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MONETARY POLICY AND CAPITAL FORMATION IN NIGERIA (1980-2014)

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Abstract: *This work is an empirical examination of the impact of monetary policy and capital formation in Nigeria using annual time series data in analyzing the data. The results showed that there exists a negative and significant relationship between interest rate and gross fixed capital formation. The result also revealed a positive and significant relationship between monetary policy rate and gross fixed capital formation. We therefore, advocate for a sustainable and moderate lending rate and borrowing rate to accommodate the interest of the investors; and that government at all level should also be more committed to the enhancement of small-large scale business in Nigeria by enacting a favourable monetary policy.*

Keywords: *capital, interest rate, monetary policy, capital formation & economy*

Introduction

The monetary system of any economy is very strategic and influences the performance of the other sectors of the economy. It consists of the money and capital markets. The commercial banks now called money deposit banks is one of the major participants in the Nigerian financial system. The commercial banks play the roles of mobilizing saving for capital formation, financing industry, trade, agriculture, consumer activities generating activities and help in realizing monetary goals.

The Nigeria financial system experienced bank distress and failure with so many attendant social, political and economic implications. One of the negative implications of these financial crises is the erosion of the basic of banking-trust utmost good faith, and confidence. The effect of the erosion is the reduction in the banking habit and lowering of the saving/deposit rate or capital formation (Ngerebo, 2005). The ability of the banking industry to play its role has been periodically punctuated by its role has been periodically punctuated by its vulnerability to systematic distress and macroeconomic volatility, which makes policy fine-

tuning inevitable. Nnanna (2005), noted that policy makers must articulate robust policies that will deepen the financial or monetary system to enable banks play their roles most efficiently.

Monetary policy is one of the main policy instruments used by the Central Bank of Nigeria Onuchukwu and Adoghor (2005), monetary policy is the actions initiated by Central Bank which aim at influencing the cost and availability of credit. They noted that monetary policy aims at controlling supply of money so as to counter all undesirable trends in the economy. The undesirable trends are poor capital formation, unemployment, inflationary pressures, sluggish economic growth and external sector instability.

In Nigeria, before the era of the Structural Adjustment Programme (SAP), the main objectives of monetary policy were the maintenance of relative price stability and a healthy balance of payment position. Monetary management depended on the direct monetary instruments such as credit ceilings, selective credit controls, administered interest and exchange rates as well as a prescription of cash reserve requirements and special deposits. Due to the narrowness and, undeveloped nature of the Nigerian financial markets, and inadequate supply of the relevant debt instruments, market-based instrument are mostly used. Recently, the banking industry has witnessed series of reforms referred to as "bank consolidation". This era came on board in 2004 and major emphasis was based on recapitalization of banks and proactive regulation based on risk focused supervision. According to Kama (2006), the banking system reforms were focused on further liberalization of banking business, ensuring competition and safety of the system, and proactively positioning the industry to perform the role of intermediation and playing a catalytic role in economic development. In this work, we examine the impact of monetary policy on capital formation in Nigeria from 1980 to 2014.

Statement of the Problem

The major objectives of monetary policy management in Nigeria includes: capital formation, employment generation, price stability, economic growth, and balance of payments equilibrium. The extent to which these objectives can be achieved depends on the ability of the Central Bank of Nigeria (CBN) to manipulate its monetary policy measures and ensure effective and efficient performance of the banking system. According to Somoye (2008), "Prior to the major policy shift by the Central Bank of Nigeria (CBN), Nigerian Banking Industry experiences a steady increase in the number of distressed deposit money banks. These banks were classified by the CBN as marginal or unsound. The marginal and unsound banks increased in number from seventeen (17) in 2001 to twenty three (23) in 2002 and 2003, and then twenty seven (27) in 2004. This incidence created the fear that the Nigerian banking system is heading towards systematic distress.

It will be recalled that despite the consolidation of banks which introduced bank recapitalization, aim that was at risk control through the creation of economies of scale, advancement of marketing and product risk and technology exploitation etc there still exist some cases of poor performances among the commercial banks in 2009, which about 14 out of the 25 recapitalized banks in Nigeria were healthy. While the rest were either facing the problem of capital inadequacy, lack of liquidity to meet their day to-day banking obligations and poor corporate governance. These and many other issues led to the establishment of Asset Management Company of Nigeria (AMCON), with a view to ensuring sound financial system, improvement in the banking sector liquidity and economic development in Nigeria (The Nation;

Saturday October 3, 2009).

Objectives of the Study

The main objective of the study is to examine the impact of monetary policy on capital formation in Nigeria. The specific objectives of the study are:

i. To examine the relationship between lending rate on gross savings as proxy for capital formation;
ii. To access the impacts of liquidity ratio on gross savings as proxy for capital formation;
iii. To measure the effect of money supply on gross savings as proxy for capital formation;

Research Questions

In view of the identified problems, and stated objectives, the following research questions have been raised in order to give this work a guide.

i. What are the relationship between lending rate and gross savings as proxy for capital formation?
ii. What are the impacts of liquidity ratio on gross savings as proxy for capital formation?
iii. How effective has money supply on gross savings as proxy for capital formation?

Research Hypothesis

The following hypotheses were tested in this work:

Ho_1: There is no significant relationship between lending rate and changes gross savings as proxy for capital formation.

Ho_2: There is no significant relationship between liquidity ratio and gross savings as proxy for capital formation.

Ho_3: There is no significant relationship between money supply and gross savings as proxy for capital formation.

Significance of the Study

The need for a research of this nature must be timely because the monetary policy as noted by Jhingan (2005) help in controlling the banking system for capital formation and economic development of a country. The central bank depends on banks and other financial institutions for the success of its policy of monetary management and capital formation of the country. Carrying out this research work will help to reveal the role of monetary policy in economic growth and development.

The importance of this study hinges on the feet that its findings will add to the existing body of knowledge in economic literature. The work will be useful for people in academics, as it will reveal the extent to which monetary policy is potent in controlling the operations of the financial system of the country.

Theoretical Review

This section of the study, centers on the review of the various theories of liquidity management of banks. These are: The Real Bills Doctrine; the shift ability theory; the anticipated income theory; the liabilities management theory, and the liquidity theory of monetary policy. They are presented in the following sub-headings.

The Real Bills Doctrine

The real bills doctrine, otherwise known as the deposit money loan theory, states that a deposit money bank should advance only short-term self-liquidating productive loans to business firms. According to Jingan (2005), "self-liquidating loans are those which are meant to finance the production, and movement of goals through the successive stages of production, storage, transportation, and distribution", when such goods are ultimately sold, the loans are considered to liquidate themselves automatically. For instance, a loan given by the bank to a businessman to finance inventories would be repaid out of the receipts from the sale of those very inventories, and the loan would be automatically self-liquidated. The theory maintains that when deposit money bank make only short-term self-liquidating productive loans, the central bank, in turn, should only lend to the banks on the security of such short-term loans. The theory suggests that this process would ensure the proper degree of liquidity for each bank and the proper money supply for the whole economy. The central bank was expected to increase or diminish bank reserves by re-discounting approved loans. When business expanded and the need of trade increased, banks were able to acquire additional reserves by re-discounting bills with the central bank. When business fell and the needs of trade declined, the volume of rediscounting of bills would fall, the supply of bank reserves and the amount of bank credit and money supply would contract. The proponents of this theory believe that the sort-term self-liquidating productive loans can liquidate themselves, and cannot lead to bad debts and can earn income for the banks.

The real bills doctrine have been criticized on the grounds that a banks refusing to grant a fresh loan when the old one has been paid will discourage productive activity. Secondly, the assumption that loans are self-liquidating under normal economic conditions cannot hold during the period of depression. Also, the theory neglects the feet that the liquidity of a bank depends on the salability of its liquid assets and not on real trade bills. If a bank possesses a variety of assets like bills and securities which can be readily sold in the money and capital markets, it can ensure safety, liquidity and profitability. It has also be argued that no loan is in itself automatically self-liquidating. A loan to a retailer to purchase inventories is not self-liquidating if the inventories are not sold to consumers and remain with the retailer. Thus, a loan to be successful involves a thirds party, the consumers in this case, beside the lender and the borrower.

The Shift ability Theory

The shift ability theory of bank liquidity was propounded by H.G Moulton, who asserted that, if the deposit money banks maintain a substantial amount of assets that can be shifted on to the other banks for cash without material loss in case of necessity, then there is no need to rely on maturities. According to this theory, an asset to be perfectly shiftable must be immediately transferable without capital loss when the need for liquidity arises. This is particularly applicable to short-term market investments, such as treasury bills and bills of exchange which can be immediately sold whenever it is necessary to raise funds by banks. But in general crises when all banks are in need of liquidity, the shift ability theory requires that all banks should posses such assets which can be shifted on to the central bank which is the lender of the last resort.

Those who subscribe to this theory believe that it posses certain elements of truth. This

is because banks now accept sound assets which can be shifted on to other banks. Shares and debentures of large companies are accepted as liquid assets along with treasury bills and bills of exchange. They maintained that this has encouraged term lending by banks. The shiftability theory, have been criticized by the fact that more shiftability of assets does not provide liquidity to the banking system. The entire shiftability of assets depends on the prevailing economic conditions. Also, the shiftability theory ignores the fact that in terms of acute depression, the shares and debentures cannot be shifted to others by the banks. In such a situation, there are no buyers and all who possess them want to sell them. It has also been argued that a single bank may have shiftable assets in sufficient quantities, but if it tries to sell them when there is a run on the bank, it may adversely, affect the entire banking system. Finally, the theory has been criticized that if all the banks simultaneously start shifting assets, it would have disastrous effects on both the lenders and borrowers.

The Anticipated Income Theory

H.V. Prochnow (1944), developed the anticipated income theory on basis of the practice of extending term loans by the U.S. deposit money banks. According to this theory, regardless of the nature and character of a borrower's business, the bank plans the liquidation of the term-loan from the anticipated income of the borrower. A term-loan is for a period exceeding one year and extending to less than five years. It is granted against the hypothecation of machinery stock and even immovable property. The bank puts restrictions on the financial activities of the borrower while granting this loan. At the time of granting this loan, the bank takes into consideration not only the security but the anticipated earning of the borrower. Thus, a loan by the bank gets repaid out of the future income of the borrower in installment, instead of in a lump sum at the maturity of the loan. The relevance of this theory lies on its superiority to the real bills doctrine and the shoftability theory especially in fulfilling the objectives of liquidity, safety and profitability. The theory believes that liquidity is assured to the bank when the borrower saves and repays the loan regularly in installments. It satisfies the safety principle because the bank grants loan not only on the basis of a good security but also on the ability of the borrower to repay the loan. The bank can utilize its excess reserves in granting term-loan and is assured of a regular income.

This theory is criticized because it is said to be a method of analyzing the creditworthiness of a borrower and not a theory. Also, repayment of loans in installments to the bank no doubt provide a regular stream of liquidity, but fails to meet emergency cash needs of the lender bank.

The Liability Management Theory

The liability management theory was development in the 1960s. According to the theory, "there is no need for banks to grant self-liquidating loans and keep liquid assets because they can borrow reserve money in the money market in case of need". The theory maintains that a bank can acquire reserves by creating additional liabilities against itself from different sources. These sources as suggested by the theory include: the issuing of time certificates of deposit; borrowing from other commercial banks; borrowing from the central bank; raising of capital funds by issuing shares, and by ploughing back of profits. According to the theory of liabilities management of deposit money banks; time certificate of deposits have different maturities which ranges from 90 days to less than 12 months. The time certificates of

deposits are negotiable in the money market. Therefore, a bank can have access to liquidity by setting them in the money market deposit money bank as maintained by this theory can create additional liabilities by borrowing from other banks having excess reserves. Such borrowing has a shorter-term that may last for a day or week. The interest rate of such borrowing depends upon the prevailing rate in the money market.

The liabilities management theory suggests that deposit money banks can also create liabilities on themselves by borrowing from the bank of the country. The purpose of these is to enable them meet up with their liquidity needs for short-term and by discounting bills from the central bank. The theory of the liabilities management of deposit money banks have been criticized on the ground that:

- During a boom period, the interest rate structure in the money market is higher than the ceiling rate set by the central bank, thus time deposit certificates cannot be sold in the money market.
- Time deposit certificates are not dependable source of fund for the commercial banks because bigger commercial banks are at an advantage in selling these certificates as they have larger certificate which they can afford to sell at even low interest rates. While smaller banks, are at a disadvantaged position.
- Borrowing from other banks are only possible during normal economic condition, in abnormal time, on bank can afford to lend to others.

Despite these observable limitations of the theory, it has remained one of the remarkable explanations offered in the management of the deposit money banks' liabilities and liquidity needs.

The Liquidity theory of Monetary Policy

The liquidity theory is a new approach to monetary policy which was propounded by the Radcliff Report, Gurley and Shaw. According to the theory, liquidity means moneyness. It is characterized by the ease of converting an asset into money at little cost. A liquid asset is one which is easily spendable, marketable or transferable, and has capital certainty. The theory asserts that different assets differ in the degree of liquidity. For instance, money is the most important liquid asset which consists of coins, currency and bank deposits. This is because they perform the medium of exchange function of money. In the case of bank deposits, only demand can be issued on their basis. But bank deposits are not real money but are near because they cannot be withdrawn before the expiry date. Other money assets as identified by this theory include: bonds, securities, debentures, bills of exchange, treasury bills etc. The theory believes that liquidity is created by the central bank by issuing coins and notes and by deposit money banks by creating demand deposits. A change in the supply of money by the central bank affects liquidity by bringing changes or readjustments in the portfolio assets of the people. This depends on the effects of money supply on aggregate spending. For example, if people decide to spend the increased money supply in purchasing such assets as shares and debentures, there will be less money available in liquid form with the public. If the stock market is bullish, people may buy shares and the liquidity is reduced. On the other hand, if there is uncertainty in the stock market, people may hold the increased money supply in bank deposits or invest in property if they expect property prices to rise. However, it is the central bank that influences money supply in the economy by following 'easy' or "tight" monetary policy.

This the central bank does by controlling aggregate spending and thereby influencing business activity, output and employment. The theory of the liquidity argued that it is not always successful in controlling spending by increasing or decreasing the money supply and hence liquidity. This is because the central bank has little control over the velocity of circulation of money, non-bank financial intermediaries, business expectations and time legs in monetary policy. It becomes difficult to predict the effects of changes in money supply on liquidity.

The Radcliffe Report and Gurley and Shaw argued that the existence of non-bank financial intermediaries (NBFLS) weaken the effect of monetary policy in increasing the money supply in the economy because they control a large proportion of liquidity in the economy. They further argued that the success of monetary policy depends not in controlling the money supply, but general liquidity. As a result, the liquidity theory of money provides a new and realistic approach to monetary policy.

Empirical Review

There have been some studies relative to the profitability of deposit money banks in Nigeria. For example, Ogunlewe (2001) in a study of the monetary policy influence of banks profitability, using data from Nigerian banks. He found that the determinants of banks profitability include reserve ratio, permissible credit growth, stabilization securities and exchange rate. Also, Uchendu (1995), investigated the effect of monetary policies on the performance of Nigerian deposit banks. He found that whether you use all bank's data, six banks or the then three large banks data, the dominant factors influencing bank profitability are: interest rate, exchange rate, bank reserve, banking structure, and unit labor costs, particularly when return on capital is used as measure of profitability. He concluded that stable and realistic monetary and banking policies are important for the profitability of deposit money banking business in Nigeria. Ahmad (2003) reported that interest on loan is the largest constituent of income for Nigerian banks as evidence from available data and that movement from one interest regime to another could have some effects on the profitability of banks in the system. Gertler and Gilchrist (1994) conducted a study that specifically looked at how bank business lending response to monetary policy tightening. Their study revealed that business lending does not decline when policy is tightened. They concluded that the entire decline in total lending come from a reduction in consumer and real estate loans. Contrary to this study, Kashyap and Stein (1995) find evidence that business lending may respond to a tightening of monetary policy. They find that when policy is tightened, both total loans and business loans at small banks fall, while loans at large banks are unaffected. The differential response of small banks may indicate that they have less access to alternative funding sources than large banks and so are less able to avoid the loss of core deposits when policy is tightened.

Punta and Somaiya (2006), investigated the impact of monetary policy on the profitability of banks in India between 1995 and 2000. The monetary variables are bank rate, lending rate, cash reserve ratio, and statutory ratio, and each regressed on bank profitability independently. Lending rate was found to exert positive and significant influence on banks profitability which indicates a fall in lending rate will reduced the profitability of the banks. Also, bank rate, cash reserve ratio, and statutory ratio were found to have significantly affected profitability of banks negatively.

Amidu and Wolfe (2008) examine the constraint implication of monetary policy on bank

lending in Ghana between 1988 and 2004. Their study revealed that Ghanaian banks lending behaviour are affected significantly by the country's economy and change in money supply. Younus and Akhta (2009) examine the significance of the statutory liquidity requirements as a monetary instrument in Bangladesh. Using descriptive analysis techniques like trend analysis and summary statistics, they found that statutory liquidity equipments has experienced infrequent changes and pass evidence has shown that reduction in statutory liquidity requirement produce positive impact on bank credits and investments especially prior to the 1990s.

According to Jhingan (2005), "Monetary policy of the central bank of any nation plays important role in the control of the credit creation power and performance of deposit money bank." Monetary policy is often used to influence or control inflationary and deflationary pressures within the domestic economy. The main monetary policy instruments adopted in checking the activities of the commercial banks are the qualitative and quantitative techniques. The quantitative technique aims at controlling the cost and quantity of credit through the use of bank rate policy, open market operation, and the variation of the reserve ratios of deposit money banks. The qualitative technique on the other hand, adopts selective credit control, and direct action. The purpose is to influence and control credit creation by deposit money banks in order to stabilize economic activity in the country.

Ajayi and Ojo (1979), observed that the high rate of inflation witnessed in the country at the end of the civil war in 1970 was due to the disruption of production by the war and the unrealistic wage increase awarded by the Adebo and Udoji commissions of 1971 and 1974 respectively. They were of the view that by the end of 1974, inflation had become the most macroeconomic problem facing Nigeria. In an attempt to curb this problem, the Central Bank of Nigeria (CBN), introduced some anti-inflationary monetary policy measures to encourage the deposit money banks to channel a greater and increasing percentage of their credit allocation to the productive sector. The CBN also adopted monetary measures aimed at reducing the liquidity ratio of commercial banks, Ojo (1993) also noted that the Economic Stabilization Act of 1982 empowered the CBN to use its monetary policy measures to direct the commercial banks to grant more loans and advances to the preferred sectors of the economy.

According to Inasakah (1993), monetary policy under the Structural Adjustment Programme (SAP) had a structural component which involved a movement toward market-based financial system designed to facilitate the mobilization of financial savings and to encourage more efficient allocation of financial resources. He noted that the excess liquidity that prevailed in the 1990s were controlled by the CBN, as they adopted such monetary policy measures as reduction in credit growth by deposit money banks and other banking financial institutions, special deposit requirement against outstanding external payment arrears,, abolition of foreign exchange guarantees, currency deposit as collaterals for naira loans, and the withdrawal of public sector deposit from the deposit money banks etc. Onuchuku, Adoghor and Opuala-Charles (2005) observed that the primary objective of monetary policy in 2001 was to ensure stable prices by maintaining inflation rate at a single digit. They noted that efforts were made by the CBN, to stabilize the persistent problem of excess growth in aggregate liquidity and its negative effective on domestic price and exchange rate stability. They further observed that appropriate steps were taken to promote efficiency of the payment system and ensured the healthy behaviour operators of the financial sectors. The work of Hughes, Master

and Moon (2002) revealed that bank consolidation, an aspect of monetary policy measures help in promoting economies of scale in the banking system, but fail to account for risk. Hence, they argued that the economies of scale that result from consolidation and diversification of banks do not produce better performance in banking. To them, unless the banks' management becomes risk conscious and moderates its decisions and actions, appropriate larger scale of operation that leads to diversification can only reduce liquidity and credits of the banks.

Somoye (2008) observed that bank consolidation as an aspect of monetary policy has improved the structure of the Nigeria banking industry in terms of asset size, deposit base and capital adequacy, while the profit efficiency has not been impressive. He also noted that the lending capacity of the banks improved significantly due to the consolidation of banks. He argued that as at 2004, an average bank in Nigeria could only lend about N14.371 billion. But with consolidation, banks in Nigeria as at 2006 could lend an average of N80.788 billion. According to Kama (2006), "the consolidation of banks has produced relatively well capitalized banks, which has engendered greater public confidence in the system." He noted that the resulting liquidity in the banking sector has also induced significant fall in the rate of interest. This according to him has given the deposit money banks the leverage of greater potential finance large transactions with higher single obligator limit, other benefits of the consolidation policy of Central Bank to the deposit money banks include reduction in the corporate governance abuses, economies of scale and reduction in the corporate governance abuses, economies of scale and reduction in bank charges to their customers.

The work of Sobodu and Akiode (1998) revealed that the period between 1990 to 1992 was an interesting one in the policy of deregulation of the Nigerian economy and the financial system. They were of the view that the year 1990 in particular was noted for very bold and decisive steps taken by the monetary authorities to monitor and safeguard the quality of assets of the banking industry as well as ensure that the sector was adequately capitalized, thus, promoting safety and soundness of the system. They argued that the assets structure of deposit money banks have significantly changed since the introduction of SAP and its deregulated policy framework. To them, "loans and advances as a proportion of total asset have reduced from an average of 40.9% during pro-SAP period to 26.3% during the SAP period". Also, cash and short-term funds as a proportion of total asset have increased from an average of 44.5% during the pre-SAP period to 55.5% during the SAP era. Their study also revealed that the policy of deregulation led to significant increase in the profitability of deposit money banks in Nigeria. According to Pettway and Sinkey (1980) Shick and Sherman (1980) Simons and Cross (1991), "the major determinant of deposit money bank's performance is the information on bond and stock price movement.

Research Design

Amadi (2002) defined research design as a scheme or a blueprint for data collection, prior to the actual study. He sees it further as the specific structure and strategy for investigating the relationship among the variables of study. It is a set of method and procedures used in collecting and analyzing measures of the variables specified in the research problem. In a bid to carry out a more reliable research, the study adopted an econometric design.

Data Required

The following data are required for this work:

- Gross savings as proxy for capital formation
- Lending rate
- Liquidity ratio
- Money supply

Sources of Data

According to Felix and Anaele (2006) data collection is the systematic way of obtaining information, facts, evidence or observation towards answering specific research questions or testing stated hypothesis. The nature of the research problem requires that data be obtained from the institutions charged with the responsibility of publishing national data. In view of this, the research collected materials and data mainly from the secondary sources. These secondary sources include: journals, internet-based materials, books, conference papers, Central Bank of Nigeria Bullion, the CBN statistical Bulletin among others.

Technique of Data Analysis

This study adopted the ordinary least square (OLS) techniques to carry out the estimation of the models equation. The study used multiple regression analysis to establish the relationship between monetary policy and capital formation in Nigeria.

The R was used to carry out a test of the explanatory power of the independent variables such as interest rate and money supply on the dependent variables.

The T-test was used to test for the significance of the parameter estimates. Also, the F-ratio was adopted by the researcher to test for the significance of the R2, while the Durbin-Watson (DW) test was conducted to test for the presence of serial correlation of the error term. In order to enable the researcher facilitate the estimation process, an econometric software package known as E-views was used.

Models Specification

(a) Variables in the model

Dependent Variables

(i) **Gross Savings:** This is the total amount of savings of financial system in Nigeria.

Independent Variables

(i) **Lending Rate:** This is the percentage of principal paid to the lender for an amount borrowed after the due date.

(ii) **Liquidity Ratio:** This is amount required of the deposit money bank by CBN to maintain securities before providing credits or financial services to its customers.

(iii) **Money Supply:** This is defined as the quantity of money or stock of money in an economy. Money supply is expected to show a positive relationship with the dependent variable increase in money supply will lead to increase in capital formation,

(b) **The model**

Thus, the various discussions are expressed in the mathematical form as follows:

Model: Monetary Policy and Capital Formation Model

GRS =*f(LDR,* LQR, MS).....i

The mathematical form of the equation can be expressed in the OLS linear regression as:

GRS – $a_0 + a_1$ LDR + a_2LQR + a_3MS + U.....ii

A1<0; a_2>0; a_3>a_4<0

Where:

GRS = gross savings as proxy for capital formation

LDR = Lending rate

LQR = Liquidity ratio

MS = Money supply

a_0 is a constant term or intercept, while a_1, a_2 and a_3 are the coefficient of the explanatory variables. The U is the random variable.

Table 1: Interest Rate, Monetary Policy and Capital Formation

YEARS	EVT	GFCF	MPR
1980	6	34.8	6
1981	6	24.5	6
1982	8	32.8	8
1983	8	39	8
1984	10	33.83	10
1985	10	40.93	10
1986	10	35.54	10
1987	12.75	27.16	12.75
1988	12.75	28.37	12.75
1989	18.5	28.94	18.5
1990	18.5	40.12	18.5
1991	14.5	39.97	14.5
1992	17.5	38.77	17.5
1993	26	44.97	26
1994	13.5	40.4	13.5
1995	13.5	29.82	13.5
1996	13.5	35.22	13.5
1997	13.5	38.33	13.5
1998	14.31	36.39	14.31
1999	18	35.33	18
2000	13.5	41.34	13.5
2001	14.31	6.33	14.31
2002	19	7.94	15.75
2003	15.75	12.99	16
2004	15	44.44	15
2005	13	39.8	13.1

2006	12.25	63.43	14.8
2007	8.75	89.9	15
2008	9.81	89.24	11.4
2009	7.44	120.27	13
2010	8.8	142.32	17
2011	8	126.94	14.9
2012	7.9	101.7	23
2013	9	132.6	15.5
2014	11.2	123.8	17.7

Source: CBN Variables Issues

Analysis of Unit Root and Co-Integration Results

Unit root test is necessary in time series variables in order to avoid the situation of a spurious regression model. We employ Augmented Dickey-Fuller (ADF) test for the analysis. The results are shown in the table below.

Table 2: Augmented Dickey-Fuller (ADF)

Variable	**Variable at level form**			**Variable at difference**			**Order of integration**
Variable	ADF Stat.	Lag	5%	ADF Stat	Lag	5%	
In(GFCF)	-1.591813	1	-2.9527	-4.059994	1	-2.9558	1(1)
INT	-2.288227	1	-2.9527	-6.081919	1	-2.9558	1(1)
MPR	-2.813282	1	-2.9527	-6.424824	1	-2.9558	1(1)
RESIDUAL	-3.117014	1	-2.9527	NA	NA	NA	1(0)

The results show that all the variables are integrated of order one 1(1). All the variables have unit roots, but stationary after being differenced. This is because the ADF statistics for each of the variables are less than the critical levels at 5%. In other words, the null hypothesis for unit root is accepted for all the variables at the level form. On the other hand, the ADF statistics for each of the variables when differenced are higher than their critical values at 5% which implies that the null hypothesis of unit root isrejected.We proceeded to examine their long-run equilibrium relationshipusing co-integration ADF (CADF) test. As already shown in table 1 above,the error term (residual) is stationary at its level form. This implies that there exists a long-run relationship between dependent and independent variables.

Table 3: Model Summary

Variable	Coefficient	Std. Error	t-stat.
Constant	3.718647	0.306461	12.13417
INT	-0.156179	0.025604	-6.099740
MPR	0.139659	0.026756	5.219679

R^2 =0.554 **F-Stat.** = 19.916 D-W = 1.446

Evaluation Based On Economic Criteria

The OLS regression applied the Log- Linear Model in order to determine the relative change in the dependent variable from a relative change in each of the explanatory variables.The result has established a negative but significant relationship between interest rate and gross fixed capital formation. This has been found to be consistent with the theory.The result also revealed a positive and significant relationship between monetary policy rate and gross fixed capital formation. This has been found to be consistent with the theory.

Table 4: Summary of the Signs

Variable	Expected Sign	Realized Sign	Remark
INT	Negative	negative	conforms
MPR	Positive	positive	conforms

Evaluation Based On Statistical Criteria

Coefficient of Determination (R)

This measures the goodness of fit of the regression model. It shows how the variation in the dependent is explained by explanatory variables, from the table, R^2 = 0.554. This implies that about 55% variation in the gross fixed capital formation is explained by the explanatory variables.

Student t-Test

This tests the explanatory power of the Independent variables; the result shows that the variable interest rate (INT) has a significant impact on gross fixed capital formation. This is because its absolute t-statistic of -6.099740 is greater than the critical t-statistics of 2.042 at 5% level of significance. Its coefficient of -0.156179 implies that a unit increase in interest rate will decrease gross fixed capital formation by -0.156179 unit. Again, the variable monetary policy rate has a significant impact on gross fixed capital formation. This is because its absolute t-statistic of 5.219679 is greater than the critical t-statistics of 2.042 at 5% level of significance. Itscoefficient of 0.139659 implies that a unit increase in monetary policy rate increases gross fixed capital formation by 0.139659 units.

F-Statistic

The F-statistic is used to determine the overall significance of the entire variable in the

model. The calculated f-statistic is 19.916 and is greater than the critical f-value of 8.59. This implies that the entire variables joined together are significantly different from zero.

Evaluation Based On Econometric Criteria

Autocorrelation Test

This test whether the error are correlated with one another. To do that$_s$ we apply the Durbin Watson* d' test with the hypothesis as below:

From the Durbin Watson table, the estimated d* is 1.446 while the du is 1.376 at 0.01 level of significance (du<d<4-du => 1.376< 1.446<4-1.376 => 1.376<1.446<2.624) which falls under the do not reject region. However, we conclude that there is no autocorrelation problem.

Heteroscedasticity Test

This test is conducted to check if errors have constant variance or not. The null hypothesis is that the errors are homoscedastic (no heteroscedasticity). Note that this test follows chi-square distribution. Wecompare the estimated chi-square statistics with the critical chi-square statistics. From the result obtained x^2 Cal = 2.54 is less than $\%^2$ critical of 20.599 which is statistically insignificant and therefore do not reject the null hypothesis of homoscedasticity.

Normality Test

This test is to know if the error term is normally distributed. The null hypothesis is that the error term follows normal distribution from our result the Jarque Bera statistic of 31.6 which is less than the critical chi-square of 5.99 under 2 df. This, we reject the null hypothesis which implies the errors do follow normal distribution.

Multicollinearity Test

This test was carried out through the use of correlation matrix. It suggests that if the pair wise correlation coefficient between two regressors is high, say in excess of 0.8, then miticollinearity is a serious problem (Gujarati, 2009). The correlation matrix as shown in the appendice; from the result, the existence of collinearity cannot be found among the explanatory variable. Thus, we can conclude that multicollinearity is not a problem in this model. Hence, the highest value is 0.65.

Summary

In this study, we set out to empirically examine of the Impact of Monetary Policy on Capital Formation in Nigeria from 1980 to 2014. The study was conducted to determine the extent to which monetary policy contributed to capital formation.

Secondary data were used; the source of data was CBN Statistical Bulletin (2014). In order to achieve the objectives of the study, an econometric model was formulated using the Ordinary Least Square (OLS). In the model, gross fixed capital formation was regressed on, interest rate, and monetary policy rate.

The major findings of the study are summarized below:

i. There exist a negative and significant relationship between interest rate and gross fixed capital formation. The implication of this result is that the rate of interest does not adversely

affect gross fixed capital formation.

ii. The result has also revealed a positive and significant relationship between monetary policy rate and gross fixed capital formation.

Conclusions

In this study, we examined the Impact of Monetary Policy on Capital Formation in Nigeria from 1980 - 2014. From our findings, there exist a negative and significant relationship between interest rate and gross fixed capital formation.

Lastly, the result has also revealed a positive and significant relationship between monetary policy rate and gross fixed capital formation.

The general conclusion is that monetary policy is paramount on capital formation which is achieved through the maintenance of a moderate interest rate and a good monetary policy in the economy.

Recommendations

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

i. The empirical results of the study have revealed a negative and significant relationship between interest rate and gross fixed capital formation. We therefore, advocate for a sustainable and moderate lending rate and borrowing rate to accommodate the interest of the investors.

ii. The government at all level should also be more committed to the enhancement of small-large scale business in Nigeria by enacting a favourable monetary policy.

iii. Maintenance of healthy balance of payment position and a good business environment should be the priority of the government so as to develop a sound financial system.

iv. The government should checkmate this corrupt practice by ensuring the independent and empowerment of the anti-graft bodies and strictly adhering to the stipulations of the Fiscal Responsibility Act (FRA) of 2007.

v. Lastly, the government should always try to maintain good monetary instruments in the economy in order to maintain both internal and external balances without going **deficit.**

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