ANALYSIS OF MONETARY POLICY EFFICACY ON OUTPUT AND PRICES IN NIGERIA:
A VECTOR ERROR CORRECTION APPROACH

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Abstract

Literatures on monetary policy have revealed the need for frequent study to ensure sound economic stability as a panacea for economic growth and development. In view of this, the study gives analysis of monetary policy efficacy on output and prices in Nigeria, with the aid of vector error correction approach from 1986 to 2015. It utilises a pair of models consisting of real broad money supply (LRBMS), real interest rate (RINTR), real exchange rate (LRER) and macroeconomic variables such as consumer price index (LCPI), real gross domestic product (LRGDP) and government dominance level (LGDL). The baseline model employed (LRGDP) as the dependent variables against other variables, while LCPI represents the dependent variables in the Alternative model. Augmented Dickey-Fuller (ADF) and Philips Perron (PP) tests revealed stationarity at first difference in all the variables. Co-integration test results show a stable long run equilibrium relationship among all variables with two co-integrating equations from the trace tests. The vector error correction for the Baseline and Alternative models revealed that both interest rate and exchange rate play prominent roles in determining output growth and price stability in Nigeria, subsequently by money supply. While exchange rate, interest rate and output level respectively quickly adjust to shock in the economy. The study finally recommends that the autonomy of the Central Bank should be strengthened to discharge its statutory mandate by limiting undue credit to the government, and government should be made to balance its budgets and also borrow at the market rates to finance its deficits.

1.0 INTRODUCTION

It is pertinent to note that economic growth and development of any economy depends on formulation and implementation of sound monetary policy over time). In broad terms, monetary policy is the combination of regulating and stabilising monetary measures used by the federal government through the monetary authorities with the aid of broad planning framework involving instruments and targets to check the supply and demand for money, credit condition, maintenance of internal and external economic stability in relation to sound financial system with the ultimate aim of actualising the macroeconomic objectives for the attainment of overall economic development. Mohammed (2012). More often than not, monetary authorities, particularly in developing countries, are saddled with a dual mandate of price stability and sustainable growth. As such, the monetary authorities apply their discretionary power of influencing the money stock and interest rate to make money either expensive or cheap,

depending on the prevailing economic conditions and policy stance in order to achieve price stability. Uchendu (2009).

In Nigeria, the Central Bank of Nigeria (CBN) is the sole monetary authority mandated to promote monetary stability and evolve an efficient and reliable financial system through the application of appropriate monetary policy instruments and systematic surveillance, Uchendu (2009).

Its other functions include issuance of legal tender, maintenance of Nigeria's external reserves, safeguarding the international value of the currency, promotion and maintenance of monetary stability and sound financial system in Nigeria, as well as acting as banker and financial adviser to the federal government. Moreover, the conduct of monetary policy in Nigeria has witnessed several phases: the prominent phases are the direct control period, the period of indirect control or application of market instruments and the period of intense reform of strategy and institutions. The major objectives of the policy remained unchanged, that is, price stability and sustainable growth of the economy. However, the analysis of researchers on the efficacies of monetary policy in different countries at different periods has produced different results. Some of the results are not unconnected with the use of incomplete and annual data that provide uncertain effects on the economy and its prospects, particularly in a market-oriented economy. Also, literatures of the CBN have revealed that most monetary and financial targets of the government, as compared to the outcomes of the key policy variables, were not achieved. CBN (2008) and CBN (2009). Their study tends to give detailed analysis of monetary policy efficacy on output and prices in Nigeria, using the vector error correction approach to ascertain the short-term dynamic adjustments of the variables within the studied period of 1986 to 2015 with the aid of quarterly data, including the measurement of speed adjustment parameters of the coefficients in correcting a given shock in the model.

The study is organised into four sections. Following the introductory section is the section two which provides literature review and theoretical framework; section three presents the methodology of the study and discussion of findings, while section four gives the conclusion and policy implications.

2.0 REVIEW OF LITERATURE

Research has revealed the need to intensify effort in investigating the efficacy of monetary policy in Nigeria. This is in collaboration with the core mandate of most central banks for ensuring low and stable inflation across the globe and their costs for the economy. Okafor (2009) asserted that the ultimate goal of monetary policy is to ensure the achievement of consistency between the expansion in domestic liquidity and government's macroeconomic objectives of prices and exchange rate stability, higher output growth, full employment of resources, balance of payment equilibrium, promotion of sound financial system, sustainable growth and development. However, empirical evidences have highlighted the efficacies of monetary policy on the real sectors of the various economies with particular references to output and prices in Nigeria.

Montrel (1989) used vector auto-regression procedure to trace the sources of acceleration of inflation in Argentina, Brazil and Israel. He then revealed that nominal exchange rate movement explain inflation rate in the countries. However, Papadopoulos (1993) examined the effect on monetary policy on output and price for an open economy in Greece, and realised that

contraction in any government policy financed by domestic credit accelerated the recession with inflation declining after two years lag.

Moser (1994) examined the dominant factors affecting inflation in Nigeria through elasticity model of time series data from 1960 to 1992. The study reveals that monetary expansion driven mainly by explanatory fiscal policy explains to a large extent the inflationary trends in Nigeria.

Al-Mutairi (1995) conducted a VAR model to examine the impact of money supply, government expenditure and import prices on inflation in Kuwait. The study shows that government expenditure plays a dominant role in explaining the variation in the price level followed by import prices and money supply.

Federal Office of Statistics in 1987, cited in Okunola (1999), used multiple regression to explain factors affecting price behaviour from 1970 to 1997. It revealed that government expenses, money supply and credit were noticed to have contributed positively to the general behaviour of price changes in Nigeria.

Awasak (2004) studied the effect of monetary policy on inflationary control in Nigeria using multiple regression analysis. It disclosed that both interest rate and monetary supply have weak effect on the control of inflation in Nigeria.

Also, Rafindadi (2004) extended this research to capture the effectiveness of both monetary and fiscal policies in enhancing sustainable economic growth in Nigeria from 1990 to 2000 with ten equations. It revealed that monetary contraction, if implemented as a stabilisation policy in Nigeria, will increase the GNP, and the increase is greater than the decline in government autonomous expenditure which then lead to the decline in money supply.

Batini (2004) further reviewed the performance of monetary policy in Nigeria, as is related to the sensitivity of Nigeria to external shocks and other characteristics of the Nigerian economy. He concluded that a historical analysis of monetary policy in Nigeria suggests that monetary conditions might have been less accommodative. And hence inflation in Nigeria might have been lower and less volatile than what was observed in the past had Nigeria followed prescriptions based on a role consistent with price stability.

Busari (2007) examined the main economic determinants of inflation in Nigeria from 1980 to 2003, and confirmed that in the long run, inflation is largely and positively related to the level of money supply and marginally to fiscal deficit. And inflation is positively related to exchange rate depreciation, while exchange rate depreciation will be negatively related to growth in real GDP in the medium term. Inflation is also positively related to the growth in money supply, exchange rate and growth of GDP.

Olorunfunmi and Dotun (2008) assessed the impact of monetary policy on the economic performance of Nigeria. They concluded that there was negative relationship between interest rate and GDP, while there was positive relationship between inflation and interest rate; and concluded that interest rate charged by banks be reduced to affect the overall growth of the economy.

In summary, the reviewed literatures employed multiple regressions and vector auto-regression in their analysis with limited variables of normal values. This study will be analysed on the basis

of vector error correction analysis to ascertain the short run effect or dynamic in variables to ensure the long run co-integrating vectors coefficients of the model with their real and logged values, as well as to determine the speed of adjustment of parameters in order to measure the numbers of time a given shock will be corrected in the model on the account of government dominancy.

THEORETICAL FRAMEWORK

The objectives of public policy typically includes low and stable domestic prices, sustainable real growth of GDP, favourable balance of payments, reduction of unemployment and poverty reduction. The central bank's role as an institution of government is to conduct appropriate monetary policy which is consistent with the objectives. In this regard, the central bank determines the amount of money supply that is consistent with the country's macroeconomic objectives and manipulates the monetary instruments at its disposal in order to achieve policy target.

In order to determine the money supply, the central bank will need information on the balance of payments, government budget deficit or surplus and other economic indicators, e.g. growth, prices, etc. On the basis of information, three basis tables are prepared: balance of payments, government budget and monetary survey)

The basis is presented.

Table 1: The conduct of monetary policy in Nigeria)

Balance of Payments (BoP)	**Government Budget (GovB)**	**Monetary Survey**
Current Account (x,1) + Capital Account = Change in NFA	Revenue – Expenditure = Change in NCG	NFA + NDA = M Or NFA + NDC + OAN+ M

Source: Uchendu (2009)

Where:
NFA = Net Foreign Assets
NCG = Net Credit to Government
NDA = Net Domestic Assets
NDC = Credit to the Domestic Economy (net)
OAN = Other Assets (net)
M = Money Supply (Currency in Circulation + Deposits)
X = Exports
I = Imports

It can be seen from the above that the three columns in the table are closely linked. Both the outcome of the balance of payment (ΔNFA) influences the monetary survey; at the same time, the real growth of the economy and prices influences the balance of payments (growth in exports, demand for imports, etc.) and the government budget (oil revenue, tax collection,

expenditure for wages, materials). The monetary survey is the consolidation of the balance sheet of the Central Bank, the commercial banks and the merchant banks.

The monetary survey uses balance sheet identity of the form:

$$M_2 = (M_1 + QM) = NFA + NDC + OAN \quad (1)$$

$$\Delta M_2 = \Delta(M_1 + QM) = \Delta NFA + \Delta NDC + \Delta OAN \quad (2)$$

Where: M_2 = Broad money supply
M_1 = Narrow money supply
QM = Quasi money or Time + Savings deposit at Commercial and Merchant Banks
Δ = Change
NFA, NDC, OAN, as defined above

Thus, given the projected growth in output, inflation and accretion to external reserves (NFA) in the relevant future period, the Central Bank determines the level of money supply and bank credit consistent with the above macroeconomic framework using an appropriate tool of the demand for money function such as:

$$L_n(M_2P_t) = a_0 + a_1L_n\pi + a_2L_nY + a_3L_n(M_2P_{t-1}) + a_4L_n\,(i) \quad (3)$$

Where: M_2P_t = Real broad money supply deflated by the price level

P_t = General price level at time t
π = Inflation rate; Y = Real gross domestic product
M_2P_{t-1} = The dependent variable (real money supply) lagged one period
i = Interest rate

Given the computed value of broad money, M_2, foreign assets (net), NFA, and other assets (OAN), the credit absorptive capacity of the economy, i.e. the change in aggregate domestic credit (NDC), consistent with growth in real GDP, inflation rate and the balance of payments target follow from equation (2) such that:

$$NDC = M_2 - NFA - OAN \quad (4)$$

$$\Delta NDC = \Delta M_2 - \Delta NFA - \Delta OAN \quad (5)$$

The ensuing addition to aggregate domestic credit is then decomposed into credit to government (DCG) and change in credit to the private sector (DCP). Having determined the level of government deficit to be financed by the banking system, credit to the private sector is derived as a residual.

$$\Delta DCP = \Delta NDC - \Delta DCG \quad (6)$$

The DCP so derived becomes the maximum amount of increase in credit to be extended to the private sector. The framework just described formed the basis of credit ceilings imposed on individual banks until they were dispensed with in September 1992.

However, all government monetary variables are targeted towards ensuring price stability, and steady money supply in relation to government targeted growth over a particular period of time.

Under the indirect approach, the level of monetary and aggregates consistent with the achievement of macroeconomic objectives continued to be determined by the CBN as explained above, but the achievement of the target was through the control of base money (B). The feasibility of controlling bank credit and hence money supply in this way hinges on the principle that banks maintain a stable relationship between their reserves (vault cash and deposit with central bank) and the amount of credit they extend, such that control can be achieved by controlling base money.

THE CONCEPT OF MONEY MULTIPLIER

The process of money creation and the concept of money multiplier derived from the idea that banks can and do expand money supply by a multiple of reserves available to them. It is shown as:

$$M_2 = M \cdot B \qquad (8)$$

Where: M_2 is broad money supply, M is the money multiplier and B is the base money

From (8), the multiplier may be derived as:

$$m = M_2 B = \frac{C_p + C}{C_p + R} = \frac{C_p/D + D/D}{C_p/D + R/D} \qquad (9)$$

or $$m = \frac{1 + c}{c + r} \qquad (10)$$

where: D = Deposit held by banks
c = Ratio of currency to deposits
R = Ratio of banks reserves to deposits

and all other variables are as previously defined. Following from equation (10), equation (8) may be re-written as follows:

$$M_2 = \left[\frac{1 + c}{c + r}\right](C_P + R) \qquad (11)$$

Equation (11) can be used to estimate the level of money supply arising from a given level of base money (B) and the multiplier. Consequently, the central bank can control the money supply (M_2) through changes in bank reserves (R) and currency outside bank (CP) which was shown above comprises of its known liabilities.

The central bank can also influence the multiplier (m) in the desired direction. The currency to deposit ratio (c) is a function of the preference of economic agent for holding money either in the form of currency or demand deposits. While this ratio is generally thought to be outside the control of the central bank, it may be sensitive to interest rate movements. Banks' reserve to deposit ratio (r) may be influenced by monetary policy instruments such as interest rate and open market operations (OMO). More importantly, (r) can be directly influenced by the central bank through the use of reserve requirements. Uchendu (2009)

3.0 METHODOLOGY OF THE STUDY AND DISCUSSION OF FINDINGS

In order to give analysis of monetary policy efficacy on output and prices in Nigeria, an econometric model of vector error correction was developed using gross domestic product (GDP), consumer price index (CPI), broad money supply (BMS), interest rate (INTR), exchange rate (EXR); and government dominance level (GDL) on quarterly basis from 1986 to 2015 were utilised. Each of the two models utilised GDP and CPI as dependent variables at different times while other variables remained as independent variables in both cases. Preliminary investigation of unit root test on time series data were carried out through Augmented dickey-Fuller and Philips-Perron (PP) to ensure stationarity. Also, co-integration test was conducted among the variables to ascertain their long run relationship. Moreover, variables are used with their log and real values, except CPI and GDL that are in their nominals and INTR that is not logged. The justification for selective logging of some variables is based on the need to reduce their initial quantum to lesser scale of the unlogged variables.

The model is specified as follows:

$$LRGDP = \alpha + LRBMS\beta_1 - RINTR\beta_2 - LCPI\beta_3 - LRER\beta_4 + LGDL\beta_5 + \mu_1 \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad \text{(Baseline Model)}$$

$$LCPI = \alpha + LRBMS\beta_1 + RINTR\beta_2 - LRGDP\beta_3 + LRER\beta_4 + LGDL\beta_5 + \mu_1 \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad \text{(Alternative Model)}$$

Lag intervals of 1 to 5 and 1 to 4 were chosen respectively in accordance with Hennan Quinn sequential modified LR test, final prediction error, and Akaike information criteria. As they all indicate cointegrating equations, with the aid of Eviews 7.0 software.

RESULTS AND DISCUSSION OF FINDINGS

The results from ADF and PP tests for the equations are presented in Table A that provides stationarity of the variables.

Table 2: Unit Root Test Results

1st Difference		
Series	**ADF**	**PP**
LRGDP	- 3.845	- 28.165
LRBMS	- 11.145	- 2 8.165
RINTR	- 5.796	- 5.816
LCPI	- 2.682	- 7.247
LRER	- 8.155	- 8.160
LGDL	- 9.172	- 9.678

Source: Researcher's Computation (2015) using E-views 7.0

Table 2 above shows that variables are stationary at first difference of 1%, 5% and 10%. PP confirms stationarity in LCPI that was denied in ADF at first difference. However, the cointegration test revealed that there are two cointegrating equations by the trace tests statistic for both the Baseline and Alternative models. Hence, the null hypothesis was rejected, that there is no cointegrating equation at 0.05 level. Meanwhile, the two equations portend the same values in the tests, as any of them is fit for this analysis as shown in Table 2 below:

Table 3: Unrestricted Cointegration Test

Maximum Rank/Number of Cointegrating Equations	Maximum Eigenvalue	Critical Values of Eigenvalue 0.05	Trace Statistic	Critical Value of Trace Statistic 0.05	Probability**
0*	40.46	40.08	113.85	95.75	0.00
1*	27.64	33.88	73.34	69.82	0.03
2	23.35	27.58	46.75	47.86	0.08
3	17.03	21.13	22.41	29.80	0.28
4	5.20	14.26	5.37	15.49	0.77
5	0.18	3.84	0.18	3.84	0.68

Source: Researcher's Computation (2015) using E-views 7.0

The results in the table revealed 2 co integrating equations as evidenced by the trace test statistic value, as the values 113.85 and 73.34 are greater than their critical values at both ranks 0 and 1 in the table 2.

VECTOR ERROR CORRECTION RESULTS

This is used to ascertain the short run effect or dynamics of variables, as it has been observed that while some variables may have long run effects on other variables, they may also have a short run effect with different consequences on the major economic variables. Babangida (2009).

Table 4: Normalised Vector Error Correction Model (VECM) Coefficients for Baseline Model

Variables	**Vector Coefficients (β)**	**Error Correction Adjustment Coefficients (α)**
LRGDP(-1)	1.000000	0.159019* (0.04392) [3.62088]
LRBMS (-1)	0.335258* (0.05907) [5.67583]	-0.104425 (0.36020) [-0.28991]
RINTR(-1)	-0.014337** (0.00635) [-2.25757]	6.501695 (7.30339) [0.89023]
LCPI(-1)	0.102075* (0.01918)	-0.049110 9(0.06327)

	[5.32095]	[-0.77613]
LRER(-1)	0.355201* (0.06746) [5.25505]	-0.715289* (0.21316) [-3.35570]
LGDL(-1)	-0.660708* (0.12289) [-5.37626]	-0.100495 (0.18437) [-0.54508]
C	-4.692077	

Source: Researcher's computation using E-views 7.0 {2011} ( ) and [ ] report values of standard error and 't' ratio respectively.

* indicates significance at 1% level
** indicates significance at 5% level
*** indicates significance at 10%

The table 3 presents the long run cointegrating vector coefficients of Baseline model where gross domestic product (GDP) is the dependent variable. It shows that the whole variables (LRBMS, RINTR, LCPI, LRER and LGDL) are statistically significant at 1 percent except INTR that is significant at 5 percent.

The coefficient of LRBMS is rightly signed with its positive expected sign. It implies that a 1% increase in money supply leads to 0.3% rise in output. The coefficient of RINTR is rightly signed with its negative sign. This shows that a 1% rise in the rate of interest leads to 0.14% decrease in the level of output. However, the coefficient of LCPI is wrongly signed with positive influence. This revealed that a 1% rise in the level of inflation will translate to 0.1% increase in output level. In addition, the coefficient of LRER shows a positive sign against its expectation. It shows that a 1% increase in the level of exchange rate leads to 0.4% rise in output. The coefficient of LGDL carries a negative sign which makes it counter sensitive. It shows that a 1% rise in the government dominance level leads to 0.7% decrease in output level.

On the other hand, the speed adjustment parameters of the coefficients of the VEC model are also reported. The coefficient measures the average number of times that a given shock is corrected in the model. This is given as $(1 - \alpha)^t$, which is $(1 - \alpha)$, where t is the number of years and α is the absolute value of the adjustment parameter Aliyu (2008); in Babangida (2009). From the results of Table 4, the speed adjustment parameter of the coefficients of the VEC model reported that only two out of the six adjustment coefficients are statistically significant and are both correctly signed, i.e. LRGDP and LRER.

The fastest speed of adjustment was recorded by the coefficient of LRER with 0.28, representing roughly about 3 quarters or 9 months with an expected negative sign, followed by the coefficient of LRGDP with 0.84, representing about 8 quarters or 2 years period with an expected positive sign which means that previous level of output accounts for increase in the current level of output.

Conversely, for the Alternative model in Table 5 below of the long run results of vector cointegrating coefficients where LCPI is said to be the dependent variable, it shows that only two of the variables are statistically significant i.e. RINTR and LRER at 1% level. The coefficient of RINTR carries a negative sign which is counter sensitive. This implies that an increase in the

interest rate by 1% will lead to a decrease of 0.9% in the price level, while the coefficient of LRER shows an expected positive sign. This implies that an increase in the exchange rate by 1% tends to increase the price level at about 6%.

Table 5: Normalised Vector Error Correction Model (VECM) Coefficients for Alternative Model

Variables	**Vector Coefficients (β)**	**Error Correction Adjustment Coefficients (α)**
LCPI (-1)	1.000000	-0.001824 (0.00206) [-0.88563]
LRBMS (-1)	1.636161 (2.04956) [0.79830]	-0.005728 (0.01125) [-0.50900]
RINTR(-1)	-0.890090* (0.14154) [-6.28851]	0.688792* (0.24058) [2.86304]
LRGDP(-1)	- 0.429047 (3.58728) [-0.11960]	0.001684 (0.00150) [1.12275]
LRER(-1)	5.914249* (1.75365) [3.37254]	-0.015368** (0.00695) [-2.21096]
LGDL(-1)	-1.211365 (0.87326) [-0.31275]	-0.007752 (0.00566) [-1.36984]
C	48.23997	

Source: Researcher's computation using E-views 7.0 {2011} ( ) and [ ] report values of standard error and't' ratios respectively.

* indicates significance at 1% level
** indicates significance at 5% level
*** indicates significance at 10%

On the other hand, the speed adjustment parameters of the coefficients of VEC model reported that only two out of the six variables are statistically significant, and they are correctly signed. The fastest speed of adjustment was recorded by the coefficient of RINTR of 0.31 roughly 3 quarters or 9 months with an expected positive sign. This high speed adjustment to the shock of the variables could be explained that a slight increase in interest rate tends to increase inflationary pressure in the country. It is then followed by the coefficient of LRER of 0.98, roughly 10 quarters or 2 years and a half of a year, i.e. 2 years, 6 months. And the coefficient is rightly signed based on its negative expectation.

Corresponding Equations for Baseline and Alternative Models

LRGDP = – 4.692 + 0.34LRBMS – 0.01RINTR + 0.10LCPI + 0.36 LRER – 0.70 LGDL
……Baseline Model

LCPI = 48.24 + 1.64LRBMS – 0.90RINTR – 0.43 LRGDP + 5.91LRER – 1.21LGDL
……Alternative Model

4.0 Conclusion and Policy Implications

The analysis disclosed several hints on the conduct of monetary policy to achieve sound output growth and price stability in Nigeria simultaneously. As all variables employed are relevant in studying monetary policy efficacy over time due to their stationarity at first difference in the ADF and PP tests, while the co-integration test, revealed two cointegrating equations shown by the trace test statistic. In the Baseline model, it revealed that all variables are statistically significant in analysing output growth in Nigeria. It shows that both the money supply (LRBMS) and interest rate (RINTR) respond to growth (LRGDP) as expected, while price level (LCPI), exchange rate (LRER) and government dominance (LGDL) portend counter impact on growth. In the event of any monetary shock in Nigeria, exchange rate tends to record the fastest speed of adjustment of about 3 quarters or 9 months of a year, while output speed of these two variables have their adjustment coefficients statistically significant and correctly signed.

In the Alternative model, only the interest rate (RINTR) and exchange rate (LRER) are statistically significant at 1%. However, interest rate on price level is counter sensitive, while others are not significant. The speed adjustment parameters of coefficient reported interest rate of about 3 quarters or 9 months, while exchange rate is about 10 quarters or 2 years and 6 months and are both rightly signed.

In summary, money supply and interest rate revealed a strong impact and significance on output level in Nigeria, and exchange rate quickly readjusted to shock in the economy in less than a year, while interest rate and exchange rate show strong influence on price level in the economy. As the negative influence of interest rate on price level could be traced to injections in the economy. The Alternative model shows interest rate as the fastest adjuster to shock in less than a year, as exchange rate in 2½ years.

In both cases of output growth and price stability in Nigeria, interest rate and exchange rate play prominent roles followed by money supply, while exchange rate quickly adjusts to shock in the economy, followed subsequently by interest rate and output level.

The study recommends that interest rate be varied on capital asset and consumable goods in relation to different sectors of the economy to ensure expected responses between output and interest rate. The autonomy of the Central bank should be strengthened to discharge its statutory mandate by limiting undue credit to the government, as government should be made to balance their budgets and borrow at market rates to finance their deficits, including the need to promote stable foreign exchange earnings and constant reorientation against imported items.

REFERENCES

Al-M. (1995) "Examining the Cause of Inflation in Kuwait". An Application of a Vector Autoregression Model". OPEC Review.

Awasak, O. R. (2004) "The Effects of Monetary Policy on Inflationary Control". A B.Sc. Research Submitted to the Department of Economics, Bayero University, Kano.

Babangida, B. U. (2009) "Real Exchange Rate Misadjustment and Macroeconomic Performance in Nigeria (1970 – 2007)". PhD Thesis Submitted to the Department of Economics, Bayero University, Kano.

Batini, N. (2004) "Achieving and Maintaining Price Stability in Nigeria". International Monetary Fund (IMF).

Busari, T. D. (2007) "Determinants of Inflation in Nigeria (1980 – 2003)". Economic and Financial Review, Vol. 45, pp. 35 – 56.

CBN (2008) "Statistical Bulletin", 50th Year Special Anniversary Edition.

CBN (2009) "Statistical Bulletin", Vol. 20, December.

Mohammed, I. D. (2012), "Effectiveness of Monetary Policy in Nigeria: An Empirical Investigation". An M.Sc. Dissertation Submitted to the Department of Economics, Bayero University, Kano.

Montiel, P. (1989) "Empirical Analysis of High Inflation Episodes in Argentina, Brazil and Israel". IMF Staff Papers 36, No. 3, 527 – 549.

Moser, G. C. (1994) "The Main Determinants of Inflation in Nigeria". IMF Working Paper.

Okafor, P. N. (2009) "Monetary Policy Framework in Nigeria: Issues and Challenges". CBN Bullion, Vol. 30, No. 2.

Okunola, V. F. (1999) "The Role of Money Supply and credit on Inflationary Trends in Nigeria" B.Sc. Economics Research, Bayero University, Kano.

Olorunfunmi, S. & Dotun, F. O. (2008) "Stationary Analysis of the Impact of Monetary Policy on the Economic Performance in Nigeria". In Pakistan Journal of Social Sciences, (5) 6: 562 – 566.

Papadopoulos, K (1993) "The Effect of Monetary, Fiscal and Exchange Rate Policies on Output, Prices and Balance of Payment in the Open Economy of Greece" (1956 – 1990), Applied Economics, No. 25.

Rafindadi, A. A. (2004), "Measuring the Effectiveness of Monetary and fiscal Policies in Enhancing Sustainable Economic Growth in Nigeria". An M.Sc. Thesis Submitted to the Department of Economics, Usmanu Dan Fodiyyo University, Sokoto.

Uchendu, O. A. (2009) "Overview of Monetary Policy in Nigeria" CBN Bullion, Vol. 30, No. 2.