

EMPIRICAL EXAMINATION OF THE EFFECTIVENESS OF MONETARY POLICY INSTRUMENTS IN ACHIEVING PRICE STABILITY IN NIGERIA

Salisu Baba Manu 

Department of Economics, Faculty of Social and Management Sciences,

Bauchi State University Gadau, Nigeria

sbmmisau@gmail.com

Chindo Sulaiman

Department of Economics, Faculty of Social and Management Sciences, Bauchi State

University Gadau, Nigeria

Abstract

The study empirically examines the effectiveness of monetary policy instruments in achieving price stability in Nigeria, covering 1963-2015. Unit root test was conducted based on ADF technique, and all the variables were found to be stationary at level. The OLS result revealed that, there exist an inverse relationship between inflation (dependent variable) and some of the explanatory variables such as Monetary Policy Rate (MPR), Exchange Rate (EXCR), and Total Credit to Private Sector (TCPS). While other explanatory variables such as Required Reserve (RR) and Money Supply as a ratio of GDP (MSGDPR). We therefore recommend that the monetary authority should emphasizes on the expansion and proper implementation of those variable such as MPR, EXCR and TCPS, as they helps in achieving stability in the economy. We also recommend that other stabilization policy such as fiscal policy to be implemented to coexist with monetary policy to jointly achieve stability in the economy.

Keywords: Monetary policy, Inflation, Price stability, MPR, OLS

INTRODUCTION

All over the world the major preoccupation of central bank or monetary authority is the formulation and implementation of monetary and fiscal policy. This is predicted on the use of monetary policy as a tool to enhance the macroeconomic environment generally and in

particular an efficient financial system/market in order to promote economic growth. The central bank of Nigeria (CBN) has continued to play the traditional role expected of a central bank, which is the regulation of the stock of money supply in such a way as to promote the social welfare (Ajayi, 1999). Over the years, the major goals of monetary policy have often been the two later objectives. Thus inflation targeting and exchange rate policy have dominated CBN's monetary policy focus based on the assumption that they are essential tools of achieving macroeconomic stability. The economic environment that guided monetary policy before 1989 was characterized by the dominance of the oil sector, the expanding role of the public sector in the economy and over dependence in the external sector. In order to maintain price stability and healthy balance of payments position, monetary management depended on the use of direct monetary instrument such as administered interest rates, exchange rates, credit ceiling, selective credit controls as well as the prescription of cash reserve requirement and special deposits. The use of market based instruments was not feasible at that point because of the less developed nature of the financial market and deliberate restraint on interest rates.

The most popular instrument of monetary policy was the issuance of credit rationing guidelines, which primary set the rate of change for the component and aggregate commercial bank loans and advances to the private sector. Central banks undertake an evaluate of the economy, which form the basis for monetary policy formulation and implementation. To the extent that monetary policy is a tool for macroeconomic management, its application varies from country to country and produces different result. It uses instruments which effects may be uncertain as well as information that may not be completed about the economy and its prospects especially in a market economy. Monetary policy is a blend of measures and set of instruments designed by the central bank to regulate the value of money, supply of money and cost of money consistent with the absorptive capacity of the economy or the expected level of activity without necessary generating undue pressure on domestic price and the exchange rate. (Folawewo and Oshinubi, 2006). For most economics, the objectives of monetary policy include price stability, maintenance of balance of payment equilibrium, promotion of employment and output, growth and sustainable development (folaweuro and Osinubi, 2006). These objectives are necessary for the attainment of internal and external balance and the promotion of long run economic growth. The central bank of Nigeria carries out the principle functions on behalf of the Federal Government of Nigeria through a process outlined in the CBN Decree 34, 1991 and the bank and other financial institution decree 25, 1991.

There is indeed a general consensus that domestic price fluctuation undermines the role of money as a store of value and frustrates investment and growth. Empirical studies (Ajayi and

Ojo 1981, Fiscuer 1994) on inflation, growth and productivity have confirmed the long term inverse relationship inflation and growth.

Inflation has become a major problem for Africa and Nigeria in particular during the past thirty years. Since the first oil shock in the mid-1970s, the inflation rate of Africa is averaged to more than 15% a year. For Sub-Saharan Africa, the average inflation rate has been closer to 20% a year, while few Sub-Saharan countries have even experienced inflation rates of 50% or even 100% a year (Batini, 2004).

One of the major objectives of monetary policy in Nigeria is price stability. But despite the various monetary regimes that have been adopted by the Central Bank of Nigeria over the years, inflation still remains a major threat to Nigeria's economic growth. The growth of money supply is correlated with the high inflation episode because money growth was often in excess of real economic growth. However, preceding the growth in money supply, some factors reflecting the structural characteristics of the economy are observable. Some of these are supply of stocks, arising from factors of such as famine currency devaluation and changes in term of trade (Umaru. A, 2012). The first period of inflation in the region of 30 percent range (12 months moving average) was in 1976 (CBN 2009). One of the factor often adduce for this inflation is the drought in northern Nigeria, which destroyed agricultural production and pushed up the cost of agricultural food items, a significant increase in the proportion of the average consumer's budget. In addition, in the late 1980's following the structural adjustment program, the effect of wage increase created a cost push effect on inflation. Therefore it is necessary to examine the effectiveness of monetary policy instruments within the context of Nigerian economy over the period under study. Additionally, the second episode was in the 1980s following the structural adjustment program (SAP), the effect of wages increase created a cost push inflation. In the long run, it was the structural characteristics of the economy, coupled with the growth in money supply that translated these in to permanent prices increases in 1984 inflation peaked at 39.6% at a time of relatively little growth in the economy. At that time, the government was under pressure from debtor groups to reach an agreement with the international monetary fund (IMF), one of the conditions of which was the devaluation of the domestic currency. The fourth inflationary episode occurred in 1993, and persisted through the end of 1995. Thus inflation gathered momentum toward the tail end of 1992 it reached 57% by the end of 1995 it was 72.8%. As with the third inflation, it coincided with a period of expansionary fiscal deficit and money supply growth. The authorities found it too difficult to contain the growth of private sector domestic credit and bank liquidity. Continuous fall of the inflation rate has been experienced. Since 1996 as a result of stringent monetary policies of

central bank, it however, increased in 2001 2003, 2004, 2005, 2008 and 2010 to 18.9%, 14.0%, 15.0%, 11.6%, 15.1 and 12.8 respectively.

Given the number of years since the Central Bank of Nigeria was established and the substantial financial resources and endowment available in the country, coupled with the existing institutions one will expect that the economy at large would have been well-established (Folawewo, 2006). But one can claim that the entire spectrum of the economy has not been sufficiently active especially when compared with the economy of other developing countries. The main trust of this study shall be to evaluate the effectiveness of the CBNs monetary policy. This will go a long way in assessing the extent to which the monetary policies impacted on controlling or reducing inflation in Nigeria.

Therefore the main aim or objective of this study is to empirically examine the effectiveness of monetary policy instruments in controlling or minimizing the rate of inflation within the context of Nigerian economy over the period understudy (1963-2015). One major significance of this study is that, many or most of the studies on this same issue and same area of study undermine or neglect the application of famous Ordinary Least Square method of analysis. Others such as Ojo (2008), Inuwa et, al (2011) used granger causality test and VAR method respectively. Therefore we intend to apply the almighty OLS method in order to access or examine the effectiveness or otherwise of the monetary policy instruments in Nigeria.

LITERATURE REVIEW

In Gherman and Adam's study, the monetary policy aims at guaranteeing a high employment rate, as well as price stability. This double purpose, which is known and reviewed through literature as dual mandate of the monetary policy, may oppose the declared purpose of many central banks, which aim primarily, and sometimes exclusively, at price stability (Gherman,2010).

In a situation of dependency between global finances and high uncertainty, the ideal monetary policy should be highly comprehensive, it should be consistent, dynamic, transparent and responsible and it should avoid excessive fluctuation and flexibility (Gherman, 2010). Alain kabundi et al (2015) examine the effectiveness or otherwise of some monetary policy instruments by applying granger causality test and discovered that some of the instruments such as reserve requirement (RR) are positively correlated with inflation. This implies that any variation in RR affect inflation positively. Aron J. et al (2004) conclude that monetary policy instruments are more effective in curbing inflationary pressure in the economy. They also discovered that the monetary policy instruments are positively correlated with inflation in an economy. However in his study Jaafar M. (2016) in his study discovered that monetary policy

instruments has less impact in curbing inflation in Nigeria, and recommend that monetary policy in conjunction with other stabilization policy instruments should be embarked simultaneously, so as to jointly minimize the inflation in the economy. Folawewo, (2006) the reduced inflation of the last years is the result of a mixture of economic policies, favorable to disinflation, followed by restrictive monetary and fiscal policies and an almost neutral budgetary policy. The monetary policy was mainly characterized by high interest rate and mandatory reserves and currency appreciation.

Keynesians (1936) claimed that the monetary policy may influence the aggregate demand, by modifying the money supply, which may lead to full employment, without generating inflation. Later, at the beginning of the '80s, the Keynesian theories lose credibility and to the monetary ones, held high by economists such as Milton Friedman, Kar Brunner and Alton Meltzer, who suggest that monetary regulation can stabilize economy. The neoclassic economy brings in the rational expectations theory (Cerna, 2012). Baitini N. (2004) in his study of the relationship between monetary policy and price fluctuation in Pakistan discovered that, majority of the monetary policy instruments such as OMO, RR, BR has a positive and significant impact on inflation, and recommend the monetary authority to emphasize on expanding such measures. Similarly from the CBN annual report on the operation, success and performance of monetary policy in Nigeria (2016 Buletin) the monetary policy is one of the effective measures of ensuring relative stability in the Nigerian economy

METHODOLOGY

This study employs secondary annual time series data. Time series data is advantageous because it captures a country's specific behaviors and devoid of endogeneity, thus providing an in depth policy implication (Forbes, 2000). The data on all the variables employed in this study were sourced from central Bank Statistical Bulletin (2015) covering the period of 1963-2015; this is largely due to the availability of data on all the variables however the sample period is adequately enough for time series data as many scholars consider thirty samples or observations are enough for a good time series analysis.

With respect to the statistical tool of analysis the study employed Augmented Dickey Fuller (ADF) and Philips Peron method of stationary testing. These methods were employed in order to check the stationarity of the time series data employed in this study. The study also employed or adopted the use of famous Ordinary Least Square method in order to estimate the parameters of a model. Multiple linear regressions was used to estimate the variables or parameters of the model.

Model Specifications

To test for the unit root properties of the data, the following theoretical models were used

This is the pre Co-integration test. It is used to determine the order of integration of a variable that is how many times it has to be differenced or not to become stationary. It is to check for the presence of a unit root in the variable. That is whether the variable is stationary or not. To do that, we test the following hypothesis.

This test is conducted by “augmenting” by adding the lagged values of the dependent variable $INFR_t$.

To be specific, The ADF test here consists of estimating the following regression:

$$\Delta INFR_t = \beta_1 + \gamma INFR_{t-1} + \sum_{i=1}^m \alpha_i \Delta INFR_{t-1} E_t \text{-----eq(1)}$$

Where, ϵ_t is a pure white noise error term and where $\Delta INFR_t = (INFR_t - INFR_{t-1})$ $\Delta INFR_{t-1} = (INFR_{t-1} - INFR_{t-2})$ etc. The number of lagged difference terms to include is often determined empirically, the idea being to include enough terms so that the error term in the above equation is serially uncorrelated, so that we can obtain an unbiased estimate of γ , the coefficient of lagged $INFR_{t-1}$

So the rest of regressors equations are as follows;

$$\Delta MPR_t = \beta_1 + \gamma MPR_{t-1} + \sum_{i=1}^m \alpha_i \Delta MPR_{t-1} + E_t \text{-----eq(2)}$$

$$\Delta RR_t = \beta_1 + \gamma RR_{t-1} + \sum_{i=1}^m \alpha_i \Delta RR_{t-1} + E_t \text{-----eq(3)}$$

$$\Delta EXCR_t = \beta_1 + \gamma EXCR_{t-1} + \sum_{i=1}^m \alpha_i \Delta EXCR_{t-1} + E_t \text{-----eq (4)}$$

$$\Delta TCPS_t = \beta_1 + \gamma TCPS_{t-1} + \sum_{i=1}^m \alpha_i \Delta TCPS_{t-1} + E_t \text{-----eq (5)}$$

$$\Delta MSGDPR_t = \beta_1 + \gamma MSGDPR_{t-1} + \sum_{i=1}^m \alpha_i \Delta MSGDPR_{t-1} + E_t \text{-----eq (6)}$$

We test the following hypothesis;

H_0 : Variable has a unit root (i.e. variable is non-stationary)

To estimate the multiple linear regression model the following linear multiple regression model was specified.

$$\log INFL_t = \log \beta_0 + \beta_1 \log MPR_t + \beta_2 \log RR_t + \beta_3 \log EXCR_t + \beta_4 \log TCPS_t + \beta_5 \log MSGDPR_t + U_t \text{-----eq. (7)}$$

Where;

Log INFL= logarithm of Inflation rate

β_0 = intercept of the regression

Log MPR = logarithm of Monetary policy rate

Log RR= logarithm of Required Reserved

Log EXCR = logarithm of Exchange rate

Log TCPS = logarithm of Total Credit to Private Sector

Log MSGDPR = Money Supply Gross Domestic Product Ratio

U = is the Error term.

$\beta_0, \beta_1, \beta_2, \beta_3, \beta_4$ and β_5 are the parameters to be estimated.

Co integration test

$$\Delta INFR_t = \mu + \pi INFR_{t-1} + \sum_{j=1}^{p-1} r_j \Delta INFR_{t-j} + E_t$$

$$\Delta RR_t = \mu + \pi RR_{t-1} + \sum_{j=1}^{p-1} r_j \Delta RR_{t-j} + E_t \text{ -----eq 13}$$

$$\Delta EXCR_t = \mu + \pi EXCR_{t-1} + \sum_{j=1}^{p-1} r_j \Delta EXCR_{t-j} + E_t \text{ -----eq 14}$$

$$\Delta CPS_t = \mu + \pi TCPS_{t-1} + \sum_{j=1}^{p-1} r_j \Delta TCPS_{t-j} + E_t \text{ -----eq 15}$$

$$\Delta MSGDPR_t = \mu + \pi MSGDPR_{t-1} + \sum_{j=1}^{p-1} r_j \Delta MSGDPR_{t-j} + E_t \text{ -----eq 16}$$

There were following hypotheses to be tested:

H₀: there is co-integration among the variables.

H₁: there is no co-integration among the variables.

RESULTS AND DISCUSSIONS

Prior to estimating Equation 2, unit root and co integration tests were conducted to assess the order of integration of the variables and long-run relationship among them, respectively. For unit root test, augmented Dickey-Fuller (ADF) test statistics was employed. While, for co integration test Johansen co integration test was employed. The results for unit root and co integration tests are presented in Table 1 and 2, respectively. The unit root test results in Table 1 shows ADF test statistics indicate that all the variables are stationary at level. Thus, given the stationarity nature of the variables OLS can be most suitable method for estimating Equation 2. The Johansen co integration test result reported in Table 2, suggest there exist three co integrating equations. This means that the variables have long-run relationship. Confirming the long-run relationship among the variables, we can proceed to the estimation of our main model using OLS.

Table 1. Unit root test based on ADF method

Variables	Level	5% critical value	Order of integration
INFR	5.908745 (0.0000)***	2.971853	I(0)
MPR	6.061982 (0.0000)***	2.971853	I(0)
RR	4.219567 (0.0042)**	3.020686	I(0)
EXCR	4.567249 (0.0011)***	2.971853	I(0)
CPS	4.456273 (0.0015)***	2.971853	I(0)
MSGDPR	4.747282 (0.0015)***	2.971853	I(0)

Note: ***indicates significance at 1% level. Parentheses are p -values

The Johansen co-integration test revealed that there is a long run relationship between inflation and other variable captured in the model. The result revealed or indicates one co-integration equation model at 5% levels the conclusion drawn from the result is that there exist a long run relationship between inflation rate and monetary policy rate, required reserved, exchange rate, total credit to private sector as well as money supply gross domestic product ratio. Since there is only one co-integrating vector, an economic interpretation of the long run on inflation rate in Nigeria can be obtained by normalizing the estimates of the unconstrained co-integrating vector on inflation rate.

Error Correction Mechanism

Table 2. Johansen co integration test result

VARIABLE	D(MPR)	D(RR)	D(EXCR)	D(TCPS)	D(MSGDPR)
ECT 1	-0.046703	0.14381	0.003607	0.080655	0.602820
	(0.16386)	(0.46575)	(0.28727)	(0.10546)	(0.08921)
	[0.28501]	[0.30849]	[0.01256]	[0.76478]	[6.75765]

From table 2 above indicated that estimated lagged error correction term of inflation, the magnitude of the error correction term is negative (appropriately signed), its absolute value lies between zero and one and it is statistically significant. This implies a long run convergence of the model will still converge with time. The speed of error adjustment of the model would be corrected in the long run.

OLS estimate of the model

This study employs ordinary least squares (OLS) method of time series to achieve our objective. It is one of the most common techniques of multivariate analysis. OLS has some important statistical properties that make it one of the most powerful methods of regression analysis. These properties comprise the Gauss-Markov theorem. An estimator such as 2b referred to as the best linear unbiased estimator (BLUE) of 2 b if: First property: it is linear. The estimator must be linear function of a random variable. Second property: it is unbiased. The mean (expected) value $E(b)$, is equal to the true value, 2b. Third property: it has a minimum variance in the class of all such linear unbiased estimators. An unbiased estimator with the least variance is called an efficient estimator. $Y = b_0 + b_1X + e$. However Gauss-Markov Theorem states that, given the assumptions of the classical linear unbiased regression model, the least-squares estimators, have minimum variance of the class of unbiased estimators, that is, they are blue. Salisu and Chindo (2017).

The estimated multiple regression model is specified below;

$$\log INFL_t = \log \beta_0 + \beta_1 \log MPR_t + \beta_2 \log RR_t + \beta_3 \log EXCR_t + \beta_4 \log TCPS_t + \beta_5 \log MSGDPR_t + U_t$$

$$INFL_t = 122.23 - 29.54MPR_t + 16.48RR_t - 17.08EXCR_t - 1889TCPS_t + 37.03MSGDPR_t$$

From the regression result estimated above we obtain the following estimates

$$\beta_0 = 122.23, \beta_1 = -29.54, \beta_2 = 16.48, \beta_3 = -17.08, \beta_4 = -1889, \beta_5 = 37.03$$

Table 3. OLS estimated result

Dependent variable LINFLt		
Regressor	Coefficient	t-statistics (p-value)
lnMPR _t	-29.54***	-1.55(0.000)
lnRR _t	16.48***	2.43(0.000)
lnEXCR _t	-17.08***	-2.31(0.000)
lnTCPS _t	-1889***	-2.37(0.001)
lnMSGDPR _t	37.03***	2.61(0.000)
Constant	122.23***	1.99(0.000)
Adjusted R-squared	0.56	
F-statistics	6.36(0.001)***	
Durbin Watson stat (DW)	1.56	
Akaike Info. Criterion (AIC)	-2.370	
Schwarz criterion (SC)	-2.297	

Note: ***indicates significance at 1% level, Parentheses are p-values.

The following conclusions can be drawn from the results of the estimated function above. The regression has an intercept of 122.23. This represents autonomous contribution of inflation, for instance, from non-monetary variables such as fiscal policies, GDP, export and imports among others. But the positive sign of the autonomous factor indicates that it contributes to the increase of inflation.

From regression estimates it indicated that there is an inverse (negative) relationship between Monetary Policy Rate (MPR), Exchange Rate (EXCR) and Total Credit to Private Sector (TCPS) that is when Monetary Policy Rate (MPR) Exchange Rate (EXCR) and Total Credit to Private Sector (TCPS) increased by 1% would lead to decrease in inflation by 29.54%, 17.08% and 18.89% respectively.

There is direct (Positive) relationship between Required Reserved (RR) and Money Supply Gross Domestic Product Ratio (MSGDPR) and Inflation Rate that is when Required Reserve (RR) and Money Supply Gross Domestic Product Ratio (MSGDPR) increased by 1% would lead to an increase in inflation by 16.48% and 37.02%.

In the regression equation above, it can be observed that the Parameter RR (Required Reserve) MSGDP (Money Supply Gross Domestic Product Ratio) is positive indicating that the factors are contributing to the increase in inflation in the country. While the parameter MPR (monetary policy rate), EXCR (Exchange Rate) and TCPS (Total Credit to Private Sector) are negative indicating that the factors contributing to the decrease in inflation rate in the country.

Increase in the explanatory variable RR and MSGDPR will lead to increase in inflationary situation in the country, while increase in explanatory variable EXCR MPR and TCPS will lead to decrease in inflation in the country. The test of statistical coefficient of the parameter is at 5% level of significance.

The adjusted R-squared (0.987), which is the coefficient of determination, indicates that the model is good fit. The F-statistic shows that all explanatory variables included in the model have joint explanatory power on INFL. The DW, AIC and SC show that the estimated model is reliable. To further assess the reliability and efficiency of the model, the estimated model has been subjected to different diagnostic tests, whose results are presented in Table 4.

The diagnostic tests conducted included Breusch-Godfrey serial correlation LM test for autocorrelation, Ramsey RESET test for miss-specification, Jarque-Bera for normality, heteroskedasticity test: Breusch-Pagan-Godfrey for normality. Their estimated results revealed that the model passed all the tests as we failed to reject their null hypotheses at 5% significant level.

Table 4. Diagnostic Test Results

Diagnostic test	F-statistic	p-value
Breusch-Godfrey Serial Correlation LM Test	13.504	0.196
Ramsey RESET Test	1.387	0.245
Jarque-Bera	3.295	0.192
Heteroskedasticity Test: Breusch-Pagan-Godfrey	9.479	0.050

CONCLUSION AND RECOMMENDATIONS

The study empirically examined the effectiveness of monetary policy instruments within the context of Nigerian economy over the period under study (1963-2015).

The estimated results indicated that there exist an inverse (negative) relationship between the dependent variable which is inflation and some of the explanatory variables such as Monetary Policy Rate (MPR), Exchange Rate (EXCR) and Total Credit to Private Sector (TCPS) that is when Monetary Policy Rate (MPR) Exchange Rate (EXCR) and Total Credit to Private Sector (TCPS) increased by 1% would lead to a decrease in inflation rate by 29.54%, 17.08% and 18.89% respectively.

Estimates of other explanatory variables reveal a positive and direct relationship between Required Reserved (RR) and Money Supply Gross Domestic Product Ratio (MSGDPR) and Inflation Rate that is when Required Reserve (RR) and Money Supply Gross Domestic Product Ratio (MSGDPR) increased by 1% would lead to an increase in inflation by 16.48% and 37.02%.

In the regression equation above, it can be observed that the Parameter RR (Required Reserve) MSGDP (Money Supply Gross Domestic Product Ratio) had positive sign indicating that the factors are contributing to the increase in inflation in the country. While the parameter MPR (monetary policy rate), EXCR (Exchange Rate) and TCPS (Total Credit to Private Sector) with a negative sign indicating that such factors are contributing toward decreasing or minimizing inflation rate in the country. In a nut shell we can conclude that increase in the explanatory variable RR and MSGDPR will lead to increase in inflationary situation in the country, while increase in explanatory variable EXCR MPR and TCPS will lead to decrease in inflation in the country. The policy recommendations is that, the monetary authority should emphasize on discouraging the operation of those variables that are positively affecting inflation rate in Nigeria in order to slowed if not stopped the rising trend of inflation in Nigeria. However such variables that negatively affect inflation in Nigeria should be expanded and encouraged such that the inflationary rate will be at minimal level.

REFERENCES

- Aaron Chicheke (2009). Monetary policy, Inflation, Unemployment and the Philips Curve in South Africa: Masters Dissertation. Available online MD/09/134.
- Adamson Y.K. (2000): A Structural Disequilibrium and Inflation in Nigeria: A theoretical and Empirical analysis center for economic research on Africa. New jersey 07043: Montclair state university, upper Montclair
- Agebor p. and hoffmaister A.W.(1997) "Money Wages and Inflation in Middle-Income Developing Countries" IMF Working Papers WP/97/174.
- Alain Kabundi Eric Schaling , Modeste Some (2015). Monetary policy and heterogeneous inflation expectations in South Africa: Economic Modelling 45 (2015) 109–117
- Anna Sokolova (2015) Fiscal limits and monetary policy: default vs. inflation: Economic Modelling 48 (2015) 189–198
- Aron J. Mvllbaver, J.N. and Pretorius C. (2004) "A Framework for forecasting the component of the consumer price index: Application for South Africa" center for study of Africa economic (CSAE) working paper series, 2004- 17 march.
- Asogu J.O. (1991). "An Econometric Analysis of the Nature and Causes of Inflation in Nigeria" Central Bank of Nigeria Economic and Financial Review, Volume 29, number 3. 2014
- Bartholomew Moore (2014). Monetary policy regimes and inflation in the new-Keynesian model: Journal of Macroeconomics 40 (2014) 323–337.
- Batini N. (2004) "Achieving and Maintaining Pricing Stability in Nigeria" IMF working paper: WP/04/97 Research Department, June
- CBN Statistical Bulletin. 50 years Special Anniversary Edition. December, 2008, 2010, 2013 and 2016
- Cerna, S.,(2012), The monetary policy in post crisis period, Timisoara Journal of Economics, Volume 5, No.1(17), 2012, pp.59-78; Credit and inflation: Economics Letters 122 (2014) 144–149
- Driasaki, C., & Driasaki, M. (2012). Inflation, Unemployment and the NAIRU in Greece.Procedia Economics and Finance, 1(12), 118–127. doi:10.1016/S2212-5671(12)00015-9
- Emmanuel A.I (2000) Impact of Monetary Policies on Inflation in Nigeria (1980–1995); a published M.Sc. Thesis submitted to the Department of Economics, ABU, Zaria.
- Emmanuel A.I (2000) Impact of Monetary Policies on Inflation in Nigeria (1980–1995); a published M.Sc. Thesis submitted to the Department of Economics, ABU, Zaria
- Essien E.A. (2002) "Identifying the trend of core inflation in Nigeria" Central Bank of Nigeria Economic and Financial review, volume 40, number 2, June.
- Fakiyesi O.M. (1996): "Further Empirical Analysis of Inflation in Nigeria" Central Bank of Nigeria Economic and Financial review, volume 34, number 1, March
- Folawewo, A.O. and Osinubi T.S. (2006) "Monetary Policy and Macro-Economic Stability in Nigeria" A Rational Expectation Approach: Journal of Social Science. Vol. 12, NO 2, Pp. 93-100.
- Folorunso B.A. and Abiola A.G. (2000) "The long run Determination of inflation in Nigeria (1970-1998)" Nigerian journal of Economic social studies, Volume 42, Number 1, Ibadan: Nigerian Economic Society
- Gabriel Caldas, Montesa, Alexandre Curi (2017) Disagreement in expectations about public debt, monetarypolicy credibility and inflation risk premium: Journal of Economics and Business 93 (2017) 46–61
- Gherman, A.M., Adam, A.,(2010), Monetary Policy Approaches Taking into Consideration the Current Economic Context, Theoretical and Applied Economics,Volume XVII (2010), No. 12(553), pp. 89 – 94;
- Hyunduk Suh (2014) Dichotomy between macro-prudential policy and monetary policy on
- J.C Anyawu et-al (1997), The Structure of the Nigerian Economy 1960-1997. Joance Educational Publishers Ltd. Onisha.
- J.C Anyawu et-al (1997), The Structure of the Nigerian Economy 1960-1997. Joance Educational Publishers Ltd. Onisha.
- Jaafar M. (2016) Available online at <http://www.businessjournalz.org/efr> monetary policy and price stability in Nigeria 1977-2016, 1(16), 55–91
- Javeria Khalid (2007). Trade-off between Inflation and Unemployment. Proceedings of the 2nd International Conference on Business Management.

Javier Andrés and Pablo Burriel (2018) Inflation and optimal monetary policy in a model with firm heterogeneity and Bertrand competition: *European Economic Review* 103 (2018) 18–38

John Thornton and Chrysovalantis Vasilakis (2017) Inflation targeting and the cyclical policy: *Finance Research Letters* 20 (2017) 296–302

Journal of macroeconomic review.

Leonardo B. et al (2010). The effect of Age and Job Protection on the welfare costs of Inflation and Unemployment. *European Journal of Political Economy*.

M.C Vaish (2007), *Macroeconomics Theory*. 13th Edition Revised. Vikas Publishing House Put Ltd. New Delhi.

Neculescu, C., Serbanescu, L., Impact of the inflation on the exchange rate and on the average salary, *Cross – Cultural Management Journal*, Volume XV, Issue 3(29), 2013, pp 222-227;

Olubaduwe (2009) Inflation, unemployment and the Philips curve in sub-sahara Africa.

Salisu Baba Manu. and Chindo Sulaiman (2017) Environmental Kuznets Curve and the Relationship between Energy Consumption, Economic Growth and CO2 Emissions in Malaysia: *Journal of Economics and Sustainable Development* www.iiste.org ISSN 2222-1700 (Paper) ISSN 2222-2855 (Online) Vol.8, No.16, 2017

Umaru, A. (2012). Available online at <http://www.businessjournalz.org/efr> An Empirical Analysis of the Relationship between Unemployment and Inflation in Nigeria from 1977- 2009, 1(12), 42–61

Yuliya Lovcha, Alejandro Perez-Laborda. Monetary policy shocks, inflation persistence, and long memory: *Journal of Macroeconomics* 55 (2018) 117–127

Zîna Cioran (2014). Monetary Policy, Inflation and the Causal Relation between the Inflation Rate and Some of the Macroeconomic Variables: *Procedia Economics and Finance* 16 (2014) 391 – 401