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The Impact of Monetary Policy on the Economic Growth of Nigeria

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Abstract

This work examined the extent to which the Central Bank of Nigeria Monetary Policies could effectively be used to promote economic growth, covering the period of 1990-2011. The influence of money supply, average price, interest rate and labour force were tested on Gross Domestic Product using the multiple regression models as the main statistical tool of analysis. Studies show that CBN Monetary Policy measures are effective in regulating both the monetary and real sector aggregates such as employment, prices, level of output and the rate of economic growth. Empirical findings from this study indicate that average price and labour force have significant influence on Gross Domestic Product while money supply was not significant. Interest rate was negative and statistically significant. It is therefore, recommended that Central Bank Monetary Policy could be an effective tool to encourage investment, reduce unemployment, reduce lending rate and stabilize the economy of Nigeria.

Introduction

Nigeria being an import dependent economy is faced with stagnated growth, unstable business cycles and economic fluctuation. This usually results to unemployment, inflation, unproductivity and balance of payment disequilibrium. Government has in one way or the other regulated and controlled the economy to maximize the welfare of the citizens by way of ensuring that the resources are efficiently allocated and used.

Like any other developing country, Nigerian government adopts three types of public policies to carry out the objective of income distribution and allocation of resources. These tools of public policy include: monetary policy, fiscal policy and income policy tools. In Nigeria, government has always relied on monetary policy as a way of achieving certain economic objective in the economy such macroeconomic objectives include; employment, economic growth and development, balance of payment equilibrium and relatively stable general price level. The reason for choosing monetary policy is the fact that monetary policy has very serious implications for both fiscal and income policy measures.

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 level of economic activities. It can be described as the art of controlling the direction and movement of monetary and credit facilities in pursuance of stable price and economic growth in the economy (CBN 1992).

There is no consensus among economist as to whether government intervention through the use of monetary policy will bring about economic stabilization. This disagreement divided the economy into different schools of thought. They are, the

classical school, the Keynesian school, and the monetarist school. Each of them has its view on how variation in monetary aggregates could affect the economic stabilization.

The classicists believe that given the equation of exchange and stability in the velocity of money plus the assumption that economy operates at full employment, the change in money supply will only affect price without any effect on real demand, investment and output. The Keynesians on the other hand believe that variations in money supply could lead to an increase or decrease in interest rate. A decrease in interest rate will affect aggregate investment and enhance aggregate income and output. This is based on the belief that interest rate is the key determinant of investment in the market economy. The investment process involves the employment of factors such as labour and capital which lead to increase in total employment.

The monetarists base their views on money supply as the key factor affecting the wellbeing of the economy. They believe that an increase in money supply will lead to an increase in nominal demand, and where there is excess capacity they believe that output will be increased. In the long-run, the monetarist position is that the increase in money supply will be inflationary without any effect on investment, employment and aggregate demand.

In spite of these controversies, the Nigeria government in collaboration with its monetary authority still adopts monetary policy to regulate the economy. Thus adopting monetary policy in manipulating the fluctuations experienced so far in the economy, Central Bank of Nigeria (CBN) undertake both contractionary and expansionary measures. The reason for this action is because monetary policy has been successfully being introduced and implemented in developing economy. Therefore, it becomes necessary to examine how variations in monetary policy (money supply) can be used to influence output. The examination will cover a period of twenty-one years.

One of the major objectives of monetary policy in Nigeria is stabilization of economic growth. Nigerian government has adopted various monetary policies through Central Bank of Nigeria over years to achieve economic growth. Despite the increasing emphasis on manipulation of monetary policy in Nigeria, the problem surrounding its economic growth still persists. Such problems include high unemployment rate, low investment, high rate of inflation and unstable foreign exchange rate. These perceived problems are being claimed to have caused a fast decline in the economic growth of Nigeria. It, therefore, becomes necessary to highlight the monetary policy in Nigeria and examine the extent to which it has actually contributed to the growth in the economy.

This study examined the extent to which variations in money supply had been and can be used to influence output in Nigeria.

Research Questions

The following research questions will help to achieve the above objective

1. How has monetary policy influenced output in Nigeria?
2. To what extent has interest rate affected the economic growth in Nigeria?
3. How does average price affected the level of output in Nigeria?
4. Has labour force played any significant role on economic growth in Nigeria?

Hypotheses of the Study

The following are the hypotheses to be tested in the study.

Ho_1: There is no significant relationship between money supply and the level of output.

Ho_2: Interest rate does not significantly affect the economic growth.

Ho_3: Average price does not significantly affect the level of output.

Ho_4: Labour force has no significant impact on economic growth.

Conceptual Framework

The term monetary policy has been defined by experts from many perspectives. According to CBN (2006), monetary policy concept was defined as "Any policy measure designed by the federal government through the CBN to control cost availability and supply of credit. It also referred to as the regulation of money supply and interest rate by the CBN in order to control inflation and to stabilize the currency flow in an economy. Also CBN (1997), defined monetary policy as combination of measures designed to regulate the value, supply and cost of money on an economy in consonance with the expected levels of economic activities.

The Wikipedia encyclopedia (2015) defines monetary policy as the process by which the monetary authority of a country controls the supply of money, often targeting an inflation rate or interest rate to ensure price stability and general trust in the currency. Monetary policy is maintained through actions such as increasing interest rate, or changing the amount of money banks need to keep in vault. Jhingan (2002), refers monetary policy as the credit measures adopted by the central bank of a country. Nwankwo (1991), defined monetary policy as one of the macroeconomic instrument with which monetary authority of a country employed in the management of their economy to attain desired objectives. Wrightsman (1976), opined that monetary policy entails those actions initiated by the central bank which aim at influencing the cost and availability of credits. Okwo *et al* (2012), monetary policy consists of a government formal effort to manage the money in its economy in order to realize specific economic goals. According to Ogunjimi (1997) three basic kinds of monetary policy decision can

be made - the amount of money in circulation; the level of interest rate; and the functions of credit markets and the banking system. The combination of these measures is designed to regulate the value, supply and cost of money in an economy, in line with the level of economic activity. Abeng (2006) explained that monetary policy is valid only for a highly monetized economy. If the economy is not monetized, the efficacy of monetary policy is restricted. For instance, in an underdeveloped economy where a large proportion of output is produced in a subsistence sector, supply of money would be independent. Monetary policy, therefore, would not be a better tool to manage the economy.

A close observation of these definitions of monetary policy shows that monetary policy boils down to adjusting the supply of money in the economy to achieve some combination of inflation and output stabilization. Most economist agree that in the long run output usually measured by gross domestic product (GDP) is fixed, so any changes in the money supply only cause prices to change. But in the short-run, because prices and wages usually do not adjust immediately, changes in money supply can affect the actual production of goods and services (Koshy, 2012).

Theoretical Framework

The Classical View of Monetary Policy

The classical economists' view of monetary policy is based on the quantity theory of money. The quantity theory of money is usually discussed in term of fisherian equation of exchange, which is given by the expression **MV = PY.**

In the expression, M denotes the supply of money over which the Federal Government has some control; V denotes the velocity of circulation which is the average number of times a currency is spent on final goods and services over the course of a year; P denotes the price level GDP. Hence PY represents current nominal GDP. The equation of exchange is an identity which states that the current market value of all final goods and services (nominal GDP) must equal the supply of money multiplied by the average number of times a currency is used in transaction in a given year.

The classical economist believes that the economy is always at or near the natural level of real GDP. Thus, they assume that in the short run, the Y in the equation of exchange is fixed. They further argue that the velocity of circulation of money tends to remain constant. So that V can also be regarded as Fixed. Given that both Y and V are fixed, it follows that if the Central Bank of Nigeria (CBN) were to engage in expansionary (or contractionary) monetary policy, it will lead to an increase (or decrease) in money supply (M), the only effect would be to increase (or decrease) the price level P, in direct proportion for the change in money supply (M). In other words,

expansionary monetary policy can only lead to inflation, and contractionary monetary policy can only lead to deflation of the price level.

Keynesian View of Monetary Policy

Keynesian theory did not buy the notion that the relationship between money and price is direct and proportional. They share the view that it is indirect through the rate of interest. Also they reject the notion that the economy is always at or near the natural level of real GDP so that Y in the equation of exchange can be regarded as fixed. They also reject the proposition that the velocity of circulation of money is constant.

Keynesians believe that expansionary monetary policy increases the supply of loanable funds available through banking system, causing interest rates to fall. With lower interest rate, aggregate expenditures on investment and interest-sensitive consumption goods usually increase, causing real GDP to rise. Hence, monetary policy can affect real GDP indirectly.

The Monetarist View of Monetary Policy

Monetarist is a school of thought led by Milton Friedman. This school of thought is a modern variant of classical macroeconomics. They developed a subtler and relevant version of the quantity theory of money. Like any school of thought, Friedman (1963) emphasized on the supply of money as the key factor affecting the well-being of the economy and as well, accepted the need for an effective monetary policy to stabilize an economy. He also has the notion that, in order to promote steady growth rate, money supply should grow at a fixed rate, instead of being regulated and altered by the monetary authority(ies). Friedman equally argued that since money supply might be demanded for reasons other than anticipated transaction, it can be held in different forms such as money, bonds, equities, physical goods and human capital. Each form of this wealth has a unique characteristic of its own and a different yield. These effects will ultimately increase aggregate money demand and expand output. The Monetarists acknowledge that the economy may not always be operating at the full employment level of real GDP. Thus, in the short-run, monetarists argue that expansionary monetary policies may increase the level of real GDP by increasing aggregate demand. However, in the long-run, when the economy is operating at the full employment level, they argue that the quantity theory remains a good approximation of the link between the supply of money, price level, and the real GDP. Also, in the long-run expansionary monetary policy only lead to inflation and do not affect the level of real GDP.

Empirical Studies

Onyeiwu (2012) examined the impact of monetary policy on the Nigeria economy using Ordinary Least Squares (OLS) method. The result showed that

monetary policy represented by money supply exert a positive impact on GDP growth and balance of payment but negative impact on rate of inflation and he concluded that CBN monetary policy is effective in regulating the liquidity of the economy which affects some macroeconomic variables such as output, employment and prices. Owalabi and Adegbite (2014) examined the impact of monetary policy on industrial growth in Nigerian economy using multiple regression analysis. They analyzed the relationship between manufacturing output, treasury bills, deposit and lending, and rediscount rate and industrial growth, and found that the variables had significant effects on the industrial growth.

Adefeso and Mobolaji (2010), also investigated fiscal - monetary policy and economic growth in Nigerian by employing Jabansen Maximum Likelihood Co-integration procedure. The result shows that there is a long – run relationship between economic growth, degree of openness, government expenditure and broad money supply (M2). Owalabi and Adegbite (2014) examined the impact of monetary policy on industrial growth in Nigerian economy using multiple regression analysis. They analyzed the relationship between manufacturing output, treasury bills, deposit and lending, and rediscount rate and industrial growth, and found that the variables have significant effects on the industrial growth.

Chukwu (2009), analyzed the effect of monetary policy innovations in Nigeria. The study used a Structural Vector Auto-Regression (SVAR) approach to trace the effects monetary policy stocks on output and prices in Nigeria. The study also analyzed three alternative policy instrument, that is, broad money (M2), minimum rediscount rate (MRR), and the real effective exchange rate (REER). The study found evidence that monetary policy innovations have both real and nominal effect on economic parameter depending on the policy variable selected.

Micheal and Ebibai (2014), examined the impact of monetary policy on selected macroeconomic variables such as gross domestic product, inflation and balance of payment in Nigeria using OLS regression analysis. The result shows that the provision of investment friendly environment in Nigeria will increase the growth rate of GDP. Akujobi (2012), investigated the impact of monetary policy instrument on economic development of Nigeria using multiple regression technique and found that treasury bill, minimum rediscount rate and liquidity rate have significant impact on economic development of Nigeria.

Okwo, et al (2012) examined the effect of monetary policy outcomes on macroeconomic stability in Nigeria. The study analyzed gross domestic product, credit to the private sector, net credit to the government and inflation using OLS technique. None of the variables were significant, which suggested that monetary policy as a policy option may have been inactive in influencing price stability. Bernhard (2013)

examined the channels of monetary transmission mechanism in Nigeria using Granger casualty test to estimate the relationship between the various channels and the selected macroeconomic aggregates. The study shows that three channels of transmission were functional for inflation targeting. They include the interest rate, exchange rate and credit channels.

Omoke and Ugwuanyi (2010) investigated the relationship between inflation and output using Co-integration and Granger Causality test analysis. They found that there was no existence of co- integrating vector in the series used. Thus, the result suggested that monetary stability can contribute towards price stability in Nigerian economy since the change in price level is mainly caused by money supply and thus concluded that inflation in Nigeria is to a large extent a monetary phenomenon.

Okoro (2013) examined the impact monetary policy on Nigeria economic growth by testing the influence of interest rate, inflation, exchange rate, money supply and credit on GDP. Augumente Dickey Fuller (ADF) test, Philips–Perron Unit Test, Co-integration test and Error Correction Model (ECM) techniques were employed. The results show the existence of long–run equilibrium relationship between monetary policy instruments and economic growth.

Umaru and Zubairu, (2012) investigated the impact of inflation on economic growth and development in Nigeria between 1970-2010 through the application of Augmented Dickey-Fuller technique in testing the unit root property of the series and Granger causality test of causation between GDP and inflation. The results of unit root suggest that all the variables in the model are stationary and the results of Causality suggest that GDP causes inflation and not inflation causing GDP. The results also revealed that inflation possessed a positive impact on economic growth through encouraging productivity and output level and on evolution of total factor productivity. A good performance of an economy in terms of per capita growth may therefore be attributed to the rate of inflation in the country.

Monetary Policy as a Tool for Economic 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 an important tool for stable economic growth.

The effect for sustainable growth began in Nigeria in the early 1980's with the introduction of Structural Adjustment Programme (SAP), in response to the emergence and persistence of unstable macroeconomic instability. The Structural Adjustment Programme monetary policy was aimed at moderation inflation, increasing domestic savings, allocating resources efficiently, improving capital inflow and local production

and employment, enhancing external reserves and enhancing external reserves and stabilizing the Naira exchange rate.

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Methodology

The Research Design: The main objective of the study was to evaluate the extent to which variation in broad money supply, average price, interest rate, and labour force have been and can be used to influence gross domestic product in the Nigeria economy. To investigate the relationship between changes in these variables and changes in aggregate output or GDP, multiple regression models was adopted because of its simplicity and ability to deal with lag.

Sources of Data: The annual time series data were collected from secondary source from 1980 to 2011. The data were collected principally from annual reports of Central Bank of Nigeria (CBN) statistical bulletin and World Bank Group statistical reports.

Method of Data Analysis: Multiple regression analysis of the ordinary least square (OLS) is the estimation technique that is being employed in this study to determine the impact of monetary policy on the economic growth of Nigeria.

Model Specification

The model to capture the impact of monetary policy on Nigeria economic growth variables are stated below with the independent variables as Money supply, Interest, Rate, Average Price and Labour Force while the dependent Variable is Gross Domestic product.

This is expressed functionally as

$GDP_t = F (MS_t, AVP_t, INTR_t, LF_t)$ …… (1)

The operational and log form of the model is stated thus:

$GDP_t = b_o + b_1 MS_{2t} + b_2 AVP_t + b_3 INTR_t + b_4 LF_t + \mu_t$ ……... (2)

$LnGDP\,t = b_o + b_1 LnMSt + b_2 LnAVPt + b_3 LnNTRt + b_4 LnLF_t + \mu$… (3)

$LnGDP_t$ = Gross Domestic Product

$LnMS_{2t}$ = Money Supply

$LnAVP_t$ = Average Price (proxy for consumer price index)

$Ln\ INTR_t$ = Interest Rate

$LnLF_t$ = Labour Force

b_0 = intercept

b_1-b_4= Coefficient of the independent variables

μ = white noise or error term

Note: All variables are in their natural logarithm form.

The apriori expectation:

$b_1, b_2, b_4 > 0$; $b_3 < 0$

Discussion

Table I contains the summary of a multiple regression results for our model. In terms of the signs and magnitude of the coefficients which signify the effect of monetary policy variables on economic growth, it was observed from the model that $LnAVP_t$, $LnLF_t$ had positive a priori expectation. The coefficients of $LnMS_{2t}$ was observed to be negative and insignificant, while LnINTRt was negative and statistically significant. To determine the relationship between monetary policy and economic growth of Nigeria, it was observed that, a unit change in money supply brings about 0.4675 units decrease in economic growth at 5% level of significant indicating a negative impact on the economic growth. Also, a unit change in Average Price brings about 0.5264 increase in economic growth. This is consistent to the a priori expectation. Interest Rate is negative and is statistically significant, as a unit change in Interest Rate leads to 0.1052 units decrease in economic growth. A unit change in Labour Force brings about 9.905 units increase in economic growth. The R^2 in the model is 0.99, this means that about 99% of the variation of the dependent variable GDP is explained

jointly by all the independent variables in the model. The explanatory power of the model is very high and is a good fit, leaving about 1% for the unexplained variable. The F- statistics of 435.94 with probability of 0.000 is highly significant. This means that the independent variables in the model ($LnMS_2t$, LnAVPt, LnINTRt, LnLFt,) are jointly significant. Durbin Watson statistics of 1.75863 reveals that there is no presence of autocorrelation, since the value 1.80 approximately is within the range of 1.8 and 2.2. It, therefore, implies that the result will be reliable for prediction and policy making. The result of the t – statistic reveals that Money supply and Interest Rate are not statistically significant at 5% level of significance, while Average Price and Labour Force are statistically significant at 5% level of significance.

The significant relationship of Average Price and Labour Force on Gross Domestic Product, suggest that monetary policy as a policy option had been active in influencing these macroeconomic variables to achieving economic stability and sustainable growth in the long – run. While the insignificant effect of Broad Money Supply and Interest Rate revealed that the adoption of monetary policy measures such as cash reserve ratio or open market operation by the monetary authority has no significant impact on the variables to regulate interest rate and mitigate price instability in Nigeria.

Conclusion and Recommendations

This study examined the impact of monetary policy on economic growth of Nigeria. The work covers the period of 1980 – 2011, using multiple regression analysis. The result shows that Nigeria's economic growth is responsive to some of the macroeconomic variables such as average price and labour force. Furthermore, the result suggests that money supply which is the variable of interest may have been affected by change in economic activity, which influenced the desire to hold currency for unproductive purposes. Despite this, the result shows that the supply of money in particular has influence on the macroeconomic variables, which has proved it to be effective to control output in Nigeria economy within the period under study. It, therefore, suggest that monetary policy measures should be well co-ordinated so that the desired behavioural changes in the real sector will be achieved. Policies adopted should be limited to the absorptive capacity of the economy. This will create jobs, promote export and revive industries that are currently far below installed capacity. More so, adequate and result oriented instrument should be injected in the policies adopted at any given time. Finally, government should direct effort towards improving the level of development of both the money and capital market. This is because a well-developed money and capital market with wide range of both short and long-term finance are necessary for efficiency of the monetary system.

Table 1: Regression Result

variable	Co-efficient	t-values	p-values
Constant	-160.90	-3.17	0.006
Money Supply	-0.4675	-1.54	0.141
Average Price	0.5264	5.05	0.000
Interest Rate	-0.1052	-0.43	0.675
Labour Force	9.805	3.24	0.005
R^2	99.0%		
Adj. R^2	98.8%		
F-Value	435.94		
P- Value	0.000		

Source: Author's computation. Significant at 5%

Appendix 1.0

DATA ON SELECTED MACROECONOMIC VARIABLES

YEAR	GDP_t	M_t	AVP_t	$INTR_t$	LF_t
1990	472.65	52.86	2.4	27.7	30,043,885.00
1991	545.67	75.4	2.8	20.8	30830691
1992	875.34	111.11	4	31.2	31699193
1993	1089.68	165.34	6.3	18.32	32595298
1994	1399.7	230.29	9.8	21	33458731
1995	2907.36	289.09	17	20.79	34343510
1996	4032.3	345.85	21.9	20.86	35249740
1997	4189.25	413.28	23.8	23.32	36175721
1998	3989.45	488.15	26.2	21.34	37050181
1999	4679.21	628.95	27.9	27.19	37996091
2000	6713.57	878.49	29.9	21.55	38875614
2001	6895.2	1269.32	35.5	21.34	39681943
2002	7795.76	1505.96	40.1	29.7	40558453
2003	9913.52	1952.92	45.7	22.47	41290885
2004	11411.07	2131.82	52.6	20.62	42105536
2005	14610.88	2637.91	61.9	19.47	43250247
2006	18564.59	3797.91	67	18.7	44509061
2007	20657.32	5127.4	70.7	18.21	45724201
2008	24296.33	8008.2	78.8	21.15	47063053
2009	24794.24	9419.92	87.9	23.77	48361657
2010	54204.8	11034.94	100	21.86	49706564
2011	63258.53	12172.49	110.8	23.21	51192657

Appendix 2

DATA ON SELECTED MACROECONOMIC VARIABLES

YEAR	$LnGDP_t$	LnM_t	$LnAVP_t$	$LnINTR_t$	$lnLF_t$
1990	6.158355	3.967647	0.875469	3.321432	17.21817
1991	6.302014	4.322807	1.029619	3.034953	17.24402
1992	6.774612	4.710521	1.386294	3.440418	17.2718
1993	6.993639	5.108004	1.84055	2.907993	17.29968
1994	7.244013	5.439339	2.282382	3.044522	17.32582
1995	7.975001	5.666738	2.833213	3.034472	17.35192
1996	8.302092	5.846005	3.086487	3.037833	17.37797
1997	8.340277	6.024125	3.169686	3.149311	17.4039
1998	8.291409	6.190623	3.265759	3.060583	17.42778
1999	8.450885	6.444052	3.328627	3.302849	17.45299
2000	8.811886	6.778205	3.397858	3.070376	17.47588
2001	8.838581	7.146237	3.569533	3.060583	17.49641
2002	8.961335	7.317186	3.691376	3.391147	17.51825
2003	9.201655	7.577081	3.822098	3.112181	17.53615
2004	9.342339	7.664731	3.962716	3.026261	17.55569
2005	9.589522	7.877742	4.12552	2.968875	17.58251
2006	9.829011	8.242206	4.204693	2.928524	17.6112
2007	9.935825	8.542354	4.258446	2.901971	17.63814
2008	10.09808	8.988221	4.366913	3.05164	17.667
2009	10.11837	9.150582	4.4762	3.168424	17.69422
2010	10.90052	9.308822	4.60517	3.084658	17.72165
2011	11.05499	9.406934	4.707727	3.144583	17.75111

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