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Evaluation of Monetary Policy Outcomes and Its Effect on Price Stability in Nigeria

Okwo, Ifeoma Mary Ph.D[1*], Eze, Felicia[1] and Nwoha, Chike Ph.D[1*]

1. Department of Accountancy, Faculty of Management Sciences, Enugu State University of Sciences and Technology, Enugu State, Nigeria.

* E-mail of the corresponding author: ifeomaokwo@yahoo.com.

Abstract

This study examined the effect of monetary policy outcomes on macroeconomic stability in Nigeria. Data was gathered for a time frame of 1985 to 2010 from the CBN statistical bulletin. A simplified ordinary least squared technique stated in multiple forms was applied to the data after ensuring data stationarity. At 5% significant level, none of the variables are statistically significant. The insignificant statistics between monetary policy, gross domestic product, credit to the private sector, net credit to the government and inflation in Nigeria, suggest that monetary policy as a policy option may have been inactive in influencing price stability. These considerations suggest that sound fiscal policies will be an important component of the policy mix if the move to price stability is to be sustained and credible.

Keywords: Monetary policy; price stability; fiscal policy; money supply.

1. Introduction

For many countries, the objectives of monetary policy are explicitly stated in the laws establishing the central bank, while for others they are not. The objectives of monetary policy may vary from country to country but there are two main views. The first view calls for monetary policy to achieve price stability, while the second view seeks to achieve price stability and other macroeconomic objectives. The Central Bank of Nigeria, like other central banks in developing countries, achieves the monetary policy goal through the amount of money supplied. CBN (2006) defines money supply as comprising narrow and broad money. The definition of narrow money (M1) includes currency in circulation with non-bank public and demand deposits or current accounts in the banks. The broad money (M2) includes narrow money plus savings and time deposits, as well as foreign denominated deposits. The broad money measures the total volume of money supply in the economy. Thus, excess money supply (or liquidity) may arise in the economy when the amount of broad money is over and above the level of total output in the economy.

The general task of a central bank is to administer a national monetary policy within the terms of the economic objectives and consideration laid down by the government. In pursuance of these objectives, the Central Bank of Nigeria (CBN) generally has the core mandate of maintaining internal and external value of the currency. In the domestic economy, this translates to keeping inflation low, maintaining low interest rate, ensuring a good Gross Domestic Product value, all for economic stability. Therefore, monetary policy is a tool for macroeconomic management though its application varies from country to country and produces different results. Monetary policy is one of the tools of controlling money supply in an economy of a nation by the monetary authorities in order to achieve a desirable economic growth. Monetary policies are effective only when economies are characterized by well-developed money and financial markets like in the developed economies of the world. This is where a deliberate change in monetary variable influences the movement of many other variables in the monetary and macroeconomic variables.

Monetary policy consists of a Government's formal efforts to manage the money in its economy in order to realize specific economic goals. Monetary Policy refers to the specific actions taken by the Central Bank to regulate the value, supply and cost of money in the economy with a view to achieving Government's macroeconomic objectives. Three basic kinds of monetary policy decisions can be made:- the amount of money in circulation; the level of interest rate; and the functions of credit markets and the banking system (Ogunjimi, 1997). The combination of these measures is designed to regulate the value, supply and cost of money in an economy, in line with the level of

economic activity. Excess supply of money will result in an excess demand for goods and services, prices will rise and balance of payments will deteriorate. The most popular instrument of monetary policy was the issuance of credit rationing guideline, which primarily set the rates of change for the components and aggregate commercial bank loans and advances to the sector. The sectoral allocation of bank credit in CBN guidelines was to stimulate the productive sector and thereby stem inflationary pressures. The fixing of interest rates at relatively low levels was done mainly to promote investment and growth. Occasionally, special deposits were imposed to reduce the amount of free reserves and credit-creating capacity of the banks.

The challenges of monetary policy management rest wholly on CBN which has over the years been committed to its effective control. Although the performances of monetary authority in the area of financial institutions stability seemed to have improved greatly in recent times, microeconomic indicators of interest rate and inflation have remained at immoderate levels. This is why the huge increases in the country's economic growth have failed to translate into high standard of living for the citizenry.

<Insert Fig. 1>

A look at the graphical representation of interest and inflation rates in Nigeria shows that the two economic variables have been on a double-digit value averagely over the period. In the last ten years, inflation in Nigeria has remained above 10% except in 2004, an inflation rate of 23.8% was recorded but to of 8.5% and 6.6% in years 2006 and 2007 respectively. However, an inflation rate of 15.1% was recorded in 2008 while the period closed at 11.8% in 2010. Interest rate on the other hand averaged 20% in the last ten years rising to 24.85% in 2003, dropped to 18.7% three years later, but increased to above 22% in 2009 and 2010. Naira exchange rate against the US dollar has been on a steady rise closing the period at 150.60 NGN. In the same vein, the consumer price index (CPI) is not left out in the steady increase. In 2005, consumer price index and exchange rate crossed themselves at one hundred and thirty naira averagely. However, while the consumer price index ended the period at 216.00 NGN, exchange rate closed the period at 150.60 NGN.

Although macroeconomic policies have been said to have improved enormously in developing countries the expected growth benefit failed to materialize. Instead a series of financial crisis, severely depressed growth and macroeconomic instability has been the case. Conceptually, a macroeconomic environment that is less predictable is of concern because unpredictability can prevent allocation decision, investment and growth. Although in Nigeria, appreciable progress has been made in this regard since the introduction of various financial sector reform programs after 1986, the effect is yet to reflect on the country's specific microeconomic variables such as interest rate and inflation. Despite the foregoing, the Nigerian monetary policy has continued to face several challenges and thereby not achieving it's objectives. This paper therefore, tends to evaluate if the Nigerian monetary policies have a positive effect on economic growth. This paper is structured into five sections. Section one presents the introduction, while section two reviews related literature. Methodological framework is in section three while section four presents the analysis and findings. Conclusion and recommendations are presented in section five.

2. Review of Related Literature.

The theoretical framework of this study is the monetarist propositions on existence of inflation and prices instability in an economy as is the case in Nigeria. Therefore, interrelationship between prices and money is perceived and conceptualized. The propositions are based on the propositions of (Okwu, Obiakor, Falaiye, and Owolabi, 2011) that: (i) exogenous changes in the money stock lead to equivalent percentage changes in the overall price level under conditions of stable money demand; (ii) that if cash (money) forms one-half of all transactions in the economy then a doubling of the amount of cash in the economy must result eventually, ceteris paribus, in the prices of all goods traded within the economy increasing twofold. These responses of prices to money changes then suggest a testable hypothesis about monetary policy and price stability. The need to regulate money supply is based on the knowledge that there is a stable relationship between the quantity of money supplied and economic activity and that if its supply is not limited to what is required to support productive activities, it will result in undesirable effects such as high prices or inflation. The contribution that monetary policy makes to sustainable growth is the maintenance of price stability (CBN, 2006). Since sustained increase in price levels is adjudged substantially to be a monetary phenomenon, monetary policy uses its tools to effectively check money supply with a view to maintaining price

stability in the medium to long term. Theory and empirical evidence in the literature suggest that sustainable long term growth is associated with lower price levels. In other words, high inflation is damaging to long-run economic performance and welfare. Monetary policy has far reaching impact on financing conditions in the economy, not just the costs, but also the availability of credit, banks' willingness to assume specific risks, etc. It also influences expectations about the future direction of economic activity and inflation, thus affecting the prices of goods, asset prices, exchange rates as well as consumption and investment.

The role money plays in an economy is a subject of great controversy among contemporary economists. Demand for money changes interest rate and changes in interest rates affect demand for investment which in turn determines income variation. Interest rate is a determinant of aggregate economic activity. Money on the other hand affects the volume of aggregate expenditure directly through the availability of credit or indirectly through its effect on the level of interest. Low interest rates leads to growth of money supply and this growth is correlated with high inflation. Monetary policy refers to the combination of measures designed to regulate the value, supply and cost of money in an economy, to match with the level of economic activities. It can also be described as the act of controlling the direction and movement of monetary policy instrument and credit facilities in pursuance of stable price and economic growth in an economy (CBN 1992). For most economys, the objective of monetary policy includes: the achievement of price stability with respect to both domestic and external prices. This is done through the use of policy instrument. On the other hand exchange rate policies are used as tool in ensuring external stability thereby promoting export performance in the economy (Neaime, 2008). Price stability can also be maintained through fixing of interest rate, through direct controls, and ceiling on the growth of bank lending. In summary, monetary policy in the Nigerian context refers to the actions of the Central Bank of Nigeria to regulate money supply, so as to achieve the ultimate macroeconomic objectives of government. Several factors influence money supply, some of which are within the control of the central bank, while others are outside its control. The specific objective and the focus of monetary policy may change from time to time, depending on the level of economic development and economic fortunes of the country. The choice of instrument to use to achieve what objective would depend on these and other circumstances. These are the issues confronting monetary policy makers. Despite the various monetary regimes that have been adopted by the Central Bank of Nigeria over the years, macroeconomic factors still remain a major threat to Nigeria's economic growth.

Generally, low and stable inflation has become the core mandate for most central banks across the globe for the obvious reasons that inflation has cost on the economy. These costs include macroeconomic costs in which producers may mistake a general price increase, unwanted expansion of capacity which borrowers and savers may not know the real rate of interest (Okafor, 2009). According to Fakiyesi (1996) inflation depends on growth in broad money (M2) the rate of exchange (TRE) of the naira vis-à-vis the dollar($), the growth of real income (GRI) or (Y), the level of rainfall (R) and the level of anticipated inflation which is based on the previous years level of inflation. In other respects the cause of inflation may also be evidenced by the worsening terms of external trade experienced by the country. It is possible therefore that Nigeria's inflationary episodes were preceded by structural or real factors followed by monetary expansion. Structural factors have proven to be important in the inflation spiral. Reduction in oil revenue led to a reduction in real income, with serious distributional implications.

Exchange rate fluctuations induce changes in the relative prices of goods and services, as well as spending pattern of households and firms, especially if a proportion of wealth is held in foreign currencies. An increase in the exchange rate will have opposite effect, with dearer exports and cheaper imports. The strength of the exchange rate channel, however, depends on the responsiveness of the monetary shocks. The degree of openness of the economy and the exchange expansionary monetary policy depreciate domestic currencies and increase the prices of imported goods. According to Ball (2002), the most reasonable alternative to policy of fixed exchange rate are inflation targeting and price level targeting since movement in exchange rate typically, feed quickly into prices levels in emerging economics, or at least do so a lot quicker than exchange rate channel of monetary policy can influence output prices. Ganev et al (2002) for example, studied the effects of monetary shocks in ten Central and Eastern European (CEE) countries and find some indication that changes in the exchange rate affect output but find no evidence that suggests that changes in interest rate affect output.

The output of an economy typically measured by Gross Domestic Product is determined by its economic resources-the size and skill of its workforce and the size and technological productivity of its capital stock. Gross Domestic Product represent the total monetary value of goods and services produced within a country over a year. It is used to

determine the wealth of a country. The growth rate of economic output therefore will depend on the growth rate of these resources-physical capital and human capital as well as changes in the underlying productivity of these general inputs in the economy. Gross Domestic Product of a country can be maintained through the use of policy tools. The achievement of these policy tools indicates that ultimate aim of the government's economic policies has been achieved.

2.1. Evaluation of Monetary Policy in Nigeria between 1986 and 2010.

The implementation of the structural adjustment programme (SAP) in 1986 and de-regulation of financial sector in Nigeria offered a lot of policy change in monetary policy development in Nigeria. The deregulation brought an establishment of exchange markets in 1986. In 1987, there was a removal of interest rate, unification of foreign exchange markets and liberalization of bank licensing. The third high inflation episode started in the last quarter of 1987 and accelerated through 1988 to 1989. This episode is related to the fiscal expansion that accompanied the 1988 budget. In 1989, banks were permitted to pay interest on demand deposits, ban on credit extension based on foreign exchange deposits. In 1990, a uniform accounting standards was introduced for banks while a stabilization security to mop up excess liquidity was also introduced. In 1991, inflation fell reaching one of its lowest points in 1991 i.e 13% (CBN 2009). There was an embargo on bank licensing while the administration of interest rate was introduced. Central Bank was also empowered to regulate and supervise all financial institutions in the economy. In 1992, privatization of government-owned banks commenced, credit control was removed in 1993, indirect monetary instrument were introduced while in 1994, re-imposition of interest and exchange rate controls were made. In 1997, the minimum paid up capital of merchant and commercial bank was further raised to a uniform level of N500million. In 2001, universal banking system was introduced. In 2005, CBN compelled all commercial banks to raise their capital base from N2billion toN25billion. In 2006, the CBN introduced a new monetary policy implementation framework (Monetary Policy Rate (MPR) to replace the minimum Re-discount Rate (MRR). The various policies initiated were to bring about stability in the macroeconomic variables. Overall, the CBN's amended Act granted the Bank more discretion and autonomy in the conduct of monetary policy. Consequently, the focus of monetary policy during this period shifted significantly from growth and developmental objectives to price stability. The operational framework for indirect monetary policy management involved the use of market (indirect) instruments to regulate the growth of major monetary aggregates. Under this framework, only the operating variables, the monetary base or its components are targeted, while the market is left to determine the interest rates and allocate credit. Essentially, the regime involves an econometric exercise, which estimates (ex ante) the optimal monetary stock, which is deemed consistent with the assumed targets for GDP growth, the inflation rate and external reserves. Thereafter, market instruments are used to limit banks' reserve balances as well as their credit creating capacity.

2.2. Instruments of monetary policy under the regime

The major instrument of indirect monetary control in Nigeria is the Open Market Operations (OMO). To date this instrument has been complemented by reserve requirements, CBN securities, as well as moral suasion.

2.2.1.Open Market Operations

The OMO was introduced at the end of June 1993 and is conducted wholly on Nigerian Treasury Bills (NTBs), including repurchase agreements (repos). The OMO entails the sale or purchase of eligible bills or securities in the open market by the CBN for the purpose of influencing deposit money, banks' reserve balances, the level of base money and consequently the overall level of monetary and financial conditions. In this transaction, banks subscribing to the offer, through the discount houses, draw on their reserve balances at the CBN thereby reducing the overall liquidity of the banking system and the banks' ability to create money via credit. In implementing the OMO, the Research Department of the CBN advises the trading desk at the Banking Operations Department, also of the CBN, on the level of excess or shortfall in bank reserves. Thereafter, the trading desk decides on the type, rate and tenor of the securities to be offered and notifies the discount houses 48 hours ahead of the bid date. The highest bid price (lowest discount rate quoted) for sales and the lowest price offered (highest discount offer) for purchases, with the desired size or volume, is then accepted by the CBN.

2.2.2. Reserve requirement

The CBN complements the use of OMO with a reserve requirement. In this connection, the reserve requirement is an instrument for liquidity management and for prudential regulation. The reserve requirements are the Cash Reserve

Ratio (CRR) and the Liquidity Ratio (LR). While the former is defined as a proportion of the total demand, savings and time deposits which banks are expected to keep as deposits with the CBN, the latter refers to the proportion of banks' liquid assets to their total deposit liabilities. The CRR and liquidity ratio have been progressively increased or decreased depending on the complementary role the monetary authority tends to achieve.

2.2.3. Discount window operations

The CBN discount window facilities were established strictly in line with the "lender of last resort" role, that the Bank is expected to play. Accordingly, it has continued to provide loans of a short-term nature (overnight) to banks in need of liquidity. The facilities are collateralised by the borrowing institution's holding of government debt instruments and any other instrument approved by the CBN and subject to a maximum quota. The Minimum Rediscount Rate (MRR) is the nominal anchor, which influences the level and direction of other interest rates in the domestic money market. Its movements are generally intended to signal to market operators the monetary policy stance of the CBN.

2.2.4. Moral suasion

The CBN adopts this approach as a means of establishing two-way communication with the banks, thereby creating a better environment for the effectiveness of monetary policy. The main avenue of contact is the Bankers' Committee, which meets two-monthly. This dialogue with banks was further expanded in November 2000 to include other stakeholders comprising key government officials, financial market operators, academics, etc, under the umbrella of the Monetary Policy Forum. The objective of the Forum is to enhance the transparency of the Bank's monetary policy-making process.

Empirical studies of monetary policy in Nigeria recorded varying results. Abata, Kehinde and Bolarinwa (2012) assesses how fiscal and monetary policies influence economic growth and development in Nigeria. They argued 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 exists 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. Amassoma, Nwosa and Olaiya (2011) appraised monetary policy development in Nigeria and also examined the effect of monetary policy on macroeconomic variables in Nigeria for the period 1986 to 2009. Adopting a simplified Ordinary Least Squared technique after conducting the unit root and co-integration tests, the findings showed that monetary policy have witnessed the implementation of various policy initiatives and has therefore experienced sustained improvement over the years. The result also shows 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. The implication of this finding is that monetary policy has had a significant influence in maintaining price stability within the Nigeria economy. The study concluded that for monetary policy to achieve its other macroeconomic objective such as economy growth; there is the need to reduce the excessive expenditure of the government and align fiscal policy along with monetary policy measure. Okwu, Obiakor, Falaiye, and Owolabi (2011) examined the effects of monetary policy innovations on stabilization of commodity prices in Nigeria. Consumer price index (CPI), broad money aggregates (BMA) and monetary policy rate (MPR) were applied to a multiple regression model specified on perceived functional link between the indicators of Central Bank of Nigeria's monetary policy innovations and commodity prices indicator. The result showed that positive relationship existed between the respective indicators of monetary policy innovations and indicators of commodity prices; monetary policy rate had more immediate effect than broad money on consumer price index, and that commodity prices responded more to monetary policy rates than to broad money aggregates; although both broad money and monetary policy rate exerted positive effect on commodity prices, only broad money exerted significant effect at 0.05 level of significance. However, overall effect of both on commodity prices was statistically significant. Consequently, the study recommended, among other things, that the Central Bank of Nigeria should always determine optimal mix of both policy variables to ensure stabilization of consumer goods and other commodity prices, and engender confidence in the Bank's monetary policy. Abiodun and Tokunbo (2006) examined the efficacy of monetary policy in controlling inflation rate and exchange rate instability. The analysis performed is based on a rational expectation framework that incorporates the fiscal role of exchange rate. Using quarterly data spanning over 1980: 1 to 2000: 4, and applying time series test on the data used, the paper shows that the effort of monetary policy at influencing the finance of government fiscal

deficit through the determination of the inflation tax rate affects both the rate of inflation and the real exchange rate, thereby causing volatility in their rates. The paper reveals that inflation affects volatility of its own rate, as well as the rate of real exchange. The policy import of the paper is that monetary policy should be set in such a way that the objective it is to achieve is well defined. Mbutor (2010) evaluated the role of monetary policy in enhancing remittances for economic growth. The vector autoregressive methodology is applied with two stage deductions. The monetary policy rate first impacts intervening variables- exchange rate, interest rate, inflation etc- which in turn impact remittance flows. The data set were tested for temporal properties, including unit roots and co-integration. Preliminary evidence shows that domestic economic prosperity increases remittances to Nigeria, while exchange rate depreciation depresses remittances. The latter outcome reflects remitters' perception that a stronger Naira is a sign of things-getting-better-back-home. Hameed, Khaid and Sabit (2012) presented a review of how the decisions of monetary authorities influence the macro variables like GDP, money supply, interest rates, exchange rates and inflation. The method of least square OLS explains the relationship between the variables under study. Tight monetary policy with balanced adjustments in independent variables shows a positive relationship with dependent variable. Ajisafe and Folorunso (2002) note that the relative effectiveness of monetary and fiscal policy on economic activity in Nigeria was determined through cointegration and error correction modeling techniques. The time series properties of the variables were investigated by conducting a unit root test using annual series data for the period 1970-1998 and the data source was mainly CBN Statistical Bulletin. The result of our analysis shows that monetary rather than fiscal policy exerts a great impact on economic activity in Nigeria. The emphasis on fiscal action of the government has led to greater distortion in the Nigerian economy. Ajisafe and Folorunso (2002) are, however, of the opinion that both monetary and fiscal policies should be complementary.

Elsewhere, Jonathan and Phil (2006) investigated the impact of monetary policy on the exchange rate using an event study with intraday data for four countries. Carefully selecting the sample periods ensures that the policy change is exogenous to the exchange rate. An unanticipated tightening of 25 basis points leads to a rapid appreciation of around 0.35 percent. We also show that the impact depends on how the surprise affects expectations of future monetary policy. If expectations of future policy are revised by the full amount of the surprise, then the impact on the exchange rate is larger (0.4 percent) than if the surprise only brings forward an anticipated change in policy (0.2 percent). Masagus, Henri, Peter and Piet (2010) present the findings of a meta-analysis identifying the causes of variation in the impact of monetary policies on economic development. The sample of observations included in their meta-analysis is drawn from primary studies that uniformly employ Vector Autoregressive (VAR) models. Their findings reveal that capital intensity, financial deepening, the inflation rate, and economic size are important in explaining the variation in outcomes across regions and over time. Differences in the type of models used in the primary studies also significantly contribute to the explanation of the variation in study outcomes. Starr (2005) using SVAR model with orthogonalized identification find little evidence of real effect of monetary policy in five common wealth of independent states(CIS) with the notable exception that interest rate have a significant impact on output in Russia.

3. Methodology.

This study perceives a relationship between monetary policy outcomes and general prices as postulated by the theoretical framework that changes in monetary outcomes correlates with changes in consumer price indices. In carrying out this study, time series data spanning 1986 to 2010 was sourced from the Central Bank of Nigeria Statistical Bulletin. The estimated model is discussed vis-à-vis stated a priori theoretical expectations about the sign of the numerical values of model coefficients. This provides insight into the nature and magnitude of the effect of a unit change in the respective explanatory variables on the response variable, and induce informed basis to conclude on the nature of the relationship between commodity prices and each of the indicator variables of monetary policy outcomes. Subsequently, the estimated model is evaluated for statistical significance and explanatory power. Discussion and evaluation of the model provide insight into the behavioural characteristics of the selected indicators of monetary policy outcomes and the attendant effects on prices.

The empirical analysis process is anchored on the multiple regression models of (Okwu, Obiakor, Falaiye, and Owolabi, 2011) but modified to accommodate all monetary policy outcomes and the perceived functional relationship with consumer price indices. The monetary policy outcomes include broad money (M_2), net credit to government (NCG), credit to the private sector (CPS), real GDP (RGDP) and inflation. Ordinary least square

econometric technique specified in a multiple form was applied to the data obtained. The models were written as:

$CPI = B0 + B_1 M_2 + B_2 INF + B_3 RGDP + B_4 NCG + B_5 CPS + u$ ……(1).

Where: INF= Inflation rate

RGDP= Real Gross Domestic Product

NCG = Net credit to government

CPS = Credit to private sector

M_2 = Broad money.

Since the data for the analysis is a time series, the Philips Peron unit root test was employed to ensure data stationarity so as to avoid spurious regression results.

4. Findings.

The performance of Nigeria's monetary policy framework in the last decade regime can be assessed according to the extent to which the actual growth in monetary aggregates, GDP growth rate and inflation, approximate the ex-ante policy targets as shown in Table 1.

<Insert Table 1>

Money and credit

Growth in money supply was substantial during the review period. Broad money supply M2 dropped rapidly from 48.07% in 2000 to 24.11% in 2004. It recorded a rapid increase from 24.35% in 2005 to 57.88% in 2008. These rates were consistently above their projected targets. However, in 2009 and 2010, the trend changed to the reverse. The rate dropped to 17.07% and 6.91% in 2009 and 2010 respectively. The growth in monetary aggregates was due to factors such as rapid monetisation of oil inflows, minimum wage adjustments, and the financing of government's fiscal deficits through the banking system. Credit to the private sector, on the other hand, declined sharply from 43.46% in 2001 to 11.79% in 2002 and increased steadily from 26.81% in 2003 to 91.62% in 2007. All the increases were above the targeted rates for the periods (see table 1). Afterwards, credit to the private sector dropped to 26.15% and father to -3.81% in 2009 and 2010 respectively. Overall, the major source of liquidity was growth in credit to government in most of the years that peaked 6320.55% in 2002 but dropped steadily till 2008 at a declining increase rate. It however, ended the period on a positive increase note at 51.27%.

Prices

It will be recalled that the major objective of Nigeria's monetary policy is the maintenance of macroeconomic conditions and price stability. Using this yardstick, the outcome of monetary policy in Nigeria has been generally mixed. By definition, price stability in Nigeria refers to the achievement of a single-digit inflation rate on an annual basis. Indeed, this objective has not been achieved on a sustained basis. For example, in 1995 the rate of inflation was as high as 72.8% while the target of single digit inflation was achieved in only three (3) years out of six (6), between 1995 and 2000. In fact, the single-digit inflation rate that materialised was attributable to a favourable agricultural harvest – as the weight of food accounts for 70% in the computation of Nigeria's consumer price index. In the last ten years, single digit inflation was achieved only in the years 2006 and 2007 at 8.55% and 6.56% and increased sharply by more than 100% in 2008 to 15.06% probably due to the global economic crises.

Domestic output

Similarly, output performance has not been impressive. Growth in domestic output measured by real GDP grew considerably in the review period, indicating that monetary policy impacted positively on output even in the face of increased income from oil exports. For instance, from 4.89% in 2000, domestic output rose to 9.57% in 2003, declined to 5.98% in 2008 while closing the period at 7.87% in 2010. Given the double digit inflation rate, high unemployment rate and high interest, one stands to question if these growth rates above the target rates are indeed modest.

Generally, there have not been consistencies in the actual and target growth rates for the monetary policy management in Nigeria. Generally, fiscal dominance has been the major factor which has consistently undermined the efficacy of monetary policy in Nigeria.

Further analysis.

Unit root test result.

A time series is considered to be stationary if its mean and variance are independent of time. If the time series is non-stationary, that is, having a mean and or variance changing over time, it is said to have a unit root (Johannes et al, 2011). Stationarity is important in econometrics as most time series data exhibit unit root problem. If a time series is non stationary, the regression analysis carried out in a conventional way will produce spurious results. A spurious regression occurs when after regressing a time series variable on others, the tests statistics show a positive relationship between these variables even though no such relationship exist. To guard against spurious result, this study took caution by checking the properties of the variables via the pp test. The result is presented below.

<Insert Table 2>

A non-stationary time series can be converted into a stationary time series by differencing (Johannes et al, 2011). The above table reports that CPI, CPS, Inflation and M_2 Philips Peron statistics are non-stationary at level while NCG and RGDP were stationary at level. However, stationarity was achieved for CPI at second difference and at first difference for CPI, CPS, Inflation and M_2. Observing that the critical values < the PP test statistic t* at 1% for CPI at second difference; CPS, inflation and M_2 at first difference; NCG and RGDP at level, we conclude that there is no unit root with the time series. Therefore, the time series are stationary and hence, further analysis.

<Insert Table 3>

The estimated model is given as CPI = -0.04967092058*CPS + 0.04879778986*Inflation - 0.1328879891*M2 - 0.0002671519911*NCG + 1.068790596*RGDP + 4.223343941.

In the above table, the coefficients confirm the correlation results. Credit to private sector, broad money supply and net credit to government have a negative relationship with consumer price index. This implies that as consumer price indices increases, credit to private sector, broad money supply and net credit to government the monetary policy decreases indicating an indirect relationship. These are in consonance with apriori expectation and the findings of Amassoma, Nwosa and Olaiya (2011) who found a negative relationship with M_2 (broad money) but contrary to the findings of (Okwu, Obiakor, Falaiye, and Owolabi, 2011) who found a positive relationship with broad money. However, inflation and real GDP correlates positively with consumer price index indicating a direct relationship with consumer price index. At 5% significant level, none of the variables are statistically significant. The insignificant statistics between monetary policy, gross domestic product, credit to the private sector, net credit to the government and inflation in Nigeria, suggest that monetary policy as a policy option may have been inactive in influencing price stability.

5. Conclusion and Recommendations

The evaluation of monetary policy and analysis of its effect in achieving price stability have been carried out with a view to ascertaining the extent of effectiveness of monetary policy. Some of these policies include:- the deregulation of financial sector, adoption of universal banking system and replacement of the Minimum Re-discount Rate (MRR) with the Monetary Policy Rate (MPR). Existing literature showed among others that the effects of monetary policy innovations on consumer price indices were yet to be well established in the developing countries. In this regard, this study has contributed empirically to the quest of knowledge in this area. Analysis suggests that monetary policy has not been influential in reducing price instability in Nigeria. This is due to the insignificant statistics between monetary policy, gross domestic product, credit to the private sector, net credit to the government and inflation in Nigeria, suggesting that monetary policy as a policy option may have been inactive in influencing price stability as targeted by the Central Bank of Nigeria. The study therefore recommend a reduction in government excessive expenditure and a flexible monetary polices by the monetary authority that will help sustain price stability and economic growth in the country.

Given the above, fiscal policies are also likely to have an important influence on the credibility of anti-inflation policies. High fiscal deficits or debts, by raising the risk of future inflation, may augment the difficulty of achieving

credibility even if the monetary authorities are fully committed to inflation control. Markets may fear that a central bank will be unable to deliver on such a commitment if there is insufficient fiscal discipline. Fiscal deficits may also pose a problem in the transition from high to low inflation, since, to the extent that public debt is financed by longer-term fixed-rate instruments, inflation reduction will imply a rising debt-service burden in real terms. These considerations suggest that sound fiscal policies will be an important component of the policy mix if the move to price stability is to be sustained and credible.

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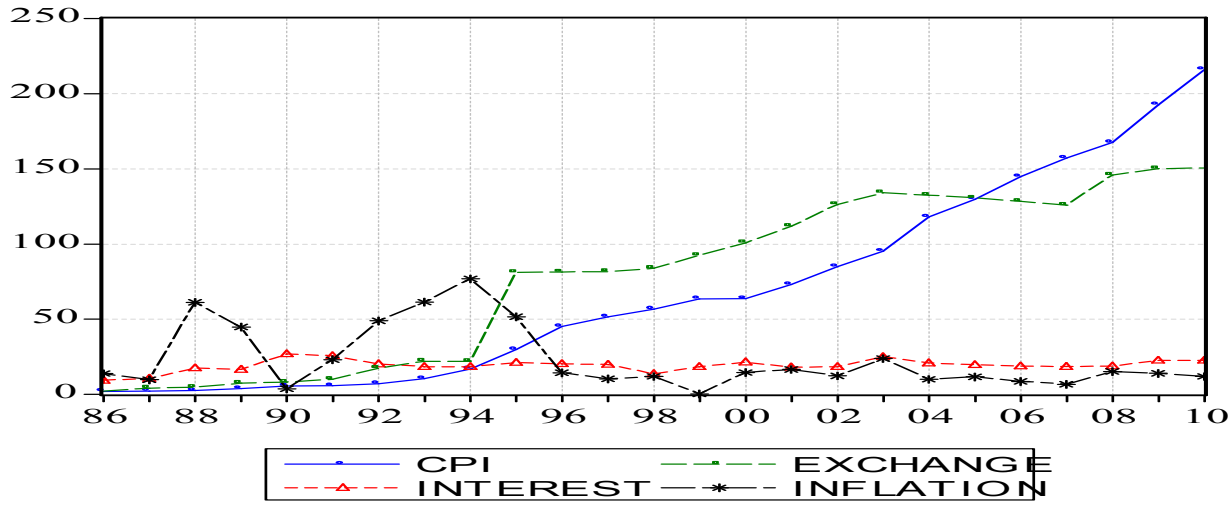
Fig. 1: CPI, Interest, Inflation and Exchange rates in Nigeria (1986-2010)



Culled from CBN Statistical Bulletin, 2011.

Table 1: Nigeria Monetary Policy Targets and Outcomes (Growth Rates).

Years	M2 Actual	M2 Target	RGDP Actual	RGDP Target	NDC Actual	NDC Target	NCG Actual	NCG Target	CPS Actual	CPS Target	INF Actual	INF Target
2000	48.07	14.60	4.89	3.00	-25.32	27.80	-170.13	37.80	30.93	21.90	14.53	9.00
2001	27.00	12.20	4.72	5.00	79.87	15.80	95.16	2.60	43.46	22.80	16.49	7.00
2002	21.55	15.30	4.63	5.00	56.59	57.90	6320.55	96.60	11.79	34.90	12.17	9.30
2003	24.11	15.00	9.57	5.00	35.70	25.70	58.43	-150.30	26.81	32.30	23.81	9.00
2004	14.02	15.00	6.58	5.00	11.99	22.50	-17.94	29.90	26.61	22.00	10.01	10.00
2005	24.35	15.00	6.51	5.00	14.51	22.50	-36.99	-10.90	30.82	22.00	11.57	10.00
2006	43.09	27.00	6.03	7.00	-69.13	-72.30	-732.81	-	32.06	30.00	8.55	9.00
2007	44.80	24.10	6.45	10.00	279.57	-29.90	-22.30	-	91.62	30.00	6.56	9.00
2008	57.88	45.00	5.98	7.50	84.20	66.00	-31.21	-54.57	59.49	54.70	15.06	9.00
2009	17.07	20.80	6.96	5.00	58.55	87.00	25.92	21.90	26.15	45.00	13.93	9.00
2010	6.91	29.25	7.87	6.10	10.00	51.40	51.27	51.36	-3.81	31.54	11.80	11.20

Source; 2011 CBN Statistical Bulletin.

Table 2: Philips Peron Unit Root Test.

Variables	Critical value* at 1%	PP Test statistic @ level	Diff. Status	Critical value* at 1%	PP Test statistic (t*)
CPI	-4.3942	0.073182	2	-6.745547	-6.745547
CPS	-4.3738	-4.026751	1	-4.3942	-7.621428
Inflation	-4.3738	-3.009100	1	-4.3942	-4.625259
M2	-4.3738	-3.289441	1	-4.3942	-6.551879
NCG	-4.3738	-4.771963	-----	-----	----
RGDP	-4.3942	-7.698446	----	----	----

Source: Author's E-view output.

Table 3: Regression result.

Dependent Variable: CPI				
Method: Least Squares				
Date: 11/18/12 Time: 07:17				
Sample(adjusted): 1986 2009				
Included observations: 24 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
CPS	-0.049671	0.054629	-0.909234	0.3752
Inflation	0.048798	0.079856	0.611069	0.5488
M_2	-0.132888	0.083596	-1.589648	0.1293
NCG	-0.000267	0.001202	-0.222330	0.8266
RGDP	1.068791	0.516163	2.070644	0.0530
C	4.223344	2.774470	1.522217	0.1453
R-squared	0.274203	Mean dependent var		8.920833
Adjusted R-squared	0.072593	S.D. dependent var		7.586830
S.E. of regression	7.306267	Akaike info criterion		7.027660
Sum squared resid	960.8676	Schwarz criterion		7.322173
Log likelihood	-78.33192	F-statistic		1.360066
Durbin-Watson statist	0.908217	Prob(F-statistic)		0.285190