Effect of Money Supply on Economic Development in Nigeria

Osuka, B. O., Otiwu, K. C.
Department of Banking and Finance
Imo State University, Owerri

Kalu, U. E.
Department of Banking and Finance
Abia State Polytechnic, Aba

Abstract
*This study examined the effect of money supply on economic development in Nigeria (2000 –
2022). Money supply was proxied by Broad Money Supply (MS2), Credit to Private Sector
(CPS)) and controlled by Inflation rate (INF)) and Gross Domestic Product (RGDP)) was used
as proxy for economic development. The data were sourced from UNDP, World Bank data,
CBN financial Statistical report. The data were subjected to inferential such as trend analysis,
ADF unit root test, Johansen cointegration test, Auto-regression distributive lag estimates. The
unit root result revealed the variables are integrated at mixed order of I(0) and I(1). The
estimation followed the Autoregressive Distributive Lag (ARDL) Model. The findings revealed
that MS2 and CPS had significant positive effect on RGDP; while INF has significant negative
effect on RGDP. The researchers conclude that money supply has significant effect on
economic development in Nigeria. The researchers recommend among others that, the
monetary authorities should consolidate on the fiscal policies measures that prompt reduction
on inflation in other to boost the economic development in the country. This must be with
caution to the level of money supply as the economic development responds more favorably to
an increase in the money supply.*

INTRODUCTION

Money supply in relation to economic development has received drastic attention as a subject
matter in the field of monetary economics in recent years. This is because of the importance of
economic development among the macro-economic objectives of developed and developing
nations; persistent concern has always been given among monetary economists (Asinya, 2019).
Money supply is the total amount of money in the economy. Money supply is one of the
principal macroeconomic elements that impact the economic growth by ensuring that all
economic activities are running effectively in private and public sectors. Yet, it is significant
and crucial to establish the impact that money supply has on economic devlopment in Nigeria
so that for policy makers can effectively base on to grow the economy.

There are three alternative views regarding measurement of money supply: the most common
view is associated with the traditional Keynesian thinking which stresses the medium of
exchange function of money and is usually designated by (M1). M1 is defined as currency with
the public and demand deposit with commercial banks. It can also be called high powered
money or narrow money. The second view is designated as (M2) and is known as broad money.
It is associated with modern quantity theorist headed by Friedman and M2 consist of M1 plus
time and saving deposits. The third view is the broadest and is associated with Shaw (1973). It

includes M2 plus deposits of savings bank, building societies, loan associations and deposits of other credit and financial institutions (Jhingan, 2014). Monetary policy is a deliberate action of the monetary authorities to influence the quantity, cost and availability of money credit in order to achieve desired macroeconomic objectives of internal and external balances (CBN, 2018). An important function of monetary authority, such as central bank in most countries is to exercise a firm control over money supply, generally considered the nerve-centre of the economy. The firm control over money supply can only be achieved through information obtained from monetary analyses. Onoh (2021) argued that a monetary authority must be adequately equipped for monetary data collection, storage and retrieval of data for use, where and when necessary. Monetary policy can either be expansionary or contractionary, depending on the overall policy thrust of the monetary authorities. Monetary policy is expansionary when the policy adopted by the central bank increases the supply of money in the system and contractionary, when the actions reduce the quantity of money supply available in the economy or constrains the growth or ability of the deposit money banks to grant further credit (CBN, 2018). Money supply is the amount of money that is available to the economy at any point in time (Okaro, 2013). Similarly, Onoh (2021), stressed that money supply could be defined both in narrow and broad terms, depending on the ease with which it could be converted into cash. A narrow definition of money supply comprises currency in circulation and demand deposit, while a broader definition would include balances in other deposit accounts (Ihsan & Anjum, 2017).

Evidence in the Nigerian economy has shown that since the 1970s, some relationship exist between the stock of money and economic growth. Over the years, Nigeria has been controlling her economy through variations in her stock of money. Consequent upon the effect of the collapse of oil price in 1981 and the Balance of payment deficit experienced during the period, various methods of stabilization ranging from fiscal to monetary policies were used and interest rates were fixed. Also, the Structural Adjustment Programme (SAP) showed that reducing money stock through increased rate would lower gross national product. Thus, the notion that stock of money varies with economic activities applies to the Nigerian economy (Laidler, 2019). The implication of the stability of the relationship between money supply and economic growth will show the effectiveness of monetary policy following the conventional Hicksian IS-LM analysis (Goridko & Nizhegorodtsev, 2013). But in recent days the relationship between money supply and economic development in Nigeria is highly uncertain; hence this study is carried out to prove this view.

The slowdown of the economy and even the continuation of the economic downturn in many countries are enhanced by a number of reasons. The deep and durable recession is typical for the under-monetized economies. Monetary policy of the most states focuses primarily on holding steadily low inflation (inflation of costs), the arising of which is often associated with an increase of money supply. The viewpoint of management of the central banks, as well as representatives of international financial organizations, that policy permits to keep control for the financial markets, avoiding significant fluctuations on them. The real (but unmentioned) problem is that money is also a commodity, the turnover of which has recently accelerated. Deficiency of money leads to an increase the price of not only for money, but also for all other goods, for which money is the equivalent. Thus, the compression of money supply also leads to inflation, but now it is demand inflation. Similar delusions are related with a fatal error of some economic schools (Expansionary monetary, monetarists) about the linear character of the links between numerous economic indicators.

Friedman (1968) begins his analysis of the impact of the changes in the quantity of money on the economy at the moment of long-term balance. Expansionary monetary policy leads to an increase in the global demand. In a short term, it reduces the per capita income, human development, unemployment rate and increases the inflation rate. However, an increase in prices reduces the actual wages which are more important for an employee in wage-setting behaviour than a nominal wage. It means that an employee will include inflation expectations in his or her demands. In case of monetarists, these expectations are adaptive, i.e. the current inflation and the past inflation are taken into consideration. An increase in inflation entails greater inflation expectations. Therefore, in pay negotiations employees will demand an increase in nominal salaries higher than the current inflation as in the case of Nigeria currently. This will result in the increase in the production costs and in the accelerated increase of prices. Inflation higher than the rate of increase of the money supply leads to the reduction of the real quantity of money in circulation. Thus, the production and unemployment rise. This causes greater pressure on salary increase, which suggests lower inflation and decreasing inflation expectations.

Most researchers have been unable to come to a consensus on what should be the exact effect of monetary policy instruments on economic development of a country and there has been array of debates on such outcome. For instance, Sanchita and Rina (2011), Sanusi (2012), Omoke and Ugwuanyi (2016), Okpara and Nwoha (2017), Adofu, Abula and Audu (2017), all agreed that there is a positive and significant relationship between monetary policy instruments such as broad money supply etc and economic growth. While, conversely Olubusoye and Oyaromade (2018), Omofa (2009), Salisu (2013) hold that the relationship is not significant. And more worrisome is the result of the findings of Ditimi (2009) that there is no relationship. This study on Money Supply and Economic Development of Nigeria attempts to reconcile such disagreements by studying the effect of money supply on the real gross domestic product of Nigeria.

REVIEW OF RELATED LITERATURE

Concept of Money Supply

1. Money Supply: Generally, money supply is taken as the total amount of money (currency and demand deposits) in circulation in a country at any given time (Onoh, 2021). Currency in circulation is made up of coins and notes, while demand deposits or checking current accounts are those obligations which are not associated with any interest payments and accepted by public as a means of exchange, drawn without notice by means of cheques (Asinya, 2019).

Money supply can be defined as those assets which represent immediate purchasing power in the economy, and hence function as a medium of exchange. In Nigeria, the narrow money supply (M1) is defined as currency outside the banks plus demand deposits of commercial banks plus domestic deposits with the central bank, less federal government deposits at commercial banks. In simple terms, M1 is defined as M1 = C + D, Where M1 = narrow money supply C = Currency outside banks D = Demand deposits (Ajayi, 2019).

Onoh (2021) defined money supply as the stock of money in an economy and comprises of Narrow and broad monies, M1 and M2 respectively, can be generated either from the liabilities column or assets column of the monetary balance sheet. The M1 represents the total currency in circulation and demand deposits while the M2 represents M1 plus savings deposit, time deposits and other liabilities such as foreign currency deposits. Money Supply refers to the total

stock of monetary media of exchange available to a society for use in connection with the economic activity of the country (Ahuja, 2020).

2. Credit to Private Sector: The importance of credit in economic development cannot be over-emphasized, especially in the context of developing countries that are trapped in a web of poverty which has become known as the vicious circle of poverty. As noted in Jhingan (2014), the vicious circle of poverty implies a circular constellation of forces tending to act and react upon one another in such a way as to ensure that poverty is self-perpetuating. Several theories emphasized the over-riding importance of capital in breaking the grip of poverty, removing structural rigidities and promoting economic development. For instance, the "big push" theory contends that a high minimum amount of investment is required to overcome the obstacles of development in poor countries and to launch it on the part of progress. Similarly, the "take-off" in Rostow's stages of growth theory is largely predicated on massive investment of capital (Paul & Akindele, 2016).

The task of the financial intermediation is generally carried out by the financial sector, channeling capital to profitable investment. In particular, deposit-taking institutions are well recognized for fulfilling the crucial role of sourcing finance in supporting Nigeria's private sector consumption and investment. According to Olowofeso, Adeleke & Udoji, (2015) Private sector credit applies to financial capital made available to the private sector. Financial enterprise, such as loans and advances, sales of non-equity securities, transaction credits and other receivable accounts, which compensate for claims for repayments. Credit can be seen from two angles, in this regard; namely: Credit for commercial or business loans and the banking system. Collier and Gunnings (2019), opined that trade credit applies to transactions involving the supply of products by the seller or the production of a service without immediate payment. While Private sector banking system credit, includes the direct provision of loans and overdrafts to the private sector by institutions such as deposit money banks, non-interest banks and Nigerian merchant banks.

3. **Inflation Rate:** Inflation is defined as the continuous increase in price level and the rate of this increase is referred to as the inflation rate. There are several methods for measuring the inflation rate but the most common measurement is the Consumer Price Index (CPI), which indicates the average price of the consumption of households and is the measurement used (Yaqub, 2018). If inflation exclusively entailed an even, stable and predictable increase of the general price level in the economy - commonly referred to as pure inflation then inflation would not be such a complicated and debated phenomenon. Inflation is an increase in the general level of prices, or, alternatively, it is a decrease in the value of money. Inflation is one of those macroeconomic variables that affect every Indian citizen, irrespective of an investor, borrower or lender, almost every day. Inflation is seen as negative news by the stock markets, because it tends to curb consumer spending and therefore corporate profits. It also affects the value of the domestic currency adversely in the foreign exchange markets. The two frequently used measures of inflation in India are based on the Wholesale Price Index (WPI) and the Consumer Price Index (CPI). Constant increase in the common stage of prices for goods and services is known as Inflation. For measuring the inflation, weighted average of prices of goods and services are considered. The Wholesale price index is the measure of Inflation. The relationship between inflation rate and economic growth remains an issue of research because literature suggested that there are three possible results of study that are none, positive or negative relationship (Onoh, 2021). Balami (2016) stated that inflation was defined as the long-term general increase in the level of prices of a wide range of goods and services. One of the most

commonly used expressions in economic talks is inflation, yet the idea is often misunderstood. Although there are several schools of thought on inflation, economists generally agree that inflation is a steady increase in prices. Simply expressed, inflation is a condition in which there is a continuing overall increase in the cost of goods and services.

Economic Development
Economic development is the process by which a nation improves the economic, political, and social well-being of its people. The term has been used frequently by economists, politicians, and others in the 20th and 21st centuries. The concept, however, has been in existence in the West for centuries. "Modernization, westernization, and especially "industrialization is other terms often used while discussing economic development. Economic development has a direct relationship with the environment and environmental issues Economic development is very often confused with industrial development, even in some academic sources. Whereas economic development is a policy intervention endeavor with aims of improving the economic and social well-being of people economic growth is a phenomenon of market productivity and rise in gross domestic products. Consequently, as economist Amartya points out economic growth is one aspect of the process of economic development. According to Rana *et al*., (2015) economic growth and development is a two-way relationship. According to them, the first chain consists of economic growth benefiting human development, since economic growth is likely to lead families and individuals to use their heightened incomes to increase expenditures, which in turn furthers human development. At the same time, with the increased consumption and spending, health, education, and infrastructure systems grow and contribute to economic growth.

Economic development' is a process in which a nation is being transformed and improved in the sector of the economic, political, and social wellbeing of its people. Economic development preserves and raises the community's standard of living and enhance per capita income through the process of human and physical infrastructural development based on principles of equity and sustainability (Stanlake & Grant, 2015). There different indicators that economist uses to measure the level of economic development in a country includes per capital income, declining poverty rates, increasing literacy rate, declining infant mortality, increasing life expectancy, real gross domestic product, capacity utilization, human capital development and industrial output etc (Ismaila & Imoughele, 2015). Thus, it can be concluded that economic development leads to the creation of more opportunities in the sector of education, health sector, research, human development, capacity utilization, industrial output, full employment and environmental conservation. It equally implies an increase in the per capital income of the citizenry.

I: Gross Domestic Product (GDP): The Gross Domestic Product (GDP) is one of the primary indicators used to measure the healthiness of a country's economy. It is also used to determine the standard of living of individuals in an economy. However, Gross Domestic Product could be defined as the market value of all officially recognised final goods and services produced within a country in a given period of time. This implies that Gross Domestic Product takes into account the market value of each good or service rather than adding up the quantities of the goods and services directly. Gross Domestic Product is important in an economy because it is used to determine if an economy is growing more quickly or more slowly. Also, it is used to compare the size of economies throughout the world. Again, the Gross Domestic Product is used in the comparison of relative growth rate of economies throughout the world. For instance, the Federal Reserves in the United States uses it as one of the indicators of whether the

economy needs to be restrained or stimulated. The components of Gross Domestic Product using the expenditure method includes; Consumption, Investment, Government expenditure, Gross export and Gross import. Where this could be expressed mathematically as GDP = C + I + G + (X - M). There are two other methods of calculating the Gross Domestic Product which are the Value Added (or Production) approach and the Income (or By Type) approach. In calculating Gross Domestic Product using either of the three approaches , it does not include intermediate goods, but only "new" products (final goods) and services, this is to avoid double counting which may lead to the presentation of an inaccurate value of GDP. There are two types of GDP in existence which includes; Real GDP and Nominal GDP. Where Real GDP is the measurement of economic output of a country minus the effect of inflation and Nominal GDP is the measurement that leaves the price changes in the estimate. In this work, gross domestic product will be used in analyzing the Nigerian economy so as to determine the problems facing the economic development of the Nigerian economy and to device a means for controlling these problems in order to experience rapid economic growth in the country.

Impact of Money Supply on the Growth of the Nigeria Economy
Monetary policy is one of key drivers of economic growth through its impact on economic variables. Economic growth is essential in an economy as it reduces poverty as well as improving livelihoods. The growing importance of monetary policy has made its effectiveness in influencing economic growth a priority to most governments (Ajisafe & Folorunso, 2020; Khabo, 2020; Mankiw, 2012). Despite the lack of consensus among economists on how monetary policy actually works and on the magnitude of its effect on the economy, there is a remarkable strong agreement that it has some measure of effects on the economy (Nkoro, 2015). Monetary policy as a combination of measures designed to regulate the value, supply and cost of money in an economy, in consonance with the expected level of economic activity (Folawewo & Osinubi, 2016). For most economies, the objectives of monetary policy include price stability, maintenance of balance of payments equilibrium, promotion of employment and output growth, and sustainable development. The pursuit of price stability invariably implies the indirect pursuit of other objectives such as economic growth, which can only take place under conditions of price stability and allocative efficiency of the financial markets.

Monetary policy aims at ensuring that money supply is at a level that is consistent with the growth target of real income, such that non-inflationary growth will be ensured. Monetary policy is used as inflation is generally considered as purely a monetary phenomenon. Monetary policy influences economic growth through aggregate spending, changes in money supply and interest rates influence consumer spending as well as investment decisions. Consequently, aggregate demand changes in response to monetary policy adjustments. Empirical researches have largely focused on addressing two issues first, to examine if money could forecast output given predictive power of past values of output. If so, the second issue is to examine whether such relationship is stable over time or not in Nigeria. In Nigeria however, the influence of money supply on economic growth can only be taken with mixed reactions.

Theoretical Review
Classical monetary theory
The classical theory of money in its original and crude form asserts that there is a direct and proportionate relationship between changes in the quantity of money and the general price level. The formulation of this crude theory posits that if money supply increases by 10%, then general prices would also increase by 10%. This formulation is also attributed to the writings of the French economist - Jean Bodin published about 1968. Later in 1952, David Hume made

a better exposition of this quantity theory of money as cited in (Nzotta, 2004). The crude theory could be stated as follows: P = KM Where P = General price index K = Constant Proportionality, M = Money supply Where K = v/y V = Velocity of money; Y = real output Anyanwu and Oaikhenan (1995) asserted that the classical economist did not introduce the role of money in their model in terms of its demand and supply. Instead, they introduced money by using quantity theory. In short, they related the level of an economy commodity prices to the quantity of money in the economy and the level of its commodity production. Two very similar, "quantity theory" formulations were used to explain the level of prices, viz: the transactions formulations or the equation of exchange, and cash balances formulation or the Cambridge equation.

The Quantity Theory of Money

The classical quantity theory of money states that the price level is a function of the supply of money. Algebraically, MV=PT, where M, V, P and T are the supply of money, the velocity of money, price level and the volume of transactions (or real output) respectively. The equation tells us that the total money supply MV equals the total value of output PT in the economy (Jhingan, 2012). In this theory, the classical economists believe in the long-run economy, where full employment is attained. They recognized the existence of unemployment in the event of a downward rigidity of money wages. Such a situation could be corrected by an expansionary monetary policy. Suppose the monetary authority increases the money supply, given the velocity of money and the level of real output, with the income in the money supply, liquidity rises with the people who increase the demand for goods and services, this, in turn, raises the price level. The rise in price level reduces the real wage which provides incentives for employers to expand employment and output towards the full employment level.

The Keynesian Theory

Keynes (1936) rejected the Quantity Theory of Money in the short run because their assumptions (Y was fixed at full employment and V was fixed) do not apply in uncertainty real world with high level of unemployment. Keynes argues that changing in money supply is not the only reason for changing in the general price level, but there is another variable that affects the price level which is the employment of production factors. In the case of absence of full employment, the increase in the money supply will lead to increase in total spending and then increased the total output. When the economy reaches the level of full employment, the increase in money supply only leads to higher prices. Thus, the money supply is non-neutral when the economy operated at less than the full employment level, where there is indirect effect of money supply on economic activity, through the influence of money supply on interest rates, and the investment and output (Iwedi, 2016).

Review of Empirical Studies

Ingabire, Uwineza, Benimana, Musafiri, Berimana, Ishimwe & Nshizirungu (2020) assessed the Effect of money supply on economic growth in Rwanda through economic growth (GDP) per capita in Rwanda. The study uses Rwanda National Bank and World Bank data from 2008 to 2018. This study used the autoregressive distributed lag (ARDL)-bounds testing to co-integration and Ordinary Least Squares regression technique for analysis of the data to assess the impact of money supply on GDP per capita in Rwanda. The study model is composed of five macroeconomics variables which are Gross Domestic Product per capita, Money supply, Lending Interest Rate, Gross Capital Formation and deposit rate. The study findings Shows a

statistical significant positive association between money supply and economic growth in Rwanda both in short run and long run. This study suggests that money supply should be increase at a steady rate by keeping pace with the growth of Rwandan economy.

Odumusor (2019) examined the impact of money supply on the growth of the Nigerian economy 1976 - 2015. The research was anchored on the classical quantity theory, Keynesian theory and the Monetarist theory that provided justifications for the conceptual and empirical discussion. This research employed ex-post facto design. Empirically, the result showed that money supply is not significant in the short-run. In the long-run money supply is significant but has a negative impact on economic growth. The causality test showed that money and economic growth are independent of each other, meaning that there is no predictive power of money supply in explaining the economic growth and vice versa. Thus, increment in money supply is incapable of generating growth in the Nigerian economy. The implication is that government should not pay so much attention on money supply as a major tool of monetary policy towards the achievement of economic growth. Also in the estimated results investment (GFCF) is significant in long-run and not in the short-run, this is expected because capital accumulation takes time to yield returns..

Osadume and Obialom (2018) examined Money Supply and Economic Development of Nigeria (1986-2016). The objective of the study was to examine the Effects of - Broad money supply captured by currency in circulation, demand deposits and quasi money on economic development of Nigeria. The study used secondary data sourced from World Bank, UNDP, Bureau of Statistics and the Central Bank of Nigeria; The research work selected Nigeria as its sample and used the OLS, Co-integration, Granger-causality and Error Correction model data Analysis tested at the 5% level of significance. The findings showed that broad money supply components namely, currency in circulation, demand deposits and quasi money all had positive but insignificant effect on economic development in the short-run; Furthermore, all the tested variables showed positive and significant effects in the long-run period on economic development with significant speed of adjustments. The study concludes that money supply components have significant effect on economic development in Nigeria.

Oluseyi, Olasehinde & Eweke (2017) investigated the long and short run relationships between broad money supply and real aggregate output (GDP) in Nigeria from 1981 to 2015. This work made use of data of different frequencies (yearly and quarterly) in order to reveal some hidden facts that data of the same frequency might fail to show. An unrestricted version of Mixed Data Sampling (U-MIDAS) technique and Autoregressive Distributed Lag (ARDL) technique were employed. The ADF unit root test revealed that the yearly real GDP and quarterly broad money supply contained a unit root and this permit the testing of cointegration among the variables. The U-MIDAS results affirm the existence of a long and short-run relationship between yearly real GDP and quarterly broad money supply at different season while the ARDL result affirm that money supply impacted significantly on real GDP in the long run only. The study concluded that the disequilibrium correction terms from the two analytical approaches showed the evidence that there is a tendency for growth targeting in Nigeria which is one of the major objectives of Nigeria economy though at a slower rate. Iwedi (2016) examined the link between money supply and economic growth in Nigeria. The researcher applied the cointegration and VAR model in a simple regression framework. Money supply (proxied by M2) has a short and long run positive and significant link on Real Gross Domestic Product in Nigeria. On ADF test results, it shows the two series were non-stationary at their levels, but they were stationary at first difference, this means the series M2 and RGDP were integrated at order one I(1). When the ADF test shows that the residuals are free of unit roots, it means that residuals are stationary and cointegrated at degree zero I(0), which means there are cointegration between M2 and

RGDP and so there is an equilibrium relationship between the two variable in the long run. On causality, there is a causality running from M2 to RGDP and not vice versa. This shows that there is unidirectional causality from money supply (M2) to Real GDP in Nigeria during the period of study. With this, we can infer that changes in money supply help to explain the changes in RGDP in Nigeria.

Inam (2014) examined the effect of money supply on economic growth in Nigeria: An Econometric analysis (1985-2011). Using augmented Cobb-Douglas production function and relying on co-integration/Error- Correction Methodology, it is found that money supply does not only have a positive impact on economic growth in Nigeria, but such impact is strongly and statistically significant.

Ogunmuyiwa and Ekone (2010) investigated the impact of money supply on economic growth in Nigeria using annual data for the period 1980 to 2006. Applying Econometric technique (Ordinary Least Squares(OLS), Granger Causality test and Error correction Model), the results revealed that although money supply is positively related to growth, the result is however insignificant in the case of GDP growth rates on the choice between contractionary and expansionary money supply.

Obaid (2007) tests the causality relationship between money supply (M3) and real GDP in Egypt during the period (1970-2006) by using Granger test. Findings from his study revealed that there is no causality between the nominal money supply and nominal GDP during the study period, while when he used the real money supply and real GDP, he found that there exist mutual causality relationship between real money supply and real GDP in Egypt (non-neutral money), and thus the monetary policy is an effective policy on the real GDP in Egypt, the mutual causality relationship could help to forecast the GDP behavior within assumed volume of money supply by the economics policy making in Egypt.

The research in broad money has been given much attention as related to economic growth, but little attention has been channeled to economic development to the best of researcher's knowledge and literature review. Also, several studies conducted on money focus basically on broad money supply only, neglecting credit to different sectors and inflation. Hence, this study is conducted to close this gap in literature.

METHODOLOGY

The researchers adopted *quasi experimental* research design approach for the study. This is aimed at establishing a cause-and-effect relationship between money supply and economic development in Nigeria for the period 23 years ranging from 2000 to 2022. Data for the study was time series secondary data from United Nations Development Programme (UNDP), World Bank data, CBN financial Statistical bulletin. The data were subjected to Augmented Dickey-Fuller unit root test. The researchers adopted Autoregressive Distributive Lag (ARDL) analysis model. Statistical evaluation of the global utility of the analytical model for reliability of the results obtained was carried out using the coefficient of multiple determination (R^2), the student T-test and F-test. Hypotheses of this study were tested with multiple linear regression analysis models.

Model Specification

The study adapts the model of Inam (2014) and Iwedi (2016) with modifications. In this study, there is need to determine the long-run relationship between variables as it enables the understanding of the effect that one has against the other. However, each endogenous variable was explained by its lagged, or past values and the lagged values of all other endogenous

variables in the model; which eliminates the use of any exogenous variables in the model (Gujarati, 2004). Since the methodology allowed comprehensive information about the dynamics of the interactions, long-term trends are easily explained. This enables shocks within the regressions and the system to be easily seen. The study models are specified as follows:

$$RGDP_t = \beta_0 + \beta_01RGDP_{t-1} + \beta_2MS^2_t + \beta_3MS^2_t + \beta_4CPS_t + \beta_5CPS_{t-1} + \beta_6INF_t + \beta_7INF_{t-1} + ECM(-1) + \mu_t$$

Where; β_0 = Constant; $\beta_1 - \beta_7$ = Co-efficient of independent variables; μt = Error term; RGDP = Real gross domestic product (₦); MS2 = Broad money supply (₦); CPS = Credit to private sector (₦), INF = Inflation rate (%). A priorit expectations $\beta_1 - \beta_6 > 0$, $\beta_6 - \beta_7 < 0$

DATA ANALYSIS AND DISCUSSION OF FINDINGS

Trend Analysis

The trend analysis shows the graphical presentations of data used for the study, as reflected in figure 1 to figure 4. Line graph are presented in Figure below to illustrate the trend exhibited by the selected variables in the study:
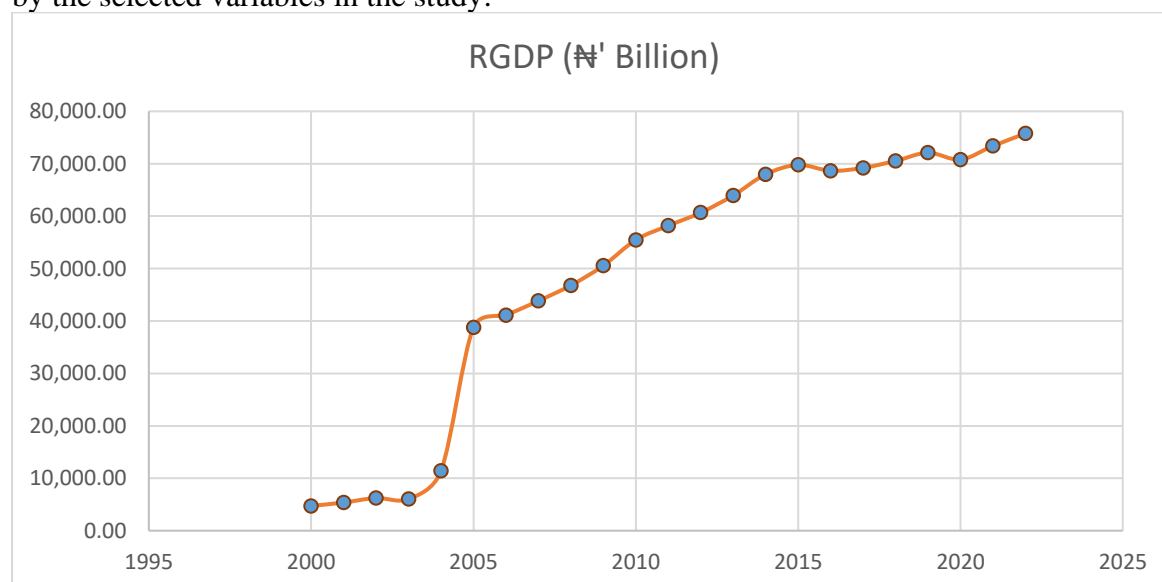

Fig 1: Real gross domestic product

The graphical presentation of real gross domestic product in Nigeria increased from 4,728 in the year 2000 to 38,777.01 in the year 2005. However, from the year 2006 to 2015 the RGDP experienced a gradual and continuous increase, but in the year 2016 and 2017 the value of real GDP experience decreased. The value of RGDP moves gradually upward from 70,536.35 in the year 2018 to 72,094.09 in the years 2019. But, dropped gradually in the year 2020 and increases within 2021 and 2022. However, within the studied period, the real gross domestic product has increased to a very large extent.
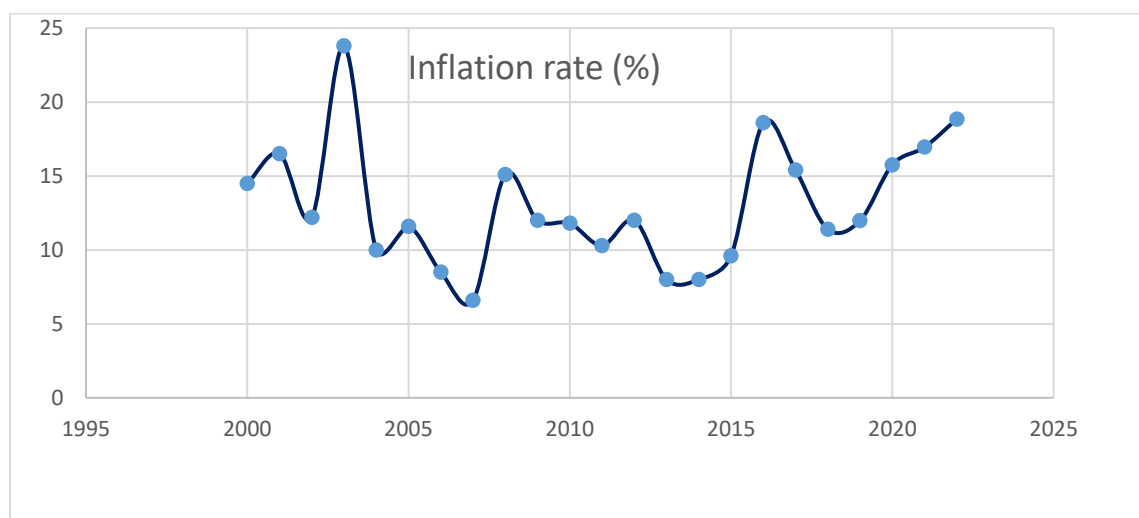
Fig 2: Inflation rate

Figure 2 shows the trend of inflation rate in Nigeria. From the trend movement, the inflation rate in Nigeria increased tangibly at peak from the year 2000 – 2003. However, within 2004 – 2007 the inflation rate in Nigeria reduced to the minimal level as shown in the trend. Within 2008 – 2018 the percentage of inflation was in a zig-zag form. But, from 2019 to 2022 the inflation rate in Nigeria increases synonymously. In conclusion, within 2000 – 2022, inflation rate in Nigeria has experienced increase tangibly.
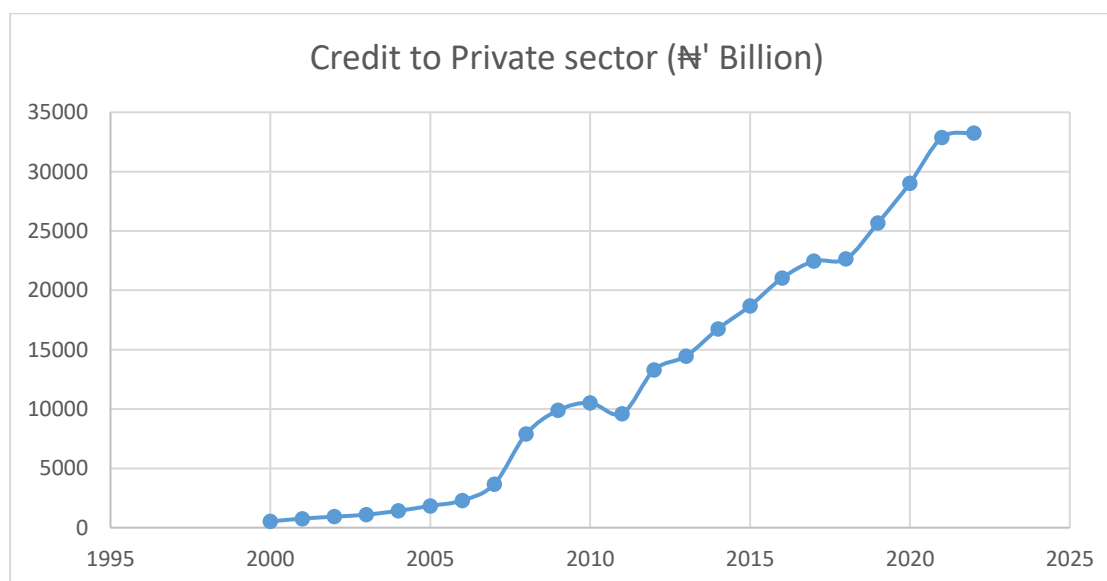

Fig 3: Credit to private sector

Trend analysis for credit to private sector in Nigeria revealed that, there has been a gradual and continuous increase in credit to private sector in Nigeria from 2000 to 2010, but decrease in the year 2011. However, from the year 2012 to the year 2022 credit to private sector in Nigeria increases significantly. By implication, the credit to private sector in Nigeria increased synonymously within the studied years (2000 – 2022).
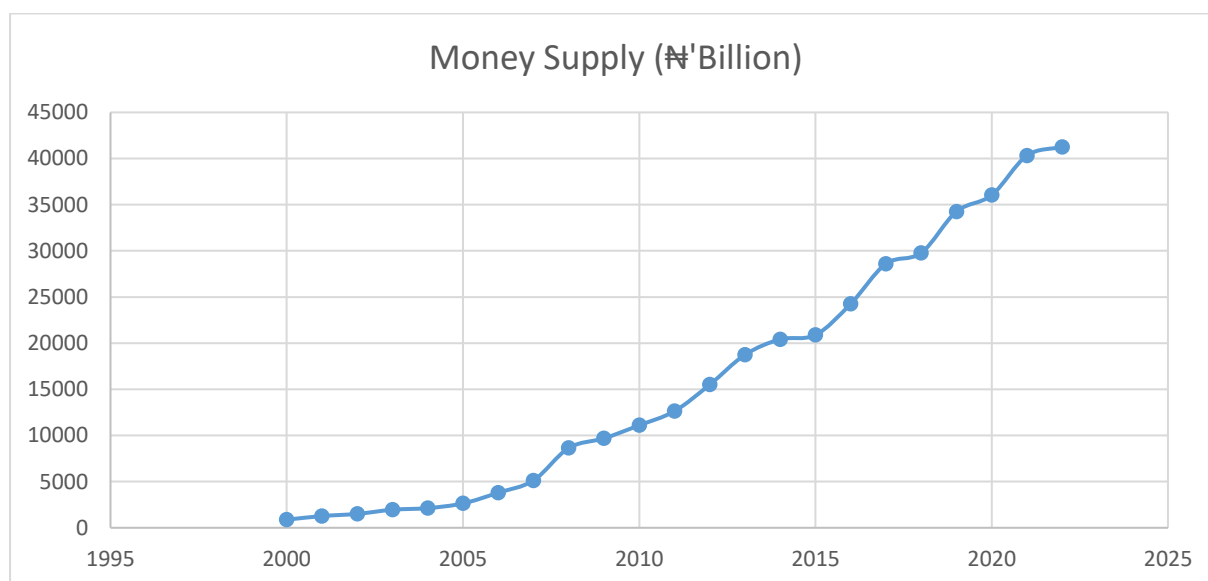
Fig 4: Money supply

The amount of money supply in Nigeria economy maintained gradual and continuous increase from the year 2000 – 2022. The amount experienced continuous increases within the year 2018 – 2022.

Stationary Test

The data obtained was subjected to stationarity test since time series data are disposed to stationarity glitches. To shun having a specious outcome, data is imperiled to unit root test using Augmented Dickey-Fuller unit root test thus; the variables were found to be stationary at first difference.

Table 1: Presentation of Augmented Dickey-Fuller unit root test

Variables	ADF- statistics	Prob.	Order of integration
RGDP	-13.97105	0.0000	stationary at level $I(0)$
INF	-3.547496	0.0162	stationary at level $I(0)$
CPS	-3.687953	0.0124	stationary at level $I(1)$
MS2	-3.891391	0.0080	stationary at level $I(1)$

Source: Compiled by Researchers from Appendix E-View 12

The results on the Augmented Dickey-Fuller unit root test as shown in Table 4.2 indicates that the variables of broad money supply, credit to private sector and inflation rate with high negative t-statistic coefficients are statistically significant at 5 percent and integrated at ordinary level and first difference. The variables are therefore co-integrated of mixed order. As such, they all accepted the null hypothesis of stationary. RGDP and INF were integrated of order I(0) and CPS and MS^2 were integrated at order of I(1). Being that the variables are of mixed integration, that is, I(0) and I(1), ARDL model are recommended to co-integrating relationship amongst the variables for the study.

Auto-regressive distributive lag (ARDL)

The result obtained from the ADRL analysis is presented in Table 4.6 as shown below:

Table 2: Auto-regressive distributive lag (ARDL)
Autoregression distributive Estimates
Dependent Variable: RGDP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
INF	-0.154047	0.044492	-3.462342	0.0026
CPS	0.031353	0.015031	2.086824	0.0449
MS	4.841026	0.059900	80.81762	0.0000
C	0.005062	0.014484	0.349461	0.7306
R-squared	0.934091	Mean dependent var		50.01304
Adjusted R-squared	0.923685	S.D. dependent var		3.048145
S.E. of regression	0.842057	Akaike info criterion		2.650834
Sum squared resid	13.47215	Schwarz criterion		2.848311
Log likelihood	-26.48459	Hannan-Quinn criter.		2.700499
F-statistic	89.75909	Durbin-Watson stat		1.972480
Prob(F-statistic)	0.000000			

Source: E-views computations, (2023)

The ARDL result in table 2 reveales that the coefficient of multiple determination (R^2) was 0.934, which implies that 93.4% changes in the dependent variable was explained by changes in the independent variable, while 6.6% was unexplained by stochastic variables in the model. Thus, the independent variable (inflation, credit to private sector and broad money supply) could only explain 93.4 percent of changes in real gross domestic product (RGDP), leaving 6.6% unexplained. The R^{-2} adjusted was 92.3% indicating a goodness of fit of the regression model adopted in this study which is statistically significant at 5% probability level. The Durbin-Watson statistical value of 1.972 was observed which falls within 1.8 to 2.5, implying that the variables were free from auto-correlation since it is within the region of 2. More so, the f-statistical (calculated) value of 89.75 was observed in the analysis which is greater than 2.085 t-table value; and f-probability value of 0.00000 was observed from the analysis which is less than 0.05 (95% of freedom), indicating that estimated regression model adopted in this study is statistically significant at 5% level. With this, the researchers rejected the null hypotheses and accept alternative hypothesis hence, inflation, credit to private sector and broad money supply have significant effect on real gross domestic product.

The result revealed that INF(-1) had a negative and significant effect on RGDP such that a unit increase in INF would bring about a -0.154 percent decrease in RGDP in Nigeria. CPS had a positive and significant effect on RGDP such that a unit increase in CPS would bring about a 0.031 percent increase in RGDP. Also, MS exerted a positive and significant effect on RGDP such that a unit increase in MS would bring about a 4.84 percent significant increase in RGDP. Hence, credit to private sector and broad money supply recorded a positive and significant effect on real gross domestic product in Nigeria. Furthermore, inflation rate recorded a negative and significant effect on real gross domestic product in Nigeria.

Diagnostic tests for the ARDL model

The residuals of the ARDL model were diagnosed for serial correlation, heteroscekedasticity and normality. The results are summarized as presented in Table 4.14:

Table 3: Diagnostic test results for ADRL model

Test	Result	Prob.
Normality test	2.001193	0.2710
Breusch-Godfrey Serial Correlation LM Test:	3.196541	0.0530
Heteroskedasticity Test: Breusch-Pagan-Godfrey	1.084389	0.3101

Source: Computed using E-View 12.0 econometric software

As observed from Table 3, the ARDL model passed all the diagnostic tests for serial correlation (Breusch-Godfrey test), heteroskedasticity, and normality test. The absence of serial correction, heteroskedasticity and abnormal distribution of the residuals was confirmed by the p-values of the tests which were greater than 0.05. Hence, the null hypothesis of no serial correlation, no heteroskedasticity and no abnormality of distribution was accepted accordingly in the analysis result.

Discussion of findings

The result of the first test being ADF test shows the two series were non-stationary at their levels, but they were stationary at first difference, this means the series M2 and RGDP were integrated at order one I(1). When the ADF test shows that the residuals are free of unit roots, it means that residuals are stationary and cointegrated at degree zero I(0), which means there are cointegration between M2 and RGDP and so there is an equilibrium relationship between the two variable in the long run. On causality, there is a causality running from M2 to RGDP and not vice versa. The ARDL result revealed that INF had a negative and significant effect on RGDP such that a unit increase in INF would bring about a -0.154 percent decrease in RGDP in Nigeria. Implying inflation rate recorded a negative and significant effect on real gross domestic product in Nigeria. The result aligns with the findings of Iwedi (2016) that examined the link between money supply and economic growth in Nigeria. The researchers applied the cointegration and VAR model in a simple regression framework. Money supply (proxied by M2) has a short and long run positive and significant link on Real Gross Domestic Product in Nigeria. CPS had a positive and significant effect on RGDP such that a unit increase in CPS would bring about a 0.031 percent increase in RGDP. And MS exerted a positive and significant effect on RGDP such that a unit increase in MS would bring about a 4.84 percent increase in RGDP. Hence, credit to private sector and broad money supply recorded a positive and significant effect on real gross domestic product in Nigeria. The result agrees with the findings of Ingabire, Uwineza, Benimana, Musafiri, Berimana, Ishimwe & Nshizirungu (2020) that assessed the effect of money supply on economic growth in Rwanda through economic growth (GDP) per capita in Rwanda. Of which the findings Show a statistical significant positive association in the model both in short run and long run. The result also aligns with Osadume and Obialom (2018) which examined Money Supply and Economic Development of Nigeria (1986-2016) and found that broad money supply components namely, currency in circulation, demand deposits and quasi money all had positive and significant effect on economic development in the short-run. The result is equally consistent with Oluseyi, Olasehinde & Eweke (2017) that investigated the long and short run relationships between broad money supply and real aggregate output (GDP) in Nigeria from 1981 to 2015. The U-MIDAS results affirm the existence of a long and short-run relationship between yearly real GDP and quarterly broad money supply at different season while the ARDL result affirm that money supply impacted significantly on real GDP in the long run only.

Conclusion

The study examined the effect of money supply on economic development in Nigeria. It is evident from the result that broad money supply, credit to private sector and inflation in Nigeria within the period under study had significant effect on real gross domestic product in Nigeria. We conclude therefore that money supply has significant effect on economic development in Nigeria, development in Nigeria.

Recommendations

In line with the findings of this study, the researchers recommend the following:

1. The monetary authorities should consolidate on the fiscal policies measures that prompt reduction on inflation in other to boost the economic development in the country. This must be with caution to the level of money supply as the economic development responds more favorably to an increase in the money supply.
2. The supply of credit to the private sector must be encouraged. This may come through reduction in the lending rate to the private sector especially the productive subsectors. This will further promote economic development in the country.
3. There is need to moderately increase the level of broad money supply while being conscious of the rate of inflation, as such that the effect will not be eroded by inflationary or deflationary pressures.

REFERENCES

Adofu, M., Abula, O. & Audu, J. (2017). Alternative econometric approaches for analyzing the role of the financial sector in economic growth; Time series evidence for LDCs. *Journal of Development Economics, 50* (1), 199-146.

Ahuja, H. L (2020). *Macroeconomic* (Theory and Policy) Sixtheen Revised Edition S. Chand Company Ltd, 7361, Ram Nagar, New Delhi.

Ajayi, S. I. (2019). An economic case study of the relative important of monetary and fiscal policy in Nigeria. *Bangladesh Economic Reviews, 2,*559-576.

Ajisafe, Z. & Folorunsho, P. (2020). Trade and economic growth in developing countries: Evidence from sub-Saharan Africa. *Journal of African Trade*, 3(1–2), 41–56.

Al-Taeshi F. I. A. (2016). Short-run and long-run inflation and economic growth nexus in Ghana. *Ghana Journal of Development Studies*, *11*(2), 32-49

Anyanwu, J.C. (2017): *Nigerian Public Finance*. Onitsha: Joanee Educational Publishers Ltd.

Asinya, F. A. (2019). *Simplified macro-economic theory*. Calabar: University of Calabar press. P.M.B. 1115.

Balami, A. (2016). The impact of inflation, policy rate and government consumption expenditure on GDP Growth in Ghana: A Co-Integration Approach. *European Journal of Business and Management*, *5*(15), 170-185.

CBN Annual Statistical Bulletin. https://www.cbn.gov.ng/documents/Statbulletin.asp, Accessed on July 17,2020

Central Bank of Nigeria (2018). Code of corporate governance for bureau de change in Nigeria.

Central Bank of Nigeria (2020). The interest rate development. Economic report First quarter 2020.

Collier, P. & Gunning, H. A. (2019). *Aid, Policy and Growth in Post Conflict Societies*. World Bank Policy Research Working Paper 2902.

Ditimi, A. K. (2009). Causality test between money and income: A case study of selected developing Asian Countries (1960- 2007), *The Pakistan Development Review*.(30).

Folawewo, O. A. & Osinubi, S. T. (2016). Monetary Policy and Macroeconomic Instability in Nigeria; a Rational Expectation Approach. *Journal of Social Science*, 12(2), 93-100.

Friedman, M. (1958). The Quantity Theory of Money: A Restatement, the University of Chicago Press.

Friedman, M. & Schwartz, A. (1963). Money and Business Cycles, Review of Economics and Statistics, February, 32-64.

Ihsan, I. and Anjum, S. (2017). Impact of money supply (M2) on GDP of Pakistan. *Global Journal of Management and Business Research, 13(6).* Available from https://globaljournals.org/GJMBR_Volume13/1-Impact-of-Money-Supply.pdf.

Ingabire, T. Uwineza, J., Benimana, M. L., Musafiri, F., Berimana, G., Ishimwe, N. C. & Nshizirungu, N. (2020). Effect of money supply on economic growth in Rwanda. International Journal of Research and Innovation in Social Science (IJRISS) 6 (4), 24-35

Ismaila, W. & Imoughele, A. (2009). *Money Supply Growth and Macroeconomic Convergence in ECOWAS*. Freetown.

Iwedi, M. (2016). The link between money supply and economic growth in Nigeria: An Econometric Investigation. *IIARD International Journal of Economics and Business Management*, 2 (3), 20-36.

Jhingan, M, L. (2004). *Money, banking, international trade and public finance.*Delhi; Vrinda Publications.

Jhingan. M, L. (2012). *Macro-economic theory.* Delhi; Vrinda Publishing's

Khabo, V. S. (2020). *The Impact of Monetary Policy of the Economic Growth of a Small and Open Economy*: The case of South Africa, Department of Economics, University of Pretoria.

Laidler, D, E. W. (2019). The demand for money; *Theories, evidence and problem (4thed.).* New York; Harper Collins.

Mankiw, N. (2012). The savers-spenders theory of fiscal policy. *National Bureau of Economic Research Working Pape*r 7571, 1-14.

Nizhegorodtsev, R. & Goridko, N. (2013). The impact of money supply on economic growth: Theory, experience, modelling. Handbook on Economics, Finance and Management Outlooks, 23 (12), 69 – 87.

Nkoro, E. (2015). The Study of Monetary Policy and Macroeconomic Stability in Nigeria (1980 – 2000). http://searchwarp.com/swa20450.thm

Nzotta, S.N. (2014). *Money, banking and finance.*Owerri; Hudson- Jude.

Obaid, G. (2007). *Money supply-output causality in Egypt*, Faculty of Commercial and Business Administration Magazine, Helwan University.

Odumusor, C.J. (2019). Impact of money supply on the growth of the Nigerian economy, 1976 – 2015. *IOSR Journal of Economics and Finance (IOSR-JEF), 10(1), 30-46.*

Ogunmuyiwa, M. & Ekone, A. (2010). Money supply; economic growth nexus in Nigeria. *Journal of Social Science, 23* (3), 199- 204.

Okaro, C. S. (2013). Money, Banking Methods and Processes. Emma Okaro ventures, Enugu, Nigeria

Okedokun M.O (1998). Financial Intermediation and Economic Growth in Developing Countries. *Journal of Economic Studies,* 25(3): 203 – 234.

Okpara, A. & Nwoha, S. (2017). *The Nigeria Economy at the crossroads; Policies and their effectiveness.* Calabar; University of Calabar press.

Olowofeso, E. O., Adeleke, A.O., & Udoji, A.O. (2015). Impact of private sector credit on economic growth in Nigeria. *CBN Journal of Applied Statistics, 6*(2), 81-101.

Olu, E. & Idih, Z. (2015). The long-run relationship between money supply, real GDP, and price level: empirical evidence from Sudan. *Journal of Business Studies Quarterly*, *2*(2), 68

Olubusoye, O.E. & Oyaromade, R. (2018). Modeling the Inflation Process in Nigeria. AERC Research Paper 182. *African Economic Research Consortium, Nairobi*:1-36.

Omoke, P. C. & Ugwuanyi, C.U. (2016). Money, price and output; A causality test for Nigeria. *American Journal of Scientific Research, 8,* 78-87.

Onoh (2021). *Dimensions of Nigeria's Monetary and Fiscal Policies – Domestic and External.* Aba: Astra Meridian Publishers.

Owoye, O. & Onafowora A. O (2007). M2 Targeting, Money Demand and Real GDP Growth in Nigeria: Do Rules Apply? *Journal of Business and Public Affair,* 1(2): 25-34.

Oyaromade, S. (2018). Financial intermediation and economic growth in developing countries.*Journal of Economic Studies, 25* (3), 203 -234

Paul, A. A. & Akindele, J.O. (2016). The impact of human capital development on economic growth in Nigeria: ARDL approach: *IOSR Journal of Humanities and Social Science (IOSR-JHSS) 21(3) 01-07.*

Rana, T. M. *et al*., (2013). The Ghanaian economic recovery. Naval Postgraduate School Monterey Ca.

Salis, T. P. (2013). Economic development in the third world: *An introduction to problems and policies in a global perspective.* New York: Longman.

Sanusi, A. R (2012). An empirical analysis of the money supply process in Ghana: 1983-2010. Abuja Journal of Banking and Finance. 2(1): 115 – 128.

Shaw, E. S. (1973). *Financial deepening in economic development.* New York: Oxford University Press.

Stanlake, V. L. & Grant, A. I. (2015). The impacts of exchange rate on economic growth in Cambodia. *International Journal of Applied Economics, Finance and Accounting*, 5(2), 78–83.

Yaqub, J. O. (2018). Exchange Rate Changes and Output Performance in Nigeria: A sectorial Analysis. *Pakistan Journal of Social Sciences*, 7(5): 12-19.