

# EFFECTIVE MONETARY POLICY AS A RECIPE FOR MACROECONOMIC STABILITY IN NIGERIA

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**Abstract:** The basic objective of this paper was to investigate effective monetary policy as a recipe for macroeconomic stability in Nigeria, using annual time series data from 1981 to 2014. The paper employs OLS methodology with all the BLUE assumption. The results show that considering the magnitude, 1% increase in RGDP (proxy for economic growth) is brought about by 0.86% increase in narrow money supply (M1), 0.63% increase in broad money supply (M2), 258% decrease in inflation rate (INFLARATE), 1276.3% increase in lending rate (LEDRATE), and 143.9% increase in gross fixed capital formation. This implies that an increase in lending rate and other related variables will lead to a significant increase in real GDP, proxy for economic growth in Nigeria. The estimated value of  $R^2$  (goodness of fit) of 0.67 or 67% shows that 67% systematic variation in Real GDP is caused by variation in narrow money supply, broad money supply, inflation rate, lending rate, and gross fixed capital formation. This indicates that indeed, monetary policy has an effect on macroeconomic stability in Nigeria. The study seems to suggest that concerted efforts should be made by the government to focus on increment in narrow and broad money supplies which will aid in the financing of the country's monetary growth, balancing the price increase, stimulating increased spending, and further enhancing the country's macroeconomic variables.

**Keywords:** employs OLS methodology, BLUE assumption, real GDP, economic growth in Nigeria.

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## 1. INTRODUCTION

The effect of monetary policy on Nigeria's macroeconomic growth has been receiving increasing attention in recent years. Because of the prime importance of economic growth among the various macro-economic objectives of nations (developed and developing nations), persistent concern has always been given among monetary economists. The relationship between monetary policy and the Nigerian economy has been receiving increasing attention than any other subject matter in the field of monetary economics in recent years. Because of the importance of economic growth among the macro-economic objectives of nations (developed and developing), persistent concern has always been given among monetary economist including Mckinnon (1973), Shaw (1973), Fry Mathieson (1980), Odedokun (1997), Levine (1997) and Asogu (1998) to the relationship between monetary policy and macroeconomic output.

Economists differ on the effect of monetary policy on economic growth. While some agreed that variation in the quantity of money is the most important determinant of economic growth, and that countries that devote more time to studying the behaviour of aggregate monetary policy rarely experience much variation in their economic activities (Handler 1997). Others are Skeptical about the role of money or gross national income Robinson (1950, 1952). Kuznet (1955) supports the view that financial markets start growing as the economy approaches the intermediate stage of the growth process and develop once the economy becomes matured. This connotes that economic growth stimulates increased financial

development. Steve (1997) and Domigo (2001), explain that there may not be possibility of economic growth without an appropriate level of monetary policy, credit and appropriate financial conditions in general. Evidence in the Nigerian economy has shown that since the 1980's some relationship exist between the stock of money and economic growth or economic activity.

These developments are then incorporated in an economic model to see how the economy is likely to evolve over time. In doing this, the central bank is confronted with some unexpected development such as the Niger- Delta crisis that disturbed the oil production and slowed down the revenue generation by the government. They therefore, have to build uncertainties into their model. Uncertainty seems to be a problem at every part of the monetary policy process and there is yet no set of policy and procedures that policy makers can use to deal with all situations that may arise (Chimezie, 2012). Indeed, the central bank spends a great deal of time and effort in researching into the various ways to deal with different kinds of situation.

A fundamental problem of any government is economic or otherwise its implementation. Number of government monetary policy instrument have been designed and applied in Nigeria in the hope of achieving the desired result of stable price level, low level of unemployment, efficient banking system etc. but the application of the instrument have not achieved the desired objectives stated above and has this left the government with no other alternative than to turn to the use of discretionary monetary policy.

The economy of Nigeria is faced with problems of unemployment, low investment and high inflation rate and these factors militate against the growth of the economy. Thus, adopting monetary policy in manipulating the fluctuations experienced so far in the economy, CBN undertakes both contractionary and expansionary measures in tackling the problems observed above. The CBN uses various instruments to achieve its stated objective and these include: open market operation (OMO), required reserve ratio (RRR), bank rate, liquidity ratio, selective credit control and moral suasion. There have been various regimes of monetary policy in Nigeria. Sometimes, monetary policy is tight and at other times it is loose, mostly used to stabilize prices. The economy has also witnessed times of expansion and contraction but evidently, the reported growth has not been a sustainable one as there is evidence of growing poverty among the populace. The controversy bothering on whether or not monetary policy measures actually impact on the Nigerian economy is a problem this study sets to solve.

However, the main thrust of this study is to evaluate the effectiveness of the CBN's monetary policy over the years. This would go a long way in assessing the extent to which the monetary policies have impacted on the growth process of Nigeria using the major objectives of monetary policy as yardstick. Therefore, given a number of problems caused by inflation as a result of increased used of monetary policy with the aim to increasing the growth rate of the economy, the researcher is interested in investigating empirically the dynamic effect of monetary policy on macroeconomic stability in Nigeria. There is a need for a clear-cut knowledge linkage of existing monetary policy and macroeconomic stability. This study would fill this gap by empirically examining the dynamic effect of monetary policy on macroeconomic stability in Nigeria.

This study would clearly shows the dynamic impact of monetary policy on macroeconomic variables especially economic growth in Nigeria. Much attention had been directed towards the effect of discretionary and non-discretionary fiscal policy implemented by the government neglecting the dynamic effect of monetary policy in stabilizing macroeconomic variables in the country. This study endeavours to fill that gap through quantitative analysis of some selected time series data.

## 2. LITERATURE REVIEW

Monetary policy exerts considerable influence on economic activity in both developed and developing economies. The low level of supply of money aggregates in general and money stock in particular had been responsible for the fundamental failure of many African countries to attain growth and development. Various scholars have laid much of the blame for the failure of monetary policies to transform the growth rate of the economy, as a result of poor implementation and insincerity on the part of policy executors. (Onakoya, Salisu and Oseni, 2012).

Until recently, with the recapitalization policy in the banking sector which resulted in mergers, acquisitions, increased bank branches and innovations of new products and technology as well as growth in the capital markets, the Nigerian financial system remained, by and large relatively underdeveloped because of lack of financial intermediation and financial deepening which the economy requires for sustained growth.

In an attempt to link monetary policy to economic growth recent contributors to economic growth literature have considered the role of financial structure which presupposes that the level of money stock drives economic growth. Montiel (1995), Emenuga (1996) and Osikoya (1992) all submitted that, possible effect of financial depth (money in circulation) on economic growth can manifest in three channels: (a) improved efficiency of financial intermediation (b) improved efficiency of capital stock and (c) increased national savings rate. Fishlow (1996), Bardhan (1996) and Horton et al. (1995) among others provide succinct statements of the historical perspective of issues involved and discuss the various implications of received interest in monetary aggregates in the determination of the level of economic growth in developing countries.

Prior to the publication of Kuznets' (1955) paper "Economic Growth and Income Inequality" economic development and growth were guided by the belief that the benefits of economic growth will eventually trickle down in such a way as to affect the velocity of monetary aggregate. Modern macro-economic theories of money and economic development seem to agree that there exists a systematic relationship between money and economic development (Bemanke Alan et al. 1992; Ghatak 1995).

### Theoretical Review:

Asogu (1998) sees monetary policy as actions by monetary authorities to influence the national economic objectives by controlling or influencing the quantity and direction of money supply, credit and the cost of credit. This according to him is aimed at ensuring adequate supply of money to support financial accommodation for growth and development programmes for sustainable growth and development on the one hand and , stabilizing various sectors of the , economy for sustainable growth and development on the other.

Monetary policy can be seen as systematic ways of employing the central Bank's control of the money supply as an instrument for achieving the objectives of economic policy (Johnson, 1962). Similarly, from a synthesis of most of the literature and in the context of the Nigerian situation, Ubogu (1985) defines money supply as an attempt by the monetary authorities to the leverage aggregate economic activities by controlling the quantity and direction of money and credit availability.

Vaish (1979) was of the opinion that the theoretical roots of money supply goes the way of the quantity theory money, which according to him, remains a central theme in the theory of money supply. The quantity theory states that a change in monetary policy, ceteris paribus, results in a proportional change in the price level. The controversies in monetary theory and policy have centered on what has come to be called the transmission mechanism, the channel by which monetary policy influences economic activity. In interest rate, move to bring the demand for money into equality with supply, the new level of interest rates in turn influences both consumption and interest spending hence of the output (Johnson, 1962). Changes in monetary policy are to be compatible with the rate of inflation. This change affects the wealth of the public and therefore influences their spending plans even without changes in rate of supply of money. The interest rate channel, if any fails to apply in countries where interest rates are not freely variable but are fixed. In such cases, credit is allocated by some non-price criteria, hence availability and costs become the channel of influence (Ubogu, 1985).

Economists, and mainly of the classical, school, argue that expectations of individuals and firms play an important role in transforming the effect of monetary policy actions to stability of macroeconomic variables, while this debate goes on, many hold the view that; the relative strength of the various channels of transforming monetary policy to productive economic activities is likely to vary from one country to another, depending on institutional arrangements and economic circumstances. It may also be the case that the time lags inherent in the various channels of transmission differ. Another area of debate in monetary theory policy where differences remain relatively wide is the question of the efficacy of monetary policy in nominal changes. Here, the difference in views ranges from that of the Keynesians who argue that monetary policy could influence real output , in both the short and long runs, to the neo-classical who argue that no such change in real output is possible even in the short run. The monetarist view is captured by an aggregate supply curve which is upward sloping to a point represented by full employment, which is the natural rate and vertical thereafter. This shape of the aggregated supply curve allows for inflation/output trade-off, `

The neo-classical aggregate supply curves, in contrast to both of these, are vertical at the full employment level, thereby precluding any inflation/output trade off even in the short run. An important point worth stressing from the policy point of

view is the empirical fact that a close relationship is found to exist between monetary policy and nominal income in all countries. It follows perhaps logically from this, that if production cannot adjust in the short run, due to whatever bottlenecks, monetary action is likely to cause changes in prices (Dornbusch and Fischer 2004).

As noted earlier, monetary policy refers to the combination of measures designed to regulate the value, supply and cost of money in an economy in consonance with the expected level of economic activity. One of the principal functions of the Central Bank of Nigeria (CBN) is to formulate and execute monetary policy to promote monetary stability and a sound financial system. The CBN carried out this responsibility on behalf of the federal government through a process outlined in the Central Bank of Nigeria decree 24, 1991 and the Banks and Other Financial Institutions Decree 25, of 1991 as amended. In formulating and executing monetary policy, the governor of the CBN is required to make proposals to the President of the Federal Republic of Nigeria who has the power to accept or amend such proposals. Thereafter the CBN is obliged to implement the monetary policy approved by the President (CBN 1996).

The CBN is also empowered by the two enabling laws, to direct the banks and other financial institutions to carry out certain duties in pursuit of the approved monetary policy. Usually, the monetary policy to be pursued is detailed out in the form of guidelines that are generally operated within a fiscal year but the elements could be amended in the course of those particular years. Penalties are normally prescribed for non-compliance with specific provisions in the guidelines. The aims of monetary policy are basically to control inflation maintain a healthy balance of payments position in order to safeguard the external value of the national currency and promote adequate and sustainable level of economic growth and development.

#### **Empirical Literature:**

Empirical researches have largely focused on addressing two issues. First, to examine if money could forecast output given predictive power of past values of output. If so, the second issue is to examine whether such relationship is stable over time or not. Some researchers have found evidence of the predictive ability of monetary aggregates (Beckett and Morris 1992; Krol and Chanian 1993), though, some of these studies argued that such relationship seems to have changed over time (Beckett and Morris 1992). Hum (1993), disagrees with the observed causality that runs from money to income using evidence from South African data. Jeong (2000) using Thailand socio-economic survey, concludes that growth and inequality are strongly associated with monetary policy and financial deepening.

Similar studies that have found a strong support for a positive relationship between monetary policy and growth include (Sims 1972; Wecllock 1995; Friedman and Meiselman 1963; Cagan 1956; Christ 1973; Greenwood and Jovanovic 1990 and Heber 1991, 1996). Others include (King and Levine 1993b; Wachtel and Rousseau 1995 and Neusser and Kinglert 1996). Yet others include Acemoglu and Ziliboti (1997), De-Nardi (2004), Mansor (2005), Townsend and Ueda (2005) and Owoye and Onafowora (2007). In Nigeria however, the influence of monetary policy on economic growth can only be taken with mixed reactions. Albeit, several studies have confirmed the significance of monetary policy and economic growth. Between 1971 and 1975, the growth rate of the economy measured by the real GDP ranged from 21.3% in 1971 to 3.0% in 1975. By 1981, the real GDP grew by 26.8% and remained negative till 1984 (see appendix I). A simple variance analysis shows that between 1971 and 1986, the mean spread of the GDP was 108.7.

However, between 1986 and 1994, the real GDP had a variance of 9.1. The variability of the GDP was much higher before deregulation, while it becomes lower during and after the deregulation of the economy. Both M1 and M2 had little correlation with growth of real GDP before deregulation in 1986. M2 was observed to have a variance of 362.6 and a correlation coefficient of 0.21. The period 1986- 1994 had a lower correlation of 0.16 between broad money (M2) and growth of real GDP. The mean spread of M2 was 289.2 as against 108.7 for the real GDP. The correlation between M1 and GDP between 1970 and 1986 stood at 0.22 and for 1986- 1994, it was 0.33. In essence, the above descriptive analysis does not suggest any strong relationship between monetary aggregates and economic growth in Nigeria. While attempting to identify the appropriate definition of money in Nigeria, Ojo (1978) adopted Chetty's theoretical approach with the use of 1961-79 data and found that the wider definition of money is more appropriate when measuring national income in the Nigerian economy.

Asogu (1998) examined the influence of monetary policy and government expenditure on Gross Domestic Product. He adopted the St Louis model on annual and quarterly time series data from 1960 -1995. He finds monetary policy and export as being significant. This finding according to Asogu corroborates the earlier work of Ajayi (1974) Nwaobi (1999) while examining the interaction between money and output in Nigeria between the periods 1960- 1995. The model

assumed the irrelevance of anticipated monetary policy for short run deviations of domestic output from its natural level. The result indicated that unanticipated growth in monetary policy could have positive effect on output. A clear examination of the above shows that there is no general agreement on the determinant of economic growth in the Nigerian economy. Findings of Iyoha (1969, 1976) and Taiwo (1990) show that there is a clear relationship between money and economic growth Others in Nigeria who have confirmed a strong relationship between monetary policy and growth include (Odedokun 1996; Okedokun 1998; Ojo 1993; Chete 2002 ; Saidu 2007; Owoye and Onafowora 2007).

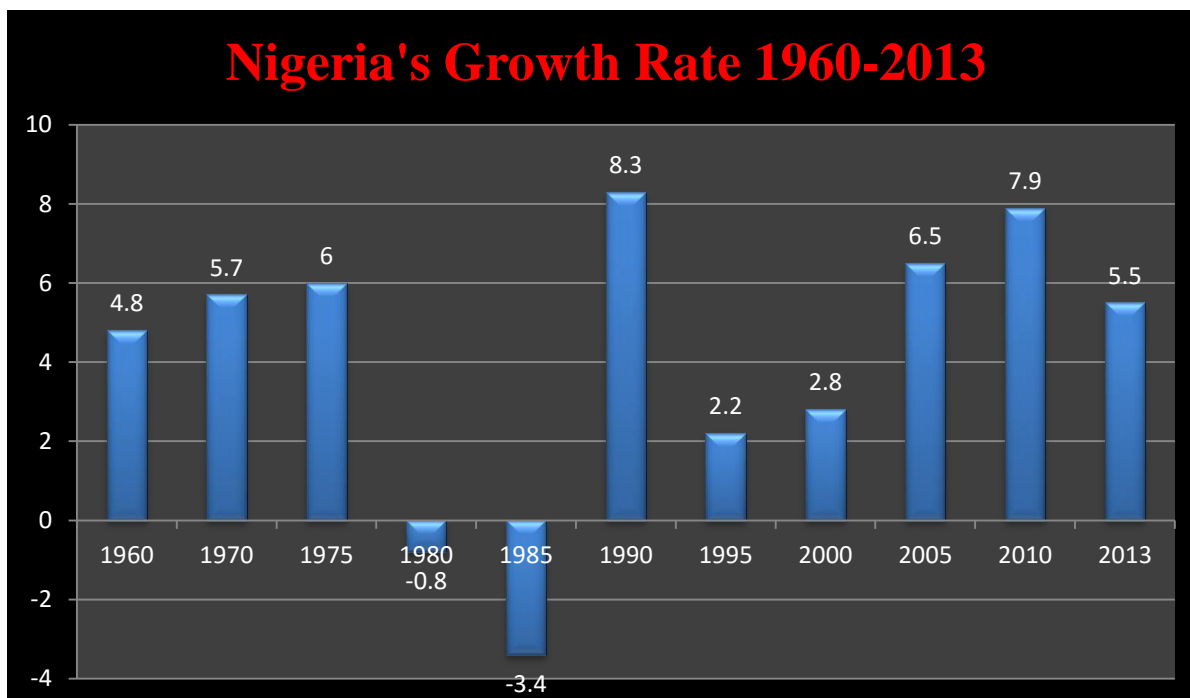
#### Monetary Policy as a Tool for macroeconomic stability:

Consistent and stabilized monetary policy is usually a set of demand management measures intended to remove some macroeconomic imbalances, which if allowed to persist, could be inimical to long-term growth. According to Anyanwu (2003), countries seeking for sustainable economic growth after a period of macroeconomic imbalances must first get stabilized. In Nigeria, monetary policy effectively implemented is a veritable tool for stable economic growth.

Efforts for sustainable growth began in Nigeria in the early 1980's in response to the emergence and persistence of unstable macroeconomic developments. There was the need to address basic elements of economic instability such as the rise in government spending which resulted in large deficits. The instability variables that needed to be stabilized were: Excessive government borrowing; rapid monetary expansion; inflation; chronic overvaluation of national currency; reduced export competitiveness; introduction of N200 and N500 currency notes; growth in real GDP which stood at 2.8 and 3.8 percent in 1999 and 2000 respectively; CBN adoption of Universal Banking (UB) in Nigeria by the end of year 2000.

#### Macroeconomic Performance in Nigeria:

According to Central Intelligence Agency (2010), Nigeria's real GDP growth rate was 6.51% in 2005, it declined to 5.63% in 2006, 5.0% in 2009 and rose to 6.4% in 2007, before recording another fall to 6.1% in 2008. In 2010 it stood at 7.9% (CBN, 2014).



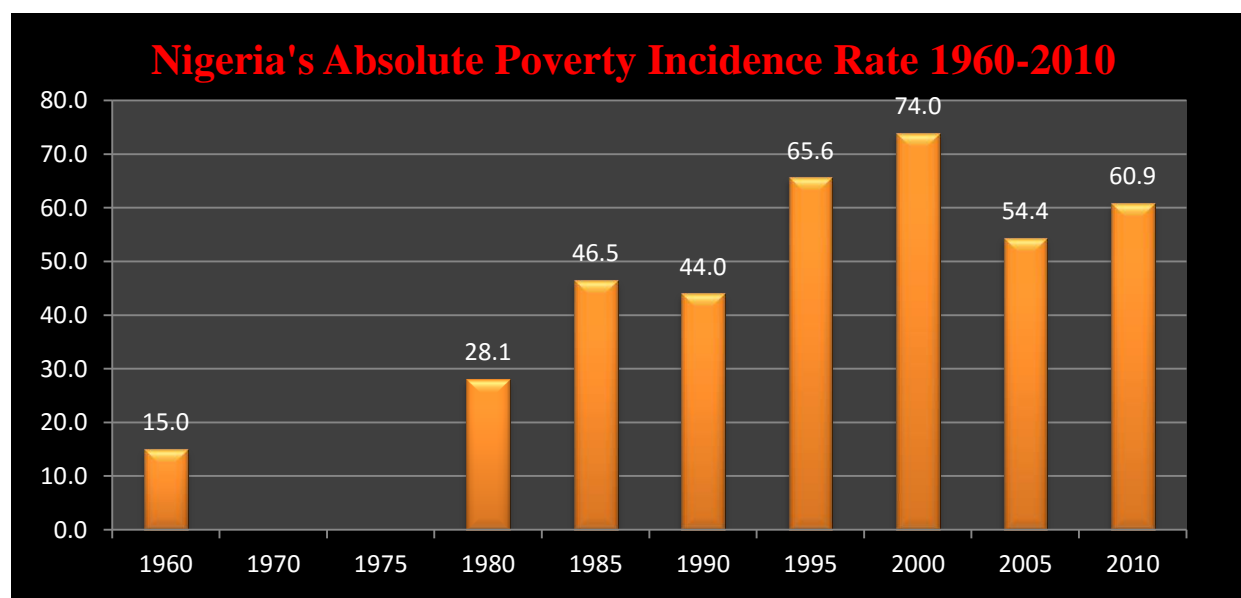
Source: CBN, Statistical bulletin, 2014.

The graph above illustrates the growth rate of Nigerian economy proxy as growth rate of real GDP. It was observed that the economy grew at an average of 6% from 1970 to 1975 but experienced short fall of 0.8%, 3.4% in 1980 to 1985 respectively. Also, it can be observed that the economy skyrocketed grew at an average of 8% in 1990 but experienced a short fall of 2.2% and 2.8% in 1995 and 2000 respectively later increases at a decreasing rate from year 2005 to 2013.



Source: NBS, 2014

The graph above illustrates the unemployment rate of Nigerian economy. It was pragmatic that the Nigeria's economy experienced 2.4% unemployment rate in 1960 before it grew to an average of 4.8% from 1970 to 1975. The economy experienced a rise of 7.8% and 8.2% of unemployment rate between 1980 and 1985 before it fell to 3.5 and 1.8 in 1990 and 1995 respectively. Likewise, between 1995 and 2000, the Nigeria economy experienced a shock which skyrocket increases the unemployment rate from its initial per cent to a huge of 18.1% in 2000 before it decreases to 11.9% in 2005. Also, it can be deduced that the economy unemployment rate from 2005 to 2011 increases at a decreasing rate.



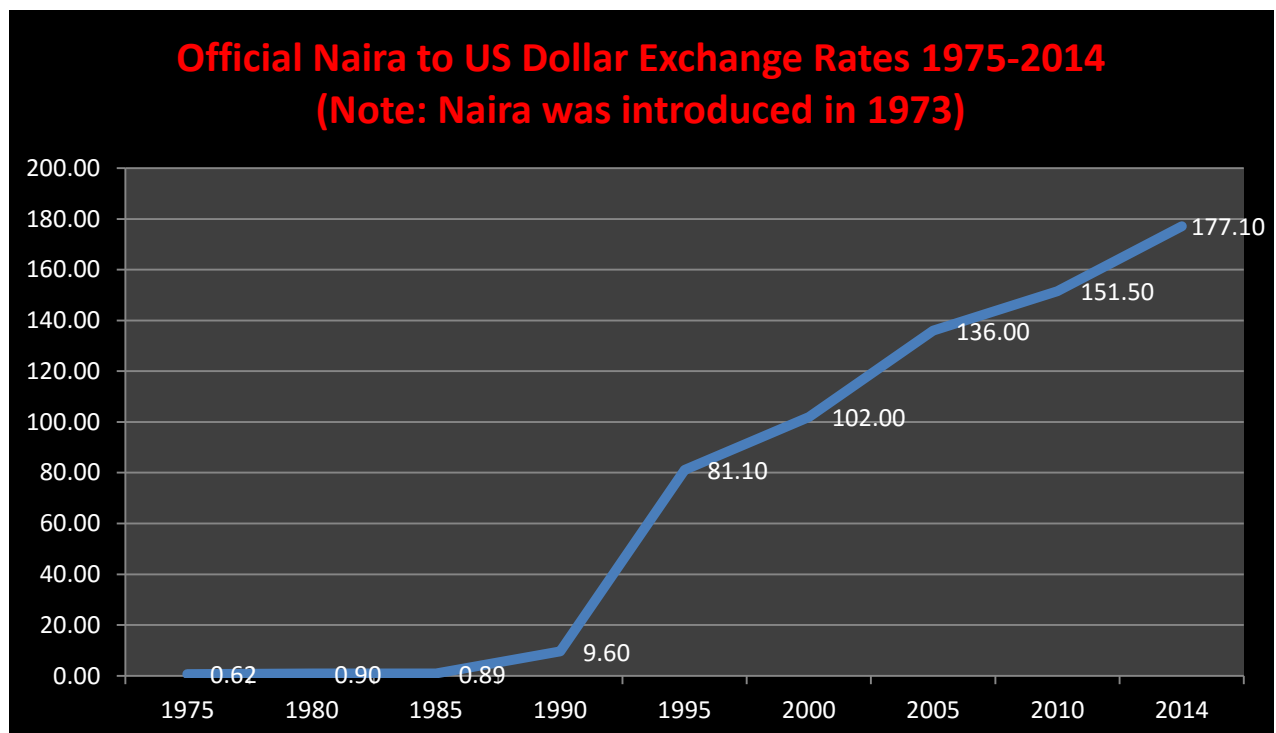
Source: NBS, 2011

The graph above illustrates the Nigeria's absolute poverty proxy as growth rate of real GDP. It was observed that the economy absolute poverty stood at 15% as at 1960 but experienced 0% poverty rate between 1970 and 1975. The graph further revealed that the Nigeria economy experienced a rise of 28.1% and 46.5% absolute poverty rate between 1980 and 1985 before it fell to 44.0% 1990. Likewise, between 1995 and 2000, the Nigeria economy experienced a shock which skyrocket increases the poverty rate from its initial stage to a huge of 65.5% and 74.0% in 1995 and 2000 before it decreases to 54.4% in 2005. Also, it can be deduced that the economy poverty rose to 60.9% in 2010.



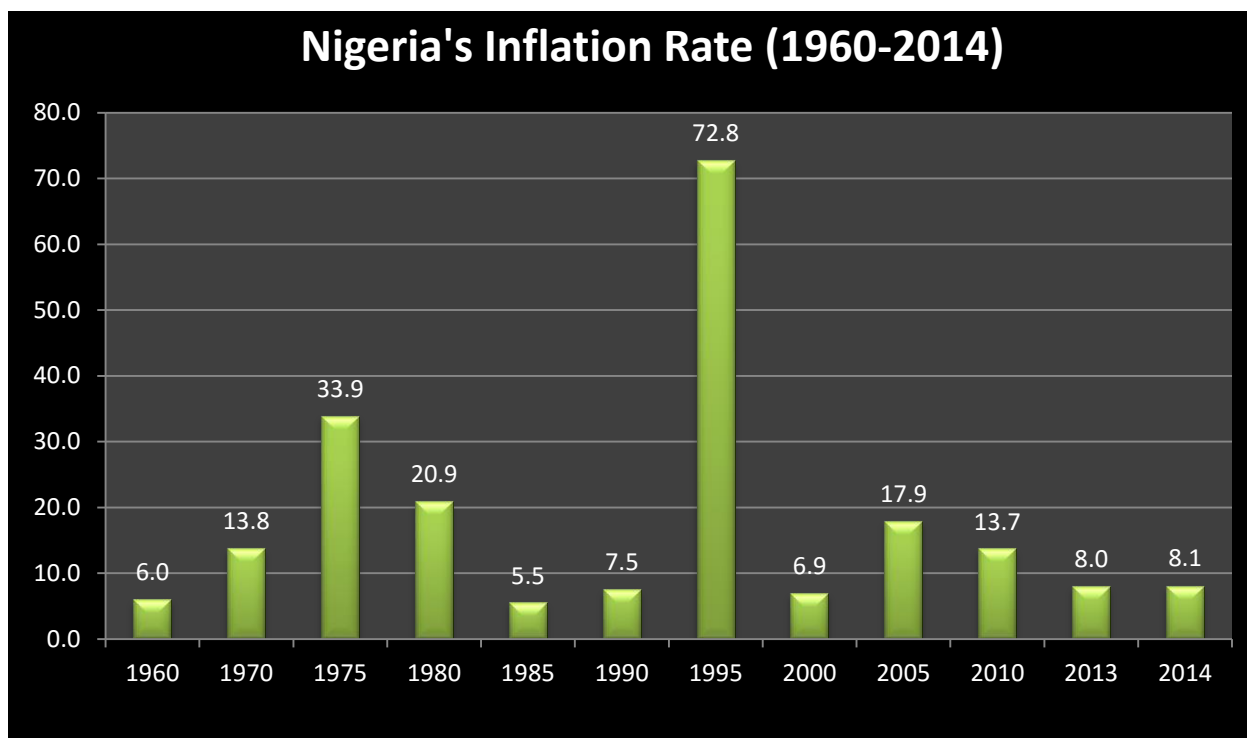
Source: CBN, Statistical bulletin, 2014

The graph above illustrates the Nigeria's income inequality proxy as growth rate of real GDP. It was observed that the economy income inequality stood at 0.342 as at 1980. The graph further revealed that the Nigeria economy experienced a rise of 0.387, 0.500 and 0.530 in 1986, 1992 and 1998. The economy later experienced a decrease at increasing rate of income inequality between 2004 and 2010.



Source: cbn, 2015

The graph above illustrates the official naira to dollar exchange rates. It was observed that the economy experienced a favourable exchange rate from 1975 to 1985 against US dollar. The economy later witnessed unfavourable exchange rates as naira skyrocket rose against dollar between 1995 and 2014.



Source: CBN, Statistical bulletin, 2014

The graph above illustrates the Nigeria's inflation rate. It was observed that the economy experienced a single digit inflation rate of 6.0% in 1960 but a double digit inflation rate between 1970, 1975 and 1980 which grew at 13.8%, 33.9% and 20.9% respectively. The graph further revealed that the economy later maintained a single digit inflation rate between 1985 and 1990 which stood at 5.5% and 7.5% respectively. Likewise, in 1995 the Nigeria economy experienced a shock which skyrocket increases the inflation rate to a huge of 72.8%. Between 2000, 2005 and 2010 the economy experienced an increasing at decreasing rate of inflation of 6.9%, 17.9% and 13.7% respectively before it decreases to 8.0% and 8.1% in 2013 and 2014 respectively.

Another factor is the inability of the researchers to use the correct and appropriate econometric method in their analysis. For example, Balogum (2007) in determining effectiveness of monetary policy in Nigeria applied only simultaneous equation model, which did not give room to test for stationarity of data and fail to test for all guasi markov assumption of Best Linear Unbiased Estimator in order to avoid spurious result. This constitutes the major gap in Knowledge filled by this research work.

Hence there is need for additional research to be conducted to examine the empirical link between monetary policy and macroeconomic stability in Nigeria in greater details.

### 3. METHODOLOGY

This study employed a regression model to analyze the effect of monetary policy on macroeconomic stability. The model of economic analysis in this study followed the conventional method and this was in reference to the variables of interest. The model was designed to investigate if any significant, positive relationship exists between monetary policy and Nigeria's macroeconomic performance.

#### **Method of Data Analysis:**

This study adopted the Ordinary Least Square (OLS) technique to examine the impact of monetary Policy on macroeconomic stability in Nigeria using time series data from 1981-2014. For the estimation of the growth model below, standard econometric tests like: Durbin Watson statistic, standard error of coefficient and F-statistic were carried out. However, the coefficient of determination i.e. R-square ( $R^2$ ) was used to measure the rate at which the independent variables explained the dependent variable. The model for this study is therefore: specified as:



$$RGDP = f(M2, M1, GFCF, LEDRATE \text{ and } INFLARATE) \dots \dots \dots (1)$$

Linearizing equation (1) gives:

$$RGDP = \alpha_0 + \alpha_1 M2 + \alpha_2 INFLARATE + \alpha_3 GFCF + \alpha_4 M1 + \alpha_5 LEDRATE + \sum_t \dots \dots \dots (2)$$

Where:

RGDP= Real Gross Domestic Product

INFLARATE= Inflation rate

GFCF= Gross Fixed Capital Formation

M2= Broad Money Supply

M1=Narrow Money Supply

LEDRATE= lending rate of commercial banks

$\sum_t$  = Error term

The a priori expectations were  $\alpha_0, \alpha_1, \alpha_3, \alpha_4, \alpha_5 > 0$ , while  $\alpha_2 < 0$ . This implies that all the independent variables with an exception of Inflation rate are expected to have a negative relationship with the dependent variable.

The evaluation consists of deciding whether the estimates of the parameters are theoretically meaningful and statistically satisfactory. For this purpose the three basic criteria ('a priori'. Statistical, econometrics) are used to evaluate the model specified.

**The 'a priori' criteria:** This refers to the signs and magnitude of the coefficients of the variables.

**Statistical Criteria:** This study makes use of statistical criteria like standard error, t-statistics, probability value and coefficient of determination. Higher standard errors imply inefficient estimates while low standard errors imply efficient estimates.

**Econometrics Criteria:** The econometrics criteria aimed at investigating whether or not the assumptions of the econometrics method is satisfied. The econometrics criteria make use of the F-test in testing the overall significance of model and the stability of coefficients.

#### Data Presentation and Analysis of Result:

The results obtained from the regression analysis carried out on the equation specified in the previous chapter will be used to draw up the conclusions and possible recommendations for the study.

The estimate of stochastic model and relevant statistics for monetary policy and macroeconomic variables is shown below. The co-efficient of explanatory variables are estimates of the model parameters. The estimations are based on data in the table while evaluations are based on relevant statistics.

#### Unit Root Tests:

Prior to the estimation of OLS, the characteristics of the data have to be examined. Testing the stationarity of economic time series data is important since standard econometric methodologies assume stationarity in the time series while they are in the real sense non-stationary. Hence, the usual statistical tests are likely to be inappropriate and the inferences drawn are likely to be erroneous and misleading. For example, the ordinary least squares (OLS) estimation of regressions in the presence of non-stationary variables gives rise to spurious regressions if the variables are not co-integrated (Granger & Newbold, 1974).

The trends of all the variables were used to conduct unit root tests to determine the stationarity of the variables using both the Augmented Dickey-Fuller (ADF) test and Philip Perron tests respectively. The results of the unit root tests are presented in tables 1 and 2. The results in Tables 1 and 2 show that all the variables are stationary in their first differences.

**Table 1: Results of Unit Roots Tests using Augmented Dickey Fuller (ADF) and Philip Perron respectively for the time series data used in the empirical analysis.****Table 1: Stationarity of the Time Series Data**

Variables	ADF Statistic with Intercept	Probability	Order of Integration
RGDP	-2.2139*	0.0239	I(1)
M2	-4.7124*	0.0006	I(1)
GFCF	-4.1177*	0.0032	I(1)
INFRATE	-3.5725*	0.0187	I(1)
M1	-4.2231*	0.0019	I(1)
LENDRATE	-4.1234*	0.0012	I(1)

**\*significant at 5 percent level**

Source: Author's Computation

Variables	Phillips-Perron test statistics	Probability	Order of Integration
RGDP	-3.2939*	0.0249	I(1)
M2	-4.7474*	0.0006	I(1)
GFCF	-4.1177*	0.0032	I(1)
INFRATE	-3.5755*	0.0137	I(1)
M1	-3.2339*	0.0231	I(1)
LENDRATE	-4.5214*	0.0005	I(1)

**\*Stationary at 5 percent significant level of first difference.**

Source: Author's Computation

The empirical evidence, from many literatures, has shown that most of the time series data are not stationary, this research work makes use of Augmented Dickey fuller and Philip Perron Test due to the problem of autocorrelation associated with the original Dickey Fuller using the model  $\Delta Y_t = \alpha + \beta_1 + \gamma Y_t + \epsilon_t$  (Intercept Only). The null Hypothesis stated that the times series variables are not stationary or have unit root. The test in the above table reveals that the entire variables are stationary in their first difference.

Time series data were used for the analysis. E-view7 Windows econometric package was used to process the data obtained.

The Result of the analysis is shown below:

Dependent Variable: RGDP

Method: Least Squares

Date: 11/02/15 Time: 11:06

Sample: 1981 2014

Included observations: 34

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	47.04130	120.0516	0.391842	0.6981
M1	0.008662	0.008477	1.021900	0.3156
M2	0.006270	0.002962	2.116829	0.0433
INFLARATE	-2.581095	1.520667	-1.697344	0.1007
LEDRATE	12.76365	4.735001	2.695596	0.0118
GFCF	1.438950	0.789381	1.822884	0.0790

R-squared	0.670210	Mean dependent var	394.2515
Adjusted R-squared	0.611319	S.D. dependent var	229.2065
S.E. of regression	142.8971	Akaike info criterion	12.92091
Sum squared resid	571748.5	Schwarz criterion	13.19027
Log likelihood	-213.6555	Hannan-Quinn criter.	13.01277
F-statistic	11.38051	Durbin-Watson stat	0.532461
Prob(F-statistic)	0.000005		

The numbers in parenthesis under the parameter estimate of the corresponding standard errors establishes that the degree of error terms is considerably minimized and hence the estimates are reliable. The parameter estimates comply with a priori expectations which explain that macroeconomic stability is grossly dependent on the explanatory variables.

Considering the magnitude 1% increase in RGDP (proxy Economic growth) is brought about by 0.86% increase in narrow monetary policy (M1), 0.63% increase in broad monetary policy (M2), 258% decrease in inflation rate (INFLARATE), 1276.3% increase in lending rate (LEDRATE) and 143.9% increase in gross fixed capital formation (GFCF). This postulates that an increase in lending rate and other related variables will lead to astronomical increase in real GDP, proxy for economic growth in Nigeria. The estimated value of  $R^2$  (goodness of fit) of 0.67 or 67% shows that 67% systematic variation in Real GDP is caused by variation in narrow money and broad monetary policy, inflation rate, lending rate, and gross fixed capital formation. This equally ascertains that parameters outside the scope of this analysis account for about 33% variation in the Economic growth which is covered by the error terms ( $\mu$ ).

The adjusted  $R^2$  when the degree of freedom is considered with the number of explanatory variables also explains the 67% variation in Real GDP. However, the analysis is statistically significant.

The overall significance of the entire model or the goodness of fit of the model as measured by the F-statistic shows that the F-statistic probability is significant even at 1% hence we agreed that variation in narrow money supply, broad monetary policy, inflation rate, lending rate, and gross fixed capital formation grossly affected Real GDP which is proxy for macroeconomic stability in Nigeria and ultimately affect sustainable development in Nigeria. However, the analysis aligns with econometrical criteria and shows that the model has overall significance and the coefficients are stable.

Narrow monetary policy (M1) which connotes all physical money along with demand deposits and other liquid assets is one of the important variables used in the model and it shows a positive relationship to Real GDP at 0.86%. This simply means that it affects positively the Real GDP in Nigeria and also increases Real GDP. The result however is not surprising because from the a-priori expectation, it was clear that increment in M1 [narrow monetary policy] will aid in the financing of the country's monetary growth, balancing the price increase, and thus enhance the country's macroeconomic stability.

Gross Fixed Capital Formation (GFCF) which is also an important variable in the model shows a positive relationship with Real GDP and is also very significant. From the result it shows that a 1 percent increase in gross fixed capital formation (GFCF) will lead to 143.9% rise in Real GDP which is an astronomical increase or rise in RGDP [macroeconomic stability]. This explains that when the government starts investing in fixed capitals such as plants and machinery, factory, land and its buildings, patents, copyrights, goodwill, computing and communication infrastructure that mostly include work station, servers, data storage, facilities, local area network, the internet, telephone fax e.t.c., it would result in the existence of these things for long term needs. Gross fixed capital formation has shown a good and positive relationship with Real GDP and macroeconomic stability in Nigeria which if invented in would help improve the real gross domestic product of Nigeria.

Broad monetary policy (M2) which refers to a broader measure that reflects money's function as a store of value and a key economic indicator which helps forecast inflation, is also one of the important variables used in the model and it shows a positive relationship to Real GDP at 0.63%. This simply means that M2 affects positively the Real GDP in Nigeria and also increases the economic growth. The result however is not surprising because from the a-priori expectation, it was clear that increment in M2 [broad monetary policy] will stimulate increased spending, which will further enhance the country's economic growth.

Inflation rate (INFLARATE) is one of the variables in the model and it shows a negative relationship to real GDP. From the result it shows that a 1 percent increase in inflation rate (INFLARATE) will lead to 258% fall or decrease in Real GDP which is an astronomical decrease in RGDP [Economic growth]. This simply depicts that when inflationary rate is increasing, economic growth of the country is seriously adversely affected.

The F-statistic shows a value of approximately 11.8 which indicates that the overall model is significant with the probability value being  $P=0.00$  which indicates a significance at 1 percent level.

The Durbin-Watson statistic shows a value of approximately 0.53 which shows the presence of positive serial correlation.

The Akaike information criterion and Schwarz criterion show about 12.92 and 13.19 respectively which indicates that the model selection is good.

The Hannan-Quinn criterion also shows about 13.01 consequently the conformity with the expected sign indicates that there is a direct relationship between each of the variables and Economic Growth.

For the Reliability of the result, White heteroskedacity-consistent standard errors & covariance with the HAC standard errors and covariance test were used simultaneously which gives the result pasted below:

White heteroskedasticity-consistent standard errors & covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	47.04130	105.6927	0.445076	0.6597
M1	0.008662	0.008873	0.976277	0.3373
M2	0.006270	0.001448	4.328771	0.0002
INFLARATE	-2.581095	1.178013	-2.191058	0.0369
LEDRATE	12.76365	4.393002	2.905451	0.0071
GFCF	1.438950	0.951876	1.511699	0.1418
R-squared	0.670210	Mean dependent var		394.2515
Adjusted R-squared	0.611319	S.D. dependent var		229.2065
S.E. of regression	142.8971	Akaike info criterion		12.92091
Sum squared resid	571748.5	Schwarz criterion		13.19027
Log likelihood	-213.6555	Hannan-Quinn criter.		13.01277
F-statistic	11.38051	Durbin-Watson stat		0.532461
Prob(F-statistic)	0.000005			

HAC standard errors & covariance (Bartlett kernel, Newey-West fixed bandwidth = 4.0000)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	47.04130	151.3920	0.310725	0.7583
M1	0.008662	0.009684	0.894530	0.3787
M2	0.006270	0.001783	3.515907	0.0015
INFLARATE	-2.581095	1.281326	-2.014394	0.0537
LEDRATE	12.76365	6.441308	1.981531	0.0574
GFCF	1.438950	1.398263	1.029099	0.3122
R-squared	0.670210	Mean dependent var		394.2515
Adjusted R-squared	0.611319	S.D. dependent var		229.2065

S.E. of regression	142.8971	Akaike info criterion	12.92091
Sum squared resid	571748.5	Schwarz criterion	13.19027
Log likelihood	-213.6555	Hannan-Quinn criter.	13.01277
F-statistic	11.38051	Durbin-Watson stat	0.532461
Prob(F-statistic)	0.000005		

From both results above,  $R^2$  remains the same and also with other statistical method of evaluation. However the model is reliable. This simply implies that the result is reliable for policy recommendation.

The above regression result has the consistent problem of auto-correlation which is shown by Durbin-Watson autocorrelation evaluation value of 0.53 for all the three ways of statistical evaluation.

Breusch-Godfrey tests were used to detect fitness of the model. Durbin-Watson  $d$  test is simply the ratio of sum of the squared difference in successive residuals to the RSS. This test is used to find problem of autocorrelation in the model. To avoid some of the drawbacks of the Durbin Watson  $d$  test of the autocorrelation, Breusch and Godfrey have constructed a test of autocorrelation that allows for: non stochastic regressors, such as the lagged values of the regressands; and higher order autoregressive schemes such as AR1, AR2. (Gujrati, 2004). The null hypothesis states that there is problem of auto-correlation while the alternative hypothesis posits otherwise.

#### Breusch-Godfrey Serial Correlation LM Test:

F-statistic	16.65984	Prob. F(2,26)	0.0000	
Obs*R-squared	19.09770	Prob. Chi-Square(2)	0.0001	
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	86.28039	84.17975	1.024954	0.3148
M1	-0.001695	0.006075	-0.279086	0.7824
M2	-0.002050	0.002081	-0.985346	0.3335
INFLARATE	2.021673	1.147657	1.761566	0.0899
LEDRATE	-4.197285	3.342415	-1.255764	0.2204
GFCF	-0.536106	0.564034	-0.950485	0.3506
RESID(-1)	0.643243	0.189980	3.385846	0.0023
RESID(-2)	0.385085	0.230039	1.673999	0.1061
R-squared	0.561697	Mean dependent var	-7.44E-14	
Adjusted R-squared	0.443692	S.D. dependent var	131.6272	
S.E. of regression	98.17549	Akaike info criterion	12.21371	
Sum squared resid	250599.1	Schwarz criterion	12.57286	
Log likelihood	-199.6331	Hannan-Quinn criter.	12.33619	
F-statistic	4.759955	Durbin-Watson stat	1.378796	
Prob(F-statistic)	0.001503			

The result gives the probability values of  $Pro F(2, 26) = 0.0000$ , and  $Prob chi-square(2) = 0.0001$  which is significant at 5% significant level and move against the Durbin Watson  $d$  test of presence of positive serial correlation. However the Breusch and Godfrey test shows absence of serial correlation.

#### 4. SUMMARY, CONCLUSION AND RECOMMENDATIONS

Having reviewed some of the related literatures and collected all necessary data, which have been analyzed and discussed, we hereby provide a summary of the findings and conclusion. Recommendations were also made in line with the results and suggestions for further research studies were provided.

The study focused on the impact of monetary policy and macroeconomic stability in Nigeria. It set out a conceptual framework for analyzing the variables involved in the study such as economic growth, monetary policy, its forms as well as its levels. The research also examined monetary policy in the Nigeria context in relation to its goals, history, policies and problems as well as and solutions to the highlighted problems.

Efforts were made to explain the impact of monetary policy on economic growth. Time series data were collected from 1981 to 2014 on Real Gross Domestic Product, Narrow and Broad Monetary policy, Gross Fixed Capital Formation, Lending Rate, and Inflation Rate, to empirically show the relationship with the use of multiple regressions [OLS] method. It was found that 67% systematic variation in Real GDP is caused by variation in Narrow and Broad Monetary policy, Gross Fixed Capital Formation, Lending Rate, and Inflation Rate, and generally caused by variation in monetary policy variables. The study showed the impact of monetary policy on Nigeria's macroeconomic stability. The findings conclude that monetary policy has a strong effect on macroeconomic stability in Nigeria.

The following recommendations are made to improve the performance of economic growth through the instrument of monetary policy in Nigeria:

1. Lending rate should be increased in order to boost the availability of financial capital towards economic development.
2. Government should engage in expansionary monetary policy when fiscal policy is contractionary, and vice-versa.
3. Government should give room for economists' advice in order to control the high rate of inflation with the aims of boosting purchasing power of the populace.

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