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RESEARCH ARTICLE

# Monetary Policy Transmission Mechanisms and Economic Growth in Nigeria: An Empirical Investigation (1999-2021)

**Ugwu, Felix Ikechukwu PhD[1], Njeze, Valerie Amobi[2]**
[1]Department of Business Administration, Enugu State University of Science and Technology
[2]Department of Economics, Enugu State University of Science and Technology

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ABSTRACT

*This study evaluated monetary policy transmission mechanisms and economic growth in Nigeria: an empirical investigation (1999-2021). This research focused on analyzing the channels through which monetary policy affects economic growth in Nigeria. The study explored how changes in monetary policy instruments (e.g., interest rates, money supply) influence key macroeconomic variables and contribute to overall economic growth. Hence, the specific objectives of this study are; to examine the impact of broad money supply (M2) on gross domestic product in Nigeria; to investigate the influence of credit supply to private sector (CPS) on gross domestic product in Nigeria; to ascertain the effect of interest rate on gross domestic product in Nigeria. Data were gotten from CBN Statistical Bulletin. Ex-post facto were employed for the research design. Ordinary Least Square of multiple regression were used to test research hypotheses. The results revealed that Broad money supply (M2) had positive and significant effect on the gross domestic product in Nigeria; coeff was 0.316889 while the probability value is 0.0000. Credit supply to private sector (CPS) had positive and significant effect on the gross domestic product in Nigeria; coeff was 0.273877 while the probability value is 0.0000. Interest Rate had positive and non-significant effect on the gross domestic product in Nigeria; coeff was 0.039057 while the probability value is 0.0671. Therefore, this study recommended that Contraction of monetary policy variables like narrow money and broad money should be done to reduce much influx of money in the economy. Federal government through the monetary authorities should revive all monetary policies that affect all sectors in the economy. They should eliminate the ones having little or no effect and modify the significant ones, also taking into consideration the relevance of creating new policies designed for the growth of the economy as a whole.*

***Keywords:*** *Monetary Policy Transmission Mechanisms; Economic Growth; Empirical Investigation;*

**Introduction**

Monetary management is often an integral part of macroeconomic management, which is usually within the purview of the Monetary Authority or rather Central Bank of a state on its behalf (Abdulazeez, 2016). Monetary policy is therefore a tool for monetary management of a country, which involves the use of some combinations of instruments by the Central Bank to influence the availability and cost of credit and/or money in the domestic economy with a view to achieving macroeconomic balance/stability via economic growth. On the other hand, macroeconomics policy refers to actions taken by government agencies responsible for the conduct of economic policy to achieve some desired objective of policy through the manipulation of a set of instrumental variables (Ibeabuchi, 2017).

Thus, macroeconomic policies deal with the various actions of policy makers of change the levels of employment, the price level, output, income distribution, and external balance in the appropriate directions through the manipulation of relevant policy instruments. In Nigeria, the key macroeconomic policies are monetary policy, fiscal, exchange rate and Income policies. However, more importantly is that the effective management of the monetary policy is a fundamental pre-requisite in ensuring adequate liquidation in the banking system and sectoral credit allocation to the sensitive. Sectors of the economy such as: power, agricultural, aviation, SMEs, etc. The above therefore, shows that monetary policy management goes beyond price stability, particularly amongst developing countries, but with a dual mandate: price stability and sustainability of economic growth. Monetary policy influences the level of money stock and/or interest rate i.e. availability, value and cost of credit inconsonance with the level of economic activity (Ibeabuchi, 2017).

Macroeconomic aggregates such as output, employment and prices are, in turn, affected by the stance of monetary policy through a number of ways including interest rate or money; credit, wealth or portfolio, and exchange rate channels (CBN, 2015). This aptly means that Monetary Authority applies discretionary power to influence the money stock and interest rate to make money either more expensive or cheaper depending on the prevailing economic conditions and policy stance geared towards achieving price stability. Anowor & Okorie (2016) posit that monetary policy is a key factor of macroeconomic management in opened economy to stimulate economic stability and to promote economic development through its impact on economic variables.

It is generally believed that monetary policy influences macroeconomic variables which include employment creation, price stability, gross domestic product growth and equilibrium in the balance of payment in developing country (Precious, 2014). The role of monetary policy on the economic development and the changing in aggregate economic activity depend on how monetary policy is conducted and the independency of the central bank to choose the appropriate monetary tools to formulate the monetary policy of macroeconomic objectives (Alavinasab, 2016).

The accurate information on the effectiveness of the policy on the macro economy is the main issue of the policy maker to successfully implementation of any economic policy in general to achieve the sustainable output growth, the authority and policy maker always targets on the intermediate variables include the short term interest rate, money supply, and exchange rate, which is considered as the most powerful instrument of monetary policy (Fasanya, Onakoya, & Agboluaje, 2013). Wrights (2016) succinctly puts it thus; monetary policy is nothing more than deliberate attempt to control the money supply and credit conditions for the purpose of achieving certain broad economic objectives. In general, most Monetary Authorities or Central Banks have been saddled with controlling inflation; maintaining a healthy balance of payments position to safeguard the external value of the domestic currency and promoting economic growth.

**Statement of the Problem**

One of the major objectives of monetary policy in Nigeria is price stability. Despite the various monetary regimes that have been adopted by the Central Bank of Nigeria over the years, inflation still remains a major threat to Nigerian's economic growth. The monetary policy implementations in the economy over the past years were detrimental to, and inconsistent with the development needs of the economy. This concern has exerted pressures with the view to finding possible solutions.

As a result of this the structural adjustment programme was introduced in the economy and to liberalize the financial system. Monetary policy is said to be a major economic stabilization weapon which involves measures designed to regulate and control the volume, cost, availability and direction of money and credit in an economy to achieve macroeconomic objectives or goals. The problem lies on making use of policy that will solve the economic problems instead of the economy to have low level 1of investment, income and also the level of demand and supply will reduce.

**Objectives of the Study**

The main objective of the study on monetary policy transmission mechanisms and economic growth in Nigeria: an empirical investigation (1999-2021). The specific objectives of this study were:

1. To examine the impact of broad money supply ($M_2$) on gross domestic product in Nigeria.
2. To investigate the influence of credit supply to private sector (CPS) on gross domestic product in Nigeria.
3. To ascertain the effect of interest rate on gross domestic product in Nigeria.

**Research Questions**

1. How far had broad money supply ($M_2$) impacted on gross domestic product in Nigeria?
2. To what degree had credit supply to private sector (CPS) influenced gross domestic product in Nigeria?
3. To what extent had interest rate affected gross domestic product in Nigeria?

**Statement of Hypotheses**

Based on the research objectives, the hypotheses tested include:

i. $H_{01}$: Broad money supply ($M_2$) had no positive and significant effect on the gross domestic product in Nigeria.
ii. $H_{02}$: Credit supply to private sector (CPS) had no positive and significant effect on the gross domestic product in Nigeria.
iii. $H_{03}$: Interest Rate had no positive and significant effect on the gross domestic product in Nigeria.

**Review of Related Literature**

**Conceptual Review**

**Concept of Monetary Policy**

According to Obasikene (2016), monetary policy refers to a set of measures or techniques used by Central Bank of Nigeria (CBN) and other monetary authorities to control the cost, volume and availability of money in the economy in order to achieve desired economic objectives. She also It is a deliberate manipulation of cost and availability of money and credit by the government as a means of achieving the desired level of prices, employment, output and other economic objectives. The term monetary policy has been defined by experts from many perspectives. According to CBN (2016), monetary policy concept was defined as “Any policy measure designed by the federal government through the CBN to control cost availability and supply of credit. It also referred to as the regulation of money supply and interest rate by the CBN in order to control inflation and to stabilize the currency flow in an economy. Also, CBN (2017), defined monetary policy as combination of measures designed to regulate the value, supply and cost of money on an economy in consonance with the expected levels of economic activities.

The Wikipedia encyclopedia (2015) defines monetary policy as the process by which the monetary authority of a country controls the supply of money, often targeting an inflation rate or interest rate to ensure price stability and general trust in the currency. Monetary policy is maintained through actions such as increasing interest rate, or changing the amount of money banks need to keep in vault. Jhingan (2018), refers monetary policy as the credit measures adopted by the central bank of a country.

Asogu (2018) defines monetary policy as the actions by the monetary authorities to influence the national economic objectives by controlling or influencing the quantity and direction of money supply, credit and the cost of credit. He noted that monetary policy is aimed at ensuring adequate supply of money to support financial accommodation for growth and developmental programmes as well as stabilizing various sector for a sustainable growth and development. Johnson (in Asogu (2018) sees monetary policy as a policy employing the Central Bank's control of the supply of money as an instrument of achieving the objectives of a general economic policy. Falegar (1978) also argued in the same direction. According to him, monetary policy deals with discretionary control of money supply by the monetary authority in order to achieve stated or desired economic goals. While Onido (2015) refers to monetary policy as actions taken by the monetary authorities usually the Central Bank, to effect monetary and other financial conditions, through influence over the availability and cost of credit in pursuit of broad objectives of sustainable growth of output, price stability and a healthy balance of payments position.

Ubogu (2010) defines monetary policy as an attempt by the monetary authorities to int1uence the level of aggregate economic activities by controlling the quantity and direction of money and credit availability. All the scholars mentioned above are of the view that monetary policy emanates from Central Bank that sets the standard rules and guidelines for each year's monetary policy. For instance, the Year 200C Monetary Policy and Credit Policy measure as published by Central, Bank states that "monetary policy shall seek to subdue int1ation as single digit annual rate". Essentially, therefore, monetary policy is the policy of the Central Bank of any nation to control and regulate money supply in the economy to achieve the desire, economic policies or goals in any particular year or time. Ogwuma (2014) not only define monetary policy as other scholars cited above but also points out that monetary policy can be represented in three parts: The assembly and analysis of wide range of data on the economy and the appraisal of Current policies. The development or forecasts aimed at determining the future course of the economy in the absence of policy changes. Developing and evaluating policy options for overcoming the likely problems in short and medium term. He further noted that policy formulation exercise involves developing a consistent set of targets for the growth of output or GDP, rate of inflation, the fiscal deficit of the Federal Government and its financing, the outcome of the balance of payment and demand for money. Ogwuma mentioned instruments used in the third quarter of 1992 "which deemphasize on the use of direct instrument of monetary control, but maintain the use of stabilization securities as part of the control to contain the large injections of liquidity.

Nanna and Dogo (2018) states that despite the reforms to put banks in good image there was loss of public confidence that on the long run affected the entire monetary policy. They cited several scholars to show that sound monetary policy contains extraneous factors that would enable it to either succeed or fail. After using statistical data and hypothesis Nnanna and Dogo (2018) concluded that, positive monetary policy can only result if the monetary authority had the legal and operational autonomy and flexibility to intervene decisively and on timely basis in the system. In contrast, Asogu (2018) emphasized that owing to the underdeveloped nature of Nigeria's financial and capital market, the monetary policy is adapted to accommodate government's financial needs for tackling critical and urgent problems of economic growth and development.

**Broad Money Supply (M2)**

Broad money supply (M2) includes assets that are highly liquid but are not cash. M2 as a measurement of the money supply is a critical factor in the forecasting of issues like inflation. Inflation and interest rates have major ramifications for the general economy, as these heavily influence employment, consumer spending, business investment, currency strength and trade balances (Onuorah and Ozurumba, 2015).

Broad money supply (M2) is a calculation of the money supply that includes all elements of M1 as well as "near money." These assets are less liquid than M1 and not as suitable as exchange mediums, but they can be quickly converted into cash or checking deposits. M2 is a measure of the money supply that includes cash, checking deposits, and easily convertible near money (Udoka, 2016).

Broad money supply (M2) is a broader measure of the money supply that M1, which just include cash and checking deposits. M2 is a closely watched as an indicator of money supply and future inflation, and as a target of central bank monetary policy. M2 includes all of M1 (and all of M0) plus savings deposits and certificates of deposit, which

are less liquid than checking accounts. M3 includes all of M2 (and all of M1 and M0) but adds the least liquid components of the money supply that are not in circulation, such as repurchase agreements that do not mature for days or weeks (Eze, 2017).

$M_2$ aggregation of money supply seeks to broaden the range of liquid assets to include some interest earning items, such as savings deposits and fixed or time deposits (Onoh, 2015). This broad monetary aggregate, $M_2$, comprises $M_1$ plus short-term (usually a year and under) savings and time deposits, certificates of deposit, foreign currency transferable deposits and repurchase agreements. Although some of these assets are not readily accepted as payment for goods and services, the transaction cost associated with their conversion is relatively small. In some countries, broad aggregation of money has been extended beyond $M_2$ to include some less liquid financial assets. These aggregates add to $M_2$, long-term foreign- currency time deposits, travelers' cheques, short-term bank notes and money market mutual funds. Although these instruments are primarily used to promote long-term savings, they can be easily converted into currency or demand deposits at little cost. As such, they are said to facilitate the exchange of goods and services among individuals (Nwaobi, 2015).

**Private Sector Credit**

Domestic credit to private sector refers to financial resources provided to the private sector by financial corporations, such as through loans, purchases of nonequity securities, and trade credits and other accounts receivable, that establish a claim for repayment (Mello and Pisu, 2010). For some countries these claims include credit to public enterprises. The financial corporations include monetary authorities and deposit money banks, as well as other financial corporations where data are available (including corporations that do not accept transferable deposits but do incur such liabilities as time and savings deposits). Examples of other financial corporations are finance and leasing companies, money lenders, insurance corporations, pension funds, and foreign exchange companies (Okwo et al., 2012).

Domestic credit to private sector refers to financial resources provided to the private sector, such as through loans, purchases of nonequity securities, and trade credits and other accounts receivable, that establish a claim for repayment (Shijaku & Kalluci, 2013). For some countries these claims include credit to public enterprises. Credit to the private sector may sometimes include credit to state-owned or partially state-owned enterprises.

Domestic credit to private sector by banks refers to financial resources provided to the private sector by other depository corporations (deposit taking corporations except central banks), such as through loans, purchases of nonequity securities, and trade credits and other accounts receivable, that establish a claim for repayment. For some countries these claims include credit to public enterprises (Mitchell-Ryan, 2010).

Financial institutions like banks, pension funds, insurance corporations and foreign exchange companies provide financial resources in the form of loans, trade credit, purchases of non-equity securities and other receivables to the private sector. The total of such monies is expressed as a percentage to GDP to give credit to private sector. Factors affecting credit demand can be grouped into three main categories: price, income levels and expectations. The lending rate is the key price variable applied; however, its method of aggregation is dependent on the availability of data and the scope of the analysis. Income levels are identified using macroeconomic factors such as GDP performance, fiscal activity and real effective exchange rate (Branch et al., 2015). Some studies have broadened income measures to include corporate performance, such as profitability of corporate assets (Kok, 2009). More recent studies have also included business confidence indicators (Dumicic & Ljubaj, 2017).

**Interest Rate**

Anyanwaokoro (1999) submitted that interest rate is a price for money and credit. According to Keynes, interest rate is the reward for not hoarding but for parting with liquidity for a specific period of time. Keynes' definition of interest rate focuses more on the lending rate. Adebiyi (2017) defines interest rate as the return or yield on equity or opportunity cost of deferring current consumption into the future. Some examples of interest rate include the saving rate, lending rate, and the discount rate. Professor Lerner, in Jhingan (2013), defines interest as the price which

equates the supply of 'Credit' or savings plus the net increase in the amount of money in the period, to the demand for credit or investment plus net 'hoarding' in the period. This definition implies that an interest rate is the price of credit which like other price is determined by the forces of demand and supply; in this case, the demand and supply of loanable funds.

Ibimodo (2015) defined interest rates, as the rental payment for the use of credit by borrowers and return for parting with liquidity by lenders. Like other prices interest rates perform a rationing function by allocating limited supply of credit among the many competing demands. Bernhardsen (2008) defined the interest rate as the real interest rate, at which inflation is stable and the production gap equals zero. That interest rate very often appears in monetary policy deliberations. However, Anyanwoncha (2013) states that interest rates are charged for a number of reasons, but one is to ensure that the creditor lowers his or her exposure to inflation. Inflation causes a nominal amount of money in the present to have less purchasing power in the future.

The concept of the interest rate refers to the interest rate levied by the banks on loans or deposits (Faris & Syed, 2017). The interest rate charged on loan is a form of revenue for the bank and at the same time represent the cost borne by the customer for borrowing the money and is termed as credit interest, on the contrary, while interest rates on deposits is cost, the bank is expected to pay to the customers and at the same time represent a form of revenue earned by the customers in exchange for retaining deposits with banks, also termed as debt interest rate. The difference between the debt and credit interest rate from all banking activities are called interest rate spread (IRS). What determines the rate of interest is the credit risk, thus, if the credit risk is high the interest rate on loans is high in order to compensate for the size of this risk. It is also referred to the cost or price of borrowed funds for a period of time, based on the concept of present values the cash value goes down over time due to many factors, including the rate of inflation.

**Economic Growth**

Economic growth is defined as the general increase in the real value of goods and service that are produced in an economy over a given period (Babatunde & Shuaibu, 2011). It is the capacity of a country to produce goods and services, compared from one time period to another. It can be measured using Real GDP, GNI or Real GDP per Capital. Economic growth can therefore be viewed as an increase in the Gross Domestic Product (GDP) of a particular country. Inflation and Interest rate are essential macroeconomic variables capable of changing, transforming and redirecting the growth pattern of a country's economy. One of the major macroeconomic objectives of any country (Nigeria inclusive) is to have a sustained level of economic growth combined with low levels of Inflation and a reasonable level of Interest rate. Hence, the behaviours of both Inflation and Interest rate to a large extent affect the economic growth of a country (Okpe, 2018).

Economic growth means an increase in the capacity of an economy to produce goods and services, compared from one period of time to another. Economic growth is a process by which a nation wealth increases over time (Odunsaya and Atanda, 2012). The most widely used measures of economic growth is the rate of growth in a country's total output of goods and services gauged by the gross domestic product (GDP). Economic growth can also be referred to as the increase of per capita gross domestic product (GDP) or other measures of aggregate income, typically reported as the annual rate of change in the real GDP. Economic growth is primarily driven by improvement in productivity, which involves producing more goods and services with the same inputs of labour, capital, energy and materials.

Economic growth is defined and measured as either: an increase in real gross domestic product (GDP) accruing over some time period, or an increase in real GDP per capita occurring over some time period (McConnell and Brue, 2015). With either definition, economic growth is calculated as a percentage rate of growth per quarter (3-Month period) or per year. The second definition takes into consideration the size of the population. Real GDP per capita (or per capita output) is found by dividing real GDP by the size of the population (McConnell and Brue, 2005). Growth means an increase in economic activities. Todaro (2015) citing Kuznets defined a country's economic growth as a long-term

rise in capacity to supply increasingly diverse economic goods to its population, this growth capacity based on advancing technology and the institutional and ideological adjustment that it demands.

**Theoretical Review**

This study is anchored on The Keynesian Theory. Keynesians believe that expansionary monetary policy increases the supply of loanable funds available through banking system, causing interest rates to fall. With lower interest rate, aggregate expenditures on investment and interest-sensitive consumption goods usually increase, causing real GDP to rise. Hence, monetary policy can affect real GDP indirectly. The Keynesian Economists think of monetary policy as working primarily through interest rate. In Keynesian transmission mechanism, an increase in the money supply leads to a fall in interest rate to include the public to hold additional money balances.

**The Keynesian Theory**

Keynesian theory did not buy the notion that the relationship between money and price is direct and proportional. They share the view that it is indirect through the rate of interest. Also, they reject the notion that the economy is always at or near the natural level of real GDP so that Y in the equation of exchange can be regarded as fixed. They also reject the proposition that the velocity of circulation of money is constant.

Keynesians believe that expansionary monetary policy increases the supply of loanable funds available through banking system, causing interest rates to fall. With lower interest rate, aggregate expenditures on investment and interest-sensitive consumption goods usually increase, causing real GDP to rise. Hence, monetary policy can affect real GDP indirectly. The Keynesian Economists think of monetary policy as working primarily through interest rate. In Keynesian transmission mechanism, an increase in the money supply leads to a fall in interest rate to include the public to hold additional money balances.

Consequently, a fall in interest rate may stimulate investment. The increased investments also increase the level of income or output through the multiplier, which may stimulate economic activities. Thus, monetary policy affects economic activity indirectly through their impact on interest rates and investment. Therefore, the Keynesian transmission mechanism is characterized by a highly detailed sector building up of aggregate demand and a detailed specification of portfolio adjustment process that attaches central role to interest as an indirect link between monetary policy and fiscal demand.

In simple terms, the monetary mechanism of Keynesians emphasizes the role of money, but involves an indirect linkage of money with aggregate demand via the interest rate as symbolically shown below:

OMO, R, MS, r, I, GNP
Where, OMO = Open Market Operation
R = Commercial Bank Reserve
MS = Stock of Money
r = Interest Rate
I = Investment
GNP = Gross National Product

On a more analytical note, if the economy is initially at equilibrium and there is open market purchase of government securities by the Central Bank of Nigeria (CBN), this open Market Operation (OMO) will increase the commercial banks reserve (R) and raise the bank reserves. The bank then operates to restore their desired ratio by extending new loans or by expanding bank credit in other ways. Such new loans create new demand deposits, thus increasing the money supply (MS). A rising money supply causes the general level of interest rate (r) to fall. The falling interest rates affects commercial bank performance and in turn stimulate investment given businessmen expected profit. The induced investment expenditure causes successive rounds of final demand spending by GNP to rise by a multiple of the initial change in investment. On the other hand, a fall in money supply causes the general level of interest rate (R) to rise or increase thereby increasing the commercial banks profitability (Jhingan, 2019).

**Empirical Review**

Umaru and Zubairu (2019) investigated the impact of inflation on economic growth and development in Nigeria between 1986-2018 through the application of Augmented Dickey-Fuller technique in testing the unit root property of the series and Granger causality test of causation between GDP and inflation. The results of unit root suggest that all the variables in the model are stationary and the results of Causality suggest that GDP causes inflation and not inflation causing GDP. The results also revealed that inflation possessed a positive impact on economic growth through encouraging productivity and output level and on evolution of total factor productivity. A good performance of an economy in terms of per capita growth may therefore be attributed to the rate of inflation in the country.

Akujobi (2019) investigated the impact of monetary policy instrument on economic development of Nigeria, 1990-2018, using multiple regression technique and found that treasury bill, minimum rediscount rate and liquidity rate have significant impact on economic development of Nigeria.

Onyeiwu (2019) examined the impact of monetary policy on the Nigeria economy, 1990-2017 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.

Okwo (2019) examined the effect of monetary policy outcomes on macroeconomic stability in Nigeria, 1986-2017. The study analyzed gross domestic product, credit to the private sector, net credit to the government and inflation using OLS technique. None of the variables were significant, which suggested that monetary policy as a policy option may have been inactive in influencing price stability.

Ganev (2018) investigated the relationship between monetary shocks and economic parameters in ten Central and Eastern European (CEE) countries, 1985-2017 and finds that changes in interest rates do not affect output, but have significant impacts on changes in the real exchange rate.

Owalabi and Adegbite (2014) examined the impact of monetary policy on industrial growth in Nigerian economy, 1995-2012 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.

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, 1995-2012 using OLS regression analysis. The result shows that the provision of investment friendly environment in Nigeria will increase the growth rate of GDP.

Precious (2014) investigates the impact of monetary policy in promoting economic growth in the South African economy over the period 1990-2010, by using Johansen co-integration and the Error Correction Mechanism to identify the long-run and short-run dynamics between variables. The finding shows that money supply, repo rate and exchange rate had the positive impact on economic growth in South African countries.

Okoro (2013) examined the impact monetary policy on Nigeria economic growth, 1986-2010 by testing the influence of interest rate, inflation, exchange rate, money supply and credit on GDP. Augumente Dickey Fuller (ADF) test, Philips–Perron Unit Test, Co-integration test and Error Correction Model (ECM) techniques were employed. The results show the existence of long–run equilibrium relationship between monetary policy instruments and economic growth.

**Methodology**

*Ex-post facto* design was adopted for this study. The data for this study was obtained mainly from secondary sources particularly from Central Bank of Nigeria (CBN) statistical Bulletins and other relevant journals covering the period of 1999 – 2021.

The researcher adopted Ordinary Least Square (OLS) multiple regression by Onyeiwu (2019) who employed Ordinary Least Squares (OLS) method to examined the impact of monetary policy on the Nigeria economy. This model specifies that economic growth [proxy by Real Gross Domestic Product (RGDP)] is significantly influenced by the monetary policies indices (Broad Money Supply and Credit to Private Sector and interest rate) is formulated as follows,

RGDP = $f(M_2, CPS, INTR,)$
$GDP_t = \alpha_0 + \alpha_1 M_2 + \alpha_2 CPS + \alpha_3 INTR + \mu_t$ .....(2)
Where;
RGDP = Real Gross Domestic Product
$M_2$ = Broad money supply
CPS = Credit to Private Sector
INTR = Interest Rate
β0, β1, β2, β3 = Parameter Estimates
μ = Error Term
t = Time series/ Number of Observations

**Results**

**Data Presentation**

**Table 1: Data Presentation**

| *Year* | *RGDP* | *$M_2$* | *CPS* | *INTR* |
|---|---|---|---|---|
| *1999* | 22,449.41 | 628.95 | 431.17 | 27.19 |
| *2000* | 23,688.28 | 878.46 | 530.37 | 21.55 |
| *2001* | 25,267.54 | 1,269.32 | 764.96 | 21.34 |
| *2002* | 28,957.71 | 1,505.96 | 930.49 | 30.19 |
| *2003* | 31,709.45 | 1,952.92 | 1,096.54 | 22.88 |
| *2004* | 35,020.55 | 2,131.82 | 1,421.66 | 20.82 |
| *2005* | 37,474.95 | 2,637.91 | 1,838.39 | 19.49 |
| *2006* | 39,995.50 | 3,797.91 | 2,290.62 | 18.70 |
| *2007* | 42,922.41 | 5,127.40 | 3,668.66 | 18.36 |
| *2008* | 46,012.52 | 8,643.43 | 7,899.14 | 18.70 |
| *2009* | 49,856.10 | 9,687.51 | 9,889.58 | 22.62 |
| *2010* | 54,612.26 | 11,101.46 | 10,518.17 | 22.51 |
| *2011* | 57,511.04 | 12,628.32 | 9,600.02 | 22.42 |
| *2012* | 59,929.89 | 15,503.41 | 13,293.64 | 23.79 |
| *2013* | 63,218.72 | 18,743.07 | 14,461.41 | 24.69 |
| *2014* | 67,152.79 | 20,415.61 | 16,753.00 | 25.74 |
| *2015* | 69,023.93 | 20,885.52 | 18,688.42 | 26.71 |
| *2016* | 67,931.24 | 24,259.00 | 21,025.24 | 27.29 |
| *2017* | 68,490.98 | 28,604.47 | 22,459.18 | 30.60 |
| *2018* | 69,810.02 | 29,774.43 | 22,646.33 | 28.16 |
| *2019* | 71,387.83 | 34,257.90 | 25,676.87 | 30.57 |
| *2020* | 70,800.54 | 36,038.01 | 29,030.01 | 28.64 |
| *2021* | 73,382.39 | 40,318.29 | 32,868.49 | 28.48 |

***Source:*** *CBN Statistical Bulletin and World bank Fact fish 1999-2020*

***Where:***

RGDP = Real Gross Domestic Product
$M_2$ = Broad Money Supply,
CPS = Credit to Private Sector
INTR = Interest Rate

**Data Analysis**

**Testing of Research Hypotheses**

**Test of Hypothesis One**

**Table 2: Regression Analysis (Ordinary Least Square Model) for Hypothesis One**

Dependent Variable: LRGDP
Method: Least Squares
Date: 06/07/23 Time: 11:15
Sample: 1999 2021
Included observations: 23

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 7.961729 | 0.072312 | 110.1019 | 0.0000 |
| LM2 | 0.316889 | 0.008128 | 38.98904 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.987014 | Mean dependent var | 10.75532 |
| Adjusted R-squared | 0.986365 | S.D. dependent var | 0.392047 |
| S.E. of regression | 0.045779 | Akaike info criterion | -3.243470 |
| Sum squared resid | 0.041915 | Schwarz criterion | -3.144284 |
| Log likelihood | 37.67817 | Hannan-Quinn criter. | -3.220105 |
| F-statistic | 1520.145 | Durbin-Watson stat | 0.829874 |
| Prob(F-statistic) | 0.000000 | | |

***Source:*** *Eviews Output, 2023*

**Step 4: Decision**

The decision criteria is to reject $H_0$ if the statistics is $>$ 2.0 and the probability of the t-statistics is $<$ 0.05. It was shown in table 2 that the t- statistics is 38.98904 while the probability value is 0.0000, this depict that the t-statistics is less than 2.0 while the probability value was greater than 0.05; therefore, the null hypothesis (H0) is rejected and concluded that Broad money supply ($M_2$) had positive and significant effect on the gross domestic product in Nigeria.

**Test of Hypothesis Two**

**Table 3: Regression Analysis (Ordinary Least Square Model) for Hypothesis Two**

Dependent Variable: LRGDP
Method: Least Squares
Date: 06/07/23 Time: 11:29
Sample: 1999 2021
Included observations: 23

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 8.399888 | 0.077505 | 108.3790 | 0.0000 |
| LCPS | 0.273877 | 0.008897 | 30.78182 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.979329 | Mean dependent var | 10.75532 |
| Adjusted R-squared | 0.978295 | S.D. dependent var | 0.392047 |
| S.E. of regression | 0.057759 | Akaike info criterion | -2.778574 |
| Sum squared resid | 0.066722 | Schwarz criterion | -2.679389 |
| Log likelihood | 32.56432 | Hannan-Quinn criter. | -2.755209 |
| F-statistic | 947.5207 | Durbin-Watson stat | 0.812356 |
| Prob(F-statistic) | 0.000000 | | |

***Source: E-Views Output, 2023.***

**Step 4: Decision**

The decision criteria is to reject $H_0$ if the statistics is $>$ 2.0 and the probability of the t-statistics is $<$ 0.05. It was shown in table 3 that the t- statistics was 30.78182 while the probability value is 0.0000, this depict that the t-statistics was less than 2.0 while the probability value was greater than 0.05; therefore, the null hypothesis (H0) is rejected and concluded that Credit supply to private sector (CPS) had positive and significant effect on the gross domestic product in Nigeria.

**Test of Hypothesis Three**

**Table 4: Regression Analysis (Ordinary Least Square Model) for Hypothesis Three**

Dependent Variable: LRGDP
Method: Least Squares
Date: 06/07/23 Time: 11:30
Sample: 1999 2021
Included observations: 23

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 9.809139 | 0.494922 | 19.81955 | 0.0000 |
| INTR | 0.039057 | 0.020171 | 1.936352 | 0.0671 |

| | | | |
|---|---|---|---|
| R-squared | 0.157876 | Mean dependent var | 10.75532 |
| Adjusted R-squared | 0.115769 | S.D. dependent var | 0.392047 |
| S.E. of regression | 0.368656 | Akaike info criterion | 0.928603 |
| Sum squared resid | 2.718146 | Schwarz criterion | 1.027788 |
| Log likelihood | -8.214630 | Hannan-Quinn criter. | 0.951968 |
| F-statistic | 3.749458 | Durbin-Watson stat | 0.143171 |
| Prob(F-statistic) | 0.067084 | | |

***Source: Eviews output, 2023.***

**Step 4: Decision**

The decision criteria is to reject $H_0$ if the statistics is $>$ 2.0 and the probability of the t-statistics is $<$ 0.05. It was shown in table 4 that the t- statistics is 1.936352 while the probability value was 0.0671, this depict that the t-statistics was less than 2.0 while the probability value was greater than 0.05; therefore the null hypothesis (H0) was accepted and concluded that Interest Rate had positive and non-significant effect on the gross domestic product in Nigeria.

**Summary of Findings**

Based on the above analysis, the following findings were made.

i. Broad money supply ($M_2$) had positive and significant effect on the gross domestic product in Nigeria; coeff is 0.316889 while the probability value is 0.0000.
ii. Credit supply to private sector (CPS) had positive and significant effect on the gross domestic product in Nigeria; coeff is 0.273877 is 30.78182 while the probability value is 0.0000.
iii. Interest Rate had positive and non-significant effect on the gross domestic product in Nigeria; coeff is 0.039057 while the probability value is 0.0671.

**Conclusion**

From the findings, the researcher therefore concludes that Broad money supply ($M_2$) had positive and significant effect on the gross domestic product in Nigeria. Credit supply to private sector (CPS) had positive and significant effect on the gross domestic product in Nigeria. Interest Rate had positive and non-significant effect on the gross domestic product in Nigeria. From the finding, the main monetary policy variables which are Broad money supply ($M_2$) and Credit supply to private sector (CPS) had positive and significant effect on the gross domestic product. Therefore, we conclude that monetary policy had positive and significant effect on the economic growth.

**Recommendations**

**Based on the findings, the following recommendations were made:**

a. Contraction of monetary policy variables like narrow money and broad money should be done to reduce much influx of money in the economy.
b. Federal government through the monetary authorities should revive all monetary policies that affect all sectors in the economy. They should eliminate the ones having little or no effect and modify the significant ones, also taking into consideration the relevance of creating new policies designed for the growth of the economy as a whole.
c. There should be a consistent fight from the demand and supply side plus political approach by means of political and policy stability. Co-ordination of monetary and fiscal policy implies, among others, fiat monetary restraint which should be matched with lower deficit spending.

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