EMPIRICAL ANALYSIS ON THE IMPACT OF MONETARY POLICY ON ECONOMIC GROWTH OF NIGERIA (1980-2018)

*EZE IFEANYI SYLVANUS **OGBONNAYA PRINCESS ONYEKACHI AND *ELOM SAMPSON OMENA (Ph,D)
*Department of Social Sciences, Akanu Ibiam Federal Polytechnic, Unwana-Afikpo, Ebonyi State, Nigeria **Department of Languages, Akanu Ibiam Federal Polytechnic, Unwana-Afikpo, Ebonyi State, Nigeria

Abstract
This research work examines the impact of monetary policy on economic growth of Nigeria, covering the period of 1980 – 2018. The objectives includes to establish the causality relationship between monetary policy and economic growth and to examine the relationship between monetary instruments and Real Gross Domestic Product (RGDP). Time series secondary data was collected and the research employed descriptive and ex-post-facto research design. The augmented Dickey Fuller unit root test, Johansen’s Cointegration Test and Vector Error Correction was used for the analysis. The results shows that 1% increase in money supply leads to 0.40% increase in RGDP in long run and 0.88% increase in RGDP in short run. 1% increase in the interest rate 1% increase in the interest rate leads to a 6.7% increase in RGDP in the long run and 0.62% decrease in RGDP in short run. A 1% increase in inflation rate leads to a 4.57% decrease in RGDP in long run and 1.05% increase in RGDP on average in short run. The research recommend that government should avoid tight monetary policy to make fund available for expansion of real sectors, government should also set marketing board so as to control market price of commodities, government should introduce a routine check to ensure that monetary policies are executed in all financial institutions.

Key words: Gross Domestic Product, Interest Rate, Exchange Rate, Inflation Rate and Money Supply
Introduction
Monetary policy refers to the combination of measures designed to regulate the value, supply and cost of money in an economy in consonance with the level of economic activities. It can also be described as the art of controlling the direction and movement of monetary and credit facilities in pursuance of stable price and economic growth in the economy, (C B N 1992). Monetary policy got its root from the work of Irving Fisher (Diamond 2003). He laid the foundation of the quantity theory of money through his equation of exchange. In his proposition money has no effect on economic aggregates but price. However, monetary policy as a measure of economic management bring about sustainable economic growth and development has been the pursuit of nations and formal articulation of how money affects economic aggregate demand back the time of Adams Smith and latter championed by the monetary economists. Since the expositions of the role of monetary policy in influencing macroeconomic objectives like economic growth, price stability, equilibrium in balance of payments, full employment etc, monetary authorities are saddled the responsibility of using monetary policy to grow their economy. Nigeria being an import dependent economy is faced with stagnated growth, unstable business cycles and economic fluctuation. These usually result to unemployment, inflation, unproductive and balance of payment disequilibrium.

Nwoke, Ihemeje and Amumadu (2016). Government has in one way or the other regulated and controlled the economy to maximize the welfare of the masses by way of ensuring the resources are efficiently allocated and used. At independence, it was felt that the existing financial institutions could not adequately support the process of industrialization and agricultural modernization that was needed to move the economy into the forefront of development. Existing financial institutions were foreign owned and local farmers and entrepreneurs had difficulties borrowing from them. The informal financial sector provides the little loans they were capable of at high interest rate. There were few sources of equity and long term finance for long term borrowers. Investment was considered risky production in the new sector and used technologies unfamiliar to workforce. Prior to the commencement of the economic liberalization programme in Nigeria, direct control of monetary management was adopted by C B N. like in many other less developed country (LDC). The motive for this are not far
fetched most of them are rooted in the market failure paradigm. There was need to channel cheap credit towards the sectors in the economy that are believed to be at the forefront of development.

The effect for sustainable growth began in Nigeria in the early 1980’s with the introduction of Structural Adjustment Programme (SAP), in response to the emergence and persistence of unstable macroeconomic instability. The Structural Adjustment Programme Monetary Policy was aimed at moderation inflation, increasing domestic savings, allocating resources efficiently, improving capital inflow and local production, employment, enhancing external reserve and stabilizing the naira exchange rate. Countries seeking for sustainable economic growth after a period of macroeconomic imbalances must first get stabilized. (Anyanwu 2003).

The conduct of monetary policy off from 2000 – 2011 has been designed to influence the growth of money supply consistent with the required aggregate gross domestic product (GDP) growth rate, ensure financial stability, maintain a stable and competitive exchange rate of the naira, and achieve positive real interest rates. Consequently in the wake of the global financial crisis, the bank largely adopted the policy of monetary easing to address the problem of liquidity shortages in the banking system. In 2014, monetary policy was focused on achieving the objective of price and exchange rate stability. Accordingly, the bank sustained its tight policy stance with a view to ensuring that electioneering spend did not result in uptick in inflation.

Over the years, Nigeria have been moving from direct to indirect monetary policy to ensure macroeconomic stability but the economy remain unstable. Nevertheless, monetary policy, the world over, play fundamental roles in the development and growth of any economy. The effectiveness and efficiency in performing these roles, particularly the intermediation between the surplus and deficit units of the economy depend largely on the type of monetary instrument. It is to ensure its soundness that the financial sector appears to be the most regulated and controlled by the government and its agencies. Generally, the stage of development and thus, the efficiency of the instruments varies among countries and change over time in the same country, in tandem with the development of the real sector. In other words, the more developed and sophisticated monetary policy tend to be associated with the mature economy, while underdeveloped monetary policy feature in developing economy.
It is against this background that this paper tries to reexamine the impact of monetary policy on Nigeria economy and suggest policy that will facilitate macroeconomic stability.

**Literature Review**

Monetary policy is defined as the process by which the monetary authority of a country controls the supply of money, often targeting an inflation rate or interest rate to ensure price stability and general trust in the currency. According to CBN (2006) monetary policy is defined as any policy measure designed by the federal government through the CBN to control cost availability and supply of credit. Also, Nwankwo (1991) defined monetary policy as one of the macroeconomic instrument with which monetary authority of a country employed in the management of their economy to attain desired objective. It consists of a government formal effort to manage the money in its economy in order to realize specific economic goals, (Okwu, Eze, and Nwoha 2012).

Economic growth of any country reflects its capacity to increase production of good and services. According to Anyanwoncha (1993), the rate of economic growth measures the percentage increase in real national output during period of time, usually a year over the preceding year’s level. Jhingan (2003), defines economic growth as a process whereby the real per capital income of a country increase over a long period of time. According to him economic growth is measured by the increase in the amount of good and service. It can also be defined as an increase in the monetary value of goods and services produced by an economy over given period of time (usually a year). The Gross Domestic Product (GDP) is the indicator that measures the rate of economic growth in an economy. The GDP can be distinguished into nominal and real, while the nominal GDP measures the increase in good and services without taking changes in prices into consideration, the real GDP measures changes in goods and services after making provision for adjustment in prices.

Within the Nigeria context, there have been several attempts to empirically determine the relationship between monetary policy and economic growth. Nwoko, Ihemeje and Anumadu (2016), examined the extent to which central bank of Nigeria monetary policies could effectively be used to promote economic growth, covering the period of 1990-2011. The influence of money supply, average price, interest rate and labour force were tested on gross
domestic product (GDP). Using the multiple regression analysis of the Ordinary Least Square (OLS) technique, the study indicate that average price and labour force have significant influence on GDP while money supply was not significant, interest rate was negative and statistically significant.

Obamuyi and Olorunfemi (2011), also examined the implication of financial reform and interest rate behavior on the economic growth of Nigeria, study result revealed that financial reform and interest rate have significant impact on economic growth in Nigeria, also result implied that the interest rate behavior is important for economic growth. The study adopted the ordinary least square statistical technique to examine the relationship between real interest rate and economic growth (proxy gross domestic product growth rate) in Nigeria during 1995 – 2010. Time series secondary data from the World Bank Data Bank 2011 are used in the multiple regression analysis.

In the research work of Inam and Ime (2017), they investigate the impact of monetary policy on the economic growth of Nigeria using annual data covering the period of 1970 to 2012. It seeks to analyse the relationship between money supply and economic growth. The study employs the ordinary least square techniques and the granger causality test. The result indicates a positive and insignificant relationship between money supply and economic growth. Ogunmiyana and Ekone (2010) investigate the impact of money supply and economic growth in Nigeria between 1980 and 2006. Applying economic technique ordinary least square, causality test and error correction mechanism to time series data, the results revealed that although money supply is positively related to growth but the result is however insignificant in the cause of GDP growth rates on the choice between contractionary and expansionary money supply.

Dele (2007), employed the generalized least squares (GLS) method in his study performancy of West African Monetary Zone Countries (Gambia, Ghana, Guinea, Nigeria and Sierra Leone) from 1991 – 2004. Using the variables money supply (M2), Minimum Rediscount rate, Banking System Credit to private sector, banking system credit to private sector, banking system credit to central government and exchange rate of the national currency to the US dollar. The findings of the study indicate that monetary policy was a source of stagnation as it hurt real domestic output of those countries. Onyeiwu (2012), examined the impact of monetary policy on the Nigeria economy using ordinary least square method. The result showed that monetary policy
represented by money supply exert a positive impact on GDP growth and
balance of payment, but negative impact on rate of inflation and he concluded
that C B N monetary policy is effective in regulating the liquidity of the
economy which affects some macroeconomic variable such as output,
employment and prices.
Fasanya, Onakoya and Agboluaja (2013), examined the impact of monetary
policy on economic growth using time series data covering the period 1975 –
2010. The effects of stochastic shocks of each of the endogenous variables
were explored using Error Correction Model (ECM). The finding of the study
reveal a long run relationship among the variables. The findings also shows
that inflation rate, exchange rate and external reserve are significant
monetary policy instruments that drive growth in Nigeria. Also, Chikwu
(2009), analysed the effect of monetary policy innovations in Nigeria. The
study used a structural vector Autor-Regression (SVAR) approach to trace the
effects monetary policy stocks on output and prices in Nigeria. The study also
analysed three alternative policy instrument, that is, broad money (M2),
Minimum Rediscount Rate (MRR) and the real effective exchange rate (REER).
The study found evidence that monetary policy innovations have both real
and nominal effect on economic parameter depending on the policy variable
selected.
Amasoma, Nwosu, and Olaiya (2011), examined the effect of monetary policy
on macroeconomic variables in Nigeria for the period 1986 – 2009 by
adopting a simplified ordinary least square technique found that monetary
policy has a significant effect on exchange rate and money supply while
monetary policy have an insignificant influence on price instability. Akujobi
(2012), on his study investigated the impact of monetary policy instrument
on economic development of Nigeria using multiple regression technique and
found that treasury bill, minimum  rediscount rate and liquidity rate have
significant impact on economic development of Nigeria. In the same way,
Owalabi and Adegbite (2014), examined the impact of monetary policy on
industrial growth in Nigeria economy using multiple regression analysis. They
analyzed the relationship between manufacturing output, treasury bills,
deposit and lending, and rediscount rate and industrial growth, and found that
the variables have significant effects on the industrial growth.
Literature is inclusive regarding the impact of monetary policy on economic
growth. Various studies give different results due to differences in country(s)
of study, time period and methodology used. Among the empirical studies reviewed in Nigeria, have not examined the impact of monetary policy on financial structure to ensure economic growth. These will go a long way in improving the real sector (Agricultural and manufacturing sector). This study will try to re-examine the impact of monetary policy instruments on economic growth of Nigeria.

Methodology
Research Design
The research design employed descriptive and ex-post-facto research design. Descriptive research design helps in gathering information about the existing status of the phenomena in order to describe what exists in respect to variables. Also, Ex-Post-Facto research design was adopted to examine the impact of monetary instrument on economic growth (GDP) of Nigeria. This design was adopted to enable the researcher to use time series date to explain the impact of interest rate, exchange rate, money supply, inflation on real gross domestic product.

Model Specification
Based on our objective of study, the model to capture the impact of monetary policy on economic growth to Nigeria are stated below with the independent variables as money supply, interest rate exchange rate inflation rate and dependent variable as real gross domestic product (RGDP). These are expressed functionally as $\text{RGDP} = F(\text{MS, INT, EXR, INF})$

Where $\text{RGDP} =$ real gross domestic product.

$\text{MS} =$ Money Supply

$\text{INT} =$ Interest Rate

$\text{EXR} =$ Exchange Rate

$\text{INF} =$ Inflation Rate

Transforming the equation into a linear function.

$\text{RGDP} = \beta_0 + \beta_1 \text{MS} + \beta_2 \text{INT} + \beta_3 \text{EXR} + \beta_4 \text{INF} + U_i$

Where $\beta_0 =$ the intercept

$\beta_1, \beta_2, \beta_3 & \beta_4 =$ coefficients of explanatory variables

$U_i =$ The error term

The error term $(U_i)$ is used to capture other variables that are not included in the model.
**Table 1: Johansen’s Cointegration Test**

Date: 08/19/19  Time: 11:34  
Sample (adjusted): 1983 2018  
Included observations: 36 after adjustments  
Trend assumption: Linear deterministic trend  
Series: LN_RGDP LN_MS LN_INTRATE LN_INFRATE LN_EXCHRATE  
Lags interval (in first differences): 1 to 1  

<table>
<thead>
<tr>
<th>Hypothesized No. of CE(s)</th>
<th>Eigenvalue</th>
<th>Trace</th>
<th>Critical Value</th>
<th>Prob.**</th>
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</thead>
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<td>0.591976</td>
<td>78.84401</td>
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<td>0.0080</td>
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<td>At most 1</td>
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<td>11.72741</td>
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<tr>
<td>At most 4</td>
<td>0.079936</td>
<td>2.999234</td>
<td>3.841466</td>
<td>0.0833</td>
</tr>
</tbody>
</table>

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level  
* denotes rejection of the hypothesis at the 0.05 level  
**MacKinnon-Haug-Michelis (1999) p-values

<table>
<thead>
<tr>
<th>Hypothesized No. of CE(s)</th>
<th>Eigenvalue</th>
<th>Max-Eigen</th>
<th>Critical Value</th>
<th>Prob.**</th>
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</thead>
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<tr>
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<td>32.27149</td>
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<td>At most 1</td>
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<td>14.26460</td>
<td>0.3095</td>
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</table>
At most 4  0.079936  2.999234  3.841466  0.0833

Max-eigenvalue test indicates no cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Table 1 shows that the Trace Test indicates the existence of one cointegrating equation at the 5% significance level. This cointegrating equation means that one linear combination exists between the variables that force these indices to have a relationship over the entire period, despite potential deviation from equilibrium levels in the short-term. The Maximum Eigenvalue Test also shows one cointegrating equations at the 5% level confirming the Trace Test. Therefore, these two tests confirm a cointegrating relationship over the period.

| 1 Cointegrating Equation(s): | Log likelihood | -51.93010 |

| Normalized cointegrating coefficients (standard error in parentheses) |
|-----------------------------|-----------------|------------|
| LN_RGDP | LN_MS | LN_INTRA_TE | LN_INFRA_TE | LN_EXCHRATE |
| 1.000000 | -0.406551 | -6.706669 | 4.577462 | 1.608146 |
| (1.18113) | (2.89876) | (0.72223) | (1.54604) |

Since we have identified the existence of one cointegrating equation, we can say that a stable equilibrium relationship is present. The results are normalized on the RGDP. Due to the normalization process, the signs are reversed to enable proper interpretation.

The Money supply and interest rate have the expected signs and are statistically significant. We interpret the coefficients as follows:

i. A 1% increase in the Money supply leads to a 0.40% increase in the RGDP in the long run

ii. A 1% increase in the Interest rate leads to a 6.70% increase in the RGDP in the long run.
iii. A 1% increase in the Infrate leads to a 4.57% decrease in the RGDP in the long run.

iv. A 1% increase in the Exchrate leads to a 1.60% decrease in the RGDP in the long run.

Money supply and interest rate have positive impact on RGDP while Infrate and exchrate have negative impact on GDP on average ceteris paribus.

Table 2: Vector error correction model

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<tr>
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<td>CointEq1</td>
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<td></td>
<td>(0.06065)</td>
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<td>(0.06142)</td>
<td>(0.01169)</td>
<td>(0.00549)</td>
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<td></td>
<td>[ 0.54342]</td>
<td>[-2.24867]</td>
<td>[-2.72006]</td>
<td>[ 0.45407]</td>
<td>[-2.1206]</td>
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<tr>
<td>D(LN_RGDP(-1))</td>
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<td>0.018493</td>
<td>-0.097813</td>
<td>0.034204</td>
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</tr>
<tr>
<td></td>
<td>(0.19501)</td>
<td>(0.05010)</td>
<td>(0.19749)</td>
<td>(0.03760)</td>
<td>(0.01764)</td>
</tr>
<tr>
<td></td>
<td>[-0.82013]</td>
<td>[ 0.38911]</td>
<td>[-0.49527]</td>
<td>[ 0.90959]</td>
<td>[-0.34041]</td>
</tr>
</tbody>
</table>
Table 2 shows that the previous period’s deviation from long run equilibrium is corrected in the current period at an adjustment speed of 0.03%. A percentage change in Exchrate is associated with a 1.05% increase in RGDP on average ceteris paribus in the shortrun. A percentage change in Infrate is associated with a 0.19% decrease in RGDP on average ceteris paribus in the shortrun. A percentage change in Intrate is associated with a 0.62% decrease in RGDP on average ceteris paribus in the shortrun. A percentage change in Money supply is associated with a 0.88% increase in RGDP on average ceteris paribus in the shortrun.

**SUMMARY OF HYPOTHESES FINDINGS**

i. A 1% increase in the Money supply leads to a 0.40% increase in the RGDP in the long run and a percentage change in Money supply is associated with a 0.88% increase in RGDP on average ceteris paribus in the shortrun.

ii. A 1% increase in the Interest rate leads to a 6.70% increase in the RGDP in the long run and a percentage change in Intrate is associated with a 0.62% decrease in RGDP on average ceteris paribus in the shortrun.

iii. A 1% increase in the Infrate leads to a 4.57% decrease in the RGDP in the long run and a percentage change in Infrate is associated with a 0.19% decrease in RGDP on average ceteris paribus in the shortrun.

iv. A 1% increase in the Exchrate leads to a 1.60% decrease in the RGDP in the long run and a percentage change in Exchrate is associated with a 1.05% increase in RGDP on average ceteris paribus in the shortrun.
Conclusions
Over times, there have been argument between monetary policy and fiscal policy which can be used to ensure economic growth of a nation. From this research it is clear for a developing nation like Nigeria, monetary policy effect economic growth both directly and indirectly. Therefore, monetary policy instrument is the key and strong macroeconomic variables which cannot be toyed with in Nigeria, because a change in the instrument lead to a proportionate change in Real Gross Domestic Product (RGDP). However, Monetary policy impact on economic growth of Nigeria will remain adverse if economic, political and socio-cultural limitations are not checked. So, checkmating of sensitive variables should be done before implementing monetary reform.

Recommendations
• Nigeria being a developing and mono-export country should avoid tight monetary policy to make fund available for other sectors like banking and agricultural sector for economic growth.
• Government should also checkmate inflation rate to avoid high inflation by setting up a marketing board so as to control the market price of commodities.
• Government should embark on utilization of low interest rate to enable investors access loan for expansion of their business.
• Finally, the government should also endeavor to make the financial sector less volatile and more viable as it is in developed countries, and introduce a routine check to ensure that monetary policies are executed in all financial institution.

REFERENCES


