An Empirical Analysis of Monetary Policy Transmission Instruments and Non-oil Real 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 examines the impact 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-oil Real Sector Private Investment (NRSPI). The time series data is sourced from CBN, spanning through a period of 1981 to 2020. Johansen Co-integration and Error correction model (ECM) econometric analysis was employed.The empirical findings established that in the long run, inverse and significant relationships exist between (NRSPI) and MPR, LR, and CRR while FXR is positively and significantly related. The coefficient of the ECM (-1.16) which measures NRSPI's speed of equilibrium adjustment to changes in the selected policy instruments, is significant and correctly signed. It suggests that in the long run, NRSPI adjusts slowly to short-run disequilibrium in the selected policy instruments; indicating a lag effect. Overall, the policy instruments do not contribute effectively to NRSPI growth in Nigeria. Therefore, the monetary authorities should lay emphasis on aligning their policy contractionary measures, to reduce adverse effect of these selected instruments, They should maintain optimal lending rate that reflects the overall internal rate of return on investment, with due attention to market fundamentals. Lastly, Policy makers should take into consideration the lag effect, and design policies in line with the magnitude of expected changes.

Keywords: Monetary policy instruments; Non-oil real private investment; Co-integration and error correction models.

1. INTRODUCTION

Globally, the cardinal objective 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 monetary policy regulatory measures still remains vague. World Bank [1], United Nations [2]. In recent times, the performance of the Non-oil Real Sector 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 instruments and long term inadequate capital fund are the major impediment to sustainable growth of Real Sector Private Investment output, in most developing economies.CBN [3,4],. Oyeyemi [5].

According to United Nations Conference on Trade and Development (UNCTAD) [6] and United Nations, [2], Nigeria and many other developing economies, are endowed with abundant natural resources but ineffective monetary policies and inadequate 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 measures that would enhance sustainable real sector private investment, (Frimpang and Marbuah [7] and UNCTAD, [6].

There is also general belief that Nigeria neglected agricultural investment like palm produce exportation but have concentrated mainly on oil sector. Adeleke, Uboh and Shobande, [8]. .According to UNCTAD, [6], at present, Nigeria's policy measures are not adequate, when efficient management of resources are taken into consideration for sustainable economic growth and development The priorities of the Nigerian government policy measures are still localized and of short term (except in oil sector) with little or no attention paid to diversification into other real sector investment which can improve employment, social development, like rural infrastructural development, health care delivery etc. Amoo et al [9].

Conversely, in most developed economies, monetary policy instruments have emerged as veritable tools in stimulating sustainable growth in real rector investment and ultimately economic growth. IMF [10], asserts that effective and adequate regulatory policy instruments and fiscal incentives have been enhancing real Private Investments in developed countries with strong financial institutions, thereby ameliorated the cost of doing business and resulting to huge investments to these countries. But in Nigeria, the formulation of effective policy regulatory instruments are undermined by weak financial institutions, unstable macroeconomic indicators, poor infrastructural facilities, among others. These are believed to have hampered the growth of Non oil Real Sector Private Investment in Nigeria. [3], Lucky and Uzah [11]. Adeoye and Shobande [12].

Consequently, the 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 [5], Lucky and Uzah [11],

"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, Foreign Exchange Rate among others. In practice, Monetary Policy plays a counterbalance role to address price stability and stabilize the economy". (IMF [13], Carl Walsh [14] and Mitcheli [15].

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 Mitcheli [15] and World Bank [1]. "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, [16], Carl Walsh [14].
According to UNCTAD [6] and IMF [13], 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 developed economies, the performance of real sector investment serves as a gauge for assessing the adequacy of macroeconomic policy tools and measures. Monetary Policies can only be deemed effective if they enhance the productive capacity and distribution of goods and services that impact positively on the citizenry, CBN [9] and Amoo et al [9]. For the government to achieve its desired macroeconomic objectives, it must therefore pursue policy measures that will enhance real sector investment.

Based on the above background, the study seeks to investigate the extent the monetary policy transmission instruments must have adversely or positively affected Non-oil Real Sector Private Investment in Nigeria, and other constraints that scuttle the sustainable growth of the sector.

Generally, under the related literature reviewed, many scholars established 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 studies on the relationship between output, investment and savings and investment output and interest rate, investigated by Ochieng [17], Yue and Shuang-hong [18], and Osadume (2018). In their different conclusions, they established that Monetary Policy regulatory instruments, through interest rate, propagate savings which augment capital for real growth of investment, unless the variables are not well managed.

On the other hand, some related studies like Adesoye and Shobande [19], Kapuscinski [20], Adelowokan, Adesoye and Balogun [19], Ndikumana [21] Nuwagira [22], investigated the close relationship between exchange rate, interest rate , and real sector investment, and concluded that the policy instruments have adverse effect. In Nigeria, Lucky and Uzah (2017) and Osadume, (2018), established that Monetary Policy Rate has a positive relationship with real investment while Adelowokan and Balogun [19] established negative relationship.
Based on the controversy over the above findings, the quest for empirical investigation to establish authentic results, continues.

Furthermore, the Nigerian Government has recognized that government alone cannot drive the economy World Bank [1] and United Nations [2]. The government has therefore accentuated her effort in restructuring the system for efficient sectorial allocation of capital to Real Sector Private Investment by introducing the National Economic Empowerment and Development Strategy. Despite this effort, the performance of Non-oil Real Sector Private Investment has remained suboptimal. (Nwosa and Shaibu [23] Obafemi and Ifere, [24]. The missed targets of macroeconomic indicators as revealed in CBN [25] also seem to support this assertion.

Based on these challenges there is need to investigate the problems empirically to seek for 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 Foreign Exchange 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's Non -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

This section covers the related literature under the conceptual, theoretical and empirical studies relating to Non-oil Real Sector Private Investment 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 GDP, inflation rate and Balance of Payments. Other goals include low unemployment rate and viable external sector,[9] and Carl Walsh [14].

"Monetary Policy in Nigeria which 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). Mesagan and Shobande [26] 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 [27,28].

"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. These include open market operations which is the primary instrument for the conduct of monetary policy supported by discount window operations and reserve requirements". Ndekwu [28].

The Minimum Rediscount Rate complemented with the repurchase 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 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, [29].

The success of Monetary Policy depends largely on the autonomy of central banks. 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 [3].

In Nigeria, implementation of Monetary Policy involves the interactions between Financial intermediaries and the monetary authorities, using Monetary Policy instruments. Various frameworks have been applied by CBN which include monetary targeting, exchange rate targeting, inflation targeting etc, CBN, [3], Mesagan and Shobande [26].

2.2 The Concept of Monetary Policy Transmission Instruments

Monetary Policy measures are intended to influence the aggregate demand and supply in order to affect overall economic performance within an economy. CBN [3], The instruments of Monetary Policy used by CBN could be direct or indirect. Under the direct instruments, CBN can direct Deposit Money Banks (DMBs) on the maximum percentage or amount of loans to allocate to different economic sectors,, 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 [30].

The indirect instruments of Monetary Policy include Cash Reserve Requirement, Monetary Policy Rate, Liquidity Ratios, Open Market Operations, Foreign Exchange Rate , among others .CBN [3], Ndekwu [28], These are briefly discussed.

2.3 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 sytem Nurul [30], Ackley [31].

OMO enables the central bank to influence the cost and availability of reserves and bring about desired changes in bank credit and money supply.

2.4 Monetary Policy Rate

The Monetary Policy Rate is the interest 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 [32],and CBN [3].

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 [17], and Nurul [30],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 [33] Ochieng [17],

2.5 Cash Reserve Requirement Ratio (CRR)

This is a specified minimum fraction of customers 'deposit required of DMBs 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 [14], and CBN [3].

2.6 Liquidity Ratio

The liquidity ratio is a statutory fraction of current liabilities required to be held as liquid assets by DMBs 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 [31], (CBN [3], IMF [13].

2.7 Foreign Exchange Rate

Exchange rate is the price of country's currency in relation to another country's currency and it is a key macroeconomic factor that affects international trade and the real economy of each country. (Carl wash [16]. Dornbusch et al [34].
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 become more 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 [32].

"In an expansionary Monetary Policy measure, 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 [19].

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 [33].

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 increase because there are higher revenue from both domestic and foreign sales. Conversely, exchange rate depreciation dampens investment because of the increasing cost of imported intermediate goods (capital inputs) and the user cost of capital. Nuwagira [22]. However, investment response to exchange rate differs among countries and different sectors of the economy Ireland [10].

2.8 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 [3].

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 [35]. It could also mean the production of capital goods, which are not consumed but instead used in future production. Investment is also measured in terms of physical capital formation, which is regarded as an addition to the stock of capital. UNCTAD [6], IArrow [36], Agagi [37].

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. World Bank [3], UNCTAD [6].

"Furthermore, 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". Mordi et al [29].

Due and Friedlander [38] described public goods as possessing the basic characteristics of non-appropriate, non-rivalry, non-excludable consumption. 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.. Examples are roads and highways, defense and national security, airport, environmental protection, etc. Zebib, and Muoghalu.[39].

Conversely, Private goods are divisible and individually consumed, while consumers preference can be ascertained through 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, [40].

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 is composed of building and construction, land development, transport, machinery and equipment and breeding stocks. [3,41],

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 [3], Oyeyemi [5].

2.9 Theoretical Framework

2.9.1 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. The net present value rule for investment has also become a standard component of corporate finance Jorgensen [42], Keynes [43].

The offshoots of Keynes work brought about some other investment theories which include 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 [34].The theories are briely discussed below.

2.9.2 The neoclassical theory of investment

The neoclassical theory of investment developed by D. W Jorgesen and his group, assert that firms make investment decisions by following the marginal rule of profit maximization. The theorysuggest 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's theory, 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, [42].

2.9.3 The accelerator theory

The accelerator theory basically postulates that investment is a linear function of changes in output. The accelerator theory of investment is also based upon the notion that a particular amount of capital stock is necessary to produce a given investment output. Carl Walsh [14] and Jorgensen, [42]. Thus, investment is made possible in the sense that the savings/income generated is 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.

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. Dixit and Pindyck [44]. 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. Jorgensen, [42].

2.9.4 The tobin "Q" theory

The Tobin [45] 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 [45].

"The Q- theory of investment assumes implicitly profit/value maximization by assuming that investment is determined by an optimal capital stock. It relates 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" [45].

"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 [10].

2.9.5 Mckinon and shaw investment theory

"Mckinon and Shaw who formulated the neoliberal approach to investment stressed on the importance of financial deepening and high savings interest rates as drivers of 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". [46].

"In addition, accordingly to the supply leading theory of finance., the desire to achieve high and sustainable economic growth requires mobilization of savings by financial institutions that can be channeled to investment in the form of credit" UNCTAD [2].

Meanwhile, Ando and Modigliani's [47] "life-cycle 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".

2.9.6 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 DMBs 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 [33], Nurul [30].

The second approach is contractionary action which is based on the Monetary Policy presented by Keynesian economists. It asserts that the (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 in aggregate demand and a rise in output, Froyen and Guender [32].

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 [10] and Froyen and Guender [32] monetary policy influences the macro economy through many different policy instruments – MPR, CRR, liquidity ratios, OMO instruments, Foreign exchange rates, et cetera.

2.10 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 [9] in their study employed Nigeria'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 [48] in their study employed a VAR using, interest rate, exchange rate, cash reserve requirement etc and established a negative differential impact of monetary policy instruments on the components of final expenditures of real investments.

Francis and Eugene [49] 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 and they have significant adverse impact".

Ochieng [17] 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 [18] 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 [21] investigated the implications of Monetary Policy instruments on domestic investment through interest rate and its impacts on bank lending to the private sector using 37 sub-Saharan African countries. The study found that the monetary policy instruments affect real domestic investment negatively through the interest rate.

Dixit and Pindyck [44] in study suggest that increased uncertainty caused by exchange rate variations (depreciation) reduces investment, (negative impact) given the irreversibility of investment projects and, hence, increases the option of delaying investment expenditures.

Kapuscinski, [20] study determined the relative implications of the instruments of monetary policy transmission on real investment in Poland, applied SVAR using Polish data and established that exchange rate was relatively weak and less effective during contractionary measures and therefore had adverse effects.

Lucky and. Uzah [11] 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, [5] examined the effectiveness of monetary policy instruments in Nigeria using OLS multiple regression and ECM. The study found that Monetary Policy Rate (MPR) reflects significant negative effect on market/commercial banks interest rate in Nigeria and therefore adversely affected real investment through dampened credit demands by investors.

Adelowokan, Adesoye & Balogun [19] examines "the effect of exchange rate volatility on investment and growth in Nigeria and confirm existence of long run relationship among the variables It established adverse effect of exchange rate, interest rate, inflation on real investment and growth".

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".

2.11 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 Private investment 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, by the economic planners if confirmed Dedola and Lippi [50].

Secondly, although all the above reviewed studies have contributed to the existing related literature on this study, there are still some fundamental issues that are not considered in these studies. Majority of these studies reviewed focused on external environment and cross country study. For instance, Ndikumana [21], Bernanke and Gertler [48], Dedola and Lippi [50] and others, used cross-section analysis which precludes country's specifics which may also lead to misleading result Gujarati and Porters [51]. "There are at least two important caveats that might affect such results. In the first place, such cross-country analysis is plagued by multiplicity of issues of parameter heterogeneity, omitted variables, model uncertainty and measurement error. Inference based on such results, leads to potential biases". Rodvik, 1999),. 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 in Nigeria.

"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 [33].

Therefore, recognizing the above gaps and challenges of the previously reviewed studies, there is need to reexamine the problem empirically and holistically, (applying standard econometric analysis,) for effective management. This will provide a useful information for the Monetary authority to fine tune policy initiatives toward Stimulating Non-oil Real Sector Private Investment.

3. RESEARCH METHODOLOGY

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 [52].

The study applied Nigeria's time series secondary data, sourced from CBN Annual Reports and Statement of Accounts, CBN Statistical Bulletin, 2020, and World Bank.

3.1 EstimationTechnique and Procedure

The study applied econometric analytical techniques - Ordinary Least Square (OLS), co-integration, Unit root test and Error correction mechanism (ECM) for the data analysis.

1. 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 independent and dependent 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. Granger [53]. Consequently, a further 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 [51]. The assumption is that the time series used for this research have unit root stochastic process The process could be represented as follows:

$$mi=1\Delta Yt = \beta o + \beta 1t + \lambda Yt\text{-}1 + \Sigma \acute{a}i \Delta Yt\text{-}i + \xi t \ldots (3.1)$$

where Y is the single time series for the selected monetary policy instruments under investigation and β the parameter coefficient, ξt is a pure white noise error term, άi 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 'ג' 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 are 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 [54] Co-integration test was applied. The objective of this test is to determine if there is long-run equilibrium relationships among variables used in this research. As pointed out by Engle and Granger [55], "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 [54] as mathematically stated below:

$y_t = a_1 y_{t-1} + ... + a_k y_{t-k} + ø x_t + \mu_t$ ..... (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, ø 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 [51].

Using this method the equation was estimated in an unrestricted form and then tested whether the restriction implied by the residual rank of the co-integration, could be rejected.
"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 was determined which indicates the existence of long run relationship" Johansen [54].

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 [56] and Engel and Granger [57] 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 [51].

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 [57]. 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:

$Yt_t = a_0 + \sum i\text{-}a_1 Yt\text{-}1 + \sum_{i0} a_i Z\ t\text{-}1 + ai\ ecm_{t-1} + \mu$ ..... (3.3)

Where a_0 is a constant, Yt_1 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, Yt-1 is the lag term of the dependent variable, the ecm_{t-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 error.

"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 [51] Finally, diagnostic tests are performed on the results with a view to validating the models.

3.1 Model Specification

The model specification of this study is explained and specified as shown below. The MPR is the official rate of the CBN and serves as the anchor rate, as well as the operating range or band of overnight interest rates in the money market. The nominal FXR of the local currency to US Dollar was used. It 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. Monetary policy shocks, affect DMBs' deposit and lending through the manipulations of these instruments. DMBs' credit/loans are the major source of capital for .stimulating NRSPI output.

Leaning on the modified theories of Tobin [45] and Keynes [45] of investment as discussed in section 2,, the linear specification could be expressed both functionally and mathematically respectively 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_4' = Parameter coefficients
U_t = Error Term

Hence the above estimable long-run linear equation posits that Non-oil Real sector Private Investment in Nigeria, (dependent variable) is a function of the above selected Monetary Policy transmission instruments (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 : β_1, β_2, and β_3, are > 0 while β_4, < 0

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

4. RESULTS AND DISCUSSION

4.1 Data Presentation and Analysis of Empirical Findings

This section presents the data, the empirical results and discussions on the relevant findings from the study. 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 Table 1 below presents the OLS level. Series result.

4.1 Analysis OLS Level Series Result

The 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 independent variables. The result shows through R-squared that 88 per cent of the variations in NRSPI is determined by the combined effect of changes in the explanatory variables. The F-statistics (203.04) confirms further that these explanatory variables are jointly and statistically important in explaining the variations in NRSPI. The selected explanatory variables are rightly signed in accordance with the theoretical priori expectations except LR (positive) and NFXR (negative) but non-significant. The result established long run relationship.

However, 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 OLS level series regression which could lead to spurious regression. Consequently, application of the Augmented Dickey and Fuller (ADF) [58] Unit root test was adopted.

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

Table 2. Summary of Unit Root Test Result Data Presentation

Variables	At Level		First Order Difference		Remarks
	ADF Test Stat	Order ofIntegration	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 significance *** = 1 % level of significance.*
Source: E-View Econometric Computer Software application, Version 6 (See Appendix 1 and 2)

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)

4.2 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 selected data in the OLS regression level series above, the ADF [58] 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 all the variables are not stationary at level but after the first order /(1) differencing, 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, [55], 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.

4.3 Analysis of Co-integration Tests Result

The concept of co-integration as pointed out by Engle and Granger, [57] creates a link between integrated process and the concept of steady state of equilibrium. The objective of this test is to 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 first order.
(I(1) level difference stationary, for all variables, the Johansen [54] maximal likelihood ratio Trace test statistics was applied to determine the number of co-integrating vectors, and 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 in the estimation.

The null hypothesis is that there are no co-integrating or long run relationships among the 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 eigen value 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) 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 ECM result presented on table 4. gives the final and more improved estimation result when compared with the OLS level series. 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 (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 overall goodness of fit is still good as explained by 67 percent. The F- statistics ratio of 12.72 with probability ratio of 0.000 is also high and finally confirming that the explanatory variables are jointly and statistically important in explaining the variations in (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 a more accurate 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 NFXR is significantly and positively related to NRSPI. The NFXR positive relation imply high rate of depreciation/devaluation, of domestic currency, which could reduce real investment expenditure as a result of high rate depreciation of Naira that increased cost of imported inputs for manufacturing/industrial sector. This has adverse effect on returns derivable from NRSPI. This is in support of Nuwagira [22] and Obstfeld and Rogolf [57] 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 increase in policy contractionary measures during the period under review. Increase in MPR indicates increase in cost of capital and increase in CRR and LR implies reduction in the deposits and reserves of DMBs, all resulting to reduction in credits (capital) NRSPI firms,(especially the SMEs that constitute the bulk of the real sector Private Investors). The result supports Frances and Eugene [49] as well as the CBN [25] financial stability report which also confirmed that there was reduction in financial intermediation.

Reduction in overall financial intermediation leads to credit contraction by DMBs which depresses NRSPI 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 or contraction.

“The result also suggests that policy instruments employed have a greater adverse effect on investment expenditure of NRSPI firms which are more dependent on bank loans, than oil firms that can access the credit market directly through stock market”. Gertler and Gilchrist [60].

Furthermore, (under contractionary measures) keeping other variables constant, one percent increase in in the rate of CRR, LR and MPR, induces 6%, 2.9% and 4.4% reduction in (NRSPI) investment 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 by the government 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 NRSPI1-t at any one period, determining the level in another”. Culbertson, [61].

In the short run estimation, the variations in the policy instruments caused disequilibrium in NRSPI. The coefficient of the ECM term (-1.16) percent, which measures the speed of the adjustment at which NRSPI, equilibrium is restored, is 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 also suggests that growth process of NRSPI in Nigeria adjusts slowly to the short-run disequilibrium in the explanatory variables, which is an indication of policy 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 16 per cent of disequilibrium in the growth process of NRSPI in Nigeria, caused by the variations in the explanatory variables in the short run is corrected within a lag during the period under review. (One lag is one year in this study). Culbertson [61].

5. SUMMARY, CONCLUSION AND RECOMMENDATIONS

The study attempts to explore the influence of some selected Monetary Policy transmission instruments - (CRR), (MPR), (LR), and nominal FXR on (NRSPI) in Nigeria, for the period 1981 to 2020, with annual time series secondary data sourced from CBN statistical Bulletin and World Bank Data files.. The study applied econometric analysis based (OLS) regression, ADF (1981) Unit Root Test, Johansen [54] co-integration and ECM. *T*he selected Monetary Policy transmission instruments are the explanatory variables while the NRSPI is the dependent variable.

6. 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 have significant adverse effect on NRSPI, implying high rate of contractionary policy measures. The negative relationship of MPR, CRR and LR would cause a reduction in credit that would be allocated to NRSPI firms, (capital constraint) while the positive significant relationship of nominal FXR with NRSPI, suggest high depreciation/ devaluation of domestic currency which causes increase in the cost of production for private manufacturing sector (Nigeria being an input import dependence country) and so, a reduction on returns on investment of NRSPI firms [62-66]..

7. LIMITATIONS OF THE STUDY

The major limitation of this study is on source of data. Annual data were used and this does not leave room to gauge the correct lag effect of the policy actions on the variables used for the study. This is as a result of our inability to source quarterly data on these variables [66-68]. It is therefore suggested that future studies on this topic can be investigated using higher frequency data like quarterly data, and perhaps, including other relevant variables that can affect NRSPI in Nigeria.

8. CONCLUSION

This study empirically analyzed the effect of monetary policy transmission instruments on NRSPI in Nigeria, spanning from 1981 to 2020 [69-71]. The overall import of this study suggests that the selected Monetary Policy transmission instruments did not contribute effectively to the growth process of (NRSPI) in Nigeria, within the period under review. This is based on the findings of the study which established that there is negative relationships between NRSPI and CRR, MPR and LR, and nominal FXR significant positive relationship with NRSPI,

Additionally, 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 which could be maipilated by the Monetary authority to achieve the desired economic objectives.

9. RECOMMENDATIONS

Based on these results, the study recommends as follows:

i. This study has established that during contractionary policy measures, the rates of MPR, LR and CRR are increased. Increase in MPR causes increase in the cost of capital for NRSPI firms that depends much on (DMBs') loans/credit while increase in CRR and LR will cause a decrease in DMBs' deposit base, thereby reducing the amount of DMBs' loan to NRSPI firms. This will lead to DMBs credit rationing and ultimately to capital constraint or capital inadequacy for the firms.
   The Monetary authority should therefore lay more emphasis on how to align their contractionary policy measures to reduce the negative effects of the increase in MPR, LR and CRR This will enhance the DMBs deposit base and reserves, thereby increasing credit demand, reduction of cost of capital which will ultimately reduce the unavailability of investible funds for NRSPI firms.
ii. The Monetary Authority should maintain optimal lending interest rate which would reflect the overall internal rate of return on investment, with due attention to market fundamental, to stimulate credit demand.
iii. Adequate policies/reforms and surveillance should be maintained to ensure efficient foreign exchange utilization and management. This include checkmating the level of general price rates within the economy To reduce pressure on exchange rate, CBN should also minimize being the sole supply of foreign exchange
iv. The findings of this study also justifies that CBN should embark on diversification into NRSPI 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, etc..
v. There is need for the policy makers to take into consideration of the lag effect and design policies in line with the magnitude of expected changes
vi. Finally, issues such as discipline, confidence and credibility on the part of the government monetary policies as argued

by Ndikumana [21]. 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 policy reversal and conflicts which adversely affect long term investment Ndekwu [28]

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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