MONETARY POLICY AND ECONOMIC GROWTH OF NIGERIA (1981-2012)

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Abstract
This study examined the impact of monetary policy on the growth of Nigeria economy between the period of 1981 and 2012 with the objective of finding out the impact of various monetary policy instruments (money supply, interest rate, exchange rate and liquidity ratio) in enhancing economic growth of the country within the period considered. To identify the stationarity characteristics of the data employed in the empirical investigation, various advanced econometric techniques like Augmented Dickey Fuller Unit Root Test, Johansen Cointegration Test and Vector Error Correction Mechanism (VECM) were employed and the following information surfaced: None of the variables was stationary at level meaning they all have unit roots. But all the variables became stationary after first difference with the exclusion of money supply. However, all the variables became stationary after second difference. Hence they were integrated of order two. The cointegration result indicated that there is long run relationship among the variable with two cointegrating vectors. The result of the vector error correction mechanism (VECM) test indicates that only exchange rate exerted significant impact on economic growth in Nigeria while other variables did not. Equally, only money supply though statistically insignificant possessed the expected sign while others contradicted expectation. The study concluded that monetary policy did not impact significantly on economic growth of Nigeria within the period under review and that the inability of monetary policies to effectively maximize its policy objective most times is as a result of the shortcomings of the policy instruments used in Nigeria as such limits its contribution to growth. The study recommended among others that Commercial banks and other financial intermediaries must be forced to ensure compliance with the stipulated prudential guidelines.

Keywords: monetary policy, monetary policy, Commercial banks, financial intermediaries, interest rate, exchange rate

1.1 Introductions
Since its establishment in 1959, 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 in such a way as to promote the social welfare. This role is anchored on the use of monetary policy that
is usually targeted towards the achievement of full-employment equilibrium, rapid economic growth, price stability, and external balance (Fasanya et al, 2013). These objectives are necessary for the attainment of internal and external balance, and the promotion of long-run economic growth. Evidence in the Nigerian economy has shown that since the 1980’s some relationship exist between the stock of money and economic growth or economic activity. Over the years, Nigeria has been controlling her economy through variation in her stock of money. Hence monetary policy comprises those government actions designed to influence the behaviour of the monetary sector.

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 assumption that these are essential tools of achieving macroeconomic stability (Ajayi, 1999). In Nigeria, monetary policy has been in use since the Central bank of Nigeria was saddled the responsibility of formulating and implementing monetary policy by Central bank Act of 1958. This role has facilitated the emergence of active money market where treasury bills, a financial instrument used for open market operations and raising debt for government has grown in volume and value becoming a prominent earning asset for investors and source of balancing liquidity in the market. Monetary policy has two fundamental goals to promote maximum sustainable output and employment and to maintain sustainable price level in the economy. The job of stabilizing output in the short run and promoting price stability in the long run involves several steps. First, the central bank tries to estimate how the economy is doing now and how it is likely to do in the medium term, then, it compares this estimates to its goals for the output and the price level, if there is a gap between the estimates and the goals, the CBN have to decide on how forcefully and swiftly to act to close the gap. Estimate of the current economic conditions are not as even as the most up-to-date data on key variables like employment, growth, productivity etc, largely reflect condition in the past. So to get a reasonable estimate of the current and medium term economic conditions, the central bank tries to find out what the most relevant economic developments are such as government spending, economic conditions abroad, financial conditions at home and abroad and the use of new technologies that boost productivity. These developments are the incorporated in an economic model to see how the economy is likely to evolve over time. In doing this, the central bank is confronted with some unexpected development such as the Niger-Delta crisis that disturbed the oil production and slowed down the revenue generation by the government they therefore, have to build uncertainties into their model. Uncertainty seems to be problem at every part of the monetary policy process and there is yet no set of policy and procedures that policy makers can use to deal with all situations that may arise (Chimezie, 2012). Indeed, the central bank spends a great deal of time and effort in researching into the various ways to deal with different kinds of situation.

The economy of Nigeria is faced with unemployment, low investment and high inflation rate and these factors militate against the growth of the economy. Thus, adopting monetary policy in manipulating the fluctuations experienced so far in the economy, CBN undertakes both contractionary and expansionary measures in tackling the problems observed above.

1.2 Statement of the problem
“Monetary policy is known to be a vital instrument that a country can deploy for the maintenance of domestic price and exchange rate viability, as a critical condition for the achievement of a sustainable economic growth and external viability” (Amasomma et al, 2011). On a yearly basis,
the monetary authority formulate guidelines geared towards the enhancement and development of policy variable designed to ensure optimal performance of the banking industry and ultimately to advise the macroeconomic goals or objectives but in the implementation of such policy variable certain conflicting issues are to be addressed ranging from the ability to comply with various monetary policy guidelines as well as satisfying depositors and shareholders (Chimezie, 2012). Central bank of Nigeria uses various instruments to achieve its stated objective and these include: open market operation (OMO), required reserve ratio (RRR), bank rate, liquidity ratio, selective credit control and moral suasion. There have been various regimes of monetary policy in Nigeria. Sometimes, monetary policy is tight and at other times it is loose, mostly used to stabilize prices. The economy has also witnessed times of expansion and contraction but evidently, the reported growth has not been a sustainable one as there is evidence of growing poverty among the populace. The controversy bothering on whether or not monetary policy measures actually impact on the Nigerian economy is a problem this study sets to solve. Therefore, the main thrust of this study is to evaluate the effectiveness of the CBN’s monetary policy over the years. This would go a long way in assessing the extent to which the monetary policies have impacted on the growth process of Nigeria using the major objectives of monetary policy as yardstick.

This study was guided by the research question: to what extent does monetary policy impact on economic growth of Nigeria and the main objective of the study is to examine the effectiveness of monetary policy in the Nigerian economy with the specific objective of assessing the impact of monetary policy instruments on economic growth of Nigeria.

2.0. LITERATURE REVIEW

2.1. Theoretical literature
Monetary theory has undergone a vast and complex evolution since the study of the economic phenomenon first came into limelight. It has drawn the attention of many researches with different views on the role and dimensions of money in attaining macroeconomic objectives. Consequently, there are quite a number of studies aimed at establishing relationship between monetary policy and other economic aggregates such as inflation and output.

In this chapter we will take a look at the different schools of thought, their views of the role of money in attaining policy objectives alongside are view the necessary literature relating to this study.

2.1.1 THE CLASSICAL MONETARY THEORY
The classical school evolved through concerted efforts and contribution of economists like Jean Baptist Say, Adam Smith, David Ricardo, Pigou and others who shared the same beliefs. The classical model attempts to explain the determination, savings and investment with respect to money. The classical model on say’s law markets which states that “supply creates its own demand”. Thus classical economists believe that the economy automatically tends towards full employment level by laying emphasis on price level and on how best to eliminate inflation .The classical economists decided upon the quantity theory of money as the determinant of the general price level. Theory shows how money affects the economy. It may be considered in terms of the equation of Exchange.

\[ MV = PY \]

Two very similar quantity theory formulations were used to explain the level of price viz; the transactions formulation or the Cambridge equation.
In the transaction version – associated with Fisher and Newcomb, some assumptions were made: that the quantity of money (m) is determined independently of other variable, velocity of circulation (V) is taken as constant, the volume of transactions (T) is also considered constant. Thus of price (p) and the assumption of full employment of the economy, the equation of exchange is given as:

\[ MV = PT, \]

which can readily establish the production that – the level of price is a function of the supply of money. That is, \( p = F(m) \) which implies that, any change in price changes money supply. In cash balances version – associated with Walras, Marshall, Wicksell and Pigou, the neoclassical school (Cambridge school), changed the focus of the quantity theory of without changing its underlying assumptions. This version focuses on the fraction (K) of income, held as money balances. The Cambridge version can be expressed as:

\[ M = kpy \]

Where \( K \) = Fraction of income, \( M \) =Quantity of money, \( P \) = price level, \( Y \) =value of goods and services

The K in the Cambridge equation is merely inversion of V, the income Velocity of money balances, in the original formulation of quantity theory. This version directs attention to the determinants of demand for money, rather than the effects of changes in the supply money (Anyanwu, 1993).

### 2.1.2 KEYNESIAN THEORY

The Keynesian model assumes a close economy and a perfect competitive market with fairly price- interest aggregate supply function. The economy is also assumed not to exist at employment equilibrium and also that it works only in the short run because as Keynes aptly puts it “In the long run, we also will be dead”. The Keynesian theory is rooted on one notion of price rigidity and possibility of an economy setting at a less than full employment level of output, income and employment. The Keynesian macro economy brought into focus the issue of output rather than prices as being responsible for changing economic conditions. In other records, they were not interested in the quantity theory per say.

From the Keynesian in the mechanism, monetary policy works by influencing interest rate which influences investment decisions and consequently, output and income via the multiplies process. Thus, the Keynesian theory is a rejection of Say’s Law and the notion that the economy is self-regulating.

### 2.1.3 THE MONETAIST THEORY

The monetarist essentially adopted Fisher’s equation of exchange to illustrate their theory, as a theory of demand for money and not a theory of output price and money income by making a functional relationship between the quantities of real balances demanded a limited number of Variables.

Monetarists like Friedman emphasized money supply as the key factor affecting the wellbeing of the economy. Thus, in order to promote steady of growth rate, the money supply should grow at a fixed rate, instead of being regulated and altered by the monetary authorities.

Friedman equally argued that since money supply is substitutive not just for bonds but also for many goods and services, changes in money supply will therefore have both direct and indirect effects on spending and investment respectively such that demand for money will depend upon the relative rates of return available or different competing assets in which wealth can be.
2.2 Empirical literature

The impact of monetary policy on growth has generated large volume of empirical studies with mixed findings using cross sectional, time series and panel data. Some of these studies are country-specific while others are cross-country. Few of the studies are selected for review as follows:

Onyeiwu (2012) examines the impact of monetary policy on the Nigerian economy using the Ordinary Least Squares Method (OLS) to analyse data between 1981 and 2008. The result of the analysis shows that monetary policy presented by money supply exerts a positive impact on GDP growth and Balance of Payment but negative impact on rate of inflation. Furthermore, the findings of the study support the money-prices-output hypothesis for Nigerian economy.

Amassoma et al (2011) examined the effect of monetary policy on macroeconomic variables in Nigeria for the period 1986 to 2009 by adopting a simplified Ordinary Least Squared technique found that that monetary policy had a significant effect on exchange rate and money supply while monetary policy was observed to have an insignificant influence on price instability.

Ajisafe and Folorunso (2002) examined the relative effectiveness of monetary and fiscal policy on economic activity in Nigeria using co-integration and error correction modelling techniques and annual series for the period 1970 to 1998. The study revealed that monetary rather than fiscal policy exerts a greater impact on economic activity in Nigeria and concluded that emphasis on fiscal action by the government has led to greater distortion in the Nigerian economy.

Adeolu et al (2012) assessed how fiscal and monetary policies influence economic growth and development in Nigeria. The paper argues that curbing the fiscal indiscipline of Government will take much more than enshrining fiscal policy rules in our statute books. This is because the statute books are replete with dormant rules and regulation. It notes that there exist a mild long-run equilibrium relationship between economic growth and fiscal policy variables in Nigeria. The paper suggest that for any meaningful progress towards fiscal prudence on the part of Government to occur, some powerful pro-stability stakeholders strong enough to challenge government fiscal recklessness will need to emerge.

Hameed et al (2012) presented a review on how the decisions of monetary authorities influence the macro variables like GDP, money supply, interest rates, exchange rates and inflation. It asserts that the foremost objective of monetary policy is to enhance the level of welfare of the masses and it is instrumental to price stability, economic growth, checking BOP deficits and lowering unemployment. The method of least square OLS explained the relationship between the variables under study. Tight monetary policy in term of increase interest rate has significant negative impact on output. Money supply has strong positive impact on output that is positive inflation and output is negatively correlated .exchange rate also have negative impact on output which is show from the values. The study recommended that central bank can best contribute to a nation’s Economic health by eliminating the price uncertainties associated with inflation.

Chukuigwe (2008) analyze the impact of monetary and fiscal policies on non-oil exports in Nigeria from 1974 to 2003. Using Ordinary Least Squares estimation, the study revealed that both interest rate and exchange rate, being proxies for monetary policy, negatively affect non-oil exports. Budget deficits – proxy for fiscal policy also had a negative effect on non-oil exports. Based on the findings, the study recommended that there is need to formulate a new strategy to address the identified challenges. This would be anchored on macroeconomic stability, export
promotion, rationalization of the role of government, fortification of infrastructural facilities and stimulation of demand for goods and services since it would create an enabling investment climate.

In summary, the overall findings of the works reviewed so far indicate that there is somehow a general consensus that there is a direct relationship between monetary policy and economic growth. However, while the robustness of most of the works reviewed could be widely acclaimed, it will be noteworthy that there are some flaws inherent in some others which could somehow hinder the robustness of their results and which this work is intended to correct.

3.0. METHODOLOGY

In the course of this work, the research design employed is time series research design. The researcher adopted the multiple regression analysis based on the classical linear regression model, otherwise known as Ordinary Least Square (OLS) technique. The estimation covered the period between 1981 and 2012 while the secondary data obtained from Central Bank (CBN) statistical bulletin for various years was analysed using E-View 7 econometric package.

3.1. Model Specification

To indulge in empirical analysis between monetary policy and economic growth in Nigeria, real gross domestic product (RGDP) was used as the endogenous variable while broad money supply (M2), interest rate (INT), exchange rate (EXR), liquidity ratio (LR) were used as the exogenous variables.

The model is specified thus:

\[ GDP = b_0 + b_1M2 + b_2INT + b_3EXR + b_4LR + \mu \]

Where: RGDP = gross domestic product, M2 = broad money supply, INT = interest rate, EXR = exchange rate, LR = liquidity ratio, \( \mu \) = stochastic variable or error term, \( b_0 \) = constant term, \( b_1, b_2, b_3 \) and \( b_4 \) = parameters to be estimated.

A PRIORI EXPECTATION

\( b_1 \) and \( b_4 > 0, \ b_2 \) and \( b_3 < 0 \)

3.2. Estimation Procedure

The time series properties of data employed in the estimation equation is tested for stationarity using Augmented-Dick-Fuller (ADF) unit root test in order to avoid the problem of spurious regression. To investigate whether there is existence of long run relationship among the variables in estimation, the Johansen test for co-integration was employed. An Error Correction Mechanism is employed to ascertain the speed of adjustment from the short run equilibrium to the long run equilibrium state. The functional form, on which our econometric model was based, employed a multiple regression equation model in this work.

In estimating the model we relied on the developments in the co integration theory, otherwise referred to as the “error correction mechanism” using the vector error correction mechanism (VECM).

4.0. PRESENTATION AND ANALYSIS OF RESULTS

The variables considered in this research work are: Gross Domestic Product (GDP) at current basic prices (dependent variable) and the independent variables include: money supply (M2), interest rate (INT), exchange rate (EXR), and inflation rate (INF). The empirical results are presented below:
4.1 PRESENTATION OF RESULT
4.1.1 UNIT ROOT TEST
The Augmented Dickey-Fuller (ADF) test result is presented below:

Table 1: Augmented Dickey Fuller Unit Root Test at level Trend and intercept

<table>
<thead>
<tr>
<th>Series</th>
<th>ADF Test Statistic</th>
<th>5% critical values</th>
<th>Order</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP</td>
<td>2.369742</td>
<td>-3.568379</td>
<td>I(0)</td>
<td>N.S</td>
</tr>
<tr>
<td>M2</td>
<td>3.108624</td>
<td>-3.562882</td>
<td>I(0)</td>
<td>N.S</td>
</tr>
<tr>
<td>INT</td>
<td>-2.043321</td>
<td>-3.568379</td>
<td>I(0)</td>
<td>N.S</td>
</tr>
<tr>
<td>EXR</td>
<td>1.775392</td>
<td>-3.562882</td>
<td>I(0)</td>
<td>N.S</td>
</tr>
<tr>
<td>LR</td>
<td>-3.106574</td>
<td>3.562882</td>
<td>I(0)</td>
<td>N.S</td>
</tr>
</tbody>
</table>

Table 2: Augmented Dickey Fuller Unit Root Test with intercept at first difference

<table>
<thead>
<tr>
<th>Series</th>
<th>ADF Test Statistic</th>
<th>5% critical values</th>
<th>Order</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP</td>
<td>-6.203966</td>
<td>-3.568379</td>
<td>I(1)</td>
<td>S</td>
</tr>
<tr>
<td>M2</td>
<td>-2.913058</td>
<td>-3.568379</td>
<td>I(1)</td>
<td>N.S</td>
</tr>
<tr>
<td>INT</td>
<td>-8.796299</td>
<td>-3.568379</td>
<td>I(1)</td>
<td>S</td>
</tr>
<tr>
<td>EXR</td>
<td>-4.218399</td>
<td>-3.568379</td>
<td>I(1)</td>
<td>S</td>
</tr>
<tr>
<td>LR</td>
<td>-5.456200</td>
<td>-3.568379</td>
<td>I(1)</td>
<td>S</td>
</tr>
</tbody>
</table>

Table 3: Augmented Dickey Fuller Unit Root Test with intercept at second difference

<table>
<thead>
<tr>
<th>Series</th>
<th>ADF Test Statistic</th>
<th>5% critical values</th>
<th>Order</th>
<th>Remarks</th>
</tr>
</thead>
</table>
Table 1, 2 and 3 above represent the results of the Augmented Dicey Fuller unit root tests both at level, first difference and second difference respectively.

As can be seen from the table, at 5 percent level of significance, none of the variables was stationary at level since by comparison, their critical values were greater in absolute values than their augumented dicey fuller (ADF) test statistics. At first difference, GDP, INT, EXR, and LR became stationary while M2 was still not stationary. However, at second difference, all the five variables; GDP, M2, INT, EXR and LR were stationary since their Augmented Dicey Fuller Test Statistics (6.049264, -8.433386, 9.545361, 6.164577, -6.278649) were all greater than their critical values (-3.580623, -3.574244, -3.580623, -3.580623, -3.580623) respectively at 5 percent level of significance. Thus, the series are stationary and integrated of order two, I(2).

Table 4: CO-INTEGRATION RESULT

<table>
<thead>
<tr>
<th>Eigen Value</th>
<th>Trace Statistic</th>
<th>0.05 Critical Value</th>
<th>Prob,**</th>
<th>Hypothesized No. of CE(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.790394</td>
<td>97.14515</td>
<td>69.81889</td>
<td>0.0001</td>
<td>None *</td>
</tr>
<tr>
<td>0.556369</td>
<td>50.26932</td>
<td>47.85613</td>
<td>0.0291</td>
<td>At most 1</td>
</tr>
<tr>
<td>0.404236</td>
<td>25.88645</td>
<td>29.79707</td>
<td>0.1321</td>
<td>At most 2</td>
</tr>
<tr>
<td>0.265854</td>
<td>10.34912</td>
<td>15.49471</td>
<td>0.2548</td>
<td>At most 3</td>
</tr>
<tr>
<td>0.035286</td>
<td>1.077699</td>
<td>3.841466</td>
<td>0.2992</td>
<td>At most 4 *</td>
</tr>
</tbody>
</table>
The results of the cointegration in Table 4 above indicated that the trace statistics is greater than the critical value at 5 percent level of significance in at least one of the hypothesized equations. This confirms that there is at least one cointegration relationship among the various variables used to model the relationship between monetary policy and economic growth in Nigeria for the period under investigation. Specifically, the results of the cointegration test suggested that economic growth, proxied by Gross Domestic Product (GDP) at current price had equilibrium relationship with Money supply (M2), interest rate (INT), exchange rate (EXR) and liquidity ratio (LR) which kept them in proportion to each other in the long run.

4.1.3 VECTOR ERROR CORRECTION MODEL (ECM)

As noted, error correction mechanism (ECM) is meant to tie the short-run dynamics of the cointegrating equations to their long-run static dispositions. In order to capture the short run fluctuation, the Vector Error Correction Method (VECM) was employed and the result is presented below.

Vector Error Correction Estimates

| Date: 08/13/14 | Time: 00:05 |
| Sample (adjusted): 1983-2012 |
| Included observations: 30 after adjustments |
| Standard errors in () & t-statistics in [ ] |

<table>
<thead>
<tr>
<th>Cointegrating Eq:</th>
<th>CointEq1</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP(-1)</td>
<td>1.000000</td>
</tr>
<tr>
<td>M2(-1)</td>
<td>-1.988544 (0.25709) [-7.73487]</td>
</tr>
<tr>
<td>INT(-1)</td>
<td>-22652.54 (110055.) [-0.20583]</td>
</tr>
<tr>
<td>EXR(-1)</td>
<td>41027.73 (15184.8) [2.70189]</td>
</tr>
<tr>
<td>LR(-1)</td>
<td>-225225.2 (56859.3) [3.96110]</td>
</tr>
<tr>
<td>C</td>
<td>4807090.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Error Correction:</th>
<th>D(GDP)</th>
<th>D(M2)</th>
<th>D(INT)</th>
<th>D(EXR)</th>
<th>D(LR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CointEq1</td>
<td>0.239169</td>
<td>0.093877</td>
<td>-8.96E-08</td>
<td>-6.84E-07</td>
<td>2.20E-06</td>
</tr>
<tr>
<td></td>
<td>(0.09151)</td>
<td>(0.02406)</td>
<td>(2.6E-07)</td>
<td>(1.2E-06)</td>
<td>(5.7E-07)</td>
</tr>
<tr>
<td></td>
<td>[2.61358]</td>
<td>[3.90111]</td>
<td>[-0.34538]</td>
<td>[-0.59306]</td>
<td>[3.85955]</td>
</tr>
<tr>
<td>D(GDP(-1))</td>
<td>-0.281843</td>
<td>-0.129000</td>
<td>-4.90E-07</td>
<td>1.47E-06</td>
<td>-3.08E-06</td>
</tr>
<tr>
<td></td>
<td>(0.23402)</td>
<td>(0.06154)</td>
<td>(6.6E-07)</td>
<td>(3.0E-06)</td>
<td>(1.5E-06)</td>
</tr>
<tr>
<td></td>
<td>[-1.20438]</td>
<td>[-0.09625]</td>
<td>[-0.37885]</td>
<td>[0.49969]</td>
<td>[-2.11138]</td>
</tr>
<tr>
<td>D(M2(-1))</td>
<td>0.454268</td>
<td>0.479681</td>
<td>9.24E-07</td>
<td>5.89E-06</td>
<td>-1.10E-05</td>
</tr>
<tr>
<td></td>
<td>(0.60157)</td>
<td>(0.15819)</td>
<td>(1.7E-06)</td>
<td>(7.6E-06)</td>
<td>(3.8E-06)</td>
</tr>
<tr>
<td></td>
<td>[0.75514]</td>
<td>[3.03227]</td>
<td>[0.54204]</td>
<td>[0.77641]</td>
<td>[-2.92845]</td>
</tr>
</tbody>
</table>
From the VECM result presented above, the coefficient of the constant term is 1504893 implying that at zero performance of the various explanatory variables used, Gross Domestic Product (GDP) will stand at 1504893 units. The coefficients of GDP (-1) is -0.282. This implies that a unit increase in GDP lagged for one year will bring about a decrease in GDP by 0.282 units. the coefficient of LM2(-1) is 0.454 implying that a unit increase in broad money supply lagged by one year will bring about a 0.452 unit increase in GDP. Similarly, The coefficients of INT (-1) is 33637.52 implying that a unit increase in a year period lagged of interest rate will bring about a 33637.52 unit increase in GDP. EXR(-1) has a coefficient of 44010.72 meaning that a unit increase in exchange rate will bring about a 44010.72 unit increase in GDP. Finally, liquidity ratio (LR) when lagged by one period has a coefficient of -41012.51 showing equally a negative relationship with GDP. Hence, a unit increase in liquidity ratio when lagged by one year will bring about a -41012.51 unit decrease in GDP.

The above result indicates that the R² is 0.624 indicating that the explanatory variables explain about 62% of the total variations in GDP during the period under consideration. However, the coefficient of ECM is 0.239. The coefficient reveals that there is no speed of adjustment between the short-run and long-run realities of the cointegrating equations annually. This is because; the ECM coefficient is not consistent with the assumed negative value.
To determine whether the estimated parameters are statistically significant or not, a system equation was estimated using ordinary least square and the result is presented below:

**System:** UNTITLED  
**Estimation Method:** Least Squares  
**Date:** 08/13/14  **Time:** 00:06  
**Sample:** 1983-2012  
**Included observations:** 30  
**Total system (balanced) observations:** 150

<table>
<thead>
<tr>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C(1)</td>
<td>0.239169</td>
<td>0.091510</td>
<td>2.613578</td>
</tr>
<tr>
<td>C(2)</td>
<td>-0.281843</td>
<td>0.234016</td>
<td>-1.204378</td>
</tr>
<tr>
<td>C(3)</td>
<td>0.454268</td>
<td>0.601567</td>
<td>0.755141</td>
</tr>
<tr>
<td>C(4)</td>
<td>33637.52</td>
<td>56384.58</td>
<td>0.596573</td>
</tr>
<tr>
<td>C(5)</td>
<td>44010.72</td>
<td>17602.69</td>
<td>2.500227</td>
</tr>
<tr>
<td>C(6)</td>
<td>-41012.51</td>
<td>335224.56</td>
<td>-1.230330</td>
</tr>
<tr>
<td>C(7)</td>
<td>1504893.</td>
<td>435224.2</td>
<td>3.457741</td>
</tr>
</tbody>
</table>

Equation: \[ D(GDP) = C(1)*( GDP(-1) - 1.98854381212*M2(-1) - 22652.5364858*INT(-1) + 41027.7323024*EXR(-1) - 225225.23254 + 4807090.26348 ) + C(2)*D(GDP(-1)) + C(3)*D(M2(-1)) + C(4)*D(INT(-1)) + C(5)*D(EXR(-1)) + C(6)*D(LR(-1)) + C(7) \]

**Observations:** 30  
**R-squared** | 0.623930  
**Adjusted R-squared** | 0.525825  
**S.E. of regression** | 1371740.  
**Sum squared resid** | 4.33E+13  
**Durbin-Watson stat** | 1.887475

From the system equation above, it will be seen that it is only the coefficient of ECM and exchange rate that are statistically significant at 5 percent level of significance while the coefficients of other variables: money supply, interest rate, and liquidity ratio were not statistically significant. This is judged by their p-values given in the system equation. Hence, the p-values of ECM coefficient (0.0102) and coefficient of EXR (0.0138) were all less than 0.05 while the p-values of other variables are greater than 0.05.

**Durbin-Watson (second order) test:**  
Finally, the Durbin-Watson statistics indicates that  
\[
\begin{align*}
\text{Lower D-W (d_L)} &= 1.19 \\
\text{Upper D-W (d_U)} &= 1.73 \\
\text{Where D-W calculated} &= 1.89
\end{align*}
\]

Since the calculated D-W statistic is greater than the upper D-W tabulated value, we accept the null hypothesis that there is absence of first order autocorrelation.
4.2 IMPLICATION OF THE STUDY
The VECM result presented above shows that GDP has a negative relationship with LR and a positive relationship with M2, INT and EXR. Only the Relationship between GDP and M2 conforms to a priori expectation while that between GDP and LR does not conform to the a priori expectation. It was expected that the higher the higher of liquidity of the economy which is evident by high liquidity ratio, the higher the level of economy activities which could ultimately translate into higher economic growth but the findings from this study showed the opposite. Equally, from a priori, GDP ought to have negative relationship with both exchange rate and interest rate both findings reveal that the reverse were the case as interest rate and exchange rate turned out to be positively related to gross domestic product. Hence only the coefficient of money supply (M2) conforms to a priori expectation.

4.3 TEST OF HYPOTHESIS
H0: Monetary policy instruments do not have significant impact on economic growth in Nigeria
To test for this hypothesis, we take a look at the relationship between the various instruments of monetary policy and economic growth of Nigeria from the VECM result. From the result, it was observed that only the coefficient of M2 conforms to expectation since it had positive relationship with GDP, while LR had negative relationship with GDP contrary to a priori and that INT and EXR had positive relationship with GDP equally in contrast to a priori. From the above, coupled with the fact that outside the coefficient of exchange rate (EXR), none of the Other Variables Was Significant At The 5 % Level Of Significance, we therefore accept the null hypothesis and conclude that monetary policy instruments do not impact significantly on economic growth in Nigeria for the period reviewed.

5.1 Summary of findings
The study investigated empirically the relationship between monetary policy and economic growth of Nigeria for the period between 1981 and 2012 employing various techniques of econometric analysis. In the course of the study, the main objective was to determine empirically the impact of monetary policy instruments on economic growth in Nigeria.

The Vector Error Correction Mechanism (VECM) test which was used to determine the impact of the independent variables (M2, INT, EXR and LR) on the dependent variable (GDP) showed that only broad money supply had a positive though statistically insignificant relationship with GDP. Liquidity ratio has negative relationship with GDP while exchange rate and interest rate have positive relationship with GDP contrary to economic expectation.

Equally, the coefficient of ECM indicated that the speed of adjustment of the model does not conform to the expected negative sign.

5.2 Recommendations
Based on the findings, the following recommendations are made:

1. For effective operation of the monetary policy measures in the Nigerian economy, the Central Bank of Nigeria should be granted full autonomy on its monetary policy functions. Partial autonomy should be replaced with full autonomy for the central banks in the developing economies at large which is invariably subjected to government interference and its politics.

2. Commercial banks and other financial intermediaries must be forced to ensure compliance with the stipulated prudential guidelines. Any deviation from the set regulations should be punished to serve as a deterrent to others.

3. Finally, since Global experience has indicated that monetary policy must work in random to create the right macroeconomic framework, in other word monetary policy to a great extent depends on coordination with fiscal policy; these two phenomena should be articulated in order to bring out effective results. Therefore, the execution of monetary policy through its techniques requires effective and prudent management on the part of the monetary authorities.
5.3. Conclusion

The role of the Central bank in regulating the liquidity of the economy which affects some macroeconomic variables such as the output, employment and prices cannot be over-emphasised. This study applied vector error correction mechanism (VECM) to determine the impact of monetary policy in the Nigeria’s economic growth for the period 1981-2012. It is evident from the result that monetary policy did not impact significantly on economic growth of Nigeria within the period under review. This study concludes therefore that the inability of monetary policies to effectively maximize its policy objective most times is as a result of the shortcomings of the policy instruments used in Nigeria as such limits its contribution to growth.

References


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