**Money Policy and its Impact on selected Macroeconomic Variables in the Nigerian Economy; 1970 – 2012**

Corresponding Author: **Imoisi, Anthony Ilegbinosa**

*College of Social & Management Sciences, McPherson University, Seriki Sotayo, Km 96, Lagos-Ibadan Expressway, P.M.B. 2094, Abeokuta, Ogun State*.

 E-mail-mcanthonyby@yahoo.co.uk, 08034525743

**Moses, Owede Vincent**

*School of Graduate Studies, Faculty of Social Sciences, Department of Economics,University of Port Harcourt, P. M. B. 5323, Choba, Rivers State*

Email – moses.vincent@uniport.edu.ng

08037296436

 **Godstime, Ikechukwu Opara**

*2Department of Economics, Faculty of Social Sciences,*

*Imo State University, Imo State, Nigeria*

Email – iykop@yahoo.com

Tel +2348034188243

**Abstract**

This study examines the impact of monetary policy on selected macroeconomic variables such as gross domestic product, unemployment, inflation and balance of payments using the Augmented Dickey Fuller test, Co-integration test and the Error Correction Model on annual data collected for the period of 1970-2012. The study reveals that there is a long run relationship between monetary policy variables (money supply, exchange rate and real interest rate) and the selected macroeconomic variables (gross domestic product, inflation, unemployment and balance of payments). It was observed that monetary exerts moderate impact on the selected macroeconomic variables in Nigeria. The paper validates previous works done on the efficacy of monetary policy and also submits that appropriate sanitation exercise be carried out by the CBN to make the banking environment conducive. Such activity by the CBN will improve monetary policy in Nigeria and eventually lead to an overall improvement of the selected macroeconomic variables. Based on the foregoing, the paper recommends that the monetary authorities should streamline its measures especially the prevailing interest rate through the use of indirect tools in order to achieve the targeted inflation rate that is desirable, the monetary authorities should take necessary steps to reduce the spread between bank lending rate and savings deposit rate to not more than 10% by encouraging banks to do so, the monetary and fiscal policy authorities should coordinate their activities and introduce policies that will encourage banks to allocate foreign exchange in favour of the manufacturing sector and not in the favour of importers of consumer goods.

**Keywords** Monetary Policy, Unemployment, Gross Domestic Product, Real Interest Rate, Balance of Payments, Money Supply, Inflation

**1.0 INTRODUCTION**

A major concern which has interested the thoughts of governments for decades is that of the relative efficiency of monetary policy in manipulating economic variables. Monetary policy refers to the attempt made in trying to realize the national economic objectives of full employment without inflation, rapid economic growth as well as balance of payments equilibrium through the management of the economy’s supply of money and credit” (Iyoha, 2002). Whereas fiscal policy, on the other hand requires the utilization and alteration in government spending as well as tax revenues to manipulate the level of economic activities (Iyoha, 2002).

According to the Central Bank briefs (Research development) Series No. 92/03/1 titled “Monetary policy in the Nigerian Economy”; in July 1992. Monetary policy refers to the arrangement of actions intended to control the value, supply as well as cost of money in consonance with the level of economic activities. It can be defined as the act of regulating the trends as well as the direction of monetary and credit facilities in pursuit of price stability and economic growth in the country. The Central Bank (Reserve bank, as it is called in other nations) has the authority of influencing monetary policy, by means of monetary instruments, to achieve preferred macroeconomic goals of a nation. The authority of the Central Bank of Nigeria (CBN) basically originated from the CBN Act of 1958, as amended in consecutive appraisals and strengthened in Act 24 and 25 of 1991 and the subsequent amendment in 1998 and 1999. The Central Bank’s main objectives, as contained in the act have remained the same. Embedded in these broad objectives is the mandate to conduct monetary and financial policies with the evolution of the Nigerian economy, the mandate of the CBN has been broadened over the time and along with the instrument of monetary policy. Thus, the bank has assumed overall responsibility for administering the Banks and other financial institutions (BOFI) Act No. 25 of 1991, as amended, which aims at ensuring high standard of banking practice and sustained financial stability. As part of its responsibility to promote a sound banking structure, efficient payments and settlement system and facilitate the development and deepening of the money and capital market. The CBN has supervisory regulatory responsibilities over the deposit money banks and other financial institutions.

The primary objective of monetary policy that cut across the mandate of most Central Banks is the maintenance of the price stability, which is fundamental to \the attainment of sustainable growth; while the focus of central bank in an increasing number of economies is the fight against inflation. The CBN is still saddled with development functions, with the attendant risk of policy conflict. The pursuit of price stability invariably implies the indirect pursuit of other objectives such as economic growth; which can only take place under conditions of price stability, and allocation efficiency of the financial markets. Economic growth is determined by many factors, some of which are within the ambit of Central Banks, while others exogenous to monetary policy. Since inflation is generally considered as purely a monetary phenomenon, with significant cost to the economy, the primary goal of monetary policy is to ensure that the supply of money is at a level that is consistent with the growth target of real income, such that non-inflationary growth will be ensured. The pursuit of price-stability, therefore, encompasses all the main area in which the Central Bank can contribute towards stabilizing the macroeconomic environment of the country. The objectives of this paper include: to investigate factors responsible for the inefficiency of monetary policy in Nigeria; to investigate the influence of monetary policy on macroeconomic indicators, such as inflation, Gross Domestic Product, balance of payments (BOPs) and unemployment; to examine the relative effectiveness of monetary and fiscal policies in the Nigerian economy.

Third world countries in Sub-Sahara Africa, particularly Nigeria have their utmost problem of price-instability, high level of unemployment rate, unrealistic exchange rates, inequitable distribution of income, unfavourable balance of payments as well as inadequate economic development. Examining these variables critically has a direct relationship with money supply. Kaufman (1978) opines that money is more very much associated to aggregate spending, income, production, prices, and employment than any other single economic variable. An excess supply of money will lead to an increased demand for goods and services and in return result in increased prices and/ or an unfavourable balance of payments position. Since mid 60s to date the Nigerian government has introduced several measures aimed at tackling various macroeconomic problems the country is experiencing. Such measures include the Structural Adjustment Programme, austerity measures, exchange control act etc. In spite of all these measures, the problems have persisted. From a historical point of view, it has been observed that the absence of an effective monetary policy in Nigeria has exposed the country to several economic crises when the supply of money was either too much or too scarce.

In the light of the foregoing, the Nigerian government now considers effective monetary policy as an essential part of their responsibilities. The question now is how effective is the monetary policy in solving macroeconomic problems in Nigeria?

**2.0 REVIEW OF RELATED LITERATURE**

Economists, specifically the monetarist are of the view that, the ultimate changes in money supply have an obvious impact on the level of economic activities. Empirical proof made available in favour of the monetarist principle was an econometric comparison of the effect of monetary and fiscal policy by Friedman and it is a renowned study (the relative stability of monetary velocity and investment multiplier in the United States).

Their point of view was that the rise in the popularity of Keynesian theory during the 1950s was unsupported, in so far as there was no empirical evidence supporting clearly the superiority of their doctrine over that of the classical theory. They were of the opinion that theories should be accepted or rejected only on the basis of their association to real experience. Their empirical evidence showed that not only does money matter; also, it is the major factor which influences economic activity. Thus, they concluded that the management of the money stock is a far more useful instrument for influencing the level of aggregate demand than control over autonomous expenditures and that the money stock is also easier to manage and in practice can be determined by the monetary authorities within fairly narrow margin.

Hamburger and Zwich (1981) opines that since the efficiency of monetary policy must be judged by associating procedures to policy objectives, it is essential to state these goals to assess its effectiveness. They argued that four wide-ranging policy objectives have come to be recognized as long-range goals of economic policy in most industrialized economies. These are the familiar goals of full employment, price level stability, economic growth and equilibrium in the balance of payments. They opined clearly that these primary goals make-up as well as tend to assess the principles for an entire national economy whose performance is strongly affected by domestic and international forces besides the actions of domestic monetary authorities. Thus, monetary authorities must be assessed by the contribution they make towards attaining these goals rather than by an economy’s actual performance as measure by those principles. They asserted that following the complexities of the linkage between the techniques of monetary policy and comprehensive goals, and of time lags in the dynamic process that make up the linkage, monetary authorities in all countries find it essential to choose as policy targets, objectives that are short term and more immediate.

Levy (1981) carried out a study on the Chilean economy, to find out the association between money supply and inflation rate. The inflation rate was defined in terms of the consumer and wholesale price index. In his research, he introduced independent variables which included lagged supply of money and the real expected cost of holding money that is real rate of interest. His findings indicated that inflation is affected by supply of money and its lagged value. This result is similar to Hamburger and Zwich (1981) model in their studies of Latin America countries. In spite of the heterogeneity of the various countries, the model produced similar results. Thus, in his conclusion Hafer (1973) noticed that inflation in Latin American countries cannot be attributed to structural factors but rather to the behaviour of money supply. His study arose from the need to explain the Hungarian monetary crises. He noticed that governments are usually induced to chase a policy of money supply to finance their budget, when these changes in money supply are not controlled by a corresponding increase in real output, inflation arises.

Assuming a stable demand for money function and concentrating attention on changes in the supply of money, the monetarists were able to establish a case that if a nation has an unacceptable level of unemployment, it could still achieve a higher level of money supply. This higher rate of growth in money supply brings about an increase in effective demand for goods and services resulting (not immediately) eventually in increase in real output. Increased output can come only from increased employment, which is the effect of an increase in the demand for labour (Ubogu, 1985).

On the impact of money supply on the balance of payments, considerable theoretical and empirical work has been conducted. A prominent example is that of Johnson and Ojo (1993) which stressed monetary disturbance as the major cause of changes in the balance of payments. These monetary disturbances normally result from increase in domestic credit to the public sector by the central monetary authority. Horwitz (1968) presents an empirical study of the relationship between money supply, inflation and balance of payments deficit. He attributed the increase in money supply experienced in Sri-Lanka mainly to government borrowing from the banking system to finance the growing budget deficit. Jhingan (2000) posited that a shortage of money supply will inhibit growth while an excess of it will lead to inflation. Monetary authorities should control the uses of money and credit to achieve a suitable monetary policy and control speculative activities through direct physical controls. That in an underdeveloped economy, the supply of money and credit should be controlled in such a way that the price level is prevented from rising without affecting investment and production adversely.

2.1 IMPACT OF MONETARY POLICY IN THE NIGERIAN ECONOMY

Some Nigerian economist have undertaken researches on the impact of monetary policy in the Nigerian economy or their effectiveness in attaining macroeconomic objectives, such as price stability, favourable balance of payments, rapid economic growth, full employment, etc.

Odozi (1992) was of the view that the impact of monetary policy may be evaluated first in terms of the behaviour or intermediate target policy and secondly in terms of the performance of the ultimate target such as output growth, price stability, savings and investment. The impact of monetary policy on the latter set of variables generally is difficult to establish especially for economies such as Nigeria. Odozi (1992) study on the impact of monetary policy, shows that his figures for the rate of inflation for the year 1987 – 1989 corresponded with those of Ojo (1993), so also did those of the growth of money supply. However, his focus was mainly on the impact of monetary policy on the intermediate target variables such as money supply, interest rates, exchange rates and the price level. He maintained that the effectiveness of monetary policy in regulating the money supply over the years has depended to a large extent on government spending and fiscal deficit. His data included recorded increases in money supply growth from 1990 onwards, reflecting the substantial growth in government expenditure and deficit, including debt service payments, a fall in inflation from 50.5% in 1989 to 7.5% by December 1990 and 27.0% in 1991 to 13.0% in first half of 1992 respectively. The decline in money supply towards 1989 coupled with the steady drop in inflation helped stabilized the Nigerian Naira, which depreciated by only 8.1% in 1990. The real exchange rate appreciated by an average of 9.3% yearly between 1989 and 1990.

Olaloku et al (1979) maintained that monetary policy has facilitated economic growth and development through the supply of credit for development financing both in the public as well as private sectors through acquisition of government development stocks, bills, bank credits made available through direct loans, etc. In addition, he claimed that the policy of bringing down the cost of credit by reducing the Central Bank’s rediscount rate also aided (through indirect) development finance in the private sector. He also claimed that government heavy borrowing from the banking system to finance its huge budget deficits created strong inflationary presence which exerted a major disturbing influence on monetary policy, hence the limited success of monetary policy in the fulfillment of its objectives. In respect of the high rate of inflation and occasional balance of payments deficit, he held that the task of monetary policy has been made particularly difficult despite the wide powers of monetary control made available. This is because monetary policy had to operate in the context of what appeared to be a destabilizing fiscal policy such as what the government pursued during the period.

Hamburger and Zwich (1981) in their study on the impact of monetary policy on the performance of the Nigerian economy used the NISER econometric model of the Nigerian economy to assess and evaluate monetary policy in Nigeria. They brought forward the fact that up to the end of 1987, the government pursued a deflationary policy and that at the end of 1987, it was clear that the deflationary policies undermined the recovery of the economy even though certain aspects of the economy showed some improvement. The inflationary strategy of government in 1988, they claimed was not particularly successful as it tended to overheat the economy. The level of unemployment and inflation became very high as to negate whatever gains the structural adjustment was making. They also arrogated that instability in the foreign exchange market and the persistent decline of the value of the naira tended to make monetary policy impotent.

Aigbokhan (1995) and Ugbogu (1985) extended their analysis (on the effectiveness of monetary and fiscal policy) to other less developed countries (LDCs) to ascertain the relative effectiveness of monetary and fiscal policy. The evidence from these two studies showed that monetary policy has more powerful impact in some countries while fiscal policy is more powerful in others (Aigbokhan, 1995).

2.2 MONETARY POLICY BEFORE THE STRUCTURAL ADJUSTMENT PROGRAMME

In the 70s, the emphasis of monetary policy was the maintenance of domestic price stability, favourable balance of payments position, accelerating the pace of economic growth and development. During this period and up till the adoption of the Structural Adjustment Programme in 1986, the conduct of monetary policy in Nigeria relied mainly of direct control measures, involving the imposition of aggregate credit ceiling and selective sectoral control, interest rate control, cash reserve recruitments, exchange rate control and call for special deposits. The use of market-based instruments such as open market operations was not feasible because of the undeveloped structure of the financial market characterized by limited menu of money market instruments, fixed and inflexible interest rates and restricted participants in the market ([www.thisdayonline.com](http://www.thisdayonline.com) 16/5/2002)

The focus of sectoral bank credit allocation was to stimulate activities in the productive sectors of the economy, while interest rate ceilings were imposed to promote investments and output growth. Moreover, the imposition of compulsory deposits on banks, call for advance deposits on imports and issuance of stabilization securities were designed to curtail the ability of banks to expend credits in order to reduce pressures on domestic prices and balance of payments position.

However, the conduct of monetary policy came under severe pressure emanating mainly from increased government monetization of oil revenues and large fiscal deficits financed largely by the CBN. With the growth in government expenditure, including the award of large salary increases and significant bank credit expansion, the Nigerian economy experienced an accelerated growth of monetary aggregate during the 1970s. Consequently, inflation pressures intensified while output growth slowed down and the pressure on the external balance increased. More specifically, the federal government fiscal deficit increased to an average of 6.1% of nominal GDP annually in 1975 – 1979, GDP growth slowed from 10.3% in 1970 – 1974 to 6.4% in 1975 – 1979 while inflation rate accelerated from 10.4% to 20.3% during the same period. The balance of payments position swung from a comfortable surplus to deficit within the decade. In essence, the period witnessed bouts of macroeconomic instability fuelled by government spending.

As the oil boom of the 1970 came to an abrupt end, the overall economic environment under which monetary policy was conducted deteriorated in the mid 1980s. When the spot oil price from bonny light collapsed from US$38.82 per barrel in 1980 to US$30.0 per barrel in 1983 and further to US$14.16 per barrel in 1986, oil export earnings plummeted from US$25.47 billion in 1980 to US$11.76 billion in 1983 and further to US$6.89 billion in 1986, Consequently, government’s development strategy changed first, the direct control measure designed to reduce aggregate demand and restore external equilibrium were tightened ([www.thisdayonline.com](http://www.thisdayonline.com) 16/5/2002)

**2.3 MONETARY POLICY SINCE THE STRUCTURAL ADJUSTMENT PROGRAMME**

The period of the 80s was a period of foreign reserve conservation, a period of stringent monetary policy. Measures were embarked upon to slow down re-introduction of pre-shipment inspection of raw materials and spare parts. However, the objectives and instrument of monetary policy remained largely unchanged. The focus was still that of stimulating output, employment, growth as well as the promotion of domestic price stability and balance of payments stability. In particular, the direct monetary management framework was retained; it is relevant to note that the era of oil boom brought in its trail; two fundamensstal developments that had serious implications for macroeconomic management. These were the heavy dependence on the oil sector as the main source of foreign exchange earnings and government revenue, and the extraordinary expansion of the public sector and the unsustainable growth in government spending, arising from the massive investment in social, physical and economic infrastructure

In general, compliance with credit guidelines issued during the period was unsatisfactory. The macroeconomic environment remained generally under pressure, as the growth in domestic liquidity accelerated further with broad money (M2) rising at an average annual of 32.8% during the period. The expansion was spurred by the rapid increase in bank credit in the domestic economy, particularly to government.

 Although the impact of monetary policy on the overall economic performance is not easy to isolate, empirical evidence shows that there are links between the two. In the period under review, the objectives of monetary policy were in general not fully realized Real output and employment growth remained sluggish, averaging 0.9% annually between 1980-1985 and 2.99% between 1986-2001. The strong growth performance observed in 1985 and from 1988 to 1990 was not sustained. The inflationary pressure which were building up in the second half of the 1990s intensified, averaging 17.8% annually in the period 1980-1985 and 27.44% in 1986-2001 and reached an all time high of 72.8% in 1995. Also, the external sector came under severe pressure, resulting in the depletion of external reserves to a level less than the three months of imports conventionally accepted as the minimum ([www.thisdayonline.com](http://www.thisdayonline.com) 16/5/2002)

Since 1990s, series of reforms that commenced with the coming of the civilian government brought renewed hope for the economy. These included privatization of government enterprises, implementation of structural reforms and vigorous external public image enhancing policy measures. In the year 2000, monetary policy focused on maintaining internal and external balance as well as achieving a single digit inflation rate by curtailing the growth of excess liquidity in the banking system, enhancing the viability of the external sector and sustaining the stability of the financial system. There were reasonable fiscal constraint and as expected, there were some savings from the earnings from crude oil. Early in 2001, against advice, the government decided to spend the savings made in 2000 even though the receipt from was still good. During that year, the external sector experienced renewed pressure resulting in a lower overall balance of payments surplus of N29.2 billion or 0.5% of GDP in contrast to the 6.3% recorded in 2000. Similarly, the level of external reserve rose by 5.5% compared with 81.1% recorded in the preceding year. These developments posed serious challenges to macroeconomic management and exchange rate policy.

In 2006, the objective of monetary policy was price stability and non inflationary growth as enunciated in the National Economic Empowerment Development Strategy (NEEDS). The target for a single digit inflation was however, achieved in December 2006 when inflation stood at 8.5%. The growth rate in 2006 declined to 5.63% compared with what was obtained in 2005 when it stood at 6.51%, but the external reserves rose rapidly from $US28.3 billion to $US41.9 billion, representing an increase of $US13.6 billion. At the end of 2006, the overall performance indicated that the broad money supply (M2) target was overshot as it grew by 30.6% compared with the target of 27.8%. The reserve money target for December 2006 was missed. The actual reserve money at the end of December 2006, stood at N947.9 billion, compared with the target of N820 billion. The non attainment of the actual reserve money target at the end of December was largely due to the rapid growth of currency in circulation.

3.0 MODEL SPECIFICATION

The series comprise annual observations from the period of 1970-2012 in Nigeria. While the selected macroeconomic (dependent) variables include Gross Domestic Product (GDP), Inflationary Rate (INF), Unemployment Rate (UNEMP) and Balance of Payment (BOP); the independent variables were Money supply (MSS), Exchange Rate (EXR) and Real Interest Rate (RIR) which were the monetary policy instruments adopted. All data were extracted from the International Monetary Fund (IMF) data bank (available online: <http://data.worldbank.org>) and various volumes of the Central Bank of Nigeria Bulletin.

Thus, the estimated macro econometric models are expressed as follows:

 Log(GDP)= *β0 + β1* log(MSS)+ *β2* log(EXR) + *β3* RIR + ɛt (1)

 Log(INF)= *β0 + β1* log(MSS)+ *β2* log(EXR) + *β2* RIR + ɛt (2)

 Log(UNEMP)= *β0 + β1* log(MSS)+ *β2* log(EXR) + *β2* RIR + ɛt (3)

BOP= *β0 + β1* MSS+ *β2* EXR + *β2* RIR + ɛt (4)

While *β1, β2, and β3* are the parameters of the independent variables, *β0* and ɛt are the constant white noise error terms respectively.

**3.1 Method of Analysis**

To avoid a spurious regression, this paper will first check the stationarity property of each variable by employing the Augmented Dickey-Fuller (ADF) (Dickey and Fuller, 1981) unit root tests. Next, a multivariate Johansen cointegration test (Johansen, 1988; Johansen and Juselius, 1990) is used to analyze the presence of the long-run equilibrium relationship between the variables in all four specified models. The conditions (i.e stationarity of variables and at least one co-integrating equation) for estimating an error correction model must thus be satisfied.

**4.2 Empirical Findings and Discussion of Results**

**4.2.1Unit Root Test**

Table 1 below shows the result of the ADF test conducted on all the variables considered in this paper. The result shows that while two variables (i.e RIR and INF) were stationary at levels {i.e (0)}, EXR, MSS, GDP, UNEMP and BOP were all stationary at first difference.

**Table 1: Stationarity Test Results**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **MSS** | **EXR** | **RIR** | **GDP** | **INF** | **UNEMP** | **BOP** |
| Test Statistics | -4.076248\* | -6.186297\* | -6.349097 | -4.840449\* | -3.753057 | -7.346132\* | -6.992160\* |
| Critical Value at 5% | -3.526609 | -3.523623 | -2.933158 | -3.552973 | -2.933158 | -1.949097 | -3.533083 |
| Order of Integration | I (1) | I (1) | I (0) | I (1) | I (0) | I (1) | I (1) |

Note: \* represent test statistics that are significant at first difference.

**4.2.2 Cointegration Test**

**Table 2: Johansen Cointegration Test Results**

|  |  |  |
| --- | --- | --- |
|  | Trace Test k=2 | Maximum Eigenvalue Test k=2 |
|  | Trace Statistics | Critical Values (5%) | No. of CE(s) | Trace Statistics | Critical Values (5%) | No. of CE(s) |
| GDP Model | 60.00407\* | 47.85613 | 1 | 30.47237\* | 27.58434 | 1 |
| INF Model | 69.62173\*30.05519\* | 47.8561329.79707 | 2 | 39.56653\*22.12347\*  | 27.5843421.13162 | 2 |
| UNEMP Model |  59.33393\* | 47.85613 | 1 | 44.25053\* | 27.58434 | 1 |
| BOP Model | 74.96985\* 38.91264\* | 47.85613 29.79707 | 2 | 36.05721\* 29.44899\* | 27.58434 21.13162 | 2 |

Note: \* denotes rejection of the null hypothesis at the 5% level.

In view of the fact that the series for the estimated models are co-integrated, we proceed to fit the error correction model for the four models.

**4.2.3 Error Correction Mechanism**

**Table 3: Growth Model**

|  |  |  |  |
| --- | --- | --- | --- |
| **Variables** | **Coefficient** | **t-statistics** | **Probability** |
| C | -0.012364 | -0.559861 | 0.5797 |
| DLOG(GDP(-1)) | 0.432700 | 2.537729 | 0.0166 |
| DLOG(MSS) | 0.232044 | 4.050119 | 0.0003 |
| DLOG(MSS(-1)) | -0.260658 | -3.865681 | 0.0006 |
| DLOG(MSS(-2)) | 0.174120 | 2.889315 | 0.0071 |
| DLOG(EXR) | -0.021753 | -0.784606 | 0.4388 |
| D(RIR) | 0.000757 | 1.872897 | 0.0709 |
| ECM(-1) | -0.138502 | -1.487823 | 0.1472 |
|  R2=0.454491; F-statistics= 3.570641; DW=1.780167 |

The result in table 3 above shows that the growth model is statistically significant with a f-statistics of 3.57. Additionally, the Durbin-Watson (i.e. DW) statistics of 1.78 proved that there is minimal serial autocorrelation in the growth model. Furthermore, only money supply proved to be a significant (i.e. P ˂ 0.05) instrument that explains economic growth in Nigeria between 1970 and 2012. The negative sign and coefficient of the residual (i.e. ECM) meets the requirement for short-run adjustment to long-run equilibrium.

**Table 4: Inflation Model**

|  |  |  |  |
| --- | --- | --- | --- |
| **Variables** | **Coefficient** | **t-statistics** | **Probability** |
| C | -0.319583 | -2.060670 | 0.0478 |
| DLOG(INF(-2)) | -0.180969 | -1.641136 | 0.1109 |
| DLOG(MSS) | -0.606790 | -1.129631 | 0.2673 |
| DLOG(MSS(-1)) | 1.818307 | 3.454043 | 0.0016 |
| DLOG(EXR) | -0.343886 | -1.333979 | 0.1919 |
| DLOG(EXR(-2)) | 0.898248 | 3.765449 | 0.0007 |
| D(RIR) | -0.021090 | -4.742079 | 0.0000 |
| D(RIR(-1)) | -0.005611 | -1.367648 | 0.1813 |
| ECM(-1) | -0.599645 | -4.882141 | 0.0000 |
|  R2=0.735614; F-statistics= 10.78162; DW=1.578924 |

The inflation rate model, as shown in table 4 above, shows that all the selected monetary policy instruments were statistically significant at 5% level. This implies that monetary policy instruments of money supply, exchange rate and real interest rate significantly influence inflationary rate in Nigeria during the period under review. The inflation model is statistically significant with a f-statistics of 10.78. Additionally, the Durbin-Watson (i.e. DW) statistics of 1.59 proved that there is minimal serial autocorrelation in the growth model. The sign and coefficient of the ECM confirms the adjustment from short-run to long-run equilibrium dynamics.

**Table 5: Unemployment Model**

|  |  |  |  |
| --- | --- | --- | --- |
| **Variables** | **Coefficient** | **t-statistics** | **Probability** |
| C | -0.063839 | -0.841450 | 0.4065 |
| DLOG(UNEMP(-1)) | 0.153252 | 0.891714 | 0.3794 |
| DLOG(UNEMP(-2)) | 0.226935 | 1.410984 | 0.1682 |
| DLOG(MSS) | 0.286228 | 1.089453 | 0.2844 |
| DLOG(EXR) | 0.762726 | 5.084122 | 0.0000 |
| DLOG(EXR(-1)) | -0.387906 | -1.995492 | 0.0548 |
| DLOG(EXR(-2)) | -0.306919 | -1.655783 | 0.1079 |
| D(RIR) | 0.002980 | 1.432544 | 0.1620 |
| ECM(-1) | -0.129682 | -1.471268 | 0.1513 |
|  R2=0.599708; F-statistics= 5.805442; DW=2.206051 |

The empirical analysis in table 5 provides us with an insight on the impact of monetary policy on the level of unemployment in Nigeria between 1970 and 2012. Exchange rate, among the other selected monetary policy instruments, proved to statistically significant. This implies that only exchange rate significantly influence the level of unemployment in Nigeria. A Durbin-Watson statistics of 2.20 and F-statistics of 5.80 confirms the absence of autocorrelation and statistical significant of the model respectively.

**Table 6: Balance of Payments Model**

|  |  |  |  |
| --- | --- | --- | --- |
| **Variables** | **Coefficient** | **t-statistics** | **Probability** |
| C | 7457.058 | 0.102521 | 0.9190 |
| D(BOP(-1)) | 0.272691 | 1.381414 | 0.1770 |
| D(BOP(-2)) | 0.628821 | 4.660934 | 0.0001 |
| D(MSS) | 0.754545 | 4.378670 | 0.0001 |
| D(MSS(-1)) | -0.618883 | -2.825172 | 0.0082 |
| D(EXR) | -8898.642 | -1.666979 | 0.1056 |
| D(EXR(-2)) | -7457.144 | -1.395280 | 0.1728 |
| D(RIR(-1)) | -7327.416 | -2.270540 | 0.0303 |
| ECM(-1) | -0.794804 | -3.597912 | 0.0011 |

R2=0.720822; F-statistics= 10.00503; DW= 2.556160

The explanatory variables (i.e. the monetary policy instruments) sufficiently explained the variation in balance of payments as shown by a R-Squared value of 0.72 in table 6. Money supply and real interest rate significantly influenced the balance of payments position of Nigeria between 1970 and 2012. A Durbin-Watson statistics of 2.57 and F-statistics of 10.00 is an evidence of a balance of payments model that is free of autocorrelation and also statistical significant.

The empirical results show that at least one of the selected monetary policy instruments significant affected the selected macroeconomic variables as shown in all the specified models. Monetary policy has therefore proven to be a potent tool for enhancing macroeconomic variables and at large the economy.

5.0 CONCLUSION AND RECOMMENDATIONS

The study examines the impact of monetary policy on selected macroeconomic variables (gross domestic product, inflation, unemployment and balance of payments) from 1979-2012. The analysis employs the ADF-test to avoid unit root problems and also the Johansen co-integration test was conducted to show that there is a long run relationship between the dependent variables (gross domestic product, inflation, unemployment and balance of payments) and independent variables (money supply, exchange rate and real interest rate). The result shows that there is a long run relationship between the variables. From the analysis of the results, the study shows that monetary policy has shown a moderate influence on the selected macroeconomic indicators to some extent and also proves to be relatively effective. Based on this, the following recommendations were made: Also, it is worthy to note that no monetary policy can be effective if it is not complemented with an effective fiscal policy

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**APPENDIX**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **RIR** | **MSS** | **EXR** | **GDP** | **INF** | **UNEMP** | **BOP** |
| -29.26951735 | 979.30 | 0.71 | 182235.83 | 13.76 | 4.80 | 46.60 |
| 5.576788732 | 1041.90 | 0.71 | 208181.71 | 16.00 | 5.30 | 117.40 |
| 3.991658474 | 1204.20 | 0.66 | 215185.49 | 3.46 | 5.20 | 57.20 |
| 1.569257786 | 1370.10 | 0.66 | 226789.93 | 5.40 | 5.20 | 197.50 |
| -25.6667594 | 2592.20 | 0.63 | 252101.21 | 12.67 | 4.60 | 3102.20 |
| -13.96816185 | 4035.10 | 0.62 | 238922.00 | 33.96 | 3.80 | 157.50 |
| -6.867482824 | 5707.70 | 0.63 | 260526.17 | 24.30 | 4.30 | 339.00 |
| -4.257604524 | 7675.30 | 0.64 | 276220.57 | 15.09 | 4.90 | -527.20 |
| -6.28956771 | 7521.00 | 0.64 | 260298.78 | 21.71 | 5.30 | 1293.60 |
| -3.319853087 | 9848.80 | 0.60 | 277893.49 | 11.71 | 5.10 | 1868.90 |
| -3.547418144 | 14389.90 | 0.55 | 289578.45 | 9.97 | 6.40 | 2402.20 |
| -8.055418796 | 15238.90 | 0.62 | 251562.93 | 20.81 | 5.20 | -3020.80 |
| 5.355616728 | 16693.50 | 0.67 | 250972.53 | 7.70 | 4.30 | -1389.30 |
| -3.580512853 | 19034.20 | 0.72 | 237684.83 | 23.21 | 6.40 | -301.30 |
| -5.449597284 | 21242.70 | 0.77 | 226232.36 | 17.82 | 6.20 | -354.90 |
| 5.009445134 | 23153.00 | 0.89 | 248187.66 | 7.44 | 6.10 | 349.10 |
| 10.6671969 | 23605.20 | 1.75 | 254426.05 | 5.72 | 5.30 | -5667.70 |
| -24.25469954 | 28895.40 | 4.02 | 252644.16 | 11.29 | 7.00 | -18264.80 |
| -3.050044422 | 38405.80 | 4.54 | 277654.63 | 54.51 | 5.10 | -20795.00 |
| -16.38815194 | 43370.90 | 7.36 | 297646.65 | 50.47 | 4.50 | -22993.50 |
| 10.0019365 | 57553.63 | 8.04 | 322041.81 | 7.36 | 3.50 | -5761.90 |
| 7.590990778 | 79067.30 | 9.91 | 337356.81 | 13.01 | 3.10 | -15796.60 |
| -23.9306517 | 129085.47 | 17.30 | 347201.66 | 44.59 | 3.50 | -101404.90 |
| 4.48599768 | 198479.20 | 22.07 | 354838.30 | 57.17 | 3.40 | 42060.60 |
| -8.772398134 | 266944.89 | 22.00 | 355193.14 | 57.03 | 3.20 | -42623.30 |
| -41.98359694 | 318763.47 | 21.90 | 364072.97 | 72.84 | 1.90 | -195216.30 |
| -10.30851716 | 370333.53 | 21.88 | 379728.11 | 29.27 | 2.80 | -53152.00 |
| 16.49755608 | 429731.33 | 21.89 | 389980.77 | 8.53 | 3.40 | 1077.70 |
| 24.26235066 | 525637.73 | 21.89 | 397310.22 | 10.00 | 3.50 | -220675.10 |
| 3.408360355 | 699734.50 | 92.34 | 401682.13 | 6.62 | 17.50 | -326634.30 |
| -10.25001804 | 1036079.55 | 101.70 | 423372.96 | 6.93 | 13.10 | 314139.20 |
| 22.28285205 | 1309364.18 | 111.23 | 436497.53 | 18.87 | 13.60 | 24738.70 |
| -12.73342366 | 1555800.90 | 120.58 | 443258.54 | 12.88 | 12.60 | -565353.30 |
| 8.560264419 | 1766010.90 | 129.22 | 488914.16 | 14.03 | 14.80 | -162839.70 |
| -1.281265508 | 2131169.43 | 132.89 | 540739.07 | 15.00 | 13.50 | -1128379.40 |
| -1.513291849 | 2612891.13 | 131.27 | 569938.98 | 17.86 | 11.90 | 1364854.50 |
| -2.214392483 | 3562695.90 | 128.65 | 605337.99 | 8.24 | 12.30 | 1458302.00 |
| 11.76406583 | 5857671.09 | 125.81 | 647540.39 | 5.38 | 12.70 | 3478374.80 |
| 4.190483705 | 8983328.69 | 118.55 | 688142.88 | 11.58 | 14.90 | 3450585.70 |
| 23.70649656 | 10289794.74 | 148.90 | 735861.57 | 11.54 | 19.70 | 2057949.30 |
| -7.231326702 | 11315551.78 | 150.30 | 793551.20 | 13.72 | 21.10 | 1993003.10 |
| 12.41647443 | 12802675.85 | 154.74 | 847444.27 | 10.84 | 23.90 | 1336791.70 |
| 14.87001014 | 15032375.54 | 156.81 | 902793.98 | 12.22 | 19.90 | 2209582.50 |