**IMPACT OF DEPOSIT MONEY BANK CREDITS ON ECONOMIC GROWTH OF NIGERIA**

**BY**

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**APPROVAL PAGE**

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**DEDICATION**

I dedicate this project to God almighty my creator, my strong pillar, my source of inspiration and strength in working on this project, and also to my parents Mr. & Mrs. Patrick N. Nwabueze and also to Vivian, Raphael, Patrick, Ikenna and Deborah who have been the best of siblings and to my ever loving husband Mr. Kanayo Ikemefuna Emmanuel for his support and encouragement towards the successes of this project.

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**ABSTRACT**

This work is based on the impact of deposit money bank credits on Nigeria economic growth. The main objective of this study is; to ascertain the impact of deposit money bank credits on economic growth of Nigeria (1981-2016). A model was constructed to incorporate real gross domestic product (RGDP) as the dependent variable proxy of economic growth, commercial bank credit (CBC) and interest rate (INTR) as the independent variables and tested using the ordinary least-square (OLS) techniques. The empirical result shows that commercial bank credit and interest rate have negative relationship and insignificant impact on the economic growth in Nigeria. From the granger causality test result, inflation rate and interest rate have no causal relationship with real gross domestic product in Nigeria. Also no causal relationship exist between INTR and RGDP, finally no causal relationship exist between commercial bank credit (CBC) and interest rate (INTR) Based on the result, the researcher recommends that the Central Bank of Nigeria and other monetary authorities should reduce the interest rate being charge on loans borrowed from the commercial banks through the reduction of bank rate and other deposit requirements of the commercial banks in order to make funds available to the potential investors which will increase the national output though their production.

**CHAPTER ONE**

**INTRODUCTION**

**1.1 Background of the Study**

Deposit money bank are resident depository corporations and quasi-corporation which have any liabilities in the form of deposit payable on demand, transferable by cheque or otherwise usable for making payments.

A growing body of work in advanced economies has shown that deposit money bank credits are one of the greatest drivers of economic growth and development. Thus, most countries with well-functioning financial system and large volume of deposit money bank credit are characterized with substantial and sustained growth as well as economic development (Nabila Zakir,2014, Sunde 2013). This suggest that as an economy becomes large, there is increasing need for increased and targeted deposit money bank to critical sector of the economy including households.

This banking institution is responsible for financial intermediation in Nigerian financial system, which enables the channeling of fund from the surplus unit of the economy to the deficit unit of the same economy, thereby transforming deposit to credit (loan). According to Ademu (2006) in Nwanyanwu (2010), the provision of credit with sufficient consideration to growth potential in the sector as well as price system in the economy is one of the ways to generate employment opportunities and by so doing, contributing to the growth of the economy at large. This can be made possible because bank credit contribute immensely to the expansions of business enterprise, increase scale of production which results to growth in the overall economy.

Ademu (2006) highlighting the role of bank credit explained that it can be used to prevent economic activity from total collapse in the event of natural disaster such as flood, drought, disease or fire. Importance of bank credit to the Nigerian economy has led to sustained increase of credit to productive sector of Nigeria economy. Central bank of Nigeria annual report (2010), noted that credit to the core private sector to the deposit money bank grows by 10.26% between 2009-2010. In making credit available, banks are rendering great social services because through their actions production is increased, capital investment are expanded and ahigher standard of living realized.

The concept of economic growth is viewed as an increase in the net national product in a given period of time (Dewett 2005) he explained that economic growth is generally referred to as a quantitative change in economic variable, normally persisting over successive periods. The role of credit in economic growth has been recognized as credits are obtained by various economic agents to enable them meet operating expenses (Nwanyanwu 2008), Furthermore, according to Ademu (2006), the provision of credit with sufficient consideration for sector’s volume and price system is a way of achieving economic growth through self-employment opportunities while highlighting the role of credit to the growth of any economy. (Shaw, 1973; Mckinnon 1973) economic growth is one of the important factors that improve living standard in developing countries. It is an indispensable requirement for economic development among other factors it is believed that the main factors affecting economic growth are labor, capital and exogenously determined technology. The impact of deposit money bank credits are relevant to the economic growth of Nigeria.

**1.2 Statement of the Problem**

The duty of the deposit money bank credit is to mobilize resources, so as to be able to provide long term funds to the business sector. Little studies has been done to find out the impact of deposit money bank credits have to the growth of national economies Tuuli (2002) posits that although there have been numerous empirical studies on the determinant of growth in transition economies, the relationship between bank credits and economic growth, however has been largely ignored.

Generally, economic growth has long been considered an important goal of economic policy with substantial body of research dedicated to explaining how this goal can be achieved. But unfortunately, such concerted effort in both researchers and policies have yielded no meaning result. Thus, studying the impact deposit money bank credits have on the economic growth of Nigeria has become very necessary until this vacuum is filled, the unavoidable questions on this study will remain unanswered.

**1.3 Research Question**

This study is based on the following research question

1. What is the impact of deposit money bank credits on Nigeria’s economic growth?
2. To what extent has deposit money bank lending rates affected the economic growth in Nigeria?
3. To what extent has money supply influenced Nigeria’s economic growth?

**1.4 Objective of the Study**

The general objective of this study is to ascertain the impact of deposit money bank credits on economic growth of Nigeria. In line with this, the specific objective of the study include the following

1. To evaluate the impact of deposit money bank credits on Nigeria’s economic growth.
2. To ascertain the effect of deposit money bank lending rates on Nigeria’s economic growth.
3. To ascertain the impact of money supply on the Nigeria’s economic growth.

**1.5 Hypotheses of the Study**

The hypotheses of this study are as follows

Hypotheses one

Ho: deposit money bank credits do not have any significant impact on Nigeria’s economic growth.

Hypotheses two

Ho: deposit money bank lending rates do not have any significant impact in Nigeria’s economic growth.

Hypotheses three

Money supply does not have any significant impact on Nigeria’s economic growth.

**1.6 Scope of the Study**

The study will focus on the impact of deposit money bank credits on economic growth of Nigeria over the period of 1980 to 2015. This study covers the period of 35 (thirty-five) years. Bank credits as shall be used in this study are credits advanced by deposit money banks in Nigeria. Economic growth shall be peroxide by the real gross domestic product (RGDP)

**1.7 Significance of the Study**

The study will be of immense benefit to the following

Bankers: the study will enhance their understanding of the relationships existing between bank credits and economic growth. This will go a long wayin enabling them carry out efficient financial intermediation function bearing in mind how it impact on economic growth.

Government:different levels of government will find this study useful especially policy implementation, enactment of laws and making pronouncement that will promote economic growth

Researcher: other researchers will find this study very useful since it will add to the existing knowledge. Such researchers and students who wish to carry out a related study will have to use it as a research material.

**CHAPTER TWO**

**LITERATURE REVIEW**

**2.1 Conceptual Literature**

**2.1.1 Concept of Commercial Bank Loans (Credit)**

Bank credit is the aggregate amount of credit available to a person or business from a banking institution. It is the total amount of funds financial institutions provide to an individual or business. A business or individual’s bank credit depends on the borrower’s ability to repay and the total amount of credit available in the banking institution.

Bank loan the advance of a specified sum of money to an individual or business (the borrower) by a commercial bank, savings bank, etc. (the lender). A bank loan is a form of credit that is often extended for a specified period of time, usually on fixed-interest terms related to the base interest rate, with the principal being repaid either on a regular installment basis or in full on the appointed redemption date. Alternatively, a bank loan may take the form of overdraft facilities under which customers can borrow as much money as they require up to a pre-arranged total limit and are charged interest on outstanding balances. In the case of business borrowers, bank loans are used to finance working capital requirements and are often renegotiated shortly before expiring to provide the borrower with a ‘revolving’ line of credit.

Depending on the nature of the loan and the degree of risk involved, bank loans may be unsecured or secured, the latter requiring the borrower to deposit with the bank collateral security (e.g. title deeds to a house) to cover against default on the loan (Lowes L. Davies, 2005).

**2.1.2 Concept of Economic growth**

Economic growth is simply a sustained increase in the output of goods and services of a country over a period of time. It serves as the yardstick by which the economic performances of a country or different nations are measured. Therefore, a country can be judged as a high performer or a poor performer based on the rate of economic growth at any particular period of time. The gross domestic product (GDP) is the measure of the flow of output of final goods and services at either market prices or an adjusted value (i.e. real gross domestic product) resulting from current production during a year in a given country.

The International Monetary Fund (2009) and CBN (2010) stated that economic growth is the increase in the amount of the goods and services produced in an economy over time. It is conventionally measured as the percent rate of increase in real gross domestic product, or real GDP (RGDP). Growth is usually calculated in real term i.e. inflation- adjusted terms, in order to net out the effect of inflation on the price of the goods and services produced. The drivers of economic growth in an economy as posited by Dwivedi(2008) are the quality of the labour force, natural resources, capital formation, technological development and political and social factors while Riley(2012) noted that the determinants are growth in physical capital stock; growth in the size of active labour force available for production; growth in the quality of human capital; technological progress and innovation; institutions including stable democracy, maintaining rule of law and macroeconomic stability; and rising demand for goods and services either led by domestic demand or from external trade.

**2.2 Theoretical Framework**

**Theories of Bank Credit**

**2.2.1 The Financial Liberalization Theory**

This theory was the original work by McKinnon and Shaw. Under this theory, the consideration is central on the part played by government intervention in the financial markets as a critical setback to growth, investment and savings mobilization. The role of government in interest rate control and credit allocation to the productive economic sectors in developing countries hinders the mobilization of savings and discourages financial assets holding, economic growth and capital formation. Interest rate ceiling on deposit indirectly inhibited financial saving which resulted in excess liquidity outside the banking industry.

Government pervasive intervention and financial system involvement through the supervisory and regulatory framework, especially interest rate control and credit allocation tends to facilitate financial market distortions. As such, the intervention of government is adversely affecting the market players’decision regarding investment and savings and resulted in financial mediation fragmentation. The resultant effect of this scenario is an economy that is financially repressed.

According to McKinnon and Shaw, the central position is that credit allocation should be determined by the free market and financial markets should also be liberalized. Hence, there will be adjustment in the real interest rate to the equilibrium level and the elimination of projects with low yields. This will result in improvement in the overall savings and investment efficiency and increased supply of total real credit. In return, this would induce increased volume of investment that will engender the growth of the economy. The primary critique of the theory of financial liberalization has been from the paradigm of imperfect information. The Paradigm of Imperfect information argued with the proponents of financial liberalization and examines financial development problems in the form of information asymmetry and credit rationing as a result of expensive information.

According to Stiglitz and Weiss, two critical problems are associated with information asymmetry. Adverse selection of imperfect information paradigm is the first and the second is moral hazard, that is, the effect of information asymmetries on higher rates of interest which emanates from financial liberalization and reform policies in particular, worsen the taking of risk in the economy and also threatens the financial system stability which can result easily to financial crises.

**2.2.2 The Quantity Theory of Credit**

Werner in his work towards a quantity theory of disaggregated credit and international capital flows presented the Quantity Theory of Credit with a central focus on different equation of exchange distinguishing between money used for GDP-transactions and money used for non GDP-transaction. He further stressed that money should not be defined as bank deposits or other aggregates of private sector savings. More so, that bank should not be seen as not being financial intermediaries that lend existing money, rather creators of new money through the process of lending. In addition, growth of GDP requires increased transaction in economic activities, which in turn require larger amount of money to be used for such transactions; therefore, the money used for transactions can only rise if banks create more credits. The bank credit can be disaggregated into credit for GDP transactions and credit for non-GDP transactions. The former drives nominal GDP and the latter assets transaction values.

Consequently, the effect of bank credit depends on its quantity and quality which is defined as whether it is used for unproductive transactions (credit for consumption or asset transactions, producing unsustainable consumer or asset inflation, respectively) or productive transactions (delivering non-inflationary growth). Credit used for productive a transaction aim at income growth and is sustainable; credit for asset transactions aims at capital gains and is unsustainable.

**2.2.3 The Credit Channel Theory**

Bernanke and Gertler postulated the credit channel theory. This theory emphasized that the direct effects of monetary policy on interest rates are amplified by endogenous changes in the external finance premium. They described external finance premium as the difference between the cost between funds raised externally and funds raised internally by the borrower. More so, the imperfection of credit market depends on the size of the finance premium and a change in monetary policy that raises or lowers open market interest rates tends to change external finance in the same direction.

In addition, they linked the monetary policy and external finance premium through “Balance Sheet Credit Channel” and “Bank Lending Credit Channel”.

**2.2.4 The Balance Sheet Credit Channel Theory**

This theory stressed that the external finance premium facing a borrower depends on borrower’s financial position. Therefore, the greater is the borrower’s net worth, the lower the external finance premium and overall terms of credit. The theory further stated that the quality of borrower’s sheet similarly affects their investment and spending decisions. This balance sheet channel arose due to shifts from central bank’s policy not only affects market interest rate but also the financial positions of borrowers.

**2.2.5 The Bank Lending Credit Channel Theory**

The banking lending channel stated that monetary policy also affects the external finance premium by shifting the supply of the intermediated credit, especially loans from commercial banks. It indicated that if supply of bank loans is disrupted for some reason, bank dependent borrower may not be necessarily shut off but incur cost of finding lenders. Therefore, a reduction in the supply, relative to other forms of credit is most likely to increase external finance premium and reduce real activity.

**2.2.6Trends of Commercial Banks Credit to SMEs in Nigeria**

The role of SMEs to industrial and economic development of any nation has been globally recognized, the same is the case for a nation like Nigeria. In Nigeria however, one would have expected a progressive increase in credit allocation to the SMEs. The aggregate loans and advances commercial banks extended to SMEs between 1980 and 1999 as a percentage of credit allocated to the private sector shows that between 1980 and 1986, the percentage credit allocated arises from 1.5% to 9.3%. This period falls within the time government has not mandated commercial banks to assign a given percentage of credit to SMEs witnessed a sporadic increased to the SMEs went up as high as 48.80% and 32.20% in 1992 and 1993 respective. This period also witnessed the period the government directed commercial banks to mandatorily allocate 20% of their total credit to SMEs. The mandatory credit allocation was abolished in 1996 and this explained the downward trend of credit allocation to the SMEs from 16.96% in 1997 to 15.30% in 1998, 13.30% in 1990, 8.76% in 2000, 6.59% in 2001 and 8.63% in 2002. Therefore, there is need to check this downward trend in the percentage credit allocation to the SMEs. The major reasons adduced for this poor credit given to SMEs apart from government policy includes lack of collateral asset, high administrative costs of processing small loans, delay in the disbursement of approved funds, distress in banking sector coupled with volatile exchange rate regime and prohibitive interest rate (Cookey, 2000).

The poor credits reflect the contribution of the SMEs (proxies by manufacturing sector) to the total Gross Domestic Product (GDP) of the country. SMEs contribution to the total Domestic Production (GDP) of the country rises from 9.89% in 1981 to a low level of 6.02% in 2002. However, there is a steady increase in the percentage contribution to the GDP in the period between 1985 and 1990 which is a reflection of the increase in commercial bank credits among other factors allocated to the SMEs sector. This trend suggested that an increase contribution of the SMEs to the total GDP includes lack of credit facilities, inability of small and medium industrialist to transform ideas into reality, poor demand for finished goods, restricted access to land, difficulties in input procurement and lack of continuity after the death of their owners (Anyanwu, 2003).

**Theories of Economic Growth**

**2.2.7 Neoclassical Model of Growth**

Ray (1998) explains that neoclassical growth is an economic theory that outlines how steady economic growth rate will be accomplished with the proper amounts of the three driving forces labor, capital and technology. Khan (2003) buttresses that this theory emphasizes that technology change have major influence on economic growth. The theory argue that economic growth will not continue unless there advances in technology.

The neoclassical model of growth was first devised by Nobel Prize winning economist, Robert Solow, over 40 years ago. Solow-Swam is an economic model of log-run economic growth set within the framework of neoclassical economics, it attempts to explain long-run economic growth by looking at capital accumulation, labor or population growth and increases in productivity, commonly referred to as technological progress. The Solo believes that a sustained increase in capital to labor goes up but the marginal product of additional units of capital is assumed to decline and the economy eventually moves back to a long-term growth path, with real GDP growing at the same rate as the workforce plus a factor to reflect improving productivity. Shaw (1992) a “steady-state growth path” is reached when output, capital and labor are all growing at the same rate, so output per worker and capitals per worker are constant. Neoclassical economist who subscribe to the Solow model believe that to raise an economy’s long term trend rate of growth requires an increase in the labor supply and an improvement in the productivity of labor and capital.

**2.2.8 Harrod-Domar model**

This model was developed independently by Prof F. Harrod in 1939 and Evsey Domar in 1949. Although Harrod-Domar model was created to help business cycle, it was later adapted to explain economic growth its implication were that growth depends on the quality of labor and capital; more investment leads to capital accumulation, which generates economic growth. The model implies that economic growth depends on policies to increase investment, by increasing savings and using that investment more efficiently through technological advances.

Solow Swam extended the Harrod-Domar model by adding labor as a factor of production and capital-output ratios that are not fixed as they are in Harrod-Domar model. Harrod-Domar stressed the important of savings and investment as key determinant of growth. The growth of an economy is positively related to its saving ratio and negatively related to the capital-output ratio. It suggests that there is no natural reason for an economy to have a balanced growth. It implies that a higher savings rate allows for more investment in physical capital. This investment can increase the production of goods and services in a country, therefore increasing growth. The capital-output ratio shows how much capital is needed to produce a dollar’s worth or output. It reflects the efficiency of using machines. This efficiency means that a lower capital-output ratio leads to higher economic growth since fewer inputs generate higher output.

**2.2.9 Endogenous Growth Theory**

Endogenous growth theory or new growth theory was developed in the 1908s by Romer (1986), Lucas (1988) and Rebelo (1991) among other economics as a response to criticism to the neoclassical growth model. The endogenous growth theory holds that policy measures can have an impact on the long-run growth rate of an economy (Wikipedia, 2013). The growth model is one in which the long-run growth rate is determined by variables within the model, not an exogenous rate of technological progress as in a neo-classical growth model. Jihingan (2006) explained that the endogenous growth model emphasizes technical progress resulting from the rate of investment, the size of the capital stock of human capital.

Nnanna *et al* (1993) explain that endogenous growth economists believe that improvement in productivity can be linked directly to a faster pace of innovation and extra investment in human capital they stress the need for government and private sector institutions which successfully nurture innovation, and provide the right incentives for individuals and business to be inventive.

Furthermore, in an endogenous growth model, Nnanna *et al* (2004) observed that financial development can affect growth in three ways: raising the efficiency of financial intermediation, increasing the social marginal productivity of capital and influencing the private savings rate (capital formation). This means that a financial institution can effect economic growth by efficiently carrying out its functions, among which is the provision of credit.

**2.3 Empirical Literature**

The role of bank credit to the growth of the economy has attracted the attention of many researchers in developed and developing economies of the world.

Tawose (2009), investigates the effect of bank loans and advances on industrial performance in Nigeria, co-integration and error correction techniques was adopted for the analysis, the result shows that industrial performance co-integrated with all the independent variables. Industrial sector growth is proxied by real real GDP, while commercial bank credit is captured with aggregate savings, interest rate and inflation rate. It was found that all the independent variables have positive correlation with the real GDP.

Mohd and Osman (2001) broadly categorized the causality into demand-following relationship and supply following relationship. The proponents of demand-following hypothesis argued that economic growth is a causal factor for bank lending, not the reverse. Robinson (1952) maintains that economic growth propels banks to finance enterprises. Gurley & Shaw (1969) also argued that as the economy expands and grows, the increasing demand for financial services stimulates banks to provide more credit.

Habibullah and Eng (2006) conducted causality testing analysis on 13 Asian developing countries and also found that bank lending promotes economic growth. Similarly, the IMF 2008 Global Financial Stability Report indicated a statistically significant impact of credit growth on GDP growth.

Ekpenyong and Acha (2011) examine the contribution of banks to economic growth using correlation analysis, regression, diagnostic tests, Augmented Dickey-Fuller test and cointegration. While Nigerian banks are not contributing significantly to economic growth, there is Positive and significant impact of private sector credit on growth.

Obademi and Elumaro (2014) re-examine the financial repression hypothesis in order to determine the impact and direction of causality between banks and economic growth during intensive regulation, deregulation and guided deregulation regime. Ordinary least square regression and Causality test conclude that banks have significant positive impact on growth in Nigeria especially during deregulation. Nevertheless, banks appear to be passive to growth in terms of causality.

Josephine (2010) assesses the impact of bank credit on economic growth in Nigeria using deposit money banks as a case study. The proxies used are gross domestic product and domestic credit to the economy. The result indicated that bank credit has not impacted significantly on the growth of the Nigeria economy. This is attributed to the fact that banks exhibits apathy in lending to the private sector for productive purposes, example, agricultural sector, as they prefer to lend to the short term end of the market. It is recommended that banks should be willing to give both short and long term loan for productive purposes as they will eventually lead to economic growth.

Akpansung & Babalola (2009), examined the impact of bank credits on the growth of Nigerian economy for the period of 1970-2008, using two-stage least square and granger causality test, the result indicates that bank credit has a negative impact on the growth of Nigerian economy with causation running from GDP to bank credit.

Nwanyanwu (2010) employed OLS econometrics techniques in determining the impact of bank credits on the growth of Nigerian economy, she found that bank credit positively and significantly impact on the growth of Nigerian economy.

**2.4 Limitations of the Previous Studies**

Although evidence from empirical studies support the fact that bank credits has impact on economic growth, the degree and magnitude of this impact is country specific. Also, the direction of casual relationship between bank credits and economic growth is one area of contention among researchers.

Previous studies as well as economic literature is replete with possible qualitative and quantitative variables that influence the growth in real output. However, there is no consensus on the effect of explanatory variables on economic growth.

In a paper which focused on how banking credit can be used as an instrument of economic growth, Agada (2010) identifies public and private sector credits as variables that cause variations on GDP. Toeing similar lines, Nwanyanwu (2010), Fadare (2010), Odekun (1998), among other authorities adopted similar variable in their studies which largely focused on bank and economic growth.

Having reviewed literature related to this study, it was discovered that only few discourse actually disaggregate deposit money bank credits to examine the impact of each type of credit on economic growth in Nigeria.

**CHAPTER THREE**

**METHODOLOGY**

This research work is conducted employing an econometric methodology. Economic, statistical and econometric tools were used in analyzing and presenting data. Ordinary Least Squares (OLS) estimation technique would be used in carrying out the analysis. This is because of the simplicity in its computational procedure coupled with its interesting BLUE (Best Linear Unbiased Estimator) properties and its assumptions.

Estimators from this methodology have both numerical and statistical properties. Gujarati (2009) Davidson and Mackinnon (1993) put the numerical properties as “those properties that hold as a consequence of the use of ordinary least squares, regardless of how the data were generated.”

This study will ascertain the impact of commercial bank loan to small and medium enterprises on the economic growth of Nigeria over the specified period of 1981-2015 and also check for long-run equilibrium relationship (co-integration) among the variables.

The research will include an evaluation that would take into cognizance economic/theoretical a priori tests, statistical test of significance and econometric or second order tests. An E view 8.0 regression software package is employed in this analysis to test non violation of the basic assumption of the OLS model.

**3.1 Theoretical Framework**

The Quantity Theory of Credit;Werner in his work towards a quantity theory of disaggregated credit and international capital flows presented the Quantity Theory of Credit with a central focus on different equation of exchange distinguishing between money used for GDP-transactions and money used for non GDP-transaction. He further stressed that money should not be defined as bank deposits or other aggregates of private sector savings. More so, that bank should not be seen as not being financial intermediaries that lend existing money, rather creators of new money through the process of lending. In addition, growth of GDP requires increased transaction in economic activities, which in turn require larger amount of money to be used for such transactions; therefore, the money used for transactions can only rise if banks create more credits. The bank credit can be disaggregated into credit for GDP transactions and credit for non-GDP transactions. The former drives nominal GDP and the latter assets transaction values.

**3.2 Model Specification**

This study shall build a multiple regression model and make use of econometrics procedure in estimating the relationship between my economic variables.

The functional form of the model is specified as:

RGDP= F (CBR, INTR, M2)……………………………(3.1)

The mathematical form of the model is specified as:

RGDP = βo+ β1CBC + β2INTR + β3M2…………………….(3.2)

This econometric form of the model is specified as:

RGDPt = β0t+ β1CBCt + β2INTRt+ β3M2+ µt……….………(3.3)

Where

RGDP= real gross domestic product i.e. (constant price GDP)

F= functional relationship

CBC= Commercial bank Credit

INTR= interest rate

M2= Broad money supply

βo= Benchmark (RGDP Intercept)

β1 and β2 = Slope coefficient

µ= Error term

**3.3 Method of Evaluation**

The estimated result will be evaluated subject to three criteria.

1. Preliminary test
2. Economic criteria
3. Statistical criteria
4. Econometrics criteria

**3.3.1 Preliminary Test**

**3.3.1.1 Stationarity (Unit Root) Test:**

The importance of this test cannot be over emphasized since the data used in the estimation are time-series data. In order not to run a spurious regression, it is worthwhile to carry out a stationary test to make sure that all the variables are mean reverting, that is, they have constant mean, constant variance and constant covariance. In other words, that they are stationary. The Augmented Dickey-Fuller (ADF) test was used for this analysis since it adjusts for serial correlation.

The model is specified as follows

**ΔRGDPt-1 = β0 + β1CBCt-1 + β2INTRt-2 + µt**

**Decision Rule:** If the ADF test statistic is greater than the MacKinnon critical value at 5% (all in absolute term), the variable is said to be stationary. Otherwise it is non stationary.

**3.3.1.2 Cointegration Test**

Econometrically speaking, two variables will be cointegrated if they have a long-term, or equilibrium relationship between them. Cointegration can be thought of as a pre-test to avoid spurious regressions situations (Granger, 1986). As recommended by Gujarati (2004),the ADF test statistic will be employed on the residual.

The model is specified as follows

**µt = β2 + β1RGDPt + β2CBC + β2INTR**+ β3m2

**Decision Rule:** If the ADF test statistic is greater than the critical value at 5%, then the variables are cointegrated (values are checked in absolute term).

**3.3.1.3 Error Correction Mechanism**

If there exist a long run relationship (co-integration) among the time series variables, the Error correction mechanism will be estimated to know the rate at which the dependent variable returns to equilibrium to the independent variable after some levels of variations i.e. to derive the numerical value of the magnitude of the short run dynamics or disequilibrium.

The error correction model is specified as follows

**∆RGDP∊t = 0 + 1 ∆CBCt +2 ∆INTRt+3 ∆** M2**+∊t**

**3.3.1 Economic criterion Test (A Priori Test)**

These are determined by the principles of economic theory and refer to the sign and size of the parameters of economic relationship.

The expected signs for the parameters associated with the various variables are shown below

|  |  |
| --- | --- |
| VARIABLES | EXPECTED SIGNS |
| CBR | + |
| INTR | - |
| M2 | + |

**3.3.2 Statistical Test of Significance**

These are determined by the statistical theory and aimed at evaluating the statistical reliability of the estimates of the parameters of the model, the most widely used statistical criteria is the square of correlation coefficient (coefficient of determination R2), t-test and f-test of significance.

**3.3.2.1 Test for Goodness of Fit**

To determine the proportion of variation dependent variable that is attributable to variation in explanatory variable. The value of R2 ranges between 1 and 0 (ie 0≤R2≤1). The closer to 1 the better the fit, otherwise, the worse the fit.

**3.3.2.2 t-test of significance**

The student t-ratio will be used to test the individual statistical significance of the regression co-efficient. A two tail test is conducted at 5% level of significance and n-k degree of freedom (df). Where n is the number of observation and K is the parameter estimated.

**Decision rule:**

The computed(t\*) will be computed with the critical t-value(t0.025). if t\*>t0.025, the Ho will be rejected and H1 will be accepted. Otherwise, Ho is accepted and H1 rejected.

**3.3.3.3 f-Test of Significance**

F-test statistics is used to test the overall statistical significance of the independent variables. A one tail test conducted at 5% level of significance and (V1/V2) degrees of freedom. Where;

V1= degree of freedom (df) for the numerator: v1=k-1.

V2= degree of freedom (df) for the denominator: v2=n-k

**Decision Rule (F-test)**

If the F\*>F0.05 we will reject the null hypothesis and accept the alternative, otherwise, the alternative hypothesis H1 will be rejected and null hypothesis H0 be accepted.

**3.3.4 Econometric Test of Significance (Second order Test)**

**3.3.4.1Autocorrelation test**: The aim of this test is to see whether the errors corresponding to different observations are serially correlated or not. Uncorrelated errors are desirable. The Durbin – Watson (D-W) statistics at 5% will be used to test for the presence of autocorrelation problem. The region of no autocorrelation remains:

Du> d\* > (4-du)

Where:

du = Upper Durbin – Watson

d\* = Computed Durbin-Watson

**Decision Rule:**

If the computed value of Durbin-Watson lies within the no autocorrelation region, it means there is no presence of autocorrelation problem. But if the Durbin-Watson computed value lies outside the regions there is the presence of autocorrelation problem. If it occurs, to avoid the spurious regression associated with it, we will employ the Heteroscedasticity Autocorrelation Correction (HAC) to remove its influence in the model.

**3.3.4.2 Normalitytest**: This study will carry out a normality test to check if the residuals, a proxy for stochastic error term follows normal distribution or not.

The normality test that would be used in this study is Jarque-Bera (JB) test of normality.

**Decision Rule**

For the residual to be normally distributed, the K value should be drawing close to or exactly three (3) and S should draw close or exactly zero (0),thus making the JB value close to or equal to zero (0), which is the condition for normal distribution.

**3.3.4.3 Granger causality test**: Although regression analysis deals with the dependence of one variable on the other, it does not necessarily imply causation. In other words, the existence of a relationship between variables does not prove causality or the direction of influence (Gujarati, 2004). The essence of causality analysis, using the granger causality test, is to actually ascertain whether a causal relationship exists between two variables of interest.

**3.4 Data required and sources**

The data required for this study are secondary time series data on commercial bank credit, interest rate, broad money supply and real gross domestic product (RGDP) ranging from 1981-2016. The data are extracted from the 2016 Central Bank of Nigeria (CBN) statistical bulletin.

**3.5 Statistical Package Used**

The statistical package used to analyze the data is E-view 8

**CHAPTER FOUR**

**PRESENTATION AND ANALYSES OF RESULT**

This chapter analyzes the results using various economic, statistical and econometric tests. Thus, the earlier posted hypothesis of this study will be tasted based on the empirical results.

**4.1 The Empirical Results**

As the performance of theoretical postulation is no guarantee, but only an indicator of what we may expect in practice, empirical testing of the time series data of the variables is absolutely necessary.

**4.1.1 Unit Root Test Results**

The Augmented Dickey-Fuller (ADF) was used to test for the unit root in the individual variable. The test was done based on the following hypothesis;

H0: variable is non-stationary

H1: variable is stationary

The results from the Augmented Dickey-Fuller test for unit root are summarized below.

**Table 4.1: ADF Test for Unit Root**

|  |  |  |  |
| --- | --- | --- | --- |
| **VARIABLES** | **ADF test**  **Statistics** | **5% critical**  **Value** | **Order of**  **Integration** |
| RGDP | -5.187876 | -1.951332 | I(1) |
| CBC | -4.662721 | -3.603202 | I(1) |
| INTR | -5.060826 | -2.954021 | I(1) |
| M2 | -4.391705 | -3.612199 | I(1) |

From the tabular illustration, all the variables under study (real gross domestic product, commercial bank credit, interest rateandbroad money supply are not stationary at level form but at first differencethat is, they are integrated at order one; I(1).

Not having a stationarity time series data indicates not having a short run relationship among the individual time series data, this result is expected since most macro- economic time series data are known to exhibit such behavior.

Since our variables are non-stationary at level form, there is need to conduct a co-integration test. The essence is to show that although all the variables are non-stationary, the variables may have a long term relationship that is, and the variables may be co-integrated and will not produce a spurious result.

**4.1.2 Co-integration Test Result**

According to (Gujarati 2004) a regression involving non-stationary time series variables will produce a spurious (non-meaningful) result. But if such variables are co-integrated, having long run relationship, the result will therefore be acceptable. Econometrically speaking, two variables will be co-integrated if they have a long run equilibrium relationship between them (Gujarati, 2004:822)

To test for co-integration among the variables, we will carry out ADF test on the regression residuals as proposed by Gujarati (2004). The ADF unit root test on the residuals work with the same decision rule as unit root test.

The co-integration test result is summarized as follows:

**Table 4.2: Co-integration Test Result**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Null Hypothesis: ECT has a unit root | | | |  |
| Exogenous: None | | |  |  |
| Lag Length: 0 (Automatic - based on SIC, maxlag=8) | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  | t-Statistic | Prob.\* |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller test statistic | | | -2.159290 | 0.0315 |
| Test critical values: | 1% level |  | -2.634731 |  |
|  | 5% level |  | -1.951000 |  |
|  | 10% level |  | -1.610907 |  |
|  |  |  |  |  |
|  |  |  |  |  |
| \*MacKinnon (1996) one-sided p-values. | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller Test Equation | | | |  |
| Dependent Variable: D(ECT) | | |  |  |
| Method: Least Squares | | |  |  |
| Date: 08/07/18 Time: 03:03 | | |  |  |
| Sample (adjusted): 1983 2016 | | |  |  |
| Included observations: 34 after adjustments | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| ECT(-1) | -0.398431 | 0.184519 | -2.159290 | 0.0382 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.118161 | Mean dependent var | | -97.24378 |
| Adjusted R-squared | 0.118161 | S.D. dependent var | | 1230.652 |
| S.E. of regression | 1155.660 | Akaike info criterion | | 16.97170 |
| Sum squared resid | 44073151 | Schwarz criterion | | 17.01659 |
| Log likelihood | -287.5189 | Hannan-Quinn criter. | | 16.98701 |
| Durbin-Watson stat | 1.531836 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

From the result above, the ADF test statistics (-2.159290) is greater than the 5% critical value (-1.951000) in absolute terms. This implies that the residuals are stationary (i.e. the variables are co-integrated or that the linear influence of the independent variables cancels out).

**4.1.3 Error Correction Mechanism Result**

**Table 4.3: ECM Test Result**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: D(RGDP) | | |  |  |
| Method: Least Squares | | |  |  |
| Date: 08/07/18 Time: 03:05 | | |  |  |
| Sample (adjusted): 1983 2016 | | |  |  |
| Included observations: 34 after adjustments | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 1181.566 | 248.9455 | 4.746282 | 0.0001 |
| D(CBC) | -0.001985 | 0.001195 | -1.661013 | 0.1075 |
| D(INT) | 54.06707 | 65.83465 | 0.821256 | 0.4182 |
| D(M2) | 0.432622 | 0.256802 | 1.684649 | 0.1028 |
| ECT(-1) | -0.876199 | 0.217089 | -4.036131 | 0.0004 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.519274 | Mean dependent var | | 1557.240 |
| Adjusted R-squared | 0.452966 | S.D. dependent var | | 1532.667 |
| S.E. of regression | 1133.586 | Akaike info criterion | | 17.03921 |
| Sum squared resid | 37265529 | Schwarz criterion | | 17.26368 |
| Log likelihood | -284.6666 | Hannan-Quinn criter. | | 17.11576 |
| F-statistic | 7.831342 | Durbin-Watson stat | | 1.700523 |
| Prob(F-statistic) | 0.000208 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

From table 4.3 above, the magnitude of the short run disparity is0.876199, that is to say the degree of the short run dynamics is 87 percent. This shows a very high speed of adjustment to equilibrium after a shock.

**4.2 Regression Result**

In the regression result, the variables under consideration are commercial bank credit (CBC) and interest rate (INT) of bo, b1,b2 andb3,are9.296463, -0.042432, -0.018890 and 0.264277respectively.

**The regression result is presented below;**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: LOG(RGDP) | | |  |  |
| Method: Least Squares | | |  |  |
| Date: 08/07/18 Time: 03:06 | | |  |  |
| Sample: 1981 2016 | | |  |  |
| Included observations: 32 | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 9.296463 | 0.083054 | 111.9325 | 0.0000 |
| LOG(CBC) | -0.042432 | 0.011304 | -3.753606 | 0.0008 |
| INT | -0.018890 | 0.003718 | -5.080731 | 0.0000 |
| LOG(M2) | 0.264277 | 0.013103 | 20.16957 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.974802 | Mean dependent var | | 10.27242 |
| Adjusted R-squared | 0.972102 | S.D. dependent var | | 0.545587 |
| S.E. of regression | 0.091128 | Akaike info criterion | | -1.836630 |
| Sum squared resid | 0.232522 | Schwarz criterion | | -1.653413 |
| Log likelihood | 33.38608 | Hannan-Quinn criter. | | -1.775898 |
| F-statistic | 361.0602 | Durbin-Watson stat | | 0.465715 |
| Prob(F-statistic) | 0.000000 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

**TABLE 4.4: Result of A prior Test**:

|  |  |  |  |
| --- | --- | --- | --- |
| **VARIABLES** | **EXPECTED SIGNS** | **OBSERVED SIGNS** | **RESULTS** |
| CBC | +VE | -VE | DCWES |
| INT | -VE | +VE | CWES |
| M2 | +VE | +VE | DCWES |

CWES – conform with expected sign

DCWES – doesn’t conform with expected sign

**4.3 Evaluation of Regression Results**

**4.3.1 Evaluation Based on Economic Criterion**

This subsection is concerned with evaluating the regression result based on a priori expectations. The signs and magnitude of each variable coefficient is evaluated against theoretical expectations.

The signs of some of the variable coefficient are not exactly in line with prior expectations. Commercial bank credit (CBC) has a negative relationship with real gross domestic product (RGDP) which does not conforms to the expected sign, on the other hand, interest rate has a negative relationship on real gross domestic product which conform to the expected sign. Broad money supply has positive relationship with the real gross domestic product which conforms to the expected sign.

The constant term is estimated at 9.296463which mean that the model passes through the point 9.296463 mechanically, if the independent variables are zero, real gross domestic product would be 9.296463 (Gujarati and Sangeetha, 2007).

The estimated coefficient for commercial bank credit (CBC) is -0.042432; this implies that if we hold all other variables affecting real gross domestic constant, a unit increase in commercial bank credit will lead to a 0.042432decrease in real gross domestic product (RGDP) on the average. Likewise, the estimated coefficient of interest rate (INTR) is -0.018890, this means that holding every other variable that affect real gross domestic product constant, a unit increase in Interest Rate will bring about -0.018890decrease in real gross domestic product. Finally, the estimated coefficient for M2 is 0.264277 which implies that if we hold every variables affecting real gross domestic product, a unit increase in M2 will lead to 0.264277 increases in economic growth on the average.

**4.3.2 Evaluation Based On Statistical Criterion**

This subsection applies the R2, the t-test and the f-test to determine the statistical reliability of the estimated parameters. These tests are performed as follows;

**4.3.2.1 R2 –Result and Interpretation**

The coefficient of determination R2 from the regression result, the R2 is given as 0.974802 this implies that 97.4802% of the variation in real gross domestic product is being explained by the variation in Interest Rate, commercial bank credit and broad money supply on the average on the average.

**4.3.2.2 t–Test Result and Interpretation**

From the distribution table, t0.025, 36= 2.042

The result of the t-test of significance is shown in table 4.5 below:

The result of the t-test is presented below and evaluated based on the critical value (2.042) and the value of calculated t-statistics for each variable.

**Table 4.5: Result of t-Test of Significance**

|  |  |  |  |
| --- | --- | --- | --- |
| **VARIABLES** | **t-computed (t\*)** | **t-tabulated (ta/2)** | **Conclusion** |
| CBC | -3.753606 | 2.042 | significant |
| INTR | -5.080731 | 2.042 | significant |
| M2 | 20.16957 |  | significant |

Significant (Reject Ho; accept H1),

Insignificant (Accept Ho).

From the t- test result above, For CBC, t\*>ta/2, therefore we rejectnull hypothesis. Hence commercial bank credit (CBC) is statistically significant thus commercial bank creditis a significant variable to determine economic growth in Nigeria.

More so, for interest rate, t\*>ta/2,therefore we accept null hypothesis. Hence interest rate (INT) is statistically significant thus interest rateis not a significant variable to determine economic growth in Nigeria.

For M2, t\*>ta/2, therefore we accept null hypothesis. Hence broad money supply (M2) is statistically significant thus M2is a significant variable to determine economic growth in Nigeria.

**4.3.2.3 Result and Interpretation of F–Test of Significance**

v1=4-1=3, V2=35-4=31, df=(2,33) at 5% level of significance and df=(3,31), f0.05= 2.99 and F\*=361.0602. Since f\*> f0.05, we reject the null hypothesis and conclude that the variables (CBTL, INTR, M2) have joint inference on economic growth in Nigeria.

**Table 4.6: Result of f-Test of Significance:**

|  |  |  |
| --- | --- | --- |
| **Computed f-ratio value** | **Critical f-ratio value** | **Result** |
| 361.0602 | 2.99 | Statistically significant |

**4.3.3 Evaluation Based on Econometric Criterion**

In this subsection, the following econometric test is used to evaluate the result obtained from our model: autocorrelation, normality and granger causality test.

**4.3.3.1 Result and Interpretation of Autocorrelation Test**

Using the durbin-watson statistics, the region of no autocorrelation (positive or negative) is given as follows

du< d\*< (4-du)

du= 1.65

d\*= 0.465715

(4-du)= 4 – 1.65= 2.35

By substitution, the region becomes:

1.65>0.465715< 2.35

|  |  |  |  |
| --- | --- | --- | --- |
| Du | d\* | 4-du | Result |
| 1.65 | 0.465715 | 2.35 | Autocorrelation present |

The result shows that there is the presence of autocorrelation problem in the model as the computed durbin Watson statistics did not fall within the zero autocorrelation regions.

**4.3.3.2 Normality Test Result and Interpretation**

The Normality test will be done using the Jaque-Berra test of normalityJaque-Berra test of normality is hinged on the hypothesis that K is close to or exactly 3 and S is close to or exactly o, thus making the JB value close to or equal to O, which is the condition for normal distribution it will also be tested using the probablility value, if the probability is less than 0.05, the null hypothesis will be accepted but if the probability value is higher than 0.05, the alternative hypothesis will be accepted.

**Table 4.7 Result of Normality Test**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Skewness** | **Kurtosis** | **Jarque-berra** | **Probability** | **Test** |
| 1.406611 | 7.370943 | 36.02582 | 0.000000 | ND |

ND= Normally distributed

**Conclusion:**

From the normality table, the Jaque-Berra draw close to zero (0) as stated, in order words the residual are normally distributed. Also, the probability value is greater than 0.05; therefore, the null hypothesis is accepted.

**4.3.3.3 Granger Causality Test: Result and Interpretation**

**Table 4.8: Result of Causality Test:**

|  |  |  |  |
| --- | --- | --- | --- |
| Pairwise Granger Causality Tests | | | |
| Date: 08/07/18 Time: 03:08 | | | |
| Sample: 1981 2016 | | |  |
| Lags: 2 | |  |  |
|  |  |  |  |
|  |  |  |  |
| Null Hypothesis: | Obs | F-Statistic | Prob. |
|  |  |  |  |
|  |  |  |  |
| CBC does not Granger Cause RGDP | 34 | 3.43691 | 0.0458 |
| RGDP does not Granger Cause CBC | | 2.90148 | 0.0710 |
|  |  |  |  |
|  |  |  |  |
| INT does not Granger Cause RGDP | 34 | 0.01921 | 0.9810 |
| RGDP does not Granger Cause INT | | 1.00515 | 0.3784 |
|  |  |  |  |
|  |  |  |  |
| M2 does not Granger Cause RGDP | 34 | 3.89496 | 0.0317 |
| RGDP does not Granger Cause M2 | | 6.81120 | 0.0038 |
|  |  |  |  |
|  |  |  |  |
| INT does not Granger Cause CBC | 34 | 0.76497 | 0.4745 |
| CBC does not Granger Cause INT | | 0.15529 | 0.8569 |
|  |  |  |  |
|  |  |  |  |
| M2 does not Granger Cause CBC | 34 | 0.64957 | 0.5297 |
| CBC does not Granger Cause M2 | | 17.0597 | 1.E-05 |
|  |  |  |  |
|  |  |  |  |
| M2 does not Granger Cause INT | 34 | 0.69745 | 0.5060 |
| INT does not Granger Cause M2 | | 0.02793 | 0.9725 |
|  |  |  |  |
|  |  |  |  |

From the granger causality result, unidirectional causal relationship exists between commercial bank credits(CBC) and real gross domestic product(RGDP), also anocausality relationship exists between interest rate (INTR) and real gross domestic product (RGDP).Unidirectional causal relationship exist between M2 and RGDP. No causal relationship exist between INT and CBC. Unidirectional causality exist between CBC and M2. Finally, no causality exist between INT and M2

**4.4Evaluation of Research Hypotheses**

**4.4.1 Hypotheses one**- from the t-Test result we reject the null hypotheses for all the variables (CBC, INTR and M2), which is that commercial bank credit, interest rate and broad money supply have significant impact on the real gross domestic product.

**4.4.2 Hypothesis two-** from the regression result, commercial bank credit and interest rate both have a negative relationship with real gross domestic product in Nigeria whereas broad money supply have positive relationship on the economic growth in Nigeria.

**4.4.3 Hypotheses three-** From the granger causality result, unidirectional causal relationship exists between commercial bank credits (CBC) and real gross domestic product(RGDP), also ano causality relationship exists between interest rate (INTR) and real gross domestic product (RGDP). Unidirectional causal relationship exist between M2 and RGDP. No causal relationship exist between INT and CBC. Unidirectional causality exist between CBC and M2. Finally, no causality exist between INT and M2

**4.4 Implication of the Results**

The result of this study indicates that all the variables under study (commercial bank credit, interest rate and broad money supply)have significant impact on the real gross domestic product in Nigeria.

Also, commercial bank credit and interest rate havenegative relationship on the real gross domestic product in Nigeria; this implies that a unit increase in the values of the commercial bank credit and interest rate of the country will bring about an decrease in the real gross domestic product in Nigeria. whereas broad money supply has a positive relationship on the economic growth in Nigeria. This is partly consistent with our a priori expectation.

Furthermore, from the granger causality result, unidirectional causal relationship exists between commercial bank credits (CBC) and real gross domestic product(RGDP), also ano causalityrelationship exists between interest rate (INTR) and real gross domestic product (RGDP). Unidirectional causal relationship exist between M2 and RGDP. No causal relationship exist between INT and CBC. Unidirectional causality exist between CBC and M2. Finally, no causality exist between INT and M2

**CHAPTER FIVE**

**SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION**

**5.1 Summary of Findings**

This study builds a model to examine the impact of impact of deposit money bank credit on the economic growth in Nigeria for the period 1981-2016 while incorporating other variables that affect real gross domestic product such as commercial bank total credit, interest rate and broad money supply. To carry out this research work, annual time series data on broad money supply, interest rate, commercial bank credit and real gross domestic product for the period 1981-2016 were collected.

The overall result of the research work shows that, commercial bank credit, interest rate and broad money supply have significant impact on the economic growth in Nigeria.

The findings of this study further indicates that interest rate and commercial bank credit havenegative relationship with real gross domestic product whereas broad money supply has positive relationship on the economic growth in Nigeria;

From the granger causality result, unidirectional causal relationship exists between commercial bank credits (CBC) and real gross domestic product(RGDP), also ano causality relationship exists between interest rate (INTR) and real gross domestic product (RGDP). Unidirectional causal relationship exist between M2 and RGDP. No causal relationship exist between INT and CBC. Unidirectional causality exist between CBC and M2. Finally, no causality exist between INT and M2

**5.2 Conclusion**

From the foregoing, we therefore conclude that commercial bank credit, interest rate and broad money supplyhave significant impact on real gross domestic product. We also conclude that unidirectional causal relationship exists between commercial bank credits (CBC) and real gross domestic product(RGDP), also ano causality relationship exists between interest rate (INTR) and real gross domestic product (RGDP). Unidirectional causal relationship exist between M2 and RGDP. No causal relationship exist between INT and CBC. Unidirectional causality exist between CBC and M2. Finally, no causality exist between INT and M2

**5.3 Recommendations**

Owing to the findings of this research work above, the following recommendations are therefore formulated and the government and other necessary authorities are advised to adhere to them in order to increase the manufacturing sector output of Nigeria.

1. The Central Bank of Nigeria and other monetary authorities should reduce the interest rate being charge on loans borrowed from the commercial banks through the reduction of bank rate and other deposit requirements of the commercial banks in order to make funds available to the potential investors which will increase the national output though their production.
2. Haven seen that interest rate has a negative relationship with real growth of the economy, the authorities in charge of formulating the stabilization policies of the country should formulate policies which keeps interest rate at a bearable position which will increase the volume of spendable cash in the hands of individual.
3. Accessing loans from financial institutions more especial commercial banks should be made easy without much bureaucratic principles and unending demands of bankers when accessing loans for investment.

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**TIME SERIES DATA ON RGDP, CBC, INT AND M2, DATA RANGING FROM 1981-2016**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **year** | **RGDP** | **CBC** | **INT** | **M2** |
| 1981 | 15258 | 2664.9 | 8.92 | 14.47 |
| 1982 | 14985.08 | 313.1 | 9.54 | 15.79 |
| 1983 | 13849.73 | 1521.2 | 9.98 | 17.69 |
| 1984 | 13779.26 | 1439.7 | 10.24 | 20.11 |
| 1985 | 14953.91 | 2425 | 9.43 | 22.30 |
| 1986 | 15237.99 | 272.5 | 9.96 | 23.81 |
| 1987 | 15263.93 | 482.8 | 13.96 | 27.57 |
| 1988 | 16215.37 | -3820.8 | 16.62 | 38.36 |
| 1989 | 17294.68 | -10326 | 20.44 | 45.90 |
| 1990 | 19305.63 | 1932.5 | 25.3 | 52.86 |
| 1991 | 19199.06 | -7414.3 | 20.04 | 75.40 |
| 1992 | 19620.19 | 230.8 | 24.76 | 111.11 |
| 1993 | 19927.99 | -53233.5 | 31.65 | 165.34 |
| 1994 | 19979.12 | 647.7 | 20.48 | 230.29 |
| 1995 | 20353.2 | 122138.3 | 20.23 | 289.09 |
| 1996 | 21177.92 | 244975.7 | 19.84 | 345.85 |
| 1997 | 21789.1 | 264651.7 | 17.8 | 413.28 |
| 1998 | 22332.87 | 175626.3 | 18.18 | 488.15 |
| 1999 | 22449.41 | 212922.9 | 20.29 | 628.95 |
| 2000 | 23688.28 | 135673.6 | 21.27 | 878.46 |
| 2001 | 25267.54 | 217647.6 | 23.44 | 1,269.32 |
| 2002 | 28957.71 | 19976.5 | 24.77 | 1,505.96 |
| 2003 | 31709.45 | 38963.6 | 20.71 | 1,952.92 |
| 2004 | 35020.55 | 220800 | 19.18 | 2,131.82 |
| 2005 | 37474.95 | 437000 | 17.95 | 2,637.91 |
| 2006 | 39995.5 | 546403.1 | 16.9 | 3,797.91 |
| 2007 | 42922.41 | 744385.9 | 16.94 | 5,127.40 |
| 2008 | 46012.52 | 1076078 | 15.48 | 8,008.20 |
| 2009 | 49856.1 | 342788 | 18.36 | 9,411.11 |
| 2010 | 54612.26 | 221565.3 | 17.59 | 11,034.94 |
| 2011 | 57511.04 | 546810.3 | 16.02 | 12,172.49 |
| 2012 | 59929.89 | 370387.9 | 16.79 | 13,895.39 |
| 2013 | 63218.72 | 379587.8 | 16.72 | 15,160.29 |
| 2014 | 67152.79 | 387212.8 | 16.55 | 17,679.29 |
| 2015 | 69023.93 | 432623.1 | 13.6 | 18,901.30 |
| 2016 | 67931.24 | 394079.2 | 14.01 | 21,607.68 |
|  |  |  |  |  |

***SOURCE: CENTRAL BANK OF NIGERIA STATISTICAL BULLETIN***

**APPENDIX I**

**STATIONALITY TIME SERIES DATA ON RGDP**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Null Hypothesis: D(RGDP) has a unit root | | | |  |
| Exogenous: None | | |  |  |
| Lag Length: 0 (Automatic - based on SIC, maxlag=9) | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  | t-Statistic | Prob.\* |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller test statistic | | | -5.187876 | 0.0000 |
| Test critical values: | 1% level |  | -2.636901 |  |
|  | 5% level |  | -1.951332 |  |
|  | 10% level |  | -1.610747 |  |
|  |  |  |  |  |
|  |  |  |  |  |
| \*MacKinnon (1996) one-sided p-values. | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller Test Equation | | | |  |
| Dependent Variable: D(RGDP,2) | | |  |  |
| Method: Least Squares | | |  |  |
| Date: 08/07/18 Time: 02:56 | | |  |  |
| Sample (adjusted): 1984 2016 | | |  |  |
| Included observations: 33 after adjustments | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D(RGDP(-1),2) | -1.032729 | 0.199066 | -5.187876 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.455792 | Mean dependent var | | -63.67879 |
| Adjusted R-squared | 0.455792 | S.D. dependent var | | 1474.906 |
| S.E. of regression | 1088.045 | Akaike info criterion | | 16.85199 |
| Sum squared resid | 37882940 | Schwarz criterion | | 16.89734 |
| Log likelihood | -277.0578 | Hannan-Quinn criter. | | 16.86725 |
| Durbin-Watson stat | 1.692075 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

**APPENDIX II**

**STATIONALITY TIME SERIES DATA ON CBC**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Null Hypothesis: D(CBC) has a unit root | | | |  |
| Exogenous: Constant, Linear Trend | | | |  |
| Lag Length: 9 (Automatic - based on SIC, maxlag=9) | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  | t-Statistic | Prob.\* |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller test statistic | | | -4.662721 | 0.0053 |
| Test critical values: | 1% level |  | -4.374307 |  |
|  | 5% level |  | -3.603202 |  |
|  | 10% level |  | -3.238054 |  |
|  |  |  |  |  |
|  |  |  |  |  |
| \*MacKinnon (1996) one-sided p-values. | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller Test Equation | | | |  |
| Dependent Variable: D(CBC,2) | | |  |  |
| Method: Least Squares | | |  |  |
| Date: 08/07/18 Time: 02:57 | | |  |  |
| Sample (adjusted): 1992 2016 | | |  |  |
| Included observations: 25 after adjustments | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D(CBC(-1)) | -13.90709 | 2.982612 | -4.662721 | 0.0004 |
| D(CBC(-1),2) | 12.53932 | 2.872909 | 4.364678 | 0.0008 |
| D(CBC(-2),2) | 11.28126 | 2.709410 | 4.163732 | 0.0011 |
| D(CBC(-3),2) | 10.51719 | 2.491370 | 4.221447 | 0.0010 |
| D(CBC(-4),2) | 8.939195 | 2.182704 | 4.095467 | 0.0013 |
| D(CBC(-5),2) | 7.706069 | 1.874697 | 4.110567 | 0.0012 |
| D(CBC(-6),2) | 6.257833 | 1.603985 | 3.901429 | 0.0018 |
| D(CBC(-7),2) | 5.372594 | 1.351650 | 3.974842 | 0.0016 |
| D(CBC(-8),2) | 2.947534 | 1.029548 | 2.862939 | 0.0133 |
| D(CBC(-9),2) | 1.978987 | 0.645479 | 3.065920 | 0.0090 |
| C | -216226.4 | 125705.4 | -1.720105 | 0.1091 |
| @TREND("1981") | 22675.50 | 7423.452 | 3.054576 | 0.0092 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.881587 | Mean dependent var | | -1167.884 |
| Adjusted R-squared | 0.781391 | S.D. dependent var | | 308875.5 |
| S.E. of regression | 144416.6 | Akaike info criterion | | 26.90487 |
| Sum squared resid | 2.71E+11 | Schwarz criterion | | 27.48993 |
| Log likelihood | -324.3108 | Hannan-Quinn criter. | | 27.06714 |
| F-statistic | 8.798653 | Durbin-Watson stat | | 2.557988 |
| Prob(F-statistic) | 0.000238 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

**APPENDIX III**

**STATIONALITY TIME SERIES DATA ON INT**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Null Hypothesis: D(INT) has a unit root | | | |  |
| Exogenous: Constant | | |  |  |
| Lag Length: 1 (Automatic - based on SIC, maxlag=9) | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  | t-Statistic | Prob.\* |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller test statistic | | | -5.060826 | 0.0002 |
| Test critical values: | 1% level |  | -3.646342 |  |
|  | 5% level |  | -2.954021 |  |
|  | 10% level |  | -2.615817 |  |
|  |  |  |  |  |
|  |  |  |  |  |
| \*MacKinnon (1996) one-sided p-values. | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller Test Equation | | | |  |
| Dependent Variable: D(INT,2) | | |  |  |
| Method: Least Squares | | |  |  |
| Date: 08/07/18 Time: 02:59 | | |  |  |
| Sample (adjusted): 1984 2016 | | |  |  |
| Included observations: 33 after adjustments | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D(INT(-1)) | -1.371752 | 0.271053 | -5.060826 | 0.0000 |
| D(INT(-1),2) | 0.208195 | 0.181187 | 1.149061 | 0.2596 |
| C | 0.190381 | 0.574409 | 0.331438 | 0.7426 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.586172 | Mean dependent var | | -0.000909 |
| Adjusted R-squared | 0.558584 | S.D. dependent var | | 4.947793 |
| S.E. of regression | 3.287272 | Akaike info criterion | | 5.304501 |
| Sum squared resid | 324.1847 | Schwarz criterion | | 5.440547 |
| Log likelihood | -84.52427 | Hannan-Quinn criter. | | 5.350277 |
| F-statistic | 21.24698 | Durbin-Watson stat | | 1.856781 |
| Prob(F-statistic) | 0.000002 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

**APPENDIX IV**

**STATIONALITY TIME SERIES DATA ON M2**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Null Hypothesis: D(M2) has a unit root | | | |  |
| Exogenous: Constant, Linear Trend | | | |  |
| Lag Length: 9 (Automatic - based on SIC, maxlag=9) | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  | t-Statistic | Prob.\* |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller test statistic | | | -4.391705 | 0.0101 |
| Test critical values: | 1% level |  | -4.394309 |  |
|  | 5% level |  | -3.612199 |  |
|  | 10% level |  | -3.243079 |  |
|  |  |  |  |  |
|  |  |  |  |  |
| \*MacKinnon (1996) one-sided p-values. | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller Test Equation | | | |  |
| Dependent Variable: D(M2,2) | | |  |  |
| Method: Least Squares | | |  |  |
| Date: 08/07/18 Time: 03:01 | | |  |  |
| Sample (adjusted): 1993 2016 | | |  |  |
| Included observations: 24 after adjustments | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D(M2(-1),2) | -13.22838 | 3.012130 | -4.391705 | 0.0009 |
| D(M2(-1),3) | 11.75798 | 2.987174 | 3.936155 | 0.0020 |
| D(M2(-2),3) | 11.79125 | 2.942595 | 4.007091 | 0.0017 |
| D(M2(-3),3) | 11.36188 | 2.911052 | 3.903016 | 0.0021 |
| D(M2(-4),3) | 11.42731 | 3.301510 | 3.461238 | 0.0047 |
| D(M2(-5),3) | 12.89953 | 3.309395 | 3.897852 | 0.0021 |
| D(M2(-6),3) | 10.04409 | 2.474434 | 4.059145 | 0.0016 |
| D(M2(-7),3) | 8.382944 | 2.876473 | 2.914313 | 0.0130 |
| D(M2(-8),3) | 13.03070 | 4.587619 | 2.840406 | 0.0149 |
| D(M2(-9),3) | 13.50553 | 3.140321 | 4.300683 | 0.0010 |
| C | -720.6665 | 437.2806 | -1.648064 | 0.1253 |
| @TREND("1981") | 49.30041 | 24.87485 | 1.981938 | 0.0709 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.967076 | Mean dependent var | | 61.30000 |
| Adjusted R-squared | 0.936895 | S.D. dependent var | | 1232.625 |
| S.E. of regression | 309.6443 | Akaike info criterion | | 14.61558 |
| Sum squared resid | 1150555. | Schwarz criterion | | 15.20461 |
| Log likelihood | -163.3869 | Hannan-Quinn criter. | | 14.77185 |
| F-statistic | 32.04286 | Durbin-Watson stat | | 1.702736 |
| Prob(F-statistic) | 0.000000 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

**APPENDIX V**

**COINTEGRATION TEST RESULT**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Null Hypothesis: ECT has a unit root | | | |  |
| Exogenous: None | | |  |  |
| Lag Length: 0 (Automatic - based on SIC, maxlag=8) | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  | t-Statistic | Prob.\* |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller test statistic | | | -2.159290 | 0.0315 |
| Test critical values: | 1% level |  | -2.634731 |  |
|  | 5% level |  | -1.951000 |  |
|  | 10% level |  | -1.610907 |  |
|  |  |  |  |  |
|  |  |  |  |  |
| \*MacKinnon (1996) one-sided p-values. | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller Test Equation | | | |  |
| Dependent Variable: D(ECT) | | |  |  |
| Method: Least Squares | | |  |  |
| Date: 08/07/18 Time: 03:03 | | |  |  |
| Sample (adjusted): 1983 2016 | | |  |  |
| Included observations: 34 after adjustments | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| ECT(-1) | -0.398431 | 0.184519 | -2.159290 | 0.0382 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.118161 | Mean dependent var | | -97.24378 |
| Adjusted R-squared | 0.118161 | S.D. dependent var | | 1230.652 |
| S.E. of regression | 1155.660 | Akaike info criterion | | 16.97170 |
| Sum squared resid | 44073151 | Schwarz criterion | | 17.01659 |
| Log likelihood | -287.5189 | Hannan-Quinn criter. | | 16.98701 |
| Durbin-Watson stat | 1.531836 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

**APPENDIX VI**

**ERROR CORRECTION MECHANISM**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: D(RGDP) | | |  |  |
| Method: Least Squares | | |  |  |
| Date: 08/07/18 Time: 03:05 | | |  |  |
| Sample (adjusted): 1983 2016 | | |  |  |
| Included observations: 34 after adjustments | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 1181.566 | 248.9455 | 4.746282 | 0.0001 |
| D(CBC) | -0.001985 | 0.001195 | -1.661013 | 0.1075 |
| D(INT) | 54.06707 | 65.83465 | 0.821256 | 0.4182 |
| D(M2) | 0.432622 | 0.256802 | 1.684649 | 0.1028 |
| ECT(-1) | -0.876199 | 0.217089 | -4.036131 | 0.0004 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.519274 | Mean dependent var | | 1557.240 |
| Adjusted R-squared | 0.452966 | S.D. dependent var | | 1532.667 |
| S.E. of regression | 1133.586 | Akaike info criterion | | 17.03921 |
| Sum squared resid | 37265529 | Schwarz criterion | | 17.26368 |
| Log likelihood | -284.6666 | Hannan-Quinn criter. | | 17.11576 |
| F-statistic | 7.831342 | Durbin-Watson stat | | 1.700523 |
| Prob(F-statistic) | 0.000208 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

**APPENDIX VII**

**REGRESSION RESULT**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: LOG(RGDP) | | |  |  |
| Method: Least Squares | | |  |  |
| Date: 08/07/18 Time: 03:06 | | |  |  |
| Sample: 1981 2016 | | |  |  |
| Included observations: 32 | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 9.296463 | 0.083054 | 111.9325 | 0.0000 |
| LOG(CBC) | -0.042432 | 0.011304 | -3.753606 | 0.0008 |
| INT | -0.018890 | 0.003718 | -5.080731 | 0.0000 |
| LOG(M2) | 0.264277 | 0.013103 | 20.16957 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.974802 | Mean dependent var | | 10.27242 |
| Adjusted R-squared | 0.972102 | S.D. dependent var | | 0.545587 |
| S.E. of regression | 0.091128 | Akaike info criterion | | -1.836630 |
| Sum squared resid | 0.232522 | Schwarz criterion | | -1.653413 |
| Log likelihood | 33.38608 | Hannan-Quinn criter. | | -1.775898 |
| F-statistic | 361.0602 | Durbin-Watson stat | | 0.465715 |
| Prob(F-statistic) | 0.000000 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

**APPENDIX VIII**

**NORMALITY TEST RESULT**



**APPENDIX IX**

**GRANGER CAUSALITY TEST RESULT**

|  |  |  |  |
| --- | --- | --- | --- |
| Pairwise Granger Causality Tests | | | |
| Date: 08/07/18 Time: 03:08 | | | |
| Sample: 1981 2016 | | |  |
| Lags: 2 | |  |  |
|  |  |  |  |
|  |  |  |  |
| Null Hypothesis: | Obs | F-Statistic | Prob. |
|  |  |  |  |
|  |  |  |  |
| CBC does not Granger Cause RGDP | 34 | 3.43691 | 0.0458 |
| RGDP does not Granger Cause CBC | | 2.90148 | 0.0710 |
|  |  |  |  |
|  |  |  |  |
| INT does not Granger Cause RGDP | 34 | 0.01921 | 0.9810 |
| RGDP does not Granger Cause INT | | 1.00515 | 0.3784 |
|  |  |  |  |
|  |  |  |  |
| M2 does not Granger Cause RGDP | 34 | 3.89496 | 0.0317 |
| RGDP does not Granger Cause M2 | | 6.81120 | 0.0038 |
|  |  |  |  |
|  |  |  |  |
| INT does not Granger Cause CBC | 34 | 0.76497 | 0.4745 |
| CBC does not Granger Cause INT | | 0.15529 | 0.8569 |
|  |  |  |  |
|  |  |  |  |
| M2 does not Granger Cause CBC | 34 | 0.64957 | 0.5297 |
| CBC does not Granger Cause M2 | | 17.0597 | 1.E-05 |
|  |  |  |  |
|  |  |  |  |
| M2 does not Granger Cause INT | 34 | 0.69745 | 0.5060 |
| INT does not Granger Cause M2 | | 0.02793 | 0.9725 |
|  |  |  |  |
|  |  |  |  |