	9.375796	0.089899	104.2925	0.0000
R^2= 0.959154				F-stat = 297.4387
Adjusted R^2=0.955929				D.W stat= 0.320781 Prob (F-stat) = 0.0000

Source: Author's computation using E-views 9.0

Note: indicate rejection of the null hypothesis at 1%, 5% and 10% level of significance respectively.

The R-square is 0.959154, which implies that about 95% of the changes in GDP is as a result of the changes in the independent variables in the model, i.e., changes in Money Supply, Monetary Policy Rate and Exchange Rate, while 5% is caused by factors not included in the model. This indicates that the model is a strong fit. The fitness of the model is confirmed by the adjusted R2. The result of the F-stat shows that the variables are jointly significant in explaining GDP at 5% significant level.

From the years under review, the result indicates that Money supply contributes significantly to GDP in Nigeria and this can be highlighted in the election periods, aided in import and export growth, the influx of money into the economy can stimulate spending and create temporary jobs, money supply played a significant role to investors who can borrow loans from banks and invest in domestic industries to increase production which led to the growth of infant industries.

Monetary Policy Rate has a significant impact on GDP because it influences interest rates of banks which has a direct impact on the lending capacity of the banks to the general public, the reason behind monetary policy rate having a negative relationship with GDP is because the increase in monetary policy rate which has direct relationship with lending capacity, would lead to lower borrowing which would discourage investment, and then slow the Economic growth.

From the result, it is clear that exchange rate is significant in explaining GDP. For the period under review, exchange rate which was hovering around the predetermined fair rate between 300 to 670 as pronounced by Bank of America. This is because exchange rate facilitated international trade which in turn improved external reserves and exports of the country. It also opens the country to economic significance in the open world.

Result Regression Analysis for Model 2

Table 5 presents the result of the Regression Analysis for Model 2. The result shows that there is a positive and significant relationship between Money Supply and GDP, implying that a unit change in Money Supply will lead to an increase in GDP by 15.98%. The result shows that there is a positive and significant relationship between Exchange rate on GDP implying that a unit change in Exchange rate will lead to an increase in GDP by 0.083%. The result shows that there is a negative and insignificant relationship with Inflation and GDP implying that a unit change in Inflation will lead to a decrease in GDP by 0.0004%.

Table 5: Result of the Ordinary Least Square Regression for Model 2

Dependent Variable; LGDP				
Independent Variables	Coefficients	Std. Error	t-statistics	Prob
LM2	0.159805	0.014765	10.82295	0.0000***
EXG	0.000836	0.000336	2.488714	0.0173***
INF	-4.86E-05	0.000239	-0.203249	0.8400
R^2= 0.951828		F-stat = 2.141966		
Adjusted R^2=0.948025			D.W stat= 0.204115 Prob (F-stat) = 0.0000	

Source: Author's computation using E-Views, 9.0

The R-square both confirm the fitness of the model showing that 95% of the changes in Inflation is caused by the independent variables in the model i.e., Changes in Money Supply, Inflation and Exchange Rate, while the remaining 5% is caused by factors not included in the model. The result of the F-stat shows that the independent variables are jointly significant in explaining GDP at 5% significant level. This indicates that the model is a strong fit.

From the years under review, inflation was insignificant in explaining GDP because the purchasing power of consumers was not hampered to buy goods but with the continuous increase in food prices, it was slowly deteriorating the purchasing power of consumers and leading to reduced spending, however high inflation can have a more pronounced negative impact on GDP.

From the years under review, the result indicates that Money supply contributes significantly to GDP in Nigeria and this can be highlighted in the election periods, aided in import and export growth, the influx of money into the economy can stimulate spending and create temporary jobs, money supply played a significant role to investors who can

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borrow loans from banks and invest in domestic industries to increase production which led to the growth of infant industries.

From the result, it is clear that exchange rate is significant in explaining GDP. For the period under review, exchange rate which was hovering around the predetermined fair rate between 300 to 670 as pronounced by Bank of America. This is because exchange rate facilitated international trade which in turn improved external reserves and exports of the country. It also opens a country to economic significance in the open world.

- **Result of Granger Causality Test**

The mentioned test would not include the granger causality for the two models but instead it would merge all the equations together because to answer the research question of examining the casual relationship that exists among monetary policy, inflation and economic growth in Nigeria. Table 4.2.6 shows the result of the Granger causality test. The Granger causality test is used to estimate the causal relationship between the variables. The decision rule states that we reject the null hypothesis of no causal relationship when the p-value is <0.05 and also the F-statistics >3.

The result shows that we cannot reject the null hypothesis of MS does not Granger cause GDP because the p-value (0.01905) < 0.05 at 5% level, and we cannot reject the null hypothesis of GDP does not Granger cause MS because the p-value (0.2575) > 0.05 at 5% level. Therefore, there is a unidirectional causal relationship between MS and GDP. This implies that changes in MS will lead to significant change in GDP and not vice versa. The result shows that we cannot reject the null hypothesis of MPR does not Granger cause GDP because the p-value (0.7316) > 0.05 at 5% level, and we cannot reject the null hypothesis that GDP does not granger cause MPR as the probability is greater than (0.4102) > 0.05 at 5% level of significance.

Therefore, there is no Granger causality between GDP and MPR we can say that MPR and GDP are independent of one another. The result shows that we cannot reject the null hypothesis of EXG does not Granger cause GDP because the p-value (0.7650) > 0.05 at 5% level, and we cannot reject the null hypothesis of GDP does not Granger cause EXG because the p-value (0.6033) > 0.05 at 5% level of significance. Therefore, there is no Granger causality between GDP and EXG we can say that EXG and GDP are independent of one another. The result also shows that we cannot reject the null hypothesis of INF does not Granger cause GDP because the p-value (0.7488) > 0.05 at 5% level and we cannot reject the null hypothesis of GDP does not Granger cause INF because the p-value (0.9471) > 0.05 at 5% level of significance. Therefore, there is no Granger causality between INF and GDP we can say that EXG and GDP are independent of one another.

Table 6: Result of the Granger Causality Test

Null Hypothesis	F-statistics	Prob.
LMS does not Granger Cause LGDP LGDP does not Granger Cause LMS	4.41416 1.41074	0.01905*** 0.2575
MPR does not Granger Cause LGDP LGDP does not Granger Cause MPR	0.31533 0.91423	0.7316 0.4102
EXG does not Granger Cause LGDP LGDP does not Granger Cause EXG	0.27000 0.51274	0.7650 0.6033
INF does not Granger Cause LGDP LGDP does not Granger Cause INF	0.29173 0.05444	0.7488 0.9471

Source: Author's computation using E-Views, 9.0.

Note: indicate rejection of the null hypothesis at 1%, 5% and 10% level of significant, respectively.

Test of Hypothesis

Hypothesis 1

H0: There is no impact of monetary policy rate on economic growth in Nigeria.

H1: There is an impact of monetary policy rate on economic growth in Nigeria.

The results of the regression analysis in table 4 showed that monetary policy rate has a negative and significant impact in explaining economic growth in Nigeria as the probability value (0.0126) is greater than 0.05. Therefore, we reject the null hypothesis. This means that monetary policy rate has a significant impact on economic growth in Nigeria.

Hypothesis 2:

H0: There is no impact of inflation on economic growth in Nigeria

H1: There is an impact of inflation on economic growth in Nigeria.

The result of the Regression analysis in table 5 shows that there is a negative and insignificant impact of Inflation in explaining economic growth in Nigeria as the probability vale (0.4642) is greater than 0.05. Therefore, we cannot reject the null hypothesis. This implies that inflation has no impact on economic growth in Nigeria.

Hypothesis 3:

H0: There is no causal relationship that exists among monetary policy, inflation and economic growth in Nigeria.

H1: There is a causal relationship that exists among monetary policy, inflation and economic growth in Nigeria.

The result in granger causality test in table 6 shows MPR does not Granger cause GDP because the p-value (0.7316) > 0.05 at 5% level and GDP does not granger cause MPR as the probability is greater than (0.4102) > 0.05 at 5% level of significance. Therefore, there is no Granger causality between GDP and MPR we can say that MPR and GDP are independent of one another. In the same table 4.5, the result also shows that we cannot reject the null hypothesis of INF does not Granger cause GDP because the p-value (0.7488) > 0.05 at 5% level and we cannot reject the null hypothesis

of GDP does not Granger cause INF because the p-value (0.9471) > 0.05 at 5% level of significance. Therefore, there is no Granger causality between INF and GDP we can say that INF and GDP are independent of one another. Since both monetary policy and inflation have no causal relationship with economic growth. We cannot reject the null hypothesis that there is no causal relationship between monetary policy, inflation and economic growth in Nigeria.

Discussion of Findings

This section will discuss the results obtained using the Unit root test, Regression analysis and granger causality tests.

The result of the Regression Analysis for Model 1 shows that there is a negative and significant relationship between Monetary Policy Rate and GDP, the result shows that there is a positive and significant relationship between Exchange rate and GDP, there is a positive and significant relationship between Money supply and GDP. The statistical evidence emanating from the study of co-efficient of determination R2 shows that the endogenous variables jointly explained over 95% of the total variation in the dependent variable (GDP). The value of the adjusted R2 (0.959154) which is over 95 % re-affirms the goodness of fit. The F-statistics (0.0000) of the model estimate implies that the independent variables are jointly significant in explaining GDP over the study period at 5% level of significant. All the variables are significant in explaining changes in economic growth (GDP).

The result of the Regression Analysis for Model 2 shows that there is a positive and significant relationship between Money Supply and Economic Growth, it also shows that there is a negative and insignificant relationship between inflation and Economic growth. The result also shows that there is a positive and significant relationship between Exchange rate and Economic Growth in model 2.

The result shows that only INF is stationary at levels while all other variables are non-stationary at levels, therefore we cannot reject the null hypothesis at 5% confidence level. However, the results show the variables LGDP, LMS, INF, EXG and MPR are stationary at first difference at 5% confidence level.

The Granger causality test is used to estimate the causal relationship between the variables.

The result of the granger causality test shows that we cannot reject the null hypothesis of MS does not Granger cause GDP because the p-value (0.01905) < 0.05 at 5% level, and we cannot reject the null hypothesis of GDP does not Granger cause MS because the p-value (0.2575) > 0.05 at 5% level. Therefore, there is a unidirectional causal relationship between MS and GDP. This implies that changes in MS will lead to significant change in GDP and not vice versa. The result shows that we cannot reject the null hypothesis of MPR does not Granger cause GDP because the p-value (0.7316) > 0.05 at 5% level, and we cannot reject the null hypothesis that GDP does not granger cause MPR as the probability is greater than (0.4102) > 0.05 at 5% level of significance.

Therefore, there is no Granger causality between GDP and MPR we can say that MPR and GDP are independent of one another. The result shows that we cannot reject the null hypothesis of EXG does not Granger cause GDP because the p-value (0.7650) > 0.05 at 5% level, and we cannot reject the null hypothesis of GDP does not Granger cause EXG because the p-value (0.6033) > 0.05 at 5% level of significance. Therefore, there is no Granger causality between GDP and EXG we can say that EXG and GDP are independent of one another. The result also shows that we cannot reject the null hypothesis of INF does not Granger cause GDP because the p-value (0.7488) > 0.05 at 5% level and we cannot reject the null hypothesis of GDP does not Granger cause INF because the p-value (0.9471) > 0.05 at 5% level of significance. Therefore, there is no Granger causality between INF and GDP we can say that INF and GDP are independent of one another.

V. CONCLUSION

The study concludes based on the findings that there exists a negative and significant relationship between Economic Growth (GDP) and Monetary Policy Rate (MPR) but there exists a negative and insignificant relationship between Economic Growth (GDP) and Inflation (INF). The result of the Regression analysis corresponds with the findings of Onyeiwu (2012) The study also finds that no causal relationship between Monetary Policy Rate, Inflation and Economic Growth in Nigeria. This study concludes therefore that the inability of monetary policies to effectively maximize its policy objective most times is as a result of the shortcomings of the policy instruments used in Nigeria as such, limits its contribution to growth even though monetary policies had brought impressive contribution over the years. However, there is need to grant greater flexibility to the monetary authority, reduce the excessive expenditure of the government and align the objectives of fiscal and monetary policy.

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