Monetary Policy and Economic Growth in Nigeria

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Abstract

This study investigated the nexus between monetary policy and real gross domestic product in Nigeria between 1980 to 2015. The specific objective of this study is to examine the impact of treasury bills rate, exchange rate and interest rate on real gross domestic product. The study employed the Ordinary Least Squares (OLS) methodology, using secondary data collected from Central Bank of Nigeria (CBN) statistical bulletin for the period of 1980 to 2015. The study found a positive and no significant relationship between treasury bills rate and real gross domestic product but there was a negative and no significant relationship between interest rate and real gross domestic product, while there was a positive and significant relationship between exchange rate and real gross domestic product. The study concludes that monetary policy has significant influence on real gross domestic product in Nigeria. The study recommends that when government seeks to solve the problem of exchange rate stability it should invest in capital formation to boost production and due implementation of monetary policy should be given top most priority by managers of the economy.

1. INTRODUCTION

Monetary Policy is a sister stabilization instrument to fiscal policy used in the regulation of economic dynamics operated by the Central Bank of Nigeria(CBN). The method involves using indirect monetary instruments to bring rising inflationary trends to control. This is necessary because of potential economic volatility and shocks prevalent in free market economy. The efficacy of monetary policy is slow and steady but depends extensively on the existence of dynamic money market institutions and a national population with banking culture.

To effectively stabilise the economy monetary policy is characteristically inflation targeting and growth stimulating (Nnanna, 2006). Its function is to vary quantity of money supply by contracting credit expanding functions of banks to minimum level capable of slowing persistent price growth. By this act internal and external value of local currency is protected from unnecessary market disequilibrium.

Monetary policy role in the economy is so crucial that it shields the economic agents of one economy to dangers of imported inflation. This is achieved by the tightening of foreign currency trades.

The economic situation in Nigeria in recent times has deteriorated with the naira losing value. The response has been the application of stringent methods of foreign exchange management to show up the currency.

The goal of any nation is to ensure economic wellbeing for its citizens. In achieving this economic variables are manipulated in different combinations to create wealth in the economy. Such a programme can bring about lower levels of unemployment and inflation, robust balance of payment, higher levels of industrialisation and economic stability (Afolabi, 1991)
Several countries have used monetary policies to address different economic problems. During the global financial crisis of 2008, the USA experienced severe economic downturn. The policy of increasing money supply into the economy and bailing out sick companies gradually turned the economy around.

In the last quarter of 2016, Nigeria was hit by economic recession with attendant rise in level of prices, high unemployment, scarcity of goods, low capacity utilization in the manufacturing sector and a sharp fall in the value of naira. The federal government has responded by introducing different monetary policies to manage the economy such as increased supply of foreign currency to banks, interest rate management and monthly payment of N5000 to the poor.

Research findings on the effect of monetary policies on economic growth are varied. This study examined the nexus between some instruments of monetary policy and economic growth in Nigeria using time series data from 1980-2015.

2. Literature Review

The use of monetary policy as an instrument for managing an economy can be traced to the era of Adam Smith. The policy has been used to control price, balance of payments and through open market operations has provided funding for governments and a source of earnings for investors (Onyeiwu, 2012).

The policy is also directed towards realising the goals of price stability, low unemployment rate, and economic expansion. Expansionary monetary policy entails a rise in money supply and a cut in interest rate while contractionary monetary policy is the opposite (Ayanwu and Kalu, 2014).

Monetary policy is considered second to fiscal policy in efficiency terms. It criticism is on its slow pace of achieving the premeditated objective of equilibrium in economic trend. Some scholars are of the opinions that jump starting the growth of an economy or pulling weak economy from recession makes monetary policy unreliable as a stabilization instrument. On the contrary Keynes (1930) asserts that fiscal policy is dependable in setting a depressed economy to the direction of sustainable growth. Keynes further advocates for balanced blend of monetary and fiscal policies, but that in extreme conditions monetary policy could fail in its primary objective. Friedman (1968) opined that inflation is embedded in the phenomenon of money. On this basis the Chicago school of thought is convinced that application of monetary policy measures of altering the volume of money supply is ideal for lowering volatility as inflation is a function of money velocity. This school is in direct opposition to Cambridge scholars championed by Keynes.

Similarly the impact of monetary policy on economic aggregate is vague, but the controversy centres on whether monetary policy influences growth or contracts it based on money supply. Ikhide and Olawode (1993) found that a reduction in money supply by hiking interest rate resulted in decreased national product. Fasanya et al (2013) found that monetary policy is beneficial for driving economic growth in Nigeria.
In a similar study Balogun (2007) reported that monetary policies led to inflation and stagnation.

In their study of the impact of monetary policy on the manufacturing sector from 1981-2012 using the Johansen cointegration test, Okonkwo, Egbulonu, Emerenini (2015) concluded that money supply and credit to the sector contributed positively to the performance of the manufacturing sector.
Also Nenbee and Madume (2011) empirically investigated the outcome of monetary policy on the nation's macroeconomic stability between 1970 and 2009. Their findings indicated that 47% of the total variations in the equation can be ascribed to treasury bills, money supply and rediscount rate in the long-run.

Despite the popularity of the use of monetary policies in managing economic problems, it has its critics and draw banks. White (2009) noted that monetary policies created to resolve short term problems of poor demand can aggravate medium term economic challenges by leading to rising debt that will be difficult to offset in the future.

Concept and Theoretical Framework of Economic Growth

Economic growth is the sustainable increase in the volume of goods and services produced in an economy. The sustainability implies that the improvement is consistent over extended period of time. To grow the economy on the long run requires the acquisition of basic capital assets required for further projection. The accumulation strengthens the industrial capacity production of commodities for export and domestic products for home consumptions.
This theory was developed out of many observed flaws in previous growth model of Solow-Swan neoclassical model of growth. The Solow-Swan growth model which made postulation of a continuous production function that attached output to the capital and labour input for a steady equilibrium status in the economy. But the implication of this model is that the growth rate of output in equilibrium is exogenous and is independent of the saving rate and technical progress. The model further implies that growth in income per capita can either be achieved by raising saving or lowering rising population and many other model implications.
The endogenous growth model is valid having adjusted for and in reaction to omission and weakness found in the solow and swan model of growth. Endogenous growth theoretically clears the mis-understanding surrounding the long run growth rate of an economy based on endogenous variable in contrast to exogenous factor of the neoclassical theory of growth. The identified exogenous variable explained in the solow-swan and by extension the neoclassical growth theory includes the rate of population growth and the rate of technological progress independent of saving rate. The only special feature of endogenous growth theory is the introduction of endogenous technical progress in growth model (Jhingan, 1997).

Hypothesis

Based on the review of literature the following hypothesis were tested

1. HO1: There is no significant relationship between interest rate and real gross domestic product.
2. HO2: There is no significant relationship between treasury bills rate and real gross domestic product.
3. HO3: There is no significant relationship between exchange rate and real gross domestic product.

3. METHODOLOGY
Research Design
Research design means general method of data collection and analysis and how a research will be implemented   . It is a justified means of data collection from identified sources containing study elements. The social sciences study social variables that are subject changes in trends and general behaviours. The research adopted in this study is the survey research method.

Data Collection
Secondary data was utilized for this study. Population is the entire group of items which the researcher wishes to study (Baridam, 2001). The population of this study represent monetary policy instruments of interest rate, treasury bills rate, real gross domestic product and exchange rates.

Time series data on the study variables was collected from Central Bank of Nigeria statistical bulletin for the period 1981-2015. The sample size chosen for the study is 34 which represent the number of years chosen for this analysis.

Data Analysis
The analytical technique of this study is the Ordinary Least Square Method of analysis (OLS). The reason for the preference is subject to the Gauss Markov theorem which confers the OLS reliability and volatility status as the Best Linear Unbiased Estimator (BLUE). Best linear unbiased estimator means that the result of the estimation has minimum variance between its anticipated theoretical outcome and its very ex post estimation.

Model specification
The model of this study is specified in two forms of mathematical and econometric functions. The mathematical function is specified as follows:
RGDP= F (INTR, EXR, TBR)………………   .eqn (1)
However the econometric model is specified as follows:

$RGDP = \beta_0 + \beta_1 INTR_1 + \beta_2 EXR + \beta_3 TBR + e$…………..eqn(2)
Where
GDP   real gross domestic product
INTR   interest rate
EXR   exchange rate
TBR   Treasury bill rate

4. PRESENTATION OF EMPIRICAL RESULTS
The table below presents the result obtained from the estimated linear model, based on the ordinary least squares (OLS) procedure as follows.
Table 4.1 multiple linear regression result (Short-run Es timated Model)

Dependent Variable: RGDP
Method: Least Squares
Date: 03/17/17   Time: 13:27
Sample: 1980 2015
Included observations: 36

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	16742.21	4648.937	3.601298	0.0011
TBR	275.2486	347.4728	0.792144	0.4341
INTR	-373.6496	357.6467	-1.044745	0.3040
EXR	239.7075	19.61382	12.22136	0.0000
R-squared	0.827689	Mean dependent var		30266.20
Adjusted R-squared	0.811534	S.D. dependent var		17278.92
S.E. of regression	7501.236	Akaike info criterion		20.78796
Sum squared resid	1.80E+09	Schwarz criterion		20.96391
Log likelihood	-370.1833	F-statistic		51.23673
Durbin-Watson stat	0.322054	Prob(F-statistic)		0.000000

Source: Researcher's computation

The equation below presents the results obtained from our estimated linear model

RGDP= 16742.21+275.2486 (TBR) – 373.6496(INTR) +239.7075(EXR) --------- (4.1)

Probability = (0.0011) (0.4341) (0.3040) (0.0000)

R- Squared = 0.827689

F- Statistics = 0.000000

Durbin-Watson=20.322054

S.E Regression=7501.236

4.0 ANALYSIS OF EMPIRICAL RESULTS

The regression result presented in the above equation 4.1 is analyzed below.

From the table 4.1 the OLS result showed that treasury bills rate is positively related to real gross domestic product to the extent that 1% increase treasury bills rate may lead to a 275.2486 increase in real gross domestic product.

While interest rate is negatively related to real gross domestic product, this shows that a 1% increase in interest will lead to 373.6496 decrease in real gross domestic product.

While exchange rate is positively related to real gross domestic product, this shows that a 1% increase in exchange rate will lead to 239.7075 increase in real gross domestic product

R- Squared (R^2): The R – Squared which is also known as coefficient of determination, is a statistical tool used to measure goodness of fit of the model. In other words, it is used to show the extent at which variation in the dependent variable is explained by changes in the explanatory variables. Hence it is measured in percentages. From the estimated linear multiple regression model shown in table 4.1 the E- Views 3.1 computed R- Squared obtained is 0.827689, this implies that 82 percent variation in real gross domestic product is explained by treasury bills rate, interest rate and exchange rate within the period 1980-2015. While the remaining 18 percent variation are explained by other variables that are not captured in the model. This also indicates that the estimated model have a good fit for prediction and policy purpose.

4.1 TEST OF HYPOTHESIS

The t-test: This is conducted to verify the effect of the independent variable on the dependent variable. The null hypothesis for this test states that the parameter estimates are not statistically significant; the decision rule is that we accept the null hypothesis, if the probability value is more than 5% level of significance.

Hypothesis

H_{O1}:   There is no significant relationship between treasury bills rate and real gross domestic product.

H_{O2}:   There is no significant relationship between interest rate and real gross domestic product.

H_{O3}:   There is no significant relationship between exchange rate and real gross domestic product

Interpretation 1: Since the probability value (0.4341) is greater than 0.05 percent level of significance. It follows that there is no significant relationship between treasury bills rate and real gross domestic product.

Interpretation 2: Since the probability value (0.3040) is greater than 0.05 percent level of significance; the null hypothesis is accepted, with the conclusion that there is no significant relationship between interest rate and real gross domestic product.

Interpretation 3: Since the probability value (0.000) is less than 0.05 percent level of significance; the null hypothesis is rejected, with the conclusion that there is significant relationship between exchange rate and real gross domestic product.

IMPLICATION OF FINDINGS

TREASURY BILLS RATE: Treasury bills is positive and not significantly related to real gross domestic product; this indicates that a 1% increase in treasury bills rate will lead to a 275.2486 increase in real gross domestic product in Nigeria. Since the probability value (0.4341) is more than 0.05 percent level of significance. Therefore, it is concluded that there is no significant relationship between treasury bills rate and real gross domestic product.

INTEREST RATE: Exhibited a positive and no significant relationship with real gross domestic product which adheres to our prior. Therefore a 1% increase in interest rate will decrease real gross domestic product by 373.6496. Since the probability value (0.3040) is greater than 0.05 percent level of significance; we accept the

null hypothesis, otherwise, we do reject the alternate hypothesis. Therefore, it is concluded that there is no significant relationship between interest rate and real gross domestic product.

EXCHANGE RATE: Exchange rate exhibited a positive and a significant relationship with real gross domestic product. Therefore a 1% increase in London club loan will increase real gross domestic product by 239.7975. Since the probability value (0.000) is less than 0.05 percent level of significance; we reject the null hypothesis, otherwise, we do accept the alternate hypothesis. Therefore, it is concluded that there is significant relationship between exchange rate and real gross domestic product.

DURBIN-WATSON: Since the Durbin-Watson test is more than two which is (0.322054), it means that the independent variables are not auto correlated which is good.

S.E. REGRESSION: 7501.236 accounts for the problem or downturn in the research process.

F- test: This test for overall significance of the model. This test is also carried out using the 5% level of significance, which is identified as a fair level. Thus, the Probability (F- Statistics) is 0.00000 thus we reject the null hypothesis and conclude that the overall parameter estimate for the result is statistically significant because the probability value of the (f- statistics) is lesser than 5% level of significance.

5. CONCLUSION

This research work has critically examined the effect of monetary policy on real gross domestic product in Nigeria, based on economic data for the period of 1980-2015s. Following the result of this study, monetary policy has a significant influence on real gross domestic product in Nigeria.

6. RECOMMENDATIONS

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

1. When government seeks to solve the problem of exchange rate stability it should invest in capital formation to boost production.

2. Due process and implementation of monetary policy should be given top most priority by managers of the economy.

3. In order to boost gross domestic product, monetary policy tools should be judiciously managed.

4. Real GDP is a function of external debt, foreign direct investment, inflation and export, i.e. RGDP= f(INTR, EXR, TBR) therefore, Nigeria should increase its export and foreign investment as a means to curb inflation in order to increase real gross domestic product.

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TABLE 4.1

THE RESEARCH DATA

Year	RGDP	TBR	INTR	EXR
1980	14,257.01	4.49	9.00	0.5464
1981	15258.00	5.00	7.75	O.6100
1982	14,985.08	7.00	10.25	0.6729
1983	13849.73	7.00	10.00	0.7241
1984	13779.26	8.50	12.50	0.7649
1985	14953.91	8.50	9.25	0.8938
1986	15237.99	8.50	10.50	2.0206
1987	15263.93	11.75	17.5	4.0179
1988	16215.37	11.75	16.5	4.5367
1989	17294.68	17.50	26.8	7.3916
1990	19305.63	17.50	25.5	8.0378
1991	19199.06	15.00	20.01	9.9095
1992	19620.19	21.00	29.8	17.2984
1993	19927.99	26.90	18.32	22.0511
1994	19979.12	12.50	21.00	21.8861
1995	20353.26	12.50	20.18	21.8861
1996	21177.92	12.25	19.74	21.8861
1997	21789.10	12.00	13.54	21.8861
1998	22332.87	12.95	18.29	21.8861
1999	22449.41	17.00	21.32	92.6934
2000	23688.25	12.00	17.98	102.1052
2001	25267.54	12.95	18.29	111.9433
2002	28957.71	18.88	24.85	120.9702
2003	31709.45	15.02	20.71	129.3565
2004	35020.55	14.21	19.18	133.5004
2005	37474.95	7.00	17.95	132.147
2006	39995.50	8.80	17.26	128.6516
2007	42922.41	6.91	16.94	125.8331
2008	46012.52	4.50	15.14	118.5669
2009	49856.10	6.13	18.99	148.9017
2010	54612.26	10.25	17.59	150.298
2011	57511.04	16.75	16.02	153.8616
2012	59929.89	17.20	16.69	155.8973
2013	63218.92	13.34	18.8	157.26
2014	67152.79	15.99	20.1	157.29
2015	69023.93	15.90	18.0	196.95

Source: Central Bank of Nigeria (CBN) statistical bulletin (2015).