

## A Comparative Study of Monetary and Keynesian Theories on Inflation and Money Supply in Nigeria

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### **Abstract**

*The study compared the theories of the monetarist and keynesian school of thought with the Nigerian economic policies regarding money supply and inflation over a period of thirty five years (1981-2015). The motivation for this study was borne out of a contentious dispute that there seem not to be any consensus as to which economic theory has been dominant in the Nigerian economic landscape superintended by various governments over time. The hypotheses were premised on the opposing beliefs of these schools of thought as to the effect of money supply on prices. The methodology embarked on was regression analysis. The model of the study was well fitted as the AIC, or Schwarz criterion, shows that the difference between the two is very negligible, an indicator of a near perfect model convergence near zero. The smaller they are the better the fit of your model is (from a statistical perspective) as they reflect a trade-off between the lack of fit and the number of parameters in the model. The goodness of fit of the model testing the effect of money supply on inflation indicates a significantly high variation of 99.3% and 99.2% of inflation by money supply by the R2 and adjusted R2. The ADF seen on table 4.2.2 shows that at 1%, 5% and 10% critical values the values are more negative than ADF test static. The conclusion of this study is to accept the alternate hypothesis which suggests that money supply has a significant effect on inflation and to reject the conjecture in the null hypothesis which said that money supply has no significant effect on inflation. It is the recommendation of this study that monetary policy is better suited to stabilize the economy if it is used to target inflation directly rather than used directly to stimulate the economy. Further recommendations of study include that interest rate regime should be flexible enough to adapt to market based realities. There should be a narrowing of the gap between the interbank rate and the parallel market to avoid the attendant distortions in the foreign exchange market or in the market's ability to provide enabling environment for trading in foreign currency. The government should find practical ways to increase money supply as a means of targeting inflation given the recession in the last two quarters of 2016.*

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### **1.0 Introduction**

According to Kaufman (1978), money is more closely related to aggregate level of spending, prices, income, production and employment than any other single economic variable. An excess supply of money which will result in an excess demand for goods and services and in return lead

to increased prices and or a deterioration of the balance of payment position. Typically, in periods of high inflation, the horizon of the investor is very short, and resources are diverted from long term investment to those with immediate returns and inflation hedges, including real estate and currency speculation. Inflation implies that goods and services cost more than the actual value of money; this is seen in the overall prices increase in the economy. The causes of inflation are either demand based or premised on costs. Monetarist economists insist that the increases associated with the overall level of demand and its attendant impact on supply is what gives rise to demand-pull inflation. The Keynesians on the other hand hold the view increase in production costs as the reason for inflation especially when the extra costs of the goods and services are incorporated into the prices. Keynesian theorists believe wages and salaries of workers who are part of the production process affect the prices of the products. Where there is an increase in the salaries and wages of these workers the cost of production albeit increases hence inflation. The purchasing power of money reduces as inflation increases significantly, also savings decrease in value as the rate consumer price index increases over the preceding year. The Keynesian school of thought insists that the value of money during inflation can be further enhanced where investments are made. There are implications of inflation to to debtors and creditors alike as the rate of interest may be beneficial for debtors operating on a fixed rate of interest during inflation by reducing their debt servicing burden.

When economists are studying inflation they usually mention the theoretical expositions in the school of thought regarding inflation such as Keynesian and Monetarist Schools. For every theory there is policy issue. Monetary theorists postulate that inflation is always a money supply. To them inflation is a dependent variable and MS the Independent variable. Keynesians disagree as they insist Inflation is the independent variable while money supply is the dependent variable of course monetarists disagree insisting that it is structural. For instance in Nigeria today, the imports are still large and yet people find it hard to get currency even when demand is evident, By nature of their philosophy, monetarists blame the policy makers in government of conducting a foreign exchange policy that is strangulates the economy.

### **1.1 Statement of problem**

While there is a general consensus of the capitalist nature of the Nigerian economy there seems to be no consensus as to which economic theory has been dominant in the various economic policies embarked on by various governments over time. More specifically, with regards to inflation and money supply there has been arguments as to which has impacted more on the other. While Monetarists believe that money supply significantly affects inflation, Keynesians believe that money supply does not significantly affect inflation, many even hold that inflation is affected more by fiscal policies rather the stock of money in supply.

### **1.2 Objectives of research**

The research intends to establish if either the monetarist position or the Keynesian belief holds regarding their opposite assumptions on the significance or otherwise of the effect of money supply on inflation in Nigeria.

### **1.3 Hypotheses of study**

**H1** Money supply has a significant impact on inflation in Nigeria.

**H0** Money supply has no significant impact on inflation in Nigeria.

#### **1.4 Scope and significance of study**

The study involved data covering a period of thirty five years (1981 -2015) and is useful to academics that use economic theories to guide policy makers or model assumptions to further more study.

### **2.0 Literature review**

#### **2.1 Keynesian economics versus monetarist economics**

Milton Friedman criticized the Keynesian economics theory by mainly emphasizing the control of money in the economy. In this case the control of money in the economy allows the market to adjust itself. The monetarists believe inflation can be tackled through money supply. Interest rates in the views of the monetarist school are a dependent factor of the level of money supply in the economy. At the end of the Great Depression the limitations of the Keynesian model regarding interest rates and liquidity issues were becoming painfully clear as changes in money supply and interest rates did affect the economy. In the 1950s the Monetarists, led by Milton Friedman, made a call for renewal of the classical economic tradition with a focus on the short-run and emphasis on money supply, but with certain modifications.

The Monetarists did advocate for the discontinuation of fiscal policies, but agreed it was ineffective if it was not adequately complemented with monetary policy. The Monetarists advocated for the recognition of the role of money supply in the economy. Although the monetarist believed that money supply can be more disruptive than a stabilizing force if governments focused more on fiscal policies than money supply and interest rates. Friedman studied disruptive effects of monetary policy using “*long and variable lags*”. These recommendations of the monetarist were more free market oriented as the long and variable lags studied concluded that the United States economy would be better off if the market forces were allowed to operate freely (*laissez faire*) and not tightly regulated.

The Keynesians on the other hand were of the opinion that the stimulation of an economy experiencing downturn through increase in consumption of goods and services (expansionary policies) and the control of inflation by reducing spending through contractionary policies are appropriate measures at controlling the economy. As an improvement on the classical economics approach to policy, the Keynesians in the early 1980s posits that controlling consumption, net exports and government expenditure has an impact on the economy. The new Keynesian school of thought addressed some of the short comings of the classical school of thought such as price behavior and government intervention. While Keynes advanced the macroeconomic theory of the role of interest rates and money demand he was skeptical of the efficacy of monetary policy. He did not believe that changes in money supply would have a significant effect on the economy, particularly during a recession or depression.

Keynes down played the role of monetary policy for several reasons. He believed that increases in money supply would not lower interest rates, particularly during an economic downturn such as a recession or depression. First, Keynes observed that during an economic downturn interest rates are likely to be very low already. He asked, how can money supply stimulate the economy by lowering interest rates when interest rates are already near zero and can't go any lower?

But what does happen when there is an increase in money supply? Keynes' speculative demand for money suggested that people decided to hold money depending not only on the current but also the expected interest rate of non-money assets. Low interest rates on bonds and a declining stock market provide little incentive for people to transfer their wealth out of money. But perhaps more important, expectations of future higher interest rates further reduce the incentive for shifting financial assets from money to interest-bearing accounts. Any increase in the money supply is simply held by the public. If the Fed wants to buy the T-Bill that I hold then fine. I'll take the cash and wait for interest rates to rise to buy the T-Bill back at a lower price. An increase in money supply cannot significantly lower the nominal interest rate any further. This situation is called a *Liquidity Trap*.

In a liquidity trap households and firms are willing to hold any amount of money supplied by the Federal Reserve. A change in money supply results in no change in the interest rate. In our money demand equation (3) above, the coefficient on interest rate,  $h$ , is very large. Money demand is very sensitive to even small changes in the interest rate. In other words, a change in money supply is met by a change in money demand with only a small change in the interest rate needed to attain the new equilibrium.

Odozi (1992) was of the opinion that the impact of monetary policy may be assessed first in term of the behaviour or intermediate target of policy and secondly in terms of the performance of the ultimate target such as output growth, price stability, saving and investment. The impact of monetary policy on the latter set of variables being generally difficult to establish especially for economies such as Nigeria. In his study of the impact of monetary policy, his figures for the rate of inflation for the year 1987 - 1989 corresponded with those of Ojo (1992), so also did those for the growth of money supply. The relationship between money supply and inflation is a very common debate in the economic literature. Many economists have analyzed the relationship among these variables over many years. At international level, such studies include Chhibber et al. (1998)

## **2.2 Supply- Side Economics**

Supply-side economics, which is also known as trickle-down economics, is an economic theory that a reduction in tax rates, especially for businesses and wealthy individuals, stimulates and promotes growth in the economy by the government. It includes the incentives, the low tax rates so that the investors and the entrepreneurs may invest their money towards production. The causes and the costs of inflation in the UK economy occurred in the Macroeconomics History. The pre-1979, UK economy suffered from supply-side failures which the UK government and its economic market could not get rid of. But the government of 1980s got achieved goals by improving the policies of earlier supply-side. The year between 1945 and 1979, it is shown that the economy growth in UK is slower than the other countries and this will affect the lower rate of production per person. This caused as the major weakness for the inflation concerned with labour market among other countries. During the 1980s, the productivity of the UK is significantly decreased and the government changed some policies of supply-side economics as follows. Most major utilities such as Gas, Water and Electricity were sold out to other countries by the government and some were let to remain in the stock market. The lack of such natural resources had led to more competition, the lower prices promotions and the better quality of services among the industries such as telecommunications. The income tax was cut mostly to the wealthier businesses in the 1980s. It is shown that the top rate of income tax decreased from 60%

to 40%. The overall amount of tax has not fallen as the government had already raised the indirect taxes such as Value Added Tax (VAT).

According to the new supply side policies, it was become more difficult for the employment union to operate among the manufacturing industries as there was declined in productivity and thus the power of that union has fallen and it will prevent the inflation problem that has been happened like in 1970s. During the 1980s in UK, the government allows the irregular financial services markets which mean they ordinary building of civilization can operate like banks and moreover, there were also the organization which could provide mortgages and these will results as the competitive market and lower borrowing costs among the economy.

There was also the new arrangement of reducing the amount of unemployment. That was such jobless people could get the benefits from the government in the more difficult ways and those benefits were already mention as the price of inflation and thus those were less than the wages. That's why, we can say that it will encourage the people more to get the job. According to those polices, the references mentioned that the inflation in UK during 1980's got success by using the Supply-Side Economics Policies such as a large fall in unemployment and it is also shown that the UK current employment is recorded as the highest rate in EU. Moreover, we can see that the inflation rate in UK can also be successfully controlled by using such policies.

In the United States during the 1980s, the supply-side polices were applied to improve the US economy and maintain low unemployment. The fundamental procedure includes the methods of changing employee workforce skills, the arrangements for tax cuts, benefit cuts for the unemployed, motivating the labour to work hard and produce better goods or services. In addition, there are also more supply-side policies in order to keep up and improve the US economy in the 1980s and 1990s. The new policies are based on:

Creating hard-to-employ jobs and those employees will get more benefits compare to the unemployed. Reducing business taxes in order to let the business people to make more investments in business and thus the production of goods and services will get higher. By changing such policies made the US economy to be more improvements and secure. The consequences by using those supply-side policies and regulations led its economy to increase the supply and decrease in large demand. The reduction of the rates of taxes also motivated the people to work hard. Controlling and limiting the government expenditures saved more extra nations' income and also increase in productivity. According to the findings, it showed that the US economy had increased significantly in productivity and its inflation rate also went down near to zero levels after setting up the supply-side policy.

### **2.3 Nigeria's economic policies from 1981 to 2015**

The monetary policy of the Central Bank in the first two decades of its existence was geared towards macroeconomic stability, full-employment equilibrium, price stability, rapid economic growth and external balance of payment. As the years passed the challenges of maintaining external reserve ratio, implications of over-dependence on oil and imports caused the CBN to shift emphasis towards inflation targeting and strategies towards a maintaining a positive balance of payment. The GDP growth trend over the years clearly indicates that the monetary policies have been largely unsuccessful according to Baghebo Michael & Ebibai Tombra Stephen (2014). They also attributed this failure to maintain adequate macroeconomic stability as the reason for frequent shift in policy by successive governments.



Both the Keynesians and the Monetarists have identified different channels and mechanisms through which monetary policies have been transmitted. The monetarist transmission mechanism states that changes in the money supply results to a change in the real magnitude of money. Friedman and Schwartz (1963) described this transmission, as an increase in open market operations by the Central Bank (increases stock of money), which also leads to an increase in Commercial Bank reserves and ability to create credit and hence increase money supply through the multiplier effect. In order to reduce the quantity of money in their portfolios, the bank and non-bank financial institutions would in the initial stance purchase securities with characteristics equivalent to the ones sold to the Central Bank. The increase in demand bid up price of such securities. Thus through this mechanism, the initial increase in money supply, involving the open market operations stimulates activities in the sector.

Other experts investigated the effect of interest rates on credit structure in non-governmental sectors of industrialized countries. Borio (1995) in such study concluded that monetary policy stimulates growth under a flexible rate regime but that the attendant depreciation can destabilize the economy if not properly handled. In his policy recommendation Borio (1995) held that monetary policy is better suited to stabilize the economy if it is used to target inflation directly rather than used directly to stimulate the economy. Batini (2004) also believed that regardless of the poor implementation of monetary policies in Nigeria that there is enough evidence to support inflation targeting under a free float exchange regime than under a tightly fixed regime.

Gertler and Gilchrist (1993) established the existence of the lending channel by studying the response of small manufacturing firms to changes in monetary policy. Their results shows that, in periods of monetary policy aimed at deflating the economy, lending to small firms declines, and small firms react to changes in bank-related aggregate (e.g. broad money) than large firms. Monetary policy instruments take the form of direct or indirect. Examples of direct instruments include aggregate credit ceilings, deposit ceiling, exchange control, restriction on the placement of public deposit, special deposits and stabilisation securities while indirect instruments are Open Market Operation (OMO), discount rate, cash reserve requirement, liquidity ratio, and selective credit policies. Monetary policy has vital roles in the short-run i.e. it is used for counter-cyclical output stabilization, while in the long run it is used to achieve the macro-economic goals of full employment, price stability, rapid economic growth and balance of payments equilibrium. Under SAP, monetary and financial policies were programmed to play a dual role. For economic growth and stabilisation purposes, there was to be tight monetary policy to complement a more disciplined fiscal policy in order to reduce domestic demand and reduce inflationary pressures.

Kogar (1995) asserts that monetary policy is an effective instrument in relation to influencing demand. He opined that low inflation rate is a *sin-qua- non* to sustainable development. Kogar examined the relationship between financial innovations and monetary control and concluded that in a changing financial structure Central Banks cannot realize efficient monetary policy without setting new procedures and instruments in the long-run, because profit seeking financial institutions change processes and institutions in regulation to adapt to dynamic changes in the economy. Nnanna (2001) studies monetary policy trends in Nigeria in the past four decades and his findings indicate that Monetary management in Nigeria during the period of financial sector reform was more successful than in the periods of tight regulations. However, he attributes deviations from expected outcome to a combination of social, political and legal framework

constraining operations by the Central Bank of Nigeria .Nnanna (2001) concludes that further granting of instrument autonomy to the CBN has enhanced its operational efficiency, in terms of its ability to achieve its key objective of monetary policy, such as price stability. Ugwuegbe, Okore and Onoh (2013) in studying the impact of foreign direct investment in Nigeria recalled the policy reversals in 2004 by the Abacha led government reversing the floating exchange rate and the decree removing CBN's autonomy in 2007, a retreat from the deregulated financial sector initiatives in the mid 1980s.

Sanusi (2002) insists that unless there are adequate institutional legal framework the effective pursuance of a globally compatible monetary policy that would facilitate rapid integration of financial market would be an exercise in futility. The banks are more effective in fostering economic growth where there are institutional structures and conducive political environment and operational autonomy in decision- making with a certain level of coordination between monetary and fiscal policies

Anyanwu (1996) agrees with Milton Friedman's postulation that monetary policy presupposes a form of relationship between the supply and demand for money on one hand, and other aggregate economic variables like general price level, output, income, savings and investment on the other hand. This relationship influences the effectiveness of the mix of policy instrument. Friedman is of the view that changes in the stock of money are closely related to changes in the price level and through it, on other general economic aggregates. The amount of money the public desires to hold relative to its income distorts the rigidity of the relationship. Lags that exist between the formulation and implementation of monetary policy is a constraint on its effectiveness.

The determination of real output, general price level and other Macro-economic variables is the Keynesian postulation in the monetary transmission mechanism.. According to Keynesians, national income depends on the interplay between expected rate of profit and interest rate. The rate of interest is determined by supply of and the demand for money. Equilibrium income depends on two conditions in this model, that is: (1) Planned saving must be equal to planned investment, and, (2) At any point in time, supply of money must equal demand for money. Rate of interest influences Savings, investment, demand for and supply of money

Anyanwu (1996) insists that the effectiveness of monetary policy will then depend on the interest elasticity of demand for money. Here, monetary policy is likely to be effective, the less interest elastic the demand for idle balances, the less interest elastic the investment and consumption schedule that depend on active or transaction balances. Therefore, the effectiveness will be in combating depression rather than inflation.

The Raddiffe view is a departure from the Keynesian school of thought. He distinguished between the demand for money and the demand for liquidity. These two types of demand are not the same thing because there is interest yielding money substitutes, which people can easily turn to cash whenever they want. As a result of this situation, whatever is done to change the demand for money may be less effective than expected, because it is the demand that will respond to interest change in the rate of interest. Part of the accumulation of liquidity is likely to take the form of interest bearing near-money instead of non-interest yielding cash.

This variance of monetary policy opined that regulating money supply is not likely to be successful in stemming inflation, since the significant variable is not money per se, but the supply Asian Economic and Financial Review, 2014, 4(1):20-32 26 relative to the demand for it. And the flexibility of demand for money makes the control of money supply alone, an unreliable tool of monetary policy. Therefore, for monetary policy to be effective it has to address the control of the volume, cost and direction of liquidity rather than money supply in the economy. Keynesian view of monetary transmission is anchored on the ability of changes in money supply to influence the cost of capital through changes in short term interest rates. Changes in the money supply through the financial market affect the level of economic activities through the monetary transmission mechanism.

Modigliani (1963) analysed credit availability theory by stating that "interest rates charged to borrower by financial intermediaries are largely controlled by institutional forces and should adjust slowly at best; and that the demand for funds is accordingly limited not by lender's willingness to lend or more precisely, by the funds available to them to be rationed out among would-be borrowers". Monetary expansion includes relaxation in credit rationing by the banking sector resulting to an increase in investment, income and aggregate consumption, Increase in income increase savings which will further increase the bank's ability to give loans and advances to the business sector. In response to the effectiveness of the transmission mechanism which depends on the stock of money and effective demand, Sanusi (2002) wrote that the Central Bank has at its disposal a number of control mechanisms usually referred to as "tools of monetary policy". Some of these tools are quantitative while others are selective.

### **3.0 RESEARCH METHODOLOGY**

#### **3.1 Research Design**

The research investigates possible cause-and-effect relationship by observing an existing condition and trying to find out possible causes. And similar to Kim and Singal (1993) the researchers adopted an ex-post facto research design.

A situation where the independent variable has already occurred and the researcher starts with the observation of dependent variable on premise that a casual link exists between.

#### **3.2 Nature and Sources of Data**

The data used for this research is secondary data got from the CBN annual reports. The data is considered.

Adequately appropriate to draw solve the problem, it is cheaper to collect and is reliable as information needed to achieve the research objectives.

#### **3.3 Model Specification**

The model for this study was expressed in line with the hypotheses stated as follows

H<sub>1</sub>: Money supply has a significant impact on inflation in Nigeria.

H<sub>0</sub>: Money supply has no significant impact on inflation in Nigeria.

A second order linear differential equation is an equation which can be written in the form

$$Y + p(x)y + q(x)y = f(x) \dots\dots\dots (1)$$

where p, q, and f are continuous functions on some interval I and Y is the dependent variable and X is the independent variable.



In the E-view statistics the linear equation is re-stated as  $Y=C(1)+C(2)*X$

$$\text{INF} = C(1) + C(2) * \text{LMS2} \quad (\text{Hypothesis 1})$$
$$\text{LMS2} = C(1) + C(2) * \text{INF} \quad (\text{Hypothesis 2})$$

Where LInf is the logged values of inflation, and MS2 is money supply

### 3.4 Model Assumptions

The assumptions that were adopted for this research were based on the following assumptions

1. The model specification is assumed to be error free having been used as a measure for quantifying data of a secondary nature in previous research of this nature.
2. The parameters estimated have to be commensurate with the quantity of data. If the quantity of data is not appropriate then the analysis would be flawed with problems such as those associated with multicollinearity.

In particular, we will consider the following assumptions.

- Linearity - the relationships between the predictors and the outcome variable should be linear
- Normality - the errors should be normally distributed - technically normality is necessary only for the t-tests to be valid, estimation of the coefficients only requires that the errors be identically and independently distributed
- Homogeneity of variance (homoscedasticity) - the error variance should be constant
- Independence - the errors associated with one observation are not correlated with the errors of any other observation
- Model specification - the model should be properly specified (including all relevant variables, and excluding irrelevant variables)

Additionally, there are issues that can arise during the analysis that, while strictly speaking are not assumptions of regression, are none the less, of great concern to regression analysts.

- Influence - individual observations that exert undue influence on the coefficients
- Collinearity - predictors that are highly collinear, i.e. linearly related, can cause problems in estimating the regression coefficients.

### 3.6 Variables

The variables used in the models are the dependent and independent variables, the former representing the effects while the latter represents the causes. Given that the model is statistical, the research looked at the dependent variable studied to find out variations caused by the independent variable. The study adopted as proxy to credit creation the loans and advances to deposit ratio (LDr) as its dependent variable since credit creation by banks largely depends on availability of money (liquidity). The proxies for the independent variables are Money Supply (MS2) and Liquidity ratio (Lr) which previous studies such as Onoh (2002) have established positive and significant relationships between liquidity through increased deposits and credit creation.

### 3.7 Model Justification

Assaf Neto. A (2003) Liquidity and profitability are some of the most studied concepts of financial management within the area of banking. In this case the financial development clearly

is represented by the policy on recapitalization which translates to the contribution of banks towards economic growth through their deposits, net profits and credit creation abilities by loans and advances.

### 3.8 Techniques of Analysis

Regression analysis is used in modeling and analyzing the variables, since the focus is on the relationship between the dependent variable and the independent variable.

### 4.0 Data presentation and analysis

**Table 4.1 Data presentation**

<b>YEAR</b>	<b>MONEY SUPPLY (M2)</b>	<b>INFLATION (INF)</b>
1981	14.47	20.9
1982	15.79	7.7
1983	17.69	23.2
1984	20.11	39.6
1985	22.30	5.5
1986	23.81	5.4
1987	27.57	10.2
1988	38.36	38.3
1989	45.90	40.9
1990	52.86	7.5
1991	75.40	13
1992	111.11	44.5
1993	165.34	57.2
1994	230.29	57
1995	289.09	72.8
1996	345.85	29.3
1997	413.28	8.5
1998	488.15	10
1999	628.95	6.6
2000	878.46	6.9
2001	1,269.32	18.9
2002	1,505.96	12.9
2003	1,952.92	14
2004	2,131.82	15
2005	2,637.91	17.9
2006	3,797.91	8.2
2007	5,127.40	6.6
2008	8,008.20	15.1
2009	9,411.11	13.9

<b>2010</b>	11,034.94	13.7
<b>2011</b>	12,172.49	10.8
<b>2012</b>	13,895.39	12.2
<b>2013</b>	15,160.29	8.5
<b>2014</b> <sup>1</sup>	17,679.29	8
<b>2015</b>	18,901.30	10

Source: 2015 CBN Statistical Bulletin

#### 4.2 Data Analysis

**Table 4.2.1**

Dependent Variable: INF

Method: Least Squares

Date: 02/11/17 Time: 02:28

Sample (adjusted): 1981 2015

Included observations: 35 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	145.2079	104.5071	1.389455	0.1749
INF(-1)	1.432860	0.193832	7.392270	0.0000
INF(-2)	-0.362789	0.222221	-1.632560	0.1130
R-squared	0.993273	Mean dependent var	3895.781	
Adjusted R-squared	0.992825	S.D. dependent var	5799.583	
S.E. of regression	491.2642	Akaike info criterion	15.31835	
Sum squared resid	7240215.	Schwarz criterion	15.45440	
Log likelihood	-249.7528	Hannan-Quinn criter.	15.36412	
F-statistic	2214.889	Durbin-Watson stat	2.096045	
Prob(F-statistic)	0.000000			

**Table 4.2.2**

#### AUGUMENTED DICKEY- FULLER (LEVEL)

Null Hypothesis: INF has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 1 (Automatic - based on SIC, maxlag=10)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-2.118570	0.5170
Test critical values: 1% level	-4.262735	
5% level	-3.552973	
10% level	-3.209642	

\*MacKinnon (1996) one-sided p-values.

**Table 4.2.3**

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LM2)

Method: Least Squares

Date: 02/11/17 Time: 03:01

Sample (adjusted): 1981 2015

Included observations: 35 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LM2(-1)	-0.005643	0.007396	-0.762918	0.4515
D(LM2(-1))	0.513663	0.158561	3.239528	0.0029
C	0.139421	0.057467	2.426087	0.0215
R-squared	0.263085	Mean dependent var	0.214776	
Adjusted R-squared	0.213957	S.D. dependent var	0.110318	
S.E. of regression	0.097807	Akaike info criterion	-1.725131	
Sum squared resid	0.286987	Schwarz criterion	-1.589084	
Log likelihood	31.46465	Hannan-Quinn criter.	-1.679355	
F-statistic	5.355122	Durbin-Watson stat	2.059597	
Prob(F-statistic)	0.010263			

**Table 4.2.4**

**LOGGED M2 (1st DIFFERENCE)**

Null Hypothesis: D(LM2) has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=8)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-3.172998	0.0308
Test critical values: 1% level	-3.646342	
5% level	-2.954021	
10% level	-2.615817	

\*MacKinnon (1996) one-sided p-values.

### 5.0 Discussions of findings

On table 4.2.1 there is the analysis of the data measuring the effect of logged money supply (LM2) on inflation (INF). The R2 and adjusted R2 for testing the impact of logged form of money supply on inflation indicated a very significant variation of 99.3% and 99.2% respectively. This means that more of the variations in inflation in the last 35 years were explained by the level of money supply. Secondly, the Durbin Watson statistic at 2.09 means there was very insignificant trace of autocorrelation. A closer look at the AIC, or Schwarz

criterion, shows that the difference between the two is very negligible, an indicator of a near perfect model convergence near zero. The smaller they are the better the fit of your model is (from a statistical perspective) as they reflect a trade-off between the lack of fit and the number of parameters in the model. In statistics and econometrics, an augmented Dickey–Fuller test (ADF) tests the null hypothesis of a unit root is present in a time series sample. The augmented Dickey–Fuller (ADF) statistic, used in the test, is a negative number. The more negative it is, the stronger the rejection of the hypothesis that there is a unit roots at some level of confidence. The ADF seen on table 4.2.2 shows that at 1%, 5% and 10% critical values the values are more negative than ADF test static at -2.118570.

The second analysis measures the impact inflation on logged money supply. The R2 and adjusted R2 for the period prior to the reforms (see table 4.2.3) apparently indicates that less variations in levels of money supply are explained by changes in inflationary levels over 35 years at 26.3% and 23.3% unlike the first analysis seen in table 4.2.1. The difference between the AIC and the Schwarz criterion is significantly wider than the first analysis meaning that the convergence to zero is not as precise as the first analysis and so are not a better fit compared to the first model. The Durbin Watson statistic is 2.05 also indicating a slight trace of auto correlation meaning that like the first analysis there is a slight but not significant evidence of autocorrelation. The ADF shown on table 4.2.2 shows that it is only at 1% difference interval that the value is more negative than ADF test statistic at -3.172998.

## **6.0 Conclusions and Recommendations**

### **Conclusion**

The conclusion of this study is to accept the alternate hypothesis which suggests that money supply has a significant effect on inflation and to reject the conjecture in the null hypothesis which said that money supply has no significant effect on inflation. The findings of this study substantiate the positions taken by monetarists that money supply affects prices significantly more than the use of fiscal policies. This supports the positions taken by Anyanwu (1996) who concluded that monetary policy presupposes a form of relationship between the supply and demand for money on one hand, and other aggregate economic variables like general price level, output, income, savings and investment on the other hand. Furthermore given that the financial sector deregulation started in 1986, it means that thirty of the thirty five years under study was when interest rates and foreign exchange were market based. Since the monetarist assumptions were evident in Nigeria's case for the period under study, evidence here supports the position of Borio (1995) who concluded that monetary policy stimulates growth under a flexible rate regime but that the attendant depreciation can destabilize the economy if not properly handled. In the 2016 fiscal year the lack of stimulus and increased injection to complement fiscal policies with the high interest rates took its toll on the economy as seen in our macro economic data. But the situation was made worse with the wide gap between the interbank rate of foreign exchange and the parallel market causing further depreciation in naira value, the interest rates were so high.

### **Recommendation**

It is the recommendation of this study that monetary policy is better suited to stabilize the economy if it is used to target inflation directly rather than used directly to stimulate the economy. Regardless of the poor implementation of monetary policies in Nigeria there is enough evidence to support inflation targeting under a free float exchange regime than under a tightly



fixed regime. Given the assumptions of the monetarist school of thought and its theoretical relevance to economic policies in Nigeria over the years the study recommends that interest rate regime should be flexible enough to adopt to market based realities. Again the gap between the interbank rate and the parallel market should not too wide as to cause distortions in the foreign exchange market or in the market's ability to provide enabling environment for trading in foreign currency. The government should find practical ways to increase money supply as a means of targeting inflation given the recession in the last two quarters of 2016.

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