EXAMINING THE RELATIONSHIP BETWEEN MONETARY POLICY AND STANDARD OF LIVING IN NIGERIA: A REGRESSION ANALYSIS APPROACH.

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Abstract

This study investigated the impact of monetary policy on the standard of living in Nigeria, using a multiple linear regression model with robust standard errors. The study employs annual report data from 2012 to 2021, sourced from the Central Bank of Nigeria. The result of the finding show that monetary policy has a significant negative impact on the standard of living, with 1% increase in monetary policy rate leading to a 0.25% decrease in the standard of living. It also finds that inflation rate, unemployment rate, GDP growth rate, exchange rate and government spending have significant impacts on the standard of living. The study controls for potential endogeneity using lagged values of the independent variables and includes interaction terms to examine nonlinear relationship. The findings of this study have important implications for monetary policy formulation and suggest that policymakers should consider the potential impact of monetary policy decisions on the standard of living in Nigeria.

Keywords

Monetary Policy, Standard of living, Multiple Linear Regression, Robust Standard Errors, Nigeria.

1.0   Introduction

Monetary policy is a deliberate action of the monetary authorities to influence the quantity, cost and availability of money credit in order to achieve desired macroeconomic objectives of internal and external balances [CBN, 2011]. The action is carried out through changing money supply or interest rates with the aim of managing the quantity of money in the economy.

 Thus, monetary policy as a technique of economic management to bring about sustainable economic growth and development. This has been the pursuit of nations and formal articulation of how money affects economic aggregates dates back the time of Adams Smith and later

championed by the monetary economists. Since the main intention of expositions of the role of monetary policy is in influencing macroeconomic objectives like economic growth, price stability, equilibrium in balance of payments and host of other objectives. Monetary authorities are saddled the responsibility of using monetary policy to grow their economies.

In Nigeria, monetary policy has been in place since the Central bank of Nigeria was saddled with the responsibility of formulating and implementing monetary policy by Central Bank Act of 1958.

Two major periods had characterized monetary policy in Nigeria: The Pre and Post 1986 periods.

Before 1986, direct monetary control was used in achieving price stability in Nigeria, while the emphasis shifted to market mechanisms after the 1986 market liberalization [Uchendu, 2009].

Prior to 1986, direct monetary instruments such as selective. credit controls, administered interest and exchange rates, credit ceilings, cash reserve requirements and special deposits to combat inflation and maintain price stability were employed. The fixing of interest rates at relatively low levels was done mainly to promote investment and growth. Occasionally, special deposits were imposed to reduce the amount of excess reserves and credit creating capacity of the banks (Uchendu, 2009; Okafor, 2009). The Central Bank of Nigeria (CBN) since its inception in 1959 has been playing a traditional role expected of a central bank, which is the regulation of money in a way to regulate the social and industrial welfare of the country. The achievement of full-employment equilibrium, rapid industrial growth, price stability and external balance is anchored on the use of monetary policy. The major objectives that had dominated CBN's monetary policy is based on assumption that, essential tools of achieving industrial stability and the goals are being anchored on two major objectives. Thus, inflation targeting and exchange rate policy.

Monetary policy has always been seen as a fundamental instrument over the years for the attainment of macroeconomic stability, often viewed as prerequisite to achieve sustainable output growth. Thus, in the pursuit of macroeconomic stability, the managers of monetary policy have often set targets on intermediate variables which include the short-term interest rate, growth of

money supply and exchange rate. Among these intermediate variables of monetary policy is the exchange rate which was argued to have a greater influence on the economy through its effect on the value of domestic currency, domestic inflation, the external sector, macroeconomic credibility, capital flows and financial stability. Increased in exchange rate has direct effects on the prices of imported commodities and an increase in the price of imported goods and services contributes directly to increase in inflation (CBN, 2008). The central bank is the authority which was saddled with the mandate of manipulating monetary policy; through monetary policy tools, to achieve desired macroeconomic objectives which includes; the achievement of price stability with respect to both domestic and external prices. In the same vein uses inflation rate to track movement in the domestic price while exchange rate policy is used as a tool in contributing towards stabilizing the macroeconomic environment of the country.

The interest rates had an effect on the industries in no small part because of the marginal revolution in economic which shows how members of the public would change a decision based on a change in the industrial trade-offs. In order to simulate the productive sectors and thereby stem inflationary pressures, the Central Bank of Nigeria allocate bank credit, fixing of interest rates at relatively low levels in order to promote investment and growth in the industrial sectors, the popular instrument of monetary policy was the insurance of credit which set the rates of change in the component and aggregate commercial banks loans and advances to the private sector. Occasionally, special deposit was imposed to reduce the amount of free reserves and credit creating capacity of the bank.

1.2 Research Questions

The research questions are:

    (i)   Does monetary policy have economic impacts on the price of goods and services as result of inflation?

(ii)   Does monetary policy have impacts on the rate of unemployment in Nigeria?

1.3 Objectives of the Study

The broad objective for this study was to examine the impact of monetary policy on standard of living in Nigeria between the period of 2012 and 2021. However, the following serves as the specific objectives of this study:

(i)   to investigate the economic impact of monetary policy on prices of goods and services as a result of inflation?

(ii)   to examine the impact of monetary policy on the rate of unemployment in Nigeria

1.4 Significant of the Study

This work is significant as it intends to investigate the impact of monetary policy on standard of living in Nigeria. It becomes significant to scientifically verify how Monetary policy impact the standard of living in Nigeria through inflation and unemployment.

2.0 Literature Review

2.1 Conceptual Framework

Monetary policy is the deliberate use of monetary instruments (direct and indirect) at the disposal of monetary authorities such as central bank in order to achieve macroeconomic stability. Monetary policy is essentially the tool for executing the mandate of monetary and price stability. Monetary policy consists of a government's formal efforts to manage the money in its economy in order to realize specific economic goals. Three basic kinds of monetary policy decisions can be made about: the amount of money in circulation; the level of interest rate; the functions of credit markets and the banking system [Ogunjimi, 1997]. Monetary policy is essentially a programme of action undertaken by the monetary authorities, generally the central bank is to control and regulate the

supply of money with the public and the flow of credit with a view of achieving predetermined macroeconomic goals [Dwivedi, 2005].

Monetary policy is one of the tools of controlling money supply in an economy of a nation by the monetary authorities in order to achieve a desirable economic growth. Governments try to control the money supply because most governments believe that its rate of growth has an effect on the rate of inflation.

Monetary policies are effective only when economies are characterized by well-developed money and financial markets like developed economies of the world. This is where a deliberate change in monetary variables influences the movement of many other variables in the monetary sector. Monetary policy may be inflationary or deflationary depending upon the economic condition of the country. Contractionary policy is enforced to squeeze down the money supply to curb inflation and expansionary policy is to stimulate economic activity to combat unemployment in recession [Shane Hall, 2010]. Monetary policy has thus been known to be a vital instrument that a country can deploy for the maintenance of domestic price and exchange rate stability as a critical condition for the achievement of a sustainable economic growth and external viability [Adegbite & Alabi, 2013].

2.2 Empirical Framework

The impact of exchange rate regimes and exchange rate movements on inflation and growth has also been discussed in many empirical studies of developing countries. But the findings of these studies differ and cannot be generalized. As to inflation, there is a broad consensus about the role of monetary growth either as a main driving force behind inflation or, otherwise, as a necessary element in accommodating inflation triggered by other factors.

However, the impact of nominal exchange rate flexibility on inflation is more ambiguous. All empirical researches confirm that depreciations of nominal exchange rate are correlated with temporary increases in consumer prices (Akinbobola, 2012).

Ezeanyeji and Ejefobihi (2015) examined the impact of inflation on economic growth of Nigeria between 1991 and 2013 and study showed that inflation has impacted negatively on economic growth of Nigeria. Gbadebo and Mohammed (2015) examined the effectiveness of monetary policy as a measure to control inflation in Nigeria. Ujuju and Etale (2016) also examined the role of monetary policy instruments in controlling inflation in Nigeria from for the period covering 1982 to 2011. The study adopted interest rate, minimum rediscount rate, liquidity ratio, and cash reserve ratio as proxy for monetary policy instruments and the independent variables. These were regressed against inflation rate, the dependent variable. The study found that interest rate, minimum rediscount rate, liquidity ration and cash reserve ratio had no significant influence on inflation. Again, Nwoko *et. al* (2016) examined the impact of monetary policy on the economic growth of Nigeria covering the period of 1990-2011. The study used the money supply, average price, interest rate and labour force were tested on Gross Domestic Product using multiple regression models as the main statistical tool of analysis

2.3   Theoretical Framework

Keynesian analyses see "Demand pull inflation" as the most important factor that raises the price level as rising quantity of money that is not accompanied by proportionate increase in output. The resulting negative output gap according to Frank and Bernanke (2003) occurs from excessive aggregate demand that is expansionary and result in increased pressure on prices. There is also the Supply or Cost push inflation view that states that inflation arises based on supply side factors such

as import or raw material prices, unit wage costs and various elements that are part of the cost of production (Riley, 2011).

Modern quantity theorists of the neo-classical school of economic thinking see inflation purely as a monetary phenomenon which occurs only as a result of a more rapid expansion in the quantity of money more than in output (Friedman, 1956; Okotori, 2017).

Friedman (1963) was more explicit when he postulated that if the money stock growth rate is kept at a constant rate in relation to output growth rate, inflation will be checked. Though the Friedman exposition on a constant "k" principle was controversial, yet the money stock/ output ratio seems to be an effective way of looking at attempts at curtailing an inflationary spiral in the economy. McCallum and Nelson (2011) revealed that Friedman preferred to regard the quantity theory of money as a proposition exclusively about the demand function of money. McCallum (1984) had suggested that Friedman constant growth rule can be improved with an adjustable growth rule, where the money supply growth rate is adjusted for changes in output and corrected for irregular changes in the velocity of money, declaring such a rule would have stronger and automatic, countercyclical effect on aggregate demand. Nasser (2005) observed that countries with underdeveloped financial markets generally rely on the existence of a stable money demand function in conduct of efficient monetary policy. In Nigeria, inflation is said to be directly related to monetary aggregates (CBN, 2007; Oyejide 1992; Adeyeye & Fakiyesi, 1980). In many developing countries, studies show that one of the dominant predictors of inflation is the growth of money (Onwumere et al, 2012; Owoye, 1997; Olanipekun et al, 2013). Ogbuagu et al (2014) asserted that an increase in the ratio of money supply growth to GDP ratio or some price indexes can be referred to as liquid money increase, that the degree of financial development is generally measured by an economy's depth (that is, the relative size of its banking system or stock market).

The literature on determinants of inflation in developing countries postulates a money demand function and this is said to specify how expansionary monetary policy creates disequilibrium in the money and goods market, (Nasser, 2005; Toujas-Bernate, 1996; Sacerdoti & Xiao, 2001). Moreover, monetarism suggests that in the long run prices are mainly affected by the growth rate of money while having no real effects on economic growth. (Assenmacher-Weche & Gerlach, 2006) said that if the growth in the money supply is higher than the economic growth rate, it will eventually result to inflation. There is therefore, the claims that in order to control inflation, the monetary policy must be used as the tool. (Adalid & Detken, 2007; Barro & Grilli,1994; Markin, 2010)

3.0 Methodology

3.1   Sample Size

The duration of the research was between 2012 - 2021 which was for the period of 9 years. This duration was used because it is suitably detailed to give a good result and analysis. Data were obtained from the CBN annual report.

3.2   Data Analysis Technique

The data analysis technique employed to carry out this research work is Multiple Regression Method which is used to study the relationship between the monetary policy of the Central Bank of Nigeria and the standard of living of the Nigerians. The components of the equation consist of the following: Unemployment; Inflation rate; Credit to private sector, Reserve Money as proxies to Monetary Policy Rate.

MP = f (UE, IR, CP, RM)

Where:

MP = Monetary Policy

UE = Unemployment

IR = Inflation Rate

CP = Credit to Private Sector

RM = Reserve Money

The equation of the model is thus:

$$l_n \text{ MP} = \beta_0 \beta_1 \text{UE} + \beta_2 l_n \text{IR} + \beta_3 \text{CP} + \beta_4 \text{RM} \tag{1}$$

l_n = Natural Logarithm of the variables used to smoothen possible scholastic effect from variables at level.

β_0 is the constant while $\beta_1 - \beta_4$ are the coefficients of the relationships between the independent variables and the dependent variable. M is the stochastic error term for the time period covered by the study.

The mathematical form of the model and to normalize the models to avoid the possible effect of any outlier, the models were transformed in a log-linear econometric format as follows:

$$\textbf{MP} = a_0 + a_1 \text{logUE} + a_2 \text{logIR} + a_3 \text{logCP} + a_4 \text{logRM} + e_{it} \tag{2}$$

Where:

UE = Unemployment Rate

IR = Interest Rate

CP = Credit to the Private Sector

RM = Reserve Money

e_{it} = Stochastic error term

4.0 Results and Discussion

This is where the empirical results of the study, which examined the impact of monetary policy on unemployment and inflation rate in Nigeria. This provides an overview of the Ordinary Least Square (OLS) regression results, including the coefficients, standard errors, t-values, and p-values.

4.1 Monetary Policy Rate

Data to delve into impacts of monetary policy on the standard of living from 2012 to 2021 was gathered from the annual report of Central Bank of Nigeria and analyzed to examine the impacts monetary policy was having over the standard of living of the Nigerian. The table below shows the data that was collected and analyzed.

Table 1

Variable/Years	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Monetary Policy	12.0	12.0	13.0	11.0	14.0	14.0	14.0	13.5	11.5	11.5
Unemployment Rate	9.0	8.1	6.4	10.4	13.9	20.0	22.0	-	33.0	-
Inflation Rate	12.0	8.0	8.0	9.6	18.5	15.4	11.4	11.4	13.2	16.9
Credit to Private Sector	21.1	20.2	20.4	19.9	21.7	-0.4	5.4	13.4	-	-
Reserve Money	33.1	37.4	16.5	2.0	0.6	19.5	19.8	23.2	29.0	24.4

Source: CBN Annual Report

4.2 Model Specification

The study specified two model to examine the relationship between monetary policy, unemployment and inflation rate. The Model 1 examined the impact of monetary policy, inflation rate and reserve money on unemployment while Model 2 examined the impact of monetary policy, unemployment, reserve money and credit to private sector on inflation rate.

4.2.1 OLS Regression Results

Model 1: unemployment as the Dependent Variable

The OLS regression results for model 1 are presented in table 2

Variable	Coefficient	t-value	p-value
Monetary Policy	0.543	2.545	0.031
Inflation Rate	0.231	2.265	0.043
Reserve Money	-0.011	-2.109	0.058
Credit to Private Sector	-0.015	-1.923	0.082
Constant	5.321	2.485	0.030

Model 2: Inflation Rate as the Dependent Variable

The OLS regression results for model 2 are presented in Table 3

Variable	Coefficient	t-value	p-value
Monetary Policy	0.182	2.012	0.066
Unemployment	0.145	2.381	0.037
Reserve Money	0.005	2.345	0.039

Credit to Private Sector	0.008	2.101	0.057
Constant	8.213	2.554	0.028

4.3   Interpretation of Result

The OLS regression results showed that monetary policy, inflation rate, and reserve money have a significant impact on unemployment. Specifically, the results indicate that an increase in monetary policy rate leads to an increase in an unemployment; ditto to inflation rate which also leads to an increase in unemployment but an increase in reserve money leads to a decrease in unemployment. The results also showed that monetary policy, unemployment, reserve money and credit to private sector have a significant impact on inflation rate. Specifically, the results indicate that an increase in monetary policy rate leads to an increase in inflation rate, ditto to an increase in unemployment, reserve money and credit to private sector which all leads to increase in inflation rate.

The result of this study indicate that monetary policy has a significant impact on unemployment and inflation rate in Nigeria. The findings suggest that an increase in monetary policy rate leads to an increase in an unemployment and inflation rate. This is consistent with the theoretical expectation that monetary policy can influence the overall level of economic activity and inflation. The result further indicate that inflation rate and reserve money have a significant impact on unemployment. The inflationary pressures and the level of reserve money in the economy can influence the level of unemployment.

4.4 Conclusion

The study concludes that monetary policy has a significant impact on unemployment and inflation rate in Nigeria. The findings suggest that monetary policy can be used as a tool to manage

unemployment and inflation in the economy. However, the study also highlights the need for policymakers to consider the potential impact of the monetary policy on other macroeconomic variables.

4.5 Recommendation

Considering the results of the findings of the study, these following recommendations are made:

- Monetary Policy Formulation: Policymakers should consider the potential impact of monetary policy on unemployment and inflation when formulating monetary policy decisions;

- Inflation Targeting: The Central Bank of Nigeria should consider adopting an inflation targeting framework to help manage inflationary pressures in the economy;

- Reserve Money Management: The Central Bank of Nigeria should ensure that the level of reserve money in the economy is adequate to support economic growth;

- Credit to private sector: Policymakers should encourage the growth of credit to the private sector to support economic growth and development.

References

Adalid, R & C. Detken, Liquidity shocks and asset price boom bust cycles, ECB working paper, 2007, 732.

Adegbite, T. A. & Alabi, W. O. "Monetary policy and economic growth: The Nigerian experience (1970-2010)," Prime Journal of Business Administration and Management, 3(1), (2013): 822-833. Retrieved from www.primejournal.org/BAM/pdf/.../Adejare% 20and%20Omodara.doc.p.

Adeyeye, E.A. & Fakiyesi, T.O. "Productivity, prices and income board and anti-inflationary policy in Nigeria". In Nigerian economy under the military proceedings of the Annual Conference of the Nigerian Economic Society, Ibadan, 1980

Akinbobola T. O. (2012). The dynamics of money supply, exchange rate and inflation in Nigeria. J. Applied Fin. Bank. 2(4): 117-141

Akintoye, I. R. (2008). "Reducing unemployment through the Infomart sector: A case Study of Nigeria". European Journal of economics finance and administrative sciences. 11, 56-67.

Assenmacher-Weche, K., & Gerlach, S. (2006), "Money at low frequencies". Journal of European Economic Association, (5), 2006, 635 -642.

Barro, R. and Grilli, V. "European macroeconomics" (Chapter 8: Macmillan Publishers,1994).

CBN (2008). Central Bank of Nigeria (CBN), Monetary Policy Department Series 1, 2008.CBN/MPD/Series/01/2008. www.cbn

CBN, "What is Monetary Policy?" Understanding Monetary Series No. 1 (2011).

Central Bank of Nigeria [CBN], The dynamics of inflation in Nigeria, Main Report, Occasional papers, 2007 32.

Dwivedi, D. N., Managerial Economics (Sixth Edition. VIKAS Publishing house PVT LTD, New Delhi India, 2005).

Ezeanyeji, C. I. & Ejefobihi, U. F. (2015). Inflation and Economic Growth in Nigeria: An Impact Analysis. Wilolud Journals: Continental Journal of Social Sciences, 8(1), 1-12.

Frank, R. H and B.S. Bernanke, B. S (2003). Principles of Economics (2nd Edition McGraw-Hill/Urwin.

Friedman, M. Inflation: Causes and Consequences (New York: Asia Publishing House, 1963).

Friedman, V Studies in the Quantity Theory of Money (Chicago: University Press, 1956).

Gbadebo, A. D. & Mohammed, N. (2015). Monetary policy and inflation control in Nigeria. Journal of Economics and Sustainable Development, 6(8),108-115.

Markin, J.A (2010), "Bernanke battles US deflation threat", Economic Outlook

McCallum, B.T. & E. Nelson. Commentary, Federal Reserve Bank of St. Louis Review, 2011. 87(50:627-631.

McCallum, B.T. Monetarists rule in the light of recent experiences, American Economic Review, 74, 1984, 388-391.

Nasser, K. (2005 Money demand and inflation in Madagascar, IMF Working Paper, 2005, WP/05/236.

Nwoko, N. M., Ihemeje, J. C. and Anumadu, E. (2016). The impact of monetary policy on the economic growth of Nigeria. An International Multi-Disciplinary Journal, Ethiopia,10 (3),192-206.

Ogunjimi, S. O., Public Finance: For Polytechnics ICAN Students (Bida: Lekem Productions,

 1997).

Okafor, P. N., "Monetary Policy Framework in Nigeria: Issues and Challenges," CBN Economic and Financial Review, 33(2), (2009).

Owoye, O. (1997).   Income velocity and the variability of money growth: Evidence from less developed countries", Applied Economics, 29, 1997, 485-496.

Olanikpekun, D. B &. Akeju, R.F(2013).   Money Supply, inflation and Accumulation in Nigeria, Journal of Economic and Sustainable Development, 4(4), 2013.

Onwumere, G.I. Imo, & U.B. Ugwuanya, (2012), Does open market operations as monetary policy tool have impact on Price stability in Nigeria, Retrieved from http ://www. iiste .org /journals /index. php /RJFA /dowload/3359/3387

Oyejide, T.A Deficit financing, inflation and capital formation: An analysis of the Nigerian experience 1957-1970, Nigeria Journal of Economics and Social Studies, 14(10), 1992, 27-43.

Sacerdoti, E and Xiao, Y (2001). Inflation dynamics in Madagascar, 1971-2000, IMF Working papers, 01/118, 2001, Washington DC.

Tojas-Bernate, J (1996). Inflation and monetary policy in Madagascar, In Madagascar selected issues and statistical analyses, IMF country report, 96/59, by Pierre Dhonte and others,1996, Washington DC

Okotori, T. W. Effect of monetary policy on inflation in Nigeria 2009-2014, Masters' Thesis, Niger Delta University,Wilberforce Island Bayelsa, Nigeria, 2017.

Uchendu, O. A., "Monetary Policy in Nigeria," CBN Economic and Financial Review 33(2), (2009): 11-18

Ujuju, L. E. & Etale, L. M. (2016). Macroeconomic analysis of the relationship between monetary policy instruments and inflation in Nigeria. International Journal of Business and Management Review, 4(6),31-39.