IMPACT OFMONETARY POLICY TRANSMISSION INSTRUMENTS ON NON-OILREAL SECTOR PRIVATE INVESTMENT IN NIGERIA

Abstract

In recent times, the performance of Non-oil real Private investment in Nigeria has remained suboptimal. This has been generally attributed to ineffective monetary policy, among others. This study therefore empirically examines the effectiveness of selected Monetary Policy transmission instruments namely: Monetary policy rate (MPR), Cash reserve ratio,(CRR) Liquidity ratio,(LR) and Foreign exchange rate (NFXR), on Non oilreal sector Private investment (NRSPI), spanning through 1981 to 2020, with the time series sourced from CBN and applying Johansen Co-integration and Error correction modelanalysis. The empirical evidence demonstrates that, in the long run, inverseand significant relationships exist between (NRSPI) and MPR, LR, and CRR..NFXR ispositively and significantly related... The coefficient of the ECM (-1.16) which measures the speed of the equilibrium adjustment of NRSPI, to the changes in the selected policy instruments, is significant and correctly signed, suggests that in the long run, NRSPI adjusts slowly to the short-run disequilibrium in the selected policy instruments;indicating a lag effect.Overall, the policy instruments do not contribute effectively to NRSPI growth. Therefore, the monetary authoritiesshould lay emphasis on aligning their policy contractionary measures, to reduce the adverse effect of these selected instruments, Optimal lending ratethat reflects the overall internal rate of return on investment, with due attention to market fundamentals, should be adequately maintained. Lastly, policy makers should take cognizance of the lag effect and design policies in line with the expected magnitude of expected changes.

Key Words: Monetary Policy Instruments,Non-oil Real Private Investment, Co-integration and Error Correction Models,

1. Introduction.

1.1 Background of the Study

Globally, one of the cardinal objectives of macroeconomic policy is to catalyze the growth of real sectors so that provision of goods and services will be enhanced and economic welfare of citizenry improved. However, in Nigeria, the outcome of the implementation of the monetary policy regulatorymeasures still remains vague. (World Bank (2016).In recent times, the performance of the real sector Non -oil Private investment in Nigeria has been very sluggish and sub-optimal.This factor is critical in view of the general belief that ineffective

key monetary policy instrumentsand scarcity of long term finance in most developing countries are the major impediment to sustainablegrowth rate of Private sector real investment output.(CBN (2014 and 2020), (World Bank (2016) .(Oyeyemi (2019) and (Oyedokun and Kehinde (2018) .

According to World Bank (2016) and United Nations, (2013), Nigeria and many other developing economies, are endowed with abundant natural resources but lack of effective monetary policiesandinadequate capital formation, to fully harness these resources and potentials to the optimum advantage for the growth of their economies, have constituted a huge challenge to their economic planners.

Regrettably, most African developing economies (Nigeria inclusive) have failed to create enabling environment and effective policy measuresthat would enhance sustainable real private investment and ultimately rapid economic growth and development(Frimpang and Marbuah(2010) and (UNCTAD, (2012). There is also general belief that Nigeria neglected agricultural investment like palm produceexportation buthave concentrated mainly on oil sector.(Adeleke,Uboh and Shobande, (2015).According to World Bank (2017), as far as sustainable economic growth and development is concerned at present, the Nigeria's policy measures are not yet adequate, when efficient management of resources are taken into consideration. The priorities of the Nigerian government policy measures are still localized and of short term (except in oil sector) with little or no attentionpaid to diversification into other real sector investment which can improve employment, social development, like rural infrastructuraldevelopment, health care delivery etc. (Amoo et al (2014). Consequently, this is likely why her economic growth could be progressing without sustainable economic development (Yesufu (1996).

Conversely, in most developed economies, monetary policy instruments have emerged as veritable tools in stimulating sustainable growth in real sector and ultimately economic growth. IMF (2005), asserts that effective and adequate regulatory policy instruments and fiscalincentives have been successful in enhancing real Private investments in developed countries with strong financial institutions, adequate infrastructural facilities, legal framework

as well as enabling environment forreal investment. These factors have ameliorated the cost of doing business and attracted huge investment to these countries. But in Nigeria, the formulation and implementation of effective policyregulatory instruments are undermined by weak financial institutions, unstablemacroeconomic indicators, poor infrastructural facilities, among others. These have hampered the growth ofNon oilreal sector private investment in Nigeria.(CBN 2014), (Lucky and Uzah (2017).(Adeoye andShobande (2017).

Consequently, the Central Bank of Nigeria (CBN) has been very active in establishing reforms, formulating policies and studying the transmission instruments to enable them achieve the macroeconomic objectives, in line with global trend but the objectives are yet to be achieved. (Oyeyemi (2019), (Oyedokun, and Kehinde (2018) (Lucky and Uzah (2017).

Monetary policy is one of the macroeconomic management tools used to influence outcomes in the real economy to the desired policy makers' direction. The basic goals of monetary policy are promotion of stable and low prices to achieve sustainable output, employment and Balance of Payment,using the policy instruments which include Open Market Operations , Monetary Policy rate, Cash reserve ratios, exchange rate among others. In practice, monetary policy plays a counterbalance role to address price stability and stabilize the economy. (IMF (2005), Carl Walsh (2010),(Ackley (1978), and(Mitcheli (2016).

On the other hand, real sector investment is the most volatile component of aggregate demand in economic theory. Globally, a vibrant and productive real sector private investment creates more linkages in any economy and promotes internal and external balances for sustainable growth and development (Iyoha, 2004) and (World Bank (2017).Real sector investment confers many benefits to the economy as it has been adjudged to have the strongest pull on the nation's economic growth and employment generation. (Vinayagathasan, (2013), (Carl Walsh (2010),(Williams and Robinson(2014)

According to Organization for Economic Cooperation and Development (OECD (2011) and IMF (2005), real sector private investment has been identified as a major factor in economic growth and development, and by extension, contributes to high rate of employment, productivity, improved technology and poverty reduction.

In many economies, the performance of real sector investment is the gauge for assessing the effectiveness of macroeconomic policy tools and measures. Government policies can only be deemed effective and successful if they enhance the production capacity and distribution of goods and services for the growth and development of the economy and

impacting positively on the citizenry (CBN (2014) and (Amoo et al (2014). For the government to achieve its desired economic objectives, it must therefore pursue policy measures that will enhance both domestic and foreign, to enable the monetary authority to determine if they are on the right track or not

Based on the above background, this study sets out to investigate the extent the monetary policy transmission instruments must have adversely or positively affected Non-oil real sectorPrivate investment in Nigeria, and other constraints that scuttle the sustainable growth of the sector within the period under review.

Generally, under the related literature reviewed, many scholars have attempted to explain the effect of monetary policy transmission instruments on macroeconomic variables through various empirical investigations but they ended up with mixed results. For instance, there is an evidence from the link between growth of output andinterest rate, investment and savings investigated by (Ochieng (2018), (Shahbaz, Ahmad, and Walid, (2010),Yue and Shuang-hong (2007), Osadume (2018). In their different conclusions, they established that monetary policy regulatory instruments, through interest rate, propagate savings and investment which augment capital and ultimately, real investment and growth, unless the variables are not well managed.

On the other hand, some related studies like (Adesoye and Shobande (2017), (Kapuscinski (2015)(Adelowokan, Adesoye and Balogun (2015), (Ndikumana (2014) (Nuwagira (2015),(Bernhard (2013)investigated the close relationship between exchange rate, interest rate , and real sector investment, and concluded that the policy instruments have adverse effect. In Nigeria again,Lucky and Uzah (2017) and Osadume, (2018) established that Monetary Policy Rate has a positive relationship with real investment while Omotor, (2007) and Adelowokan&Balogun (2015)established negative relationship.

Based on the controversy over theirfindings, there is need for empirical investigation to seek for authentic results.

In addition, The Nigerian government has recognized through some lessons of experience that government alone cannot drive the economy (World Bank (2017).The government has therefore accentuated her effort in restructuring the system for efficientsectorial allocation of

capital to real sector Private investment by introducing a paradigm shift, under the National Economic Empowerment and Development Strategy (NEEDS).Despite this effort, the performance of theNon oil Private sector real investment has remained suboptimal.Nwosaand Shaibu (2012).Obafemi and Ifere, (2015),(Oyaromade, (2002).

The missed targets of macroeconomic indicators as revealed in CBN (2019) also seem to support this assertion..

Based on these challenges there is need to investigate the problems empirically for more authentic result.

Therefore the general objective of the study is to investigate empirically the effect of some selected monetary policy instruments namely: Cash Reserve Ratio, Monetary Policy Rate, Liquidity Ratio and nominal ForeignExchange Rate, on the Non- oil real sector Private Investment in Nigeria.

To achieve the above stated objective, the following null hypothesis is formulated to aid the analysis:

There is no long run relationship between Nigeria'sNon oil real sector Private investment and the selected Monetary Policy transmission instruments namely : Cash Reserve Ratio, Monetary Policy Rate, Liquidity Ratio and nominal Foreign Exchange Rate.

2. Review of Related Literature

2.0

This section covers the related literature under the conceptual, theoretical and empirical studies as it relates toNon-oil real sectorPrivate investmentand monetary policy instruments and monetary policy instruments.

2.1 Conceptual Framework

2.1.1 Monetary Policy in Nigeria

Monetary policy is an integral part of the macroeconomic management. It refers to the use of some combinations of policy instruments by the central bank to influence the availability and cost of credit and/or money in the domestic economy with a view of achieving macroeconomic objectives.. Its formulation therefore entails setting intermediate and operating targets in tandem with the assumed targets for economic growth (GDP), inflation rate and balance of payments. Other goals include low unemployment rate and viable external sector,(CBN 2014) and (Carl Walsh (2010).

Monetary policy in Nigeriawhich falls under the purview of monetary authorities,(CBN) is based on the assumption that there is a stable relationship between monetary policy instruments (such as money and domestic credit, liquidity ratios, interest rate, etc), and the non-monetary variables (such as real output and prices). Based on this, contractionary monetary policy is used to reduce the amount of money in circulation while expansionary policy is used when economic condition is weak, during period of high inflation. (Obadeyi, Akingunola, and Afolabi (2013).(Ndekwu 2013).

Prior to the liberalization of the banking system, the CBN relied on administrative measures like credit ceilings, cash and liquidity ratios, credit guidelines, etc, in the management of monetary policy. Following liberalization in 1986, the monetary policy framework shifted to indirect approach in 1993. The open market operations thus became the primary instrument for the conduct of monetary policy supported by discount window operations and reserve requirements. (Ndekwu (2013) and(Omotor (2007).

The minimum rediscount rate (MRR) complemented with the repurchase (REPO) rate is the key policy rate that sets the monetary policy stance. Based on the assumption of the lag effects of the monetary policy, the CBN since fiscal 2002, shifted to a medium term framework. Under this framework, money growth targets that are consistent with inflation and real output growth targets are set over two-year period. In December 2006, a new monetary policy framework which relies on short term interest rate as a major operating target was adopted. The Monetary policy rate (MPR) replaced the Minimum rediscount

rate (MRR) in the new monetary targeting framework, and thus, became the anchor rate for other interest rates. (Mordi et al, (2010).

The success of monetary policy depends largely on the autonomy of central bank. However, the achievement of these macroeconomic objectives, to an extent, was hindered by the limited operational autonomy of CBN. In 2007, a new CBN Act, which gave the Bank broader independence, was enacted to include the provision of transparent and credible framework to lock-in inflationary expectations and inflation target was adopted as the nominal anchor for monetary policy. (CBN 2014)

In Nigeria, implementation of monetary policy involves the interactions between Financialintermediaries and the monetary authorities, using tools of monetary policy which includes cash reserves requirement, open market operations, liquidity ratios, policyinterestrate,exchange rate, among others. Various frameworks have been applied by CBN which includemonetary targeting, exchange rate targeting, inflation targeting etc, (CBN, (2014). (Osadume (2018) .

2.1. 3. The Concept of Monetary Policy Transmission Instruments

Monetary policy decisions are intended to influence the aggregate demand and supply in order to affect overall economic performance within an economy. (CBN (2014), (Oyaromade (2002), The instruments of monetary policy used by the central bank could be direct or indirect. Under the direct instruments, the central bank can direct Deposit Money Banks on the maximum percentage or amount of loans (credit ceilings) to different economic sectors or activities, using interest rate caps and credit guarantee to preferred sectors. In this way the available saving is allocated and investment is directed in particular directions as desired by the authorities (Nurul (2019)

The indirect instruments of monetary policy include Cash reserve requirement, Monetary policy rate (Interest Rate) liquidity ratios, OpenMarketOperations,foreign exchange rate, among others.CBN(2014),Ndekwu (2013), These are briefly discussed

2.1.3.1 .Open Market Operation (OMO)

Open Market Operations {OMO} is a flexible tool of monetary policy. It involves the buying and selling of government securities in the open market (primary and secondary) in order to expand or contract the amount of money in the banking system. (Nurul (2019),(Ackley (1978).

OMO enables the central bank to influence the cost and availability of reserves and bring about desired changes in bank credit and money supply. The effectiveness of OMO, however depends on the existence of well-developed financial markets that are sensitive to interest rate movement and Nigerian financial system is still at the rudimentary stage of development, (Ramesh (2019) and (CBN 2014).

2.1.3.2 Monetary Policy Rate (Interest Rate)

The monetary policy rate(MPR) is theinterest rate at which central banks lend to commercial bank. It is a benchmark against which other lending rates in the economy are pegged .(Froyen and Guender (2019),and(CBN (2014).

In an inflationary environment, monetary tightening or contraction leads to a rise in domestic real interest rate. This in turn raises the cost of capital, thereby causing a fall in investment spending, which results to a fall in aggregate demand and decline in output. (Ochieng (2018), and (Nurul (2019),and Osadume (2018).

Conversely, under expansionary monetary policy which lowers nominal interest rate, an improvement is made on the firm's balance sheet because it raises the cash flow, thereby reducing adverse selection and moral hazard problems. An important feature of this instrument is that it is the nominal interest rate that affects

the firm's cash flow and not the real interest rate. (Ramesh (2019) (Ochieng (2018),

2.1.3. 3 Cash Reserve Requirement Ratio (CRR)

This is a specified minimum fraction of customers ' deposit required of Deposit Money Banks (DMB) to be held as reserves , either in cash or with the central bank. The CRR is an effective policy instrument used by central bank for controlling liquidity in the banking system and by extension, money supply in the economy and influencing the level of interest rate. (Carl Walsh (2010), and (CBN (2014).

2.1.3.4 Liquidity Ratio

The liquidity ratio is a statutory fraction of current liabilities required to be held as liquid assets by Deposit Money Banks to ensure that the banking system remain liquid and at all times, able to meet payments obligations and demands on customer deposits when they fall due. It is an indicator of the liquidity in the banking system. It is set by monetary authority and is used by the central bank to monitor and control liquidity and money supply in the economy.It is measured as the ratio of current liquid assets to current liabilities. (Ackley (1978), Ramesh 2019). The CBN approved liquid assets for Nigerian banking system include cash, short term investment, government securities and bonds while current liabilities include bank customers' deposits, borrowings etc. (CBN 2014) and Ndekwu (2013).
In macroeconomic management, liquidity is critical for the conduct of monetary policy, financial sector soundness and economic growth. (Froyen andGuender, (2018).

From a liquidity management perspective, a bank is said to be liquid as far it is able to satisfy the demand for money and as long as, at each point in time, outflow of money are smaller or equal to inflows and the stock of money held by the bank (Ramesh (2019).(CBN (2014), IMF (2005)

2.1.3.5 Foreign Exchange Rate

Exchange rate is the price of country's currency in relation to another country's currencyand it is a key macroeconomic factor that affects international trade and the real economy of each country. (Carl wash(2010). (Dornbusch, 1976)

It works through contraction in monetary policy in an inflationary environment, leading to a rise in domestic real interest rate because more currency deposit becomes more attractive

relative to deposit denominated in foreign currencies, thereby leading to a rise in the value of domestic currency deposit. This implies an appreciation of domestic currency. The appreciation of domestic currency, makes domestic goods becomemore expensive than foreign goods which results in a decline in net exports and hence a fall in aggregate output, all things being equal., Froyen and Guender (2018) and Omotor, (2007).

In an expansionary monetary policy the exchange rate is lowered through the foreign interest parity condition. This brings about a real depreciation of the domestic currency, which results to higher net exports and stronger aggregate demand on the supply side.(Adelowokan, Adesoye and Balogun (2015).

However, real depreciation that results from expansionary monetary policy raises the domestic prices of imported goods, (especially the imported capital inputs for manufacturing /industrial sector) and contracts aggregate supply, reducing output and increasing inflation,(Ramesh (2019).

Changes in the exchange rate have two opposite effects on investment, when the domestic currency depreciates, the marginal profit of investing an additional unit of capital is likely to increasebecausetherearehigherrevenuefrombothdomesticandforeignsales.

Conversely, exchange rate depreciation dampens investment because of the increasing cost of imported intermediate goods (capital inputs) and the user cost of capital. Nuwagira (2015).andObstfeld and Rogolf (1995). However, investment response to exchange rate differs among countries and different sectors of the economy (Ireland (2015),

2 .1 .4 The Concept of Real Sector Private Investment

The real sector refers to economic transactions sector of an economy. It is one of the four distinct and interrelated sectors of the economy. Others are financial, fiscal and external sectors. The sector consists of agriculture, industry, mining, building and construction, and services. (CBN 2014)

The term, real sector Private investment, can be broadly defined as acquisition of an asset by non- public or non-governmental groups or individuals with the aim of receiving a positive return (Stieglitz, 1993). It could also mean the production of capital goods, which are not

consumed but instead used in future production. Investment is also usually measured in terms of physical capital formation, in which case, investment is regarded as an addition to the stock of capital. In other words, Gross capital accumulation is the driving force of any national investment. (Ajakaiye (2002),(Agagi (2017)

At the macroeconomic level, investment expenditure in Nigeria in terms of financing is structured into domestic and foreign segments depending on sources of finance and to a lesser extent, management. At the domestic level, investment is further categorized into public and private sector investment expenditures. Foreign investment may also include foreign direct investment, foreign private investment and portfolio investments, whether such expenditure is financed by private or official sources of capital., Due and Friedlander (1977) and(World Bank (2017)

Investment could also be evaluated from the sectorial distribution point of view, in which case, each group of activity sectors of the Gross Domestic Product (GDP) is examined to measure the quantum of investment expenditure received over time. In this categorization, the structure of investment or Gross Capitalfixed Formation is composed of building and construction, land development, transport, machinery and equipment and breeding stocks. (CBN 2014) and (Nnanna et al, 2004), (OECD (2001).

The gross public investment includes investment by government and/or public enterprises. Gross domestic investment includes gross fixed capital formation plus net changes in the level of inventories by private sectors or non-governmental enterprises (World Bank (2017) and CBN (2019).

A vital and strategic real sector, which deals directly with the production of goods and services using available resources, is one of the main drivers that propel the economic growth and developmentof any economy when it is effectively harnessed.Greater part of financing for Private real investment are sourced from corporate firms, DMBs loans and households' savings for boosting economic growth and development and this entails adequate Gross fixed capital formation.(CBN 2019).(World Bank (2017).

The success of any macroeconomic policy can thus, be assessed based on its positive impact on the level of economic activities, especially the production of goods and services, which promotes the general welfare of the citizens CBN (2014).

The Gross national investment is comprised of public and private sector investments. The public or government sector investment is defined as comprising all units of government investment that implement public policy by providing non-market services, which is determined collectively through a decision making process and whose allocation is based according to the stressed needs of the final consumers. These are financed mainly by compulsory levies and taxes on other sectors of the economy. The government sector provides public goods and services with funding from the public treasuries. Mordi et al (2010).

Due and Friedlander (1977) described public goods as possessing the basic characteristics of non-appropriate, non-rivalry, non-excludable consumption. Public goods are individually and collectively consumed such that the consumption of one individual does not reduce the amount available for others. These characteristics make it difficult to package public goods for sale under conditions of market mechanism. Examples are roads and highways, defense and national security, airport, environmental protection, etc. These characteristics render price mechanism ineffective in allocating resources efficiently in a market economy, thus providing rationale for government sector intervention through monetary policy, in order to ensure efficient resource allocation, income redistribution, and attainment of stabilization of the economy. This is in contrast to the private sector that engages in production and sale of private goods.

Conversely, Private goods are divisible and individually consumed, while consumers preference can be ascertained through effective demand. Consequently, private goods can be offered in markets and individuals that cannot pay for it are excluded from its consumption in the absence of effective demand. The motive for private investment is primarily for profit while public sector investment is geared at enhancing public interest, private investment and market system in order to promote synergy between government and private sector for economic growth and development, (Jayaraman, (1996) and(Mordi et al, 2010) .

Investment could be either private or public but here the study lays emphasis on non-oil because crude oil is the major source of income to the Nigeria's government while other sectors which include agriculture, industrial sector, etc, driven by private sector,to increase production capacity and national income, are being neglected. (CBN (2013)

2.2 Theoretical Framework

2.2.1 The Theory of Investment.

John M. Keynes and Irving Fisher, both argued that investments are made when the present value of expected future revenues, at the margin, is equal to the opportunity cost of capital. This means that investments are not made until the net present value is equal to zero. Keynes and Fisher modern investment theories have emerged, incorporating various aspects of Keynes and Fisher theories. The net present value rule for investment has become a standard component of corporate finance(Jorhenson(1983), Keynes (1936) and Fishers (1938).

Ever since Keynes, who was one of the pioneers of investment theories, analyzed that there is ex post quality between savings and investment, the offshoots of his work brought about some other investment theories like neoclassical theory,accelerator theory of investment, Tobin's Q theory and Mckinon and Shaw Investment Theory. Hence these theories were theoretically identified to model investment in the existing investment literature. (Dombusch, Fischer and Richard (2002).The theories are briely discussed below.

2.2.1.1 The Neoclassical theory of Investment

The neoclassical theory of investment developed by D. W Jorgeson and his group, assert that firms make investment decisions by following the marginal rule of profit maximization. The theory suggest that fixed investment is determined by two factors which are the marginal product of capital and the users cost of capital. The users cost of capital, in turn depends on three factors - the price of capital, the rate of interest and the rate of depreciation. According to Jorgenson'stheory, so long as the marginal product of capital is greater than the users cost of capital , a firm will find it profitable to make new investment in

fixed capital. However, as more capital is used in the production process, marginal product of capital falls due to the operation of the law of diminishing return. So a firm maximizes profit when it is able to acquire and use the stock of capital at which marginal product of capital equals the users cost of capital. When a firm is able to maximize its profit, it is said that the actual stock of capital has reached its desired level.(Jorgensen, (1963).

Additionally, according to this theory, rate of investment is determined by the speed with which firms adjust their capital stocks towards the desired level. .

2.2. 1.2 The accelerator theory

The acceleration principle was first suggested by Clark (1917). `The accelerator theory basically postulates that investment is a linear function of changes in output.The accelerator theory ofinvestment is also based upon the notion that a particular amount of capital stock is necessary to produce a given investment output. (Carl Walsh (2010) and (Jorgensen, (1963). Thus, investment is made possible in the sense that the savings/income generatedis the money invested. However, a more general form of acceleration theory assumes that the larger the gap between the existing capital stock (infrastructure, human resources and physical assets) and the desired capital stock, the greater the country's required revenue to be generated and the required rate of investment.

Some scholars posit that the accelerator theory performs well empirically, because time series evidence has always revealed that lags of output are highly correlated with investment and by extension, savings/income generated (Bayraktar and Fafack, 2007).

The theory also assumes that expected return on investment is intrinsically volatile in view of the uncertainty which accompanies the main determinants of investment returns.(Rodrik (1991). Therefore element of uncertainty is introduced as another key determinant of private investment. In the context of growth, the accelerator principle suggests that increase in output leads to increase in investment, thus relating investment to GDP. (Lensink and Morrissey, 2001).

2.2.1.3 The Tobin "Q" Theory

The Tobin (1969) Q theory emphasizes the relationship between the increase in the value of the firm due to the installation of additional capital and its replacement cost. Investment, therefore, is a function of difference between the market value and the additional unit of capital and its replacement cost. This ratio (known as marginal (Q) may differ from unity due to delivery lags, adjustment and installation cost. The Q-theory incorporates all the assumption of the neoclassical theory of investments but puts a restriction on the speed of capital stock adjustment by adding an adjustment cost function However, the theory has been criticized on the following grounds: marginal and average Q will differ if firms enjoy economies of scale or market power; the assumption of increasing installation cost is unrealistic; the cost of additions to an individual firms capital stock is likely to be proportional or even less than proportional to the volume of investment, because of the indivisibility of many investment project. (Tobin (1969)

The relationship between the neoclassical theory, accelerator principle and Tobin‟s Q theory of investment, is that all the three theories assume optimization behavior on behalf of the decision maker (investor). The neoclassical and Tobin‟s theory of investment explicitly assumes profit/value maximization. The accelerator theory of investment assumes this implicitly, by assuming that investment is determined by an optimal capital stock, assuming that the production function can be written as a conventional Cobb-Douglasfunction.(Romers1994) and Carl Walsh (2010).

$Y(t)=f(K(t),L(t))$ Where Y(t) is firm output, K is capital and L denotes labour, all in a period.

The Q *theory* is of market value of firms' existing shares to the replacement cost of the firms physical assets. Higher *Q* translates to higher market prices of firms' vis-à-vis the replacement cost and new plants and equipment become relatively cheaper when compared to the market value of firms. If the issued stocks become higher in relation to the cost of plants and equipment, there will be increase in investment arising from increase in the acquisition of new plants and equipment. (Tobin 1969).

Therefore, it is logical to assume that an expansionary monetary policy may lead to increase in the demand for stocks, hence a rise in stocks prices, which could trigger increase in investment and consequently enhances aggregate demand. (Toalam (2014)

In the aggregate across all firms, therefore, investment projects that were only marginally profitable before the monetary tightening become unfunded after the fall in Q leading to decline in investment output and employment. (Toalam (2014) and (Ireland (2015)

2.2.1.4 Mckinon and Shaw Investment Theory

Mckinon (1973) and Shaw (1973) who formulated the neoliberal approach to investment stressed on the importance of financial deepening and high savings interest rates as drivers of economic growth. According to them, if an economy were free from repressive conditions, this would induce savings, investment and ultimately, economic growth. In their view, investment is positively related to real interest rate in contrast with neoclassical theory. An increase in savings interest rates will lead to an increase in the volume of financial savings thereby raising investible funds, a phenomenon thatMckinnon (1973) calls the "conduit effect".. (IMF 2014).

In addition, Financial institutions must pool savings and then direct them to viable investments in the form of credits. (UNCTAD (2012) This is the so called supply leading theory of finance. Accordingly, the desire to achieve high and sustainable economic growth requires mobilization of savings that can be channeled to investment in the form of credit (Nnanna et al 2004).

2.2.1.5 Ando and Modigliani's life-cycle theory

Meanwhile, Ando and Modigliani's (1968) life-cycle theory of consumption assigns a role to wealth as well as income as key determinants of consumer spending. Hence, this theory also identifies with monetary transmission instruments. If assets prices fall after a monetary tightening, household financial wealth declines, leading to a fall in consumption, investment output, and employment.(Albert and Modigliani (1963).

2.2.2 Theory of Monetary Policy Transmission Instruments.

In accordance with macroeconomic theory, monetary policy transmission instruments affect the real economic activities and stimulate the system through two actions: an expansionary action of the monetary authority through increase in money supply. Lowering the cash reserve ratio and liquidity ratios will lead to an increase in bank deposit base and lowering the interest rate, tend to increase credit demand to stimulate investment expenditure thereby enhancing the growth of the economy. But this expansionary action generates inflation which increases prices of commodities and assets, (Ramesh (2019), Nurul (2019)

The second approach is contractionary action which is based on the monetary policy presented by Keynesian economists. It asserts that the interest rate (MPR) is the standard instrument of monetary transmission. The Keynes suggests that a fall in real interest rates lowers the cost of capital, causing a rise in investment spending, thereby leading to an increase inaggregate demand and a rise in output, (Froyen and Guender (2018).

On the other hand raising interest rate will have the opposite impact which is an induced contractionary measure. it is the real rather than the nominal interest rate that affects consumer and business decisions.(Tolam 2014).

According to Ireland (2015) and Froyen and Guender (2018) monetary policy influences the macro economy through many different policy instruments - interest rate, cash reserve ratio, liquidity ratios, OMO instruments, exchange rates, et cetera.

2.3. Review of Related Empirical Studies.

A review of some available evidence reflects an understanding that monetary policy transmission process and other shocks do have different impact on the real domestic economy, especially, depending on the financial system development of an economy.

Amoo, Eborieme, Mbuto,Igue and Adamu (2014) in their study employedNigeria's quarterly variables namely Monetary policy rate, Money supply,, nominal exchange rate, interbank call rate, using SVAR framework, and established that the instruments have a negative impact on Manufacturing, building and construction, and agriculture of real sector investment

Bernanke and Gertler (1995) in their study employed a VAR using, interest rate, exchange rate, cash reserve requirement etc and established a differential impact of monetary policy instruments on the components of final expenditures of real investments.

Francis and Eugene (2015) tested for the strongest and most dominant monetary policy transmission channels to monetary shock in Nigeria, utilizing quarterly data. The results show that interest rates and credit channel are the leading channels for monetary policy transmission mechanism in Nigeria.

Ochieng (2018) in their study of modeling interest rate on economic growth of Kenya established a significant positive relationship between interest rate and growth.

Yue and Shuang-hong(2007) used Granger causality test to determine the effect of instrument of transmission of monetary policy shocks on the real sector in China and concluded that interest rate and exchange rate instruments have the most significant positive effects.

Ndikumana (2014) investigated the implications of monetary policy instruments ondomestic investment through interest rate and its impacts on bank lending to the private sector using 37sub-Saharan African countries. The study found that the monetary policy instruments affect real domestic investment negatively and through the interest rate.

Dixit and Pindyck(1994) study suggest that increased uncertainty caused by exchange rate variations reduces investment given the irreversibility of investment projects and, hence, increases the value option of delaying investment expenditures.

Bernhard (2013) in an attempt to determine the most effective transmission instrument for monetary policy in Nigeria applied Granger causality test on some transmission instruments. The study found that interest rate and exchange rare have the strongest negative impact.

Kapuscinski, (2015) , determined the relative importance of the instruments of monetary policy transmission in Poland, applied SVAR on Polish data and established thatexchange rate was relatively weak and less effective during the study period.

Lucky and. Uzah (2017) examined the effect of Monetary Policy transmission mechanism on

Domestic real investment in Nigeria (Gross Fixed Capital Formation as proxy) and established that maximum lending rate, Monetary policy rate, credit to private sector were positively related to GFCF while exchange rate, treasury bill rate and prime lending rate were inversely related.

Oyeyemi, (2019) examined the effectiveness of monetary policy instruments in Nigeria using OLS multiple regression and ECM. The study found that the effectiveness of Monetary Policy Rate (MPR) reflects significantly on market/commercial banks interest rate in Nigeria.

Llaudes (2007) ,studied the effects of transmission mechanism of unexpected monetary shocks in an open economy setting within the context of a VAR framework for 15 OECD countries. They established that contractionary monetary policy shock that raises the level of the interest rate, causes an appreciation of the exchange rate and also results in a loss of pricecompetitiveness of the domestic tradable goods.

Adelowokan&Balogun (2015) examines the effect of exchange rate volatility on investment and growth in Nigeria and confirm the existence of long run and negative relationship between exchange rate, investment, interest rate, inflation with real investment and growth.

Omotor, (2007), investigated the impact of monetary policy instruments on the Nigeria real sector aggregate output and confirmed that interest rate (maximum lending rate) has a negative impact on the output (agricultural and manufactures sectors)

Osadume, (2018) examined the effect of different interest rates of transmission instruments on economic development in Nigeria, using Co-integration and ECM, and established that Monetary Policy Rate and discount rates have a significant positive effect on economic development .

2.4 Research Gap

Recently, more increasing attention has been focused on effects of monetary policy transmission instruments on the aggregate investment (foreign and domestic) or aggregate output without taken into consideration that different sectors, respond differently to monetary

policy shocks. This has implications for macroeconomic management as monetary authorities have to weigh and identify the consequences of their actions on various sectors of the economy. For instance the tightening of monetary policy might be considered benign or non-threatening from the foreign investment perspective, yet it can be viewed as excessive for non-oil real Private investment of the domestic economy If that could be true, then monetary policy transmission process should have strong distributional effects on the real sector Private investment.

This study has employed Non-oil real sector Private investment variable for more specific objectivity of the analysis, having observed that all the related reviewed studies did not take the above implication into consideration.

Specific empirical investigation on Non-oil Privateinvestment is important for many reasons. Firstly, when investment in real sector is disaggregated, (that is, Private from Public,), it gives room to know the specific problem of the real sector private investment since the Public investment sector of the real economy has different capital intensity and may also generate different response from the policy transmission instruments. This difference may be largely uncovered at an aggregate level, while disaggregating the sectors gives a clearer knowledge of analyzing the problem, if confirmed (Dedola and Lippi (2005).

According to (Dedola and Lippi (2005), understanding the sectors that are adversely affected by monetary tightening, for instance, will assist the economic planners to know clearly what will be required to tackle the problem.

Secondly, although all the above reviewed studies have contributed to the existing literature on the effect of monetary policy transmission on real sector but there are still some fundamental issues that are not considered in these studies. Majority of these studies reviewed focused on external environment. For instance, Ndikumana (2014), Llaudes (2007), Bernanke and Gertler (1995), and others, used cross-section analysis which precludes country's specifics which may also lead to misleading result (Konya (2004). There are at least two important caveats that might affect such results. The first is that such cross-country analysis is plagued by multiplicity of issues of parameter heterogeneity,

omitted variables, model uncertainty and measurement error. (Rodvik, 1999).Inference based on results of such analyses leads to potential biases. Blonigen and Wang (2005) also argue that pooling rich and poor countries together without distinguishing between their level of development leads to incorrect inferences..

In addition, it could be argued that the contributions of these authors are quite constructive, but not adequate to be definite for the management of Non-oil real Private investment. This study has therefore added the following:

(i) proper and more detailed theoretical understanding of Monetary policy transmission instruments and how the process affect the non-oil real sector Private investment

(ii) Determining the major policy instruments that can significantly bring about effective and sustainable monetary policy planning, implementation and evaluation in Nigeria.

(iii)Application of standard econometric analysis technique (cointegration, unit root test and error correction model) and updating the observations to 2020, using Nigeria's time series.

The effective management of an economy is critically dependent on the proper understanding of the interrelationships among the major various components and different sectors of the economy, as well as those factors that constrain their dynamics. (Ramesh (2019).

Recognizing the above gaps and challenges of the previously reviewed studies, there is need to reexamine the problem holistically. This will provide a useful information required by the monetary authority to fine tune policy initiatives toward stabilizing the macro economy, and ultimately the Non-oil real sector Private investment . .

3. RESEARCH METHODOLOGY

3.0

This chapter highlights the various methods adopted in organizing this study. The study adopted the ex-post facto design, implying that the variables are not randomly assigned. It can be used in retrospect to establish relationship, causes and their effects.(Campbell et al, 1979).

The study made use of Nigeria's time series secondary data, sourced from CBN Annual Reports and Statement of Accounts, CBN Statistical Bulletin, 2020, CBN Economic and Financial Reviews and World Bank, for the purpose of arriving at a dependable and unbiased analysis.

3.1 Estimation Technique and Procedure:

The study applied econometric analytical techniques based on co-integration, unit root test and Error correction mechanism (ECM) and Granger causality test for the data analysis.

Prior to testing for long-run relationship using co-integration test, the level series OLS regression was applied at first stage to test for long run relationship between Non-oil real sector Private investment (dependent variable) and the selected monetary policy transmission instruments (explanatory variables). However, being conscious of the characteristics of the time series used, careful note was taken on the possibility of the stochastic error terms that might have entered the model which could give rise to spurious regression. Consequently, a further rigorous investigation was carried out using Augmented Dickey Fuller (ADF) (1981) unit root test to check the stationary property of the variables (if any) in the model.

The purpose of Unit root test is to establish if the time series have a stationary trend, and, if non-stationary, to show the order of integration through 'differencing'. A time series is stationary if its means, variance and auto-variance are not time- dependent. (Gujarati and Porters (2009). The assumption is that the time series used for this research have unit root stochastic process The process could be represented as follows:

$$\Delta Yt = \beta o + \beta 1t + \lambda Yt\text{-}1 + \sum_{i}^{m} \acute{a}i \Delta Yt\text{-}i + \xi t \ldots \quad (3.1)$$

i=1

where Y is the single time series for the selected monetary policy instruments under investigation and β the parameter coefficient, ɛt is a pure white noise error term, ά*i* and ƛ are coefficients of the lag terms and m is the length of the lag terms which is automatically selected using Akaike information criteria. If 'ƛ' is 0, then there is unit root, but if it is less than zero (negative), the null hypothesis is rejected and the alternative that the series is stationary is accepted.

Capitalizing on the likelihood of the co-movement in their behavior which implies that there is possibility that they trend together towards stable long run equilibrium, Johansen (1991) Co-integration test was applied. The objective of this test is to determine if there is existence of long-run equilibrium relationships among variables used in this research. As pointed out by Engle and Granger (1987) , the concept of co-integration creates a link between integrated process and the concept of steady state of equilibrium. Co-integration occurs when two or more time series variables which themselves may be non-stationary, drift together at roughly the same time. This implies that a linear combination of the variables is stationary. The null hypothesis is that the variables are not co-'integrated. Based on this, we specify the full information maximum likelihood based on the vector autoregressive equation (VAR) Johansen (1991) as mathematically stated below:

$y_t = a_1 y_{t-1} + \ldots + a_k y_{t-k} + ǿx_t + \mu_t$ ..... (3.2)

where: yt is a k-vector of 'differenced' stationary time series, 'k' being the lag length for the first order differenced variables, /(1), 'xt' is a vector of deterministic variables, 'a' is a constant, ǿ are the coefficient of the deterministic variables and μ_t is a vector of innovations or error term and it is known as the adjustment parameters in the vector error correction model, while "t" indicates time dependent. (Gujarati and Porters (2009).

Using this method we estimated the equation in an unrestricted form and then tested whether we can reject the restriction implied by the residual rank of the co-integration.

Applying the maximal non-zero eigen-values and the trace test of the maximum likelihood ratio, with reference to the level of significance, the number of Co-integration relations could be determined which indicate the existence of long run relationship (Johansen (1991)..

However, Co-integration process ignores the short run dynamics that might cause a relation not to hold in the short run and this formed the basis for application of Error Correction Mechanism (ECM). ECM is an extension of the partial adjustment model in co-integration technique which is the traditional approach to modeling of short run dynamics with long run equilibrium. It thus preserves the long run relationship while specifying the system in a short

run dynamic way. Granger and Newbold (1974) , and Engel and Granger (1987) are among the studies that have proved that a co-integration is a sufficient condition to run an ECM process.

A vector error correction model is a restricted VAR (Vector auto- regression) that has co-integration restriction built into the specification so that it is designed for use with non-stationary error correction term, since the deviation from the long equilibrium is corrected gradually through series of partial short-adjustment, (Gujarati and Porters (2009) .

A search for parsimony in this dynamic model typically follows the general–to-specific modeling (using various information criteria (Akaike, Schwarz, log likelihood, etc) which minimizes the possibility of estimating relationship while retaining long-run information, if the variables do not have the same order of integration, (Engel and Granger (1987). The functional form of the model, which initially is presented in a general form, incorporating many lag terms, is therefore later reduced to a specific or parsimonious structure by empirical testing and elimination and this gives the final and more precise result of the estimation.

Based on this, the specification is re-parameterized in a dynamic process and OLS regression applied with the equation as shown below:

$NRSPIt_t = a_0 + \sum i\text{-}=1 a_i NRSPIt\text{-}1 + \sum_{i=0} a_i Z\ t\text{-}1 + ai\ ecmt\text{-}1 + \mu$ .... (3.3)

Where a_0 is a constant, NRSPIt is a vector of endogenous variable and dependent variable, Zt-1 is lag term of a vector of explanatory variables as already explained and $a_i$is the parameter coefficients, NRSPIt-1 is the lag term of the dependent variable, the ecmt-1 or error correction term is the residuals from the long-run co-integration process and its coefficient measures the speed of the adjustment of the disequilibrium while μ_l is the white noise.

As long as the co-integrating vector (ECM) ecm_{t-1} is stationary and well defined, (negative), the ECM estimation will then confirm the earlier proposition that the variables are co-integrated. Equations 3.3, constitutes the maintained hypotheses for the ECM specification search. The insignificant or redundant variables are usually omitted at the parsimonious stage.(Gujarati and Porters (2009) Finally, diagnostic tests are performed on the results with a view to validating the models.

3.1 Model Specification

In specifying the effect of Monetary Policy transmission instruments on the Non-oil real sector Private investment in Nigeria, the selected monetary policy transmission instruments for this study comprise:Monetary Policy Rate (MPR), Cash Reserve Ratio (CRR), Nominal Foreign Exchange Rate (NFXR) and Liquidity ratio (LR), which are independent or explanatory variables while the Non-oil Real Sector Private Investment ((NRSPI)) is the dependent variable. The MPR is the official rate of the Central Bank of Nigeria and serves as the anchor rate , as well as the operating range or band of overnight interest rates in the money market. The nominal exchange rate of the local currency to US Dollar was used. The exchange rate captures the interplay between monetary policy and the foreign exchange segment of the economy. Other transmission instruments - Cash reserve ratio and liquidity ratio – are commonly used by central banks as stabilization tools in liquidity management and monetary policy shocks affect bank deposit and lending through their manipulation.

Leaning on the modified theories of (Tobin (1969) and (Keynes (1938) of investment and (Nurul (2019) and (Rames, (2019), the linear specification could be specified both mathematically and functionally as shown below :(All variables are in percentage or ratios)

(NRSPI) = ∫(MPR, NFXR, CRR, LR , u 3.1

$NRSPI_t = \beta_o - \beta_1 MPRt + \beta_2 NFXR_t - \beta_3 CRR_t - \beta_4 LR_t, + \mu t$ …….. 3.2

Where:

$NRSPI_t$=Non-oil Real Sector Private Investment(as percentage of RGDP)

MPR = Monetary Policy Rate (Interest Rate)

NFXR = Nominal Foreign Exchange Rate

CRR = Cash Reserve Ratio

LR = Liquidity Ratio

‘β_1’ - ‘β_5’ = Parameter coefficients

U_t = Error Term or White noise

Hence the above estimable long-run linear equation posits that Non-oil Real sector Private Investment in Nigeria, the dependent variable, is a function of the above selected Monetary

Policy transmission instruments which are explanatory variables, 't' indicates time-dependent, 'β_1'-'β_4'' are parameter coefficient and 'μt' is an unobservable component that is assumed "white noise".

3.4.1 Theoretical A Priori Expectation

During expansionary monetary policy which could lead to (i) a fall in interest rates, (ii) a decrease in exchange rate; (appreciation). (iii)a fall in cash reserve ratio and (iv) a decrease in liquidity ratio; the variables : β_1, β_2, β_3, and β_4, are < 0 .

During Contractionary monetary policy, the reverse will be the case: that is, β_1, β_2, β_3, and β_4, are > 0.

4. DATA PRESENTATION AND ANALYSIS OF EMPIRICAL FINDINGS

4.0.

This section presents the data, the empirical results and discussions on the relevant findings from the model specifications tested in this study. Table 1 below presents the OLS level series. The findings and analysis are based on the outcome of the estimation results of the model adequacy . Consequently, the choice of the reported estimation results was based on overall plausibility of the theoretical expectations as explained in chapter three.

Table 1 Presentation of Long-Run OLS Regression (Variables Measured At Level)

NRSPI = ∫(CRR LR, MPR, NFXR , μt)
Dependent Variable: NRSPI
Method: Least Squares
Date: 10/02/2021 Time: 10: 25
Sample(adjusted): 1981 – 2020
Included observations: 40 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statstic	Prob.

CRR	-0.332538	0.080039	-4.154824	0.0001*
LR	0.208411	0.183528	1.135528	0.1714
MPR	-0.204254	0..065387	-3.123923	0.0013*
NFXR	-0.206252	0.147961	-1.393955	0. 1572
C	2.005456	0.488623	4.104722	0.0000

R-squared	0.883323	Mean dependent var.	12.8163
Adjusted R-squared	0.68 782	S.D dependent var	2. 18163
S.E. of regression	0.216856	Akaike info criterion	0.001736
Sum squared resid	0.878355	Schwarz criterion	0.376634
Log likelihood	8.882124	F-statistic	203.0425
Durbin-Watson stat	1.368565	Prob(F-statistic)	0.000000

Source: E-View Econometric Computer Software Application, Version 6

4.2 Analysis OLS Level Series Result

The Ordinary Least Square(OLS) level regression as presented on table 1 above was run to establish if there is a statistical long run relationship between NRSPI and the selected Monetary policy transmission instruments. The result shows that the coefficient of determination (R-square) is 'a good fit' indicating that 88 per cent of the variations in Non-oil real Private investment is determined by the combined effect of changes in those selected explanatory variables . The F-statistics (203.04) confirms further that these explanatory variables are jointly and statistically important in explaining the variations in the Non-oil real Private investment growth process. The selected explanatory variables are rightly signed in accordance with the theoretical priori expectations except LR. The result shows that MPR, CRR and NFXR have negative long run relationship. NFXR relationship implies non- significant appreciation of the currency while LR has non-significant positive long run relationship with NRSPI.

However, despite these results, a cursory look at the diagnostics tests (with high $R^2$of 88%and low D.W. ratio of 1.3 suggests a bias result.(Gujarati (2009). The Durbin Watson statistic which is found to be 1.388535 does not lie between D-Watson critical values of approximately 2. The result suggests that there may be some degree of time dependence at this OLSlevel series regression which could lead to spurious regression. Consequently, application of the (ADF) Augmented Dickey and Fuller (1981) Unit root test was adopted.

Table 2 ***Summary of Unit Root Test Result Data Presentation***

VARIABLES	AT LEVEL		FIRST ORDER DIFFERENCE		REMARKS
	ADF Test Stat	Order of Integration	ADF Test Stat	Order of Integration	
(CRR)	-2.187918	-	-3.226134	/ (1)	**
(LR)	-2.374723	-	-4.170875	/ (1)	***
(MPR)	-2.259863	-	-5.900261	/ (1)	**
(NRSPI)	-2.223521	-	-6.966952	/ (1)	***
NFXR	-1.336167	-	-3.614044	/(1)	***

Note:	Mackinnon Critical Value at level:	Mackinnon Critical Value at first order diff.:	
	1% = -3.6852	1% = -3.6959	
	5% = -2.9705	5% = -2.9750	
	10% = -2.6242	10% = -2.6265	

* = 10% level of Significance ** = 5 % *level of si*gnificance *** = 1 % level of significance.

Source: E-View Econometric Computer Software application, Version 6 (See Appendix 1 and 2)

4.3 Analysis of the Unit Root Test

The objective of this test is to establish whether the time series used for the study have a stationary trend or not. In view of the suspected time-dependent feature of the data used in the level series OLS regression above, the ADF (1981) unit root test was applied separately on all the variables at ordinary and first order levels of differencing in order to determine the extent to which the individual variable is integrated.

The summary of the unit root test results as presented on Table 2 above shows that the null hypothesis of non-stationarity is accepted, implying that the variables are not stationary at level but could only be rejected after the first order /(1) differencing, (ie they became stationary after first order

differencing) for all the selected variables at one and 5 per cent levels of significance. This is evidenced by ADF test result at the ordinary level, which shows that the computed negative ADF test statistics for each variable is less than the Mackinnon critical values (Mackinnon, (1991), in absolute term at level before differencing. It implies that the variables do not converge to their long-run equilibrium until they are first differenced.

Table 3 Summary of Johansen Co-integration Test Result

Date: 10/02/2021 Time: 01.25
Sample: 1981-2021
Included observations: 40
Test Assumption: linear deterministic Trend in the data
Series: NRSPI, CRR, NFXR, MPR, LR,
Lags interval: 1 to 1

Eigen- Value	Max. Likelihood Trace stat. Ratio	5% Critical value	1% Critical value	Hypothesized No of CE (s)
0.990941	241.9047	94.15	103.18	None*
0.821016	189.5475	68.52	76.07	At most 1*
0.760867	131.3853	47.21	54.46	At most 2*
0.646830	79.4758	29.68	35.65	At most 3*
0.315627	11.9618	15.41	20.04	At most 4
0.046824	1.34275	3.76	6.65	At most 5

*(**) denotes rejection of the hypothesis at 5%(1%) significance level
L.R. test indicates 4 co-integrating equation(s) at 5% significance level

Source: E-View Econometric Computer Software Application, Version 6 (See Appendix 3)

4.4 Analysis of Co-integration Tests Result

The concept of co-integration as pointed out by Engle and Granger, (1987) and Hendry (1986) creates a link between integrated process and the concept of steady state of equilibrium.The objective of this test isto determine if there is existence of long-run equilibrium relationships among the variables used in this study

Consequently, based on the outcome of the unit root test which confirms that all the variables are difference stationary at first order (1) level,the maximal likelihood ratio Trace test statistics was applied to determine the number of co-integrating vectors, using the Johansen (1995) method to

confirm if the variables are co- integrated or not; in other words, if there is a long-run relationship. This is also done as a condition for accepting error correction mechanism (ECM) in the estimation.

The null hypothesis is that there are no co-integrating or long run relationships amongthe variables used for the study. The decision rule is that the computed trace test likelihood ratios should be greater than the critical values for co-integration relation to exist. The eigenvalue must also be non-zero. Based on these rules, the number of the co-integrating relations were determined.

The summary of the result as presented on Table 3,shows that there are four (4) co-integration relations at one (1%) and five (5%) significant level. This implies that the test statistics rejected the null hypothesis that the variables are not co-integrated and accepted the alternative hypothesis that they are. The presence of co-integrating vector equations in this model therefore implies that there is a long-run relationship among selected variables used for the study.

TABLE 4 Parsimonious ECM Estimated Result

Dependent Variable: D(NRSPI)
Method: Least Squares
Date: 10/02/2021 Time: 02:52
Sample (adjusted): 1981 - 2020
Included observation: 40 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.010046	0.299062	-6.721191	0.0001
D(NRSPI(-1))	0.404238	0.261621	1.545155	0.1352
D(NRSPI(-2))	- 0.094868	0.023308	- 4.070576	0.0006*
D(CRR(-1)	0.0994788	0.108671	0.915422	0.3611
D(CRR(-2))	-0.060033	0.014247	- 4.212886	0.0005*
D(LR(-1))	1.097112	0.921467	1.190618	0.2153
D(LR(-2))	-0.029964	0.010211	-2.933398	0.0069*
D(MPR(-1))	-0.094546	0.104502	-0.904691	0.3551
D(MPR(-2))	-0.044623	0.011211	-3.979216	0.0056*
D(NFXR(-1)	0.108482	0.079791	1.359468	0.1587
D(NFXR(-2))	0.048432	0.012594	3.844767	0.0012*
ECM02(-1)	-1.161022	0.302111	-3.809681	0.0008*

R-squared	0.760914	mean dependent var	0.043223
Adjusted R-squared	0.671223	S.D dependent var	0.201011
S.E of regression	0.200224	Akaike info criterion	-2.203601
Sum squared resid	0.802386	Schwarz criterion	0.113542
Log likelihood	-18.43545	F-statistic	12.7256234
Durbin-Watson stat	2.317201	Prob(F-statistic	0.000201

Source: E-View Econometric Computer Software application, Version 6 (See Appendix 5)

4.4 Analysis of ECM Estimated Results

The motive behind the Error Correction Model (ECM)(ECM) is the need to recover the long run information lost by differencing of variables in order to bring them to stationary level (i.e. those with unit roots) while allowing a wide range of short-run dynamics.

Based on the existence of a co-integrating equations among the series, the short-run and long run dynamic adjustment was carried out using the ECM model.The parsimonious ECMresult presented on table 4 gives the final and more improved estimation result when compared with the OLS level series and the over parameterized model. All the variables are correctly signed as predicted.

The coefficient of determination (R^2) of 76 per cent which measures the overall goodness of fit is still significantly high. This implies that the changes in the explanatory variables,in aggregate, accounted for 76 per cent of the variations in Non-oil Real Sector Private investment (NRSPI).

The adjusted R^2 of 67 per cent also shows that having taken into consideration the influence of other possibly omitted number of explanatory variables, the dependent variable is still good and explained by 67 percent. The F- statistics ratio of 12.7 2withprobability ratio of 0.000 is also high and finally confirms that the explanatory variables are jointly and statistically important in explaining the variations in the growth process of (NRSPI) in Nigeria.

The Durbin-Watson statistic value of 2.31 indicates absence of autocorrelation. This implies that the unit root test has effectively screened the time series variables to achieve stationarity which is am improved result.

The result finally established that in the long run, the Monetary Policy transmission instruments – CRR, MPR, and LR -are significantly and inversely related to NRSPI at the second lag, while NFXRis significantly and positively related to NRSPI, implying high rate of depreciation/devaluation, of domestic currency.

The NFXR relationship suggests reduction in real investment expenditure as a result of increased cost of imported inputs for manufacturing/industrial sector which has adverse effect on returns derivable from NRSPI.This is in support of Nuwagira (2015) Bernhard (2013)and

Obstfeld and Rogolf (1995) studies which established that exchange rate depreciation dampens real investment because of the increasing cost of imported intermediate goods and the user cost of capital, especially in economies with high rate of inflation which is applicable to Nigeria..

The MPR, CRR and LR relationships simply suggest that there are more policy contractionary measures. Increase in MPR indicates increase in cost of capital and increase in CRR and LR implies reduction in the deposits and reserves of Deposit Money Banks (DMBs), all resulting to reduction on credits (capital) to Non-oil real sector private firms,(especially the SMEs that constitute the bulk of the real Private investors).The result supports Frances and Eugene (2015) as well as the CBN (2019) financial stability reportwhich also confirmed that there was reduction in financial intermediation.

Reduction in overall financial intermediation leads to credit contraction, depresses Non-oil real sector Private investment output and overall economic activities. This finding is in tandem with accelerator theory which basically postulates that investment is a linear function of changes in output and also consistent with economic theory, as output is expected to decline following monetary policy tightening.

The result also suggests that policy instruments employed have a greater adverse effect on investment expenditure of Non-oil real Private firms which are more dependent on bank loans, than oil firms that can access the credit market directly through stock market. Gertler and Gilchrist (1994).

Furthermore, (under contractionary measures) keeping other variables constant, one percent increasein CRR, LR and MPR, induces 6%, 2.9% and 4.4% reduction in (NRSPI) expenditure respectively. The negative effect of these variables could also be possibly traced to other monetary policy shocks such as the withdrawal of all public funds from commercial banks and the effect of Single Treasury Account which contracted commercial banks lending.

The lag of the dependent variable (NRSPI1-t) was equally significant in the determination of the effect of Monetary Policy transmission instruments on NRSPI. The impact reflected inter-temporal dependence of NRSPI, with the level of NRSPI**1-t** at any one period, determining the level in another.

The coefficient of the ECM term (-1.16) percent, which measures the speed of the adjustment of NRSPI, at which equilibrium is restored, to the changes in the policy instrumentsin the short run, is also significant and correctly signed (negative) at 5 percent level. This, therefore confirms the earlier proposition that the variables used for the study are co-integrated. The speed suggests that growth process of NRSPI in Nigeria adjusts slowly to the short-run disequilibrium in the explanatory variables,

which is an indication of lag effect.The ECM coefficient also gives the proportion of the short run disequilibrium error accumulated in the previous period that is corrected in the current period. The speed implies that in the long run, 16 per cent of disequilibrium in the growth process of Non oil Real Sector Private investment in Nigeria is corrected within a lag during the period under review. (One lag is one year in this study). (Culbertson, (1961).

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

The study attempts to explore the influence of some selected Monetary Policy transmission instruments - Cash Reserve Ratio (CRR), Monetary Policy Rate(MPR), Liquidity Ratio (LR), Nominal Foreign Exchange Rate - on Non oil Real Sector Private Investment (NRSPI) in Nigeria, for the period 1981 to 2020, within the econometric analysis of Ordinary Least Square (OLS) regression, Unit Root Test, co-integration and error correction mechanism, using Nigerian annual time series data,sourced from CBN statistical Bulletin and World Bank Data files. *T*he selected monetary policy transmission instrumentsare the independent or explanatory variables while the Non oilreal sector Private investment is the dependent variable.

5.1 Summary of Major Findings

Based on the empirical result presented and analyzed in section four, and granting the orthodox problem-solution highlighted in the literature reviewed, the selected Monetary Policy transmission instruments namely: Cash Reserve Ratio , Monetary Policy Rate , Liquidity Ratio had significant inverse relationship with NRSPI, implyinghigh rate of contractionary policy measures which ultimately would cause a reduction in credit (capital) to NRSPI firms. while the positive significant relationship of nominal foreign exchange rate with NRSPI, suggest high depreciation/devaluation of domestic currency which causes increase in the cost of production to manufacturing sector and so, a constraint to returns in NRSPI .

5.2 Conclusion

Theoverall import of this study suggests that the selected Monetary Policy transmission instruments did not contribute effectively to the growth process of the Non- oil real sector Private investment in Nigeria

The Cash Reserve Ratio, followed by Monetary Policy Rate (Interest rate) and Nominal Foreign Exchange Rate instruments are most significant, dominant and most effective monetary policy

transmission instruments in explaining the effectiveness of Monetary Policy transmission instruments on the Non oil real Private investment in Nigeria. This study supports Olatunji and Babatunde (2017), Nampewo et al (2013),Frances and Eugene (2015).

5.3. Recommendations

Based on these results,The study recommends as follows:

i. The Monetary authority should lay moreemphasi on how to align their contractionary policy measures to reduce the rates of MPR, LR and CRR. This will enhance theDMBs depositbase and reserves and ultimately reduce the unavailability of investible funds to NRSPI firms through increase in DMB credit (capital) to these firms.

ii. Optimal MPR (lending interest rate) which would reflect the overall internal rate of return on investment, with due attention to market fundamentals, should be adequately maintained to stimulate credit demand.

iii. Issues such as discipline, confidence and credibility on the part of the government monetary policies (asargued by Dorduon and Njinken (1997)and Simmons, (1937) are also essential and could play a fundamental role in making a positive impact on NRSPI production capacity.These issues are apparently lacking in Nigeria, as partly reflected in several policyreversal and conflicts and ineffective allocation of resources to Non oil real Private investment productive sector.

iv. Adequate policies/reforms and surveillance should be maintained to ensure proper foreign exchange utilization to minimize market malpractices. CBN should also minimize being the sole supply of foreign exchange. Additionally, encouraging increase in local production, and value added to primary commodities and manufactured products, will also curtail excessive pressure on foreign exchange demand by importers.

v. The findings of this study also justifies that CBN should embark on diversification intoNRSPI by creation of more special and effective credit schemes and reviewing the already existing initiatives to identify their weaknesses and strengths. Such initiatives include:Small and Medium Scale Enterprises Credit Guarantee Scheme, Commercial Agricultural Credit Scheme, Nigeria Incentive-Based Risk-sharing for Agricultural Lending and restructuring instead of concentrating on oil sector alone.

vi. Finally, there is need for the policy makers to take cognizance of the lag effect and design policies in line with the expected magnitude of expected changes

References

1. Abaenewe, Z. C. &Ndugbu, M. O. 2012, Analysis of the Effect of Monetary Policy Development on Equity Prices in Nigeria. *West African Journal of Industrial and Academic Research*, 5(1), 140-152.

2. Ackley, G. (1978). Macroeconomics Theory and Policy, Collier – Macmillan, Hong Kong, pp 78 – 89.

3. Adeleke, I. A, V.I. Uboh and O.A. Shobande (2015). Monetary Policy Towards Inclusive Growth in Nigeria. *The Nigerian Journal ofEconomics and Social Studies.* 57(2), 313-337.

4. Adelowokan, O.A,,Adesoye A. B.&Balogun O. D (2015). Exchange Rate Volatility on Investment And Growth in Nigeria, an Empirical Analysis. *Global Journal of Management and Business Research, 5(10),1-11.*

5. Adeoye, B.W and O.A. Shobande (2017). Transmission Mechanism and macroeconomic aggregate in Nigeria. Caleb Journal of Social and Management Sciences, Volume 3, Number 2, Pages 115 – 134. https://doi.org/1026772/cjsms/2017030206

6. Adenekan, A. T. and Ahortor, C. R. (2013). An Empirical Investigation intothe Monetary PolicyTransmissionMechanism in Nigeriaavailable at https://www.researchgate.net/publication/264001744.

7. Albert, A. & Modigliani, F. (1963). Life cycle hypothesis of savings: Aggregate implications and
tests. An American Economic Review, Vol. 53,
pp.55 – 84.

8. Adeoye, B.W. and Shaibu, M.O. (2014). Monetary policy shocks and exchange rate volatility in Nigeria. *Asian Economic and FinancialReview*, 4(4), 544–562.

9. Agagi G. (2017). Capital Formation and Nigerian Economy. Journal of Economicsand Annual Review. Vol.38 No.2 Pp 28 -42.

10. Alarm, T., and Waheed,. M. (2006). The Monetary Transmission inPakistan. A SectoralAnalysis.Pakistan Institute of DevelopmentEconomi8cs.*MunchiPersonal RePE Archive (MPRA) No.2719.*

11. Amassoma, D.; P.I. Wosa, and S. A. Olaiya (2001), "An Appraisal of Monetary Policy and Its Effect on Macro Economic Stabilization in Nigeria" Journal of Emerging Trends in Economics and Management Sciences (JETEMS) 2 (3): 232-237

12. Amoo, B.A.; M. Eborieme, O.M. Mbutu, N. N. Igue and Y. Adamu (2014): Effects of Monetary Policyon the real Economy ofNigeria: A Disaggregated Analysis. Published by the Real SectorDivision, Research Department, CBN Abuja PG. 1 - 37

13. Andres, J., J.D. Lopez-Salido, and E. Nelson. (2004). Tobin's Imperfect Asset Substitution inOptimizing General Equilibrium .*Journal of Money, Credit, and Banking. Vol.* 36: 665–690.

14. Ando, A. and Modigliani, F.,(1968) 'Lags in Fiscal and Monetary Policy' in Commission on Money and Credit Stabilization Policies, Prentice Hall Inc, Englewood Cliffs. P.28

15. Arrow, K. (1968). "Optimal Capital Policy with Irreversible Investment" in Server, L., et al. Private Investment and MacroeconomicAdjustment: A Summary. The World Bank Research Observer, Vol.7, No12.

16. Asante, Y, (2000). Determinants of Private InvestmentBehaviour. AERC Researcper, No.100. Nairobi: AERC.

17. Baksh, S. and Craigwell, R. C. (1997). The Monetary Transmission Mechanism in a Small open economy. A case of Barbados. Savingsand Development. Vol.21 (2) (179 – 193).

18. Bayraktar, N and Fafack H. (2007). Specification of Investment Functions in Sub-SaharanAfrica. World Bank Policy Research Working Paper No.49.

19. Belongia T. and Wang (2003)."The Effect of Management Decision on Agricultural Bank Facilities".*American Journal of Agricultural Economics (Nov.)*.

20. Bernanke, B.S., and M. Gertler. 1989. Agency Costs, Networthand Business Fluctuations. American Economic Review Vol. 79 (1) pp. 14 - 31)

21. Bernanke, B.S., and M. Gertler. 1995. Inside the Black Box: The Credit Channel of Monetary Policy Transmission. *Journal of Economic Perspectives* 9: 27–48.

22. Bernanake, B.S and A.S. Blinder (1988). Credit, Money and Aggregate Demand. *American Economic Review.* May. 435-439.

23. Bernhand, O. (2013). Monetary Transmission Mechanism in Nigeria: A Causality Test Approach.
Mediterranean Journal of Social Sciences.
Vol.4(13) . 377 – 388.

24. Bussari, D,,*O Europeamoke*, P., and Adesoye, B. (2002). Monetary Polucy and Macroeconomic
Stabilsation under Alternative Exchange Rate

Regime.Evidence from Nigeria.

25. Campbell, Donald, Thomas .O. Cook, and Williams Shadish, (1979). Quasi-Experimentation: Design and Analysis Issues for Field Settings. Houghton Mifflin Coy, Boston, NewYork

26. Caballero, R and Pindyck, R. 1996. Uncertainty, Investment and Industry Evolution. International
Economic Review Vo.37 No.3.641-662.

27. Campbell, Donald., Thomas .O. Cook, and Williams Shadish. () Quasi-Experimentation: Design and Analysis Issues for Field Settings. Houghton Mifflin Coy, Boston, Newyork

28. Carl, E. Walsh. (2010) Monetary Theory and Policy. The MIT Press (3rd Edition) pp 87 – 89.

29. CBN (2014). Effects of Monetary Policy on the real Economy ofNigeria: A Disaggregated Analysis.
Publication by theReal Sector Division, Research
Department, CentralBank of Nigeria, Abuja

30. Central Bank of Nigeria (CBN) (2019).CBN Statistical Bulletin and Annual Report and Statement of Account. Abuja

31. Central Bank of Nigeria (CBN) (2020).CBN Statistical Bulletin and Annual Report and Statement of Account. Abuja

32. Chen, Yanguang. (2016). Spatial Autocorrelation Approaches to Testing Residuals from Least
Squares Regression, Vol.11 No.1 Pp. 77 - 817.

33. Culbertson, J. M. (1961). 'The Lag in the Effect of Monetary Policy: Reply' Journal of PoliticalEconomy, Vol. 3 pp 80 – 103.

34. Dickey, D. and W. Fuller (1981). "Likelihood Ratio statistics for Autoregressive Time series with unit Root", Econometrica Vol.83. p. 49

35. Douglas Fisher (1978).Monetary Theory and Demand for Money. John Wiley and Sons, Publisher. Santa Barbara, ISBN - 13: 9780470992575. pp.105 – 113.

36. Dedela, L. and F. Lippi (2005), "The Monetary TransmissionMechanism: Evidence from the Industries of Five OECD Countries", *European Economic Review, Vol.49 (6), pp.1543-156939*

37. Dixit, A. K. and Pindyck, R. S. (1994). *Investment under Uncertainty.*Princeton: Princeton, University Press

38. Douglas Fisher (1978). Monetary Theory and Demand for Money. Wiley and Sons Publishing Coy. Ltd. Pp 180 – 202.

39. Dornbusch, R. 1976. Expectations and Exchange Rate Dynamics*Journal of Political Economy Vol.* 84 1161–1176.

40. Dornbusch, R.. Fischer, S., and Richards, S., 2002. Macroeconomics 8th Edition Tata , Mc. Gray-
Hill Companies. Icn.ISBN 0-07-047434-6
International Settlements. (26), 245 -269.

41. Due, J. E. and Friedlander, A.F. (1977).Government Finance and Economics of thePublicSector; Richard, D, IrwinInc,, Homewood Illinous, 60430.

42. Engel, R.F and Granger, C.W.J. (1987). Co-integration and Error Correction Representation Estimation and Testing. Econometrica, Vol.55(2)

43. Fischer, S. (1930). Long-Term Contracts, Rational Expectations, and theOptimal Money SupplyRule. *Journal of Political Economy Vol.* 85: 191–205.

44. Irvin Fisher, (1906). The nature of Income and Capital. The University of ChicagoPress

45. Fleming, J.M. (1962). Domestic Financial Polices Under Fixed and Floating Exchange Rates. *International Monetary Fund Staff Papers* 9:
369–379.

46. Francis, O, N and Eugene, O. I (2015). Monetary Transmission Mechanism in Nigeria.: A Favar
Approach. International Journal of Economics and
Finance. Vol. 7 (8) 229 - 237

47. Friedman, M. (1968). The role of monetary policy. *American Economic Review,* 58.

48. Friedman (1956).*The Quantity Theory of Money A restatement* inMilton Friedman (ed.)The Quantity Theory of Money, Chicago. The University of ChicagoPress).

49. Frimpang, J. M, and Maubuah, g. (2010) "Determinants of PrivateSector Investment in Ghana:An ARDL Approach" *European Journal of Social Science Volume 15,* No.2,

50. Froyen, R. T., and Guender, A. V. (2018). The Real Exchange Ratein Taylor rules. A Reassessment. Economic Modeling Elsevier vol. 73 (2) pp140 – 151.

51. GertlerMark, and Gilchrist, Simon (1994). Monetary Policy Business Cycles and Behaviour of Small Manufacturing Firms. Quaterly Journal of Economics vol. 109 (2 pp 309 - 340)

52. Gray, S. (2007). Liquidity Forecasting. Paper presented at a Seminar on Liquidity Forecasting for the Monetary Policy Department CBN, at the Chelsea Hotel, Abuja.

53. Granger, C.W.J. (1969), “Investigating Casual Relations by Econometrics Models and Cross-SpectralMethods “Econometrica, Vol. 37. No. 2 March, (1969).
54. Granger, C.W.J. and P. Newbold (1993): Spurious Regression inEconometrics. *Journal of Econometrics Vol. 2.*
55. Granger, C.W.J. (1981). Some Properties of Time Series Data and their use in Econometric Model
Specification.*Journal of Econometrics, Vol.16, 121 -130.*

Gertler Mark, and Gilchrist, Simon (1994).Monetary Policy Business Cycles And Behaviour Of Small Manufacturin Firms 1994.Quaterly Journal of Economics vol. 109 (2 pp 309 - 340)

57. Green ,J and D. Villanveva (1991). Private Investment inDeveloping Countries: An Empirical Analysis IMF StaffPaper Vol.38, No.1

56. Gujarati, D.N. and Porters. (2009). “Basic Econometrics” (5th Ed.),McGraw-Hill International, Singapore,
57. Handa, J. (2010), Moneatry Economics, United States of America: RoutledgeInvestopedia – Investopedia. Investopedia ULC. 1 Jan. 2010. Foebes Digital Digital Company. 12 June 2010 http://www.investopedia.com/terms/p/price_level_targeting.asp

58. Hicks, J.R. (1937). Mr. Keynes and the “Classics”; A Suggested Interpretation. *Econometrica*
Vol. 5: 147–159

59. IMF (2005). Monetary and Fiscal Policy Designs: Issues in low- income Countries Policy Development and Review Dept. and Fiscal affairs
Dept) Washington DC IMF.

60. Ireland, P. (2015). Monetary Policy Transmission Mechanism. IMF WorkingPapers No.6, Vo..1 Pp 1

61. Iyoha, M. A.(2004).*Macroeconomics: Theory and Policy*. Benin City: Mindex Publishing

62. Jayaraman, T.K. (1996). Private Investment and Macroeconomic Environment in the SouthPacific Island Countries: ACross-Country Analysis, Occasional Paper No.14, Asian Development Bank, Manila

63. Jhinghan, M. (2003). Advance Model Economic Theory (Micro andMacro). 12th Edition, New Delhi.Vrinda Publications.

64. Johansen, S. (1991). "Estimation and Hypothesis testing ofCo-integration vectors in Gaussian Vector
AutoregressiveModel's", Econometrica, Vol. 59.

65. Jorgensen, D. (1963). "Capital Theory and Investment Behaviour".
American Economic Review, Vol.53. 247-259.

66. Kapuscinski, M. A, 2015. The role of Bank balance Sheet in monetary policy transmission: Evidence from Poland.. Narodowy Bank Polski (NBP) Education & Publishing Department, Warszawa, Poland, NBP Working Paper, No.245 pp. 1- 43.

67. Khurshid, A. 2015. The Effect of Interest rate on Investment. AnEmpirical Evidence of Jiangsu
Province, China. Journal ofInternational Studies
Vol.8 No.1 PP 81- 101

68. Kiley, M. and Roberts, J. 2017. Monetary Policy in a low interest rate world, Brookings Paper on
Economic Activity.Spiring, Vol. 2. pp. 317-396.

69. Krugman, P. R. (1998). It's Baaack: Japan's Slump and the Returnof the Liquidity Trap.*Brookings*
Papers on Economic Activity Vol. 2: 137–187.

70. Lensink, R and O. Morrissey, (2001). FDI Flows, Volatility and Growth. University of
Nottingham: Credit Research Paper Vol. 01 No./06.

71. Levine, Ross and David Renelt (1992). "A Sensitivity Analysis ofCross – Country Growth Regression".
American economic Review (Sept).

72. Loayza, N. & Hebbel, K. S. 2002, Monetary Policy Functions and Transmission Mechanisms:An Overview, in Monetary Policy: Rules and Transmission Mechanisms. Edited by Norman Loayza and KlausSchmidtt-Hebbel, Santiago, Chile, 2002, Central Bank of Chile.

73. Lucky A. L. and Uzah C. K. (2018). Monetary Policy TransmissionMechanisms and Domestic Real Investment in Nigeria: ATime Series Study 1981-2015. International Journal ofEconomics and Financial Management Vol.2 No.2. Pg 136-161. www.iiard.pub.org.

74. Mackinnon, J. A. (1991). “Critical Values for Cointegration Tests” in R. F. Engle and C. W. Granger (eds) Long-run Economic Relationships. Readings in Cointegration. Advanced text in Econometrics, OxfordUniversity Press.

75. Mauro, B. (2003). The IS-LM and the Liquidity Trap Concept fromHickand Krugman. The history of Political EconomyConference. Pp 1 – 46. Brazil.

76. Meltzer, A.H. (1995). Monetary, Credit and (Other) TransmissionProcesses: A Monetarist Perspective. *Journal of Economic Perspectives Vol.* 9: 49–72.

77. Mesagan, D.P. and O.A Shobande (2016). The Role of Central Bank in Nigerian Economy. *CITN Review*, 7(1), 25-34.

78. Mishkin, F. S. (2007), "Housing and the Monetary Transmission Mechanism", NBER Working Paper No 13518.

79. Mitcheli, Williams, (2016). Modern Monetary Theory and Practice; An Introductory Text. (First Edition). ISBN – 10: 1530338794. Pp 361 – 370.

80. Modigliani, F. (1963). The Monetary Mechanism and its interactionwith real Phenomena. Review of
Economics and Statistics Supplement. .Pp 79 –

81. Mordi, N.O,.Englama, .M, A and B. S. Adebusuyi (2010).The Changing Structure of The Nigerian
Economy”. CBN Research Department Publication,
Atisele Vanessa CardsCoy.Lagos.

82. Mundell, R.A. (1963). Capital Mobility and Stabilization Policy underFixed and Flexible Exchange Rates. *Canadian Journal of Economics and Political Science* 29: 475–485

83. Nasiru, J and Usman, L. (2013). The Relationship between DomesticSavings and Investment: The
Feldstein-horioka Test, usingNigerian Data.CBN Journal of Applied Statistics Vil.4 (1).Pp. 75 -92.

84. Ndekwu, E. C. (2013). Analysis of Monetary Policy Transmission Mechanism and Real Economy in Nigeria. CBN Occasional Paper No.43, 1-83.

85. Ndikumana L. (2014). *Implications of Monetary Policy, Credit and Investment in Sub-Saharan African Countries,* Department of Economics and Political Economy Research Institute,University of Massachusetts atAmherst.

.

86. Nnanna, J. O, Englama, M. A. and F. O. Odoko (2004). “Finance,Investment and Growth in Nigeria”. CBN Publication, Kas Arts Services, Abuja.
87. Nnanna, O. J. (2001). Monetary policy framework in Africa: The Nigerian Experience. Central Bank of Nigeria, Garki, Abuja.
88. Nampewo, D; E. Munyambonera and M. M. Lawanga (2013), "Sectoral Effects of Monetary Policy in Uganda" Journal of EmpiricalEconomics Vol. 1, No. 2, 43-58.
89. Nurul S. A . Macroeconomics Principles, Applications and Policy Implications.Congnell AcademicPublisher, Canada
90. Nuwagira Wilberforce (2015). An empirical investigation of Exchange rate passthrough to inflation in RwandaBNR Economic Review Vol. 7. Pp 53 -78.
91. Nwosa, P. I andShaibu, M.O. (2012). The Monetary Policy Transmission Mechanism in Nigeria: ASectoral Output Analysis. *Inter national Journal of Economics and Finance,* Vol.4.No.1.www.ccsenet.org/ijef.
92. Obadeyi, J .Akingunola, R and V. Afolabi. (2013). Interest Rate Targeting: A Monetary Policy Tool for Economic Growth in Nigeria (Stakeholders Approach) Journal of Advances in Economics and Business. Vol. Vol.1 No.2, pp 103 – 123.
93. Obafemi, F. N and Ifere, E. O., (2015). Monetary Policy Transmissionmechanism in Nigeria: SVAR Approach: *International Journal ofEconomics and Finance; 7(8); 229-239*.
94. Obstfeld, M., and K. Rogoff. (1995). Exchange Rate Dynamics Redux. *Journal of Political Economy* 103: 624–660.
95. Ochieng, O. B (2018). Modeling Interest Rate on Economic Growth in Kenya: (The GARCH Model). Management and Economic Journal. Everant Publisher, Pvt Ltd. Vol.2 No.7, Pp 361 - 115.
96. Olatunji, S. and Babatunde, A. (2017). Monetary Policy Transmission Mechanism and Macroeconomic Aggregates in Nigeria. Caleb Journal of Social and Management Sciences vol. 3(2 pp (115 - 134).
97. Okafor, S. (2015). Savings and Private Capital Formation in Nigeria: An Econometric Approach. Journal of Research on Humanities and Socia Sciences.Vol. 6, No, 12. 104 – 130.
98. Omotor D.G. (2007), "Monetary Policy and Economic Growth: Theoretical and Conceptual Issues" CBN Economic and Financial Review, vol.45 no.4 December (39-67),Organization for Economic Cooperation and Development (OECD) (2011). Gross Capital Formation. Retrieved June 27, 2018 from stats.oecd.org./glossary/detail.asp/ID11

99. Osadume, R. (2018). The Effect of Interest Rate Mechanism on Economic Development in Nigeria
(1986 - 2016). International Institute of Academic Research and Development (IIARD), pOLICY

100. Oyeyemi D. (2019). The Effectiveness of Monetary Policy Instruments in Nigeria: A Time Series Approach. https://www.academia.edu. (Aug.). Retrieved Oc

101. Poole, W. (1990). "Optimal Choice of Monetary Policy Instruments in A Simple Stochastic Macro
Model".*Quarterly Journal of Economics. Vol.84 (2)*
192-216

102. Ramesh, Chandra. D. (2019). The Impact of Monetary Policy in the 20th Century Emerald Publishers. Vol. 2. Pp 102 – 122.

103. RobertPollins (1991). Journal ofPost Keynesian Economics. Taylor and Francis Publishers. Vol 13, No3, 366 – 396.

104. Rodrik, D. (1991). "Policy Uncertainty and Private Investment: Developing Countries" *Journal of Development Economics, Vol. 32. No.2*.

105. Romer, P. (1994). "The Origin of Endogenous Growth" *The Journal of Economic Perspective Vol. 8, Issues* (Winter).

106. Samuelson P. A. and Nordhaus Williams (1992). Economics: Business Cycle and Aggregate Demand. (19th Edition). McGraw – Hill Irwin Publishers. Pp428 -

107. Shahbaz, M., Ahmad, N. and Walid, A.N.M. (2010). Savings-Investment Correlation and Capital
Outflow: The Case ofPakistan. *Trcmxit Studies*
Review, J *7, Pp 90 -9*

108. Siegloff, E. S and Greenworld, N. (1987). Policy ineffectiveness tests with Australian Data' Australian Economic Papers, Vol. 26, No. 49, December, pp, 179 - 187

109. Stiglitz E. and A. Weiss. (1981). "Credit Rationing in Markets with Imperfect Information. American Economic Review.

.

110. Taolam, J.G. (2014). Monetary Transmission Mechanism. IMF Workshop on Monetary and Exchange Rate Policy, Bangkok, Thailand.Nov. 24 – Dec.3, 2014.

111. Tobias, O., and Manbo, C., (2012). The Effect of Monetary Policy on Private Sector

Investment in Kenya.*Journal ofAj›JliedFinaiic'e&B mking, 2(2),239-2d7.*

112. Tobin, J. (1969). A General Equilibrium Approach to Monetary Theory*Journal of Money, Credit, and*
Banking 1:

113. Yue, V. and Shuanglong, Z. (2007). An Empirical Analysis of MonetaryPolicy Transmission through
Interest rate channel in China.ChinaBusiness Review. ISSN 1537 – 1506. USA. Vol.6 No.3.Serial NO.451. Pp. 8 – 26.

114. United Nations. (2015). Innovation for Sustainable Development, NY:United Nations Publication.www.sustainabledevelopment.un.org

115. UNCTAD. (2012).World Investment Report on Towards a NewGeneration of Investment Policies.
[Online Available]:unctad.org/en/Publications Library/2012overview_e n.pdf.

116. Vinayagathasan, T. (2013), "Monetary Policy and RealEconomy: A Structural VAR Approach
for Sri Lanka". National Graduate Institutebfor Policy Studies.Vol.2 No.1.RappongiMinato-ku, Tokyo,Japan, 106 -186.

117. World Bank (2016). Statistics and Gross Capital Formation as Percentage of (GDP). Retrieved June 27 2018 from data org:/Data.aspx/d=WDI&f=IndicatorCode%3ANE.GDI.TOTL.ZS.

118. World Bank (2017). Development Indicators. National Account Data Files:Country Ranking . Time
Series Comparison.Washington D. C www..indexmurdic.

119. Yesufu, T. M. (1996).“The Nigerian Economy: Growth without Development.*TheUniversity of Benin Social Science Series for Africa.*

120. Zebib, M and Muoghalu .M.(1998).“Dynamic Nature of PrivateInvestment and itsDeterminants in Developing Countries” . Studies in Economics and Finance. Vol. 18.

121.Ackley, G. (1978). Macroeconomics Theory and Policy, Collier – Macmillan, Hong Kong, pp 78 – 89.

122.Brunner, K. and Meltzer, A. (1969). The Nature of the Policy Problem,’ in Brunner, K (ed) Targets and Indicators of Monetary Policy’, Chandler Publishing Company, San Francisco, Culbertson, J. M. (1961). ‘The Lag in the Effect of Monetary Policy: Journal of Political Economy, Vol. 3 pp 80 – 103.

123. Friedman, M.,(1968). ‘The Role of Monetary Policy’, American Economic Review, pp. 1-17

124. Lipsey, R. G. The Relationship Between Unemployment and the Rate of change in money, wages rate in the U.K 1861 – 1957, Economica, Vol 25, 1957

125. Douglas Fisher (1978).Monetary Theory and Demand for Money. John Wiley and Sons, Publisher. Santa Barbara, ISBN - 13: 9780470992575. pp.105 – 113.

126. Simmons, H. C.,(1937). Rules Verses Authorities in Monetary Policy’ Journals of Political Economy, February,Pp1-30

127. Tobin, J., (1972). Inflation and Unemployment’ American Economic Review, March, p. 13

128. Wrightsman, D. (1976). An Introduction to Monetary Theory and Policy, The Free Pres, New York, pg 67 – 74.

129. Shiller, R. J (1978), Rational Expectation and the Dynamic Structure of Macoreconomic Models: A Critical Review, Journal of Monetary Economics, Vol 4 No 1, January,, pp 1-44