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IMPACT OF OPEN MARKET OPERATIONS ON INFLATION CONTROL IN NIGERIA: A CRITICAL ANALYSIS

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Abstract

The Nigerian economy suffers from considerable inflationary pressures either in relative or absolute terms, over the years, most of the time in double – digits. The economic implications of this, are enormous as they cause excessive relative price volatility, leading to misallocation of resources, reduction in real income of labour, decline in investment yields and, above all high cost of living. All these, adversely affect government policy objectives, thereby inhibiting economic growth. It is therefore, against this background that, the study sought to evaluate the impact of

Keywords

Open Market Operation, Inflationary Pressures, Control, Price Volatility, Investment yields.

INTRODUCTION

Inflation which is like a hydra – headed monster requires the application of multiple forces (measures) to control it. There are three (3) of these popular measures which in most cases, are simultaneously used by the government to fight it. Thus, they are the monetary, fiscal and physical measures (Jhingan, 2009). The monetary measures include, credit control, demonetization of local currency or issuance of new currency, while, the fiscal measures are, reduction in public expenditure, increase in taxes and savings, surplus budget and postponement of public debt payment. The physical measures include, increase in production, rational wage policy, price control and rationing.

It is important to state here that, inflation

open market operation on inflation control in Nigeria, from the period 1999 – 2016. The study employsex – post facto research design, as data used were secondary data, extracted from the publicationsof CBN and NBS. The hypothesis which states that, open market operation does not have a positive and significant impact on Inflation control, was tested using the Ordinary Least Squares (OLS) multiple regression technique. The result obtained, indicates that, the null hypothesis is upheld. The conclusion of the study therefore, was that, open market operation, as a monetary instrument, has the tendency to stabilize prices of goods and services through the sale and purchase of securities in the money market. The study then recommends that, monetary authorities should pursue a contractionary monetary policy through open market operation whenever the desire is to checkmate inflationary pressures in the economy.

which is generally referred to, as a continuous rise in all the prices of commodities and factors of production in an economy, has the consequence of redistributing income among people, where some people benefit and others are hurt. This situation tends to create serious social tensions and hardship, which is why countries all over the world try to avoid inflation (Lipsey, 1982, P. 256). Economists generally agreed that, inflation is caused when the aggregate demand exceeds the aggregate supply of goods and services.

Inflation, irrespective of its level, has the tendency to adversely affect the purchasing power of all classes of consumer and therefore, its control requires strong monetary and fiscal measures. The open market operation which is one of the major monetary instruments being used by the monetary authorities (CBN) to regulate money supply and credit flow in an economy, is chosen to be studied, where its effect on inflation control in Nigeria would be critically analysed.

The Central Bank of Nigeria (CBN) indirectly influences the country's economic parameters through its Open Market Operations (OMO), using Treasury Bills (TBs) and Repurchase Agreements (REPOS) with the complement of Reserve Requirements, and other monetary instruments. These categories of instruments are used to influence the quantity – based nominal anchor (monetary aggregates) needed for effective monetary programming (Chuku, 2009). The effective use of OMO as monetary instrument in Nigeria began in 1993 with the intention of migrating from direct controls of monetary management to an indirect or market – based approach. OMO was therefore, conducted wholly, using the Nigerian

Treasury Bills (NTBs)and, since then, continued to be the primary technique of monetary policy, complemented by other monetary instruments, such as, cash reserve requirement (CRR) and Liquidity ratio (LR) in Nigeria (CBN, 2011).

Statement of the Problem

In Nigeria, like in most other developing countries, Inflation constitutes a major problem to economic growth. The Nigerian economy suffered from considerable inflationary pressures either in relative or absolute terms over the years, most of the time, in double – digits. The economic implications of inflationary pressures are enormous as they cause distorted economic signals, leading to a depressed investment atmosphere characterized by, a purely speculative and short term investment decisions, inequitable distribution of income and high cost of living (Danjuma, Jibrin and Ejura; 2012).

Furthermore, as inflation causes excessive relative price variability, it leads to misallocation of resources, reduction in real income of labour, declines in investment yields and shrinks the real size of Government's budget. All these, adversely affect the government policy objectives, thereby impairing economic growth. So, from the point of view of policy makers, inflation hampers growth and development of an economy, as it discourages savings and investment. This explains why the policy makers put in a lot of efforts to control inflation and, several authors focusing attention on the issue (Folawewo and Osinubi, 2006). It is in the light of this that, this paper sought to evaluate the impact of open market operation (OMO) on inflation control in Nigeria from the period 1999 – 2016.

Hypothesis

The Hypothesis formulated for this study is as follow:

H_0: Open market operation does not have a positive and significant impact on inflation control.

Review of Related Literature

(A) Conceptual Framework

Inflation is always and everywhere a monetary phenomenon and can be produced only by a more rapid increase in the quantity of money than output (Jhingan, 2006; Freidman, 1970). Contrary to this view of the neo – classical economists, Keynes and his followers do not agree that, money supply alone is the cause of Inflation. However, Economists generally, defined Inflation in terms of a continuous rise in prices. The term inflation usually refers to, a continuing

rise in prices as measured by an index, such as, the consumer price index (CPI) or by the implicit price deflator for gross national product (Jhingan, 2009).

According to Lipsey (1982), the average level of all money prices is called the price level, while, an increase in the price level is the Inflation (i.e. a rise in the price level). This means that, an inflation is a rise in all the prices of commodities and factors of production in an economy, which has the consequence of redistributing income among people, where some people benefit and others are hurt.

The concept of Inflation is embracing and therefore, occurs in different dimensions. Thus, there are various types of Inflation, as identified by the economists. In the work of Jhingan (2009), a good number of those identified Inflation types, are mentioned, to include, Creeping Inflation (very slow rise in prices); Walking or Trotting Inflation (moderate rise in prices); Running Inflation (rapid rise in prices); Hyper Inflation (very fast rise in prices at double or triple digit rates) and Stagflation (economic stagnation plus high rate of inflation). They interpret the different levels of Inflation, which adversely affect the purchasing power of all classes of consumers. Inflation control therefore, requires strong monetary, fiscal and physical measures.

The Open Market Operation (OMO), on the other hand, refers to the sale and purchase of securities in the money market by the Central Bank. This occurs when it is discovered that, the rising or falling in prices of goods and services requires the intervention of Central Bank, in order, to stabilize the situation. In CBN monetary policy series (2011), OMO is considered as an indirect or market – based approach to Monetary Management, which has continued to be the primary tool or technique of monetary policy, complemented by Cash Reserve Requirements (CRR), Liquidity Ratio (LR) and other policy measures since its introduction in Nigeria in 1993. Some of the repackaged policy measures designed to complement OMO include, Repurchase Agreement (Repos); Reserve Repos and CBN standing facilities.

(B) Theoretical Review

Inflation is assumed to be fundamentally caused by the interplay of the forces of Demand and Supply. This was adequately addressed by the Demand pull and cost push theories of Inflation. It is the view of Demand pull theorists that, increase in aggregate demand is the major cause of Inflation. While, aggregate demand comprises of consumption, investment and government expenditures. According to Jhingan (2009), when the value of aggregate demand exceeds the value of aggregate supply, at the full employment level, the inflationary gap arises. The larger the gap, the more rapid the inflation. In other words, when Average

propensity to save (APS) is constant, as money incomes rise at the full employment level, the aggregate demand increases in excess of aggregate supply and consequently result into inflation, as prices are forced to rise. This is essentially the view of the Keynesians. The monetarists also have similar view, but centered around money supply, which uses the Fisher's equation of Exchange: MV= PQ to interpret. 'M' is the money supply, 'V' is the velocity of money, 'P' is the price level and, 'Q'is the level of real output.

The cost – push theorists, on the other hand, are of the view that, the principal causes of inflation are wage increases (wage - push) enforced by unions and profit increases (profit - push) by firms. In the earlier views of the cost – pushers (ie. Cost – push theorists), inflation was attributed to Union wage pressure, Monopoly pricing policies, Competitive struggle for relative income shares, labour and capital immobility and job information deficiencies (Bowen, 1965). There are other theorists, such as, the expectational and structuralist theorists that, view the supply of goods and services determined by cost, as the major cause of Inflation (Emmanuel, 2000).

(C) Empirical Review

Danjuma, Jibrin and Ejura (2012) assessed the effectiveness of monetary policy in combating inflation pressure on the Nigerian economy for the period 1980 to 2010. The study employed classical least squares method with the aid, granger causality, stationarity test and correlogram, which minimize the possibility of estimating spurious relations, while at the same time retaining long – run information in the work. The results of the study showed that, the liquidity ratio and interest rate turnout to be the leading monetary policy instruments that can be employed to combat inflation in Nigeria.

Chuku (2009) examined the impact of monetary policy shocks on output and prices in Nigeria for the period 1980 to 1995. The variables employed in the study were domestic credit, exchange rate, Gross Domestic Product (GDP) and money supply (M_2). The study applied Ordinary Least Squares (OLS) technique and, the findings showed that, exchange rate and money supply (M_2) had a negative impact on inflation. However, whereas, exchange rate was significant in explaining inflation for the period, the money supply (M_2) was not. On the other hand, both domestic credit and GDP were positively significant in explaining inflation in Nigeria.

Folorunsho and Abiola (2000) examined the Long – run determinants of inflation in Nigeria between 1970 and 1998, using the Econometric methods of co – integration and error correction mechanism. They find that, inflation in Nigeria could occur by the level of income, money supply, and public sector balance. The

results also indicate that in the long – run, exchange rate, money supply, income and fiscal balance determine the inflation spiral in Nigeria. The study, therefore, concludes that a reduction in fiscal deficits, an increase in domestic production and stable exchange rate should be pursued as means of controlling inflation in Nigeria.

Feridun (2005) studied impact of monetary policy on economic instability in Turkey from 1983 – 2003 and, based on quarterly data, the study affirmed that the efforts of the Turkey monetary policy at influencing the finance of government fiscal deficit through the determination of the inflation – tax rate, affected to some extent, the rate of inflation and the real exchange rate thereby, causing volatility in their rate.

Folawewo and Osinubi (2006) investigate how monetary policy objective of controlling inflation rate and intervention in the financing of fiscal deficits affect the variability of inflation and real exchange rate. The analysis was done using a rational expectation framework that incorporates the fiscal role of exchange rate. The result reveals that, inflation affects volatility of its own rate as well as the rate of real exchange.

Methodology

The adopted research design for this study is the *ex – post facto*, as data used were drawn from secondary sources (secondary data), specifically from the CBN and NBS publications. While, Ordinary Least Square (OLS) regression analysis technique was used to analyse the data collected. To demonstrate the application of OLS method, a multiple regression model was developed with OMO, Exchange rate and Interest as independent variables and, Inflation rate as the Dependent Variable.

The model developed is in line with the formulated hypothesis which states that, open market operation does not have a positive and significant impact on Inflation control. Thus, the model:-

Infr = 0 + 1OMO + 2Exr + 3Intr + μ.....

Where: Infr = Inflation rate

OMO = Open Market Operations

Exr = Exchange rate

Intr = Interest rate

0; 1; 2; and 3 = beta (parameters)

μ = Error term

Data Presentation and Analysis

The data used for this study were extracted from secondary sources (CBN and NBS publications) and summarized using descriptive statistics. They were later subjected to some statistical treatment and then analysed using the Ordinary

Least Squares (OLS) regression technique. Thus, a time series data set for an 18 year period (1999 - 2016) is presented below, indicating Inflation rate as dependent variable while, the independent variables are – OMO, Interest rate and Exchange rate.

Table: - Data for the Dependent and Independent Variables.

Year	Inflation Rate	Interest Rate	Open Market Operation (TBs)	Foreign Exchange Rate
	%	%	N' Billion	N/US Dollar
1999	6.6	21.32	88.90	92.6934
2000	6.9	17.98	86.90	102.1052
2001	18.9	18.29	1,985.50	111.9433
2002	12.9	24.85	2,421.10	120.9702
2003	14	20.71	3,026.30	129.3565
2004	15	19.18	3,467.70	133.5004
2005	17.9	17.95	2,521.70	132.1470
2006	8.5	17.26	1,509.10	128.6516
2007	5.4	16.94	1,304.20	125.8331
2008	15.1	15.14	916.30	118.5669
2009	13.9	18.99	1,392.40	148.8802
2010	11.8	17.59	2,004.90	150.2980
2011	10.3	16.02	3,048.50	153.8616
2012	12	16.79	3,609.70	157.4994
2013	8	16.72	3,650.90	157.2600
2014	8	16.55	3,879.50	155.0000
2015	9.60	11	3,697.20	197.0000
2016	18.55	14	1,930.80	305.0000

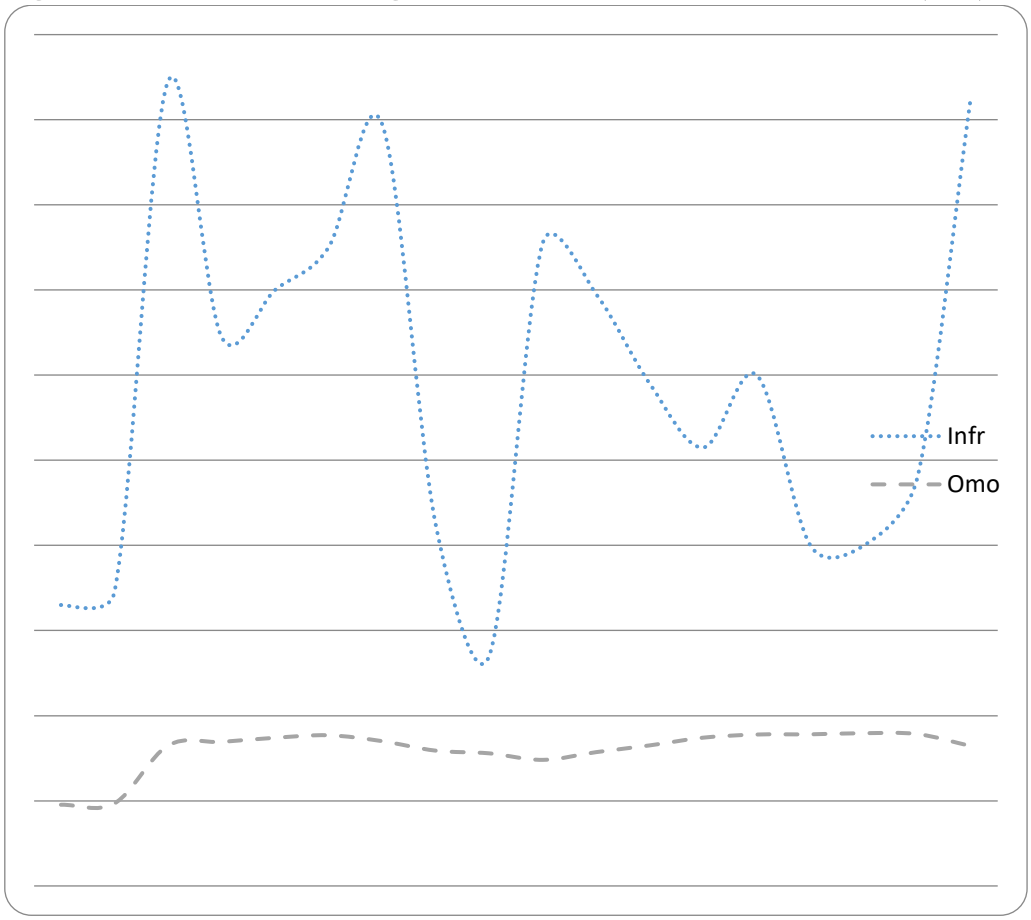
Source: Central Bank of Nigeria and National Bureau of Statistics (various years)

Data Analysis

Inflation rate during the period under review took rather a random walk, jumping back and forth between single and double digits. In 2000, the inflation rate grew marginally to 6.9% from 6.6% recorded in the previous year. In 2001, the rate had snowballed to 18.9%, the highest rate within the period under investigation. By the following year, it declined significantly to 12.9% and later increased to 14% and then 15% in 2003 and 2004 respectively. It further

increased to 17.9% in 2005 before declining to a single digit the following year. The lowest inflation rate of 5.4% was recorded in 2007 which was an improvement over the 2006 rate of 8.5%. This period was followed by a double digit regime which stood at 15.1%, 13.9%, 11.8%, 10.3% and 12% recorded in 2008, 2009, 2010, 2011 and 2012 respectively. A further decline to a single digit of 8% was recorded in 2013 and remained unchanged in 2014. It rose to 9.6% in 2015 and by 2016 increased significantly to 18.55%.

Figure: Graph showing the Trend of Inflation Rate and OMO (TBs)



Source: Researcher's initiative

The Figure above shows the graph of inflation rate and open market operation for the period 1999 to 2016. The intention of the above figure is to show in a graphical form, the relationship between the variables in the study. As clearly shown in the graph, the gyrations of open market operation is smoother than that of inflation rate which is more vigorous and steeper. As a result, these variables are subjected to further analysis in order to achieve the stated objective.

Table: Descriptive Statistics for the two variables (Inflation rate and OMO)

Infr

	Percentiles	Smallest		
1%	5.4	5.4		
5%	5.4	6.6		
10%	6.6	6.9	Obs	18
25%	8	8	Sum of Wgt.	18
50%	11.9		Mean	11.85278
		Largest	Std. Dev.	4.226195
75%	15	15.1		
90%	18.55	17.9	Variance	17.86073
95%	18.9	18.55	Skewness	.2038474
99%	18.9	18.9	Kurtosis	1.905617

Omo

	Percentiles	Smallest		
1%	80.9	80.9		
5%	80.9	86.9		
10%	86.9	916.3	Obs	18
25%	1392.4	1304.2	Sum of Wgt.	18
50%	2213		Mean	2251.867
		Largest	Std. Dev.	1211.724
75%	3467.7	3609.7		
90%	3697.2	3650.9	Variance	1468274
95%	3879.5	3697.2	Skewness	-.3184284
99%	3879.5	3879.5	Kurtosis	2.039863

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Source: Researcher's Computation using Stata Software (Version 13)
Note: Infr = Inflation Rate; Omo = Open Market Operation

The table above illustrates the descriptive statistics used to analyze the effect of open market operation on Inflation control in Nigeria for the period, 1999 – 2016.The descriptive statistics shows the mean, standard deviation, variance, skewness and kurtosis of the distribution of inflation rate and open market operation. The table shows the mean inflation rate as 11.85% with a standard

deviation of 4.23% and variance of 17.86%. The distribution of inflation rate measured by the skewness is 0.203 while the kurtosis which was used to measure the degree of steepness of the distribution was 1.91. The table also reveals that the mean open market operation was N2,251.87 billion with a standard deviation at N1,211.72 billion. The distribution of open market operation measured by the skewness was negatively skewed at -0.318 while the degree of steepness of the distribution (kurtosis) was 2.04.

Test of Hypothesis

We re-state the hypothesis of the study as follows:

H_o: Open market operation does not have a positive and significant impact on inflation rate.

H_a: Open market operation has a positive and significant impact on inflation rate.

Decision Rule:

Decision Rule 1: Accept null hypothesis if P-value is greater than 0.05 and reject null hypothesis if P-value is less than 0.05.

Decision Rule 2: Accept alternative hypothesis if P- value is less than 0.05 and reject alternative hypothesis if p-value is greater than 0.05.

Result of the Regression Analysis

Source	SS	df	MS
Model	57.4917718	3	19.1639239
Residual	246.140566	14	17.581469
Total	303.632338	17	17.8607257

Number of obs =	18
F(3, 14) =	1.09
Prob > F =	0.3857
R-squared =	0.1893
Adj R-squared =	0.0156
Root MSE =	4.193

infr	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
omo	2.16283	2.46152	0.88	0.394	-3.116605	7.442264
intr	.4002032	.4389577	0.91	0.377	-.5412675	1.341674
exr	11.65312	13.22944	0.88	0.393	-16.7212	40.02744
_cons	-27.15582	30.61883	-0.89	0.390	-92.82668	38.51505

Table: Result of Ordinary Least Square Regression Analysis of the Hypothesis.

Source: Researcher's Computation using Stata Software (Version 13)
Note: infr = Inflation Rate, omo = Open Market operation, intr - Interest Rate and exr = Exchange Rate.

The regression result presented in the tableabove revealed that the coefficient of the key variable of interest, open market operation, was positive. In a nutshell, open market operation had a positive but non-significant effect on inflation rate {$\alpha = 2.163$, $t = 0.88$, $p = 0.394 > 0.05$, $R^2 = 18.93\%$, Adjusted $R^2 = 1.56$}. The coefficient of determination which measures the goodness of fit, R^2, shows that 18.93% variation in the dependent variable, Inflation Rate, was explained by the independent variables, open market operation, interest rate and exchange rate. The remaining 81.07% variations were explained by other factors outside the independent variables. The table further reveals that both interest rate {$\alpha = 0.400$, $t = 0.91$, $p = 0.377 > 0.05$} and exchange rate {$\alpha = 11.653$, $t = 0.88$, $p = 0.393 > 0.05$} have positive but non-significant effect on inflation rate.

Decision

In line with the decision rule above, the alternate hypothesis is rejected while the null hypothesis that Open market operation does not have a significant effect on inflation rate is accepted.

Implications of Result

The findings of this study that open market operation has a positive but non-significant effect on inflation rate is consistent with literature on the effect of monetary policy on inflation rate. Open market operation has been a veritable tool in the hands of the monetary authorities in combating inflationary pressures in an economy. This, they do by pursuing a contractionary monetary policy when they sell government securities in the open market in order to checkmate inflationary pressures among other desired outcomes. For that reason, our result, which is consistent with common practice, gives empirical credence to such practices.

Conclusion and Recommendation

The Open Market Operations representing the balance sheet channel is one of the monetary instruments used by Central Banks to regulate money supply and credit flows in the economy, through the sale and purchase of securities in the money market. It has the tendency to stabilize prices of goods and services

through adoption of either expansionary or contractionary measures depending on the prevailing economic situation.

As the finding of this study reveals that, Open market Operation had a positive but non – significant effects on Inflation rate, it is therefore recommended that, monetary authorities do pursue a contractionary monetary policy through open market operation whenever the desire is to checkmate inflationary pressures in the economy. This means selling government securities, particularly, Treasury Bills (TBs) to the Deposit Money Banks (DBMs) in the money market by Central Bank, for the purpose of mopping – up liquidity, in order to incapacitate the credit creation ability of the Deposit Money Banks (DBMs).

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