MONETARY POLICY AND INFLATION RATE IN NIGERIA: 1986-2016

BY

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DECLARATION

I declare that the work in this Dissertation entitled "Monetary Policy and Inflation Rate in Nigeria: 1986-2016" was carried out by me in the Department of Economics. The information derived from the literature has been duly acknowledged in the text and a list of references provided. No part of this Dissertation was previously presented for another degree or diploma of this or any other Institution.

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CERTIFICATION

This is to certify that the Dissertation entitled "Monetary Policy and Inflation Rate in Nigeria: 1986-2016", which was carried out by Shaibu Ibrahim has been examined and meets the requirements stipulated in the regulations governing the award of the degree of Master's of Science of Federal University Lafia and is approved for its contribution to knowledge.

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DEDICATION

This study is dedicated to Almighty Allah, who made it possible for me to finish successfully and to the soul of my beloved daddy, Alhaji Shaibu Yunusa for his fatherly role, prayers and encouragements.

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ABSTRACT

This study assessed the significance of monetary policy on inflationary rate in Nigeria from 1986 to 2016. Quarterly and yearly secondary data sourced from CBN Statistical Bulletin 2016 and World Bank Development Index 2016 were used in this study. The Vector Autoregressive Model (VAR) was used for the estimation. The following variables were analyzed: Exchange Rate (EXR), Inflation Rate (INFR), Broad Money Supply (BMS, Interest Rate (INTR) and reserve ratio (RR). Total Adult Population (ADP) Bank Branches (BB) and Commercial Bank Deposits (CBD) were also used to assess the strength and weakness of monetary policy on inflationary rate in Nigeria through financial exclusion. However, it was found out based on co integration test that there is a long run relationship between the variables employed, the causality test shows a very weak transmission effect between the variables. More so the VAR estimates shows that, interest rate, broad money and reserve ratio are not statistically significant, but expectedly exchange rate is significant and therefore accounts for the variations in inflationary rate in Nigeria. In the same vein the impulse response function shows that exchange rate, inflation rate and money supply responded to shocks on interest rate though in different dimensions and finally, the assessment of financial exclusion shows that, the rate of exclusion has been decreasing overtime but still very high and far more than the rate of inclusion which has rendered monetary policy ineffective and inefficient in tackling inflation in Nigeria. Consequently, it was recommended that: The government should ensure proper coordination of policy instruments so that policy measures are can be transmitted or channeled in order to effectively meet and control target objectives especially inflationary rate in Nigeria. Also the government should ensure exchange rate stability and most importantly our multiple exchange rate system which is detrimental to our economy should be harmonized and sustained to ensure price stability and CBN should encourage and enforce commercial banks to finance real sector investment for increased productivity, provide financial literacy, key into efficient services through innovations and technology, ensure stress free financial transactions in order to boost financial inclusion.

CHAPTER ONE

INTRODUCTION

1.1   Background to the Study

The stability of every economy depends largely on the functional framework and effectiveness of monetary or fiscal policy or the proper coordination of the both policies. According CBN, (2012a) monetary policy is the overall control of money stock by the monetary authorities via monetary instruments like; interest rate; money supply, exchange rate, reserve ratio and credit facilities in order to attain macroeconomic stability, improve standard of living, aggregate output, maintain favorable balance of payments, influence foreign direct investment and most importantly to control the general prices of goods and services.

Monetary policy refers to the specific action 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. However, the ideal instrument employed depends on individual countries in respect to its economic condition and policy target at a point in time, and also depends on the size and stage of development of its financial system, level of technology and productivity (CBN, 2012b). For many countries in the world, these objectives are explicitly stated in the conduct of their monetary policy. In Nigeria, the major objectives of monetary policy are the attainment of price stability and sustainable economic growth through monetary or inflation targeting (Sanusi, 2012a).

Overtime, a lot of changes have occurred in the conduct of monetary policy globally especially in the 1990s. These changes are mainly based on the movement away from monetary targeting such as money supply and exchange rates towards the direct inflation targeting. That is monetary policy framework characterized by an explicit inflation targeting and viewed as a regime for anchoring expectations and guiding monetary policy decisions known as inflation targeting, this new dimension of monetary policy received significant attention from so many monetary authorities across the world both in developed and developing countries (Bernanke, 1999). Mishkin, (2000) has argued that the change was necessitated by the money demand instabilities and exchange rate crisis that plagued many economies of the world in the 1980s.

Monetary policy has played a major role in stimulating economic growth and price stability all over the world as it has become one of the mostly viable and mostly used economic tool by monetary authorities across the world in tackling macroeconomic instability. Price stability in various forms has been adopted in recent years as the major focus of monetary policy framework in advanced and industrialized countries like: Canada, United Kingdom, New Zealand, Australia, Spain and United States of America (McCallum, 1997).

In United States for instance, macroeconomic performance has improved greatly since the early 1980s. The 1980s and 1990s saw two of the longest expansions in U.S. history and two of the mildest contractions in 1990–01 and 2001. This success can be attributed in large part to inflation-targeting policy procedures that the Federal Reserve Bank of the United States has adopted gradually and implicitly over the last two decades. This also tells much about the origins of the implicit commitment to inflation targeting Meyer, (2001). According to Taylor, (2000), understanding the historical record suggests that some form of

inflation targeting is likely to remain at the core of monetary policy target indefinitely. More so, in United Kingdom, the Maastricht treaty mandates inflation control as the primary objective of monetary policy of the European Central Bank, the ECB has incorporated other major elements of inflation targeting approach in its procedures (Svensson, 1996). Although every country that has adopted inflation control as a primary objective of its monetary policy achieves this through inflation targeting in other to give a direction or flow of economic framework in the overall monetary policy outlook. For instance, Australia in 1993 targets 2-3% inflationary rate, Canada in 1991 was 1-3%, Finland in 1993 targets about 2%, Israel in 1991 targets 8-11% and United Kingdom 1-4% and in October 1997, it was 2.5% or less thereafter (Goodhart and Vinals, 2004).

Although, most of these countries have discrepancies in terms of target objectives and performances due to some economic challenges, but there are some impressive outcomes especially in the United States for example, the Federal Reserve Bank has since 1977, been operating under a dual mandate to pursue maximum sustainable employment and price stability. Their main challenge, since the global financial crisis across the world, has been to make rapid (or at least as rapid as possible) progress towards achieving these objectives. While it has taken a long time, and extraordinary monetary policy actions, the U.S. economy is now close to full employment, with core inflation, at 1.2 percent, below the 2 percent inflation target, but in view of the Federal Open Market Committee (FOMC), it is likely to reach 2% within two years (Akerlof, Dickens and Perry 2015). There are also a few countries in Africa that have also refocused the primary objective of their monetary policy to inflationary control or price stability, for instance South Africa adopted inflation control as its primary tool of monetary policy in 2000. In a letter from the Finance Minister Pravin

Gordhan to South African Reserved Bank (SARB) Governor Gill Marcus, dated 16 February 2010, Minister Gordhan states that "the bank should continue to pursue 3 – 6% for headline CPI inflation. To date the South African Reserve Bank (SARB) has remained committed to inflation targeting at that level to ensure long-run price stability. Since then, South Africa has continued to pursue inflation control through an inflation target of 3-6%. He also went ahead to highlight the importance of maintaining low inflation rate, that it supports sustainable growth and development and that it improves the living standards of people in the country (Gordhan 2010).

Meanwhile, Mishkin (1995), in his view opined that, an investigation of the effectiveness of the monetary transmission mechanism on inflation is still very important to ensure appropriate policy actions in South Africa and other developing countries, because it is not sufficient enough to know only the direction of change in variables following a change in monetary policy except the transmission effect is well established given a clear direction of effect.

In Nigeria persistent inflation and macro-economic instability have been the major problems facing the economy. Given this, over the past three decades, maintenance of monetary and exchange rate stability has been the major dimension of monetary policy. Despite the apparent continuity in monetary and exchange rate targeting, monetary policy has faced severe challenges with little success in terms of achieving target objectives. This is evident in the highly volatile inflationary rates, especially in the 1970s to mid 1990s (Issing, 2006).

Of great concern also, are the marked deviations observed in monetary targets and outcomes. Evidently, actual growth in M2 was 57.0% as against 18.0% target and 48.1% as

against 14.6% target in 1993 and 2000 respectively. This trend was observed from 1993 through 2008 except for1996 where actual M2 coincided with its target value of 16.8%, this is also the case with inflationary target and outcomes in Nigeria, there have been a lot of discrepancies between targets and actual performances or outcomes in monetary policy framework on inflation overtime in respect to the deviation from monetary target especially in the 90s for example: in 1991 inflation target was 13% while the actual performance was 23%, in 1992 inflation target was 5% while the actual performance was 48.8% and in 1993 the target was 25% while the actual performance was 61.3% and this has continued consistently, although there were some impressive outcomes in 1996 and 1997 when the targets were above the performances given that the ratio of the targets to performance were 30% : 14.3% and 15% : 10.2% respectively, but this did not last long and reverted back to actual performance exceeding actual targets, in 2001, 2002 and 2013 the ratio of actual targets to actual performance were 7% : 16%, 9.3% : 12.2% and 9% : 12.2% respectively (CBN 2016).

According to Casteleijn, (2001) the discrepancies exhibited in actual targets and performances are due to the poor rate of financial inclusion in Nigeria and this is as a result of inefficient financial services, inadequate technological services, inadequate number of commercial bank branches and weak financial structure which have made it difficult for a larger number of adult population in Nigeria to engage or be part of the financial system through the services of the banks, consequently, this has rendered monetary policy ineffective and inefficient . Alford, (2010) posits that, the failure of monetary and exchange rate targeting to deliver on its objectives, there is advocacy by the Central Bank of Nigeria to switch from monetary or interest rate targeting to inflation targeting as a monetary policy

regime. This is probably with the belief that it is an opportune time to take advantage of the perceived benefits derivable from an inflation targeting regime trending across the world. Consequently, the Central Bank of Nigeria in 2007 eventually announced the intention to switch from monetary or interest rate targeting to inflation targeting as a monetary policy framework to maintain price stability. In recognition of this, the CBN policy brief (2007), clearly describes inflation targeting frame-work in the context of the Nigerian economic system. In addition several workshops and seminars were organized in respect to this to unveil the modalities for its implementation.

Generally, there have been two major phases in the pursuit of monetary policy in Nigeria; the regime of direct controls and institutional development (1960-1986), and the regime of indirect controls, financial reform and deregula5tion, beginning with the adoption of Structural Adjustment Programme (SAP) in September 1986, whereas direct controls aim at influencing the cost and availability of credit to the various sectors of the economy, the regulation of deposit and lending rates, and sectoral credit allocation guidelines, indirect technique of monetary policy seeks to achieve the same objectives but through the use of market related instruments, such as open market operations and discount window operations, and the effects of these operations are transmitted to the rest of the economy through the financial markets (CBN, 2012b).

1.2   Statement of the Problem

It is worthy of note that, monetary policy has become the most effective policy tool in tackling macroeconomic instability and most importantly inflationary rate in most countries across the world. This is more reason why inflationary control through monetary policy

measures is one of the core-mandates of the Central Bank of Nigeria overtime. The Central Bank of Nigeria has taken so many measures in an attempt to meet expectations and tackle inflationary trend in Nigeria for instance: the deregulation of the financial system in 1986, the introduction of monetary policy rate (MPR) in 2006, the deviation from monetary targeting to inflation targeting in 2007 and many other reforms, but in spite of all these efforts being made, inflation is said to be persisting and alarming in the country (Ogwuma, 1996).

Nigerian industries as well as individuals are groaning under the devastating effect of inflation on a daily basis even though there is a drastic drop in purchasing power and standard of living i.e while per capita-growth rate was declining, prices of goods and services were fast increasing, a development which is contrary and alien to economic theories (Uchendu, 2010). For instance, in 2011 the growth rate was 4.9%, and declined to 4.3% in 2012. While inflation rate increased from 10.84% to 12.22% respectively at the same period. Although there was a significant increase in growth rate in 2014 to about 6.3%, but it declined drastically to -1.6% in 2015 and the rate was the same in 2016 at -1.6%, but surprisingly inflation was on the increase at these same periods, inflation rate was 8.06% in 2014 and in 2015 it went up to 9.02% and in 2016 it rose very high to 15.7% (CBN 2016).

These contradictory economic interactions have brought the Nigerian economic system into confusion and lack of confidence, and this of course could be as a result of inappropriate coordination of monetary policy by monetary authority to effectively tackle the inflationary trend in Nigeria (Michael, and Ebibai, 2014). For so many years, the Nigerian economy has been facing socio-economic stagnations traceable to inflationary spiral, particularly in the 1970s when inflation increased to a double digit. The analysis of the non-core inflation in

the early 1990s reveals inflation rate of about 57.03% in late 1994. Headline inflation rose rapidly by 1995 to reach an all time high of 72.84%, though it decelerated gradually to a single digit at 8.53% in 1997. In the same vein, core inflation, which began a gradual ascent in early 1990, peaked at about 69.0% in the mid-1995 before slowing down in 1997 (Apata, 2007).

Since then, inflation remained at single digits at 10.00% and 6.93% between 1998 and 2000. In 2001, macroeconomic stability was substantially restored, following the gains of a comprehensive and consistent economic reform program. The low inflation rate regime did not last for too long with the resurgence of spikes in headline and core-inflation between 2000 and 2001. Headline inflation rate remained at double digits between 2001 and 2005 as it recorded 18.87%, 12.88%, 14.03%, 15% and 17.86% in the respective years. However, it decelerated to 8.24% and 5.38% in 2006 and 2007 before rising to 11.60% and 12.00% in 2008 and 2009 in that order, although fell marginally to 10.48%, 12.22% and 8.06 in 2010, 2011 and 2013 respectively, but eventually rose to 15.7% in 2016, the unfavorable inflationary trend in Nigeria is an indication that monetary policy as a policy framework to tackle inflation, there is an indication of poor implementation of monetary policy and this could be traceable to poor level of transmission effect between monetary policy instruments and inflation in Nigeria, finally the weakness of monetary policy could be as a result of poor rate of financial inclusion in Nigeria (Akpan, 2015).

1.3   Research Questions

Considering the problems mentioned above, the research questions are:

a)   Can monetary policy significantly tackle inflationary rate in Nigeria?

b)   Does monetary policy granger cause inflation rate in Nigeria?

c)   How substantial is the rate of financial inclusion in boosting the effectiveness of monetary policy in Nigeria?

1.4   Objectives of the Study

The broad objective of the study is to analyze inflation control through the use of monetary policy in Nigeria. While the specific objectives of the study are:

i.   To examine if monetary policy can significantly tackle inflationary rate in Nigeria.

ii.   To determine the direction of casualty between monetary policy and inflation in Nigeria.

iii.   To ascertain if the rate of financial inclusion can substantially boost the effectiveness of monetary policy in Nigeria.

1.5   Hypotheses

The following hypotheses shall guide this study;

H_{01}:   Monetary policy can not significantly tackle inflationary rate in Nigeria.

H02:   There is no direction of casualty between monetary policy and inflation in Nigeria

H_{03}:   The rate of financial inclusion cannot substantially boost the effectiveness of monetary policy in Nigeria.

1.6   Scope of the Study

The study makes use of quarterly macroeconomic data in Nigeria to cover the periods spanning from 1986 – 2016 (a period of 30 years). This study employed quarterly data in order to ensure a large data entry which is more reliable and efficient for regression

analyses. It is also considered large enough to minimize the chances of committing any error using Vector Autoregressive Model (VAR) and Impulse Response Function. Macro economic variables were used for this research work which are: interest rate, exchange rate, broad money supply, reserve ratio and inflation rate. More so, the service and penetration financial inclusion indexes were employed which are: commercial bank branches, bank deposits (commercial and savings accounts).

The choice of this research period 1986 – 2016 is mainly based on the introduction of Structural Adjustment Programme (SAP) in 1986 as a deregulation strategy in order to allow macro economic variables interact freely without government's control. Consequently, this research work seeks to assess the time frame to establish the level of progress made in our financial system especially stability in general price level so far.

The choice is the variables employed were also due to accessibility at the period of this research work, unlike other monetary policy variables like: open market operations and discount rate which were technically difficult and challenging to access. This research work also assessed different dimensions in monetary policy from global, regional and domestic perspective; this is based on the target objectives of monetary policy across the world, from money supply to interest rate targeting and eventually to inflation as its primary objective, a policy which framework which the CBN in 2007 announced its decision to join the rest of the world by switching from money supply and interest rate targeting to inflation targeting as its core mandate. Consequently, this research work is focusing on inflation targeting through monetary policy given the global concentration on inflation especially as it affects every aspect or unit of the economy.

1.7   Significance of the Study

This research work is significant because monetary policy has been playing a leading role, in piloting the affairs of our economy, it is a policy measure that has been researched, formulated, adopted and implemented by the Central Bank of Nigeria to ensure macroeconomic stability overtime. Fortunately, this research is carried out at a point when the Nigerian economy is at a comatose and a complete break down as a result of the unbearable set back it had suffered ranging from corruption, structural defects, non implementation of past and current economic policies, political instability and most unfortunately the untimely and sharp drop in the price of crude oil which is our major source of revenue and therefore there is urgent need for policy directions and manipulations that can possibly turn things around for the good, ensure price stability and lead Nigeria to the part of sustainable growth and economic progress.

The significance of this study to some persons/bodies cannot be over- emphasized or overlooked considering the consistent and alarming rate of inflationary trend over the years especially in the 90s. This work will therefore be of immense help and use to policy makers, the government and its agents, individuals, producers, consumers, financial institutions, political appointees (advisers), legislators, researchers, writers, publishers, journalists, ministers of finance, Central Banks, Political and Economic Analysts, Investors (both foreign, indigenous) the entire Nigerian populace and the world at large. This study will also study the type of inflation, causes and ways of controlling it and it impacts on economic development in Nigeria.

1.8   Organization of the Work

This work was divided into five chapters: chapter one contains background to the study; statement of problem, research gaps, research questions, objectives, hypothesis, scope of and significance and organization of work. Chapter two focused on conceptual framework, empirical and theoretical framework. Chapter three was based on research design, model specification, and data sources. Chapter four was strictly based on presentation and discussion of results while the final chapter which is chapter five, comprises of summary of findings, conclusion and recommendations.

CHAPTER TWO

REVIEW OF LITERATURE AND THEORETICAL FRAMEWORK

2.1   Concept of Monetary Policy

Since its establishment in 1959, the Central Bank of Nigeria (CBN) has continued to play the traditional role expected of a Central Bank, which is the regulation of the stock of money in such a way as to promote the social welfare and economic stability. This role is anchored on the use of monetary policy that is usually targeted towards the achievement of full-employment equilibrium, rapid economic growth, price stability, and external balance (Fakiyesi, 2013). These objectives are necessary for the attainment of internal and external balance, and the promotion of long-run economic growth. Evidence in the Nigerian economy has shown that since the 1980's some relationship exist between the stock of money and economic growth or economic activity.

However, the term monetary policy has been defined by experts from many perspectives. According to Chimezie, (2012), monetary policy refers to any conscious or deliberate actions of monetary authorities, mostly central banks, to control (change) the quantity, availability or cost of money in an economy in order to achieve laid down goals/objectives. It is also a combination of policy measures desired by central bank to control the quantity of money and cost of credit in the economy in consonance with the expected level of economic activity. In other words, monetary policy is the process by which the central bank or monetary authorities of a country controls supply of money in order to attain a set of objectives, usually geared towards promoting national economic goals. It is therefore, the deliberate actions taken by the central bank to stabilize the economy. In pursuit of the

objective of price stability and its accompanying objectives, central banks recognize the existence of conflicts amongst the objectives and the need for trade-offs.

According to CBN release on monetary policy concept (2006) it was defined as "Any policy measure designed by the Federal Government through the CBN to control cost availability and supply of credit. It also referred to as the regulation of monetary supply and interest rate by the CBN in order to control inflation and to stabilize the currency flow in an economy. However, in the CBN Briefs (Series No 97/03 June 1997). Monetary policy was defined as follows; The combination of measures designed to regulate the value, supply and cost of money on an economy in consonance with the expected levels of the economic activities These imply that the excess supply of money would result in excess demand for goods and services, which would in turn cause a rise in price and determination of balance of payment position. Monetary policy is one of the available tools of macroeconomic objectives. The primary goals of macroeconomic policy are price stability, external stability and a satisfactory rate of output growth.

Folawewo and Osinubi (2006) define monetary policy as a combination of measures designed to regulate the value, supply and cost of money in an economy, in consonance with the expected level of economic activity. For most economies, the objectives of monetary policy include price stability, maintenance of balance of payments equilibrium, promotion of employment and output growth, and sustainable development. Nwankwo (1991) defines Monetary Policy as one of the macroeconomic instrument which monetary authority of a country employed in the management of their economy to attain desired objectives. Wrights (1976), opines that monetary policy entails those actions initiated by the central bank which aim at influencing the cost and availability of credits. More so, Okwo, Eze and Nwoha

(2012), refers to monetary policy as that which consist of a government formal effort to manage the money in its economy in order to realize specific economic goals. According to Ogunjimi (2006), monetary policy concept was defined as any policy measure designed by the federal government through the central bank of Nigeria to control the overall quantity of money in circulation, ensure macroeconomic stability and control general price level. Abeng (2006) also sees monetary policy as combination of measures designed to regulate the value, supply and cost of money on an economy in consonance with the expected levels of economic activities.

Michael and Ebibai (2014), define monetary policy 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. Monetary policy is maintained through actions such as increasing interest rate, or changing the amount of money banks need to keep in vault. Jhingan (2002) refers monetary policy as the credit measures adopted by the central bank of a country.

Ajayi, (1999), over the years, the major goals of monetary policy have often been the two later objectives. Thus, inflation targeting and exchange rate policy have dominated CBN's monetary policy focus based on assumption that these are essential tools of achieving macroeconomic stability. Folawewo and Osinubi (2006), define monetary policy as a combination of measures designed to regulate the value, supply and cost of money in an economy, in consonance with the expected level of economic activity. For most economies, the objectives of monetary policy include price stability, maintenance of balance of payments equilibrium, promotion of employment and output growth, and sustainable development. These objectives are necessary for the attainment of internal and external

balance, and the promotion of long-run economic growth. Evidence in the Nigerian economy has shown that since the 1980's some relationship exist between the stock of money and economic growth or economic activity.

Over the years, Nigeria has been controlling her economy through variation in her stock of money. Consequent upon the effect of the collapse of oil price in 1981 and the balance of payment deficit experienced during this period, various methods of stabilization ranging from fiscal to monetary policies were used. Interest rates were fixed and these were said to be beneficial to big borrower farmers (Ojo, 1989). Ikhide and Alawode (1993) while evaluating the effect of Structural Adjustment Programme (SAP) concluded that reducing money stock through increased interest rates would lower Gross National Product. Thus, the notion that stock of money varies with economic activities applies to the Nigerian economy (Laidler, 1993).

Tradable economic activities are "special" in developing countries. These activities suffer disproportionately from the institutional and market failures that keep countries poor. Sustained real exchange rate depreciations increase the relative profitability of investing in tradable, and act in second-best fashion to alleviate the economic cost of these distortions. Thus, interest rate is an important determinant of economic growth in Nigeria. However, the deregulation of interest rates in Nigeria may not optimally achieve its goals, if those other factors which negatively effects investment in the country, as suggested by Guseh and Oritsejafor (2007), are not tackled. However, the researcher sees monetary policy as a policy framework that is used by monetary authorities to control the overall money in circulation in order to ensure macroeconomic stability, boost productivity and control inflationary rate as its working definition.

2.1.1 Monetary Policy Transmission Mechanism

There are different transmission channels through which monetary policy affects economic activities and these channels of transmissions have been broadly examined under the monetarist and Keynesian schools of thought. The monetarist postulates that change in the money supply leads directly to a change in the real magnitude of money. Describing this transmission mechanism, Friedman and Schwartz. (1963) say an expansive open market operations by the Central Bank, increases stock of money, which also leads to an increase in commercial bank reserves and ability to create credit and hence increase money supply through the multiplier effect. In order to reduce the quantity of money in their portfolios, the bank and non-bank organisations purchase securities with characteristics of the type sold by the Central Bank, thus stimulating activities in the real sector. This view is supported by Tobin, (1978) who examines transmission effect in terms of assets portfolio choice in that monetary policy triggers asset switching between equity, bonds, commercial paper and bank deposits. He says that tight monetary policy affects liquidity and banks ability to lend which therefore restricts loan to prime borrowers and business firms to the exclusion of mortgages and consumption spending thereby contracting effective demand and investment.

Conversely, the Keynesians posit that change in money stock facilitates activities in the financial market affecting interest rate, investment, output and employment. Modigliani, (1963) supports this view but introduced the concept of capital rationing and said willingness of banks to lend affects monetary policy transmission. In their analysis of use of bank and non bank funds in response to tight monetary policy Oliner and Rudebush, (1995) observe that there is no significant change in the use of either but rather larger firms crowd out small firms in such times and in like manner Gertler and Gilchrist, (1991) supports the

view that small businesses experience decline in loan facilities during tight monetary policy and they are affected more adversely by changes in bank related aggregates like broad money supply.. Further investigation by Borio, (1995) who investigated the structure of credit to non government borrowers in fourteen industrialised countries observe that it has been influenced by factors such as terms of loan as interest rates, collateral requirement and willingness to lend.

2.1.2 Monetary Policy Management in Nigeria

The government overtime has taken a lot of measures in an attempt to ensure efficient and robust monetary policy framework, according to Kahn, (2010) he observes that monetary policy objectives are concerned with the management of multiple monetary targets among them price stability, promotion of growth, achieving full employment, smoothing the business cycle, preventing financial crises, stabilizing long-term interest rates and the real exchange rate. Through the control of monetary policy targets such as the price of money (interest rate - both short term and long term), the quantity of money and reserve money amongst others; monetary authorities directly and indirectly control the demand for money, money supply, or the availability of money (overall liquidity), and hence affect output and private sector investment. The primary goal of monetary policy in Nigeria has been the maintenance of domestic price and exchange rate stability since it is critical for the attainment of sustainable economic growth and external sector viability, (Sanusi, 2002).

Nnanna, (2001) observed that though, the monetary management in Nigeria has been relatively more successful during the period of financial sector reform which is characterized by the use of indirect rather than direct monetary policy tools yet, the

effectiveness of monetary policy has been undermined by the effects of fiscal dominance, political interference and the legal environment in which the Central Bank operates. Busari, Omoke, and Adesoye (2002), state that monetary policy stabilizes the economy better under a flexible exchange rate system than a fixed exchange rate system and it stimulates growth better under a flexible rate regime but is accompanied by severe depreciation, which could destabilize the economy meaning that monetary policy would better stabilize the economy if it is used to target inflation directly than be used to directly stimulate growth.

They advised that other policy measures and instruments are needed to complement monetary policy in macroeconomic stabilization. In the same stride, Batini, (2004) stress that in the 1980s and 1990s monetary policy was often constrained by fiscal indiscipline. Monetary policies financed large fiscal deficit which averaged 5.6 percent of annual GDP and though the situation moderated in the later part of the 1990s it was short lived as Batini, described the monetary policy subsequently as too loose which resulted to poor inflation and exchange rates record.

Sanusi (2002) says that the ability of the CBN to pursue an effective monetary policy in a globalised and rapidly integrated financial market environment depends on several factors which include, instituting appropriate legal framework, institutional structure and conducive political environment which allows the Bank to operate with reference to exercising its instrument and operational autonomy in decision- making, the degree of coordination between monetary and fiscal policies to ensure consistency and complementarily, the overall macroeconomic environment, including the stage of development, depth and stability of the financial markets as well as the efficiency of the payments and settlement systems, the level

and adequacy of information and communication facilities and the availability of consistent, adequate, reliable, high quality and timely information to Central Bank of Nigeria.

Nigeria's monetary policy experiences could be divided into two broad policy regimes: The direct method of control (1960-1993) and the indirect control (1993-date). The direct control method was characterized by quantitative ceilings on credits, administered interest and exchange rates, aggregate/sectoral allocation of credits and stabilization securities. Under this regime the economy was divided into preferred sector and the less preferred sector and banks were required to allocate a given proportion of their credits to different sectors. The rationale was to moderate aggregate demand by controlling the volume and cost of credit that goes into the economy. Key instruments used include: administrative fixing of the minimum rediscount rate (MRR), cash reserve requirements, liquidity ratio, stabilization securities and transfer of federal government's (including ministries and parastatals) deposits to and from the central bank. Monetary management using direct controls faced a number of constraints which led to repressed financial market (Sanusi, 2009).

Indirect method of control employs market-based instruments and requires some levels of market infrastructural development to be effective. It relies on the power of monetary authorities to influence the availability and rate of return on financial assets. Two broad regimes could be identified during the indirect method of monetary management viz: indirect control under the pre-consolidation era (1993-2005) and indirect control during the post consolidation era (2006-date). Instruments used under this regime include open market operation (OMO) through use of the Nigerian Treasury Bills (NTB) and Certificates, CBN Bills and Special NTBs, reserve requirements, liquidity ratios and movement of government deposits to and fro CBN (Ogwuma, 1996).

A new framework for monetary policy implementation was introduced in December 2006 to enable CBN leverage on the success of the banking system consolidation. Elements of the new framework included the introduction of the monetary policy rate (MPR) to replace the MRR, and a standing lending and deposit facility. Instruments under the new framework included, open market operations, repurchase transaction (REPO and reverse REPO), expanded discount window operations (EDW), cash reserve requirements (averaging system) and foreign exchange swap. (Sanusi, 2009).

The strategy was to control the aggregate demand through the control of interest rates and money supply. Higher interest rates reduced aggregate demand in the following ways: discouraging borrowing by firms and households, increasing the rate of savings (the opportunity cost of spending), Business investments may also fall as the cost of borrowing increases. Some planned investment projects may also become unprofitable thus leading to a fall in aggregate demand. Higher interest rates could also reduce the demand for lending and, therefore, reduce the growth of broad money supply which also reduces monetary inflation, (Uchendu, 2010).

But despite these reforms Inflation which is the continuous and persistent increase in the general price level of goods and services produced in the country has continued increase and persist in Nigeria. The problem of inflation is not peculiar to Nigeria alone, but it is a general problem confronting the world at large. According to the NBS, (2016) Attempt by the Nigerian government to attain a higher level of economic growth and development has a thing of challenge and worry, the consumer price index (CPI) measuring inflation in the Nigerian economy has risen to its highest point of 16.5% since 2005. Reports released by the Nigeria Bureau of statistics shows that inflation for the month of June spiked to its

highest point since October 2015 – 11 years. Inflation rose from 15.6% in May to 16.5% in June 2016, as energy and other food prices weigh in heavy on inflation continued to record relatively strong increase for the fifth consecutive month. The Headline index increased by 16.5% (year-on-year), 0.9% points higher from rates recorded in May (15.6%)," NBS said. "Most COICOP divisions which contribute to the headline index increased at a faster pace, the increase was however weighed upon by a slower increase in three divisions; Recreation & Culture, Restaurant & Hotels, and Miscellaneous Goods & Services Year on year, energy prices, imported items and related products continue to be persistent drivers of the core sub-index. "The Core index increased by 16.2% in June, up by approximately 1.2% points from rates recorded in May (15.1%). During the month, the highest increases were seen in the electricity, liquid Fuel (kerosene), furniture and furnishings, passenger transport by road, fuels and lubricants for personal transport equipment.

Asides farm produce, the core sub-index increased by 16.2% in June (year-on-year), up approximately by 1.2% points from 15.1% recorded in May. The Core sub-index has increased at a faster pace for five consecutive months. Over the first six months of the year, the Core sub index increased by 12.8%, up 5.2% points from rates recorded in the corresponding period in 2015." Inflation has increased consistently since October 2015, with the change in exchange rate policy, in the latter part of June expected to weigh in on inflation for the month of July. Goldman Sachs, an American multinational banking and investment firm, forecasts that Nigeria's inflation will not rise above 20 percent in 2016, before it takes retreats to lower levels.

Whether inflation in Nigeria is due to monetary mismanagement on the part of the authorities concerned or caused by improper coordination of economic agents and factors

still remains uncertain. Many factors have been identified to be responsible for inflationary pressure in Nigeria over the years. In a symposium of inflation in Nigeria held at University of Ibadan in November 1983, most of the participants stressed on miss-allocation of money supply, poor nature of government expenditure, excessive corruption, limitations in real output and the inflation (imported) as the major causes of inflation in Nigeria. In the case of formulating monetary policy, it is of paramount importance to specify objectives or targets (Ajisafe and Folorunso 2016).

According to Akinnifesi (2012), it is generally believed that inflationary effects are quite harmful to some business establishments. This could be so because vender often loses in the sense that the value of the money falls short of its original purchasing power, reduce standard of living, leads to market failure, market disequilibrium, and misallocation of economic resources. Inflation has been upward trending in Nigeria overtime. This has forced Nigeria to adopt several monetary measures to curtail the problem of inflation. It is therefore under the above that we adopted some mix of policy instruments in order to determine their impact on inflation. However, this work sees inflation as the continuous and persistent increase in general prices of goods and services over a period of time in an economy irrespective of policy measures by monetary authorities and policy makers as its working definition.

2.1.3 Concept of Exchange Rate

Conceptually, an exchange rate implies the price of one currency in terms of another; in the Nigerian context, it is the units of naira needed to purchase one unit of another country's currency e.g the United States dollar (Campbell, 2010). The management of any country's

foreign exchange market is carried out within the ambit of a foreign exchange policy, which according to Obaseki (2001) is the sum total of the institutional framework and measures put in place to gravitate the exchange rate towards desired levels in order to stimulate the productive sectors, curtail inflation, ensure internal balance, improve the level of exports and attract direct foreign investment and other capital inflows. Exchange rate policy also determines the mechanism for channeling foreign exchange to end-users and therefore, reflects the institutional framework, system of exchange rate determination and allocation of foreign exchange as well as the policy options for managing the exchange rate.

Vergil (2002) defines exchange rate simply as the price of foreign currency which clears the foreign exchange market. Therefore, exchange rate of currency is the link between domestic and foreign prices of goods and services. Also, exchange rate can either appreciate or depreciate. Appreciation in the exchange rate occurs if less unit of domestic currency exchanges for a unit of foreign currency while depreciation in exchange rate occurs if more unit of domestic currency exchanges for a unit of foreign currency or the rate at which the price of one currency is measured interns of another currency. Exchange rate is the price of one country's currency in relation to another country. It is the required amount of units of currency that can buy another amount of units of another currency.

Dornbusch (2012), defines exchange as the rate which a country's local currency can be exchanged for another country's currency, depending on the economic environment. He also looked it as the price at which exchange between two countries take place. How to determine the exchange rate is issue that has taken the center stage of monetary and international economics. Monetary policy in Nigeria is faced with the problems of having a

stable and realistic exchange rate which is in consonance with other macroeconomic fundamentals (Hossain 2002).

Exchange rate is also defined as the rate at which the price of one currency is measured in terms of another currency (Jhingan, 2015). According to Elumelu, (2002) The liberalization of the exchange rate regime in 1986 has led to introduction of various techniques with the view of finding the most appropriate method for achieving acceptable exchange rate for the Naira. The frequency with which these measures were introduced and charged is informed by the determined efforts of the monetary authorities to unrelentlessly combat the unabating depreciation and instability of the Naira exchange rate.

To ensure effective management of foreign exchange, the fundamental problems of the nation's economy must be addressed. This evolves an improvement in the state of infrastructure increase, local capacity utilization and a reduction of the cost of doing business in Nigeria. This should be done through the deregulation of the energy sector to enable private investors to participate in the provision of electric and telecommunication, locally produced goods should be encouraged.

2.1.4 Exchange Rate Management Policy in Nigeria.

Nigeria adopted Structural Adjustment Programme (SAP) in September, 1986 due to previous failures in macroeconomic policies on the pursuant of a realistic exchange rate. With the introduction of SAP, the second -tier foreign exchange market (SFEM) was established and was expected to produce a market-determined exchange rate that would remove the overvaluation of the naira which persisted in the pre-SAP era. A fixed rate of 22/$1 was reintroduced after various policies ranging from dual exchange rate to unified

exchange rate system were adopted in 1987. Due to inherent abuses and bureaucratic bottlenecks associated with regulation the system short-lived. In 1995, the autonomous foreign exchange market (AFEM) was introduced following the promulgation of foreign exchange decrees 17 of 1995 (monitoring and miscellaneous provisions) and the abolition of exchange control Act of 1962. Under the autonomous foreign exchange market, the CBN was to intervene in the market as short notice (Akabom 2012).

However, the Failure of (AFEM) led to the formation of Inter-bank foreign market (IFEM) whose aim among others, was depending on interbank foreign market as well as having a stable naira exchange rate. Negative developments in IFEM led to its abandonment and the re-introduction of DAS in July 2002 to address the failure of IFEM. DAS was specifically geared towards achieving the following: determination of exchange rate of naira, conserve external reserve position, ensure stability in naira rate etc. Having operated DAS for about three and half years, CBN in 2005 introduced the wholesale Dutch auction system (WDAS) which has since being in existence (Udoayang, Akpanuko and Asuquo, 2009).

2.1.5 Main Types of Foreign Exchange Rates

2.1.5.1 Fixed Exchange Rate System:

According to Jason, (2010), a fixed exchange rate is when a country's currency doesn't vary according to the Foreign Exchange Market. The country makes sure that its value against the dollar or other important currencies remains the same. It buys and sells large quantities of its currency, and the other currency, to maintain that fixed value. For example, China maintains a fixed rate. It pegs its currency (the Yuan), to a targeted value against the dollar. As of June 19, 2017, one dollar was worth 6.806 Chinese Yuan. Since

February 7, 2003, U.S. dollar has weakened against the Yuan. One U.S. dollar could be exchanged for 8.28 Yuan at that time. The U.S. dollar has weakened because it can buy fewer Yuan today, than it could in 2003.

That's because the U.S. government pressured the Chinese government to let the Yuan rise in value. This allows U.S. exports to be more competitively priced in China. It also makes Chinese exports to the United States, more expensive. On August 11, 2015, China modified its policy to allow the Yuan more flexibility. China wants to reduce its reliance on the dollar. It also wants the Yuan to be more widely traded.

2.1.5.2 Flexible Exchange Rate

Exchange rates that are determined by the foreign exchange market are called a flexible exchange rate. For this reason, exchange rates fluctuate on a moment-by-moment basis. The flexible rates follow what FOREX traders think the currency is worth. Those judgments depend on a lot of economic factors. The three most important are central bank's interest rates, the country's debt levels and the strength of its economy.

The United States allows its FOREX market to determine the U.S. dollar's value. The U.S. dollar strengthened against most currencies during the 2008 financial crisis. When stock markets fell worldwide, traders flocked to the relative safety of the dollar. But, why was the dollar safe? After all, the crisis started in the United States. Here's more on why the dollar is so strong right now. Despite this, most investors trusted that the U.S. Treasury would guarantee the safety of the world's global currency. The dollar took on that role when it

replaced the gold standard during the 1944 Bretton Woods agreement. Here's more about the underlying reasons behind the power of the U.S. dollar. (Sanusi, 2010)

2.1.6   Inflation and Exchange Rate

As a general rule, a country with a consistently lower inflation rate exhibits a rising currency value, as its purchasing power increases relative to other currencies. During the last half of the twentieth century, the countries with low inflation included Japan, Germany and Switzerland, while the U.S. and Canada achieved low inflation only later. Those countries with higher inflation typically see depreciation in their currency in relation to the currencies of their trading partners. This is also usually accompanied by higher interest rates (Jason, 2010)

2.1.7   Monetary Policy and Exchange Rate

Between 1960 and 1973, monetary policy framework in Nigeria centered on exchange rate targeting. The primary objective of this framework was to promote price stability as a sound basis for sustainable economic growth. The frame was broken into regimes and incorporates several features of the basket, band and crawling peg regimes. First, the Naira was managed against a basket of currencies of its major trading partners. The various currencies were assigned different weights, depending on Nigeria's extent of trade relationship. Second, the CBN operated the Inter-bank foreign exchange market (IFEM) which was conducted as a managed float (Sanusi 2009).

Later, the Dutch Auction System was introduced where the exchange rate of the Naira was determined by auctioning and the clearing rate determined the exchange rate. This system

contained both features of managed float and crawling peg. In 2005, the exchange rate policy allowed the exchange rate to fluctuate with a policy band of (+/- 3). The band provided a mechanism to accommodate short-term fluctuations in the foreign exchange market and flexibility in managing the exchange rate. The Retail Dutch Auction System was changed to Whole Sale Dutch Auction System (WDAS) in February 2006. The success of the consolidation exercise provided the muscle for WDAS as the threat of insolvency of deposit money banks had been drastically reduced and payment system became more efficient. In January 2009, CBN reintroduced the RDAS and back to WDAS in July 2009. (Soludo, 2009).

Additionally, it should be noted that in theory, 'optimal' inflation rate has to be greater than zero. But determining the 'right' rate for a particular economy at any point in time is a complicated issue. In practice, low inflation of 2-3% has been the norms for developed countries and 5-7% for developing countries. Contrariwise, high level of inflation promotes uncertainty, discourages savings and investment. On the other hand, excessively low inflation tends to cause cyclical downturns that last unnecessarily longer.

Hence, a little inflation may make it easier for firms to reduce real wages necessary to maintain employment during economic downturns. Consequently, it could be deduced that at very low level of inflation, nominal interest rate would also be low, limiting the central bank's ability to ease policy in case economic activity experiences a downturn. Therefore, low and stable inflation is the best contribution monetary policy can make to the efficient allocation of resources, economic development and growth (Soludo 2010).

The problem of defining money supply is still associated with a lot of controversy, according to Anyanwu (1993), money supply is the total amount of money (e.g. currency and demand deposits) in circulation in a country at any given time. Currency in circulation is made up of coins and notes, while demand deposits or current account are those obligations which are not related with any interest payment and accepted by the public as a means of exchange drawn without notice by means of cheque.

The stock of money can be measured in any given time in an economy. There are two criteria employed in measuring money supply. The first criteria define the stock of narrow money (usually designated by M1) as currencies and coins in circulation in the hands of the non-banking public and the demand deposit (of the non-banking public) with commercial bank (Ajakaiye, 2002). This definition can be synonymous with that given by Anyanwu, (1993) the second concept defines money stock (designated by M2) as M1 plus time and savings (fixed) deposit. The component of narrow money is usually called the stock of high-powered money. Economists use the stock of money to mean narrow money since savings and time deposit are not usually a medium.

2.1.8 Factors Influencing Exchange Rate.

Numerous factors determine exchange rates, and all are related to the trading relationship between two countries. Exchange rates are relative, and are expressed as a comparison of the currencies of two countries. The following are some of the principal determinants of the exchange rate between two countries. Note that these factors are in no particular order; like many aspects of economics, the relative importance of these factors is subject to much

debate. According to Michael (2010), factors that influence Exchange Rate can be enumerated as presented below.

The first factor is differentials in inflation. As a general rule, a country with a consistently lower inflation rate exhibits a rising currency value, as its purchasing power increases relative to other currencies. During the last half of the 20th century, the countries with low inflation included Japan, Germany and Switzerland, while the U.S. and Canada achieved low inflation only later. Those countries with higher inflation typically see depreciation in their currency in relation to the currencies of their trading partners. This is also usually accompanied by higher interest rates.

The second factor is differentials in Interest Rates Interest rates, inflation and exchange rates are all highly correlated. By manipulating interest rates, central banks exert influence over both inflation and exchange rates, and changing interest rates impact inflation and currency values. Higher interest rates offer lenders in an economy a higher return relative to other countries. Therefore, higher interest rates attract foreign capital and cause the exchange rate to rise. The impact of higher interest rates is mitigated, however, if inflation in the country is much higher than in others, or if additional factors serve to drive the currency down. The opposite relationship exists for decreasing interest rates - that is, lower interest rates tend to decrease exchange rates.

The third factor is current-account deficits; the current account is the balance of trade between a country and its trading partners, reflecting all payments between countries for goods, services, interest and dividends. A deficit in the current account shows the country is spending more on foreign trade than it is earning, and that it is borrowing capital

from foreign sources to make up the deficit. In other words, the country requires more foreign currency than it receives through sales of exports, and it supplies more of its own currency than foreigners demand for its products. The excess demand for foreign currency lowers the country's exchange rate until domestic goods and services are cheap enough for foreigners, and foreign assets are too expensive to generate sales for domestic interests.

The fourth factor is public debt, countries will engage in large-scale deficit financing to pay for public sector projects and governmental funding. While such activity stimulates the domestic economy, nations with large public deficits and debts are less attractive to foreign investors. The reason? A large debt encourages inflation, and if inflation is high, the debt will be serviced and ultimately paid off with cheaper real dollars in the future. In the worst case scenario, a government may print money to pay part of a large debt, but increasing the money supply inevitably causes inflation. Moreover, if a government is not able to service its deficit through domestic means (selling domestic bonds, increasing the money supply), then it must increase the supply of securities for sale to foreigners, thereby lowering their prices. Finally, a large debt may prove worrisome to foreigners if they believe the country risks defaulting on its obligations. Foreigners will be less willing to own securities denominated in that currency if the risk of default is great. For this reason, the country's debt rating (as determined by Moody's or Standard & Poor's, for example) is a crucial determinant of its exchange rate.

The fifth factor is terms of trade; a ratio comparing export prices to import prices, the terms of trade is related to current accounts and the balance of payments. If the price of a country's exports rises by a greater rate than that of its imports, its terms of trade have favorably

improved, increasing terms of trade shows greater demand for the country's exports. This, in turn, results in rising revenues from exports, which provides increased demand for the country's currency (and an increase in the currency's value). If the price of exports rises by a smaller rate than that of its imports, the currency's value will decrease in relation to its trading partners.

The sixth factor is; political stability and economic performance, foreign investors inevitably seek out stable countries with strong economic performance in which to invest their capital. A country with such positive attributes will draw investment funds away from other countries perceived to have more political and economic risk. Political turmoil, for example, can cause a loss of confidence in a currency and a movement of capital to the currencies of more stable countries.

2.1.9   Concept of Interest Rate

Interest rate is an important economic price; this is because whether seen from the point of view of cost of capital or from the perspective of opportunity cost of funds, interest rate has fundamental implications for the economy. By either impacting on the cost of capital or influencing the availability of credit, by increasing savings, it is known to determine the level of investment in an economy. As the negative relationship between interest rate and inflation is well established, it therefore becomes expedient for any economy that wishes to grow to pay proper attention to changes in interest rate. Nigeria being a country in dire need of macroeconomic stability and appreciable standard of living cannot overlook the important role interest rate could play in this direction.

Okopi (2008) defines interest rates, as the rental payment for the use of credit by borrowers and return for parting with liquidity by lenders. Like other prices Interest Rates perform a rationing function by allocating limited supply of credit among many competing demands.

According to Olusoji, (2013), interest is the payment made by the borrower to the lender of money loan. It is usually expressed as an annual rate in terms of money and is calculated on the principal of the loan. Interest Rate is the price paid for the use of others capital funds for a certain period of time. In the real economic sense, however, interest rate implies the return to capital as a factor of production (Onoh, 2007). According to Kayode (2010), interest rate may be conceived as a price of a money loan, i.e liquid capital, which may be borrowed either for production or even for consumption purposes, or the price paid for the productive services rendered by capital, its compensation demanded by the lender of money funds for parting with liquidity.

Interest can be defined as the return or yield on equity or opportunity cost of deferring current consumption into the future (Uchendu, 2010). This definition clearly shows that interest is a concept which can mean different things depending from the perspective it is viewed. Interest rate can therefore be seen as a nebulous concept, a position affirmed by the availability of different types of this rate. Some of which are; savings rate, discount rate, lending rate and Treasury bill rate. Apart from this, interest rate can also be categorized as nominal or real. This categorization credited to Irvin Fisher tries to accommodate the moderating influence of inflation on interest rate. Nominal interest rate is the observed rate of interest incorporating monetary effects while real interest rate is arrived at by considering the implications of inflation on nominal interest rate (Uchendu, 1993: Essien, 2005). The

importance of interest rate is hinged on its equilibrating influence on supply and demand in the financial sector.

Ojo (1993) confirmed this by saying that the channeling of savings into financial assets and the willingness of individuals to incur financial liabilities is strongly influenced by interest rates on those financial assets and liabilities. The developmental role of interest rate is possible because of the interlocking linkage existing between the financial and real sectors of economies. It is therefore through this linkage that the effect of interest rate on the financial sector is transmitted to the real sector. For instance, the lending rate which translates into the cost of capital has direct implications for investment. High lending rate discourages investment borrowing and vice versa. Savings rates, on the other hand, when high interest rate encourages savings which ultimately translates into increased availability of loanable funds. The snag here is that the high savings rate is also bound to translate into high lending rates with attendant negative consequences on investment (Chizea, 1993). A detailed consideration of relationships between economic variables, which this paper focuses on, reveals that savings is an offshoot of unconsumed disposable income. In the view of classical economists, level of savings is determined by savings rate of interest (Olusoji, 2003). This view holds that increase in this interest rate will lead to increased savings and hence a positive relationship. It is this view that must have encouraged the Nigerian authorities to abandon administratively fixed interest rates for market determined ones.

In the words of Ahmed (2003), deregulated interest rate is believed to be critical for both economic stabilization and development. The implication of Ahmed's position above covers the relationship between interest rate and investment. In this case, it has been established

that high lending rates discourage borrowing for investment and vice versa (Lawal, 1982). Since economists hold that investment plays a fundamental role in capital formation, and hence on economy's growth and developments, it becomes obvious that lending rates through perceived influence on investment plays a developmental role. That is, a decrease in lending rate is theorized to cause investment borrowing to rise which leads to increased capital formation and eventually to economic growth (Onoh, 2007).

The link between savings and investment is no less important as the level of savings in an economy also plays a role in the determination of investment levels. This is why monetary authorities in their pursuit of monetary policies try to influence level of savings and availability of credit, in the case of administratively fixed rates or indirectly during deregulated era, influencing the rate of interest (Ogwuma, 1996; Ojo, 1993). To achieve the desired level of interest rate, the Central Bank of Nigeria (CBN) adopts various monetary policy tools, key among which is the Monetary Policy Rate (MPR). This rate, which until 2006 was known as the Minimum Rediscount rate (MRR), is the rate at which the CBN is willing to rediscount first class bills of exchange before maturity (Onoh 2007). He further opined that by increasing or lowering this rate the CBN is able to influence market cost of funds. If the CBN increases MPR, banks' lending rates are expected to increase with it, showing a positive relationship. In recent past, the need to possess certain class of assets as collateral to assess the CBN's discount window was dispensed with due to global crisis (Anyawu, 199).

2.1.9.1 Factors Influencing Interest Rate in Nigeria

According to Elumelu, (2002), the following factors influence interest rate in Nigeria which can be enumerated below.

The first factor is inflation expectation; if the rate of inflation is expected to increase, the nominal interest rate needs to be sufficiently high to induce positive real interest rates, so that there is an incentive for savings. Similarly, lenders/savers will want to be compensated for inflation and will push the nominal interest rate up to get the desired real rate of interest.

The second factor is volume of savings; higher volumes of savings drive down interest rate and promote investment. Conversely, lower volume increases interest rate and lowers investment. The domestic interest rates, in conjunction with the rate of return on foreign financial assets, and the expected change in exchange rate determine the allocation of accumulated savings among domestic financial assets, foreign assets and goods that are hedged against inflation. Raising the levels of long-term savings is therefore vital for achieving the desired level of interest rates as well as sustaining high investment and output growth.

The third factor is fiscal deficits; government fiscal deficits financed by the banking system crowd-out the private sector. Real interest rates rise as the government attracts funds away from the private sector. High interest rate has the effect of reducing the private sector's demand for capital. Government fiscal deficit as a percentage of GDP in Nigeria has dropped significantly, averaging less than 1% in the last three years.

The fourth factor is Risk Profiles, borrowers' (including sectoral) risk profile and the pricing of risks by the DMBs play an important role in determining the level of interest rates charged by banks. Where a borrower/sector or project is assessed to be high risk, a higher than "normal "nominal interest rate is charged. This explains why some customers are charged a higher interest rate than others under similar conditions.

2.1.10 **Interest and Exchange Rat**es

Changes in exchange rates can have knock-on implications for interest rates because of their effects on inflation. In the same vein, changes in interest rates can themselves feed back into exchange rates, so there is often a complex relationship between the two. Conventional assumptions suggest that an increase in interest rates will tend to raise the exchange rate, and vice versa. Higher interest rates boost returns on Nigerian assets, attracting inflows of funds from overseas and this rise in demand for Naira can push up the price (in other words, the exchange rate of Naira). In the real world, however, things are more complicated. In some circumstances, a rise in interest rates can lead to a fall in the exchange rate, and vice versa. For instance, if the increase in interest rate makes investors to worry about growth prospects and to move their funds elsewhere, the exchange rate can drop (Stanley, 2010).

2.1.11 **Interest Rate and Inflation**

Interest and inflation are keys to investment decisions, since they have direct impact on the investment yield. When prices rise, the same unit of a currency is able to buy less. A sustained deterioration in the purchasing power of money is called inflation. Investors aim to preserve the value of their money by opting for investments that generate yields higher than the rate of inflation. In most developed economies, banks try to keep the interest rates

on savings accounts equal to the inflation rate. However, when inflation rate rises, companies or governments issuing debt instruments would need to lure investors with a higher interest rate (Odusola, and Akintolo, 2014).

Monetary authorities use the interest rate to control money supply and, consequently, the inflation rate. When interest rates are high, it becomes more expensive to borrow money and savings become attractive. When interest rates are low, banks are able to lend more, resulting in an increased supply of money. Alteration in the rate of interest can be used to control inflation by controlling the supply of money. A high interest rate influences spending patterns and shifts consumers and businesses from borrowing to saving mode. This influences money supply. A rise in interest rates boosts the return on savings in building societies and banks. Low interest rates encourage investments in shares. Thus, the rate of interest can impact the holding of particular assets. A rise in the interest rate in a particular country fuels the inflow of funds. Investors with funds in other countries now see investment in this country as a more profitable option than before (Asuquo, 2012).

Inflation has a significant impact on the time value of money (TVM). Changes in the inflation rate (whether anticipated or actual) result in changes in the rates of interest. Banks and companies anticipate the erosion of the value of money due to inflation over the term of the debt instruments they offer. To compensate for this loss, they increase the interest rates. The central bank of a country alters interest rates with the broader purpose of stabilizing the national economy. Investors need to keep a close watch on interest and inflation to ensure that the value of their money increases over time (Peter, 2011).

2.1.12 **Inflation, Interest and Exchange Rate Stability**

The exchange rate and interest rate can be kept low and stable only if we succeed in keeping inflation low and stable over time (Sanusi, 2012). If the Central Bank artificially keeps the interest rate low, the economy must be prepared to live with a depreciated exchange rate. In most monetary policy regimes, interest rate is used as a policy instrument while low Inflation and stable exchange rates are the policy objectives. Interest rate could be varied to fight inflation and positive real interest rate is the norm. For interest rate to fall on sustained basis inflation must fall and inflationary expectations must be low. If interest rate and exchange rate are controlled as we did in Nigeria in 1970s-80s, then we should be prepared to live with any level of inflation outcome that will result from such controls (Soludo, 2009). Hence, the conclusions that can be drawn are as follows:

Under a high inflation environment, a low nominal interest rate regime is not only inconsistent but is also not feasible, as creditors would demand a high interest rate to compensate them for parting with their funds and the erosion of the purchasing power induced by the high inflation. In such circumstances, the policymaker desirous of achieving low and stable inflation (price stability) will be compelled to raise its base policy rate to signal a tight monetary policy stance; influence (drive-up) market interest rates to constrain aggregate demand (through lower consumption and investment spending) and ultimately lower inflation. Over time, this outcome will expectedly elicit a lower interest rate regime when all adjustments must have taken place (MPC, 2012).

A low interest rate regime in an environment of high inflation leads to an inefficient use/allocation of financial resources, as "sub-optimal" investments which do not promote

economic growth will be undertaken. Furthermore, a high inflation environment is inconsistent with a "strong" and stable currency. In an open economy such as Nigeria, a high domestic price level (high inflation) relative to those of the trading partners accompanied by a highly appreciated domestic currency vis-à-vis trading partners' currencies will (i) diminish the country's competitiveness in the international market. (ii) Discourage exports (in Nigeria's case, non-oil exports). (iii) Encourage imports. (iv) Discourage foreign investment, portfolio and other inflows. (v) Encourage capital outflows (vi) Encourage foreign exchange arbitraging and emergence of a thriving parallel market for foreign exchange and (vii) Deplete external reserves. Thus, in order to ameliorate such adverse developments, the policymakers desirous of bringing sanity to the economic system will deploy the instruments available to it, such as pursuing an interest rate policy that will significantly moderate inflation, encourage domestic savings, encourage capital inflows and mitigate capital outflows. Thus, there is an inherent trade-off in trying to strike an appropriate balance among the three key price variables interest rate, exchange rate and inflation rate (Soludo, 2009).

2.2 Theoretical Literature

There are different theories propounded by different scholars and authors. These theories were also reviewed and used in this work considering their basic ingredients in relation to monetary policy and inflation.

2.2.1 Quantity Theory of Money and Inflation

According to Jinghan, (2002), the monetarists, following the quantity theory of money (QTM), have propounded that the quantity of money is the main determinant of the price

level, or the value of money, such that any change in the quantity of money produces an exactly direct and proportionate change in the price level. The QTM is traceable to Irving Fisher's famous equation of exchange;

MV = PQ-   -   -   -   -   -   -   -   -   **(1)**

Where M stands for the stock of money; V the velocity of circulation of money; Q the volume of transactions which take place within the given period; while P stands for the general price level in the economy. Transforming the equation by substituting Y (total amount of goods and services exchanged for money) for Q, the equation of exchange becomes;

MV = PY-   -   -   -   -   -   -   -   -   **(2)**

The introduction of Y provides the linkage between the monetary and the real side of the economy. In this framework however, P, V and Y are endogenously determined within the system. The variable M is the policy variable, which is exogenously determined by the monetary authorities. The monetarists emphasized that any change in the quantity of money affect only the price level or the monetary side of the economy, with the real sector of the economy totally insulated. This indicates that changes in the supply of money do not affect the real output of goods and services, but their values or the prices at which they are exchanged only. An essential feature of the monetarist model is its focus on the long- run supply-side properties of the economy as opposed to the short run dynamics (Geoff, 2012).

Nevertheless, the model's general weakness is found in its inadequacy to explain general price movement. The truism of direct proportion between change in the quantity of money

and change in the price level cannot be accepted in today's world (as there are other factors involved such as infrastructural and structural factors). Moreover, it is technically inconsistent to multiply two non-comparable factors as M relates to a point of time (static concept) and V to a period of time (dynamic concept). Furthermore, the velocity of circulation is highly unstable and would change with variation in the stock of money or money income. Thus, it is unrealistic to assume V to be constant and independent of M. More importantly it has been criticized for neglecting short run factors, such as expectation. (Assenmacher and Gerlach, 2006) opined that, only unanticipated changes of money supply generate price variation that economic agents misconstrue as relative price movements, which leads to price and output increase.

The QTM also gives undue importance to price level as if it is the most important phenomenon of economic system, overlooking factors like interest rate as one of the causative factors between money and prices. Despite these deficiencies, the theory could still be used to analyze inflation in relation to monetary policy (Svensson, 2003; Beck and Wieland, 2010). The general message of the theory is that increase in money supply is the causal factor of inflation and hence reduction in money supply will tackle the menace of inflation. Although Fisher's was widely celebrated, but nonetheless it suffered a lot of setback due to some fundamental irreconcilable differences raised by the Keynesians economists, and this led to Keynes version of transition mechanism as a much better theory.

2.2.2 Keynes's Version of Quantity Theory of Money -Transmission Mechanism:

Keynes' great merit lies in removing the old fallacy that prices are directly determined by the quantity of money. His theory of money and prices brings forth the truth that prices are

determined primarily by the cost of production. Keynes does not agree with the old analysis which establishes a direct causal relationship between the quantity of money and the level of prices. He believes that changes in the quantity of money do not affect the price level (value of money) directly but indirectly through other elements like the rate of interest, the level of investment, income, output and employment. The initial impact of the changes in the total quantity of money falls on the rate of interest rather than on prices. As the quantity of money is increased (other things remaining the same), the rate of interest is lowered because the quantity of money available to satisfy speculative motive increases. A lowering of the rate of interest (marginal efficiency of capital remaining the same) will raise investment, which in turn, will result in an increase of income, output, employment and prices. The prices rise on account of various factors like the rise in labor costs, bottlenecks in production and so on, (Jinghan, 2002).

Thus, in Keynes' version the level of prices is affected indirectly as a result of the effects of the changes in the quantity of money on the rate of interest and hence investment. It is on account of this reason that Keynes analysis is, at times, spoken of as the 'contra-quantity theory of causation' because it takes rise in prices as a cause of the increase in the quantity of money instead of taking the increase in the quantity of money as a cause of the rise in prices (Peter, 2001).

The transmission mechanism process that follows in Keynes is like this; increases in the quantity of money → result in a fall in the rate of interest → which encourages investment → which in turn, raises income, output and employment → it results in raising the cost of production → this result in raising prices. The traditional theory ignored the influence of the quantity of money on the rate of interest, and thereby on output and goes directly from

increase in the quantity of money to increase in the level of prices. Therein lay the fault of its analysis.

According to Uchendu (2010), Keynes systematically removed the classical dichotomy in the traditional money-price relationship by rejecting the direct relationship between M and P. He asserted that the relationship between M and P is indirect and that the theories of money and prices can be integrated through the theory of aggregate demand or the theory of output. The missing link between the real and monetary theories, according to Keynes, is the rate of interest. The mechanism of the rate of interest will work as shown above, which will increase investment and through multiplier ultimate income. The increase in aggregate demand for commodities and a higher push given to wages and costs will raise firstly the relative prices and then the general price level. The process of integration between M and P and the extent by which P will change, as a result of a given change in M, can be shown through a general theoretical model based on money supply (M), general price level (P), the aggregate demand (D), the level of income or output (Y or O), the level of employment (N) and the level of money wages (W).

These relationships can be expressed through elasticity coefficients. The ratio of a proportionate change in P to the proportionate change in M is shown by the elasticity of price level (e). The change in aggregate demand (D) to a given change in M is the elasticity of aggregate demand (ed). The change in Y or O in response to a change in AD may be expressed as elasticity of income or output (ey or eo). The change in price level, as a result of a given change in AD, is denoted by elasticity of price (ep). The response of Y or O to an increase in employment (N) is shown by the elasticity of returns (er) and the response of money wages as a result of an increase in employment is the elasticity of money wages (ew).

Consequently, findings of Stanley (2010), looked at the classical version of the quantity theory of money, Unlike Keynes, the classical version is based on the assumption of full employment and where money is only a medium of exchange; the elasticity of price level (e) and ed remain equal to unity. The elasticity of output (e0) is zero and as a consequence the elasticity of price (ep) must be equal to unity. Since e0 + ep = 1 (unity), the price level, in this case rises in exact proportion to the quantity of money. In Keynes' version, e = 0, prior to full employment and e = 1, or unity, once the full employment level is attained. In the former case (less than full employment) ed – unity and er will also be equal to unity on the presumption that production is governed by the law of constant returns, but er is determined by ew.

Before full employment money wages are assumed to be constant, therefore, ew will be equal to zero. Assuming other factor prices also as constant, er will be equal to unity. If er is unity, then, e0 will also be unity. If elasticity of output (e0) is equal to unity, then ep, must be equal to zero. Thus, the reformulated quantity theory of money suggests that the price level will remain constant so long as there are unemployed resources in the economy. Keynes, however, does not subscribe to the view that the price level will be constant before full employment, though the rise in price level may be less than proportionate.

Because there is a possibility of money wages rising before full employment, ew is greater than zero; ew > 0 brings, in turn, the operation of the law of diminishing returns, so that er < 1 (unity) and, therefore, eo will also be less than unity. The elasticity of aggregate demand (ed) is equal to the sum of eo and ev (ed = eo + ep). This shows that the determination of the magnitude of ed is very complex matter depending upon a number of variables like LP, MEC etc. Since a part of the money is likely to be held by speculators as idle balances, e<i

is likely to be less than unity; ep will be greater than zero because ew > 0 and er < unity. Thus, it is clear that the price level will start rising even before the full employment level is attained. Keynes' analysis also shows that there is no direct or proportionate relation between M and P, in his analysis, the monetary and the real factors in the economy stand fully integrated (Economics discussion 2016).

2.2.3   Classical and Keynesian Theories of Inflation.

Monetary economic theories postulate that an increase in the quantity of, or the velocity of, money supply higher than the rate of growth of outputs results in inflation. They therefore claimed that in order to control inflation, monetary policies must be used (Barro & Grilli, 1994). This is contrary to the claims of the Keynesians, who assert that inflation is the result of pressures in the economy expressing themselves in prices, and that these pressures have no direct relationship with money supply. The Keynesians therefore claim that the causes of inflation can mainly be attributed to fiscal changes, which they list into three main groups namely cost-push factors, demand-pull factors and built-in or adaptive expectation factors. These three groups of factors are commonly referred to as triangular model or three types of inflation (Gordon, 1988; O'Sullivan, 2002). According to the Keynesians, increased private and government spending, natural disasters, or increased prices of inputs, and price/wage spiral are the causes of inflation, this is in agreement with the monetary theory school of thought, whether the inflation is money inflation or price inflation.

The underpinning assertion is that monetary policies influence price inflation (hereafter referred to as inflation) by influencing the financial conditions existing in the economy. These financial conditions (savings, deposits, investments, lending / borrowing,

conservation/spending of incomes, and proportion of funds meant for effecting demand for goods and services) adjust to the various rates charged or permitted by regulatory authorities for the movement/usage of funds. The monetary authorities, especially the Central Bank of any country, use their regulatory tools to influence the availability of money in the economy through the various banks and financial institutions. The size of money available for people to use for the demand for goods and services is what the monetarists refer to as the Quantity of Money (Ezirim, 2005).

The link between the short-run (monetary) and the long-run (fiscal) factors influencing inflation can be explained using the Fisher's Effect. By this theory/effect, as propounded by Irving Fisher, inflation has a link between real and nominal interest rates. Real interest rate refers to the long-run, while nominal interest rate refers the short-run. Production and aggregate supply and demand for goods and services are long-run economic activities which respond to all adjustments of the short-run economic activities. Accordingly, the Fisher's Effect states that real interest rate equals nominal interest rate minus expected inflation rate. By this therefore, real interest rate increases as inflation rate declines (holding nominal interest rate constant), unless the rate of increase in inflation and nominal interest rate are equal. The underlining factor in the Fisher's Effect or Hypothesis in linking the Keynesian and Monetary theories of inflation is interest rate.

This is why various elements or parameters were adopted in this study as measures of independent variables (Monetary Policy) so as to enrich an investigation on the influence of each of these parameters on inflation. But this study was short of stating the disintegrated form of monetary policy such as to show which of the monetary policy tools cause inflation

most and therefore should be the focal point in the control of inflation in such markets. This therefore forms the basis for this study.

2.2.4 The Interest Rate Parity or Purchasing Power Parity Theory (PPP)

According to this theory, the difference in the rate of interest in two countries should be able to explain the exchange value of the currencies of the two countries. Thus, if a country is experiencing high interest rate regime, there is a strong tendency for the exchange rate of its domestic currency to be high as well, depicting that the domestic currency has depreciated in value against foreign ones. Therefore, there exists some form of linear relationship between the interest and the exchange rate operatives in any domestic economy. If interest rates are low, the exchange value of the domestic currency vis-a-vis foreign ones will be low (an appreciation) while the reverse will be the case if interest rates are high (a depreciated local currency results). In effect, differences in the interest rate structure between two economies will give an indication of what their exchange rates would be like. The interest rate parity theory is arguing that the rate of exchange is an important factor influencing the rate of interest rate of a local currency vis-a-vis a foreign one (Idika, 1998).

Nonetheless, the main argument against the interest rate parity theory is for its non-arbitrage condition; which says that the returns from borrowing in one currency, exchanging that currency for another currency and investing in interest-bearing instruments of the second currency, while simultaneously purchasing futures contracts to convert the currency back at the end of the holding period, should be equal to the returns from purchasing and holding similar interest-bearing instruments of the first currency. If the returns are different, an arbitrage transaction could, in theory, produce a risk-free return (Jinghan, 2002). Upon all

these the theory could still be adopted to have an insight about the possible relation between interest and exchange rates.

2.3   Theoretical Framework

From the theories above, which are all expressing different views and opinions in relation to inflation, the classical economists believe that, the amount of money in circulation at a point in time is the major determinant of the price level of goods and services and the value of money. This theory was however disputed by Keynes on the bases of its weaknesses and its inability to reconcile with the dynamic nature of every economy as it appears to be completely static which led to the transmission mechanism or transmission effect propounded by John M. Keynes which was seen to be more encompassing, than that of the classical economists, this is so because the theory covers a wide range of macro-economic aggregates and how they interact or relate with each other as a result of variations in total money in circulation.

This theory looks at interest rate as the key instrument in determining the general price level via transmission effect, he opined that, an increase in money supply reduces interest rate which in turn encourages borrowers or investors to borrow more money for capital investment, this would automatically transmits to increased productivity, full employment and natural adjustment in prices of goods and services.

Keynes in another part of his theory on inflation argued that, inflation is not directly caused by the amount of money in circulation but, due to some basic economic factors namely: Cost Push Inflation refers to an inflationary rate that is determined by the cost of production of goods and services e.g. cost of machines, raw materials, distribution and taxes. While

demands pull inflation refers to inflation rate that is based on excess demand against supply transmitting into inflationary trend. Finally, the Hyper Inflation, this refers to inflationary trend due to economic crises at a point in time, e.g war, crises, scarcity and natural disasters etc.

While the last is exchange rate parity theory, this theory tries to measure the relationship between exchange rate and interest rate in country, depicting that the both variables have linear and positive relationship i.e. a country with high exchange rate is likely to also have a high interest rate as a result of short of money supply, which in turn leads to lower level of production and high rate of prices of goods and services. The emphases of the four theories put together have analyzed the major causes of inflation extensively, but more importantly this research work adopts the Keynes's theory of inflation given the fact that, the theory reconciles with the real life economic environment in Nigeria and plays a more convincing role than the other theories.

2.4 Empirical Literature

A lot of researches have been conducted over monetary policy and inflation in Nigeria and which captured the major macro economic variables and monetary instrument, some were based on the effect of these variables to inflation and others were based on the response to shocks in monetary policy rate; while others also looked at the casualty between interest rate and inflation. However, the aim of this research is study the positions and recommendation of the every researcher carefully and incorporate their findings into ours to give a more robust judgment and recommendations based on the results and more importantly, some of researches are considered relevant and are reviewed under here.

Maku and Adelowokan (2013) in their work using annual data from 1970 to 2011 examined monetary policy and inflation in Nigeria by employing the partial adjustment model. The result indicated that interest rate and exchange rate exert decelerating pressure on dynamics of inflation rate in Nigeria. While, other macroeconomic indicators such as real output growth rate, broad money supply growth rate, and previous level of inflation rate found to be significant determinants of inflation rate in Nigeria during the period.

Dania (2013), in her work studied the monetary policy and inflation in Nigeria, time series econometric technique (Error Correction Model) was used to capture the convergence of the inflation determining factors to achieving long run equilibrium. Yearly data between 1970 and 2010 was used, and found that expected inflation , measured by lagged term of inflation, money supply, significantly determine inflation, while trade openness , capturing the tendencies of imported inflation, income level, exchange rate and interest rate were found not to be significant with all showing signs that conform with a-priori in the short run. In the long run likewise, none of the variables was found to be significant.

Iya and Aminu (2014) investigated monetary policy and inflation in Nigeria between 1980 and 2012 using the ordinary least square method. The result revealed that money supply and interest rate influenced inflation positively, while government expenditure and exchange rate influenced inflation negatively. They suggested that for a good performance of the economy in terms of price stability may be achieved by reducing money supply and interest rate and also increase government expenditure and exchange rate in the country.

Hossain and Islam (2013) examined the determinants of inflation using data from 1990 to 2010 in Bangladesh with the ordinary least square method. The empirical result showed that

money supply, one year lagged value of interest rate positively and significantly affect inflation. The result also indicated that one year lagged value of money supply and one year lagged value of fiscal deficit significantly and negatively influence over inflation rate. There was an insignificant relationship between interest, fiscal deficit and nominal exchange rate. The explanatory variables accounted for 87 percent of the variation of inflation in during the period.

Odusanya and Atanda (2010) in their work using annual data from 1970 to 2011 examined the first lagged of inflation rate and interest rate exerts positive influence on inflation rate. While, only growth of GDP and preceding inflation rate have significant effect on current inflation rate in Nigeria during that period.

Abubakar Dalhatu (2012) in his work titled monetary policy and price stability in Nigeria (December, 2006 through February, 2012). The researcher evaluates the responses of inflation, interest and exchange rate to shocks in Monetary Policy (captured by MPR) as well as the impacts of MPR on macroeconomic variables. The study used monthly data spanning from December, 2006, the variables are: inflation rate, exchange rate, broad money supply and interest rate, Structural VAR was employed to estimate the model. The result shows that inflation responds to shocks in MPR only in a fairly unstable manner (a pattern that is almost unpredictable); in the first four periods, positive shocks in MPR could not bring down inflation, on the other hand, exchange rate responds to shocks in MPR in a relatively downward fashion and quickly assumes upward trend from the second period lasting throughout the period, while interest rate, responds quickly and positively to shocks in MPR from the first thorough the last period. Therefore, interest and exchange rates are

more responsive to shocks in MPR than inflation and above all sometimes changes in MPR cannot guarantee the expected changes in Inflation (because of large informal sector as well as policy divergence between the monetary and fiscal authorities among other reasons). The researcher recommends that the current monetary tightening stance of CBN should be used with caution, improvement and expansion of the cash-lite policy and non-interest banking of the CBN, harmonization of fiscal and monetary policy.

Hameed, Khalid and Sabit (2012) presented a review on how the decisions of monetary authorities influence the macro economic variables like: Money Supply, Interest Rates, and Exchange Rates in ensuring price stability in Nigeria. They assert that the foremost objective of monetary policy is to enhance the level of welfare of the masses and it is instrumental to price stability, economic growth, checking BOP deficits and lowering unemployment. The method of least square OLS explained the relationship between the variables under study. Tight monetary policy in terms of increase interest rate has significant negative impact on price level. Money supply has strong positive impact on output that is positive inflation and output is negatively correlated. Exchange Rate also has negative impact on output which is show from the values. The study recommended that central bank can best contribute to a nation's economic health by eliminating the price uncertainties associated with inflation.

Omotor (2008) examined the impact of price response to Exchange Rate changes in Nigeria using times series data covering the period of 1970 to 2003and using a vector error correction model (VEC) and slope-dummy methodology. The study showed that exchange rate and money supply aggravated inflation in Nigeria and suggested that a stable, consistent and complementary policy on money supply and exchange rate is required for price

stability; the domestic output expansion is needed to meet the ever growing food demand in Nigeria.

Folawole and Oshinubi (2006) examined the efficacy of monetary policy and Inflation in Nigeria covering the period of 1980-2000 and employing the rational expectation framework and time series analysis. The study observed that the effort of monetary policy at influencing the finance of government fiscal deficit through the determination of the inflation tax-rate affect both the rate of inflation and real exchange rate, thereby causing volatility in their rates. The study found that inflation affects volatility of its own rate as well as the rate of exchange.

Mete and Michael (2005) examined whether monetary aggregates have useful information for forecasting inflation rate in the case of Nigeria other than that provided by inflation itself using a sample random spanning from 1990 to 1998. The study adopted two approaches; mean absolute percentage errors (MAPEs) and auto regression model. The study revealed that the Treasury bill rate, domestic debt and M2 (Broad Money Supply) provide the most important information about price movements. Treasury bill rate provided the best information, since it has the loosest MAPE. Conversely, the least important variables were the deposit rate, dollar exchange rate M1 (Narrow money). Meanwhile M2 provides more information about inflation than M1 in the sample period. They also estimated equation and determined alternately determined alternately whether M2 enters the equation significantly and they found that M2 is not significant. Exchange rate level and contemporaneous value of the domestic debt are significant in the model. The results obtained were robust across the tow methods used and they conclude that although the monetary variables contained some

information about inflation, exchange rate and domestic debt may be more useful in predicting inflation in Nigeria.

Applying a structural VAR approach, the two scholars established that after a monetary policy shock, output decline temporarily with the downward effect reaching its pinnacle within the second year, and the global monetary aggregate drops significantly. More so, the price level rises permanently in response to a positive in the global liquidity aggregate.

Oliver and Thepthida (2005) used a general equilibrium model to discover that real exchange rate fluctuations arise from two sources: changes in the relative price of traded goods, and movement in the relative price of traded to non-traded goods across countries. In their conclusion, they maintained that the introduction of non-traded goods would not alter the predictive powers of monetary shocks because the presence of non-traded goods magnifies the response of the deviation from the law of one price.

Philip and Isiaq (2012) examined the relationship between monetary policies and inflation in Nigeria for the period spanning from 1986 – 2010. The study employed a co-integration and Multi-Variate Vector Error Correction Model approach to examine both the long run and short run relationship or nexus among monetary policy, exchange rate and inflation rate. Based on this approach, the paper found that there exists at least a co-integrating vector among variables and the vector error correction estimate showed that a uni-directional causation exist from interest rate and inflation rate. The theoretical transmission nexus deduced from the VECM estimate further revealed that a change in monetary policy stance and not otherwise. Based on these findings, this study recommends appropriate control and management of both the interest rate and inflation rate.

Chimobi and Uche (2010) examined the relationship between Monetary Policy and Inflation in Nigeria covering the period of (1970 to 2005). Using co-integration and granger causality test analysis, the study revealed no existence of a co-integration vector in the series used. The study revealed that there is a unidirectional causation between Money Supply via Interest Rate and Inflation. The study also found empirical support in context to the money-prices-output hypothesis for Nigerian economy, M2 have a strong casual effect on the real output as well as on general price level. This suggests that monetary stability can contribute towards price stability in the Nigerian economy since the variation in price level is mainly caused by money supply; the study concluded that inflation in Nigeria is to a much extent a monetary phenomenon.

Mbutor and Ibrahim (2013), in their paper present a simple model showing the impact of financial inclusion on monetary policy in Nigeria between 1980 and 2012. The result of the study supports the notion that growing financial inclusion would improve the effectiveness of monetary policy. However, the coefficient of the number of bank branches has the wrong sign and this is explained by the fact that, in opening branches, banks mainly pursue profits but not financial inclusion which is a policy objective, so that there are clusters of branches which are under-utilized while numerous locations which are considered not favorable for balance sheets are under-branched.

Joseph (2017), in his work financial inclusion, governance and economic progress in using Nigeria data spanning between the period 1980-2014, the study leans on the Generalized Method of Moment (GMM) estimation technique for the analysis. Three striking results were reported: (i) financial inclusion and governance indices have statistical relevance in determining infrastructural investment in Nigeria; (ii) Governance indices and commercial

bank deposit significantly increase per capita GDP; and (iii) financial inclusion has the tendency to bridge the gap between the rich and the poor and reduce the prevalence of poverty in the economy. The findings suggest that to reduce income inequality and increase per capita GDP, more measures must be taken to address financial exclusion of low-income groups from financial services. Also transparent democratic practice that will increase investment in infrastructure and enhance per capita GDP in order to alleviate poverty should be enthroned in Nigeria.

Abdu, Buba, Adamu, and Muhammad (2015), analyzed the drivers of financial inclusion and its gender gap in Nigeria using The Global Findex 2011 dataset. The study employed Binary Probit Model and technique of Fairlie decomposition to realize its objectives. The empirical findings suggested that youthful age, better education and high income improve the chances for households to be financially included whereas old age, female and low income reduce the likelihoods for households to be financially included. The decomposition results confirm the existence of gender gap in financial inclusion in favor of male households, to which education (particularly secondary) and income quintiles 2 and 5, contribute significantly to the explained gap.

2.5   Literature Gap

Unlike past researchers, the focus of this research work is viewed from a different dimension in a broad and unique perspective, this is so because this work relied on monetary policy transmission channel as a guideline for policy implications and recommendations and this was done to give economic players and policy makers a more reliable platform and concrete direction to formulate a solid and sustainable economic policies in Nigeria. More so, most emphases of past researchers were based mainly on the effectiveness of monetary

policy on inflation rate in Nigeria without taking cognizance of other factors such as the rate of formal financial system which is a major determinant of the efficiency or possible implementation of monetary policy in Nigeria as was done in this research work. Finally, unlike other researchers this study was able to give up to date information on monetary policy and inflation in Nigeria incorporating the current trend and direction of monetary policy i.e. the deviation from monetary targeting to inflation targeting and the dynamics in our economic system.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1   Research Design

A research design is the basis or overall plan of the methods adopted in collecting and analyzing the data in relation to the research problem and objectives. For the purpose of this study, we used quantitative research design, by combining theoretical consideration (a-priori criterion), and empirical observations in analyzing monetary policy and inflation rate in Nigeria spanning between (1986-2016), the study is a time series research considering the period of time involved.

This research was embarked upon because overtime, monetary authorities in Nigeria have been at a cross, over tackling inflationary trend in Nigeria, and this has gone a long way in putting so many economic activities at stake, leading to structural imbalances, high rate of unemployment and macro economic instability. However, monetary policy which is deemed to be the most reliable and efficient means of controlling inflationary rate all across the world is perceived to be grossly inefficient and ineffective in Nigeria and this is believed to be as a result of improper coordination of monetary policy instruments, corruption, lack of focus and perseverance in policy objectives and most importantly the poor rate of financial inclusion. The choice of this topic was informed by the need to asses' inflationary control through monetary policy and to measure the strengths and weaknesses of monetary policy through financial inclusion in Nigeria.

According to Andreas (2010), despite the application of the monetary policy tools, inflation has continued to pose challenges to the monetary authorities. Some of the reasons include

the inability of the monetary authorities to enforce compliance through the monetary channel in the banking and non-banking institutions, and fiscal imbalance characterized with expansionary fiscal policy with deficit budget (Gogor, 2011; Umeredu, 2007).

Considering the challenges facing the Nigeria's economic structure as captured by this research topic, the fundamental objectives are: firstly, to examine if monetary policy can significantly tackle inflationary rate in Nigeria, secondly, to evaluate the factors responsible for the poor implementation of monetary policy in Nigeria, thirdly, to determine the direction of casualty between monetary policy and inflation in Nigeria and fourthly is to ascertain if the rate of financial inclusion can substantially boost the effectiveness of monetary policy in Nigeria. However, these objectives were achieved through the use of these methods: Vector Autoregressive Model, Engle Granger Casualty Test and Trend Analyses.

3.2   Kinds and Sources Data

The study made use of data mainly from secondary sources, particularly monetary policy department of CBN. We equally made use of data from the published works in CBN Statistical Bulletins, World Bank Development Index (WDI) and Nigeria Bureau of Statistics.

Quarterly data spanning between (Q1 1986 to Q4 2016) in Nigeria were used for this research work which are: inflation rate (INFR), interest rate (INTR), broad money supply M2, exchange rate (EXCHR) and reserve ratio (RR). More so, other variables were employed to assess the influence of the informal financial system on inflationary rate in Nigeria, which are: bank branches (BB), commercial bank deposits (CBD) and adult

population (ADLT POP). The study made use of data mainly from secondary sources, particularly from Statistical Bulletins (CBN), World Development Index and Nigerian Bureau of Statistics (NBS).

3.3   Method of Data Analysis

a.   **The Vector Autoregressive Model**

Generally, monetary policy instruments are linked through a series of interconnections among macroeconomic variables. Hence Vector Autoregressive Technique is considered to be the most suitable and reliable framework for the study of monetary policy in recent years, as it is able to capture the interaction between the conduct of monetary policy in relation to the economy without ascribing to a particular theoretical model (Mies and Tapia, 2003). VAR effectively captures linkages among macroeconomic variables since it is a dynamic system that permits simultaneity of activities among variables that are used. Basically, the variables in the system express themselves freely simultaneously and the impulse response function was employed to trace out the actions due to each variable in the entire system (Mbutor: 2009). The Vector Autoregressive Model (VAR) approach was used for estimating the objective of this study. While the Impulse Response Function was for estimating the second objective (IRF) impulse response function.

b.   **Granger Causality:** This was employed to check the casual link or transmission channel between monetary policy instruments in Nigeria in respect to the third objective of this study in order to have a guide in making recommendations. At the level of theory bringing out the evidence of the causal relationship between economic variables furnish us with elements of reflection and better understanding of economic phenomena. In practical, the

"causal knowledge" is necessary to formulate correct economic policies (Bourbonnais 2002).

c. **Trend Analyses:** this was employed to show the pattern of flow or the trend of financial inclusion in Nigeria overtime.

3.4   Model Specification and Justification

The model specification for this research work is adapted from the theoretical framework of this research which is, transmission effect theory of inflation propounded by Maynard Keynes, this theory was adopted for this research work because it covers a wide range of variables that are very crucial to this research work. Keynes explicitly established the relationship between broad money, interest rate and inflation through transmission effect; see Keynes's Version of Quantity Theory of Money -Transmission Mechanism, pp 43.

Based on this theory, the implicit model is as follows:

INFR = f (BMS, INTR, INV, GDP, FUEMPL) -   -   -   -   -   1

Where INFR= inflation rate, BMS = Broad Money Supply, INV= investment GDP = Gross Domestic Product and FUEMPL = full employment. Keynes believes that, the variables interact in this way through transmission effect; hence the explicit function is as follows:

$INFR_t = \beta_1 BMS_t > 0, \beta_2 INTR_t < 0, \beta_3 INV_t > 0, \beta_4 GDP_t > 0, \beta_5 FUEMPL > 0.$ -   2

However, due to the contemporary nature of the economy and current developments in Nigeria in line with this research topic, we therefore modify the model above by excluding some needless variables which are: INV, GDP and FUEMPL and replaced them with Reserve Ratio and Exchange rate to suit the topic of this research work. This is also in line with the work of Abubakar Dalhatu (2012).

Therefore the implicit model is as follows:

The implicit Model is as follows:

INFR = f (EXRT, INTR, BMS, RR)- -   -   -   -   -   - 3

While the explicit Model is as follows:

$INFR_t = \beta_0 + \beta_1 EXRT_t + \beta_2 INTR_t + \beta_3 LnBMS_t + \beta_4 LnRR_t + e_t$-   -   -   4

Given the fact that the theory that we have adopted for this research work laid so much

emphasis on interest rate as a key instrument that influences price level through

transmission mechanism, we therefore specify the interest rate model, consequently.

$INTR_t = \beta_0 + \beta_1 EXRT_t + \beta_2 INFR_t + \beta_3 LnBMS_t + \beta_4 LnRR_t + e_t$-- -   -   5

More so, given that the economy of Nigeria depends largely on importation of goods and

services, which indicates that, exchange rate plays a crucial role and influences the prices of

goods and services in our economic system we therefore deem it fit to assess the variations

of exchange rate as a result of other monetary policy instruments including inflationary rate,

thus.

$EXRT_t = \beta_0 + \beta_1 INTR_t + \beta_2 INFR_t + \beta_3 LnBMS_t + \beta_4 LnRR_t + e_t$-   -   - 6

Where:

Ln   Natural logarithm

INFR   Rate of Inflation

BMS   Broad Money Supply (M2)

EXRT   Exchange Rate

INTR   Interest Rate

RR   Reserve Ratio

t   Time subscript

A-Priori Expectation

This research work anticipated some expectations for some of the variables used in the

above model based on conventional macroeconomic theories and the economic environment

in Nigeria:

$\beta_1 > 0$, $\beta_2 < 0$, $\beta_3 < 0$, $\beta_4 > 0$.- -   -   -   -   -   -   -   7

The a-priori signs come from economic theories, as exchange rate (EXRT) depreciates (falls), the internal and external value of currency depreciates and Inflation increases, also an increase in Interest Rate (Contractionary Monetary Policy) reduces overall money in circulation, productivity and investment leading to a sharp drop in purchasing power and general price level (Inflation). As BMS (M2) increases, (Expansionary Monetary Policy) the overall money in circulation increases and purchasing power increases alongside which leads to an increase in general price level. Finally an increase in Reserve ration leads to a corresponding contraction in the stock of money in commercial banks, leading to a reduction in money creation, money supply and consequently inflation.

3.4.1 VAR Model for Objective 1

A transformation of the empirical model in to VAR model with the variables stated in their lagged values in a matrix specification is as follows:

$\Delta Yrt = B1 + B2 + dyt-1\ \alpha\sum\Delta yt-1 + Et$-   -   -   -   -   -   8
Where

$$INFR = \begin{vmatrix} r & \cdot \\ |p1| \\ | \\ EXRT \\ |\ /NTR \\ | \\ LnBMs \\ LnRR \\ | \\ | \quad , \quad | \\ | \quad . \quad J \end{vmatrix} \begin{vmatrix} r & \cdot \\ |p2 \\ | \\ |\overline{p3}| \\ | \quad | \\ |p4| \\ | \\ | \cdot \\ | \\ | \\ J \end{vmatrix} , E_t = \begin{vmatrix} rE1 \\ |E2 \\ | \\ |E3 \\ | \\ |E4|^- \\ | \cdot | \\ | \cdot J \end{vmatrix}$$ -   -   -   -   -   9

In using VAR, it is relatively easy to determine causality in the long run and short-run dynamics, as long as the variables are co integrated (Engle and Granger, 1987). A major highlight of the use of VAR is that in the system, there is no discrimination between endogenous and exogenous variables. Hence, all variables are treated as endogenous and VAR system does not impose a-priori restrictions on structural relationships. In addition, the

relative determination of variations in a variable in terms of its own value in the value of other variables can be assessed once the model has been estimated, using the impulse Response Functions (IRF) and Variance Decomposition (Iyoboyi and Pedro, 2014).

The reduced-form VAR model in the study consists of five variables to attest the impact of monetary policy on inflation.

However, we deem it fit to modify the model by has a vector of explained variable, which is Yt includes it, *Int*, *xt* is represented in a VAR model founded by Granger's (1969). We therefore considered the standard form of our VAR model with lag order *p* as:

$$Yt = C_O + \sum_{i=1}^{p} (A_{i\_}Y + Er) - - \quad - \quad - \quad - \quad - \quad - 10$$

Where: Yt represents the Vector of Endogenous Variables, Co is a Vector of Constants; *Ai* denotes the Matrices of Autoregressive Coefficients and *Er* is a Vector of White Noise Processes.

According to Anguyo (2008) identification of the structural shocks is achieved through the appropriate ordering of the variables of interest and applying Choleski decomposition to the variance covariance matrix of the reduced form residuals. In estimating the standard VAR model in equation 1 above, the variables must be stationary.

The model which seeks to explain the effect of variations in Monetary Policy on Inflation is a simple unrestricted VAR model adopted from (Joao and Andrea, 2006) written as:

Yt = AYt-1+ *Er*- - - - - - - - - 11

Y is a Vector of Endogenous Variables and A is a matrix of polynomials in the lag operator and *Er* is a vector of random errors.

However, the explicit form of the VAR model is stated below.

$$INFR = \alpha_0 + \beta_1 \, {}_{INFRt-1} + \beta_2 \, {}_{EXRTt-1} + \beta_3 \, {}_{BMSt-1} + \beta_4 \, {}_{RRt-1} + \beta_5 \, {}_{INTRt-1} + \varepsilon_{t1} - \qquad - \qquad 12$$

$$EXRT = \alpha_0 + \beta_1 \, {}_{EXRTt-1} + \beta_2 \, {}_{INFRt-1} + \beta_3 \, {}_{BMSt-1} + \beta_4 \, {}_{RRt-1} + \beta_5 \, {}_{INTR \, t-1} + \varepsilon_{t2} - \qquad 13$$

$$INTR = \alpha_0 + \beta_1 \, {}_{INTRt-1} + \beta_2 \, {}_{EXRTt-1} + \beta_3 \, {}_{INFRt-1} + \beta_4 \, {}_{BMSt-1} + \beta_5 \, {}_{RRt-1} + \varepsilon_{t3} - \qquad - \qquad 14$$

$$BMS = \alpha_0 + \beta_1 \, {}_{BMSt-1} + \beta_2 \, {}_{EXRTt-1} + \beta_3 \, {}_{INFRt-1} + \beta_4 \, {}_{INTRt-1} + \beta_5 \, {}_{RRt-1} + \varepsilon_{t4} - - \qquad - \qquad 15$$

$$RR = \alpha_0 + \beta_1 \, {}_{RRt-1} + \beta_2 \, {}_{EXRTt-1} + \beta_3 \, {}_{INTRt-1} + \beta_4 \, {}_{INFRt-1} + \beta_5 \, {}_{BMSt-1} + \varepsilon_{t5} - \quad - \qquad - \qquad 16$$

Where

B_0, ∂_0, a_0, $'A_0$, θ_0, ϑ_0, and ν_0 are the intercept term.

$\mu 1t, \ldots \ldots \mu 5t$ are the white noise error terms.

3.4.2 Granger Causality Model for Objective 2:

Granger (1996) proposed the concepts of causality and erogeneity: a variable Yt is said to cause Xt, if the predicted value of Xt is ameliorated when information related to Yt is incorporated in the analysis. This is translated as follows.

$$t = {}_{i=} \quad {}_1 \, y \, t - 1 \; + \; c_1 \; + \; \varepsilon_1 \, t \; . \; - \; - \qquad - \qquad - \qquad - \qquad - \qquad 17$$

$$x \, t = \quad {}_1 \, x \, t - 1 \; + \; c_1 \; + \; \varepsilon_1 \; t \; . \; - \qquad - \qquad - \qquad - \qquad - \; -$$
$$ {}_{i=1} \qquad\qquad 18$$

Where Y = (INFR) Inflation Rate and X = (INTR) Interest Rate. If the set of X and Y coefficients are statistically different from zero, then there exists Bi-Directional causation. On the other hand, Uni-Directional causation occurs when only one of the coefficients is significant (i.e. X causing Y or vice versa) and absence of causation exists if both coefficients are not significant.

3.4.3 Financial Inclusion Model using TREND Analyses for objective 3.

The financial inclusion model was incorporated into this work as a supportive or complementary approach basically to assess the strength and weaknesses of monetary policy on inflationary rate in Nigeria in an attempt to x-ray the effectiveness of monetary policy on

inflationary trend from a more holistic background, taking cognizance of financial inclusion as basis or bedrock on which monetary policy operates.

Hence the model specification Mp f (FinInc)--19

Where Mp = Monetary Policy and FinInc = Financial Inclusion

Model for penetration dimension: Commercial Bank Deposits
                                    Adult population = (15 and above)

Model for Service dimension: Bank Branches
                                    Adult Population = (15 and above)

3.5 Measurement and Explanation of Variables in the Model

The variables used for this research work are macroeconomic variables which are: Interest Rate, Exchange Rate, Reserve Ratio, Broad Money Supply, and Inflation Rate. More so, the penetration and service index of financial inclusion variables were used which are: Commercial Bank Branches, Money Deposits (Current and Savings) and Adult Population. However, due to differences in unit of measurement, for instance, while some variables like: inflation rate and interest rates are in percentage, other variables like: broad money supply, reserve ratio, exchange rate, adult population, number of bank branches and money deposits are in different measuring units such as: hundreds, thousands, millions and billions respectively. Consequently, all the variables were logged in order to harmonize the differences and have similar unit of measurement.

3.6 Estimation Technique and Procedures

The researcher carried out some preliminary or diagnostic test in order to observe the direction of the variables and establish the method of analyses adopted for this research work, which are:

a. **Descriptive statistic:** This was carried out to observe and examine the direction and pattern of distribution of the variables employed.

b. **Unit Root Test:** Time series data for all the variables in this study are trended and therefore most likely to be non-stationary. The problem with non-stationary or trended data is that, its result is likely to be biased and inconsistent leading to incorrect and misleading policy inferences. It is essential therefore, to carry out unit root test in order to avoid such spurious regression results and also to confirm the order of integration of the series of the variables involved in a model. This would go a long way in determining the co-integration techniques that is most appropriate and suitable. Regression becomes spurious when both the dependent and independent variable (s) are not stationary at level. A spurious regression usually has a very high R^2, insignificant probability values and t-statistics that appear to provide insignificant estimates, and the results may be intuitively meaningless. This is because the OLS estimates may not be consistent, and therefore the tests of statistical inference are invalid. To avoid the aforementioned problems, Augmented Dickey Fuller (ADF) unit root test was conducted.

$$\Delta xt = \alpha + \beta t + \delta xt\text{-}1 + \Sigma\ \Delta xt\text{-}1\ + \varepsilon t\text{-} \qquad \text{-} \qquad \text{-} \qquad \text{-} \qquad \text{-} \qquad \text{-} \qquad \text{-} \qquad 20$$

Where, x in the above equation is the variable under consideration. Thus, the ADF unit root test states that Ho = 0 and H1 < 0, where the ADF statistics was compared with the observed Mackinnon critical values.

c.   **Bound Test**: Given the result of the unit root test which shows that all the variables are not stationary at level, but instead a combination of I (1) and I (0) series, therefore the most appropriate test of co-integration is the Autoregressive Distributive Lag (ARDL) Bound Test of co-integration. This is employed for the model in this study. The null hypothesis indicates that, there is no long-run relationship between the dependant and independent variables. The decision rule is to reject null hypothesis when f-statistic of the test is greater than the critical value of upper bound at a chosen level of significance i.e. 5% for this study. On the other hand, the null hypothesis is accepted when the F-statistics is less than that of the Critical Value of the Lower Bound. When the F-statistics falls between the upper and the lower bound, it then means that the test is considered inconclusive.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.1 Data Presentation

The main technique of data analysis in this study is the Vector Autoregressive Model, but it is pertinent to present or provide an understanding of the trend and distribution of the variables of the study. This is to help in the determination of the most appropriate regression estimation techniques. To fulfill this obligation, the descriptive statistics of all the variables covering the same sample size of 30 observations were computed as contained in table 4.1.

Table 4.1: Descriptive Statistics

	INFR	IR	EXR	M2	R_R
Mean	2.624298	2.564264	3.878231	8.184698	5.783456
Median	2.515386	2.602690	4.739182	8.557969	6.329662
Maximum	4.370870	3.307169	6.054794	11.36270	9.730679
Minimum	-1.764935	1.781286	0.321837	4.547033	0.828354
Std. Dev.	1.070105	0.297992	1.367518	2.192915	2.504133
Skewness	-1.478520	-0.302170	-0.720949	-0.198180	-0.394176
Kurtosis	8.233340	3.419203	2.278826	1.716872	2.334436
Jarque-Bera	186.6817	2.794953	13.42900	9.318178	5.499787
Probability	0.000000	0.247220	0.001213	0.009475	0.063935
Sum	325.4130	317.9688	480.9007	1014.903	717.1486
Sum Sq. Dev.	140.8503	10.92228	230.0231	591.4918	771.2939
Observations	124	124	124	124	124

Author's Computation E-Views 9.0

The result in table 4.1 shows that the average values of Inflation Rate **(INFL)**, Interest Rate (**INTR**), Exchange Rate **(EXCH)**, Broad Money Supply (**MS2**) and Reserved Ratio **(RR)** over the period under this study are: 2.624298, 2.564264, 3.878231, 8.184698 and 5.783456 in their respective units. There is a wide range i.e. difference between the minimum and maximum values of all the variables.

Although, the standard deviations are not large less than 2 except for money supply and reserve ratio. The wide range are indications that significance changes have occurred on the variables over the period covered, this implies that there are enormous changes in the variables which are worth studying considering the variation in Nigeria's economy. The Skewness, Kurtosis and Jacque-Bera statistics are used for the examination of the nature of distribution of the variables; these determine best estimation technique for the variables. The result shows that the distributions of all the variables are negatively skewed implying that the left tail is extreme.

In relation to kurtosis, INFL, INTR are leptokurtic (i.e. evidence of fatter tail than the normal distribution) while all other variables are platykurtic (i.e. evidence of thinner tail than the normal distribution). The distribution of a series is leptokurtic when the kurtosis is greater than three (3) and it is platykurtic when the kurtosis is less than three. The Jaque-Bera statistics of INFR, EXCHR, and BMS2 are significant but that of IR and RR are not significant at 5% level. This has established the use of Vector Autoregressive Model as a more efficient and reliable method for this work.

4.2 Analyses

The researcher employed different econometric techniques as analytical methods like: Vector Autoregressive Model, Impulse Response Function and Trend Analyses in order to address the objectives of this research work. However, some important diagnostic tests were carried out to examine the nature and pattern of the variables employed and also to establish and justify the application of these methods.

4.2.1 Presentation of Unit Root Test

The stationarity test is used to find out whether or not variables employed for this study have a Unit Root from **1986-2016**, using Augmented-Dickey Fuller unit root tests and more importantly to explore options that would make the variables stationary in the case of non-stationarity, e.g via differencing, otherwise the results would be spurious and unreliable. The result is presented in table 4.2 below.

Table 4.2 Unit Root Test

VARIABLES	ADF	5% CRITICAL LEVEL	(ADF) Order of Integration
INFL Prob.	-2.943853 0.0436	-2.887909	I (1)
EXCH Prob.	-2.008715 0.0431	-1.943662	I (1)
INTR Prob.	-2.918795 0.0461	-2.885249	I (0)
MS$_2$ Prob.	-4.426174 0.0029	-3.447072	I (0)
RR Prob.	-4.193100 0.0010	-2.885249	I (1)

Author's Computation E-Views 9.0

The result of the ADF revealed that INFL, EXCH and RR have unit root at level but became stationary at first difference - integrated of order one i.e. I (1). This means the variables had to be differenced once to become stationary. On the other hand, INTR and MS2 are stationary at level, I (0). This shows that the independent variables of the model except INTR and MS2 estimated in this study are not stationary at level, while the dependent variable (INFL) is stationary at first difference. This was achieved by comparing the ADF statistics to their respective critical values at 5%, and from the result above the ADF statistics are greater than their respective critical values at different points of stationarity i.e I

(0) and (I), this could also be confirmed by their respective probability values which are also all significant at 5%. The stationarity of the variables at I (0) and I (1) could further indicate the presence of long-run relationship. Hence, Autoregressive Distributive Lag Bound Co-integration Test becomes necessary in this study to examine the existence or otherwise of a long-run relationship between the variables in the models.

4.2.2   Analysis of Co-integration Test (Bound Testing Approach)

Table 4.3: Co-integration Bound Test

Test statistics	Value	K
f-statistic	6.189161	4
Critical Value Bounds		
Significance	I0 Bound (3.47)	I1 Bound (4.57)
10%		
5%	☐	
2.5%		
1%		

Author's Computation E-Views 9.0

The result of the test indicates that the F-statistic of the variables is 6.189161 with Critical Values of the Lower Bound 3.47 and the Upper Bound 4.57 respectively. This shows that the F-statistics 6.189161 is greater than the critical value of both the lower and the Upper Bounds in the model. This implies the rejection of the null hypothesis, while alternative hypothesis accepted. Hence, the test shows that there is co-integration (long-run relationship) between the variables in the model. Therefore, we employ the Vector Auto-regressive Model for the estimation of the model in this study; this is in line with the findings of (Philip and Isiaq 2012) and (Chimobi and Uche 2010).

4.2.3   Analyses of Inverse Roots of AR Polynomials

Fig 4.1 Inverse Roots

Inverse Roots of AR Characteristic Polynomial

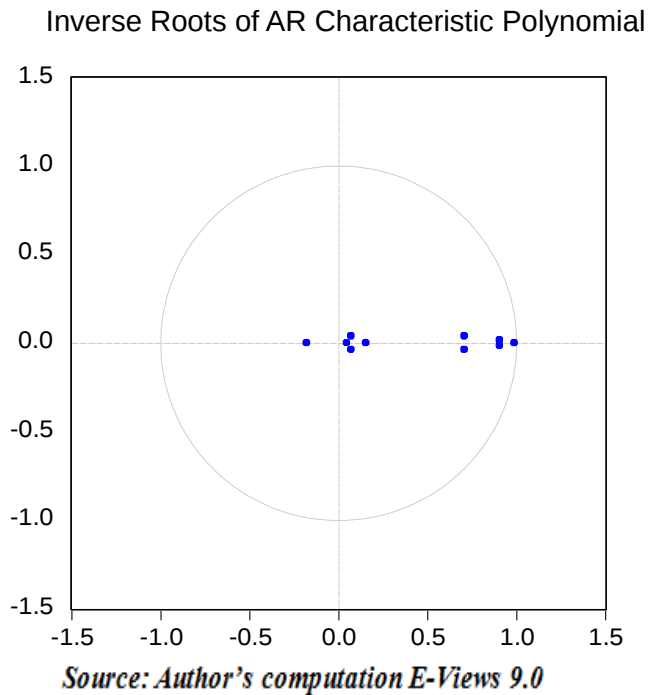Source: Author's computation E-Views 9.0

Figure 4.1 depicts the graph of AR inverse root of the VAR. The graph showed that all the polynomial roots fall within the unit circle. This outcome implies that the variables are stationary and by implication the VAR model is suitable for the analyses, this further establishes and justifies the application of impulse response function and variance decomposition.

4.2.4 Vector Auto Regression Analyses Table

4.4: VAR Estimates

	LINFR	LIR	LEXR	LM2	LR_R
LINFR(-1)	1.361863	0.017804	0.039585	0.027085	-0.005639
	(0.10178)	(0.01800)	(0.01968)	(0.04256)	(0.01763)
	[*13.3802]	[0.98926]	[*2.01159]	[-0.63635]	[-0.31990]
LIR(-1)	0.090702	1.411501	0.002385	-0.050425	-0.090586
	(0.49534)	(0.08759)	(0.09577)	(0.20715)	(0.08578)
	[0.18311]	[*16.1157]	[0.02490]	[-0.24343]	[-1.05600]
LEXR(-1)	-0.078108	0.051826	1.706266	-0.185901	0.022236
	(0.50143)	(0.08866)	(0.09695)	(0.20969)	(0.08684)
	[-0.15577]	[0.58453]	[*17.6000]	[-0.88655]	[0.25606]
C	0.092540	0.377842	0.076205	1.295827	0.025314
	(0.79035)	(0.13975)	(0.15281)	(0.33051)	(0.13687)
	[0.11709]	[2.70372]	[0.49870]	[3.92065]	[0.18495]
R-squared	0.859060				
Adj. R-squared	0.846363				
Durbin W	1.79885				

Source: Author's computation E-Views 9.0

4.2.4.1   Objective 1: The significance of Monetary Policy in tackling Inflationary Rate in Nigeria.

The VAR estimates seek to address the first and second objectives and to clarify the arguments between the null and alternative hypotheses in respect to objective one and two of this study. Basically this is to examine if monetary policy can significantly tackle inflationary rate in Nigeria or otherwise given the circumstances under which monetary policy operates and more so, it seeks to address the poor implementation of monetary policy in Nigeria.

As presented in table 4.5, the model explains that about 95% of the variation in the dependent variable (inflation) which is the measure of the prices of goods and services in Nigeria is being explained by the independent variables. The value of the Durbin Watson

statistics of 1.79885 is within the acceptable region. Meanwhile in respect to the first equation, exchange rate LEXR is significant given the fact that, the 2.01159 t-statistic is greater than the tabulated value of (1.96) at 5% level of significance. This is to say that, increase in the value of exchange rate significantly increases the rate of inflation, although this is not in line with our a-priori expectation and the purchasing power parity theory, which states that, exchange rate is inversely related to inflationary rate in a given economy, but this however, could be as a result of the volatility in our exchange rate system, which has made it difficult for inflationary rate to react proportionately to exchange rate movements in Nigeria and this could also be traceable to the unfavorable balance of payment as the overwhelming Nigeria's economy depends largely on importation of goods and services, which has made it very difficult for any appreciation of our currency to reduce the prices of goods and services.

More so it is an indication that inflationary trend in Nigeria is an exogenous factor, given the high import dependence of most goods and services we consume from foreign countries which has undermined our domestic productive capacity and has weakened the influence of other endogenous monetary policy instruments like money supply, interest and reserve ratio given that inflation is highly influenced by external factors as a result of high import dependence. The result above also depicts that previous year inflationary rate is significant given the 13.3802 t-statistic which is above t-tabulated at 5% as mentioned earlier.

The VAR result in respect to previous inflation positively affecting the current inflation rate is obviously in terms with price movements in Nigeria, as increase in the prices of goods and services are usually sustained without regards to production cost, consequently,

inflationary rate persist in respective of efforts by the Central Bank of Nigeria to curb it due to the weak and inefficient monetary policy in Nigeria.

Generally, it can be seen from the VAR estimates above that, other monetary policy instruments like interest rate, broad money supply and reserve ratio are not statistically significant. Consequently, our earlier assertion in the statement of the problem that, monetary policy could be grossly inefficient and weak as a policy measure to tackle inflationary trend in Nigeria due to poor rate of financial inclusion in Nigeria. From the result, it also depicts that, the implementation of monetary policy is very poor in Nigeria, given that most of the policy instruments are statistically insignificant, which is an indication that, policy measures by the Central Bank of Nigeria overtime have not been consistent and stable, hence the poor implementation of the policies. Meanwhile the findings agrees with that of Maku and Adelowokan (2013), Dania (2013) and Hossain and Islam (2013) who posit that, lagged term of inflation significantly determines the changes in inflation, but however, disagrees with them as their findings indicate that, exchange rate does not significantly determine the changes in inflation.

The findings also agrees with that of Odusanya and Atanda (2010), as they posit that lagged term of inflation significantly determines changes in inflation, but the findings of this work disagrees with their position that exchange rate does not significantly determine changes in inflation rate. The second equation from the VAR estimates above where INTR is the dependant variable also revealed that, all the independent variables are not significant at 5% level except INTR which depends on its lag is significant at 5%level.

More so, the third model where exchange rate is the dependent variable, all the independent variables are not significant except exchange rate depending on its own lag given the significance at 5% level and these has further established and justified our position on the ineffectiveness of monetary policy in Nigeria and therefore we accept the null hypothesis and reject the alternate hypothesis in objective one and two.

4.2.5   Granger Casualty Test Analyses

Table 4.5: Granger Causality Test

Pairwise Granger Causality Tests
Sample: 1986Q1 2016Q4
Lags: 1

Null Hypothesis:	Obs	F-Statistic	Prob.
LIR does not Granger Cause LINFR	123	0.79197	0.3753
LINFR does not Granger Cause LIR		1.93990	0.1663
LEXR does not Granger Cause LINFR	123	0.41096	0.5227
LINFR does not Granger Cause LEXR		0.23953	0.6254
LM2 does not Granger Cause LINFR	123	1.14656	0.2864
LINFR does not Granger Cause LM2		0.04248	0.8371
LR_R does not Granger Cause LINFR	123	0.78120	0.3785
LINFR does not Granger Cause LR_R		0.13342	0.7156
LEXR does not Granger Cause LIR	123	3.20269	**0.0460**
LIR does not Granger Cause LEXR		0.06877	0.7936
LM2 does not Granger Cause LIR	123	3.14926	**0.0351**
LIR does not Granger Cause LM2		0.07298	0.7875
LR_R does not Granger Cause LIR	123	2.11806	0.1482
LIR does not Granger Cause LR_R		0.25453	0.6148
LM2 does not Granger Cause LEXR	123	0.65012	0.4217
LEXR does not Granger Cause LM2		3.92191	**0.0499**
LR_R does not Granger Cause LEXR	123	1.38085	0.2423
LEXR does not Granger Cause LR_R		0.50861	0.4771
LR_R does not Granger Cause LM2	123	7.50268	**0.0071**
LM2 does not Granger Cause LR_R		0.24448	0.6219

Author's Computation E-Views 9.0

4.2.5.1 Objective 2: Granger Causality Test Analysis

The table shows the interaction of monetary policy instruments employed in respect to inflation in Nigeria. Monetary policy has been designed as an anchor, which determines the behavior of interest rate, exchange rate, broad money supply and reserve ratio in respect to inflation in Nigeria. This was necessary in order to trace the transmission effect and to determine the flow of monetary policy in tackling inflation in Nigeria and this is to assess the Nigeria's economic system in respect to Keynes transmission effect theory which was the theory adopted for this research work .

The granger casualty test is most times use to answer inquisitive question given the fact that, monetary policy instruments have a channel of interaction which differs on the bases of the condition of an economy at a given point in time. The table shows that there is no casual relationship between interest rate and inflation rate; given the fact the both probability values are greater than 5% level of significance. This is also the case between exchange rate and inflation rate, money supply and inflation rate. This is clearly an indication that monetary policy variables are largely ineffective in controlling inflation, because from the result, it shows that monetary policy instruments in Nigeria have a weak transmission effect i.e the rate at which a policy measure on any of the instruments affects or transmits to others is very poor hence, the ineffectiveness of monetary policy.

Consequently inflationary trend is indirectly independent of monetary policy adjustments in Nigeria. Perhaps that is why inflation has continued to increase steadily over times despite different policies and programmes by the monetary authority and this could be traceable to the low rate of financial inclusion as we have indicated earlier in this work as a major problem or weakness of monetary policy. However, the result clearly depicts that, exchange rate granger

causes interest rate and not otherwise given the fact that the 0.0460 probability value of exchange rate is significant at 5% level while that of interest rate which is 0.7936 is not significant, this further indicates a unidirectional relationship between the both variables.

More so, there is an indication of unidirectional relationship between money supply and interest rate, given that, money supply granger causes interest rate and not otherwise given the 0.0351 probability value of interest rate which is less than 5% and the 0.7875 probability value of interest rate which is greater than 5%. From the table, reserve ratio and interest rate have no relationship this is also the case with reserve and exchange rate, but there's a presence of unidirectional relationship between money supply and reserve ratio given that, reserve ratio granger causes money supply and not otherwise, and also between exchange rate and money supply, the result depicts that exchange rate granger causes broad money supply and not otherwise. From the granger casualty test, there is an indication that, monetary policy transmission channel or mechanism is very poor given the fact that, most of the instruments do not affect each other and this could be the reason, monetary policy measures can not directly control inflationary rate in Nigeria.

This could be as a result of the weak and vulnerable economic system and poor rate of financial inclusion. However, some of the monetary policy instruments especially the ones that influence each other like: (exchange rate   - interest rate), (interest rate   -   money supply) and (exchange rate - money supply) can be effectively utilized to tackle inflationary trend in Nigeria. Generally, the result does not correspond with the Keynes's transmission effect theory, due to some divergent economic interactions as mentioned earlier in these analyses. Meanwhile the findings in this research work disagree with that of Chimobi and Uche (2010) who examined the relationship between Monetary Policy and Inflation in

Nigeria covering the period of (1970 to 2005). Using granger causality test analysis, The study revealed that there is a unidirectional causation between Money Supply via Interest Rate and Inflation. The study also found empirical support in context to the money-prices-output hypothesis for Nigerian economy, M2 have a strong casual effect on the real output as well as on general price level and also posits that, Nigeria inflationary rate is a monetary phenomenon.

4.2.6   Trend Analyses of Financial Inclusion

Fig: 4.2: Penetration Index

PENETRATION INDEX
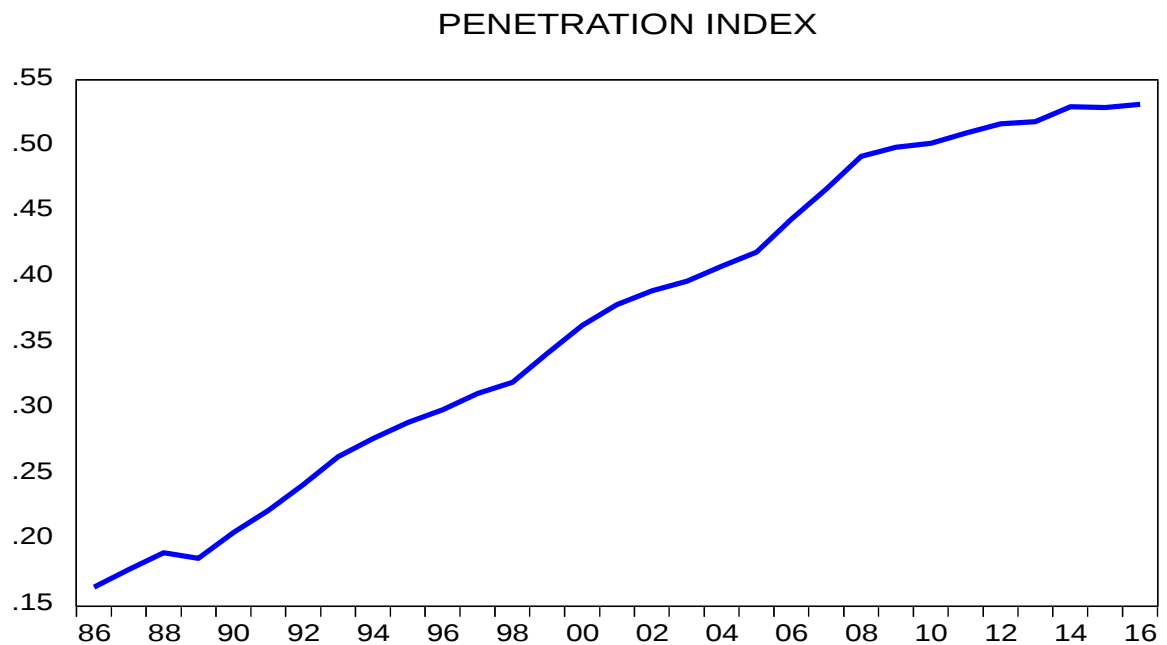
4.2.6.1   Objective 3: Formal Financial System and Monetary Policy in Nigeria.

The trend analyses using financial inclusion indicators in Nigeria basically seeks to address the fourth objective/hypotheses which has to do with the strengths and weaknesses of

monetary policy in tackling inflationary trend in Nigeria, given that the formal financial system has a major role to play in determining the capacity of monetary policy.

From figure 4.5, it can be clearly seen that, financial inclusion based on penetration index is very low, in the 1980s especially from 1986 at 16% to 1989 at 18%, this is not surprising, as inflationary rate was very high at that period due to weak financial system and high rate economic instability and of course low rate of financial inclusion which in turn translates into ineffectiveness of monetary policy leading to vulnerable reforms in our financial system by the government especially in the banking sector in an effort to boost the financial system and confidence of the country. However, from 1990 the rate of financial inclusion through the penetration index has been increasing steadily. And from 2008 it rose to 49% and still maintain the upward trend until 2014 at 53 %, and from that point to 2016, the penetration level still remain the same.

the trend of financial inclusion depicts that, the rate of financial inclusion is still very poor, and far below, the capacity to strengthen monetary policy and consequently, despite the various actions taken by Central Bank of Nigeria to tackle inflation, it seems to be having its way due to the weak level of financial inclusion through penetration index.

Fig: 4.3: Service Index
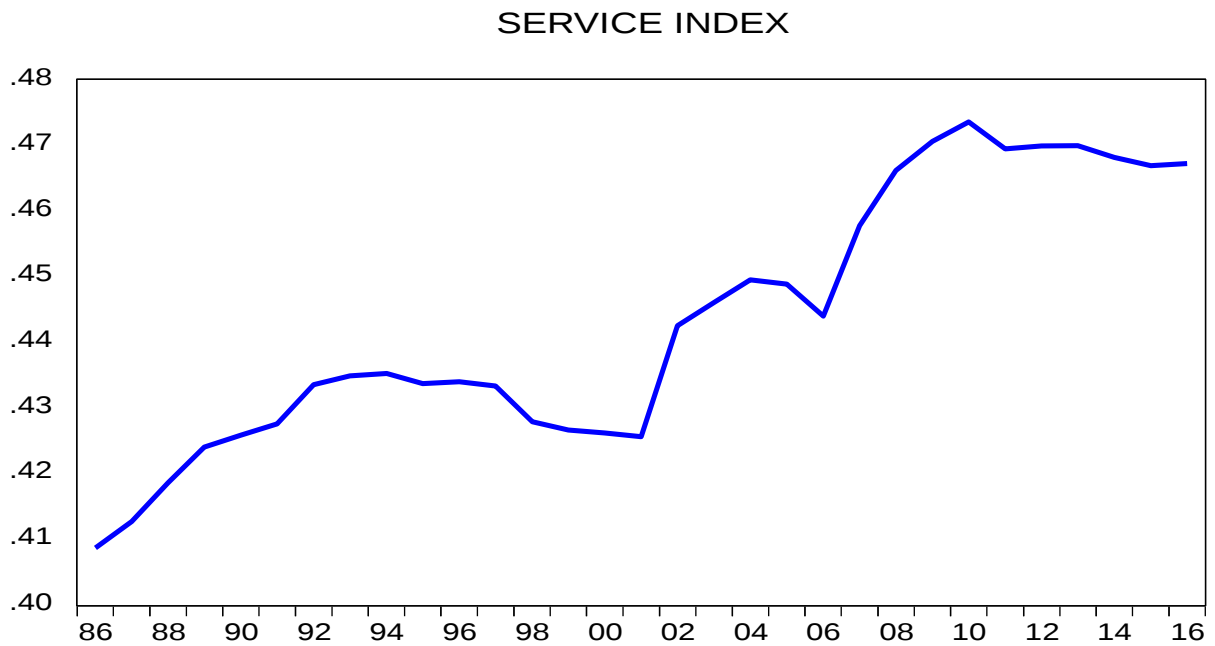
SERVICE INDEX

Figure 4.7 depicts that, the financial service index appears to be very poor in Nigeria as shown by the graph, like the penetration index, the service index in the 1980s is quite very poor, but increased consistently to 1994 which was 44%, and eventually it started declining gradually and in 2000 and 2001 it was at 46%, and this of course could be as a result of inconsistency in economic policies, poor banking system, inadequate branches of banks across Nigeria especially in the rural areas and lack of confidence in our financial system which has resulted to a lot of people exploring other means of savings and withdrawal. However, from 2002 to 2005 some progresses were made as the service index rose from to 44.6% to 44.9% respectively.

But from 2008 a lot of progress was recorded at 46.6 and to all time high in 2010 at 47.7%. This could be as a result of the banking sector reforms which restored the level of

confidence in banking system and enhanced massive participation of adult population in the banking system, but this didn't last for too long as the service index declined gradually and in 2016 the rate was at 46.7%. From all indications, financial inclusion still seems to be very poor, and consequently the informal financial system is perceived to be far above the formal financial system in Nigeria and that poses a great danger to our economic system because it has rendered monetary policy weak and inefficient to controlling inflationary rate in Nigeria. We therefore accept the null hypothesis and reject the alternative hypothesis.

4.3   Discussion of Findings

This research work primarily seeks to assess the significance and the implementation of monetary policy in tackling inflationary rate in Nigeria, and to evaluate the transmission effect between monetary policy and inflation in Nigeria in line with Keynes's transmission effect theory. More so to assess the strengths and weaknesses of monetary policy using financial inclusion as a guide to checkmate the effectiveness of monetary policy framework in Nigeria. However, some preliminary/diagnostics tests were carried out to justify and establish the methods employed for the analyses of this work, and more importantly the granger causality test was carried to x-ray the transmission channel of monetary policy instruments as an indication to policy implication.

Consequently, the Vector Auto Regressive estimates, monetary policy can not significantly tackle inflationary rate in Nigeria, given that, interest rate, broad money supply and reserve ratio as policy instruments are not statistically significant because their t-calculated values are less than the tabulated value of 1.96 at 5% level of significance, see table 4.5 above; this means that the variables cannot significantly tackle or control inflationary rate in Nigeria.

However, exchange rate and inflation rate depending on its 1 year lag are statistically significant; this is also an indication that monetary policy is poorly implemented in Nigeria to a large extent.

This implies that, the focus of monetary policy in tackling inflationary rate in Nigeria lies largely on exchange rate system in Nigeria. The reason for this is not surprising or farfetched, the Nigeria's economic system especially prices of goods and services depend largely on exchange rate system and one year lag of inflation due to excessive importation of goods and services from foreign countries as the domestic production capacity is very poor due to vast socio-economic challenges facing the Nigerian economic system over time, industries are not working due to epileptic power supply, there is inadequate human capital development, poor level of technology, ineffective policy framework, lack of confidence in our financial system, lack of political and economic will and mono-cultured economy which has forced Nigeria to depend largely on foreign goods and services making exchange rate and one year lag of inflation rate the major determinants of general price level of goods and services in Nigeria.

Devastatingly the exchange rate which is the key driver of price control is highly volatile and to make matters worse it is operated in multiple rates in Nigeria where   difference markets or economic units exchange the US dollar to Naira at different levels in under the guise of window gaps leading to a total disequilibrium in the financial system and general price level.

This is also in line with the recent economic report of International Monetary Fund on the Nigerian economy, according to IMF (2018), despite Nigeria's recovery from economic

recession after the second quarter of 2017, Nigerians are getting poorer due to higher prices of goods and services. The fund believe that economic reforms are urgently needed to put the nation on a sustainable economic path, the Nigerian government is also expected to "muddle through" in the medium term, adding that any progress could also be threatened if the 2019 elections consume political energy and resources.

More so, the outlook for growth had improved but remained challenging, adding that comprehensive and coherent economic policies remain urgent and must not be delayed by approaching elections and recovering oil prices. "Higher oil prices would support a recovery in 2018 but a 'muddle -through' outlook is projected for the medium term under current policies, with fiscal dominance and structural constraints leading to continuing falls in real GDP per capita," the IMF noted. It advised Nigeria to simplify its complex foreign exchange system, which has created gaps between official rates and other windows. "Moving towards a unified exchange rate should be pursued as soon as possible,

It was also revealed that, in opposition to the background of null hypothesis 2, interest rate, exchange rate and broad money supply actually respond to shocks on interest although in different dimensions, this is not surprising because interest rate has been playing a leading role in monetary policy measures to tackle inflationary rate in Nigeria. Perhaps that is more reason why the Monetary Policy Committee (MPC) in their meetings focus more on interest rate as a policy tool in combating inflationary rate overtime, hence the sustenance of interest rate at 14% over time in order to mop up excess liquidity in circulation and reduce inflationary trend in Nigeria.

From the granger casualty test; there seems to be a very weak transmission effect or linkages between monetary policy variables and inflation in Nigeria, given that none of the monetary policy instruments cause inflationary rate i.e they have no relationship. This is an indication to the ineffectiveness of monetary policy on inflationary rate in Nigeria; this is so because most of the policy measures by the Central Bank of Nigeria targeting inflationary control suffer a great set back as a result of ineffectiveness in respect to transmission effect and this could be the reason inflation has continued to persist despite the overall measures taken to control its upward trend in Nigeria.

Finally, the assessment of the strengths and weaknesses of monetary policy in Nigeria through financial inclusion using the penetration and service index clearly shows that, monetary is weak and largely ineffective given that the rate of financial inclusion which is the formation of monetary policy is very low in Nigeria. Consequently, monetary policy has become a vulnerable tool in tackling inflationary trend in Nigeria or could be best described as "a dog that can only bark but cannot bite". The reason for this is largely because of our weak financial system due to high rate of financial exclusion or informal financial system. Apparently, a larger portion of the adult population is not part of the banking or financial system in Nigeria today due to some cogent factors such as: inadequate bank branches, poor level of innovation and technology in banking system, low income level, cyber crime, low savings rate of interest, poor level of financial literacy and the consistent devaluation of our local currencies.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1   Summary

This research theoretically and empirically investigated the significance of monetary policy on inflation rate in Nigeria, using a quarterly time series data from **1986** to **2016,** also financial inclusion index generated from secondary source, particularly the CBN Statically Bulletin, World Development Index (WDI) and National Bureau of Statistics (NBS), the research was undertaken using econometrics analytical framework.

The results from the regression estimates were not too far from the real life economic experience in Nigeria. The descriptive statistics indicate that, the pattern of distribution of all the variables are not normally distributed which is justified by the volatile nature of some the variables employed and their transmission effect. The unit root test shows that some of the variables like: interest rate and money supply are stationary at level while inflation rate, exchange rate and reserve ratio became stationary after first differencing. The co integration test shows that the variables are co integrated i.e. they have long run relationship.

The VAR estimates depicts that most of the independent variables responsible for the variations in inflationary rate in Nigeria are not significant except exchange rate, this is not surprising giving the fact that Nigeria's economy depends mainly on importation of goods and services from foreign countries and as such exchange rate is believed to be the major determinant of the prices of goods and services in our economy. A focus on exchange rate stability or productivity within the domestic economy by the monetary authority would have transmitted to other core instruments, but unfortunately, the transmission level is very poor

coupled with the problem of high rate of informal financial system which has made monetary policy grossly ineffective in tackling inflationary rate in Nigeria.

Meanwhile, the granger causality test further justifies the VAR estimates as it indicates that there is a very weak level of transmission or casualty between the variables under study as most of them tend to have no influence on each other which is an indication that, monetary policy has a weak flow of influence on macroeconomic stability especially on inflationary rate in Nigeria

Finally the financial inclusion graph which was employed in order to establish the strength and weakness of monetary policy indicated that, of course the rate of financial inclusiveness has been increasing over time, but unfortunately this is not sufficient enough in ensuring the efficiency of monetary policy in tackling inflationary rate in Nigeria.

5.2   Conclusions and Key Findings

Based on the overall assessment of this research work as regards to the empirical findings, theoretical stand points, a-priori expectations and regression estimates, these keys findings are itemized below:

a.   Monetary policy instruments in Nigeria have very weak transmission effect on each other and therefore make it very difficult for monetary authority to achieve target objectives in respect to policy measures due to inefficient interaction or transmission between the variables.

b.   Inflationary rate in Nigeria is mainly caused by exogenous factors which can be traceable to excessive importation of goods and services which is traceable to exchange rate in Nigeria.

c.   Based on the VAR estimates exchange rate is the major and significant variable that determines the variations in inflation in Nigeria. Although this is not surprising due to the fact that, there is high rate of importation as a result f low level of productivity within the domestic economy.

d.   Our vulnerable mono cultured-economy depending largely on petroleum and fluctuations in our exchange rate system is one of the key factors responsible for unstable price system in Nigeria.

e.   Financial inclusion which is the main base, that determines the capacity or effectiveness of monetary policy in Nigeria, may have been increasing positively over the years, but it is grossly inadequate and unreliable for decision making and policy measures in controlling inflationary rate in Nigeria.

f.   Poor rate of financial inclusion which points at high rate of financial exclusion is believed to be responsible for the weak and ineffectiveness of monetary policy in Nigeria.

g.   More people are engaged in the informal financial system due to inadequate and inefficient financial services, insufficient bank branches, poor financial literacy, low income level, high rate of employment, and difficulty in accessing funds from various banks and lack of confidence in our financial system.

h.   There is a wide gap between policy objectives or target and performance in Nigeria especially inflation targeting.

5.3   Recommendations

a.   The government should ensure proper coordination of policy instruments to ensure   that policy measures are well transmitted or channeled in order to effectively meet and control target objectives especially inflationary rate in Nigeria.

b. The government should as a matter of urgency boost local production through giving out sectoral credit allocation, bailout funds and financial support to industries and entrepreneurs across the country. This is to boost domestic production and to reduce the high level of importation in order to meet our local consumption within the domestic economy.

c. The government must ensure exchange rate stability and most importantly our multiple exchange rate system which is detrimental to our economy should be harmonized and sustained to ensure price stability.

d. The current contractionary monetary policy, through interest rate by the monetary authority in Nigeria is a good omen for our economy given that, most Nigerians focus more on consumption and not investments, however, investors and entrepreneurs should be given a more serious attention and consideration.

e. More Nigerians especially within the adult population should be encouraged to enroll in the formal financial system in order to boost or enhance the effectiveness of monetary policy in Nigeria.

f. CBN should encourage and enforce commercial banks to open more branches especially in the rural areas, provide financial literacy to encourage savings, key into efficient services through innovations and technology, ensure stress free financial transactions and increase savings rate of interest to boost financial inclusion.

g. The government must ensure that, all hands are on deck to ensure that policy measures reconcile with target objectives for the overall well being of the economy.

5.4   Limitations of the Study

The study is restrictive to some extent in that, it covers only the period between 1986 – 2016, although some monetary policy instruments like exchange rate regime in Nigeria existed before 1986 but this was not considered or captured due to paucity of data beyond the scope of this research work. Secondly the study is restrictive because it may not be able to completely address inflationary trend in Nigeria due to the fact that, it relies only on monetary policy framework which depends largely on the formal financial system to effectively address inflationary trend in Nigeria, thus any factor outside the reach of these that also affects inflation may be beyond the scope of and analyses of this work.

Thirdly, the findings and recommendations of this research work are absolutely suggestive in nature, because the researcher does not necessarily posses the powers or capacity to implement them, fourthly, this research work is limited to the Nigerian economic context alone and may be inapplicable to the economy of other countries given the fact that, the data used were purely and absolutely based on the interaction of economic variables in Nigeria and financial the research work was constrained due to financial challenges.

5.5   Contribution to knowledge

The main contribution to knowledge in this research work is x-raying the linkages or 'transmission pass through' between monetary policy and inflation rate in Nigeria using the Keynes's transmission theory as a guideline and we found out that Nigeria's inflationary trend is not a monetary phenomenon but rather poor productive level within the domestic economy leading to high rate of exportation of goods and services which is responsible for our inflationary rate, Also, the inclusion of formal financial system as a guideline to

checkmate the effectiveness and efficiency of monetary policy in Nigeria, which indicates that, the rate of formal rate of formal financial system is very poor to boost the efficiency of monetary policy in Nigeria.

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APPENDIX A

Null Hypothesis: D(LEXR) has a unit root

Exogenous: None
Lag Length: 8 (Automatic - based on SIC, maxlag=12)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.008715	0.0431
Test critical values:	1% level	-2.585405	
	5% level	-1.943662	
	10% level	-1.614866	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(LINFR) has a unit root
Exogenous: Constant
Lag Length: 12 (Automatic - based on SIC, maxlag=12)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.943853	0.0436
Test critical values:	1% level	-3.490772	
	5% level	-2.887909	
	10% level	-2.580908	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: LIR has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=2)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.918795	0.0461
Test critical values:	1% level	-3.484653	
	5% level	-2.885249	
	10% level	-2.579491	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: LM2 has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 1 (Automatic - based on SIC, maxlag=2)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.426174	0.0029
Test critical values:	1% level	-4.034997	
	5% level	-3.447072	
	10% level	-3.148578	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: D(LR_R) has a unit root
Exogenous: Constant

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.193100	0.0010
Test critical values:	1% level	-3.484653	
	5% level	-2.885249	
	10% level	-2.579491	

ARDL Bounds Test
Date: 02/11/18 Time: 07:39
Sample: 1987 2016
Included observations: 30
Null Hypothesis: No long-run relationships exist

Test Statistic	Value	k
F-statistic	6.189161	4

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	3.03	4.06
5%	3.47	4.57
2.5%	3.89	5.07
1%	4.4	5.72

*MacKinnon (1996) one-sided p-values.

Vector Auto regression Estimates

Date: 02/11/18 Time: 05:25
Sample (adjusted): 1986Q3
2016Q4
Included observations: 122 after adjustments
Standard errors in ( )   t-statistics in [ ]
&

	LINFR	LIR	LEXR	LM2	LR_R
LINFR(-1)	1.361863	0.017804	0.039585	-0.027085	-0.005639
	(0.10178)	(0.01800)	(0.01968)	(0.04256)	(0.01763)
	[13.3802]	[0.98926]	[2.01159]	[-0.63635]	[-0.31990]
LINFR(-2)	-0.531252	-0.008879	-0.031617	0.011926	0.005146
	(0.09551)	(0.01689)	(0.01847)	(0.03994)	(0.01654)
	[-5.56241]	[-0.52579]	[-1.71222]	[0.29859]	[0.31114]
LIR(-1)	0.090702	1.411501	0.002385	-0.050425	-0.090586
	(0.49534)	(0.08759)	(0.09577)	(0.20715)	(0.08578)
	[0.18311]	[16.1157]	[0.02490]	[-0.24343]	[-1.05600]
LIR(-2)	0.036282	-0.526561	-0.010329	-0.176549	0.075719
	(0.50002)	(0.08841)	(0.09667)	(0.20910)	(0.08659)
	[0.07256]	[-5.95569]	[-0.10684]	[-0.84432]	[0.87442]
LEXR(-1)	-0.078108	0.051826	1.706266	-0.185901	0.022236
	(0.50143)	(0.08866)	(0.09695)	(0.20969)	(0.08684)
	[-0.15577]	[0.58453]	[17.6000]	[-0.88655]	[0.25606]
LEXR(-2)	0.095921	-0.054739	-0.734651	0.234412	-0.007247
	(0.49359)	(0.08728)	(0.09543)	(0.20641)	(0.08548)
	[0.19433]	[-0.62719]	[-7.69821]	[1.13565]	[-0.08478]
LM2(-1)	0.292402	-0.032664	-0.108643	1.285707	0.011279
	(0.20552)	(0.03634)	(0.03974)	(0.08595)	(0.03559)
	[1.42272]	[-0.89883]	[-2.73409]	[14.9592]	[0.31690]
LM2(-2)	-0.284153	0.010936	0.101340	-0.457953	0.001245
	(0.19597)	(0.03465)	(0.03789)	(0.08195)	(0.03394)
	[-1.44998]	[0.31561]	[2.67462]	[-5.58802]	[0.03670]
LR_R(-1)	0.327335	-0.000811	-0.042124	-0.132844	1.732017
	(0.40363)	(0.07137)	(0.07804)	(0.16879)	(0.06990)
	[0.81098]	[-0.01136]	[-0.53978]	[-0.78702]	[24.7784]
LR_R(-2)	-0.352100	0.015148	0.062015	0.237260	-0.754721
	(0.41321)	(0.07306)	(0.07989)	(0.17280)	(0.07156)
	[-0.85212]	[0.20733]	[0.77625]	[1.37304]	[-10.5469]
C	0.092540	0.377842	0.076205	1.295827	0.025314
	(0.79035)	(0.13975)	(0.15281)	(0.33051)	(0.13687)
	[0.11709]	[2.70372]	[0.49870]	[3.92065]	[0.18495]
R-squared	0.859060	0.941951	0.996412	0.993870	0.999179
Adj. R-squared	0.846363	0.936721	0.996088	0.993318	0.999105
Sum sq. resids	19.79885	0.619016	0.740105	3.462456	0.593784
S.E. equation	0.422336	0.074677	0.081655	0.176616	0.073140
F-statistic	67.65718	180.1172	3082.120	1799.660	13501.14
Durbin W	1.89005				

Pairwise Granger Causality Tests
Sample: 1986Q1 2016Q4
Lags: 1

Null Hypothesis:	Obs	F-Statistic	Prob.
LIR does not Granger Cause LINFR	123	0.79197	0.3753
LINFR does not Granger Cause LIR		1.93990	0.1663
LEXR does not Granger Cause LINFR	123	0.41096	0.5227
LINFR does not Granger Cause LEXR		0.23953	0.6254
LM2 does not Granger Cause LINFR	123	1.14656	0.2864
LINFR does not Granger Cause LM2		0.04248	0.8371
LR_R does not Granger Cause LINFR	123	0.78120	0.3785
LINFR does not Granger Cause LR_R		0.13342	0.7156
LEXR does not Granger Cause LIR	123	3.20269	**0.0460**
LIR does not Granger Cause LEXR		0.06877	0.7936
LM2 does not Granger Cause LIR	123	3.14926	**0.0351**
LIR does not Granger Cause LM2		0.07298	0.7875
LR_R does not Granger Cause LIR	123	2.11806	0.1482
LIR does not Granger Cause LR_R		0.25453	0.6148
LM2 does not Granger Cause LEXR	123	0.65012	0.4217
LEXR does not Granger Cause LM2		3.92191	**0.0499**
LR_R does not Granger Cause LEXR	123	1.38085	0.2423
LEXR does not Granger Cause LR_R		0.50861	0.4771
LR_R does not Granger Cause LM2	123	7.50268	**0.0071**
LM2 does not Granger Cause LR_R		0.24448	0.6219

PENETRATION INDEX
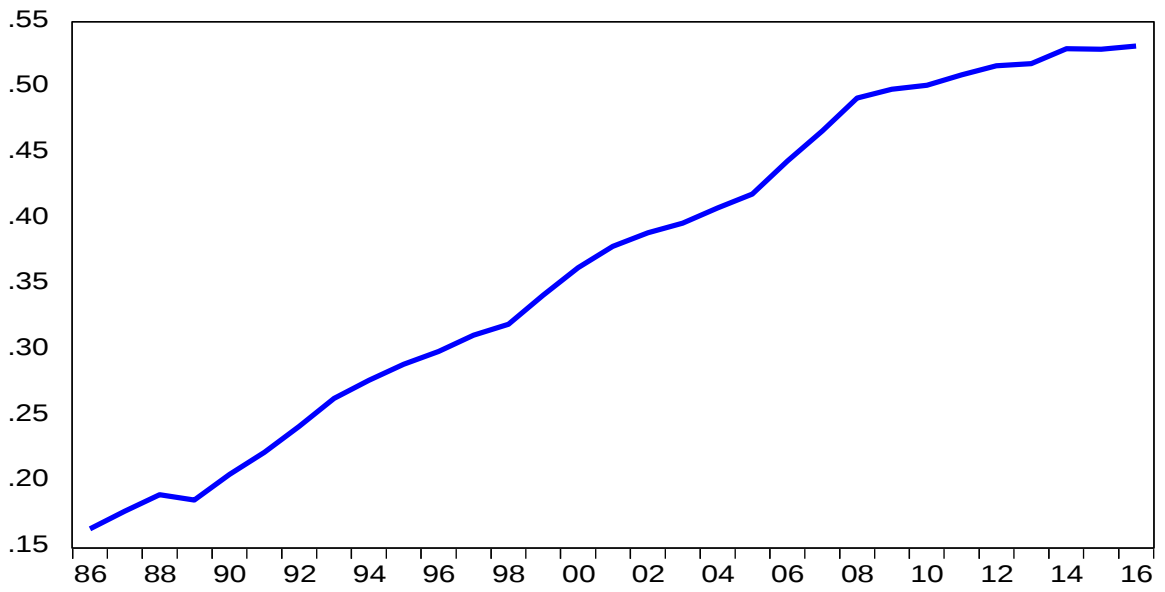
SERVICE INDEX
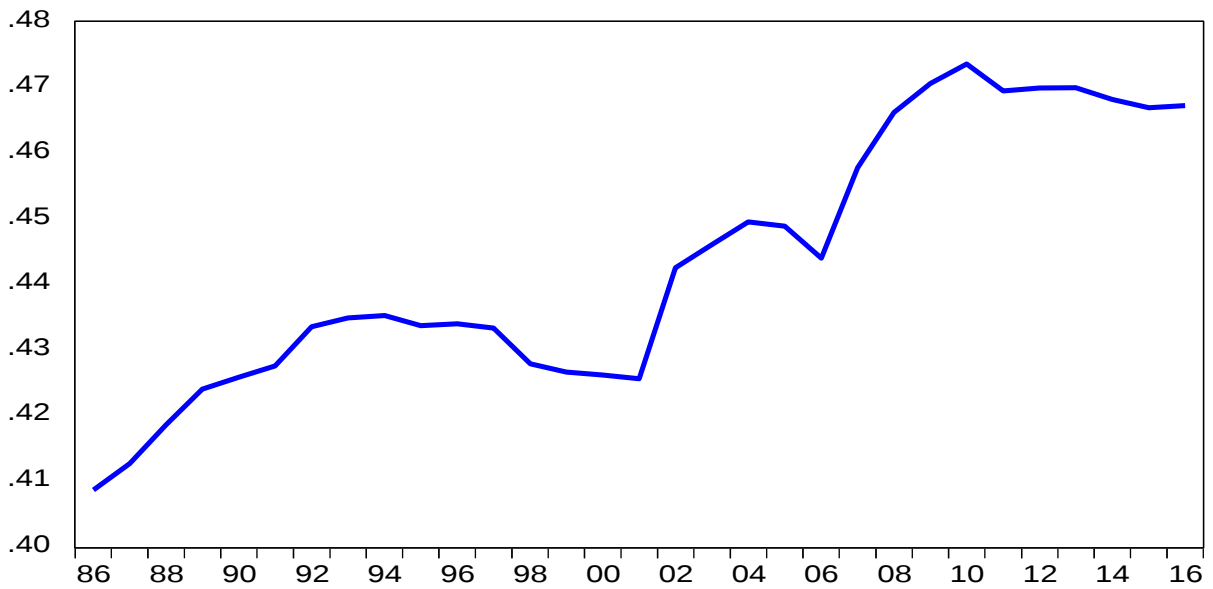
ANNUAL DATA USED FOR FINANCIAL INCLUSION IN NIGERIA FROM 1986 TO 2016

YEAR	BB in Th	BD (S&C) in B	AD P in M	LBB	LCBD (S&C)	LAD P	P INDEX	S INDEX
1986	1367	18.1376	47042075	7.220374	2.89798713	17.66655	0.1640381	0.408703
1987	1483	23.0867	48249429	7.301822	3.13925669	17.69189	0.1774404	0.412721
1988	1665	29.0651	49560351	7.41758	3.36953814	17.7187	0.1901685	0.41863
1989	1855	27.1649	50955881	7.52564	3.3019257	17.74647	0.186061	0.424064
1990	1939	38.7773	52424344	7.569928	3.65783502	17.77488	0.2057867	0.425878
1991	2023	52.4087	53816541	7.612337	3.95907261	17.80109	0.2224062	0.427633
1992	2275	75.0477	55296117	7.729735	4.31812391	17.82821	0.2422073	0.433568
1993	2358	110.4536	56860715	7.765569	4.70459552	17.85612	0.2634725	0.434897
1994	2403	142.5375	58506543	7.784473	4.95960512	17.88465	0.2773107	0.43526
1995	2368	178.9621	60228290	7.769801	5.18717405	17.91365	0.2895654	0.433736
1996	2407	214.3598	61829635	7.786136	5.36765591	17.93989	0.2992022	0.434012
1997	2407	269.8472	63522114	7.786136	5.59785587	17.9669	0.3115649	0.43336
1998	2185	314.3035	63589053	7.689371	5.75035908	17.96795	0.3200342	0.427949
1999	2185	476.3509	67125177	7.689371	6.16615477	18.02207	0.3421447	0.426664
2000	2193	702.1045	69004682	7.693026	6.55408225	18.04968	0.3631134	0.426214
2001	2193	947.1829	70712702	7.693026	6.85349221	18.07414	0.3791878	0.425637
2002	3010	1157.1116	72495210	8.009695	7.05368218	18.09903	0.3897271	0.442548
2003	3247	1337.2962	74348166	8.085487	7.19840509	18.12427	0.3971694	0.446114
2004	3492	1661.4821	76271934	8.15823	7.41546531	18.14982	0.4085697	0.449494
2005	3492	2036.089834	78267287	8.15823	7.6187865	18.17564	0.4191757	0.448855
2006	3233	3245.156489	80156285	8.081166	8.08491885	18.19949	0.4442388	0.444033
2007	4200	5001.470537	82161353	8.34284	8.51748726	18.2242	0.4673725	0.457789
2008	4952	7960.166943	84270376	8.507547	8.98220525	18.24954	0.492188	0.466179
2009	5436	9150.037668	86470114	8.600799	9.12151328	18.27531	0.4991168	0.470624
2010	5809	9784.542407	88755535	8.667164	9.18855911	18.3014	0.5020687	0.473579
2011	5454	11452.76325	91019809	8.604105	9.34598631	18.32659	0.5099687	0.469488
2012	5564	13132.09683	93387004	8.624073	9.48281465	18.35226	0.5167109	0.469919
2013	5639	13767.45809	95869976	8.637462	9.53006298	18.3785	0.518544	0.469976
2014	5526	17185.80303	98489277	8.61722	9.75183892	18.40546	0.5298341	0.468188
2015	5470	17276.67154	1.01E+08	8.607034	9.7571124	18.43314	0.5293246	0.466933
2016	5570	18326.95534	1.04E+08	8.62515	9.81612822	18.45982	0.5317564	0.467239

Source: World Development Index and CBN Statistical Bulletin 2016
BB= Bank Branches, **ADP**= Adult Population **BD(C&S)** = Bank Deposits (Current + Savings) **L**=log

Model for penetration dimension: **Commercial Bank Deposits**

Adult population =

(15 and above) Model for Service dimension:

Bank Branches

_____

Adult Population = (15 and above)

APPENDIX B
QUATERLY DATA FROM 1986 TO 2016, IN LOG FORM

PERIOD	INFR in %	IR in %	EXR in Naira	M2 in Billions	R-R in Billions
1986Q1	3.222729	2.158336	0.321837	4.547033	0.828354
1986Q2	2.726772	2.264625	0.599789	4.580046	0.973627
1986Q3	2.367479	2.355730	0.842371	4.610616	1.102256
1986Q4	2.144849	2.431650	1.049582	4.638742	1.214241
1987Q1	2.058882	2.492387	1.221423	4.664424	1.309583
1987Q2	2.109578	2.537939	1.357894	4.687662	1.388281
1987Q3	2.296937	2.568307	1.458995	4.708456	1.450336
1987Q4	2.620959	2.583492	1.524725	4.726807	1.495747
1988Q1	3.760452	2.487369	1.409362	4.695720	1.500885
1988Q2	4.086277	2.510634	1.462641	4.727980	1.522460
1988Q3	4.277241	2.557164	1.538839	4.776593	1.536844
1988Q4	4.333345	2.626959	1.637957	4.841560	1.544036
1989Q1	4.261102	2.836343	1.880467	4.990378	1.469648
1989Q2	4.044880	2.906138	1.977232	5.061052	1.492211
1989Q3	3.691192	2.952668	2.048727	5.121080	1.537338
1989Q4	3.200038	2.975933	2.094950	5.170462	1.605028
1990Q1	1.545974	2.955837	2.033113	5.179525	1.692848
1990Q2	1.190067	2.940610	2.061911	5.219485	1.806638
1990Q3	1.106871	2.910158	2.098555	5.260668	1.943965
1990Q4	1.296388	2.864478	2.143044	5.303075	2.104828
1991Q1	2.611473	2.698058	2.160651	5.321910	2.291661
1991Q2	3.005272	2.664132	2.234722	5.376683	2.498624
1991Q3	3.330640	2.657186	2.330529	5.442598	2.728150
1991Q4	3.587578	2.677219	2.448073	5.519655	2.980240
1992Q1	3.687297	2.759206	2.690815	5.631287	3.376745
1992Q2	3.842889	2.819209	2.810446	5.721255	3.625221
1992Q3	3.965567	2.892203	2.910430	5.812993	3.847519
1992Q4	4.055330	2.978186	2.990765	5.906499	4.043639
1993Q1	4.030187	3.273902	3.041435	6.007327	4.153692

1993Q2	4.086917	3.307169	3.086481	6.102150	4.321414
1993Q3	4.143529	3.274730	3.115885	6.196521	4.486915
1993Q4	4.200023	3.176585	3.129649	6.290439	4.650195
1994Q1	4.353420	2.746060	3.087495	6.389711	4.835941
1994Q2	4.370870	2.623171	3.086086	6.480403	4.984903
1994Q3	4.349394	2.541245	3.085148	6.568321	5.121770
1994Q4	4.288991	2.500282	3.084678	6.653465	5.246541
1995Q1	4.230594	2.602690	3.085852	6.747756	5.408894
1995Q2	4.075966	2.602690	3.085852	6.822583	5.489601
1995Q3	3.866040	2.602690	3.085852	6.889867	5.538341
1995Q4	3.600814	2.602690	3.085852	6.949609	5.555114
1996Q1	2.994460	2.602690	3.085852	6.673576	5.499728
1996Q2	2.732970	2.602690	3.085852	6.849524	5.468643
1996Q3	2.530512	2.602690	3.085852	7.149223	5.421667

1996Q4	2.387088	2.602690	3.085852	7.572671	5.358799
1997Q1	2.373485	2.593585	3.085852	9.056564	5.175750
1997Q2	2.319812	2.597227	3.085852	9.352835	5.122817
1997Q3	2.296858	2.604511	3.085852	9.398177	5.095710
1997Q4	2.304622	2.615436	3.085852	9.192591	5.094430
1998Q1	3.065122	2.612366	2.860313	7.795949	5.135525
1998Q2	2.845516	2.637630	2.950529	7.464558	5.179275
1998Q3	2.367821	2.673590	3.130959	7.258291	5.242231
1998Q4	1.632036	2.720247	3.401605	7.177147	5.324392
1999Q1	-1.280397	2.885138	4.198433	7.520312	5.478981
1999Q2	-1.764935	2.910173	4.475124	7.569739	5.578264
1999Q3	-1.740137	2.902889	4.667642	7.624616	5.675462
1999Q4	-1.206004	2.863287	4.775990	7.684941	5.770577
2000Q1	1.743122	2.656516	4.590474	7.750347	5.864062
2000Q2	2.533663	2.606217	4.614356	7.821717	5.954827
2000Q3	3.071278	2.577540	4.637942	7.898682	6.043326
2000Q4	3.355965	2.570486	4.661234	7.981244	6.129559
2001Q1	2.822788	2.603918	4.685750	8.085824	6.187108
2001Q2	2.827596	2.632561	4.707845	8.173009	6.279376
2001Q3	2.805452	2.675280	4.729037	8.259221	6.379947
2001Q4	2.756356	2.732074	4.749328	8.344461	6.488819
2002Q1	2.460504	2.911740	4.768104	8.452665	6.722657
2002Q2	2.445424	2.953168	4.786835	8.526384	6.801466
2002Q3	2.491314	2.965153	4.804908	8.589555	6.841910
2002Q4	2.598172	2.947696	4.822324	8.642179	6.843991
2003Q1	3.158740	2.805501	4.842987	8.642404	6.695844
2003Q2	3.230440	2.767277	4.857526	8.690672	6.665940
2003Q3	3.206013	2.737728	4.869846	8.745133	6.642417
2003Q4	3.085458	2.716855	4.879946	8.805787	6.625275
2004Q1	2.470442	2.741083	4.888797	8.918055	6.595678
2004Q2	2.316965	2.722991	4.894071	8.972925	6.598832
2004Q3	2.226695	2.699004	4.896739	9.015819	6.615900
2004Q4	2.199630	2.669123	4.896799	9.046736	6.646883
2005Q1	2.463594	2.605538	4.890331	9.012024	6.780464
2005Q2	2.471811	2.574992	4.886746	9.040449	6.803803
2005Q3	2.452105	2.549677	4.882122	9.078359	6.805584
2005Q4	2.404475	2.529591	4.876460	9.125753	6.785807
2006Q1	2.253171	2.571099	4.866436	9.185437	6.668863
2006Q2	2.179994	2.538927	4.860026	9.250679	6.636211
2006Q3	2.109193	2.489440	4.853906	9.324283	6.612245
2006Q4	2.040769	2.422638	4.848076	9.406250	6.596963
2007Q1	1.809673	2.224790	4.849095	9.524249	6.489498
2007Q2	1.812022	2.168848	4.841224	9.611873	6.531932
2007Q3	1.882768	2.141083	4.831020	9.696791	6.623398

2007Q4	2.021910	2.141494	4.818483	9.779003	6.763895
2008Q1	2.542297	2.301597	4.752894	9.828738	7.220185
2008Q2	2.693093	2.305754	4.755980	9.917448	7.352040
2008Q3	2.787145	2.285481	4.777021	10.01536	7.426222
2008Q4	2.824455	2.240778	4.816018	10.12248	7.442731
2009Q1	2.676942	2.097624	4.951997	10.31617	7.177802
2009Q2	2.651997	2.033670	4.995294	10.41074	7.168470
2009Q3	2.621541	1.974894	5.024937	10.48357	7.190971
2009Q4	2.585574	1.921296	5.040925	10.53464	7.245305
2010Q1	2.525894	1.792292	5.006917	10.50412	7.403732
2010Q2	2.486185	1.781286	5.010131	10.53564	7.492827
2010Q3	2.448245	1.807691	5.014227	10.56935	7.584850
2010Q4	2.412074	1.871509	5.019205	10.60524	7.679802
2011Q1	2.336715	2.113247	5.027279	10.65561	7.724034
2011Q2	2.320466	2.195687	5.033133	10.69098	7.846302
2011Q3	2.322370	2.259336	5.038983	10.72362	7.992958
2011Q4	2.342426	2.304194	5.044829	10.75353	8.164001
2012Q1	2.513848	2.282748	5.054496	10.77157	8.454302
2012Q2	2.516924	2.309031	5.058802	10.79971	8.636173
2012Q3	2.484867	2.335529	5.061572	10.82878	8.804485
2012Q4	2.417677	2.362242	5.062807	10.85879	8.959237
2013Q1	2.163150	2.435963	5.057254	10.89810	9.113835
2013Q2	2.086575	2.444388	5.057520	10.92664	9.236104
2013Q3	2.035750	2.434311	5.058351	10.95277	9.339452
2013Q4	2.010673	2.405732	5.059748	10.97650	9.423876
2014Q1	2.048041	2.220893	5.053752	10.97909	9.455592
2014Q2	2.059783	2.210413	5.059464	11.00549	9.515687
2014Q3	2.082596	2.236533	5.068926	11.03696	9.570375
2014Q4	2.116480	2.299253	5.082138	11.07351	9.619655
2015Q1	2.113468	2.552151	5.027336	11.13337	9.711337

2015Q2	2.188679	2.626642	5.076752	11.17279	9.730679
2015Q3	2.294147	2.676303	5.158622	11.20998	9.725491
2015Q4	2.429872	2.701133	5.272947	11.24496	9.695772
2016Q1	2.595854	2.701133	5.419727	11.27772	9.641523
2016Q2	2.792093	2.676303	5.598961	11.30826	9.562743
2016Q3	3.018589	2.626642	5.810650	11.33659	9.459432
2016Q4	3.275343	2.552151	6.054794	11.36270	9.331591

Source: CBN Statistical Bulletin 2016

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