

Determinant of Private Sector Credit and Its Implication on Economic Growth in Nigeria: 2000-2017

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Abstract

The study 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. The main objective of this study is to examine the relationship between Private Sector Credit and Gross Domestic Product. Data were obtained from Central Bank of Nigeria statistical bulletin. Simple regression analysis was used to achieve the stated objective. It was revealed in the determinant of credit supply equation 1 that there was significant relationship between Total credits to private sector and money supply in Nigeria. It was also discovered in the Private Sector Credit and Economic Growth Equation 2 that there was significant relationship between private sector credit and economic growth in Nigeria. The study therefore recommends 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.

Keywords: Private Sector Credit, Money Supply, Economic Growth, Gross Domestic Product, Credit Supply.

1. Introduction

The debate on the role of finance in economic development has been an ongoing one, especially in developing countries. This dates back to the work of the likes of Schumpeter, (1911) who advocated the concept of finance-led growth. The financial intermediation role is generally performed by the financial sector, which channels savings into productive investment. Deposit-taking institutions in particular are well recognized for performing the crucial role of sourcing finance to support private sector consumption and investment in Nigeria. Credit to private sector refers to financial resources provided to the private sector, such as loans and advances, purchases of non-equity securities, trade credits and other accounts receivable, which establish a claim for repayment. In this regard, credit can be viewed from two angles; namely: trade or commercial credit and banking system credit. Freear (1980), says

trade credit refers to transactions which involve the supplier handing over goods or performing a service without receiving immediate payment and payment to be made in the future.

Several empirical studies have shown that the efficient provisioning of credit has a positive and significant effect on output and employment opportunities while a low level of financial development and its attendant inefficient private sector credit system distorts economic growth. A strong and inclusive financial system; and availability of investable funds play vital roles in financing economic project and activities that would promote economic growth and development. This is because access to credit enhances the productive capacity of firms and enhances their potential to grow.

In recent years, private sector credit and economic growth linkage has been a major issue in economic discourse all around the world and empirical literature has been inconclusive on this issue. However, balance of evidence seems to favour a positive relationship between private sector credit and economic growth. This belief has led the Nigerian government through the Central Bank of Nigeria to continue to build a robust and inclusive financial system to fast track economic growth and to serve as a growth catalyst to other emerging economies in Africa.

Economic growth has long been considered an important goal of economic policy with a substantial body of research attempting to explain how this goal can be achieved. Most of the empirical studies have focused on explanatory variables selected on the basis of their relevance to policy formulation or base on their theoretical relevance. However, Banks play very important roles in the economic development and growth of any nation. As an important component of the financial system, they channel scarce resources from the surplus economic units to the deficit economic units in an economy (granting credit) as such this activities form part of their existence. The loan resources (Bank Credit) can be in the form of short term credit, medium term credit, long term credit and contingent fund. Thus, these Bank credits to a reasonable extends, exert reasonable influence on the pattern and trend of economic growth in Nigeria.

There is a general consensus that for economic growth to take place there should be strong support from the financial sector which provides a source of funds. The role played by finance of bringing together borrowers and lenders cannot be under estimated in the modern society. The important role of financial development in fostering growth and that their association is of a long term is supported by several studies, (Cecchetti and Kharroubi (2012), Osman (2014)). The banking sector attracts deposits which can either lie idle or be used productively. The banking sector changes deposits into assets that are advanced to the private sector. The private sector supports economic growth in the country and the availability of financial assets provides huge mileage to this sector in advancing growth. These resources can be in the form loans, non-equity securities, trade credit and accounts receivables which generate a claim for repayment. The amount of resources available is limited due to the fact that part of it is taken by the government. The advancement of debt to the government has a potential of crowding out debt to the private sector which subsequently affects growth of output. Credit to the private sector can have a positive impact on sectoral GDP, (Were et al (2012) and Iqbal et al (2012)).

2. Statement of the Problem

Modern theories of economic growth have attempted to explain the relationship between the private sector credit and economy growth factors and specify the condition under which an economy would steadily grow on the equilibrium path. Most economical of the world have experienced business cycles at different stages of their economic growth. The economic history of various economies is in fact a history of ups and downs, booms and slump prosperity and depression. Business cycles influence business decisions tremendously and set the trend for future business. The period of prosperity opens up new and longer opportunities for investment, employment and production and thereby promotes business. On the contrary, the period of depression reduces business opportunities. A profit maximizing entrepreneurs must therefore, analyse the economic environment of the period relevant for his important business decision particularly those pertaining to forward planning.

According to Dwivedi, (2008), Business cycle theories lay major emphasis on the monetary and credit system in their analysis of business cycle popularly refers to as monetary theory of business cycle. According to this theory the main cause of business cycle is the fluctuation in monetary and credit market. The fluctuation in the supply of money and credit is the basic causal factor at work in cyclical process. Hawtrey in Dwivedi, (2008), opens that business cycles are nothing but successive phases of inflation and deflation and all the changes in the level of economic activities are only reflections of changes in money flows. He stated further that 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. He concluded that the principal factor affecting the money supply is the credit mechanism i.e. the volume of credit created by the banking and non-banking system. Following this assertion that money supply forms the bedrock of business cycle through credit flow into the system; it is imperative to look intently at various factors that would

determine the volume of credits that goes into the economy at a particular period of time so as to maintain economic stability.

3. Objectives of the Study

The major objective of this study is to examine the relationship between Private Sector Credit and Gross Domestic Product. Specific objectives are to:

- Examine the relationship between Credits to private sector and Money Supply in Nigeria.
- Examine the relationship between Gross Domestic Product and Credit to private sector in Nigeria.

4. Statement of Hypotheses

- H_0 : There is no significant relationship between Credits to private sector and Money Supply in Nigeria.
- H_0 : There is no significant relationship between Gross Domestic Product and Credit to private sector in Nigeria.

5. Significance of the Study

There is the need to deepen the financial sector and reposition it for growth and integration into the global financial system in conformity with international best practices. One of the most important policy concerns in most countries is the effect of private sector credit on growth and development.

This study is important at this level of economic development when efforts are being made to reposition the financial system to enable it play key roles in economic development of Nigeria. The study essentially examined in an empirical manner, the nature of financial deepening in Nigeria since 2000 up to 2017 representing era of financial sector reform in Nigeria. The study ascertained the critical factors that have affected the level of private sector credit flows in Nigeria.

This study was justifiable since it employed the crucial methodology analysis used in examining the flows of credit by financial institutions in Nigeria. Thus, the study followed the work of Laffont and Garcia (1977) and Blundell-Wignall and Gizycki (1992) which was modified to suite the Nigerian case by Adeoye (2003) as a result of its distinguishing factors that affect both the demand and supply of banks' credit to the economy. While most studies conducted on bank credit and growth examined the banks activities up to 2003 (Adeoye 2003; Oluitan 2003), the periods covered also made the study unique to others. It covered eighteen years ranging from 2000 to 2017 in Nigeria. Although, the relationship between credit and economy growth has been well documented in both international and domestic literature, this work added to the research by examining the relationships within individual sectors which is a quiet departure from previous studies that focused on aggregate credit growth level. This is equally of value to policy makers since it identified which sectors are most efficient in their use of credit.

6. Literature Review

Determinants of Credit to Private sector

Financial institutions like banks, pension funds, insurance corporations and foreign exchange companies provide financial resources in the form of loans, trade credit, purchases of non-equity securities and other receivables to the private sector. The total of such monies is expressed as a percentage to GDP to give credit to private sector. Empirical work focuses on the effect of different factors on the level of financial resources extended to the private sector. Evidence shows that the drivers of credit to private sector can either have a positive or a negative effect. Studies that show factors which have a negative influence are several. Hofmann, (2001) shows that innovations in short term interest rates have a significant negative effect on bank credit, Gross Domestic Product and property prices. Standard demand factors failed to explain the development of credit over the long term. This study showed that the long term negative relationship between credit to private sector and interest rates could only be explained by including property prices in the model. Abuka and Egesa (2007) argued that government borrowing from banks, a proxy of government debt, crowded out the extension of credit to the private sector within the East African Region. This was supported by Sogut, (2008) who showed that in the high income countries private sector credit is negatively related to central government debt. The other factors that reduce extension of credit to the private sector include prime lending rate and reserve ratio, Enisan and Oluwafemi, (2015). This is consistent with a study by Sharma and Gounder, (2012) which shows that, in a regional grouping, factors which are detrimental to growth in credit to private sector include average lending rates and inflation.

Pissarides, (2001) provides evidence that one of the major challenges experienced by the private sector is the failure by the local banking sector and the under developed financial markets to respond to the demand for finance. A banking sector that is under capitalized with low liquidity often fails to support the private sector. This is worsened by inadequate legal and regulatory environment and poor effective supervision by the central bank. Rashid (2011) also provides evidence that an increase in foreign banks in the financial sector where there is overreliance on non-deposit based funding will lead to less resources being extended to the private sector. This is so because an increase in foreign banks results in less deposits being attracted by local banks and these foreign banks tend to allocate less of their deposits to the private sector. In the end local banks will lend less to the private sector due to a limited deposit

base. Haas and Lelyveld (2002) argued that foreign banks can be a source of cross border credit as they supply more financial resources to their subsidiaries especially during crisis periods. Thus it may be beneficial to increase the level of financial liberalization in the banking sector to attract more foreign participation by banks to increase credit flows to the private sector.

There is strong evidence in literature supporting the existence of positive relationship between private sector credit and factors like economic growth in both the short and long term. Studies reviewed from literature shows that the factors that have a positive influence on credit to private sector include broad money supply, cyclical risk premium, stronger economic growth, GDP per capita, democracy, financial deepening, rule of law, liquidity ratio, trade openness, investment profile, socioeconomic factors, financial liberalization and real interest rate, exchange rate, private domestic savings, external debt, (Enisan and Oluwafemi (2015), Touny (2014), Raza et al (2014), Assefa (2014), Anthony (2012), Iqbal et al (2012), Rachdi and Mensi (2012) and Frimpong and Marbuah (2010)). However Touny (2014) also argue that in the long term economic growth does not continue to improve credit extension to the private sector but will instead have a negative impact. A different perspective was brought by Atoyebi et al (2012) who argued that growth in private investments are better explained by changes in the political situation. The creation of an enabling environment through provision of infrastructural facilities and security is necessary for the improvement in the extension of credit to the private sector. As such private investment is hindered by macroeconomic instability and political disturbances. There are studies that show that a causal relationship may not exist between credit to private sector and economic growth which shows the existence of a Schumpeterian independent hypothesis, (Osman (2014) and Nezakati et al (2011) and Aliero et al (2013)). Sogut (2008) showed that in the high income countries private sector credit is positively related with Journal of Poverty, Investment and Development of public sector debt, which is in contradiction to other studies. According to Shijaku and Kalluci (2013) lending incentives are created by having a lower cost of lending, reduced government borrowing and more qualitative bank credit.

Meaning of credit

Chester (1920) defines Bank credit as credit extended by banks to borrowers. He stressed further that, Bankers frequently use the term in the plural, meaning advances made to their borrowing customers. Whether the borrower withdraws the amount of the proceeds of his loan in cash at once or leaves it on deposit with the lending bank, the loan in either case constitutes credit extended. Just as a merchant extends credit to he who pays for his purchase at a later time, so the banker extends credit to the business man who borrows money. Whether the money is taken from the bank at the time the loan is made, the next day, or ten days later, makes no essential difference; bank credit may take even the form of an overdraft. Credit has been described as a device for facilitating transfer of purchasing power from one individual or organization to another. As indicated by Oyatoya (1983) credit provides the basis for increased production efficiency through specialization of functions thus bringing together in a more productive union the skilled labor force with small financial resources and those who have substantial resources but lack entrepreneurial ability.

In general, total domestic bank credit can be sub divided into two: credit to the private sector and credit to the public sector. It has been empirically proved that credit to the public sector is weak in generating growth within the economy because they are prone to waste and politically motivated programmes which may not deliver the best result to the populace while private credit had been observed to be the dynamic instrument of accelerated growth (Beck et al 2005; Levine 2002; Odedokun 1998; King and Levine 1993).

Private sector credit is decomposed into two categories: short-term credit that has contractual maturity of one year or less and long-term credit that has contractual maturity longer than one year. Some countries, most notably many of the transition economies, provide more detailed data on credit maturity – up to one year, one to five years and longer than 5 years. Some countries report maturity longer than 7 or even 15 years. While it would be interesting to investigate credit with different maturity structures (e.g. medium-term, long-term, and “very long-term” credit), the only categorization that is consistent across all countries is the one that divides credit into short-term credit with maturity of one year or less and other credits.

Determinants of Private Sector Credit Flow and Economic Growth

The global financial crisis has resulted in a worldwide slowdown of credit flows, which triggered a discussion about the factors driving sluggish lending activity. Unlike previous prominent crises (e.g. in East Asia and Latin America in the 1990s), the current slowdown in lending is taking place in the absence of rising cost of credit and amid record-low policy rates and monetary stimulus. Although the decline in credit flows can be rationalized in view of the overall decline in economic activity, some critics have argued that the slowdown of lending (despite generally low interest rates) can be attributed to credit rationing by financial institutions. According to this “credit crunch” hypothesis, in the presence of asymmetric information interest rates do not equilibrate supply of and

demand for credit, and rational profit maximizing lenders deliberately constrain the outflow of liquidity in an attempt to avoid the accumulation of risky assets.

Understanding whether sluggish credit activity is related to constrained supply or weak demand for credit is important from a policy perspective. If the reduction of credit flows is mainly a response to tightened credit standards by financial institutions, then targeted monetary easing coupled with regulatory measures aimed at relaxing prudential norms may be needed to remove the obstacles for credit growth. Alternatively, if the reduction of credit flows is mostly driven by the decline in credit demand amid slower business activity, then economic policies aimed at expanding aggregate demand might be more effective in stimulating credit growth.

The interest rate structure is one of the most important indicators of the financial sectors. It is also an important determinant of credit flow to the private sector and overall investment activities. Lower lending rates and liberal credit policy encourage higher flow of credit to the private sector while rising lending rate and tight monetary policy which are essential tools for controlling inflationary pressures, restrict credit flow to the private sector (Economic Survey, 2007).

Hoffman, (2001) asserted that Economic activity; interest rates and property prices may affect credit via both credit demand and supply channels. Economic conditions and prospects determine consumption and investment demand, and thus the demand for credit. On the other hand, changes in economic activity are reflected in firms' cash flow position and households' income. Cash flow and income determine the ability of firms and households to repay their debts, so that changes in economic activity may also affect the willingness of financial institutions to extend credit. The state of economic activity may therefore also determine the supply of credit.

Financing costs, represented by market interest rates, have a negative effect on credit demand. When interest rates go up, loans become more expensive and loan demand is reduced. A monetary tightening, reflected by an increase in interest rates, may also induce financial institutions to cut back credit supply. A reduction in credit supply may also arise from reduced creditworthiness of firms and households due to a deterioration in their financial positions following a monetary tightening (balance sheet channel of monetary transmission). A tightening of monetary policy, operated via open market sales by the central bank, may also drain reserves and thus loanable funds from the banking sector, which may also cause a reduction of loan supply

Furthermore, they also found that property prices may also affect both credit demand and credit supply. Property accounts for a substantial share of household assets, so that changes in property prices may have a significant wealth effect on credit demand. Since loans are often secured with real estate collateral, property prices may also have a significant effect on the borrowing capacity of the private sector. An increase in property prices increases the value of collateralisable assets and thus the creditworthiness of firms and households. As a result, financial institutions are more willing to extend loans, so that the supply of credit to the private sector increases. Thus, economic activity, interest rates and property prices may affect both credit demand and credit supply. The problem of identifying demand and supply effects in the analysis of credit aggregates is well known and is most likely one of the reasons why there are so few studies analyzing the determinants of credit aggregates. Nevertheless, we still think that it is important to understand which factors drive the development of credit aggregates, even if it is not possible to clearly identify the demand and supply effects.

Empirical Review

Goodhart, (2008) investigates the determinants of credit growth in the United States and the United Kingdom over a long sample period (United States 1995-2005, United Kingdom 1995-2005). He finds that the change in house prices has a significantly positive effect on credit growth in the United Kingdom, but not in the United States. Rolling regression estimates suggest that in the United Kingdom the relationship between credit and house price has strengthened over the postwar period.

Borio et al (2010) investigate the relationship between credit-GDP ratios and aggregate asset prices for a large sample of industrialized countries over the period 1990-2005. They find that the development of credit conditions as measured by the credit-GDP ratio is in many countries a major driving force of aggregate asset prices. Based on simulations of their estimated models they show that the boom-bust cycles in asset markets of the early 1990s would have been much less pronounced or would not have occurred at all had credit ratios remained constant.

Goodhart and Hofmann, (2011) find cross-country evidence for a long-run relationship between bank credit, GDP and residential property prices. Based on impulse response analysis they also show that there is a two-way relationship between credit and residential property prices. All these studies are reduced form exercises, focusing on the existence of significant relationships and paying less attention to structural interpretation. But, as we have already outlined above, the identification of credit demand and credit supply effects of changes in property prices is problematic, since property prices may affect both credit demand and credit supply.

Odedokun, (2013) analyses a sample of 71 developing countries over varying periods that generally span 1991-2011 in order to generate information about the causality issue. The findings are strongly in favour of the "finance

causes growth" hypothesis. Using time-series regression analysis, the author comes to the conclusion that financial intermediation promotes economic growth in roughly 85 Per cent of the countries. Secondly, financial intermediation plays an equally important role in promoting growth as other factors, such as export expansion, capital formation ratio, and is more important in this context than labour force growth. Thirdly, he observes growth-promoting effects of financial intermediation primarily in low-income LDCs. Interestingly he finds that growth-promoting patterns of financial intermediation are practically invariant across various countries and regions for the period. He shows that marginal spillovers from the financial to the real sector are larger on average than vice versa, but decrease over time and relative to marginal spillovers from the real sector. He interprets this as an indication that finance caused growth in earlier stages of Taiwan's economic development while the relationship was reversed later on. Some studies, however, come to a different conclusion with respect to the causality issue.

Mattesini, (2015) uses the lending-deposit spread as a proxy for monitoring cost related to asymmetric information. His estimates refer to the period 1998-2013 and a sample of forty countries. The spread is particularly significant in explaining the growth performance for the whole sample and for the subsample of developed economies. For the low-income subsample, however, there is no significant relation between the spread and growth. The author attributes this to the existence of financial repression in developing countries, which may also affect the size of the spread.

Empirical evidences revealed that, the most commonly cited reasons for the shortage of long-term bank loans in Nigeria are the low levels of long-term liabilities in the banking system that can be used as funding sources. The low levels of long-term liabilities increase the maturities mismatch problem and raise the liquidity risks, thus limiting banks' ability to issue long-term loans. Other potential explanations include low quality and low transparency of borrowers (opacity), high credit risks, weak protection of creditor rights, and low efficiency of bank-level risk management systems. While the legal and business environment is systematic risk factors, other factors such as the availability of long-term funds, the access to best corporate borrowers and the management team expertise in controlling bank credit risks are bank-level factors that may vary substantially across the Nigerian banking sector.

Merriest, (2016), looked at the effect of financial sector reformation on the level of investment in an economy. He investigated the extent to which financial liberalization can improve private investment in developing countries. He made use of a simple portfolio model of investment for Argentina from 1996 to 2013, during which the country was affected by various interest rate regimes. His findings show that the increase in real interest rate, which is a typical element of financial reforms, does not necessarily involve a positive effect on private investment unless the authorities are careful to ensure that bank deposits are closer substitutes to unproductive assets (cash, gold) and foreign assets rather than capital goods. The flow of domestic credit to the private sector is not absorbed by the need of the public sector.

Moshi and Kilindo, (2017) considered the effect of government policy on private investment over the 2000-2015 periods in Tanzania. Regression results from the ordinary least squares estimation technique among others, showed that the real exchange rate had a negative and significant effect, indicating that devaluation reduced the profitability of private investment in the Tanzanian economy during the study period.

Critique of Gaps in the Literature

Many researchers have focused on private sector credit and economic growth but majority of the researchers have failed to work on the determinant of private sector credit. However, this study intends to make a different as it will examine the determinant of private sector credit in Nigeria.

Theoretical Review

Theory of Economic Growth

Economic growth is closely linked to the intricacies of the financial system. A well developed and efficient financial system helps in allocating financial resources to the best uses in the real sector, thereby promoting economic growth. As the real sector grows, the demand for financing increases and in this way the financial sector grows in tandem with the economy, signifying a two way causal relationship between finance and growth. In developed countries, financing generally flows both from the banking system and the capital markets, while in most developing and transition economies the capital markets lag behind, which shifts the burden of financing to the banking system.

There are numerous growth models in literature. However, there is no consensus as to which strategy will achieve the best success. The achievement of sustained growth requires minimum levels of skills and literacy on the part of the population, (Nnanna, 2004). Some of these existing growth models are Two-Gap Model, Marxian Theory, Schumpeterian Theory, and Harrods - Domar Theory of Growth, Neo-Classical Model of Growth, and Endogenous Growth Theory. The growth models relevant to this are Neo-Classical Model of Growth, and Endogenous Growth

Theory, since these growth models explain the situation in developing economies such as Nigeria. The neo-classical model of growth was first devised by Robert Solow. The model believes that a sustained increase in capital investment increases the growth rate only temporarily. This is because the ratio of capital to labour goes up (there is more capital available for each worker to use) but the marginal product of additional units of capital is assumed to decline and the economy eventually moves back to a long-term growth path, with real GDP growing at the same rate as the workforce plus a factor to reflect improving “productivity”. A "steady-state growth path" is reached when output, capital and labour are all growing at the same rate, so output per worker and capital per worker are constant. According to Todaro, the Neo-classical economists believe that to raise an economy's long term trend rate of growth requires an increase in the labour supply and an improvement in the productivity of labour and capital. Differences in the rate of technological change are said to explain much of the variation in economic growth between developed countries. This is shown in the model below. The aggregate production function, $Y = F(K, L)$ is assumed characterized by constant returns to scale. For example, in the special case known as the Cobb-Douglas production, at time t we have

$$Y(t) = K(t)^{\alpha} (A(t)L(t))^{1-\alpha} \dots\dots\dots(1)$$

Where Y is gross domestic product, K is the stock of capital (which may include human capital as well as physical capital), L is labour, and $A(t)$ represents the productivity of labour, which grows over time at an exogenous rate. Because of constant returns to scale, if all inputs are increased by the same amount, say 10%, then output will increase by the same amount (10% in this case). More generally

$$\gamma Y = F(\gamma K, \gamma L) \dots\dots\dots(2)$$

where γ is some positive amount (1.1 in the case of a 10% increase). Because γ can be any positive real number, a mathematical “trick” useful in analyzing the implications of the model is to set $\gamma = 1/L$, so that

$$Y/L = f(K/L, 1), \text{ or, } y = f(k) \dots\dots\dots(3)$$

This simplification allows us to deal with just one argument in the production function.

$$y = AK^{\alpha} \dots\dots\dots(4)$$

This represents an alternative way to think about a production function, in which everything is measured in quantities per worker. Equation 4 states that output per worker is a function that depends on the amount of capital per worker. The more capital with which each worker has to work, the more output that worker can produce. The labour force grows at rate n per year, say, and labour productivity growth, the rate at which the value of A in the production function increases, occurs at rate λ . the total capital stock grows when savings are greater than depreciation, but capital per worker grows when savings are also greater than what is needed to equip new workers with the same amount of capital as existing workers have.

The Solow equation (Equation 5) gives the growth of the capital-labour ratio, k (known as capital deepening), and shows that the growth of k depends on savings $sf(k)$, after allowing for the amount of capital required to service depreciation, k , and after capital widening that is, providing the existing amount of capital per worker to net new workers joining the labour force, nk . That is

$$\Delta k = sf(k) - (\delta + n)k \dots\dots\dots(5)$$

For simplicity we are assuming for now that A remains constant. In this case, there will be a state in which output and capital per worker are no longer changing, known as the steady state. (If A is increasing, the corresponding state will be one in which capital per effective workers is no longer changing. In that case, the number of effective workers rises as A rises, the job.) To find this steady state, set $\Delta k = 0$:

$$Sf(k^*) = (\delta + n)k^* \dots\dots\dots(6)$$

The notation k^* means the level of capital per worker when the economy is in its steady state. The capital per worker k^* represents the steady state. If k is higher or lower than k^* , the economy will return to it; thus k^* is a stable equilibrium. In the Solow equation, we see that when $(n + \delta)k < sf(k), \Delta k > 0$. As a result, k in the economy is growing toward the equilibrium point k^* . by similar reasoning to the right of $k^*, (n + \delta)k > sf(k)$ and as a result $\Delta k < 0$.

By the chain rule,

$$Y = \frac{dY}{dt} = \frac{\partial Y}{\partial K} \frac{\partial K}{\partial t} + \frac{\partial Y}{\partial L} \frac{\partial L}{\partial t} \dots\dots\dots(7)$$

By the exponent rule, we know that

$$\frac{\partial Y}{\partial K} = A(\alpha + \beta)K^{\alpha + \beta + 1} L^{1 - \alpha} \dots\dots\dots(8)$$

$$\frac{\partial Y}{\partial L} = AK^{\alpha + \beta} (1 - \alpha) L^{-\alpha} \dots\dots\dots(9)$$

Combining these three equations, we have



$$Y = dY/dt = [AK^{\alpha+\beta}L^{1-\alpha}] \left[\frac{K}{K} + (1-\alpha) \frac{L}{L} \right] \dots\dots\dots(10)$$

The first term in brackets in the preceding expression is of course output, Y. For a steady state, K/K, L/L, and Y/Y are all constant. From the above

$$K = I - \delta K = sY - \delta K \dots\dots\dots(11)$$

Dividing this expression through by K, we have

$$K = sY - \delta \dots\dots\dots(12)$$

For K/K constant in the preceding expression, we must have Y/K constant. If this ratio is constant, we have

$$K = Y = g, \text{ a constant growth rate}$$

So from the expression for dY/dt in the preceding expression, for the aggregate production function, with L/L = n, which is also a constant, we have

$$Y = (\alpha+\beta)(K) + (1-\alpha)L \quad g = (\alpha+\beta)g + (1-\alpha)n \dots\dots\dots(13)$$

$$g-n = \frac{[(1-\alpha) + (\alpha+\beta)-1]}{[1-(\alpha+\beta)]} n$$

→

7. Methods for achieving the stated objectives

The strategies used for achieving the stated objectives were simple regressions of which two equations were formulated in order to achieve the three specific objectives stated. In the equations, the hypotheses stated were tested. The equations are Determinant of credit supply equation 1, Private Sector Credit and Economic Growth Equation 2. Several authors have also used this approach in their works (Reinhart & Tokatlidis, 2000; Olukotun, Adewole & James, 2015; Popoola M.A, Adewole J.A & Idih O.E, 2018) and they were able to arrive at unbiased and accurate results. As a result of this, the approach of regression analysis cannot create a weakness in terms of the results presentation. The data used for this study were source from Central Bank of Nigeria Statistical Bulletin which is Total Credit to Private sector, Total Money Supply and Gross Domestic Product.

The data were choosing to examine the determinant of private sector credit and also measure the relationship between private sector credit and economic growth.

8. Discussion on Findings

The data collected for analysing the determinant of private sector credit and its implications on economic growth in Nigeria was presented in Appendix (see appendix A).

EQUATION 1: From the results of the **determinant of credit supply equation I**, the correlation coefficient (R) was 0.996. This means that there was a strong correlation between dependent and independent variable. The coefficient of determination (R-Squared) was 99.2%. This means that 99.2% variation in the dependent variable was explained by the independent variable and 0.8% of the variation in the dependent variable is explained by the disturbance term or error term. This disturbance terms are inflation, economic meltdown, low productivity, low profitability, non-performing loans etc. In other words, 99.2% variation in total credit to private sector was well explained by variation in money supply. 0.8% variation in the dependent variable was explained by variation of the variables excluded from the model (see appendix B).

The confidence intervals result revealed that the level of confidence interval 95%. This means that the samples data of the model reflects the fraction of calculated confidence intervals that encompass the true population. The Durbin-Watson result is 1.511. The Durbin-Watson statistics is a number that tests for autocorrelation. Autocorrelation is a mathematical representation of the degree of similarity between lagged versions of itself over successive time intervals. In other words, it is a situation in which a time series data is influenced by its own historical values. The Durbin-Watson statistics is always between 0 and 4. The general rule states that a value of 2 means that there is no autocorrelation in the samples. Values approaching 0 indicate positive autocorrelation and values towards 4 indicate negative autocorrelation. However, the Durbin-Watson result of this model indicated there is autocorrelation since the value of 1.511 is not up to 2. The Collinearity Diagnostics result reveals that Variance Inflation Factors (VIF) is 1.00. The general rule is that VIFs exceeding 4 warrant further investigations while VIFs exceeding 10 are signs of serious multicollinearity requiring correction. Since VIFs result is 1.00 in this model, it does not require further investigations (see appendix B).

Testing for the statistical significant at 5% (Determinant of credit supply equation 1)

H₀: **bβ**

H₀: There is no significant relationship between credit to private sector and money supply in Nigeria.



Decision

$t_{0.05}$ at $(18 - 2)$ 16 degrees of freedom was statistically significant because the analysis of variance (ANOVA) P - value < 0.05 ; p - value = 0.000 . Therefore, H_1 is accepted and H_0 is rejected. There was significant relationship between Total credits to private sector and money supply in Nigeria. This means that there is enough money supply that guaranteed enough credit to the real sector of the Nigerian economy (see appendix B).

EQUATION 2: From the results of **Private Sector Credit and Economic Growth Equation 2**, the correlation coefficient (R) is 0.989. This means that there is a positive or strong correlation between dependent and independent variable. The coefficient of determination (R-Squared) is 97.7%. This means that 97.7% variation in the dependent variable was well explained by the independent variable and 0.23% of the variation in the dependent variable is explained by the disturbance term or error term. This disturbance terms are inflation, economic meltdown, low productivity, low profitability, non-performing loans etc. In other words, 97.7% variation in Gross Domestic Product was explained by variation in total credit to private sector. 0.23% variation in the dependent variable is explained by variation of the variables excluded from the model (see appendix C).

The confidence intervals result revealed that the level of confidence interval 95%. This means that the samples data of the model reflects the fraction of calculated confidence intervals that encompass the true population. The Durbin-Watson result is 1.376. The Durbin-Watson statistics is a number that tests for autocorrelation. Autocorrelation is a mathematical representation of the degree of similarity between lagged versions of itself over successive time intervals. In other words, it is a situation in which a time series data is influenced by its own historical values. The Durbin-Watson statistics is always between 0 and 4. The general rule states that a value of 2 means that there is no autocorrelation in the samples. Values approaching 0 indicate positive autocorrelation and values towards 4 indicate negative autocorrelation. However, the Durbin-Watson result of this model indicated that there is autocorrelation since the value of 1.376 is not up to 2. The Collinearity Diagnostics result reveals that Variance Inflation Factors (VIF) is 1.00. The general rule is that VIFs exceeding 4 warrant further investigations while VIFs exceeding 10 are signs of serious multicollinearity requiring correction. Since VIFs result is 1.00 in this model, it does not require further investigations (see appendix C).

Testing for statistical significant at 5% (Private Sector Credit and Economic Growth Equation 2).

Ho: $b\beta$

Ho: There is no significant relationship between private sector credit and economic growth in Nigeria.

Decision

$t_{0.05}$ at $(18 - 2)$ 16 degrees of freedom was statistically significant because Analysis of variance (ANOVA) P - value < 0.05 ; p - value = 0.000 . Therefore, H_1 is accepted and H_0 is rejected, meaning that $b\beta$ is not equal to zero i.e. there was significant relationship between private sector credit and gross domestic product in Nigeria. This means that private sector credit impacted positively on economy growth in Nigeria within the period of analysis (see appendix C)

9. Conclusion

It was obvious from the results of the study that the financial sector reform strategies adopted in Nigeria have been geared towards making credit available to support the economy. As a result of this, supply of credit to the real sector has been improved.

10. Recommendations

Base on the objective and findings of this study, the study therefore recommends 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.

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