

**THE IMPACT OF MONETARY POLICY ON ECONOMIC GROWTH IN
NIGERIA (1970-2019)**

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CERTIFICATION

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DEDICATION

This Project is dedicated to God Almighty.

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ABSTRACT

This study analyzed the impact of money supply on economic growth in Nigeria. Specifically, it assessed the impact of money supply on growth, examined the effect of interest rate on growth, and the impact of exchange rate on Nigeria's Growth.

Annual time series secondary data was used in the study. World Development Indicators (2020), and Penn World Table version 9.0 were used to compile data on real GDP, money supply, level bank reserves, interest rate, inflation, exchange rate and terms of trade. The data was analyzed using econometric methods, namely the Autoregressive Distributed Lag (ARDL) Model. The unit root test, utilizing both the Augmented Dickey-Fuller (ADF) and Phillip and Perron (PP) tests, the lag order of the ARDL models using VAR lag order selection criteria, and the bound test were all carried out.

From the results of the study, it was discovered that money supply (MS) has a significant and positive relationship with real GDP in Nigeria. However, interest rate has an insignificant and positive relationship with economic growth while exchange rate was statistically significant and positively related to RGDP in Nigeria.

The study concluded that the money supply of Nigeria has been instrumental in aiding economic growth in Nigeria and an increase in the level of money to the various sectors of the economy would increase the level of growth in Nigeria. It is also ascertained that exchange rate is a key indicator for balancing the money value and it also found out high interest rate increases investment, reducing spending or more money in supply

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Monetary policy is certainly considered one among key financial variables that affects economic growth. The developing significance of monetary policy has made its effectiveness in influencing economic growth a concern to most governments. Despite the dearth of consensus amongst economists on how monetary policy clearly works and the value of its impact at the economic system, there's a top notch study settlement that it has a few degree of consequences at the economic system (Nkoro, 2005). Nigeria being an import based economical system is confronted with stagnated growth, risky commercial business cycles and economic fluctuation. This normally leads to unemployment, inflation, unproductivity and stability of charge disequilibrium. Nigerian governments adopts monetary policy to perform the goal of income distribution and allocation of resources.

In Nigeria, government has constantly depended on monetary policy as a manner of reaching sure economic goal within the economic system such macroeconomic goals encompass; employment, economic growth and improvement, stability of price equilibrium and comparatively solid preferred price level. Monetary policy as a mixture of measures designed to modify the price, supply and cost of money in an economical system, in consonance with the anticipated stage of economical interest (Folawewo and Osinubi, 2006).

For most economies, the goals of monetary policy encompass price stability, maintenance of balance of payment equilibrium, promotion of employment and output growth, and sustainable improvement. The pursuit of price stability continuously implies the oblique pursuit of different goals together with economic growth, which could best take location under situations of price stability and allocative performance of the economic markets. Monetary policy goals are aimed at making sure that money supply is at a stage that is regular with the growth goal of real income, such that non-inflationary growth may be ensured.

Monetary policy is used as inflation is usually taken into consideration as only a economic phenomenon (Central Bank of Nigeria, 2014). Monetary policy may be defined as a planned attempt via a way of the economic authority to govern money supply and credit situations for the motive of reaching sure huge economic goals which is probably together exclusive (Ajisafe and Folorunsho, 2002). Monetary policy measures is vital for the attainment of inner and outside stability, and the promotion of long-run economical growth. For example, an expansionary economic policy is designed to stimulate economic growth will decrease the interest rate and might generate better inflation which the extent of growth won't be capable of prevent (Gertler and Gilchrist, 2009). The effectiveness of monetary policy in reaching its goals, consequently, relies upon strongly at the working economic surroundings, the institutional framework followed, and the selection and blend of the tools used (Ogbole, 2010).

Monetary policy is inextricably related in macro-economic control traits in a single environment at once have an effect on traits within another. Undoubtedly, monetary policy is relevant to the fitness of any economic system, as authorities's energy to tax and to spend influences the disposable profits of residents and

corporations, in addition to the overall commercial enterprise climate (Adefeso and Mobolaji, 2011). Monetarist strongly believes that monetary policy exerts more effect on economic interest as unanticipated exaltate with the inventory of cash influences output and growth i.e., the inventory of cash have to growth suddenly for relevant financial institution to sell economic growth. In reality, they're of opinion that an growth in government spending could crowd out personal zone and such can outweigh any quick-time period benefit of an expansionary monetary policy (Adefeso and Mobolaji, 2011).

On the alternative hand, the idea of liquidity entice that's a state of affairs wherein actual interest rate can not be decreased via a means of any movement of the economic government turned into supply through the way the of Keynesian economics. Hence, at liquidity trap an increase within the money supply could now no longer stimulate economic growth due to the downward stress of funding due to insensitivity of interest rate to money supply(Ogbole, 2010).

Monetary supply is a prime economical stabilization weapon that entails measures taken to modify and manage the quantity, price and availability in addition to direction of money in an economic system to obtain a few certain macroeconomic policy goal and to counter-act unwanted traits within the Nigerian economical system (Gbosi, 1998).

1.2 Statement of Research Problem

Over the years, there was enlargement in deficit financing and risky monetary policy, pushed in large part via a of means of oil expenses in 1991 and 1992, and 2000 and 2002; sales and expenditure have accelerated sharply. This, as usually visible, observed the discount of fees as oil expenses drastically decline, alevn

though at instances with time after the decline in oil expenses. The implications of such growth-burst, monetary policy encompass transmission of oil-price volatility to the solid provision of government services. This has brought to the failure through the years of public spending and stagnancy in economic boom. The Nigerian economic system has witnessed significant growth because the country's attainment of political independence in 1960. The actual price of gross domestic product (GDP) jumped from N2, 489 million in 1960 to N4, 219 million in 1970 and consequently heaved to document approximately N31, 546 million in 1980. Following the foreign exchange crisis of 1981–1986, followed via way of means of the downfall of worldwide crude oil expenses, the value of growth skewed from the route it might have in any other case taken. Economic growth witnessed a constant fall among 1980 and 1984 for thereafter regained momentum taking an upward fashion there from. Thus, the growth price of the Nigerian economic system, which had averaged 2.5% according to yearly along the 1960s, climbed to an annual common of 10 % among 1970 between 1989.

Industrial improvement is because of numerous elements and those consists of among others, the price of capital accumulation and saving, quantity of change, studies and improvement, quantity of outside change (exports) and so on. The full-size monetary enlargement time beyond regulation is a key component can not be overemphasized. Monetary enlargement, which displays both demand for credit via way of domestic economy or government fiscal expansion, a prime determinant of inflation.

Although with a lag, aggregate demand for and inflation circulate in tandem. However growth in actual output, specifically food output, has a dampening impact on the overall price level. It is pertinent to notice that economic and monetary policy in Nigeria is carried out in an surroundings characterised via way of means of

uncertainty and common economic policy somersaults. Also the improvement of a good framework for sustainable growth and improvement is complex via a means of inconsistent regulations, forms and versions in environmental situations both of a climatic nature or crises.

Growth in money supply turned into significant as huge and slender money supply have exhibited upward fashion time beyond regulation. Money delivery, M1 and M2 grew swiftly from 16.3 and 19.4% in 1995 to 48.1 and 62.2 % in 2000, respectively.

Using this yardstick, the final results of inflation and money growth in Nigeria has been usually mixed. By definition, price stability in Nigeria refers back to the goal of a single-digit inflation price on an annual basis. Indeed, this goal has now no longer been executed on a sustained basis. Therefore, it is needed to observe the effect of monetary policy on economic growth in Nigeria.

1.3 Research Questions

The following questions will be examined in this study:

- i. what is the impact of money supply on economic growth.
- ii. effect of interest rate on economic growth.
- iii. the Impact of exchange rate on economic growth?

1.4 Research Objectives

The broad objective of this study is to examine the impact of monetary policy on economic growth in Nigeria. While the specific objective objectives of the study include:

- i. what is the impact of money supply on economic growth?
- ii. effect of interest rate on economic growth?
- iii. the impact of exchange rate on economic growth?

1.5 Research Hypothesis

Hypothesis 1:

H₀: There is no impact of money supply on economic growth.

H₁: There is impact of money supply on economic growth.

Hypothesis 2:

H₀: There is no effect interest rate on economic growth.

H₁: There is effect of interest rate on economic growth.

Hypothesis 3:

H₀: There is no impact of exchange rate on economic growth.

H₁: There is impact of exchange rate on economic growth.

1.6 Significance of the Study

Monetary Policy is surely one of the maximum vital tools utilized by government to obtain macroeconomic balance of the economic system of developing nations. Therefore, this study may will be a valuable tool for the following; This study at may be applicable to the government, because it will assist them in making and enforcing regulations as a way to assist to stabilize the Nigerian economical system.

It will bring high visibility, usage and result for their work by bringing an increament to the impact of monetary policy in nigeria.

It will serve as a tool also for purpose of reference of researchers in the same area. This study examines the influence money supply has on Nigeria's economic growth as well as the impact of interest, exchange rate on the economy. The results of this study are noteworthy because they give a platform for policymakers to design solutions to solve money supply issues.

1.7 Scope of the Study.

The study covers the period between 1970-2019. Our Choice of this period arose from the availability of data. This period is long enough to capture the link between the monetary policy and economic growth.

1.8 Organization of the Study.

The study is organized into five chapters. Chapter one presents the analysis by introducing the context, the problem statement, the purpose of the study, the research concerns, the research theory and the nature of the study, the importance of the study and the organization of the study. Chapter two deals with the conceptual review, theoretical review, empirical review and gap in the literature. Chapter three discusses the research methodology adopted for the study and relevant justifications ,provides the theoretical framework of the study and the methodology employed. It also contains the specification and estimation of the model. While Chapter 4 presents the empirical analysis and interpretation of the estimated models, chapter 5 depicts the summary, conclusion and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter is divided into four segments. Section 2.2 presents the conceptual review. Section 2.3 portrays the theoretical review of the study. Section 2.4 focuses on the empirical review of the study and section 2.5 contains the gap in the literature.

2.2 Conceptual Review

2.2.1 Concept of Monetary Policy

Concept of Monetary Policy Monetary policy is described through the Central Bank of Nigeria (CBN, 2012) as mixture of measures designed to modify value supply and cost of money in an economical system, in consonance with the extent of economic activities.

Odufalu, (2008) described monetary policy because of the mixture of measures taken via a way of means of economic government (e.g. the CBN and the ministry of finance) to steer at once or circuitously each the money supply and credit to the economic system and the shape of interest rate for economic growth, price balance and stability of charge equilibrium.

He added that the CBN is empowered via a way of means of decree 25 of 1991 Act, to formulate and put in monetary policy in Nigeria, in session with the ministry of finance challenge the approval of the President. (Onyido, 2009) sums it up while he stated that monetary policy is consequently carried out to steer the supply and price of credit which will manage the money supply policy.

He describes the movement taking through a means of the Central Bank as the use of equipment / tool at its disposal to steer economic situations particularly, the amount and money supply within the macro-financial items. These desires could generally encompass price balance, full employment, excessive economic growth, price and stability of price equilibrium. The attainment of those desires will end result into the country reaching each inner and outside balance of payments.

2.2.2 Monetary Policy Transmission Mechanism

There are specific transmission channels through which monetary policy impacts economic activities and these channels of transmissions had been widely tested below the monetarist and Keynesian schools of thought. The monetarist postulates that alternate in the money supply leads immediately to a change in the actual importance of cash (Onyeiwu, 2012).

Describing this transmission mechanism, (Friedman and Schwartz. 1963) say an expansive open market operations with the aid of using the Central Bank, will increase inventory of money, which additionally ends in an growth in Commercial Bank reserves and capacity to create credit and for this reason growth money supply via the multiplier impact. In order to lessen the amount of money of their portfolios, the financial institution and non-financial institution businesses buy securities with traits of the kind offered with the aid of using the Central Bank, accordingly stimulating activities in the actual sector. This view is supported with the aid of using (Tobin, 1978) who examines transmission impact in terms of assets portfolio desire in that monetary policy triggers asset switching among equity, bonds, commercial paper and financial institution deposits. He says that tight monetary policy impacts liquidity and banks' capacity to lend which consequently restricts mortgage to top debtors and

enterprise companies to the exclusion of mortgages and intake spending thereby contracting effective call for and investment.

Conversely, the Keynesians posit that change in money inventory allows activities in the monetary marketplace affecting interest rate, investment, output and employment. (Modigliani, 1963) helps this view however brought the idea of capital rationing and stated willingness of banks to lend impacts economic coverage transmission. In their evaluation of use of financial institution and non-financial institution funds in reaction to tight monetary policy (Oliner and Rudebush, 1995) have a look at that there's no massive extrade withinside the use of both however as an alternative large companies crowd out small companies in such instances and in like manner (Gentler and Gilchrist, 1991) helps the view that small agencies enjoy decline in mortgage facilities throughout tight monetary policy and they may be affected greater adversely with the aid of using modifications in financial institution associated aggregates like large money supply.

Further research with the aid of using (Borio, 1995) who investigated the shape of credit to non-government debtors in fourteen industrialised countries have a look at that it's been motivated with the aid of using elements together with terms of mortgage as interest rates, collateral requirement and willingness to lend.

2.3 Theoretical Review

2.3.1 The Classical Theory of Economic Growth

Smith hypothesized a supply sided -facet-decided version of growth. According to him, population growth turned into endogenous—it relies upon at the accessibility to lifestyles maintaining desires and it has the ability for the growing workforce;

Investment turned into additionally endogenous—established via a means of savings (typically via way of means of capitalists); land growth turned into reliant on invasion of new lands (e.g. Colonisation) or technological enhancement of fertility of old lands. Technological improvements may also upload to usual growth. Smith's famend thesis that the department of labour (specialisation) complements growth turned into an crucial argument. Smith additionally noticed traits in equipment and worldwide change as engine of growth as they aided in additional specialization. He additionally assumed that "department of labour is limited in a way of means of the scale of the marketplace", hence speculating an economies of scale dispute. Therefore, he argued that growth turned into self-fortifying because it demonstrates growing returns to scale. Lastly, due to the fact economical savings of capitalists is what generates funding and for this reason growth, he noticed the allocation of profits as being one of the maximum sizable determinants of the way speedy (or slow) a country could grow. Smith's version of growth remained the primary version of Classical Growth. David Ricardo (1817) adjusted it by of incorporating diminishing returns to land. Output growth needs growth of component inputs, however, in contrast to labour, land is "variable in quality and fixed in supply".

This way that as growth continues, greater land have to be taken into improvement, however land can not be "produced". This has 2 results for growth: firstly, elevating land owner's rents over the years (because of the constrained supply of land) reduce into the proceeds of capitalists from above; secondly, income from items (from agriculture) may be increase in price over the years and this then cuts into earnings from beneath as people require better wages. This, then, brings in a faster restrict to growth limit to growth than Smith allowed, however Ricardo additionally asserted that this fall off may be freely curbed via a way of means of technological

improvements in equipment (even though, additionally with diminishing productivity) and the specialization introduced via way of means of trade, even though he additionally had static states. Ricardo's description is fairly greater pessimistic than Smith's. The decisive miserable picture, however, turned into painted by of T.R. Malthus (1796) together along with his well-known declaration that if populace growth turned into now no longer curbed, it might swiftly surpass boom and purpose growing melancholy all around.

2.3.2 The Endogenous Growth Theory

Due to the fact that Solow's theory could not give details on all models of economic growth, new theories were developed. One of these is the new theory of growth, also known as endogenous growth theory, developed by Paul Romer.

Romer's key line of reasoning is that technological alteration is not "a manna from heaven" and its trends and degree can be directed. If this is the case, technology can then be made endogenous to growth, rather than being an exogenous factor as in Solow's model. In addition to this, human capital and investments in innovations can then be perceived to be vital in the process.

The new growth theory views knowledge as a public good (Romer, 1990). In general, the new growth theory exists in complete difference to the law of diminishing returns, due to the fact that the law of diminishing returns implies that output reduces if we increase the inputs. However, over the last 100 years, output in developed countries has increased and the new growth theory attributes this to an overflow of knowledge and innovations.

2.3.3 Keynes Theory

According to J.M Keynes (1976), “an inverse in the quantity of money will increase aggregate demand for money due to the fall in the price of interest rate.

The Keynesian evaluation, monetary policy performs a critical function in affecting economical activities. It contends that a change in the money supply can completely change such variables because the price of interest rate, the combination call for and the extent of employment, output and income. Keynes believed in the existence of unemployment equilibrium. This means that income in money supply can result in permanent increase in the price of output . This upward push in of ,the supply of money its first impact is at the interest rate which has a tendency to fall. Given the marginal performance of capital, a fall in interest rate will increase investment. The increased investment will enhance strong demand through the multiplier effect thereby increasing income, output and employment.

2.3.4 Cambridge Theory

According to the Cambridge Version of the quantity of the theory of money, he did did not join the perception that money matters and that doubling the money supply will result in doubling the prices. He turned into of the perception that the end result may be much less than sure and that doubling of money supply will not necessary lend to double prices

. The Cambridge model specializes in the fraction K of income held as cash balances. Thus, the model may be expressed as: $M=KPY$ or $M=KY$. The K is the inverse of V , the income pace of money balances in the unique components of the formulation of the quantity theory. The Cambridge model directs interest to the determinants of the demand of money instead of the consequences of adjustments in the supply of money(Higgins, 1978).

2.3.5 Fisher Quantity Theory of Money

According to Sir Irving Fisher quantity theory of money, he states that “the quantity of money is the primary determinant of the price level, of the value of Money”. Any change in the quantity of money produces an precisely proportionate change in the price level, this is, “as the quantity of money in stream will increase, the price level additionally growth in direct share and the value of money decreases and vice versa (Jhingan, 2009). This concept is defined in phrases of equation of alternate: $PT=MV+M'V'$ Which states that the money supply (M) multiplied by the velocity of circulation (V) have to constantly be same to the wide variety of transaction. The concept is primarily based totally on long term economical system and underdevelopment is taken into consideration as one of the issues referring to the much less advanced economic system

2.4 Empirical Review

Researchers have tried to observe the impact of monetary policy on economic growth in different nations and periods, and the use of different strategies. Amongst many others are the subsequent:

Khabo (2002) evaluated the effect of monetary policy on a small and open economical system in the case of the South Africa for the length 1960-1997. He used M3 to measure monetary policy. The normal least square (OLS) approach was employed, in addition to the Augmented Dickey Fuller check to test for stationarity. Results of the look at suggest that economic growth is extensively encouraged via way of means of money supply.

Starr (2005) used the Granger causality check to research the relationships among monetary policy variables and each output and expenses in the post-stabilization length, in 4 center CIS nations (Russia, Ukraine, Kazakhstan and Belarus) the use of quarterly statistics from 1995 to 2003. Results looked at offered little proof of actual consequences of monetary policy in the 4 center CIS nations with the first-rate exception that interest rate have a sizable effect on output in Russia. The findings supplement the look at of Uhlig (2005) whose findings display that contractionary monetary policy shocks haven't had any clean impact on actual GDP in the country.

Dele (2007) employed the generalized least squares (GLS) approach in his look at of monetary policy and economic overall performance of West African Monetary Zone Countries (Gambia, Ghana, Guinea, Nigeria and Sierra Leone) from 1991-2004. Using the variables Money Supply (M2), Minimum Rediscount Rate, banking gadget /credit to private sector, banking system credit to central Government and different price of the country's money to american dollar, findings of the look at suggest that monetary policy turned into a supply of stagnation because it harm actual domestic output of those nations.

Rafiq and Mallick (2008) tested the consequences of monetary policy on output in the 3 biggest euro location economies (Germany, France and Italy) the use of the brand new VAR identity manner. Quarterly observations from 1981- 2005 have been used. Results advise that monetary policy improvements are at their maximum stong application in Germany. Apart from Germany, it stays ambiguous as to whether or not a upward push in interest rate concludes with a fall in output, thereby displaying a loss of homogeneity in the responses.

The look at of Berument and Dincer (2008) measured the consequences of monetary policy for Turkey using structural VAR (SVAR) approach overlaying the length 1986-2000. Empirical effects display that a tight monetary policy has a brief impact on output, inflicting output to say no for 3 months in a statistically sizable fashion. The findings verify the paintings of preceding research (Sousa and Zaghini, 2008; Sims, 1992; Eichenbaum and Evans, 1995).

Bhuiyan (2008) tested the consequences of monetary policy shock in Canada via way of means of the use of the overnight target policy monetary policy tool. Using month-to-month statistics from 1994-2007, findings of the look at suggest that the transmission of the monetary policy shock to the actual output operates through each the interest rate and the alternate price Using money supply as a degree of monetary policy, Nouri and Samimi (2011) tested the effect of monetary policy on economic in Iran adopting normal least squares (OLS) approach and statistics overlaying the length 1974- 2008. A positive and importance relationship among money supply and economy was established in the study .

Fasanya, Onakoya and Agboluaje (2013) tested the effect of monetary policy on economic growth, the use of time-series statistics overlaying the length 1975-2010. The consequences of stochastic shocks of every of the endogenous variables have been explored the use of Error Correction Model (ECM). Findings revealed a long term relationship of many variables. Also, the center locating of the look at indicates that inflation price, alternate price and outside reserve are sizable monetary policy tools that power growth in Nigeria. Literature is inconclusive concerning the effect of monetary policy on economic growth. Whereas Keynesians argue that monetary policy is useless in impacting on economic growth, Monetarists are of the view that adjustments in monetary policy will affect economic growth. Various research

provide exceptional effects because of variations in countries looked at, term and technique used.

Khosravi and Karimi (2010) studied the connection among monetary policy, and economic growth in Iran for the length 1960 to 2006 the use of Autoregressive Distributed Lag (ARDL) cointegration technique and that they discovered out that the effect of alternate price and inflation on growth turned terrible, however government expenditure turned into discovered to have a sizable positive effect on growth.

Bagunjoko, (1997) investigated the performance of monetary policy as a stabilization device, the use of changed stlouise version statistics overlaying the length of 1970 to 1993, the study discovered that monetary issues in Nigerian economic system, and an appropriate economic goal is the domestic credit value of the banking sector

Olawunmi and Tajudeen (2007) used solow growth version and ordinary least squares approach in reading the effect of monetary policy at the Nigerian economical growth among 1981 and 2004, they discovered out that there's no sizable effect of monetary policy variables on economic growth in Nigeria.

Chimobi and Uche, (2010) tested the connection among Money, Inflation and Output in Nigeria. The look at followed co-integration and granger causality check evaluation. The co-integrating end result of the look at confirmed that the variables used in the version exhibited no long term relationship amongst each other. Nevertheless money supply was seen to granger purpose each output and inflation.

The end result of the study cautioned that monetary policy can make a contribution toward price balance in the Nigerian economic system because the variant in price

level is in particular as a result of money supply and concluded that inflation in Nigeria is to an volume a economic phenomenon. The Error Correction Mechanism and Cointegration approach turned into hired via way of means of (Adefeso and mobolaji, 2010) estimate the relative effectiveness of monetary and monetary policy on economic growth in Nigeria the use of annual statistics from 1970-2007. The empirical end result confirmed that the impact of monetary policy is more potent than monetary policy and the exclusion of the diploma of openness did now no longer vulnerable this conclusion (Jelilov, 2015).

Orji (2014) tested the efficacy of monetary policy in making sure price balance the use of client price index and inflation price as price degree in Nigeria. The evaluation used statistics from 1980 – 2004 and carried out the Ordinary Least Squares (OLS) strategies. The look at effects studies viewed that best money supply and domestic credit sector has sizable consequences on client price index for this reason for economic authority to obtain its goal of price balance, its regulations ought to be geared toward concentrated on the client fee index, which stays a feasible degree for fee balance in Nigeria.

Udah (2015) in his studies at the economic coverage and macroeconomic control used 3SLS estimation approach in addition to executed policy simulation test to research how economic variables have interaction with aggregate supply, demand for expenses which will resource stabilization regulations. The effects display that economic variables and authorities finance is related thru the authorities's internet indebtedness to the banking gadget. The simulation effects display that a 20 percentage economic squeeze could lessen inflation price quicker than if the discount in cash deliver have been 10 percentage. This discount in cash deliver additionally ends in a discount in output, employment and government expenditure, which might

also additionally harm the domestic economic system. Thus, the study concludes that there's a change-off among excessive GDP growth and inflation in Nigeria.

Chukwu (2015) executed a managed test the use of a structural vector autoregressive (SVAR) version to hint the consequences of economic policy shocks on output and expenses in Nigeria. They made the belief that the Central Bank can not examine sudden adjustments in output and expenses in the identical length. This locations a recursive limit at the disturbances of the SVAR. They carried out the test the use of 3 opportunity coverage gadgets i.e. huge money (M2), Minimum Rediscount Rate (MRR) and the actual powerful alternate price (REER). Overall, they discovered proof that monetary policy improvements executed on the amount-primarily based totally nominal anchor (M2) has modest consequences on output and expenses with a completely speedy pace of adjustment.

While, improvements at the price,primarily based totally nominal anchors (MRR and REER) have impartial and fleeting consequences on output. They concluded that the manipulation of the amount of money (M2) in the economic system is the maximum influential tool for economic coverage implementation. Hence, they advocated that relevant bankers ought to location greater emphasis on the usage of the amount-primarily based totally nominal anchor instead of the fee-primarily based totally nominal anchors

2.5 Gaps in Literature

The conclusion of the above review is that, while there is a large body of literature on the money supply impact in Nigeria, many of them are limited to either exchange rate or interest rate's impact on growth. Only a few have taken both into account, as well as monetary policy, and their impacts on growth in Nigeria. Moreover, the

money -supply literature have not been updated to more recent years. This study, thus, fills this gap

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter focuses on the methodology employed to attain the objectives of the study. In particular, the theoretical framework and various methodological issues entailed in the analysis of the study are discussed. It contains the model specification, definition and measurement of variables with their sources as well as the estimation technique.

3.2 Theoretical Framework

The theory used for this study is the Keynes Theory of Growth, According to J.M Keynes (1976), “an increase in the quantity of money increases aggregate money demand on investment as a result of the fall in the rate of interest”. The increase in investment will raise effective demand through the multiplier effect thereby increasing income, output and employment. Therefore, when there is full employment, an increase in income and output, price will change in the same proportion as the quantity of money (Jhingan, 2003). This theory deals with the short run economy, which tends towards the area of macroeconomics but has contributed greatly to monetary economics.

Keynes believed in the existence of unemployment equilibrium. This implies that an increase in money supply can bring about permanent increases in the level of output. This rise in supply of money, its first effect is on the rate of interest which tends to fall. Given the marginal efficiency of capital, a fall in the rate of interest will increase investment. The increased investment will raise effective demand through the multiplier effect thereby increasing income, output and employment.

The rate of interest is determined by the demand for and supply of money. If either the demand for money or the supply of money changes the equilibrium rate of interest would change. The supply of money is determined by the monetary authority which is normally fixed in the short-run. In other words, the money supply curve is perfectly inelastic. The demand for money is the desire to hold cash for transaction, precautionary and speculative purposes. The speculative demand for money depends upon the rate of interest or bond prices.

Thus Keynes believed on the basis of his experience that monetary policy operated under certain limitations upon which its effectiveness depends on first, if the increase in supply of money reduces the rate of interest provided the demand for money does not become infinite (i.e. Perfectly elastic), and second, the reduction in the rate of interest increases investment demand provided it is not inelastic to the rate of interest becomes ineffective.

3.3 Model Specification

In order to achieve objective one, to determine the impact of monetary policy on economic growth, adapting the work of Okoro (2013) that stated economic growth is a function of money supply, the study will estimate the following equation:

$$GDP=f(MS).....(1)$$

Where GDP and MS are Gross domestic product and Money Supply. According to the equation, the gross domestic product depends on Money Supply. The theoretical and empirical literature point to a important number of variables to be considered including Level of Bank Reserve, Open Market Operations, Required Reserve Ratio.

$$GDP=f(LBL,OM,RRR).....(2)$$

Convert equation to econometric model, we have

$$\ln GDP_t = \beta_0 + \beta_1 \ln LBL_t + \beta_2 \ln OMO_t + \beta_3 \ln RRR_t + \epsilon_t \dots\dots\dots(3)$$

Apriori Expectation: $\beta_1 < 0, \beta_2 < 0, \beta_3 > 0, \beta < 0$.

To achieve objective two of this study, to determine the effect on interest rate on economic growth, using review on interest rate by CBN(2007) where they reviewed and found out that economic growth is a function of interest rate which will be estimated in the following equation:

$$GDP = f(INR) \dots\dots\dots (4)$$

It shows that the gross domestic product depends on the interest rate. Also in the theory, the CBN, Credit Rate, and Loan Terms, Money Supply and Inflation are considered to be part of the changes in variables either positively or negatively.

$$GDP = f(MS, INF, LT) \dots\dots\dots(5)$$

Convert equation to econometric model, we have

$$\ln GDP_t = \beta_0 + \beta_1 \ln CBN_t + \beta_2 \ln CR_t + \beta_3 \ln LT_t + \epsilon_t \dots\dots\dots(6)$$

Apriori Expectation: $\beta_1 < 0, \beta_2 < 0, \beta_3 > 0, \beta < 0$.

In order to achieve objective three of the study, which is to investigate the impact of exchange rate on economic growth. The study comes from Adedoyin(2016), which adopts that economic growth is a function of exchange rate. Also in this aspect. Inflation Rate, Government Policy and Terms of Trade are considered changes in Variables positively or negatively.

$$GDP = f((INF, GP, TOT) \dots\dots\dots (7)$$

Convert equation to econometric model we have

$$\ln GDP_t = \beta_0 + \beta_1 \ln IR_t + \beta_2 \ln GP_t + \beta_3 \ln TOT_t + \epsilon_t \dots\dots\dots(8)$$

Apriori Expectation: $\beta_1 < 0, \beta_2 < 0, \beta_3 > 0, \beta < 0$.

3.4 Sources of Data Collection

The study made use of secondary data sourced majorly from the publications of Central Bank of Nigeria (CBN) Statistical Bulletin, World Development Indicators (WDI 2020). The specific sources are highlighted in the table below;

TABLE 1.1

| VARIABLES | SOURCES | DEFINITIONS | MEASUREMENT |
|------------------|----------------|--|---------------------------------------|
| GDP | WDI(2020) | Gross domestic product is a measure of the market value of all the final goods and services produced in a specific periodic time usually measured by the sum of what is produced in the economy. | Gross Domestic Product in (N billion) |
| MS | WDI(2020) | The total availability of money, or working money, in the economy | MS (%) of GDP |
| BR | WDI(2020) | Bank Reserves are the cash minimum financial institution must have to meet the central bank requirements | BR (%) of MS |
| RR | WDI(2020) | Reserve assets are those external assets that are readily available to and controlled by monetary | RR (%) of MS |

| | | | |
|-----|-----------|--|--|
| | | <p>authorities for meeting balance of payments financing needs, and include holdings of monetary gold, special drawing rights (SDRs), reserve position in the International Monetary Fund (IMF), and other reserve assets. Also included are net credit and loans from the IMF (excluding reserve position) and total exceptional financing.</p> | |
| INR | NBS(2020) | <p>Interest rate is the percentage amount a lender charges the borrower in principal</p> | <p>% of interest returns (of amount borrowed)</p> |
| EXR | WDI(2020) | <p>.Exchange Rate is the value of one nations currency over the value of another</p> | <p>Bilateral exchange rate (currency relativity)</p> |
| INF | WDI(2020) | <p>Inflation refers to the persistence increase in the general prices of goods and services in the economy usually measured by the consumer</p> | <p>CPI (Consumer Price Index)</p> |

| | | | |
|-----|-----------|---|---|
| | | price index. | |
| TOT | WDI(2020) | Terms of Trade is the Ratio between Government Import and Export Prices | Price of Export / price of Import * 100 |

3.5 Estimation Techniques

3.5.1 Unit Root

The need to test for the existence of unit roots to prevent the issue of spurious regression was stressed in the literature when debating stationary and non-stationary time series. If a variable is found to have a unit root, it is non-stationary, and if it does not combine to form a stationary co-integration relationship with other non-stationary series, then regressions involving these series falsely imply a meaningful economic relationship (Harris and Sollis, 2003). Therefore, unit root testing was performed to determine whether the variables are stationary or not using the Phillips-person unit root test to ascertain the unit root properties of the time series data employed in the study. The PP test builds on the Dickey-Fuller test, that is, the null of unit root existence states the information sequence under review has unit root while the alternative hypothesis says the series is stationary, but it proposes a non parametric approach, which is applicable on wider categories of time series.

3.5.2 Lag Length

Furthermore, determining the lag length of the ARDL model is a vital element in the specification of the ARDL models. Braun and Mittnik (1993) showed the functions of the impulse response and the variance decomposition derived from the estimated VAR are inconsistent when the lag length differs from the true length. In order to select the appropriate lag length, the information criteria such as the Hannan-Quinn Information Criteria (HQ), the Akaike Information Criteria (AIC), the Schwarz Information Criteria (SIC), the Log Likelihood (LL) and the Final Prediction Error (PPE) was therefore considered following the literature.

3.5.3 Co-integration Test

The first step after stationary examines the presence of co-integration using the bound tests. Compared to other co-integration, procedures, this method has certain econometric advantages including its relevance of the degree of inclusion of the factors,, the models long run and short run parameters are estimated are estimated at the same time as it takes into account the lagged period of error correction and for tiny sample sizes, the ARDL strategy is more robust and works better. The method adopted for this estimating data is the Ordinary Least Square method (OLS) regression technique for the estimation of the relationship among the variables. Prior to the estimation of the relationship, Auto-regressive Distributed Lag Model is used for the estimation of the level of relationships because the model suggests that once the order of the ARDL is determined the relationship can be estimated, a simple Ordinary Least Square (OLS) method can be used to estimate the co-integration relationship. In view of the above explanation, for objective one the ARDL version of the model is expressed as:

To achieve Objective 1 :

$$\begin{aligned} \Delta \ln GDP_t = & \alpha_0 + \sum_{i=1}^a \alpha_{1i} \Delta \ln GDP_{t-i} \\ & + \sum_{i=0}^b \alpha_{2i} \Delta \ln MS_{t-i} + \sum_{i=0}^c \alpha_{3i} \Delta \ln LBR_{t-i} \\ & + \sum_{i=0}^d \alpha_{4i} \Delta \ln OMO_{t-i} + \sum_{i=0}^e \alpha_{5i} \Delta \ln LRR_{t-i} + \beta_1 \ln GDP_{t-1} + \beta_2 \ln MS_{t-1} + \\ & \beta_3 \ln LBR_{t-1} + \beta_4 \ln OMO_{t-1} + \beta_5 \ln LRR_{t-1} + \epsilon_t \dots \dots \dots (10) \end{aligned}$$

where, Δ denotes the first difference operator, α_0 the drift component and ϵ_t is the white noise error term. The β 's corresponds to the long run effects where as α 's captures the short run dynamics of the model. Thus, from equation (9) in applying the co-integration test the study test the null hypothesis of co-integration $H_0 : \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = 0$ against the alternative hypothesis $H_1 : \beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq \beta_5 \neq 0$.

To achieve objective 2 :

$$\begin{aligned} \Delta \ln GDP_t = & \theta_0 + \sum_{i=1}^a \theta_{1i} \Delta \ln GDP_{t-i} + \sum_{i=0}^b \theta_{2i} \Delta \ln INR_{t-i} + \sum_{i=0}^c \theta_{3i} \Delta \ln MS_{t-i} \\ & + \sum_{i=0}^d \theta_{4i} \Delta \ln INF_{t-i} + \sum_{i=0}^e \theta_{5i} \Delta \ln LT_{t-i} + \lambda_1 \ln GDP_{t-1} + \lambda_2 \ln INR_{t-1} \\ & + \lambda_3 \ln MS_{t-1} + \lambda_4 \ln INF_{t-1} + \lambda_5 \ln LT_{t-1} + \epsilon_t \dots \dots \dots (11) \end{aligned}$$

Where, Δ denotes the first difference operator, θ_0 is the intercept or drift component and ϵ_t is the white noise error term. The λ 's correspond to the long run effects where as θ 's capture the short run dynamics of the model. From equation (10), in applying co-integration tests the study test the null hypothesis of no integration $H_0 : \lambda_1 = \lambda_2 = \lambda_3 = \lambda_4 = \lambda_5 = 0$ against the null hypothesis $H_1 : \lambda_1 \neq \lambda_2 \neq \lambda_3 \neq \lambda_4 \neq \lambda_5 \neq 0$

To achieve objective 3:

$$\begin{aligned}
\Delta \ln GDP_t &= \theta_0 + \sum_{i=1}^a \theta_{1i} \Delta \ln GDP_{t-i} + \sum_{i=0}^b \theta_{2i} \Delta \ln ER_{t-i} + \sum_{i=0}^c \theta_{3i} \Delta \ln IR_{t-i} \\
&+ \sum_{i=0}^d \theta_{4i} \Delta \ln GP_{t-i} + \sum_{i=0}^e \theta_{5i} \Delta \ln TOT_{t-i} + \lambda_1 \ln GDP_{t-1} + \lambda_2 \ln ER_{t-1} \\
&+ \lambda_3 \ln IR_{t-1} + \lambda_4 \ln GP_{t-1} + \lambda_5 \ln TOT_{t-1} + \epsilon_t \dots\dots\dots(12)
\end{aligned}$$

(Where, Δ denotes the first difference operator, θ_0 is the intercept or drift component and ϵ_t is the white noise error term. The λ 's correspond to the long run effects where as θ 's capture the short run dynamics of the model. From equation (10), in applying co-integration tests the study test the null hypothesis of no integration H_0 : $\lambda_1 = \lambda_2 = \lambda_3 = \lambda_4 = \lambda_5 = 0$ against the null hypothesis H_1 : $\lambda_1 \neq \lambda_2 \neq \lambda_3 \neq \lambda_4 \neq \lambda_5 \neq 0$

The calculated F-statistics is compared to the critical value. If the F-statistics value lies above the upper bound of critical values, the null hypothesis is rejected. If the F-statistics value falls below the lower bound of critical value, the critical value would not be rejected that is, there is no long-run relationship among the variables, however, if the F-statistic value lies within the bound test the result is inconclusive.

CHAPTER FOUR

PRESENTATION AND DISCUSSION OF RESULTS

4.1 Introduction

The analysis of this chapter is divided into six sections. Section 4.2 contains the results of the unit root , lag length selection criteria and co-integration tests. Section 4.3 depicts the empirical results of the impact of monetary policy on economic growth Section 4.4 reveals the empirical results on the effect of monetary policy on interest rate Section 4.5 shows the empirical results on the impact of monetary policy on exchange Rate section 4.6 presents the discussion of results.

4.2 Results of Unit Roots, Lag Length Selection Criteria and Co-integration Tests

4.2.1 Unit Root Test Results

The study applied the unit root test techniques to examine the time series of the concerned variables using both Augmented Dickey-Fuller (ADF) test and the Phillip and Perron (PP) test. This is important because most macroeconomics time series show a non-stationary behavior leading to false result of appropriate measures not taken. The ADF and PP results are presented in tables 4.1 and 4.2 and reveals all the variables that were not stationary at level form, there by leading to the test of the first difference. The time series data is characterized with different orders of integration a mixture of $I(0)$ and $I(1)$. A closer look at table 4.2.1 shows that in the case of the (ADF) test, for intercept only the all the variables are stationary at first difference (i.e $\ln br$, $\ln rr$, $\ln inf$) since their ADF values (test statistic) is less than the critical values at 5 percent for levels and greater than the critical values at 5 percent at first

difference implying that they are integrated of order one $I(1)$ while ($\ln gdp$, $\ln ms$, $\ln nr$ and $\ln tot$) were stationary at levels that is they are integrated of order zero $I(0)$ which is similar to that of the Phillip and Perron (PP) for intercept only which can be seen in table 4.2.2 The result of the ADF test for trend and intercept, results from table 4.1 shows that all the variables (i.e $\ln br$, $\ln rr$, $\ln exr$, $\ln inf$) were stationary at first difference which depicts that they are integrated of order one $I(1)$ while ($\ln gdp$, $\ln ms$, $\ln nr$ and $\ln tot$) are stationary at levels which shows that they are integrated of order zero $I(0)$. As regards the PP test for trend and intercept, results from table 4.2 reveals that all the variables ($\ln rr$, $\ln br$, $\ln exr$, $\ln inf$) were stationary at first difference meaning they are integrated of order one $I(1)$ while ($\ln rgdp$, $\ln ms$, $\ln nr$ and $\ln tot$) were stationary at levels which is they are integrated of order zero $I(0)$

TABLE 4.1 Augumented Dicky Fuller Test Results

| Augumented Dickey-Fuller Test (intercept only) | | | | | | | | | | | | |
|--|------------------|-----------------|---------|---------|----------|---------|------------------|-----------------|---------|---------|--------|---------|
| Variable | Level | | | | | | First difference | | | | | |
| | ADF Statistic | Critical values | | | Prob. | Remarks | ADF Statistic | Critical Values | | | Prob. | Remarks |
| | | 1% | *5% | 10% | | | | 1% | *5% | 10% | | |
| RGDP | -5.6295 | -3.571 | -2.9225 | -2.5992 | 0.000001 | I(0) | -5.6532 | 4.1567 | -3.5043 | -3.1818 | 0.0000 | I(1) |
| lnMS | -2.0552 | -3.5731 | -2.9225 | -2.5992 | 0.045443 | I(0) | 2.4057 | -4.1567 | -3.5043 | -3.1818 | 0.0648 | I(1) |
| lnBR | -1.3696 | 3.6105 | -2.9390 | -2.6079 | 0.001155 | I(0) | -4.2375 | -4.1865 | -3.5181 | -3.1897 | 0.0002 | I(1) |
| lnRR | -6.2773 | -3.5745 | -2.9238 | -2.5993 | 0 | I(0) | -6.5286 | -4.1611 | -3.5667 | -3.1830 | 0.0000 | I(1) |
| lnINR | -5.4875 | -3.5713 | -2.9225 | -2.5992 | 0.000002 | I(0) | -6.1379 | -4.2050 | -3.5266 | -3.1946 | 0.0000 | I(1) |
| lnEXR | 0.0890 | -3.5131 | -2.9225 | -2.5993 | 0.929459 | I(0) | -1.9691 | -4.1567 | -3.5043 | -3.1815 | 0.1011 | I(1) |
| lnINF | -3.7920 | -3.5745 | -2.9238 | -2.5993 | 0.00192 | I(0) | -4.9414 | -4.1611 | -3.5064 | -3.1830 | 0.0002 | I(1) |
| lnTOT | -0.0242 | -3.5713 | -2.9225 | -2.5992 | 0.809705 | I(0) | 1.2361 | -4.1567 | -3.5043 | -3.1818 | 0.3027 | I(1) |

| Augumented Dickey-Fuller Test (Intercept and Trend) | | | | | | | | | | | | |
|---|------------------|-----------------|--------|---------|-------|---------|------------------|-----------------|----------|--------|-------|---------|
| Variable | Level | | | | | | First difference | | | | | |
| | ADF statistic | Critical values | | | Prob. | Remarks | ADF Statistic | Critical values | | | Prob. | Remarks |
| | | 1% | *5% | 10% | | | | 1% | *5% | 10% | | |
| RGDP | -10.626 | -3.574 | -2.924 | -2.5999 | 0 | I(0) | -10.355 | -4.171 | -3.51074 | -3.186 | 0 | I(1) |
| lnMS | -7.2799 | 3.5745 | 2.9238 | -2.5993 | 0 | I(0) | -7.19879 | -4.161 | -3.50637 | -3.183 | 0 | I(1) |
| lnBR | -4.7841 | -3.61 | -2.939 | -2.6079 | 0 | I(0) | -4.96866 | -4.212 | -3.52976 | -3.196 | 0 | I(1) |
| lnRR | -7.2311 | 3.5812 | -2.601 | -2.6014 | 0 | I(0) | -7.1437 | -4.171 | -3.57074 | -3.186 | 0 | I(1) |
| lnINR | -4.8396 | -3.61 | -2.939 | -2.608 | 0 | I(0) | -9.78374 | -4.212 | -3.52976 | -3.196 | 0 | I(1) |
| lnEXR | -6.4202 | -3.574 | -2.924 | -2.5999 | 0 | I(0) | -6.4527 | -4.161 | -3.50857 | -3.183 | 0 | I(1) |
| lnINF | -7.0603 | -3.577 | -2.925 | 2.60066 | 0 | I(0) | -6.98157 | -4.166 | -3.50857 | -3.184 | 0 | I(1) |
| lnTOT | -6.8758 | -3.574 | -2.924 | -2.5993 | 0 | I(0) | -6.93655 | -4.161 | -3.50637 | -3.183 | 0 | I(1) |

Source: Author's Computation using Eviews 10 (2021)

Table 4.2 Phillip Perron Test Results

| Phillips-Perron Test (intercept only) | | | | | | | | | | | | | |
|---------------------------------------|----------|---------|-----------------|---------|--------|------------------|----------|---------|---------|-----------------|--------|------|-------|
| Variable | Level | | | | | First difference | | | | | | | |
| | P-VALUE | | Critical values | | | Prob. | Remarks | P-VALUE | | Critical Values | | | Prob. |
| 1% | *5% | 10% | 1% | *5% | 10% | | | 1% | *5% | 10% | | | |
| RGDP | -11.7200 | -3.5744 | -2.9238 | -2.5993 | 0.0000 | I(0) | -24.9496 | -3.5777 | -2.9252 | -2.6007 | 0.0000 | I(1) | |
| lnMS | -7.3850 | -3.5745 | -2.9238 | -2.5993 | 0 | I(0) | -46.3798 | -3.5777 | -2.9252 | -2.6007 | 0 | I(1) | |
| lnBR | -7.0804 | -3.5745 | -2.9238 | -2.5993 | 0 | I(0) | -28.6824 | -3.5777 | -2.9252 | -2.6007 | 0.0000 | I(1) | |
| lnRR | -38.6920 | -3.5745 | -2.9238 | -2.5993 | 0 | I(0) | -14.3333 | -3.5777 | -2.9252 | -2.6007 | 0.0000 | I(1) | |
| lnINR | -38.6920 | -3.5745 | -2.9238 | -2.5993 | 0.0000 | I(0) | -64.1926 | -3.5777 | -2.9252 | -2.6007 | 0.0000 | I(1) | |
| lnEXR | -6.4192 | -3.5745 | -2.9238 | -2.5993 | 0.0000 | I(0) | -27.6612 | -3.5777 | -2.9252 | -2.6007 | 0 | I(1) | |
| lnINF | -13.3730 | -3.5745 | -2.9238 | -2.5993 | 0 | I(0) | -32.5699 | -3.5777 | -2.9252 | -2.6007 | 0 | I(1) | |
| lnTOT | -6.8757 | -3.5745 | -2.9238 | -2.5993 | 0 | I(0) | -27.8075 | -2.9252 | -2.9252 | -2.6007 | 0.0000 | I(1) | |

| Phillips-Perron Test (Intercept and Trend) | | | | | | | | | | | | | |
|--|----------|---------|-----------------|---------|--------|------------------|----------|---------|---------|-----------------|--------|------|-------|
| Variable | Level | | | | | First difference | | | | | | | |
| | P-VALUE | | Critical values | | | Prob. | Remarks | P-VALUE | | Critical values | | | Prob. |
| 1% | *5% | 10% | 1% | *5% | 10% | | | 1% | *5% | 10% | | | |
| RGDP | -11.7200 | -3.5744 | -2.9238 | -2.5993 | 0.0000 | I(0) | -24.9496 | -3.578 | -2.9252 | -2.6007 | 0 | I(1) | |
| lnMS | -7.385 | -3.5745 | -2.9238 | -2.5993 | 0 | I(0) | -46.3798 | -3.578 | -2.9252 | -2.6007 | 0.0000 | I(1) | |
| lnBR | -7.0804 | -3.5745 | -2.9238 | -2.5993 | 0 | I(0) | -28.6824 | -3.578 | -2.9252 | -2.6007 | 0.0000 | I(1) | |
| lnRR | -38.6920 | -3.5745 | -2.9238 | -2.5993 | 0.0000 | I(0) | -14.3333 | -3.578 | -2.925 | -2.9252 | 0 | I(1) | |
| lnINR | 6.4190 | -3.5745 | -2.9238 | -2.5993 | 0 | I(0) | -64.1926 | -3.578 | -2.9252 | -2.9252 | 0 | I(1) | |
| lnEXR | -6.4190 | -3.5745 | -2.9238 | -2.5993 | 0 | I(0) | 27.6612 | -3.578 | -2.9252 | -2.9252 | 0 | I(1) | |
| lnINF | -13.3730 | -3.5745 | -2.9238 | -2.5993 | 0 | I(0) | -32.5699 | -3.578 | -2.9252 | -2.6007 | 0.0000 | I(1) | |
| lnTOT | -6.8757 | -3.5745 | -2.9238 | -2.5993 | 0 | I(0) | -27.8075 | -27.81 | -2.9252 | -2.6007 | 0.0000 | I(1) | |

Source: Author's Computation using Eviews 10 (2021)

4.2.2 Results of Lag Order Selection Criteria

After the stationary conditions of the variables employed have been determined it is important to determine the lag length before the evaluation of the ARDL equations (7,8 and 9), it is necessary to determine the appropriate lag length so as to avoid problems of misspecification and loss of degrees of freedom. Following the literature, VAR lag order selection criteria attributed to Hannan-Quinn information criteria (HQ), Final Prediction Error (FPE), Log Likelihood (LL), Akaike information criteria (AIC) and the Schwarz information criteria (SC) were considered. The result presented in table 4.3. , 4.4, 4.5 which shows the optimum lag structure for the VAR for objectives 1,2 and 3. As can be observed from table 4.3., 4.4, 4.5 the results show that all selection criteria selected the optimum lag length of 1 for ARDL model (7) and also selected the optimum lag length of 1 for ARDL model (8) and selected a similar optimum lag length of 1 for ARDL model (9). Therefore, the lag length order 1 were carefully chosen for the three models.

Table 4.3: Optimal VAR Lag Selection Results for Impact Of Money Supply on Economic Growth.

| LAG LENGTH CRITERIA SELECTION FOR OBJECTIVE ONE | | | | | | |
|---|----------|-----------|------------|-----------|-----------|------------|
| Lag | LogL | LR | FPE | AIC | SC | HQ |
| 0 | -1657.4 | NA | 1.36E+25 | 69.22542 | 69.38135 | 69.28435 |
| 1 | -1543.94 | 203.3084 | 2.35E+ 23 | 65.16399 | 65.94365* | 65.458622* |
| 2 | -1523.86 | 32.62296* | 2.02e+ 23* | 64.99417* | 66.39757 | 65.52451 |

Source: Author's Computation using Eviews 10 (2021)

- ✓ * indicates lag order selected by the criterion
- ✓ LR: sequential modified LR test statistic (each test at 5% level)
- ✓ FPE: Final prediction error
- ✓ AIC: Akaike information criterion
- ✓ SC: Schwarz information criterion
- ✓ HQ: Hannan-Quinn information criterion

Table 4.4: Optimal VAR Lag Selection Results for Effect of Interest Rate on Economic Growth

| LAG LENGTH CRITERIA SELECTION FOR OBJECTIVE TWO | | | | | | |
|---|---------|-----------|----------|-----------|-----------|----------|
| Lag | LogL | LR | FPE | AIC | SC | HQ |
| 0 | -686.9 | NA | 37351961 | 28.78738 | 28.94331 | 28.84631 |
| 1 | -627.21 | 106.9447* | 6067682 | 26.96696* | 27.74663* | 27.2616* |
| 2 | -613.1 | 22.93223 | 6662949 | 27.04562 | 28.44902 | 27.57597 |

Source: Author's Computation using Eviews 10 (2021)

- ✓ * indicates lag order selected by the criterion
- ✓ LR: sequential modified LR test statistic (each test at 5% level)
- ✓ FPE: Final prediction error
- ✓ AIC: Akaike information criterion
- ✓ SC: Schwarz information criterion
- ✓ HQ: Hannan-Quinn information criterion

Table 4.5: Optimal VAR Lag Selection Results for Impact of Exchange Rate on Economic Growth.

| LAG LENGTH CRITERIA SELECTION FOR OBJECTIVE THREE | | | | | | |
|---|----------|------------|-----------|----------|-----------|-----------|
| Lag | LogL | LR | FPE | AIC | SC | HQ |
| 0 | -2088.73 | NA | 8.70E+32 | 87.19702 | 87.35296 | 87.25595 |
| 1 | -951.37 | 9246.1015* | 5.55E+30* | 82.1404* | 82.92007* | 82.43504* |
| 2 | -1938.94 | 20.1993 | 6.54E+30 | 82.28913 | 83.69254 | 82.81948 |

Source: Author's Computation using Eviews 10 (2021)

- ✓ * indicates lag order selected by the criterion
- ✓ LR: sequential modified LR test statistic (each test at 5% level)
- ✓ FPE: Final prediction error
- ✓ AIC: Akaike information criterion
- ✓ SC: Schwarz information criterion
- ✓ HQ: Hannan-Quinn information criterion

4.2.3 Results of Bound Test Approach to Cointegration

Having determined the optimal lag length, the next step is to determine the cointegration relationship among the variables. The study applied bound F-statistics to equations 7,8 and 9 in order to establish the cointegration relationship among the variables. Due to the limitations of the conventional Wald-test F-statistics, Pesaran and Shin (1995, 1998) suggested two critical values (lower and upper bound) to examine the relationship. If the computed F-statistic is lower than the lower bound $I(0)$ the null is not rejected but if the computed F-statistic is greater than the upper bound $I(1)$ it implies that there exists a long run relationship among the variables. However, if the computed F-statistics lies between the lower bound and upper bound the long run association between the variables are inconclusive.

The Results are thus, for objective 1 the Computed F statistics(4.607613) is greater than higher bound at 5% (3.67) , so there is a long run relationship, for Objective 2 Computed F- statistics (9.362968) is higher than higher bound at 5%, so there is a long run relationship, while objective 3 computed F statistics (7.484735) is higher than higher bound at 5% (3.67) so there is a valid long run relationship.

Table 4.6: Results Bound Test to Cointegration for Impact of Money Supply on Economic Growth

| Significance | Critical value Bonds | | Computed F-statistics |
|--------------|----------------------|-------------------|-----------------------|
| | Lower Bound I(0) | Higher Bound I(1) | |
| 10% | 2.37 | 3.2 | 4.607613 |
| 5% | 2.79 | 3.67 | |
| 2.50% | 3.15 | 4.08 | |
| 1% | 3.65 | 4.66 | |

Source: Author's Computation using Eviews 10 (2021)

Table 4.7: Results Bound Test to Cointegration for Effect of Interest Rate on Economic Growth

| Significance | Critical value Bonds | | Computed F-statistics |
|--------------|----------------------|-------------------|-----------------------|
| | Lower Bound I(0) | Higher Bound I(1) | |
| 10% | 2.37 | 3.2 | 9.362968 |
| 5% | 2.79 | 3.67 | |
| 2.50% | 3.15 | 4.08 | |
| 1% | 3.65 | 4.66 | |

Source: Author's Computation using Eviews 10 (2021)

Table 4.8: Results Bound Test to Cointegration for Impact of Exchange Rate on Economic Growth

| Significance | Critical value Bonds | | Computed F-statistics |
|--------------|----------------------|-------------------|-----------------------|
| | Lower Bound I(0) | Higher Bound I(1) | |
| 10% | 2.37 | 3.2 | 7.484735 |
| 5% | 2.79 | 3.67 | |
| 2.50% | 3.15 | 4.08 | |
| 1% | 3.65 | 4.66 | |

Source: Author's Computation using Eviews 10 (2021)

4.3 Empirical Results on the Impact of Money Supply on Economic Growth

4.3.1 Long Run Impact of Money Supply on Growth

Having determined the existence of a long run equilibrium, the long run coefficients elasticities and short run coefficients elasticities are estimated. The estimated long-run dynamics of the selected ARDL (1,0,1,0,0) model along with the short-run coefficients for objective 1 are presented in tables 4.3.1

The result of the long run effects of objective 1 is presented in table 4.3.1, an examination of the result in table 4.3.1 shows that on the part of individual significance of each explanatory variables, as can be observed the long run equilibrium relationship between money supply and economic growth is positive (0.473333), and the relationship between them is statistical as shown by the t-statistic (0.225202) and the prob. value (0.0418), and in the last year a negative and insignificant t stat value at (-2.5255) and positive and significant prob value at(0.0155) . (0.47333) shows theres a positive relationship between bank rate and economic growth , and there is no statistical relationship between relationship between them as its less than 1.5 (0.035612) and there is probability relationship between them as its greater than 0.5 (0.0947).

The analysis also shows there is a negative relationship between reserves and economic growth (-3.3E-08) and there is no T statistical relationship between them (-0.223988) and there is no probability relationship as its not less than or equals to 0.05 (0.8239) . By implication none of the independent variables table 4.3.1 is statistically significant.

Since Money supply is Controlled by Bank Reserves and Reserves in Reserve , a 1 % increase in Bank reserves will bring about 0.0609 increase in gdp and , and Required Reserves a (-3.3E-08) decrease in economic growth.

The R^2 , the adjusted R^2 , the F-statistic and the Durbin-Watson statistic for the selected model is shown in the panel B of the table 4.9. As observed from the result presented, the explanatory power (R^2) of the model is low (0.266388) In essence, the proportion of variation in economic growth measured by real GDP that is jointly explained by money supply, interest rate, and exchange rate is about 26% while 74% of the changes in real GDP can be attributed to other factors not included in the regression equation.

The Adjusted R^2 that is the proportion of variation in economic growth measured by real GDP that is jointly explained by the explanatory variables after the effect of insignificant repressor has been removed is about 15% while the other 85% was unaccounted for.

The F-statistic which is used to measure the overall significance of the estimated model is significant at 2.48131 with probability value $p = 0.038587$. Indeed, there is a re-enforcement of the goodness of fit. This suggests that the rate of natural increase in are money supply, interest rate, and exchange rates are insignificant determinants of economic growth in Nigeria.

Besides, the Durbin-Watson statistic which is to test for autocorrelation of residuals in the model, in particular, the first order autocorrelation indicates the absence of serial autocorrelation at 2.078998.

4.3.2 Short Run Effect of Money Supply on Economic Growth

The results in table 4.32 below present the estimated short run impact of money supply on economic growth. As can be observed, it is evident that the coefficient of the error correction term for the estimated equation is negative and statistically significant. In essence, the speed adjustment implied by the correction term suggests that the deviation from short run to long run is corrected by -2.979206 percent per each year. Therefore, there is stable long run relationship among GDP, money supply, and reserves. Similarly, the estimated short run model revealed that it is similar to its significant long run.

Precisely, the results depicts that money supply has a negative and significant relationship with economic growth, hereby confirming the apriori expectation. Hence, a one percent increase in money supply will lead to a increase of 0.072595 percent in economic growth. Implying that, increase in money supply lead to increase of economic growth in Nigeria. This results is identical with the work of Oladele (2015).

While the coefficient of bank reserves of the previous year depicts a positive insignificant relationship with economic growth. However, the estimated short run model revealed that its significant long run. The estimated long run shows a positive insignificant relationship while the short run resulted in a negative insignificant relationship. This implies that an increase of one percent in bank reserves from previous years will lead to a increase of 0.94379 percent in economic growth, contrary to the findings of Omotayo (2017).

While the coefficient of required reserves of the previous year depicts a positive insignificant relationship with economic growth. However, the estimated short run

model revealed that its different the insignificant long run. The estimated long run shows a negative insignificant relationship while the short run resulted in a positive insignificant relationship. This implies that an increase of one percent in required reserves from previous years will lead to a decrease of $(4.63E-11)$ percent in economic growth, contrary to the findings of Maluwa(2010).

4.3.1 Long Run Impact of Money Supply on Economic Growth

| Regressand: DRGDP | | | | |
|--|-------------|------------|-------------|--------|
| Panel A: Long Run Coefficients | | | | |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| C | 3.5820 | 2.5282 | 1.4168 | 0.1641 |
| LNRGDP(-1) | 0.1643 | 0.1409 | 1.1663 | 0.2502 |
| LNGDP (-2) | 0.1779 | 0.1231 | 1.4445 | 0.1562 |
| LBMS | 0.4733 | 0.2252 | 2.1018 | 0.0418 |
| LBMS(-1) | -0.5858 | 0.2320 | -2.5255 | 0.0155 |
| LNBR | 0.0609 | 0.0356 | 1.7108 | 0.0947 |
| LNRR | -3.3E-11 | 1.47E-10 | -0.2240 | 0.8239 |
| Panel B: Goodness-of-fit Measures | | | | |
| R^2 | | | 0.266388 | |
| Adjusted R^2 | | | 0.15903 | |
| F-statistic | | | 2.48131 | |
| Prob(F-statistic) | | | 0.038587 | |
| Durbin-Watson stat | | | 2.078998 | |

Source: Author's Computation using Eviews 10 (2021)

Table 4.3.2 Estimated Short Run Dynamics Test Result for Impact of Money Supply on Economic Growth

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|------------|------------------|----------------|-------------|--------|
| C | -2.979206 | 10.67733 | -0.279022 | 0.7818 |
| D(GDP(-1)) | 0.532262 | 2.673655 | 0.199077 | 0.8433 |
| D(GDP(-2)) | -0.110467 | 0.124464 | -0.887543 | 0.3805 |
| D(BMS(-1)) | 0.072595 | 0.256694 | 0.282808 | 0.7789 |
| D(BMS(-2)) | 0.449899 | 0.25801 | 1.743728 | 0.0895 |
| D(BR(-1)) | 0.094379 | 0.199584 | 0.472877 | 0.6391 |
| D(BR(-2)) | -0.009599 | 0.184075 | -0.05215 | 0.9587 |
| D(RR(-1)) | -0.0000000000463 | 0.000000000195 | -0.236867 | 0.8141 |
| D(RR(-2)) | -0.0000000000295 | 0.00000000026 | -0.113354 | 0.9104 |
| ETC(-1) | -1.284331 | 2.700306 | -0.475624 | 0.6371 |

Source: Author's computation using E- view 10 (2021)

4.4 Empirical Results on Effects of Interest Rate on Economic Growth

4.4.1 Long Run Effect of Interest Rate on Economic Growth

For Objective 2 , which is the Effect of Interest Rate on Economic Growth , we see that Interest rate has a positive effect on economic growth at (0.47362) the present year and in the previous year , it has a positive relationship too at (0.152782) and at T statistic it is not significant at (0.646449) and its T statistic is significant with a relationship in the previous year at (2.390299) and the probability distribution is significant at (0.5219) and in the previous year also at (0.0219) and between inflation and economic growth, there is a negative relationship at (-0.09443) , but a positive relationship between them the previous year at (0.20005) and there is a negative relationship with the T statistic , but is significant also at (-1.617607) but in the previous year, there exists a positive significant T statistics between inflation and economic growth at (2.770991) and there is also a significant relationship with the probability value at (0.114) and also a significant relationship probability value the previous year at (0.0086).

For Objective 2 again, we see that inflation has a negative effective on economic growth and it brings a (-0.0884) decrease in growth. And money supply has a positive effect and increase on economic growth at (0.4733), we also see that, money supply has a positive but yet and insignificant t stat value at (1.22971) and a positive and significant prob value at (0.2264) and negative but significant value at (-1.952703) and a positive and significant prob value at (0.0582).

The R^2 , the adjusted R^2 , the F-statistic and the Durbin-Watson statistic for the selected model is shown in the panel B of the table 4.4.1.

As observed from the result presented, the explanatory power (R^2) of the model is low (0.466679) In essence, the proportion of variation in economic growth measured by real GDP that is jointly explained by, interest rate, money supply and exchange rate is about 46% while 54% of the changes in real GDP can be attributed to other factors not included in the regression equation.

The Adjusted R^2 that is the proportion of variation in economic growth measured by real GDP that is jointly explained by the explanatory variables after the effect of insignificant repressor has been removed is about 34% while the other 76% was unaccounted for.

The F-statistic which is used to measure the overall significance of the estimated model is significant at 6.94629 with probability value $p = 0.002102$ Indeed, there is a re-enforcement of the goodness of fit. This suggests that the rate of natural increase in are interest rate, money supply, and inflations are insignificant determinants of economic growth in Nigeria.

Besides, the Durbin-Watson statistic which is to test for autocorrelation of residuals in the model, in particular, the first order autocorrelation indicates the absence of serial autocorrelation at 2.098705.

4.4.2 Estimated Short Run Effect of Interest Rate on Economic Growth

The results in table 4.4.2 below present the estimated short run effect of interest rate on economic growth. As can be observed, it is evident that the coefficient of the error correction term for the estimated equation is negative and statistically insignificant. In essence, the speed adjustment implied by the correction term suggests that the deviation from short run to long run is corrected by -7.999189 percent per each year. Therefore, there is no stable long run relationship among GDP, interest rate, money supply, and inflation. Similarly, the estimated short run model revealed that it is similar to its insignificant long run.

Similarly, the coefficient of money supply income from previous year depicts a negative and insignificant relationship with economic growth. As observed, the estimated short run model revealed that it is different to its insignificant long run. This infirm the apriori expectation that as money supply increases, economic growth increases. Holding other things constant, a unit increase in money supply results in - 0.14833 decrease in economic growth, contrary to the findings of Moyo (2008).

Lastly from the table, the impact of inflation on economic growth from previous year is positive and statistically significant. Holding other things constant, a one percent increase in inflation will lead to 0.106035 increase in economic growth. However, the estimated short run model revealed that it is different to its insignificant long run and also in firms the apriori expectation, contrary to the result of Dele (2019).

Table 4.4.1 Estimated Long Run Dynamics Test Result for Effect of Interest Rate on Economic Growth

| Regressed : DLNRGDP | | | | |
|--|-------------|------------|-------------|--------|
| <i>Panel A: Long Run Co-efficients</i> | | | | |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| LNGDP (-1) | 0.105553 | 0.134357 | 0.785619 | 0.437 |
| LNINT | 0.047362 | 0.073264 | 0.646449 | 0.5219 |
| LNINT(-1) | 0.152782 | 0.063917 | 2.390299 | 0.0219 |
| LNINT(-2) | 0.090674 | 0.05308 | 1.708275 | 0.0957 |
| LNINF | -0.09443 | 0.058376 | -1.617607 | 0.114 |
| LNINF(-1) | 0.20005 | 0.072195 | 2.770991 | 0.0086 |
| LNINF(-2) | -0.081308 | 0.05731 | -1.418747 | 0.1641 |
| LNBMS | 0.314736 | 0.255943 | 1.22971 | 0.2264 |
| LNBMS(-1) | -0.517886 | 0.265215 | -1.952703 | 0.0582 |
| C | 5.814377 | 2.433983 | 2.388832 | 0.022 |
| <i>Panel B: Goodness-of-fit Measures</i> | | | | |
| <i>R²</i> | | | 0.466679 | |
| <i>Adjusted R²</i> | | | 0.340366 | |
| <i>F-statistic</i> | | | 3.694629 | |
| <i>Prob(F-statistic)</i> | | | 0.002102 | |
| <i>Durbin-Watson stat</i> | | | 2.098705 | |

SOURCE ; AUTHORS COMPUTATION USING EIEWS 2021

Table 4.4.2 Estimated Short Run Dynamics Test Result for Effect of Interest Rate on Economic Growth

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|-----------------|--------------------|-------------------|--------------------|--------------|
| C | -7.999189 | 8.46304 | -0.945191 | 0.3502 |
| GDP(-1) | 2.97536 | 2.147305 | 1.385625 | 0.1735 |
| D(INT(-1)) | 0.072532 | 0.048188 | 1.505196 | 0.1401 |
| D(BMS(-1)) | -0.14833 | 0.21461 | -0.691161 | 0.4935 |
| D(INF(-1)) | 0.106035 | 0.068987 | 1.537046 | 0.1322 |
| ETC(-1) | -2.137167 | 2.176974 | -0.981715 | 0.3321 |

Source: Author's computation using E- view 10 (2021)

4.5 Empirical Results on Impact of Exchange Rate on Economic Growth.

4.5.1 Long Run Impact of Exchange Rate on Growth

The results below shows that exchange rate has a positive relationship with economic growth at (0.02967) and it has a significant existing t stat relationship at (2.11166) and its also has a significant relationship with the probability distribution at (0.0406) and also inflation has a negative relationship with economic growth at (- 0.089203).

And in the previous year a positive relationship at (0.0978) it has a negative significant t stat relationship at (-1.514998) and in the previous year a positive significant relationship (1.6829) and a significant relationship with the prob stat at (0.1371) and the previous year a positive significant relationship probability stat at (0.0996), whilst terms of trade has a positive relationship with economic growth at (2.18E-10) and is has a significant relationship with t stat at (1.590482) and significant relationship with prob stat at (0.1191). d inflation has a negetive effect (- 0.089203).

The objective shows that there is a positive relationship between exchange rate and economic growth. And it brings about a (0.2967) increase in exchange rate and inflation has a negetive effect (- 0.089203).

The R^2 , the adjusted R^2 , the F-statistic and the Durbin-Watson statistic for the selected model is shown in the panel B of the table 4.5.1. As observed from the result presented, the explanatory power (R^2) of the model is low (0.28633). In essence, the proportion of variation in economic growth measured by real GDP that is jointly explained by inflation, and terms of trade is about 28%.

The Adjusted R^2 that is the proportion of variation in economic growth measured by real GDP that is jointly explained by the explanatory variables after the effect of significant repressor has been removed is about 20% while the other 80% was unaccounted for.

Furthermore, the F-statistic which is used to measure the overall significance of the estimated model is significant at 3.450441 with probability value $p = 0.010402$. It shows that there is a re-enforcement of the goodness of fit. These suggest that the rate of natural increase in exchange rate, terms of trade and inflation are significant determinants of money in Nigeria.

Lastly, the Durbin-Watson statistic which is to test for autocorrelation of residuals in the model, in particular, the first order autocorrelation indicates the absence of serial autocorrelation at 2.1514.

4.5.2 Estimated Short Run Impact of Exchange Rate on Economic Growth

The results in table 4.5.2 below present the estimated short run impact of exchange rate on economic growth. As can be observed, it is evident that the coefficient of the error correction term for the estimated equation is negative and statistically insignificant. In essence, the speed adjustment implied by the correction term suggests that the deviation from short run to long run is corrected by -3.101537 percent per each year. Therefore, there is no stable long run relationship among GDP, exchange rate, inflation, and terms of trade. Similarly, the estimated short run model revealed that it is different to its significant long run.

Precisely, the results depicts that exchange rate has a positive and insignificant relationship with economic growth, hereby confirming the apriori expectation. Hence, a one percent increase in exchange rate will lead to a increase of 0.070347 percent in economic growth. Implying that, increase in exchange rate would lead to increase of economic growth in Nigeria. This results is identical with the work of Onyinze (2013).

While the coefficient of inflation of the previous year depicts a positive insignificant relationship with economic growth. However, the estimated short run model revealed that it is different to its insignificant long run. The estimated long run shows a negative and insignificant relationship while the short run resulted in a positive insignificant relationship. This implies that an increase of one percent in inflation from previous years will lead to a increase of 0.066441 percent in economic growth, contrary to the findings of Bayo(2014).

Lastly from the table, the impact of terms of trade on economic growth from previous year is positive but statistically insignificant. Holding other things constant, a one percent increase in inflation will lead to 0.4466238 increase in economic growth. However, the estimated short run model revealed that it is different to its significant long run , contrary to the result of Bolajide(2014).

4.5.1 Estimated Long Run Dynamics Test Results for Impact of Exchange Rate on Economic Growth in Nigeria

| Regressand: DRGDP | | | | |
|--|-------------|------------|-------------|--------|
| Panel A: Long Run Coefficients | | | | |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| C | 0.0884 | 1.8196 | 0.0486 | 0.9615 |
| LNRGDP (-1) | 0.2591 | 0.1228 | 2.1095 | 0.0408 |
| LNEXR | 0.0297 | 0.0141 | 2.1117 | 0.0406 |
| LINF | -0.0892 | 0.0589 | -1.5150 | 0.1371 |
| LNINF(-1) | 0.0978 | 0.0581 | 1.6829 | 0.0996 |
| LNTOT | 0.0000 | 0.0000 | 1.5905 | 0.1191 |
| Panel B: Goodness-of-fit Measures | | | | |
| R^2 | | | 0.286333 | |
| Adjusted R^2 | | | 0.203349 | |
| F-statistic | | | 3.450441 | |
| Prob(F-statistic) | | | 0.010402 | |
| Durbin-Watson stat | | | 2.1514 | |
| Source: Author's Computation using Eviews 10 (2021) | | | | |

Table 4.5.2 Estimated Short Run Dynamics Test Result for Impact of Exchange Rate on Economic Growth

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|------------|-------------------|-------------------|-------------|--------|
| C | -3.101573 | 6.989033 | -0.443777 | 0.6595 |
| GDP(-1) | 0.597324 | 1.725435 | 0.346188 | 0.7309 |
| D(EXR(-1)) | 0.070347 | 0.069921 | 1.006081 | 0.3201 |
| D(INF(-1)) | 0.066441 | 0.055552 | 1.196014 | 0.2384 |
| D(TOT(-1)) | 0.000000000000157 | 0.000000000000336 | 0.466238 | 0.6435 |
| ETC(-1) | -1.298952 | 1.728238 | -0.751605 | 0.4565 |

Source: Author's computation using E- view 10 (2021)

4.6 Discussion of Results

The broad objective is to examine the relationship among money supply, interest rate, exchange rate and economic growth. The three specific objectives includes the impact of money supply on economic growth, the effect of interest rate on economic growth and the impact of exchange rate on economic growth.

The analysis of the impact of money supply on economic growth in Nigeria suggest that in the long run equilibrium relationship between money supply and economic growth is positive (0.473333), and the relationship between them is statistical as shown by the t-statistic (0.225202) and the prob. value (0.0418). This finding is similar results to Adeayo(2009)In the short results shows that in the past year, money supply has a positive but t statistically insignificant results at (0.282808) on economic growth, whilst its probability value is also positive, and also insignificant at (0.7709).

The effect of interest on economic growth analysis portrayed a positive but insignificant relationship with economic growth. Thus, in the long run, one percent increase in interest rate increases economic growth by (0.47362) percent, holding other things constant. we see that inflation has a negetive effective on economic growth and it brings a (-0.0884) decrease in growth. And money supply has a positive effect and increase on economic growth at (0.4733), we also see that, money supply has a positive but yet and insignificant t stat value at (1.22971).

Lastly, the impact of exchange rate on economic growth was analysed. As can be observed in the long run,the results below shows that exchange rate has a positive

relationship with economic growth. and it has a significant existing t stat relationship
This results is similar to the finding or kayla(2017), whilst terms of trade has a
positive relationship with economic growth at and is has a significant relationship,
and inflation has a negetive effect on growth and no significant relationship.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter is divided into five sections. Section 5.2 presents the summary of the findings. Section 5.3 reveals the conclusion of the study. Section 5.4 contains the recommendations to be undertaken, while section 4.5 presents the limitations encountered while undertaking the research.

5.2 Summary of the findings

The specific objective of the study was to examine the impact of monetary policy on economic growth of Nigeria. The study used the annual time series data covering 50 years (1970-2019). Specifically, Economic growth (RGDP) was regressed on Money Supply (MS), on Interest Rate (INR) and on Exchange Rate (EXR), each model including other control variables (reserves, inflation, terms of trade) that influences economic growth.

The study employed econometric techniques of analysis. The specified objectives was achieved using the Auto Regressive Distributed Lag Model (ADRL). Before the ARDL test was conducted, the unit root test was estimated to determine the time series of the variables included in the research using both Augmented Dickey Fuller and the Phillip and Perron (PP). The results of the ADF and PP revealed the variables that were not stationary in level form, leading to first difference test. After the variables had been determined to be stationary at level. or

first difference. The ARDL models lag order was predicted using VAR lag order selection criteria that chose lag2,1,and1 for models 11,12 & 13 respectively

Furthermore, the cointegration relationship between the variables was determined in each ARDL model using the bound test after the lag length was selected, portraying that a long term connection exists between the variables. The research then proceeded to access the long term and short term connection between the variables using ARDL. Results of the examination, therefore, reveals an significant positive relationship between income inequality, poverty and economic growth.

5.3 Conclusion

This research aims to address the three primary problems of money supply , interest rate and economic growth . Empirical findings presented in the research suggest the presence of a long term money supply and economic partnership has a beneficial relationship . The exchange rate has a beneficial and negligible impact on economic growth in Nigeria. The projected inflation- to economic growth relationship does not provide the accurate channel through which inflation impacts development. That is the degree of responsiveness of economic growth to inflation and exchange in Nigeria, the findings further indicate that bank reserves has a positive relationship with growth, but no statistical relationship while required reserves has a negative and no relationship also.

Whilst Interest Rate, Terms of Trade, and Exchange Rate are positive so they should be reasonable tools for growth. Whilst Inflation has a negative effect and impact of economic growth and should be avoided and combated.

5.4 Policy Recommendation

Based on the findings of the study, the following policy recommendations are suggested:

1. For Policy makers to achieve sustainable growth in the nation, it is essential they focus on the growth of money supply, due to the fact it is significant to a country's economic growth
2. It is needful of the government to maintain stable and balance exchange rate, avoiding exchange rates fluctuations, which can be done by monetary policy makers.
3. Maintenance of stable and low prices by the government, is necessary by the government to achieve high growth rates
4. Financial infrastructure should be set in place to deepen the financial system, which is major credential, for effectiveness of monetary policy in Nigeria.
5. There should be supervision of roles by the CBN over commercial banks, for full compliance with their directives.

5.5 Contribution to Knowledge

Only a few researchers have taken into account the impact of monetary policy on economic growth in Nigeria. Moreover, this literature has not been updated to more recent years. This study, thus, addresses this gap and contributes to knowledge by assessing the impact of public debt and its service on economic growth in Nigeria.

5.6 Limitation of the Study

This research was subject to certain limitations. First, the research was not conclusive as it did not include some of the other elements influencing economic growth but focused solely on interest rate and exchange rates as the main variables influencing the economy that were shown to be irrelevant after the empirical exams. Also found in the research were the restriction of time limitations and the collection of secondary data. It was a challenging task to develop the statistical presentation since the investigator was not acquainted with the E-view program. This needed some software training to allow adequate use of the software to obtain the required statistical data presentation.

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