TITLE PAGE

AN EMPIRICAL ANALYSIS OF THE IMPACT OF MONETARY POLICY ON ECONOMIC DEVELOPMENT IN NIGERIA

(1985–2011)

BY

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EC/2009/758

DEPARTMENT OF ECONOMICS

FACULTY OF MANAGEMENT AND SOCIAL SCIENCES.

CARITAS UNIVERSITY AMORJI-NIKE EMENE ENUGU

JULY, 2013

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BEING A RESEARCH PROJECT SUBMITTED TO THE DEPARTMENT OF ECONOMICS, FACULTY OF MANAGEMENT AND SOCIAL SCIENCES, CARITAS UNIVERSITY,

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF A BACHELOR OF SCIENCE (B.Sc) DEGREE IN ECONOMICS

JULY, 2013

APPROVAL PAGE

This is to certify that this research work by OKEKE NWABUEZE, presented to the department of economics, Caritas University, was supervised and approved to have met the conditions necessary for the award of a bachelor of science (B.Sc) degree in economics.

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DEDICATION

I dedicate this research work to my beloved parents, brothers, sisters, relatives and friends who are very important people to me.

ACKNOWNLEDGEMENT

I must start by giving the credit for the commencement and completion of this research work to the almighty God, who has deemed it fit to bless me with good health and adequate knowledge, of which without him, this project would not have reached its fruition. To him be all the glory.

I would also like to thank my supervisor Mr J.C Odionye for all his guidance, support, correction and advice.

Finally, i would like to thank my parents for their financial support and patience which contributed greatly towards the success of this research work.

ABSTRACT

One can hardly find a country without monetary policy. As a matter of fact, monetary policy has gained a solid ground in the Nigerian economy. However, in light of various economic problems in Nigeria, it would seem the benefits of monetary policy are yet to be fully harnessed. The purposed of this study is to analyse the impact of monetary policy with Nigeria being the case study. With regards to the data analysis, regression analysis was applied. The study covers the effectiveness of monetary policy from the period 1985 to 2011. The study revealed that the level of effectiveness of monetary policy is highly influenced by the Central Bank of Nigeria (CBN).

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CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

One of the major issues which have occupied the mind of government for years is the impact of monetary policy as a tool for price stability in Nigeria. Despite the lack consensus amongst the economy, there is remarkable strong agreement that monetary policy as an economy-stabilizing measure in Nigeria refers to the persistence rise in the general price level.

Monetary policy is one of the macroeconomic policies available for managing the economy. It is however important today because its effects on economic aggregates such as price, output, interest rates and exchange rates. In most countries, the central bank is saddled with the responsibility of conducting monetary policy. In the case of Nigeria, the responsibility entirely lies with the Central Bank of Nigeria (CBN). The discretionary control of the money stock by the monetary authority involves the expansion and contraction of money, influencing interest

rate to make money cheaper or more expensive depending on the prevailing economic situation.

1.2 STATEMENT OF THE PROBLEM

The monetary policy implemented in the economy over the past years has been detrimental and inconsistent with developmental needs of the economy (Apata J.T, 2007). This concern has exerted pressures on the monetary authorities in Nigeria to re-examine and re-evaluate their monetary policies with the view of finding possible solutions. As a result of this, the Structural Adjustment Programme (SAP) as introduced in Nigeria in 1986 in order to correct the structural imbalances in the economy and to liberalize the financial system.

Despite various actions used by the monetary authorities in administering monetary policy in Nigeria, there are still limits to the effectiveness of monetary policy. There has been a wide discrepancy between target and outcome due to the fact that the central bank has not been able to achieve the various objectives it set out for itself. For instance, there has been a problem hitting inflation target. The inflation target in 2008 was 7% but the performance was about 19%.

Nigeria needs an effective, efficient, sound and consistent monetary policy that has a positive effect on interest rate, employment and real output, so as to minimize the economic problems disturbing Nigeria as a developing country

1.3 RESEARCH QUESTIONS

- What is the effect of monetary policy on price stability in Nigeria?
- To what extent do the instruments of monetary policy control inflation in Nigeria?
- What are the contributions of monetary policy towards developing Nigeria?

1.4 OBJECTIVES OF THE STUDY

This study seeks to achieve the following objectives;

I. To determine the impact of monetary policy on inflation in Nigeria.

II. To empirically examine the effectiveness of monetary policy on economic stability in Nigeria.

III. To analyze the contributions of monetary policy towards promoting growth and development of the Nigerian economy.

1.5 RESEARCH HYPOTHESIS

The hypothesis to be tested in the course of this research work is stated below;

H_1 = Monetary policy has significant impact on inflation in Nigeria.

H_2 = Monetary policy has no significant impact on inflation in Nigeria.

1.6 SIGNIFICANCE O THE STUDY

This study is significant in the following ways;

I. It would provide an objective view of the effectiveness of the monetary policy in Nigeria.
II. It would provide an economic basis upon which to examine the effect of monetary policy on the Nigerian economy.
III. It would provide policy recommendations to the policy makers on ways to make the Nigeria economy vibrant through the monetary policy.

1.7 SCOPE OF THE STUDY / LIMITATION OF THE STUDY

This study will focus on major growth and development components which are vital parts of monetary policy. The study will also empirically examine the effectiveness of monetary policy in the Nigerian economy. Factors that affect smooth execution of the project include inadequate finance and short time.

CHAPTER TWO

2.1 LITERATURE REVIEW

THE MEANING AND CONCEPT OF MONETARY POLICY

Monetary policy is a major tool for economic management and stability which involves measures designed to regulate the volume, cost, availability and direction of credit in an economy to achieve some specified macroeconomic goals. According to Nwakwo (1991), monetary policy is a measure or combination of measures designed influence the volume, price and direction of money. According to Adesoye (2010), monetary policy is a combination of measures used to regulate the value, supply and cost of money in an economy in consonance with the expected level of economic activity. Salvin defined monetary policy as the use of open market operations, changes in discount rates, changes in reserve requirements, and other measures available to the monetary authorities to control the growth rate of money supply. John Ranlett in his book titled 'the principles of money and banking defined monetary policy as the deliberate management of money supply for the explicit purpose of attaining specific objectives in the sense that monetary

policy involves the conscious planned manipulation of the volume of money in circulation to achieve specific objectives of growth, employment and price stability. Olumechere sees monetary policy as a deliberate action adopted by the central bank to control the supply of money so as to promote the attainment of national objectives. Harry .G. Johnson defined monetary policy as a policy employing the central bank's control of money supply as an instrument for achieving the objectives of general economic policy. It refers to the use of these official instruments which are at the disposal of the central bank to regulate the availability, cost and use of money and credit with the aim of achieving optimum levels of output and employment, price stability, balance of payments equilibrium and other goals of government's economic policy. Since the common objectives of economic policy are price stability, balance of payment equilibrium, interest rate stability and rapid economic growth, the effectiveness of monetary policy will depend upon the degree to which it succeeds in achieving these objectives. The central bank influences the total amount and the cost of credit primarily by affecting the cash reserves of commercial banks in the economy. The concept of monetary policy is broad enough to

encompass the institutional changes in the banking and credit structure.

GOALS OF MONETARY POLICY

The goals of monetary policy are as follows;

a. Achieving price stability
b. Attaining full employment
c. Promoting economic growth
d. Maintaining balance of payments equilibrium
e. Stabilizing interest rate
f. Stabilizing financial markets.

INSTRUMENTS OF MONETARY POLICY

The monetary policy instruments can be classified into two (2) groups namely:- qualitative and quantitative instruments. The quantitative instruments regulate the cost, volume, and availability of credit. They include the following;

a. Open market operations (OMO): Open market operations involve the sale and purchase of government securities in the open market

depending on whether the economy is inflationary or deflationary. The effect is that when the monetary authorities sell securities to the market, bank reserves decline, and when they buy securities from the market, bank reserves increase.

b. RESERVE REQUIREMENT: The reserve requirement can be manipulated by the monetary authorities to reduce the ability of commercial banks to advance loans to the public by increasing the rate and enhancing their lending position by reducing the rate. In this connection, reserve requirement is both an instrument for liquidity management and prudential regulation. The reserve requirement is a very potent instrument and has been progressively increased from about 6% in 1993 to 7.8% in 1997 and then to 10.8% in 2001 to 2011.

c. DISCOUNT RATE: The discount rate is the rate of interest the monetary authorities or the central bank charges the commercial banks on loans extended to them. If the central bank wishes to increase liquidity and investment, it reduces the discount rate charged by commercial banks thus resulting in attractive

borrowing or low cost of borrowing and hence expansion in liquidity and investment, and vice-versa.

On the other hand, the qualitative instruments regulate the direction and use of credit in the economy. They include the following;

d. Selective credit controls: Selective credit controls involve administrative orders whereby the central bank uses guidelines to instruct commercial banks on the cost and volume of credit to specific sectors depending on the degree of priority of each sector. The aim of the selective credit controls is to channelize the flow of bank speculative and other purposes to socially and economically desirable use.

e. Moral suasion: Moral suasion involves the employment of persuasions or friendly persuasive statements, public pronouncements or outright appeal to the banks requesting them to operate in a particular direction for the realisation of specified government objectives. For example, the central bank may appeal to commercial banks to exercise restraint in credit expansion by explaining to them how excess expansion of credit might involve

serious consequences for the banking system and the economy as a whole.

2.2 THEORETICAL LITERATURE:

Over the past years, the central bank has adopted monetary targeting framework for the implementation of monetary policy. The monetary targeting framework at that time was exchange rate targeting consistent with the paradigm at that time, such that Nigeria was fixed at par, fist with British pound sterling and subsequently with a basket of 12 currencies. This experiment led to a considerable measure of stability in the naira exchange rate in monetary aggregates and prices, although there was credible evidence that the domestic currency was overvalued against the U.S dollar. However, following the collapse of the Bretton woods system of the fixed exchanged ate regime in the early 1970s, the central of Nigeria (CBN) adopted monetary targeting as a policy framework for the conduct of its monetary policy.

Monetary targeting as a strategy of monetary policy was adopted when the strategy of monetary policy was adopted when the strategy

shifted to demand management for containing inflationary pressures, balance of payments disequilibrium and deficits in the federal budget. Consistent with the monetary targeting framework, CBN focuses on liquidity management to achieve the objective of maintaining price and economic stability. The bank's operating target for the monetary target was base money, which the bank has always sought to control in order to have a hold on the control of short-term interest rates in the economy. In December 2006, the bank introduced a new framework for monetary policy. The new framework uses short-term interest rate as the operating target. Consequently, the monetary policy rate (MPR) has served as a nominal anchor for the short-term interest rate. The new framework aims at ensuring the stability in short-term interest rate in order to achieve an efficient liquidity management position and encourage inter-bank trading of funds in the money market. The nominal anchor has elicited a positive response in the money market as interest rate in that market now respond to changes in the monetary policy rate.

In the last few decades, the discourse of the impact and the role of monetary policy is still a major debate in microeconomics. Some monetarists contend that sustained inflation was a monetary phenomenon and that the central banks should be held accountable for maintaining price stability. The contention here is that central banks should control the stock of money in the economy rather focus on targeting short-term nominal interest rate as a mechanism to achieve long-run inflation objective. There are some other monetarists who equally believe that inflation was not the only concern of the monetary authorities. Anderson and Carlson (1970) view the monetary policy as having a significant effect on short-run fluctuation in real output, though it does affect long-run growth of output. Meltzer (2003) among others believed that monetary policy was responsible for the historical cyclical fluctuation in real output.

There is a paradox in the role of monetary policy. It is this "that price stability has become recognised as the central objective of central banks, the attention actually paid by central banks has decline." The implication of this that although monetary policy is essential in economic growth and development process of modern economies. Its

role in macroeconomic policy objective is becoming more passive. This is because its fundamental role has streamlined to price stability and inflation targeting. In contemporary literature and policy discussion on some economies such as those of Chile, Hungary, Thailand, Britain, etc, more attention is given to the role of an inflation objective in a central bank policy rule as the nominal anchor. This constitutes the basis of the discussion on inflation targeting. Inflation targeting is a framework for policy decision in which the central bank makes an explicit commitment to conduct a public announcement.

Monetary policy in Nigeria encompasses the action of CBN that affects the availability and cost of commercial and merchant banks reserve balance and credit conditions in the economy. The main aim of such action is to ensure that overtime, the expansion of money and credit will be adequate for the needs of the growing economy at stable prices. As the watchdog of the economy, CBN has the duty to ensure that policies are set in motion to ensure that monetary system operates well and that monetary variables do not constitute the hindrance in the achievements of national objectives. Monetary

policy plays an important role in accelerating development by influencing the cost and availability of credit by controlling inflation. As development gains momentum, an appropriate monetary policy is necessary to provide an elastic supply.

2.3 EMPIRICAL LITERATURE:

Batten and Hofer (1983) discussed the effectiveness of monetary policy in some developed countries. In their study, they found out that monetary action had a greater influence on nominal GNP. However, the result from the study cannot be generalized for the developing countries since they have significantly different economic and political structure. Anderson and Jordan (1986) tested empirically the relationship between the measures of fiscal policy and monetary actions and total spending for the United States. This relationship was developed by regressing quarter to quarter changes in money stock and the various measures of fiscal actions namely; high employment, budget surplus, high employment expenditure, and high employment receipt.

Parking and Zin (1976) recommended that monetary policy has an impact on price level. The use of expectation augmented Phillips

relations whereby the price level is regressed on some proxy for excess aggregate demand and on a measure of the expected level of prices. Duck et al (1978), in addition to the expectation, augmented Phillips relation, used pooled quarterly data for a group of 10 countries from 1953-1971 and concluded that monetary policy has an impact on price level.

According to Udoh (196), liquidity, interest rate, credit and exchange rate channels have been gradually accepted as avenue for the influence of interest rate both in the short-run and long-run. In this way, the initial monetary impulse is transmitted to economic activities. The credit channel works mainly by portfolio adjustment in banks form balance sheets in favour of assets that have higher returns during this period of monetary fluctuations. Under normal circumstances, these assets commanding higher demand would be produced more and thus stimulate the economy. A special case of credit channels is the bank loan in which a credit squeeze forces banks to ration credit. In such a situation, customers who depend on loans would be crowed out of the loan market and consequently, economic activities would be curtailed.

Ogwuma (1997) in a research work done on the issue of the relevance of central banking is the opposite and different from other economists' views in light of the Nigerian experience. He recommended that it is essential that responsibilities of major players enhance accountability and professionalism. Given the magnitude of human capital at its disposal, the central bank can surely make swift decisions to the nation's financial environment thereby contribute effectively towards nation building if it is endowed with instrument of independence, such operational autonomy would insulate its monetary policy from adversely affecting political considerations while enabling price stability and economic development.

Oluminiwa (2003) in the test concluded using OLS, found market exchange rate in the official market as being significant to the agricultural sector. He therefore concluded proper management of the exchange rate to forestall costly distortion, constitute an important pillar in determining flows of foreign direct investment to Nigeria.

Asiedu (2005) in his work used panel data for 22 countries in sub-Saharan Africa over the period 1990 to2004 to examine the impact of

political risks, institutional framework and government policy on the direct investment flows.

Ituwe (2003) in his analysis between liquidity rate and the rate of money supply studied on the effectiveness of monetary policy as a tool of controlling economic activities in Nigeria between 1992 and 2002, to establish that monetary policy measures have aided the reduction of price level in the economy.

Marr (2009) conducted econometric studies comparing a section of countries which indicate a well established correlation between direct investment and the market size. She also noted that some studies found GDP growth rate as a significant variable, while GDP was not probably indicating that where the current size of national income is small, increments may have less relevance to direct investment decisions than developmental performance.

2.4 LIMITATION OF PREVIOUS STUDIES

Okafor (1996) failed to use the public data as stated in the central bank of Nigeria (CBN) bulletin which he claimed to be the source of data in

his work 'the effect of monetary policy on inflationary control.' This implies that his result was biased.

Emenike's (1999) work could have provided a strong evidence for his study but failed to indicate whether the relationship between money supply and inflation rate is a linear or inverse relationship. Instead he concluded that there is a relationship between money supply and inflation rate. He further stated that supply cannot account up to 95% of economic growth and development. The cause of thus was his wong choice of variables in measuring productivity. He measured interest rate against Gross Domestic Product (GDP) instead of industrial productivity.

Elizabeth's (2006) work "monetary policy as a tool of inflationary control in Nigeria" is quite interesting. Her conclusion has it that there is a linear relationship between money supply and inflation rate. This is accepted but she made use of the narrow definition of money (M_1) as her variable instead of the broad definition of money (M_2). Her work also had a problem of under specification of model where she used only one independent variable which was reflected in the R^2 result.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

Research methodology comprises of the method of data analysis, model specification, evaluation techniques, sources of data collection, and the justification of data collection.

Research methodology aims at investigating the method that will be used to determine the relationship existing between monetary policy and economic development.

3.2 METHOD OF DATA ANALYSIS:

This study makes use of econometric approach in estimating the relationship between selected monetary policy components and development components. The Ordinary Least Square (OLS) method shall be employed in obtaining the numerical estimates of the coefficients in the equation. The OLS method is chosen because it possesses some optimal properties, its computational procedure is simple and it is also an essential component of other estimation

techniques. In demonstrating the application of the OLS method, the multiple linear regression analysis will be used with Gross Domestic Product (GDP) as the dependent variable and liquidity ratio, money supply and cash ratio as the independent variables.

3.3 MODEL SPECIFICATION:

The model specification for this study focuses on the estimation of the effects collected on the objectives of the research work. The model specification is stated below;

$GDP = a_o + a_1LR + a_2MS + a_3CR + u_i$

Where GDP = gross domestic product

LR = Liquidity Ratio

CR = Cash Ratio

U_i = Error term

a_o, a_1, a_2, a_3 = Coefficients of parameters

3.4 SOURCES OF DATA COLLECTION:

The sources of data collection in this research work are secondary in nature which consists of journals, textbooks, internet, annual reports, and Central Bank of Nigeria (CBN, 2009) bulletin.

3.5 JUSTIFICATION OF DATA COLLECTION

In this study, the secondary method of data collection was used because it is regarded as the most appropriate method for the required information which has some advantages over other methods.

3.6 EVALUATION TECHNIQUE

The economic a priori expectation will evaluate the parameters to find out if they meet the standard economic theory expectation in both signs and sizes.

Variables	**Expected signs**
Gross domestic product	
Money supply	+
Liquidity ratio	+
Cash ratio	-

The techniques to be used in evaluation are;

a. R^2 – coefficient of multiple determination and adjusted R^2:

This will be used for testing and to show the percentage of the total variable explained by the variation in the independent variables i.e. changes in a_o, a_1, a_2, a_3. The value of R^2 lies between 0 and 1, and the formula is stated as;

$$R^2 = 1 (1- R^2) \frac{N-1}{N-K}$$

b. T- statistics :

This is used to test for the statistical significance of the individual regression coefficient. A two tailed test is conducted at 5% level of significance. The computed T-ratio with N-K dgree of freedom is shown below;

$$t^* = \frac{a_1}{S(a_1)}$$

The coefficient of a_o, a_1, a_2, a_3 is divided by the standard error. The null hypothesis $H_1 = a_1 = 0$ is tested against the alternative hypothesis H_2: $a_1 \neq 0$. If $t^* > t_{0.025}$, accept the null hypothesis

c. F-statistic:

This test measures the overall significance of the entire regression plane. The F-test aims at finding out whether the joint influence of the independent variables (a_o, a_1, a_2, $a_{3)}$ do actually have any significance to the computed F-ratio. F* is computed with the theoretical F with V_1 and V_2, N-K degrees of freedom.

$$F^* = \frac{R^2 / K-1}{(1-R^2) / (N-K)}$$

The null hypothesis H_1: $a_1 = 0$. If $F^* > F_{0.05}$, we reject the null hypothesis showing that the whole regression is significant, otherwise, we accept the null hypothesis.

The second-order test for the possible evaluation of the stochastic assumption of the OLS model is equally conducted.

d. Durbin-Watson d-statistics:

This is used to test for the presence of the incidence of autocorrelation.

Decision rule:

- If $d^* < d_L$, we accept the null hypothesi and conclude that there is no negative correlation of the first order.

- If $d^* < (4-d_L)$, we reject the null hypothesis and accept that there is no negative autocorrelation of the first order.
- If $d_U < d^* < (4-d_U)$, we accept the null hypothesis of no autocorrelation.
- If $d_L < d^* < d_U$ or if $(4-d_U) < d^* < (4- d_L)$, the test is inconclusive

e. <u>Multicollinearity</u>:

This is used when the explanatory variables in multiple regression are not independent themselves.

f. <u>Heteroscedasticity</u>:

This is used in regression when the variations of the data are not consistent with being random drawings from the same population.

CHAPTER FOUR

PRESENTATION AND ANALYSIS OF RESULT

4.1 PRESENTATION AND INTERPRETATION OF RESULT

Dependent variable: GDP

Method of evaluation: Ordinary Least Squares

Included observation

Table 4.1: Presentation of Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	747878.9	2755693	0.271394	0.7885
LR	-45992.18	61836.35	-0.743773	0.4645
MS	2.474698	0.136448	18.13662	0.0000
CR	430677.1	164961.6	2.610771	0.0156

R-squared	0.937787	Mean dependent var.	7437534
Adjusted R-squared	0.989478	S.D. dependent var.	10012498
S.E of regression	2655249	Akaike info criterion	32.55793
Sum squared resid.	1.62E+14	Schwarz criterion	32.74990
Log likelihood	-435.5320	F-statistics	115.5662
Durbin Watson	2.676230	Prob(F-statistic)	0.000000

From the above, the interpretation of the as regard the coefficient of various regressors is stated as follows.

The value of the intercept is 747878.9, which shows that the Nigerian economy will experience a 747878.9 increase when all other variables are held constant.

The estimate of coefficients which are -45992.18 for LR shows that a unit change in liquidity ratio will cause a -45992.18 decrease in GDP, 2.474698 for MS shows that a unit change in money supply will cause a 2.474698 increase in GDP, 430677.1 for CR shows that a unit change in cash ratio will cause a 430677.1 increase in GDP.

4.2 Economic a priori Criteria:

The test is aimed at determining whether the signs and sizes of the results are in line with what economic theory postulates. Thus, economic theory tells us that the coefficients are positively related to the dependent variable, if an increase in any of the explanatory variables leads to a decrease in the dependent variable.

Therefore, the variable under consideration and their parameter exhibition of a priori signs have been summarized in the table below.

Variable	Expected signs	Estimated	Remark
LR	+	B < 0	Not conform
MS	+	B > 0	Conforms
CR	-	B > 0	Not conform

From the above, it is observed that MS actually conforms to the economic theories while LR and CR do not conform to the economic theories.

A positive relationship which exists between MS and GDP indicates that an increase in MS will result in a positive change in the growth rate of gross domestic product. This conforms to the a priori expectation because an increased or high MS over the years will increase GDP in the economy.

4.3 Statistical Criteria (First order test)

4.3.1 Coefficient of Multiple Determinants (R^2):

The R^2 (R-squared) which measures the overall goodness of fit of the entire regression, shows the value as 0.937787 = 93.7787% approximately 94%. This indicates that the independent variables accounts for about 94% of the variation in the dependent variable.

4.3.2 The Student's T-test:

The test is carried out to check for the individual significance of the variables. Statistically, the t-statistics of the variables under

consideration is interpreted based on the following statement of hypothesis.

H_o: The individual parameters are not significant.

H_1: The individual parameters are significant.

Decision rule:

If the t-calculated > t-tabulated, we reject the null hypothesis (H_0) and accept the alternative hypothesis (H_1), and if otherwise, we select the null hypothesis (H_0) and reject the alternative (H_1).

Level of significance = α at 5% = 0.05 / 2

Degree of freedom = n – k

Where n: sample size

k: Number of parameters.

The t-test is summarized in the table below:

Variables (t-value)	t-tab	Remark
LR (-0.743773)	±2.069	Insignificant
MS (18.13662)	±2.069	Significant

CR (2.610771)	±2.069	significant

The t-statistics is used to test for individual significance of the estimated parameters (A_1, A_2, and A_3). Fromm the table above, we can deduce that MS (18.3662), and CR (2.610771) are greater than 2.069 which represents the t-tabulated implying that MS and CR are statistically significant. On the other hand, intercept (0.271394), and LR (-0.743773) are less than the t-tabulated (2.069) signifying that the intercept and LR are statistically insignificant.

4.3.3 F-Statistics:

The F-statistics is used for the simultaneous significance of all the estimated parameters.

The hypothesis is stated;

H_0: $A_1 = A_2 = A_3$

H_1: $A_1 \neq A_2 \neq A_3$

Significance level: α at 5%

Degree of freedom: $V_1 = k-1$ $V_2 = N-K$ d/f

Decision rule:

If the f-calculated is greater than the f-tabulated (f-cal > f-tab) reject the null hypothesis (H_0) that the overall estimate is not significant and conclude that the overall estimate is statistically significant.

From the result, f-calculated (115.5662) is greater than the f-tabulated (2.92), that is, f-cal > f-tab. Hence, we reject the null hypothesis (H_0) that the overall estimate has good fit which implies that our independent variables are simultaneously significant.

4.4 Econometrics Criteria

4.4.1 Test for Autocorrelation:

One of the underlying assumptions of the ordinary least square regression is that the succession values of the random variables are temporarily independent, in the context of the series analysis, this means that an error (Ut) is not correlated with one or more of previous errors (U_{t-1}).the problem is usually dictated with Durbin-Watson (DW) statistics.

The Durbin-Watson's test compares the empirical d* and du in d-u tables to their transforms ($4-d_L$) and ($4-d_U$).

Decision rule:

1) If $d^* < d_L$, then we reject the null hypothesis of no correlation and accept that there is positive autocorrelation of the first order.
2) If $d^* > (4-d_L)$, we reject the null hypothesis and accept that there is negative autocorrelation of the first order.
3) If $d_U < d^* < (4-d_U)$, we accept the null hypothesis of no autocorrelation.
4) If $d_L < d^* < d_U$ of if $(4-d_U) < (4-d_L)$, that test is inconclusive.

Where: d_L = lower limit

d_U = upper limit

D* = durbin Watson.

From our regression result, we have;

$d^* = 2.676230$

$d_L = 1.162$

$d_U = 1.651$

$4\text{-}d_L = 2.838$

$4\text{-}d_U = 2.349$

Conclusion:

Since if d_L (1.162) < d* (2.676230) < d_U (1.651) or if $4\text{-}d_U$ (2.349) < $4\text{-}d_L$ (2.838), that test is inconclusive.

4.4.2 Test for Heteroscedasticity:

Heteroscedasticity has never been a reason to throw out an otherwise good model, but it should not be ignored either (Mankiw Na, 1990).

This test is carried out using White's general heteroscedasticity test (with cross terms). The test asymptotically follows a chi-square distribution with degree of freedom equal to the number of regressors (excluding the constant term). The auxiliary model can be stated thus:

$Ut = A_0 + A_1LR + A_2MS + A_3CR + A_4LR^2 + A_5MS^2 + A_6CR^2 + Vi.$

Where Vi = pure noise error.

This model is run and an auxiliary R^2 from it is obtained.

The test hypothesis is stated thus;

H_0: $A_1 = A_2 = A_3 = 0$ (Homoscedasticity)

H_1: $A_1 \neq A_2 \neq A_3 = 0$ (heteroscedasticity)

Note: The sample size (n) multiplies the R^2 obtained from the auxiliary regression asymptotically follows the chi-square distribution with degree of freedom equal to the number of regressors (excluding constant term) in the auxiliary regression.

Decision Rule:

Reject the null hypothesis if $X^2_{cal} > X^2$ at 5% level of significance. If otherwise, accept the null hypothesis. From the obtained results, $X^2_{cal} = 4.216759 > X^2\ 0.05\ (1) = 3.84$, we therefore accept the alternative hypothesis of heteroscedasticity showing that the error terms have a constant variance and rejecting the null hypothesis showing that the error terms do not have a constant variance.

4.4.3 Test for Multicollinearity:

The term Multicollinearity is due to Ragnar Frisch. Originally it meant the existence of a "perfect" or exact, linear relationship among some or all explanatory variables of a regression model. The tests were carried

out using the correlation matrix. According to Barry and Feldman (1985) criteria; "Multicollinearity is not a problem if no correlation exceeds 0.80".

	GDP	MS	LR	CR	REMARK
GDP	1.000000	0.958802	-0.116976	-0.214836	-
MS	0.958802	1.000000	-0.129302	-0.351348	M
LR	-0.116976	-0.129302	1.000000	0.355406	NM, NM
CR	-0.214836	-0.351348	0.355406	1.000000	Nm, Nm, Nm

Where M = Presence of multicollinearity

Nm = No multicollinearity

From the above table, we can conclude that multicollinearity exists between MS and GDP.

CHAPTER FIVE

SUMMARY, RECOMMENDATIONS, AND CONCLUSION

5.1 SUMMARY

From the result in chapter four, the following findings were made. The findings are summarized as follows;

a. A positive relationship exists between money supply and gross domestic product which means that money supply has a significant impact on economic growth and development. An increase in money supply promotes economic growth and development.
b. A positive relationship exists between cash ratio and gross domestic product which means that cash ration is significant in the economy because an increase in the cash ratio will raise the gross domestic product.
c. A negative relationship exists between liquidity ratio and gross domestic product but liquidity ratio is insignificant implying that it has a negative influence on economic growth. This is because an increase in liquidity ratio reduces the gross domestic product.

5.1 RECOMMENDTIONS

Due to the influence that money supply, liquidity ration and also cash ratio have on economic growth and development in Nigeria, the following recommendations are made;

a. Both expansionary and contractionary monetary policies should be used effectively in the Nigerian economy to regulate money supply, liquidity ratio and cash ratio, which would help control inflationary and deflationary pressures.
b. Policy makers should work hand in hand with the government in formulating, evaluating and implementing new monetary policies that will have a positive impact on the Nigerian economy.
c. Nigerian citizens should make reports to the government and policy makers on the areas that monetary policies affect either positive or negatively. This would help the government and policy makers to be aware of the performance of monetary policies in the country.

5.3 CONCLUSION

In conclusion, through research work and analysis, it was discovered that monetary policy was discovered that monetary policy has a positive impact on economic growth and development in Nigeria. It was also discovered that the instruments of monetary policy have both positive and negative effects on the gross domestic product which is a measure of economic growth and development.

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