Money Supply and Private Sector Funding in Nigeria: A Multi-Variant Study

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Abstract

This study examined the effect of money supply on private sector funding in Nigeria. The purpose of the study was to examine the extent to which monetary policy affect private sector funding in Nigeria. Time series data was sourced from Central Bank of Nigeria Statistical Bulletin from 1985-2018. Credit to private sector, credit to core private sector and credit to small and medium scale enterprises sector was used as dependent variables while narrow money supply, broad money supply, large money supply, private sector demand deposit was used as independent variables. Ordinary Least Square (OLS), Augmented Dickey Fuller Test, Johansen Co-integration test, normalized co-integrating equations, parsimonious vector error correction model and pair-wise causality tests were used to conduct the investigations and analysis. The empirical findings revealed that money supply explains 82.1 percent variation on credit to core private sector, 85.2 percent and 23.4 percent of the variation in credit to private sector and credit to small and medium scale enterprises sector. The study conclude that money supply has significant relationship with credit to private sector, credit to core private sector and credit to small and medium scale enterprises sector. From the findings, the study recommends that Central Bank of Nigeria should induce the variations of the amount of money changes through the nominal interest rates. That the monetary authorities should ensure adequate quantity of money supply that positively affect private sector funding in Nigeria.

Keywords: Money Supply, Private Sector Funding, Private Sector Demand Deposits, Money Supply, Small and Medium Scale Enterprises.

I. Introduction

There are four sectors of the economy as formulated in the nation's income accounting model and shown in the circular flow of income and products. These are the government (public), private sector, the household and the external sector. The private sector plays significant role in every economy. It drives growth, create jobs and pay the taxes that finance services and investment. In Nigeria the private sector generates 90 per cent of jobs, funds 60 per cent of all investments and provides more than 80 per cent of government revenues (Somoye, and Iio, 2009). The scale and diversity of the private sector operating in Nigeria strongly influences overall financial flows into the economy (Onoh, 2007). Private investors' investment strategy is based on maximizing risk-adjusted returns. The goal is not to invest in the highest returning asset, but rather to invest in well-compensated risks.

To achieve the above through the private sector, government plays a central role in formulating financial policies that facilities easy access/source of capital. It needs to provide good policies and strong financial and institutional framework to ensure that private sector can thrive and the benefits of growth reach all citizens. The majority of constraints to growth identified by the private sector are directly linked to government policies and actions. Government's policy and legislative decisions determine private sector funding. Private sector funding is determined by government monetary policy, financial sector reforms and direct funding from the government (Sesay, and Abdulai, 2017).

The pro-cyclical relationship between monetary policies and private sector funding can be illustrated through the credit channel which states that monetary policy works by affecting bank assets (loans) as well as banks' liabilities (deposits). The key point is that monetary policy besides shifting the supply of deposits also shifts the supply of bank loans. For instance, an expansionary monetary policy that increases bank reserves and bank deposits increase the quantity of bank loans available. Where many borrowers are dependent on bank loans to finance their business activities, this increase in bank loans will cause a rise in investment (and also consumer) spending, leading ultimately to an increase in aggregate output. When monetary policy tightens, the reduction in available bank reserves forces banks to create fewer reservable deposits, banks must then either replace the lost reservable deposits with non-reservable liabilities, or shrink their assets, such as loans and securities, in order to keep total assets in line with the reduced volume of liabilities.

The inadequacy of credit disbursement to small and medium scale businesses, firms, households and especially the very poor and the controversy surrounding the nature, direction and magnitude of relationship between private sector funding through

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credit disbursement and poverty reduction/output growth within the monetary policy environment gave rise to the increasing desire for this investigation. It is observed that creating unhindered access to a wide range of credit services/products will not only enhances efficient financial intermediation prospect but will also significantly contribute to poverty reduction and output growth through the window of increased productivity, employment and enhance economic growth.

The effect of monetary policy has well been examined; however, there are three strands of studies on the effect of monetary policy. The first strands focused on the effect of monetary policy on economic growth (Adefeso and Mobolaji, 2010; Adofu, Abula and Audu, 2010; Amassoma, Nwosa and Olaiya, 2011, Nasko, 2016, Karimo and Ogbonna, 2017). The second strand focused on the effect of monetary policy on banking sector performance (Alper and Anbar, 2011; Enyioko, 2012; Okoye, and Eze, 2013, Udeh, 2015, Ogolo and Tamunotonye, 2019, Ayub and Seyed, 2016 and Jegede, 2014) while the third strand focused on the effect of monetary policy and capital market performance (Akani, 2017, Lawal, et al. 2017, Iddrisu, et. al 2017 and Echekoba, 2018).These studies failed to establish the effect of monetary policy on private sector funding. From the above problems and knowledge gap, this study examined the effect of money supply on private sector funding in Nigeria.

2. Literature Review
Money Supply

Monetary Policy refers to the specific/deliberate actions taken by the Central Bank to regulate the value, supply and cost of money in the economy with a view to achieving Government's macroeconomic objectives. The objectives of monetary policy vary amongst various countries. While the objective of monetary policy is predicated on achieving price stability in a country, other countries seeks to achieve price stability and other diverse macroeconomic objectives. The Central Bank of Nigeria, like other central banks in developing countries, achieves the monetary policy objective via the volume of money supply. The total volume (stock) of money in circulation among the public at a particular point in time is called money supply. Money supply is the entire stock of currency and other liquid instruments in circulation in an economy at a particular time. Money supply can include cash, coins, and balances held in checking and savings account, and other near money substitutes. Economists are of the view that an indebt analysis of money supply remains a key veritable instrument towards understanding macroeconomic paradigm and a tonic that guides macroeconomic policy.

Money supply is generally classified as M0, M1, M2 and M3, based on the type and size of the account in which the instrument is kept. For example, M0 and M1 are often referred to as narrow money and include coins and notes that are in circulation and other money equivalents that can be converted easily to cash. M2 includes M1 and, in addition, short-term time deposits in banks and other money market funds. M3 includes M2 in addition to long-term deposits. Notably, the classifications differ amongst countries as each country may tend to use different classifications. Money supply depicts the interplay of different types of liquidity each type of money has in the economy. The crux of money supply is that it shows the different level of liquidity or spendability.

The effect of money supply on the economy is pertinent as increase in the supply (stock) of money will lowers interest rates, which in turn, will stem investment and enhance access to credit by private sector players, small and medium scale enterprises, consumers and firms, thereby stimulating investment spending. Off-course, increase money supply that lowers interest rate will mean that businesses and individuals will increase consumption, increase production and investment drive and stem economic boom. The increased business activity raises the demand for labor. The reverse is the case if invariably money supply falls or when its growth rate declines.

In Nigeria, the Central Bank defines money supply as comprising narrow and broad money. The definition of narrow money (M1) includes currency in circulation with non-bank public and demand deposits or current accounts in the banks. The broad money (M2) includes narrow money plus savings and time deposits, as well as foreign denominated deposits. The broad money measures the total volume of money supply in the economy. Thus, excess money supply (or liquidity) may arise in the economy when the amount of broad money is over and above the level of total output in the economy (CBN 2006).

Notably, the raising or high level of money supply presently remains pivotal to the regulatory authority and policy drivers and requires adequate steps aim at regulating and controlling it frequently. The form of money supply called M0 is defined as the non-bank sectors holdings of notes and coins. It is calculated by subtracting the notes and coins held by banks from the total quantity of Risks bank notes and coins in circulation. Nnnana (2003) stressed that the broad measure of money supply 1 and 2 includes M1 plus quasi money – i.e. the quantum of savings and time deposits of the public and private sectors with the banking system. An increase in the money supply is frequently assumed to positively affect stock prices and credit disbursement. When money stock grows, it stimulates the economy which leads to greater credit being available to firms and private sector to expand production, investment and then increases sale resulting in increased earnings for firms. This results in better dividend payments for firms leading to an increase in the price of stocks. However, money supply can also be negatively associated to stock prices. To

illustrate this argument, we first go through the link between money supply and inflation, since the expansion of the money supply is positively related to inflation in the economy which would increase the nominal risk free rate (Fama, 1981). This increase in the nominal risk free rate will lead to a rise in the discount rate which leads to a fall in return. Economists argue that inflation is a strictly a monetary phenomenon and occurs when the rate of growth of the money supply is higher than the growth rate of the economy (Chimobi and Igwe, 2010).

The supply of bank money is inherently determined by banks in combination with their customers and owners. Easily reproducible micro-and macroeconomic accounting shows that when firms or households take loans from banks new deposits are created, when loans are repaid these deposits are destroyed, the two claims cancel out. Interest payments from non-banks to banks reduce aggregate deposits and increase bank equity by the same amount. Banks dividends to non-banks or bank expenses towards non-banks reduce bank equity and increase aggregate deposits by the same amount. When banks purchase assets from non-banks deposits are created in same amount.

There are only two necessary conditions for the previously stated conditions to hold, first, that non-bank cash holding does not increase, and second, that banks use central bank money for settlement, both are observable. Le Bourva (1992) stated there are two opposing views concerning the supply of bank money. On the one hand the Quantity Theorists and Keynes believe the quantity to be fixed independently by the banking system, on the other, the Banking School and Wicksell believe that banks do not set a quantity but a price for money, interest rates. Keynes in this respect regards to his views presented in his General Theory, and not changing views expressed thereafter. How the Banking School views the behavior of banks is an analogy to the described supply of central bank money, but much harder to prove since the banking system consists of many banks. Noteworthy is that a central bank can force central bank money and bank money into the economy through quantitative easing even without the consent of banks.

Private Sector Funding

The private sector is said to be the engine of economic growth for a country, especially, for developing economies (William et al. 2019). The private sector remains the nucleus that drives economic growth. Private sector funding (credit) is no doubt a driver of the real economy, particularly in developing economies like Nigeria where the financial markets are porous and near well developed to mobilize the needed resources to accelerate the desired level of economic development. The private sector is the part of the economy that is run by individuals and companies for profit and is not state controlled. Therefore, it encompasses all for-profit businesses that are not owned or operated by the government.

Private sector funding entails the ways and means by which private firms and households (individuals) readily have access to fund to finance their investment and promote economic growth. It involves the pros and cons through which individuals and statutory firms' gains access to the availability of credit (fund) to finance and promote their investment drive. Private sector funding involves credit extended by the banking and financial institutions to the private sector of the economy alone and basically include firms and households excluding loans disbursed to the government. According to the global economic report (2019), domestic credit to private sector by banks refers to financial resources provided to the private sector by other depository corporations (deposit taking corporations except central banks), such as through loans, purchases of non-equity securities, and trade credits and other accounts receivable, that establish a claim for repayment. Financial resources by way of credit extension are essential lubricants that oil the wheels upon which the economy strives. It enables the funding of new investments and allows individuals to buy houses, cars, and make other investment plans. Though, excessive credit usually leads to financial crises as witness in the 2008 - 2009 global financial crises but, in essence, credit availability remains the hallmark for the promotion of investment and economic development. As a vital engine for economic growth in developing economies, the private sector relies on the financial sector as a source of funds in advancing growth (Katusiime, 2018).

According to global economy report, if the banking industry credit to the private sector is about 70 percent of GDP and more, then the country has a relatively well developed financial system. However, in developed and advanced economies the amount (rate) of credit to the private sector can hover above 200 percent of GDP. Conversely, in some developing and poor countries (economies), the amount of credit disbursed to the private sector could be less than 15 percent of GDP. Thus, private sector funding remains a financial bane in poor economies as this constitutes major challenges confronting private sector investment and economic growth. Assefa (2014) opined that these countries, firms and households essentially do not have access to credit for investment and various purchases. The private sector represents the productive sector of the economy and should be fueled with sufficient funds so as to enhance the growth of the sector (Abdullahi, 2014).

Funding Small and Medium Scale Enterprises Sector in Nigeria

In Nigeria, the national policy on micro, small and medium enterprises define SMEs along the lines of international criteria. The policy mainly uses the employment base and asset size to categorize firms into micro, small and medium. Accordingly, for small-scale enterprises, the employment base should be between 10 and 49 with an asset base of over N5 million but less than N50 million. Medium scale enterprises are those that employ between 50 and 199 workers, with an asset base of over N50 million but less than N500 million. Importantly, the assets admitted for these classifications exclude land and buildings. Also, in case of conflict of classification between employment and asset size, the policy gives pre-eminence to the number of employees over asset size. Bank credit refers to loans, advances and discounts of specific sums, which are normally with terms and other conditions available to individuals, small and medium sized business to start, grow or sustain any economic activity (John and Onwubiko, 2013). A widespread concern is that, the deposit money banks attitude towards the subsector; which supposed to be the major source of funding to small and medium sized businesses are not providing enough aids and therefore limiting the potentials that could be taped from the subsector. The deposit money banks in their mode of operations most of the time call for more sure form of financial security, if they are to grant credit facility to small or medium sized business that need funds for business activities. However, due to the nature of small and medium sized businesses, in most cases, they tend not meeting up the requirements for the granting of the facilities. This has become a major challenge to the small and medium sized business operations in Nigeria. Robinson and Victor (2015) assert that most SMEs growth was hindered as a result of inability to access fund from financial institutions.

Theoretical Review
Money View
The theory commonly tag money view is predicated on the notion that reductions in the volume of outside money will cause the real rates of return; this in turn reduces investment because fewer profitable projects are available at higher required rates of return (Cecchetti, 1995). This is a movement along a fixed marginal efficiency of investment schedule. (Cecchetti, 1995) opine that the less substitutable outside money is for other assets the larger the interest rate changes. In fact, there is no reason to distinguish any of the "other" assets in investors' portfolios. In terms of the simple portfolio model, the money view implies that the shift in assets prices for all of the assets excluding outside money are equal. Major implication of this traditional model of monetary policy transmission centers on the incidence of decline in investment. Since there are no externalities or market imperfections, it is only the least socially productive projects that go unfunded.

The Loanable Funds Theory
The neo-classical or the loanable fund theory examines interest rate in terms of demand and supply of loanble funds or credit. According to this theory, the rate of interest is the price of credit which is determined by the demand and supply for lonable funds. In the words of Prof Lerner in Jhingan (1992); it is the price which equates the supply of credit, or saving plus the net increase in the amount of money in a period, to the demand for credit, or investment plus net hoarding in the period. The demand for loanble fund has primarily three source; government, businessmen and consumers who need them for purpose of investment, hoarding and consumption. The government borrows funds for constructing public works or for war preparations. The businessmen borrow for the purpose of capital goods and for starting investment projects. Such borrowings are interest elastic and depend mostly on the expected rate of profit as compared with the interest rates. The demand of loanable fund on the part of consumers is for the purchase of durable consumer goods like scooters, houses etc. Individual borrowings are also interest elastic. The tendency to borrow is more at a lower rate of interest than at a higher rate.

Loanable funds theory of interest rate determination views the level of interest in the financial market as resulting from the factors that affect the supply and demand of loanable funds (Saunders 2010). Interest rate in this theory is determined just like the demand and supply of goods is determined, supply of loanable funds increases as interest increases, other factors held constant. He goes further to explain that the demand for loanable funds is higher as interest rate fall, other factors held constant. Saunders (2010) identifies two factors among others causing demand curve for loanable funds to shift; economic conditions and the monetary expansion refers to the sum of money offered for lending and demanded by consumers and investors during a given period. The interest rate model is determined by the interaction between potential borrowers and potential savers.

Credit Rationing Theory
Access to credit is explained by credit rationing theory (Stiglitz and Weiss, 1981; Bester, 1985; Cressy, 1996; Baltensperger and Devinney, 1985). According to Stiglitz and Weiss (1981) credit rationing is said to occur when some borrowers receive a loan, while others do not. Credit rationing takes place at either financier level due to loan markets imperfection and information asymmetry or voluntarily by the borrowers (voluntary exclusion). At financier level, credit rationing occurs in a situation where demand for credit exceeds supply at the prevailing interest rate (Stiglitz and Weiss, 1981). There is scant literature on self-rationing, however, in situations where credit rationing is voluntary, Arora (2014) describes such borrowers as non-credit seekers due to personal, culture or social reasons or could be in the bracket of discouraged borrowers. Bester (1985) suggested that

financiers may choose to reject some borrowers because of negative enticement effects. For example, for given collateral, an increase in the rate of interest causes adverse selection, since only borrowers with riskier investments will apply for a loan at a higher interest rate. Similarly, higher interest payments create an incentive for investors to choose projects with a higher probability of bankruptcy (Afonso and Aubyn, 1997, 1998; Matthews and Thompson, 2014). On the other hand, for a fixed rate of interest, an increase in collateral requirements may also result in a decline in the lender's profits (Cressy, 1996). Stiglitz and Weiss (1981) showed that this happens if the more risk-averse borrowers, those that choose relatively safe investment projects, drop out of the market. According to Bester (1985) Andretti (1983), if financiers set collateral requirements and the rate of interest to screen investors' riskiness, then no credit rationing will occur at equilibrium. This is because increasing collateral requirements tends to result in adverse selection, even with risk-neutral investors (Bester, 1984a, 1985).

Empirical Review

Suleyman (2013) examined the monetary policies of the Central Bank of the Republic of Turkey on SMEs credit between 2003-2011. Autoregressive Moving Average (ARMA) test and VAR estimation models were use. Results show that money supply has a strong effect for manufacturing sector credit volume. Also, result shows that increase in the credit volume of large enterprises does not have any effect on the credit volume for SMEs. On the contrary, as credit volume of SMEs increases, credit volume of large enterprises decreases, which reveals a reverse causality between credit volume tendencies of different size firms.

Olukayode and Somoye, (2013) evaluates the impact of finance on entrepreneurship growth in Nigeria using endogenous growth framework, the results showed that finance and interest rate, significantly impacted on entrepreneurship in Nigeria. They argued that the formulation of effective macroeconomic policy targeted to entrepreneurship financing and growth is necessary and also, monetary authorities should intervene indirectly by reducing Monetary Policy Rates (MPR) which will directly reduce the transaction costs of funds to industrial sectors.

Tsenkwo and Longdu'ut (2013) examined the relationship between Monetary Policy Rate (MPR) and Banking Rates: Evidence from Regression and Multivariate Causality Analysis. The study used descriptive statistics and econometrics analysis to subject the raw data from secondary source to series of refining like Unit Root Test, Ordinary Least Square Test, Stability Test, and Granger causality test. These tests were conducted, using Granger causality test, to know the direction of their relationships and how they are caused. The finding revealed that almost all the variables, with the exception of bank savings rate, exhibit a strong sign of co-moving in the long run with the tendency of converging. The research revealed that there exists unidirectional causality between monetary policy rate and bank lending rate; bank lending rate and bank savings rate. And there exist a bi-directional causality between monetary policy rate and bank savings rate.

Otalu, Aladesanmi and Mary (2014) assessed the impact of monetary policy on the deposit money banks performance in Nigeria, and in their study, the interest rate and money supply, liquidity ratio and the cash reserve ratio were used as proxy for monetary policy. The study used regression analysis to examine the relationship between monetary policy and bank performance in Nigeria. The results of the diagnostic test showed that credit creation of commercial banks is significantly being influenced by the interest rate, money supply, liquidity ratio and the cash reserve. Precisely, money supply and cash reserve ratio appeared to have statistically influenced deposit money banks' credit creation.

Jegede (2014) empirically examined the effect of monetary policy on commercial bank lending in Nigeria between 1988 and 2008, using macroeconomic time series variables of exchange rate, interest rate, liquidity ratio, money supply, and commercial bank loan and Advances. The study employs Vector Error Correction Mechanism of Ordinary Least Square econometric technique as the estimation method. Findings indicate that there exists a long run relationship among the variables in the model. The study specifically revealed that exchange rate and interest rate significantly influenced commercial banks' lending, while liquidity ratio and money supply exert negative effect on commercial banks' loan and advances. The study concludes that monetary policy instruments are not effective to stimulate commercial bank loans and advances in the long-run, while banks' total credit is more responsive to cash reserve ratio and recommends that monetary authority should make efforts to develop indirect monetary instruments and exercise appropriate control over the monetary sector.

Imoughele and Ismaila (2014) employed Co-integration and Error Correction Modelling (ECM) techniques to investigate the impact of commercial bank credit on Nigeria's SMEs between 1986 and 2012.The results revealed that SMEs and selected macroeconomic variables included in the model have a long run relationship with SMEs output. The study also reveals that savings time deposit and exchange rate have significant impact on SMEs output in Nigeria. The study also showed that interest rate has adverse effect on SMEs output.

Ayub and Seyed (2016) in their study examine the relationship existing between monetary policy and bank lending behavior and the influence of bank specific features on this relationship in the banks listed on the 8 Tehran Stock Exchange. The study used Iran's bank loan aggregated series and bank's size and capital structure data. The study used the growth rate of M2 as the indicators of Irans' monetary policy. Using Vector error correction model (VECM) and quarterly data for the period 2007: Q1 to 2014: Q4. The results showed a bidirectional causal link between M2 and banks' lending behavior trading on the Tehran Stock Exchange. It was also observed that the banks' capital structure as one of the banks specific feature variables have a negative impact on bank lending behavior in accepted banks in Tehran Stock Exchange.

Sesay and Abdulai (2017) empirically investigate monetary policy effects on private sector investment in Sierra Leone. The study examines the rate at which changes in monetary policy in Sierra Leone has affected the behavior of private sector investments, theories and empirical studies are reviewed in a way to identify a suitable model for private sector investment for the period 1980-2014 using recent econometric techniques (OLS, VECM, VAR). Results of the findings suggest that money supply and gross domestic saving exert positive and statistically significant effect on private sector investments whereas treasury bill rate, inflation and gross domestic debt exert a negative effect. An important policy implication emerging from this study is to facilitate the establishment of financial institutions to increase credit delivery to the private sector so as to enhance private investment.

Echekoba and Ubesie (2018) did an assessment of financial deepening on the growth of Nigerian -economy 1990-2016 using ordinary least square regression (OLS). The main objective of this study is to evaluate the effect of private sector credit, money supply and market capitalization on economic growth in Nigeria. Findings showed that the three independent variables of the study all have significant effect on Nigerian financial deepening. It was therefore recommended that policies aimed to reduce the high incidence of non performing credits to ensure that private sector credits are channel to the real sector of the economy. The monetary authorities should implement policies that increase the flow of investible funds and improves the capacity of banks to extend credit to the economy as this will make broad money supply and private sector, to significantly impact on economic growth in Nigeria.

Adeniyi et al. (2018) investigated the relationship that exists between monetary policy instruments and Deposit Money Banks Loans and Advances in Nigeria. Annual time series data covering a period from 1981-2016 were used and the Toda and Yamamoto granger non-causality model was employ to examine the relationship existing between Deposit Money Banks loan and advances and monetary policy variables in Nigeria. Findings revealed that structural changes in monetary policy system exerted positive significant impact on loan and advances of Deposit Money Banks in Nigeria. Findings also revealed bidirectional relationship existing between MPR and loan and advances of Deposit Money Banks in Nigeria. Precisely, MPR proved to be a significant variable which causes Deposit Money Bank loans and advances in Nigeria. Other explanatory variables (broad money supply, liquidity ratio, inflation rate and cash reserve ratio does not granger cause loan and advances of Deposit Money Banks in Nigeria within the study period. It concluded that the structural change in monetary policy system and monetary policy rate have significant impact on loan and advances of deposit money banks in Nigeria. Hence, the study recommended that monetary authority should formulate policies that will stabilize interest rate so as to boost the investors' confidence.

Ogolo & Tamunotonye (2018) empirically examined the effects of monetary policy on commercial banks' lending to the real sector from 1981 – 2014 using multiple regression models aided by Software Package for Social Sciences. The study modeled commercial banks credit to agricultural and manufacturing sector as the function of interest rate, monetary policy rate, treasury bill rate, exchange rate, broad money supply and liquidity ratio. The regression results from model one found that interest rate, monetary policy rate have positive relationship with commercial banks' lending to the agricultural sector while Treasury bill rate, exchange rate, broad money supply and liquidity ratio have negative effect on the dependent variable. Model two found that interest rate, Treasury bill rate, exchange rate, broad money supply and liquidity ratio have negative effect on commercial banks' lending the manufacturing sector while monetary policy rate have positive relationship with the dependent variable. They recommend that monetary policy should be harmonized with bank lending objectives to enhance commercial banks' lending to the real sector of the economy. Commercial banks should develop policies of managing the negative effect of monetary policy variables on its lending.

William, Zehou, and Hazimi (2019) investigated the factors that influence domestic credit to the private sector in Ghana. The study uses the Johansen cointegration and vector auto-regression model to analyze panel data spanning the period from 1961 to 2016. Findings from the study revealed that though there is no long-run association among the variables, there exist significant short-run relationship between domestic credit to the private sector, broad money and gross capital formation. Further diagnostic tests showed that gross capital formation Granger causes both domestic credit to the private sector and broad money, and domestic credit to the private sector Granger-causes broad money. They concluded that money supply and gross capital

formation are necessary factors to address in the quest for developing the financial strength of domestic banks in providing credit facilities to the private sector for economic growth.

Olorunmade, Samuel, and Adewole (2019) examined the determinant of private sector credit and its implication on economic growth in Nigeria. The fluctuation in the supply of money and credit is the basic causal factor at work in cyclical process; when money supply falls, prices decrease, profit decrease, production activities become sluggish and production falls and when money supply expands, price rise, profit increase and the total output increases and finally growth takes place. Sample regression analyses were used to analyse data obtained from Central Bank of Nigeria statistical bulletin from 2000 to 2017. It was revealed in the determinant of credit supply that there was significant relationship between Total credits to private sector and money supply in Nigeria. The study also finds that there was significant relationship between private sector credit and economic growth in Nigeria. They recommend that there should be persistence increase of money supply to Nigerian economy in order to increase the flow of credit to the real sector of the Nigerian economy, financial institutions should distribute more credit to the real sector for productive purposes in order to increase Gross domestic product.

Literature Gap

Sesay and Abdulai (2018) examined the rate at which changes in monetary policy in Sierra Leone has affected the behavior of private sector investments, theories and empirical studies are reviewed in a way to identify a suitable model for private sector investment for the period 1980-2014. Gap and Focus of Present Study: The above study is a foreign study and does not capture the effect of monetary policy on private sector funding, further the study only examined how monetary policy affect bank behavior of private investment. The present study will be carried out in Nigeria and focus on the effect of money supply on private sector funding in Nigeria.

William, Zehou, and Hazimi (2019) investigate the factors that influence domestic credit to the private sector in Ghana. The study uses the Johansen cointegration and vector auto-regression model to analyze panel data spanning the period from 1961 to 2016. Gap and Focus of Present Study: The above study is a foreign study and does not capture the effect of money supply on private sector funding. Furthermore, the study only examines the relationship between domestic credit to the private sector, broad money and gross capital formation. The present study will be carried out in Nigeria and focus on the effect of money supply on private sector funding in Nigeria.

3. Methodology

This study used ex-post facto quasi-experimental research design to examine the effect of money supply on private sector funding in Nigeria. This study employed secondary data sourced mainly from the Central Bank of Nigeria (CBN) statistical bulletin.

Model Specification

The study models are specified below:

CPS	=	$\alpha + \beta_1 M1 + \beta_2 M2 + \beta_3 M3 + \beta_4 PSDD + e_t$	1
CCPS	=	$\alpha + \beta_1 M1 + \beta_2 M2 + \beta_3 M3 + \beta_4 PSDD + e_t$	2
SMES	=	$\alpha + \beta_1 M1 + \beta_2 M2 + \beta_3 M3 + \beta_4 PSDD + e_t$	3

Where:

CPS	=	Credit to the Private Sector
CCPS	=	Core Credit to the Private Sector
CSMES	=	Credit to Small and Medium Scale Enterprises Sector
M1	=	Narrow Money Supply
M2	=	Broad Money Supply
M3	=	Large Money Supply
PSDD	=	Private Sector Demand Deposit
Et	=	Error Term

Techniques of Data Analysis

The main tool of analysis is the Ordinary Least Squares (OLS) using the multiple regression method for a period of 34 years, annual data covering 1985– 2018. Statistical evaluation of the global utility of the analytical model, so as to determine the reliability of the results obtained were carried out using the coefficient of correlation (r) of the regression, the coefficient of determination (r^2), the student T-test and F-test.

(i) **Coefficient of Determination (r²) Test:** This measure the explanatory power of the independent variables on the dependent variables. R^2 gives the proportion or percentage of the total variation in the dependent variable Y that is accounted for by the single explanatory variable X. The higher the R^2 value the better. For example, to determine the proportion of monetary policy to private sector funding in our model, we used the coefficient of determination. The coefficient of determination varies between 0.0 and 1.0. A coefficient of determination says 0.20 means that 20% of changes in the dependent variable are explained by the independent variable(s). Therefore, we shall use the R^2 to determine the extent to which variation in monetary policy variables are explained by variations in private sector funding variables over the periods covered in this study.

(ii) **Correlation Co-Efficient (R):** This measures the degree of the relationship between two variables x and y in a regression equation. That is, it tries to establish the nature and magnitude of the relationship when two variables are been analyzed. Thus correlation co-efficient show whether two variables are positively or negatively correlated. That is, it takes the value ranging from -1, to $+1$.

(iii) **F-Test:** This measures the overall significance. The extent to which the statistic of the coefficient of determination is statistically significant is measured by the F-test. The F-test can be done using the F-statistic or by the probability estimate. We use the F-statistic estimate for this analysis.

(iv) **Student T-test:** measures the individual statistical significance of the estimated independent variables. This is a test of significance used to test the significance of regression coefficients (Gujurati, 2003). Generally speaking, the test of significance approach is one of the methods used to test statistical hypothesis. A test of significance is a procedure by sample results are used to verify the truth or falsity of a null hypothesis (Ho) at 5% level of significance.

(v) **Durbin Watson Statistics:** This measures the collinearity and autocorrelation between the variables in the time series. It is expected that a ratio of close to 2.00 is not auto correlated while ratio above 2.00 assumed the presence of autocorrelation.

(vi) **Regression coefficient:** This measures the extent in which the independent variables affect the dependent variables in the study.

(vii) **Probability ratio:** It measures also the extent in which the independent variables can explain change to the dependent variables given a percentage level of significant.

Stationarity (Unit Root) Tests

Stationary test therefore checks for the stationarity of the variables used in the models. If stationary at level, then it is integrated of order zero i.e. I(0). Thus, test for stationarity is also called test for integration. It is also called unit root test. Stationarity denotes the non-existence of unit root. We shall therefore subject all the variables to unit root test using the augmented Dickey Fuller (ADF) test specified in Gujarati (2004) as follows.

$$\Delta y_t = \beta_1 + \beta_2 + \delta y_{t-1} + \alpha i \sum_{i-1}^{m} \Delta y_{t-1} + Et \qquad 4$$

Where:

Δy_t =   change time t

Δy_{t-1} =   the lagged value of the dependent variables

$\sum_i$ =   White noise error term

If in the above δ =0, then we conclude that there is a unit root. Otherwise there is no unit root, meaning that it is stationary. The choice of lag will be determined by Akaike information criteria.

Co-integration Test (The Johansen' Test)

It has already been warned that the regression of a non-stationary time series on another non stationary time series may lead to a spurious regression. If the residual is found to be stationary at level, we conclude that the variables are co-integrated and as such has long-run relationship exists among them.

$$CPS_t = w_O + \sum_{i=1}^{i} \vartheta_t CPS_{t-i} + \sum_{i=1}^{j} \varpi_i CPS_{jt-i} + \mu_{1t} \qquad 5$$

$$CCPS_t = w_O + \sum_{i=1}^{i} \vartheta_t CCPS_{t-i} + \sum_{i=1}^{j} \varpi_i CCPS_{jt-i} + \mu_{1t} \qquad 6$$

$$SMEs_t = w_O + \sum_{i=1}^{i} \vartheta_t SMEs_{t-i} + \sum_{i=1}^{j} \varpi_i SMEs_{jt-i} + \mu_{1t} \qquad 7$$

Granger Causality Test
Causality means the impact of one variable on another, in other-words; causality is when an independent variable causes changes in a dependent variable. The pair-wise granger causality test is mathematically expressed as:

$$Y_t \pi_o + \sum_{i=1}^{n} x_1^y Y_{t-1} \sum_{i=1}^{n} \pi_1^x x_{t-1} + u_1 \qquad 8$$

and

$$x_t dp_o + \sum_{i=1}^{n} dp_1^y Yt - 1 \sum_{i=1}^{n} dp1^X x_{y-1} + V_1 \qquad 9$$

Where x_t and y_t are the variables to be tested white u_t and v_t are the white noise disturbance terms. The null hypothesis $\pi_1^y = dp_1^y = 0$, for all I's is tested against the alternative hypothesis $\pi_1^x \neq 0$ and $dp_1^y \neq 0.$ if the co-efficient of π_1^x are statistically significant but that of $dp1y$ are not, then x causes y. If the reverse is true then y causes x. however, where both co-efficient of π_1^x and dp_1^y are significant then causality is bi – directional.

Vector Error Correction (VEC) Technique
The presence of co-integrating relationship forms the basis of the use of Vector Error Correction Model. E-views econometric software used for data analysis, implement vector Auto-regression (VAR)- based co-integration tests using the methodology developed by Johansen (1991,1995). The non-standard critical values are taken from (Osterward, 1992).

4. Results and Discussion of Findings
Table 1: **Short Term Regression Results**

Money Supply and Credit to Private Sector				Money supply and Credit to Core Private Sector			
Variable	Coefficient	t-test	Prob.	Variable	Coefficient	t-test	Prob.
M2	0.000729	1.141947	0.2628	M2	0.000753	1.060002	0.2979
M3	-0.000298	-1.400662	0.1719	M3	-0.000538	-2.273573	0.0306
MI	0.001500	0.375437	0.7101	MI	0.002805	0.630556	0.5333
PSDD	-0.001213	-0.281657	0.7802	PSDD	-0.002128	-0.443908	0.6604
C	7.201741	10.96838	0.0000	C	7.289496	9.973294	0.0000
R²	0.852010			R²	0.821964		
Adj R2	0.831598			Adj R2	0.797407		
F-Stat	41.73995			F-Stat	33.47208		
F-Prob	0.000000			F-Prob	0.000000		
DW	0.731266			DW	0.826918		

Source: Extract from E-view 9.0

The regression result on the two sectors have high R-square indicating 85.2 percent variation on credit to private sector and 82.1 percent variation on credit to core private sector. The models are statistically significant by the value of f-statistics and probability.

The coefficient of the variables shows that M2 and M1 have positive effect on credit to private sector and credit to core private sector while M3 and private sector demand deposit have negative effect on the dependent variables.

Table 2: Unit Root Test

Money Supply and Credit to Private Sector				Money supply and Credit to Core Private Sector			
Variable	ADF	5%	Prob.	Variable	ADF	5%	Prob.
CPS	-6.020482	-2.967767	0.0000	CCPS	-9.705692	-2.960411	0.0000
M2	-14.14646	-2.960411	0.0000	M2	5.025161	-2.621007	0.0000
M3	-6.804960	-2.963972	0.0000	M3	-6.804960	-2.963972	0.0000
M1	-5.634717	-2.986225	0.0001	M1	-5.634717	-2.986225	0.0000
PSDD	-5.455320	-2.986225	0.0002	PSDD	5.455320	-2.986225	0.0000

Source: Extract from E-view 9.0

The time series properties of the variables used in the analysis was investigated using Augmented Dickey-Fuller test. The test was run with specification of trend and intercept in the model. The ADF statistics for the test are presented in the table 2 above. It can be seen from the table above that the unit root test results, using the ADF unit root test suggest that all series are I (1) because they become stationary after being differenced once. Therefore, the Engle and Granger (1987) can be employed.

Table 3: Cointegration Test

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**	Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value**	Prob
Money supply and Credit to Private Sector					**Money supply and Credit to Core Private Sector**				
None *	0.977828	212.1342	69.81889	0.0000	None *	0.979759	232.0801	69.81889	0.0000
At most 1 *	0.782885	90.24930	47.85613	0.0000	At most 1 *	0.810103	107.2785	47.85613	0.0000
At most 2 *	0.455343	41.37476	29.79707	0.0015	At most 2 *	0.601650	54.11777	29.79707	0.0000
At most 3 *	0.332401	21.93160	15.49471	0.0047	At most 3 *	0.457598	24.66419	15.49471	0.0016
At most 4 *	0.245195	9.001461	3.841466	0.0027	At most 4 *	0.147011	5.088274	3.841466	0.0241

Source: Extract from E-view 9.0

From table 3, the results of the Johansen co-integration test show that we adopt the alternate hypothesis of four co-integrating equations at the 5% level of significance. This implies that, there is linear combination of the variables that are stationary in the long run and also confirms the existence of a long-run relationship between money supply variables and credit to private sector and credit to core private sector.

Table 4: Error Correction Model

Money supply and Credit to Private Sector				Money supply and Credit to Core Private Sector			
Variable	Coefficient	t-test	Prob.	Variable	Coefficient	t-test	Prob.
C	0.103264	0.206326	0.8397	C	0.011006	0.022741	0.9822
D(CPS(-1))	0.970388	2.208733	0.0458	D(CCPS(-1))	1.056725	2.963148	0.0110
D(CPS(-2))	0.583686	1.681936	0.1164	D(CCPS(-2))	0.806126	2.114837	0.0543
D(CPS(-3))	0.450984	1.492833	0.1593	D(CCPS(-3))	0.828710	2.233214	0.0437
D(M2(-1))	0.002332	1.923614	0.0766	D(M2(-1))	0.003711	2.512611	0.0260
D(M2(-2))	-0.001110	-1.176311	0.2606	D(M2(-2))	-0.001354	-1.581128	0.1379
B D(M2(-3))	-0.004425	-2.089293	0.0569	D(M2(-3))	-0.004596	-2.065428	0.0594
D(M3(-1))	0.000771	1.602640	0.1330	D(M3(-1))	0.000585	1.121600	0.2823
D(M3(-2))	0.001049	1.627066	0.1277	D(M3(-2))	0.002438	3.350254	0.0052
D(M3(-3))	0.001307	3.425904	0.0045	D(M3(-3))	0.001227	2.700478	0.0182
D(M1(-1))	-0.000529	-0.044607	0.9651	D(M1(-1))	0.006965	0.618165	0.5471
D(M1(-2))	-0.036868	-2.403970	0.0318	D(M1(-2))	-0.038119	-2.688275	0.0186

D(MI(-3))	0.019887	1.740477	0.1054	D(MI(-3))	0.021494	2.041020	0.0621
D(PSDD(-1))	-0.002181	-0.166101	0.8706	D(PSDD(-1))	-0.013800	-1.154855	0.2689
D(PSDD(-2))	0.038496	2.274134	0.0406	D(PSDD(-2))	0.040595	2.595134	0.0222
D(PSDD(-3))	-0.017678	-1.329483	0.2065	D(PSDD(-3))	-0.025661	-2.037529	0.0625
ECM(-1)	-1.717053	-3.714111	0.0026	ECM(-1)	-1.672063	-4.105179	0.0012
R2	0.791987			R2	0.844319		
Adj R2	0.535971			Adj R2	0.652713		
F-Stat	3.093507			F-Stat	4.406521		
F-prob	0.022942			F-prob	0.005035		
DW	1.756215			DW	1.923447		

Source: Extract from E-view 9.0

It is important to note that the corresponding sign of Error Correction Term (ECT) is negative but significant. This means that there is a long run causality running from independent variables to the dependent variable. The negative sign of (ECT) indicates a move back towards equilibrium following a shock to the system in the previous year. The R^2 from models proved that the variables can explain 79.1 and 84.4 percent changes on the dependent variables. The models are statistically significant from the value of f-statistics and probability. However, the ECM coefficient indicates that the models can adjust at the speed of 171 and 167 percent annually. The coefficient of the variables defines the effect of the independent variables on the dependent variables at various lags.

Table 5: Granger Causality Test

Null Hypothesis	Obs	F-Statistic	Prob.	Null Hypothesis	Obs	F-Statistic	Prob.
Money Supply and Credit to private sector				**Money supply and Credit to core private sector**			
M2 does not Granger Cause CPS	32	4.06798	0.0286	M2 does not Granger Cause CCPS	32	0.78685	0.4654
CPS does not Granger Cause M2	32	0.19973	0.8202	CCPS does not Granger Cause M2	32	4.14938	0.0268
M3 does not Granger Cause CPS	32	0.65265	0.5287	M3 does not Granger Cause CCPS	32	8.16639	0.0017
CPS does not Granger Cause M3		21.2714	3.E-06	CCPS does not Granger Cause M3	32	17.1495	2.E-05
MI does not Granger Cause CPS	32	2.17303	0.1333	MI does not Granger Cause CCPS	32	0.88915	0.4227
CPS does not Granger Cause MI		0.36501	0.6976	CCPS does not Granger Cause MI	32	0.15466	0.8575
PSDD does not Granger Cause CPS		1.96970	0.1590	PSDD does not Granger Cause CCPS	32	0.93148	0.4063
CPS does not Granger Cause PSDD		0.80964	0.4555	CCPS does not Granger Cause PSDD	32	0.21035	0.8116

Source: Extract from E-view 9.0

Pair wise causality tests were run on the models with an optimal lag of 2. The results are presented in table 5 above. The researcher's interest here is to establish the direction of causality between the dependent variables and the independent variables from 1985-2018. In the models there is uni-directional causality from broad money supply to credit to private sector and unidirectional causality from credit to core private sector to broad money supply and from M3 to credit to core private sector.

Table 6: **Short Term Regression Results**
Money Supply and Credit to Small and Medium Scale Enterprises

Money supply and Credit to Small and Medium Scale Enterprises Sector			
Variable	Coefficient	t-test	Prob.
PSDD	-0.001888	-0.146513	0.8846
M1	0.001038	0.087725	0.9307
M3	0.000601	0.963978	0.3433
M2	-0.000860	-0.456413	0.6516
C	8.035331	4.167254	0.0003
R²	0.234860		
Adj R²	0.125554		
F-Stat	2.148652		
F-Prob	0.101072		
DW	0.792969		

Source: Extract from E-view 9.0

To find out how well the model fits a set of observations, the R^2 indicates that 23.4 percent of the variation in money supply to credit to small and medium scale enterprises sector is explained within the model. Nonetheless, the R^2 cannot determine whether the coefficient estimates and predictions are biased, hence further assessment of the residuals is necessary. From the results it could be deduced that M2 and private sector demand deposit (PSDD) have negative effect on credit to small and medium scale enterprises sector while M1 and M3 have positive effect on credit to small and medium scale enterprises sector in Nigeria.

Table 7: **Unit Root Test**
Money Supply and Credit to Small and Medium Scale Enterprises

Money supply and Credit to SMEs			
Variable	ADF	5%	Prob.
SMEs	-5.921945	-2.976263	0.0000
M2	5.025161	-2.954021	0.0000
M3	-6.804960	-2.963972	0.0000
M1	-7.235884	-2.986225	0.0001
PSDD	-5.455320	-2.986225	0.0000

Source: Extract from E-view 9.0

The time series properties of the variables used in the analysis was investigated using Augmented Dickey-Fuller test. The test was run with specification of trend and intercept in the model. The ADF statistics for the test are presented in table 7 above. It can be seen from the table above that the unit root test results, using the ADF unit root test suggest that all series are stationary at order I(1) because they become stationary after being differenced once. Therefore, the Engle and Granger (1987) can be employed.

Table 8: **Cointegration Test**

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
Money supply and Credit to SMEs				
None *	0.986093	192.7224	69.81889	0.0000
At most 1*	0.712074	64.46241	47.85613	0.0007
At most 2	0.490986	27.11087	29.79707	0.0989
At most 3	0.000693	0.202187	15.49471	0.5949
At most 4	0.002532	0.076056	3.841466	0.7827

Source: Extract from E-view 9.0

From table 8, the results of the Johansen co-integration test show that we adopt the alternate hypothesis of three co-integrating equations at the 5% level of significance. This implies that, there is linear combination of the variables that are stationary in the long run and also confirms the existence of a long-run relationship between money supply variables and credit to small and medium scale enterprises sector.

Table 9: Error Correction Model

Money supply and Credit to SMEs			
Variable	Coefficient	t-test	Prob.
C	2.697326	0.877753	0.3988
D(SMES(-1))	-0.092164	-0.265953	0.7952
D(SMES(-2))	-0.064598	-0.199608	0.8454
D(SMES(-3))	-0.054213	0.185505	0.8562
D(PSDD(-1))	0.055488	0.513111	0.6180
D(PSDD(-2))	-0.038363	-0.319586	0.7553
D(PSDD(-3))	0.104251	0.748408	0.4699
D(M1(-1))	-0.056087	-0.552928	0.5914
D(M1(-2))	0.040457	0.353998	0.7300
D(M1(-3))	-0.095419	-0.772243	0.4562
D(M3(-1))	-0.002449	-0.557153	0.5886
D(M3(-2))	0.000104	0.044017	0.9657
D(M3(-3))	0.000682	0.356550	0.7282
D(M2(-1))	-0.001067	-0.166555	0.8707
D(M2(-2))	0.006089	0.646836	0.5310
D(M2(-3))	-0.001169	-0.057870	0.9549
ECM(-1)	-0.424263	-1.323800	0.2124
R2	0.625345		
Adj R2	0.455970		
F-Stat	4.331540		
F-prob	0.007725		
DW	2.123434		

Furthermore, the corresponding sign of Error Correction Term (ECT) is negative but not significant. This means that there is a long run causality running from independent variables to the dependent variable. The negative sign of (ECT) indicates a move back towards equilibrium following a shock to the system in the previous year. The R^2 from model 3 in table 9 above proved that the independent variables can explain 62.5 percent changes on the dependent variables. The models are statistically significant from the value of f-statistics and probability. However, the ECM coefficient indicates that the models can adjust at the speed of 42.4 percent annually. The coefficient of the variables defines the effect of the independent variables on the dependent variables at various lags.

Table 10: Granger Causality Test

Null Hypothesis	Obs	F-Statistic	Prob.
Money supply and Credit to SMEs			
PSDD does not Granger Cause SMES	32	0.87193	0.4305
SMES does not Granger Cause PSDD	32	0.03088	0.9696
M1 does not Granger Cause SMES	32	0.94385	0.4026
SMES does not Granger Cause M1		0.01320	0.9869
M3 does not Granger Cause SMES	32	0.37423	0.6916
SMES does not Granger Cause M3		0.53915	0.5899
M2 does not Granger Cause SMES		0.87246	0.4303
SMES does not Granger Cause M2		0.29899	0.7442

Source: extract from e-view

Pair wise causality tests were run on the models with an optimal lag of 2. The results are presented in table 10 above. The researcher's interest here is to establish the direction of causality between the dependent variables and the independent variables from 1985-2018. There is no causality among the variables.

5. Discussion of Findings

Model I examined the relationship between money supply and credit to the private sector in Nigeria. The estimated regression model from result of the vector error correction result in table 4 shows that the relationship between money supply and credit to private sector is high and significant. This is because of an R^2 of 0.791987 meaning that the model explains approximately 79 percent of the total variations in the credit to the private sector. The error correction model shows a negative value of -1.717053 which is appropriate and is significant. This means that 171 percent of the deviation from long run equilibrium relationship in the credit to private sector is corrected every year since credit to private sector is estimated annually. Some of the values of the coefficient of independent variables, that is money supply are positive and also proved negative at various lags.

Furthermore, it was found that the result of the error correction in table 4.9, the F^*- cal = 3.093507 > F^*- tab = 2.24 at 5% n=31 is statistically significant which is supported with a probability value of 0.0022942< 0.05 at 5% is significant, we therefore reject the null hypothesis, that is β_1-β_4 (money supply) is statistically significant with credit to private sector in Nigeria.

Findings from the study corroborates findings from Olorunmade, et al (2019) that there is significant relationship between total credits to private sector and money supply in Nigeria. The implication is that there is enough money supply that enhance the disbursement of credit to the real sector. Otalu, Aladesanmi and Mary (2014) opine that money supply and cash reserve ratio appeared to have statistically significant influenced deposit money banks' credit creation. Akani (2017) noted that if banks set interest rates too high, they may induce adverse selection problems because high-risk borrowers are willing to accept these high rates. The findings of this study is supported by Keynesian liquidity preference theory as it could be used to determines the interest rate by the demand for and supply of money which is a stock theory. It emphasizes that the rate of interest is purely a monetary phenomenon. It further validates loanable funds theory which is a flow theory that determines the interest rate by the demand for and supply of loanable funds. Findings also confirm bank lending of monetary policy transmission. Mishkin (1995) argued that to be successful in conducting monetary policy, the monetary authorities must have an accurate assessment of the timing and effect of their policies on the economy, thus requiring an understanding of the mechanism through which monetary policy affects the economy. The bank lending channel represents the credit view of this mechanism. According to this view, monetary policy works by affecting bank assets (loans) as well as banks' liabilities (deposits). The key point is that monetary policy besides shifting the supply of deposits also shifts the supply of bank loans. For instance, an expansionary monetary policy that increases bank reserves and bank deposits increase the quantity of bank loans available. Where many borrowers are dependent on bank loans to finance their activities, this increase in bank loans will cause a rise in investment (and also consumer) spending, leading ultimately to an increase in aggregate output, (Y). The schematic presentation of the resulting monetary policy effects is given by the following:

M ↑ → Bank deposits ↑ → Bank loans ↑ → I ↑ → Y ↑

(Note: M= indicates an expansionary monetary policy leading to an increase in bank deposits and bank loans, thereby raising the level of aggregate investment spending, I, and aggregate demand and output, Y,). In this context, the crucial response of banks to monetary policy is their lending response and not their role as deposit creators. The two key conditions necessary for a lending channel to operate are: (a) banks cannot shield their loan portfolios from changes in monetary policy; and (b) borrowers

cannot fully insulate their real spending from changes in the availability of bank credit. The importance of the credit channel depends on the extent to which banks rely on deposit financing and adjust their loan supply schedules following changes in bank reserves; and also the relative importance of bank loans to borrowers. Consequently, monetary policy will have a greater effect on expenditure by smaller firms that are more dependent on bank loans, than on large firms that can access the credit market directly through stock and bond markets (and not necessarily through the banks).

The positive findings of the study confirm the findings of Zuzana, Riikka and Laurent (2015) who found no evidence of the bank lending channel through the use of reserve requirements. The author noted that changes in reserve requirements influence loan growth of banks. The findings of João, Barroso and Gonzalez (2017) that the easing impacted the lending channel on average two times more than the tightening. Foreign and small banks mitigate these effects and banks are prone to lend less to riskier firms. The findings of Mohammed (2014) that there was co-integration between re-positioning of commercial banks and capacities of SMEs to deliver services and also a significant dispersion resulting from lending conditions and macroeconomic variables and the findings of Ovat (2016) that exchange rate and lending rate are statistically significant to SMEs credit.

Model 2 examined the relationship between money supply and Credit to core private sector in Nigeria. From the estimated regression model, the vector error correction result in table 4 shows that the relationship between money supply and credit to core private sector is high and significant. This is because of an R^2 of 0.844319 meaning that the model explains approximately 84.4 percent of the total variations in the credit to core private sector, the error correction model shows a negative value of -1.672063 which is appropriate and is significant. This means that 167 percent of the deviation from long run equilibrium relationship in the credit to core private sector is corrected every year since credit to core private sector is estimated annually. Some of the values of the coefficient of independent variables, that is money supply are positive and also proved negative at various lags.

Furthermore, it was found that the result of the error correction in table 4, the F*- cal = 4.406521 > F*- tab = 2.24 at 5% n=31 is statistically significant which is supported with a probability value of 0.005035< 0.05 at 5% is significant, we therefore reject the null hypothesis, that is β_1-β_4 (money supply) is statistically significant with credit to core private sector in Nigeria.

The findings of this study is supported by Keynesian liquidity preference theory as it could be used to determines the interest rate by the demand for and supply of money which is a stock theory. It emphasizes that the rate of interest is purely a monetary phenomenon. It further validates loanable funds theory is a flow theory that determines the interest rate by the demand for and supply of loanable funds. The significant effect of monetary policy on bank credit to core private sector confirms the classical opinion on the relevant of money in the economy. The finding also supports the bank lending channel transmission of monetary policy. The monetary transmission mechanism describes how policy induced changes in the nominal money stock or the short-term nominal interest rates impact real variables such as aggregate output and employment. Bernanke and Gertler (1995) noted that bank lending channel centers on the possible effect of monetary policy actions on the supply of loans by depository institutions.

It is also evidence that, the positive findings of the study confirm the findings of Zuzana, Riikka and Laurent (2015) who found no evidence of the bank lending channel through the use of reserve requirements. The author noted that changes in reserve requirements influence loan growth of banks. The findings of João, Barroso and Gonzalez (2017) that the easing impacted the lending channel on average two times more than the tightening. Foreign and small banks mitigate these effects and banks are prone to lend less to riskier firms. It also confirms the positive findings of Sesay and Abdulai (2017) that suggest that money supply and gross domestic savings exert positive and statistically significant effect on private sector investment. They opine that financial institutions should increase the credit delivery to the private sector in a bid to facilitate private sector investment drive. Olorunmade et al. (2019) also finds significant relationships between private sector credit and economic growth and significant relationship between total credits to private sector and money supply in Nigeria. Their study revealed that private sector credit impact positively on the growth of the economy in Nigeria. The findings of Mohammed (2014) that there was co-integration between re-positioning of commercial banks and capacities of SMEs to deliver services and also a significant dispersion resulting from lending conditions and macroeconomic variables and the findings of Ovat (2016) that exchange rate and lending rate are statistically significant to SMEs credit. Abdullahi (2014) study shows that the positive relation observed between credit to the private sector and money supply indicates that such credit only increases money supply in the economy and that the funds were not properly annexed into productive activities.

Model 3 examined the relationship between money supply and credit to private sector in Nigeria. It is evidence that the estimated regression model from result of the vector error correction result in table 9 the relationship between money supply and credit to small and medium scale enterprises sector is moderate and not significant. This is because of an R^2 of 0.625345 meaning that the model explains approximately 62.5percent of the total variations in the credit to small and medium scale enterprises sector.

It is also evidence that the error correction model shows a negative value of -0.424263 which is appropriate and is significant. This means that 42.4 percent of the deviation from long run equilibrium relationship in the credit to small and medium scale enterprises sector is corrected every year since credit to small and medium scale enterprises sector is estimated annually. Some of the values of the coefficient of independent variables, that is money supply variables are positive and also proved negative at various lags.

The findings of the study confirm the findings of Otalu, Aladesanmi and Mary (2014) that money supply and cash reserve ratio appeared to have statistically significant influenced deposit money banks' credit creation and Jegede (2014) who specifically revealed that liquidity ratio and money supply exert negative effect on commercial banks' loan and advances. The study concludes that monetary policy instruments are not effective to stimulate commercial bank loans and advances in the long-run. Anigbogu, Okoli and Nwakoby (2015) that with the exception of bank interest rate to SMEs, all other variables namely bank lending rate to SMEs, exchange rate and monetary policy have a positive and significant influence on small and medium enterprises performance in Nigeria. Findings are also consistent with the works of Olorinmade et al. (2019) that there was significant relationship between total credits to the private sector and money supply in Nigeria. This implies that the volume of money supply is enough to facilitate and guarantee the disbursement of credits to Small and Medium Scale Enterprises sector in Nigeria. Dada (2014) that commercial banks credit to SMEs and the saving and time deposit of commercial banks exert a positive and significant influence on SMEs and Suleyman (2013) that money supply has a strong effect for manufacturing sector credit volume. Abdullahi (2014) study shows that the positive relation observed between credit to the private sector and money supply indicates that such credit only increases money supply in the economy and that the funds were not properly annexed into productive activities.

6. Conclusion and Recommendations
With the F*- cal =3.093507 > F*- tab = 2.24 the study conclude that there is significant relationship between money supply and credit to private sector in Nigeria. From the result, the F*- cal =4.406521 > F*- tab = 2.24, the study conclude that there is significant relationship between money supply and credit to core private sector in Nigeria. The F*- cal =4.331540> F*- tab = 2.24, the study conclude that there is significant relationship between money supply and credit to small and medium scale enterprises sector in Nigeria.

7. Recommendations
The study recommends that the monetary authorities should ensure adequate quantity of money supply that affect positively private sector funding in Nigeria. This is because money does not affect only the absolute price and quantity of trade, but it affects also the level of financial intermediation.

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