

Effect of Bank Credit to the Private Sector on the Performance of Manufacturing Sector in Nigeria

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Abstract

The study investigated the effect of bank credit to the private sector on the performance of manufacturing sector in Nigeria, from 1981 – 2021. The objective of the study is to determine the effect of bank credit to the private sector (CPS) on the manufacturing output in Nigeria. To carry out the study, data were sourced from the Central Bank of Nigeria statistical bulletin and National Bureau of Statistics for various years. The dependent variable for the study was manufacturing output while the proxies for exploratory variable include; credit to the private sector (CPS); interest and exchange rates. For analysis and estimation, Autoregressive Distributed Lag (ARDL) method was adopted. Augmented Dicker Fuller (ADF) tests for stationarity showed that the variables were integrated at first level while ARDL Bound tests established a cointegration relationship of the variables. The result of the study revealed that credit to the private sector (CPS), interest rate; and exchange rate (independent variables) on the aggregate accounted for 93.9% of the total variations on manufacturing output (dependent variable) in Nigeria during the study period while 6.1% was due to stochastic error. The result further found out exchange rate had a positive coefficient value and a significant impact on manufacturing output in Nigeria during the period of study while other explanatory variables that include credit to the private sector and interest rate were statistically insignificant on manufacturing GDP during the study period. On the basis of the findings, the researcher recommends that Central bank of Nigeria as an apex bank should apart from using both direct and indirect controls should strengthen the use of moral suasion to encourage banks not to relent in granting the sector as the government endeavours to diversify the revenue sources of the economy. Secondly, government and Central Bank of Nigeria (the apex regulatory body of banks) should take bold steps and use all necessary economic and financial policies and regulations to make lending a single digit interest rate in Nigeria especially in a critical sector like agriculture.

Keywords: Bank credit, private sector, manufacturing output, Nigeria, exchange rate, interest rate.

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INTRODUCTION

Financial institutions are financial intermediaries that channel funds from surplus economic units to deficit economic units in the economy. However, banks are major financial institutions that perform the intermediation role of fund transmission in an economy. Ozor & Nwoke (2017) posit that financial intermediation is the channel through which funds are mobilized from surplus-spending groups and simultaneously transmitted to deficit-consuming economic units for productive purposes; and if judiciously used will lead to economic growth. Financial intermediation is critical to the growth of the real sector because the intermediation process provides an appropriate avenue for funds to be pooled together and risks diversified to fund economic activities and create an efficient avenue for selecting, funding and

monitoring risky projects, which stimulate and sustain economic growth, (Oduyemi, 2013).

Bank credit over the years has become a primary financing hub of economic activities in the world such that no single sector of any economy functions effectively without it. The number of loans and advances given out by the commercial banks to various economic agents constitutes bank credit (CBN, 2003). Thus, lending is a vital function in banking operations due to its direct effect on the economic growth and business development of a nation (Okwo, Mbajaku and Ugwunta, 2012). Bank credit is a key source of revenue for banks. The principal objectives of banks in the provision of credits include; increase profitability,

provide liquidity in the economy, and promote economic growth.

Commercial banks as primary financial intermediation agents channel funds from the surplus unit to the deficit unit of the economy, thus transforming deposits into loans and advances. The role of bank credit in the growth of industries in Nigeria has been recognized and utilized by the various economic agents to enable them to meet investment requirements (Nwaru and Okorontah, 2014). Business firms obtain credit to buy machinery and equipment; farmers' source for credit to purchase machines such as tractors, seeds, fertilizers, and erect various kinds of farm buildings. Government bodies obtain credits to meet several types of recurrent and capital expenditures. Individuals and families also take credit to buy and pay for goods and services (Adeniyi, 2006). According to Ademu (2006), the provision of credit with sufficient consideration for the sector's volume and price system is a way to generate self-employment opportunities. This is because credit helps to create and maintain a reasonable business size as it is used to establish and/or expand the business to take advantage of economy of scale. It can also be used to improve informal activity and increase its efficiency. While credits to the different economic units are laudable, credits to entrepreneurs with technological innovations and acumen have far more positive multiplying effects in an economy. A renowned economics scholar, Schumpeter (1934) in his influential work on the role of credit on economic growth stressed that bank credit to entrepreneurs has positive and stimulating effect on economic growth. The significant role played by banks through fund mobilization and channeling such to the real sector thereby ensuring economic growth has gained the support of scholars like Mckinon (1973), Shaw (1973), King & Levine (1993) and Jappelli & Pagano (1994).

The critical role banks play in financing the Nigerian manufacturing sector dates back to the post-independence era. The manufacturing sector acts as a catalyst that accelerates the pace of structural transformation and diversification of the economy, thus enabling a country utilize its factor endowments and have less dependence on foreign supply of raw materials or finished goods (Adediran & Obasan, 2010). The manufacturing sector simultaneously creates investment at a faster rate than any other sector of the economy while promoting wider and more effective linkages among different sectors of the economy and nonetheless offers more opportunities for capital accumulation. Bada (2017) submits that the manufacturing sector activities cover a broad spectrum ranging from light agro-based industries to heavy iron and steel companies.

The manufacturing segment of the industrial sector is comprised of micro, small, medium and large scale enterprises that engage in agro based businesses, cottage and handicrafts. As an independent nation in

1960, the government embarked on various policies and programmes (including indigenization decree of 1974) as enshrined in Nigerian's development plans aimed at transforming the country from its predominantly agrarian nature, into an industrialized economy. The decline in industrial sector contribution to Gross Domestic Product (GDP) is attributed to various factors including policy inconsistencies and reversals, as well as infrastructural decay and bottlenecks. Other factors include dependence on foreign raw materials inputs; poor foreign exchange earnings; low patronage of domestic goods by citizens owing to their preference to foreign substitutes; double taxation; absence or poor power generation and inaccessibility to credits.

The manufacturing sector plays a major role in the economy and contributes significantly to the aggregate output of the Nigerian nation. The total gross domestic product or output is a summation of the contribution of each sector to the basket of a country's output; be it agriculture, mining, banking/financial services, telecommunication, transport, oil and others. The summation of all economic rewards or the monetary value of all the goods and services produced by all economic units in a country is what is known as Gross Domestic Product. Adebayo (2013) sees Gross Domestic Product (GDP) as the aggregate value of all the goods and services produced or the collective reward for economic units involved in economic activities. Gross Domestic Product (GDP) is generally accepted as one of the barometers for measuring a country's economic well-being.

This study attempts to examine how bank credit to the private sector has impacted on manufacturing output that is a core sector in Nigeria's economic growth and development despite lots of increasing macroeconomic challenges that have been unfriendly to the industry for over a decade and a half. The research work therefore, is an attempt to investigate the effect of bank credit to the private sector on manufacturing output in Nigeria, from 1981-2021.

Statement of the Problem

The Nigerian apex bank Central Bank of Nigeria (CBN) that has the responsibility of regulating financial institutions frequently issue monetary and credit policies and financial directives aimed at stimulating the real or productive sector of the economy. CBN, through direct and indirect methods encourage banks to play significant roles in the provision of adequate credits in the real sector (which the manufacturing sector is one) with the aim of achieving sustainable economic output and growth. The initiatives and credit policies no doubt are yielding positive results in terms of numerical increases in bank credits to the real sector (inclusive of the manufacturing sector).

Since the advent of Nigeria's third republic, it appears that a large volume of commercial banks credit

go to Nigerian politicians for political activities rather than the manufacturing and other productive sectors of the economy that are the life wires of the nation's economic growth and development. This view is in tandem with the assertion of Soludo (2007) who stressed that commercial banks have abandoned their traditional services and engaged in speculative business such as trading in stock and oil business thus reducing their credit allocation to productive sectors such as the industrial sector. The diversion of credits to unproductive sectors of the economy has made it difficult for industries in Nigeria to raise funds to engage in new investments or expand their productive coasts of the existing industries.

Again, over the past three decades, the Nigerian manufacturing sector has being relegated to the background due to the country's dependence on crude oil that was discovered in the 1970s. Despite the country's enormous human and natural resources, the manufacturing sector has been in a deplorable state as the sector still accounts for a very low percentage of the gross domestic product (Ume, Obasikene, Oleka, Nwadike & Okoyeuzu, 2017). Dearth of funds to acquire modern industrial manufacturing equipment; procure foreign raw materials; install information technology apparatus; and hire capable hands have proved great constraint to the industry and these challenges would have led to a reduction in production costs, raising productivity and improving competitiveness if the handicap in funding has been addressed through the provision of adequate credit to the sector.

Though, credit may not be the only variable that affects manufacturing output generally. Bank credit is not costless nonetheless. The price of funds (credit) continues to rise frequently thereby affecting access to loanable funds by manufacturers. Aside credits, some of the needed inputs like raw materials, machinery, labour etc for manufacturing purposes are imported hence, exchange rate is involved. With continued fluctuations in exchange rate, manufacturing output is impaired. With the falling price of the naira vis-à-vis other currencies of the world and subsequent importation of other factor inputs; manufacturing has become a nightmare. The rising prices of local raw materials for manufacturing due to inflation equally have eroded the purchasing power of the naira. All these variables add up as burning issues that continue to impact adversely on the country's manufacturing output, employment and industrial capacity utilization with its detrimental effect on the nation's economy.

It is in the light of the forgoing and the increasing credit to the private sector over the years, this research work is undertaken to examine the effect of credit to the private sector on manufacturing output in Nigeria in view of the transformational role of this key sector in economic growth of the nation.

Research Objectives

On the basis of the above stated problems, the primary objective of the study is to examine the effect of bank credit to the private sector on the performance of manufacturing output in Nigeria while the specific objectives of the study include:

- i. To determine the effect of bank credit to the private sector (CPS) on the manufacturing output in Nigeria.
- ii. To investigate the effect of exchange rate on the manufacturing output in Nigeria.
- iii. To examine the effect of interest rate on the manufacturing output in Nigeria.

Hypotheses

Based on the above objectives of the study and research questions, the following hypotheses are stated to guide the study;

- i. H0₁: There is no significant effect of bank credit to the private sector on manufacturing output in Nigeria.
- ii. H0₂: Exchange rate does not have a significant effect on manufacturing output in Nigeria.
- iii. H0₃: There is no significant effect of interest rate on manufacturing output in Nigeria.

Conceptual Framework

Bank credit and credit to the private sector

Banks provide substantial credit required for the real sector and the economy at large and play a significant role in economic growth and development. Bank credit is the borrowing capacity provided to an individual, firm or government by the banking system in the form of loans and advances. For an economy to have increases in output, consumption, capital and labour force; finance is crucial and banks are essential conduits that provide credit channel that foster productive activities and economic growth. As postulated by Schumpeter, bank credit to entrepreneurs has a positive effect on economic growth. Similarly, Branch, Cooper and Moxey (2014) posit that bank credit is an essential means of increasing standards of living; achieving economic development; and it remains central in every economy and dominates the financial sector even as they account for an overwhelming proportion of business funds financed externally within the domestic and international markets.

Bank credit in form of loans and advances, documentary bills, leases, commercial papers, bankers acceptances and bills discounted (Nzotta, 2004) to the manufacturing sector has positive relationship with manufacturing output and growth in a nation's output at large. The more the credits to the private sector in the manufacturing segment of the economy the greater their contribution to national output. Conversely, if bank credit is reduced to the sector, output will simultaneously decrease.

Interest Rate

Interest rate refers to the rental fee for the borrower's use of credit or the lender's return for giving up liquidity (Amah, 2005). It is the price of money and, like other prices; it tries to perform a rationing role in the market by making it easier to distribute the limited supply of credits among the many competing requests for it. Interest rate is the amount charged by banks when they advance loans to their customers. This rate varies according to perceived risks, the duration of loans (short, medium or long term), the cost of loanable funds and lending margins (Ismaila, 2016). Interest rate is normally expressed as a percentage of the principal on annual basis and it is influenced by the borrower's creditworthiness, money supply, monetary policy, fiscal policy, and a number of other factors.

Makinde, (2016) submits that interest rates perform a rationing function by allocating limited supply of credit among the many competing demands, just like other prices while Essien *et al.*, (1996) stressed on the various interest rate structures that are considered very significant in managing the economy that include:

- i. Lending rate: This means the rate at which banks to give credit to their borrowing customers.
- ii. Deposit rate: The interest rate at which banks pay consumers for their deposits or borrow money from them. The difference between these two rates reveals a lot about credit availability and market competition. The relationship between a high lending rate and a limited or high credit supply is widely known. A low lending rate, on the other hand, indicates a high supply of credit and/or a low demand for credit.
- iii. Pure Interest Rate: This is the rate at which present consumption is preferred to that of the future. This indicates that it is restricted to the waiting benefit that riskless economic investment promises. Practically speaking, this appears to be represented by the lowest rate in the economy, the treasury bills rate, or the interest rate on short-term CBN financial instruments.
- iv. Monetary Policy Rate (MPR). It is the benchmark interest rate which supposed to drive the banks interest rate.

The interest rate charged by banks though guided by the decisions of Monetary Policy Committee (MPC) has been unfriendly to manufacturers even as banks continue to charge exorbitant lending rates above MPC stipulations. The high cost of bank funds negatively impact on both small-medium and large-scale enterprises. High interest rate adversely affects the appetite for bank credits by manufacturers and this further affects manufacturing output. Similarly, low interest rate induces the private sector to source for credits from financial institutions and with its direct

impact on output. Interest rate has an inverse relationship with manufacturing output.

Exchange Rate

According to McDonald (1990), exchange rate is essentially the cost of foreign currency that settles the foreign exchange market. Therefore, the link between domestic and foreign costs of goods and services is the exchange rate of currencies (Oloba and Abogan, 2013).

Exchange rate is the price of one currency in terms of another currency, that is, the current market price for which one national currency can be exchanged for another. It is normally expressed as the number of units of a domestic currency that will purchase one unit of a foreign currency or the number of units of a foreign currency that will purchase one unit of a domestic currency. The exchange rate plays a critical role in an economy because imports and exports constitute a large part of the economy. Essentially, exchange rate changes affect the price of imported goods, services and our exports. When the value of a currency, for example the naira falls, imported goods become more expensive, and we tend to reduce the volume of our imports. At the same time, other countries will pay less for some of our products that are exported and that will tend to boost export sales and foreign exchange earnings as well as the country's export industries competitiveness in the international markets. On the other hand, a higher exchange rate makes it harder to sell overseas as other countries exports become cheaper than that of Nigeria. This will lead to a fall in exports which will eventually reduce real national output and cut back employment level. In this regard we can say the Nigerian economy is less competitive.

However, exchange rate can be measured in terms of;

- i. The nominal exchange rate and
- ii. The real exchange rate

The amount of domestic currency units needed to exchange for one foreign currency unit is known as the nominal exchange rate. The domestic price expressed in foreign currency is therefore the nominal exchange rate.

Volatility in Exchange rate

According to Abba (2009), volatility in exchange rates addresses the risk posed by sudden changes in the currency rate. It is especially the risk connected to an economy's currency depreciation or appreciation. The word "volatility" has a very specific connotation in literature. According to Oloba (2012), volatility refers to the exchange rate's day-to-day and month-to-month unpredictability, which may or may not have a trend. In other words, volatility refers to changes in the exchange rate that occur often and over a short period of time. There are other aspects of variability besides this one. Misalignment is a term used to describe another aspect of exchange rate unpredictability. Misalignment is defined as persistent deviations from the

long-term equilibrium of the currency rate. The ability of an exchange rate to deviate from its fundamentals over an extended period of time is known as misalignment. Because there is evidence that the shift in the exchange rate indicated in the volatility measures is unexpected, understanding the distinction between volatility and misalignment is crucial. Trading companies must therefore manage the unpredictability around currency rates. This implies that this kind of fluctuation has an impact on international trade. Misalignments, in contrast to exchange rate volatility, are typically predicted, and can negatively impact economic performance in a variety of ways. They could result in inflation, protectionism, deindustrialization, recession, and adjustment costs.

Gross Domestic Product (GDP)/ Manufacturing Output

According to Kamran *et al.*, (2014), the gross domestic product (GDP) is defined as the total market value of all finished goods and services produced in a nation during a given year. They also assert that GDP is measured as follows: the total market rate of all finished goods and services produced in a nation in a given year, which is equal to all government spending, investment, and purchasing costs plus the value of exports minus the value of imports. Gross Domestic Product (GDP) is defined by Aslanov *et al.*, (2010) as the total of all finished goods and services produced in a nation at any one moment.

According to McConnel and Brue (2008), the actual growth of the GDP is the rise in national wealth and social welfare. According to Ezenwa (2016), economic indicators that can be used to assess the success of the Nigerian economy include the Gross Domestic Product (GDP), the level of employment, national income, total market capitalization, all share price index, interest rate, and inflation rate. GDP refers to the total amount of goods and services produced in a nation during a specific period of time and are expressed in Naira (Ezenwa, 2016). Every sector of the economy contributes to the national output or Gross Domestic Product. In Nigeria, there are three main sectors of the economy that account or contribute to the nation's total output or GDP. These sectors are:

2.1.4 Relationship between bank credit, macroeconomic variables and manufacturing output

This section discusses the various ways macroeconomic factors influence manufacturing output.

Interest rate and manufacturing output

The relationship between interest rate and manufacturing output could be viewed through source of credit to the manufacturing sector of the economy. High interest rate makes the cost of borrowing funds expensive thereby impacting negatively on manufacturing output. This is because manufacturers and other respective businessmen most times borrow from banks and other lending institutions to fund their business. On the

contrary, low interest rate means funds would be cheaper to borrow and thus lead to increase in negatively output. The higher the cost of borrowing as measured by the maximum lending, the lower the output of the manufacturing sector as prospective manufacturers would be discouraged from borrowing. Similarly, the higher the amount of loanable funds available to prospective manufacturers, the greater is the output of the manufacturing sector.

There is a theoretical and empirical linkage between credit and manufacturing output. According to the law of return to scale, the theory explains the behaviour of the rate of increase in output (production) relative to the associated increase in the inputs (the factors of production) in the long-run when all factors of production are variable and subject to change due to a given increase in size (scale). There are three possible types of return to scale: increasing return to scale, constant return to scale, and diminishing (or decreasing) return to scale. There is increasing return to scale if output increases by more than the proportional change in all inputs. There is constant return to scale, when output increases by the same proportional change as all input changes. Manufacturing output is efficient if it is able to increase output with the same level of credit. However, if the interest rate, which is the cost of loan, is greater than the expected return on investment, then it will not be economically plausible to undertake such investment. Thus, with low interest rate on loanable funds manufacturers are more likely to be productive.

Exchange rate and manufacturing output

The decisions to produce (what, how much, for which market) and to consume (domestic products, imports), as well as decisions to save and invest, are influenced by real exchange rate, that is, nominal exchange rates adjusted for relative rates of inflation. Hence with a rapidly increasing global economy and continuous change in international trade laws and reforms, the exchange rate plays important role in valuing manufacturing output which is a crucial part of economic growth. The relationship between exchange rate and manufacturing output is one of the most discussed topics both theoretically and empirically, and has created enormous interest among economists and policymakers. According to Mueller and Mueller (2016), the immediate impact of exchange rate devaluation is to lower the prices of goods and services produced locally by promoting exports. It is believed that devaluation is a policy directed towards creating a fair balance of trade and improving the performance of the export sector of an economy. The impact of the devaluation of currency on the economic behaviour of nations has remained a subject of hot debate that is inconclusive. Some scholars have documented the existence of positive impact of devaluation on economic growth (Lawal *et al.*, 2017; Mueller & Mueller, 2016; Tang & Zhang, 2012).

There are various studies that have investigated the influence of exchange rate fluctuations on manufacturing exports. Walsh and Yu (2010) noted that in a situation of low exchange rate, the importation of production machinery is highly encouraged, while in a period of high exchange rate, exportation is encouraged. Gatawa and Mahmud (2017) commented that exchange rate fluctuations deter firms from undertaking investment, innovation and trade, it may also discourage firms from entering into export markets, thereby weakening investors' confidence in the sector, and also raises the price of imported inputs such as raw materials and capital equipment invariably reducing the manufacturing commodities and income of manufacturers, and exchange rate risk which leads to capital reversal considered unfavorable for the economy at trying times.

Theoretical Framework

This study is anchored on Loanable funds theory. Loanable funds theory advocate that the demand curve for investment funds slopes downward presenting that less funds are borrowed at a higher rates and more at a lower rates of interest. The theory stated that banks cannot always set high interest rates, e.g. trying to earn maximum interest income (Stiglitz & Weiss, 1981). If interest rates by banks are fixed too high, it may result to adverse selection challenges because high-risk borrowers are willing to accept these high rates. Once these borrowers receive the loans, they may develop moral hazard attitude or so called borrower moral hazard since they are likely to take on highly risky projects or investments (Chodechai, 2004). The signaling theory suggest that borrowing firms should provide more collateral so that they can signal to the banks that they are less risky type borrowers and then they are charged lower interest rates. Borrowers who give less collateral for their financing indicate higher levels of risk. Firms giving higher collateral, therefore, will be charged low interest rates while those that offer low collaterals will be charged higher interest rates (Chodechai, 2004).

Empirical Review

Nwabuisi, Oke-Bello, Oyewole, Toriola, Folami, & Afolabi, (2020) investigates the effect of bank credit on the performance of manufacturing sector in Nigeria. The study adopted ex post facto research design and formulated an econometric model where manufacturing output is the dependent variable while bank credit, interest rate and exchange rate are the explanatory variables. Annual time series data from 1981 to 2017 were sourced from the Central Bank of Nigeria Statistical Bulletin and was analyzed using the dynamic ordinary least square (DOLS) technique. The study found that bank credit and interest rate showed a significant positive effect on manufacturing sector performance while exchange rate showed a significant negative effect on manufacturing sector performance in Nigeria.

Ogunmuyiwa, Okuneye and Amaefule (2017) examined the impact of bank credit on growth of the manufacturing sector in Nigeria. Time series data from the return to democratic rule in 1999 to 2014 were fitted into the regression model using econometric techniques particularly the Augmented Dickey-Fuller (ADF) test and the Autoregressive Distributed Lag (ARDL) model. Empirical findings show that bank credit to the private sector has a positive impact on the manufacturing sector. Similarly, a significant impact was found between bank credit and manufacturing sector's growth.

Olowofeso, Adeleke and Udoji (2015) studied the impacts of private sector credit on economic growth in Nigeria using the Gregory and Hansen (1996) co-integration test that accounted for structural breaks and endogeneity problems. The method was applied to quarterly data spanning 2000: Q1 to 2014: Q4, while the Fully Modified Ordinary Least Square procedure was employed to estimate the model coefficients. The paper found a co-integrating relationship between output and its selected determinants, albeit, with a structural break in 2012Q1. Amongst others, findings from the error correction model confirmed a positive and statistically significant effect of private sector credit on output, while increased prime lending rate inhibits growth.

In a related study of bank credits to the private sector and economic growth, Yakubu and Affoi (2014) examined the impact of Commercial Banks' Credit to the private sector and economic growth in Nigeria, from 1992 to 2012. The study used an Ordinary Least Square (OLS) technique for estimation and the researchers found out that Commercial Banks' Credit has a significant effect on economic growth in Nigeria.

Modebe, Nwanneka and Ugwuegbe (2014) investigated the impact of bank credit on the growth of Nigerian economy for the period, 1986-2012. The study employed Ordinary Least Square (OLS) method of estimation and Augmented Dick-Fuller to determine the order of integration. The result of Johansen and Juselius Co-integration test showed that there is at most one co-integrating equation in the model, implying that there is a long run relationship between the variables in the model. The result of the Ordinary Least Square (OLS) regression further showed that there is a negative and significant relationship between gross domestic product (GDP) and total bank credit to private sector (TBCPS) in the long run. Broad money supply (M2) which was used as control variable has a positive and significant impact on gross domestic product (GDP) in the long run. The short run dynamics of the variables indicates that total Banks' Credit to the private sector (TBCPS) also has a negative and insignificant impact on Gross Domestic Product (GDP) in the short-run. The result of the Granger causality test reviles that causation runs from Gross Domestic Product (GDP) to total Banks' Credit to the private sector (TBCPS) and not the other way round, a case of unidirectional causality. The result also showed

bi-directional causality between total Banks' Credit to the private sector (TBCPS) and broad money (M2).

In a study to examine the impact of Banks' Credit on the real sector in Nigeria with regards to output growth in the manufacturing and agricultural sub sectors of the economy over the period 1980-2010 by Oni, Akinlo and Elumilade (2014), using the error correction modeling techniques, the results showed that Banks' Credit has significant impact on manufacturing output growth both in the short run and long run but not in the agricultural sub sector. Inflation and exchange rate depreciation have negative effects on manufacturing output growth in both short run and long run.

In evaluating the empirical relationship between Nigeria's economic growth and private sector Bank' Credit over the period 1974-2010, (37 years), Aliero, Abdullah and Adamu (2013) employed the Auto Regressive Distributed Lag Bound (ARDL) technique in the study. The results of the analysis indicated that there is the prevalence of a significant long run relationship between private sector bank credits and Nigeria's economic growth. However, the pair- wise Granger Causality results indicated that none of the study variables Granger causes the other.

Aliyu and Yusuf (2013) carried out a study on the impact of credit to private sector (CPS) on the real sector of Nigeria with a view to assessing the contributions of credit to private sector (CPS) to real sector growth. The study used aggregate time series data from 1986 to 2011. Data analysis was carried out using multiple regression models. Based on the result of coefficient of determination (R-square), the study revealed a 96.1% variation between credit to private sector (CPS) and real sector growth in Nigeria. The study concludes that there is a statistically significant impact of credit to the private sector on the real sector of Nigeria.

Using an aggregate production framework and autoregressive distributed lag (ARDL) cointegration technique on a time series data covering the period 1970 - 2009 to investigate financial sector development and industrial Production (output) in Nigeria, Udoh and Ogbuagu (2012) finds a co-integration relationship between financial sector development and industrial production. Both the long run and short run dynamic coefficients of financial sector development variables have a negative and statistically significant impact on industrial production.

An evaluation of the relationship between bank lending and the growth of the manufacturing sector in Nigeria was undertaken by Obamuyi, Edun and Kayode (2012) for the period covering 1973 – 2009. The study employed co-integration and Error Correction techniques. The results indicated that lending rates are significantly related to manufacturing output in Nigeria.

Research Design

A research design is a blueprint that guides the researcher in his or her investigation and analyses (Onwumere, 2005). The study adopts the ex-post facto research design for the research. The data for the study is annual time series in nature, and covers the period, 2000 to 2020. Data were sourced from the following:

- Central Bank of Nigeria Statistical Bulletin for various years.
- National Bureau of Statistics (NBS) annual reports for various years.

Model Specification

For purposes of the study, industrial output is the dependent variable and commercial banks' credit to the private sector is the independent variable. Outside bank credit, other independent variables (interest rate, inflation rate and exchange rate) which also affect credit to the private sector and manufacturing output are included in the model specification.

The model for the study is formulated in its mathematical functionality as follows:

$$MGDP=f(BCPS, INTR, EXRT) \text{ ----- Eq 1}$$

Econometrically, the mathematical representation of our model in Eq1 is represented thus;

$$MGDP_t = \beta_0 + \beta_1 BCPS_t + \beta_2 INTR_t + \beta_3 EXRT_t + \varepsilon_t \text{ ----- Eq 2}$$

Where;

- MGDP = Manufacturing Output (proxied by Manufacturing GDP)
- BCPS = Bank Credit to the Private Sector
- EXRT = Exchange Rate
- INTR = Interest Rate
- $\beta_0, \beta_1, \beta_2, \beta_3$ = Parameters to be estimated.
- ε = stochastic or error term
- t = Time series
- β_0 = Constant
- $\beta_1 - \beta_3$ = Coefficients of the Explanatory variables

METHOD OF DATA ANALYSIS

For our study, Autoregressive Distributed Lag (ARDL) method of Least Square Regressions form will be used to analyse the annual time series data set. The choice for the selection of Autoregressive Distributed Lag (ARDL) method of estimation is because it contains lags of the dependent and explanatory variables as regressors. ARDL however, is not very new in the literature of econometrics, but presently it has gained attention from scholars as a method of regression estimation and analysis of variables, (Pesaran and Shin, 1999; Pesaran, Shin and Smith, 2001).

Data Analysis

Our data was analysed and estimated by using the Autoregressive Distributed Lag (ARDL) form of Ordinary Least Square regression.

Data Series Estimation and Analysis

The analysis and estimation of the data were carried out through a unit root tests (stationarity); lag selection; co-integration tests (establishing long-run relationship), ARDL Bound test and ARDL regression estimates.

Unit Root Test

A summary of Augmented Dickey Fuller (ADF) unit root tests for our study is shown in Table 4.1 below. The result shows that the ADF t-test statistic at 1%, 5% and 10% levels of significance provides strong

evidence of non-stationarity for all the variables at levels [I(0)]; hence, for the variables with the presence of unit root, the null hypothesis is accepted and the study concludes that there is a presence of unit root at levels. However, stationarity was achieved at first difference with all the variables having I(1) order. With all the variables stationary at I(1), the variables in our model are of uniform order of integration. The study hence, employed ARDL Model for regression estimation that accommodates order of integration for estimations at either I(0) or I(1) or mixed.

Table 4.1: Summary result of unit root test

Augmented Dickey-Fuller with constant			
Variables	I(0) Level	I(1) FD	Order of Integration
MGDP	-1.073138	-4.398204***	I(1)
CPS	1.987781	-4.552473***	I(1)
INTR	-3.044369	-6.399882***	I(1)
EXRT	-0.036611	-4.546379***	I(1)
Test critical values: 1% level	-4.205004	-4.219126	
5% level	-3.526609	-3.533083	
10% level	-3.194611	-3.198312	

Note: ***, ** and * denote significance at 1%, 5% and 10% levels, respectively.

Source: Researcher's compilation from E-view 12.0

Autoregressive Distributed Bound Test

ARDL Bound-test to ascertain the existence of long-run relationship in the model was the next step undertaken in estimation process. The rule that guides the Bound-test is that there is long-run relationship if the F-statistic is greater than the lower and upper bounds at 5%. If the F-statistic is lower than the lower bound at 5%, then, there is no co-integration, and if the F-statistic is between the upper and lower bounds at 5% then, the test is inconclusive.

The null hypothesis is that there is no long-run relationship between the variables, that is, credit to the private sector (CPS), interest rate; and exchange rate

(independent variables) and Manufacturing Output (dependent variable) in Nigeria.

It can be observed from table 4.2 below, that F-statistic value (5.541732) is greater than lower (2.79) bound level and upper bound level (3.67) at 5% level of significance. The result shows that the independent variables of study i.e. credit to the private sector (CPS); interest rate (intr); and exchange rate (exrt) influence the growth of manufacturing output in Nigeria during the study period. Hence, the study, establishes that there is long-run relationship between the dependent and independent variables. Presented below in Table 4.2 is the co-integration result for checking for possible existence of the long-run relationship.

Table 4.2: Bound Test

Null Hypothesis: No long-run relationships exist		
Test Statistic	Value	K
F-statistic	5.541732	3
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.37	3.2
5%	2.79	3.67
2.5%	3.15	4.08
1%	3.65	4.66

Source: Computed from E-views version 12.0

Co-integration test

The next step carried out was to establish cointegration relationship of the variables in the study. Table 4.3 presents the cointegration result used to check for possible cointegration of the variables as well as the

speed of adjustment from short-run to long-run equilibrium of the co-integrating variables during the study period (1981-2021). Extant studies suggest that credit to the real sector such as manufacturing enhance manufacturing and industrial output which further

promotes economic growth. The negative coefficient sign (-0.548451) observed in the error correction regression or cointegration equation i.e. $CointEq(-1)$ is signed correctly and significant at 5% level. From the cointegration test, it can be observed that there is an

indication of the existence of long-run co-integrating relationship and also demonstrated a short-run adjustment mechanism of 54.85% back to long-run equilibrium.

Table 4.3: Cointegration Test

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(MGDP(-1))	0.336503	0.112166	3.000030	0.0053
D(CPS)	-0.048916	0.042674	-1.146267	0.2605
CointEq(-1)	-0.548451	0.098057	-5.593207	0.0000

Source: Researcher's computation from E-view 12.0 version

Hypotheses Testing

Here, the three hypotheses of the study to be estimated from ARDL regression analysis upon which the study is anchored are tested.

Restatement of Hypotheses

- i. H_{01} : There is no significant effect of credit to the private sector on manufacturing output in Nigeria.
- ii. H_{02} : Interest rate does not have significant impact on manufacturing output in Nigeria.
- iii. H_{03} : There is no significant impact of exchange rate on manufacturing output in Nigeria.

Table 4.4: Summary of the ARDL Regression Estimation Results for testing the hypotheses on the effect of credit to the private sector on manufacturing output in Nigerian, (Dependent variable, GDP)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
MGDP(-1)	0.788052	0.169675	4.644480	0.0001***
MGDP(-2)	-0.336503	0.128563	-2.617412	0.0136***
CPS	-0.048916	0.072320	-0.676380	0.5038
CPS(-1)	0.169758	0.082563	2.056096	0.0483**
INTR	7.845171	13.12479	0.597737	0.5544
EXRT	-3.700342	1.505315	-2.458184	0.0198***
C	1845.516	422.0938	4.372289	0.0001
R-squared	0.939120			
Adj R-squared	0.927337			
F-statistic	79.69993			
Prob(F-statistic)	0.000000			
Durbin-Watson	1.945046			

Source: Researcher's computation from E-views 12.0

NB: ***, **, * = Significant @ 1%; 5% and 10% respectively.

The result of the ARDL presented in table 4.4 shows the impact of macroeconomic variables on industrial output in Nigeria during the study period, 1981 - 2021. The result revealed that credit to the private sector (CPS), interest rate; and exchange rate (independent variables) on aggregate accounted for 93.9% of the total variations on manufacturing output (dependent variable) in Nigeria during the study period while 6.1% was due to stochastic error. The result also showed that the F-statistic is 79.69993 with a probability value (0.0000). The result is statistically significant at both 1% and 5% levels. The interpretation of F-statistic result is that the model is a good fit for estimation purposes.

The positive coefficient of the constant term (C) suggests that holding the independent variables constant, manufacturing output (MGDP) will be increasing by 1845.52 units.

Test of Hypotheses

The decision rule is as follows:

- Accept null hypothesis (H_0), if p-value of the t-statistics is greater than 0.05
- Reject null hypothesis (H_0), if p-value of the t-statistics is less than 0.05

Testing of Hypothesis 1

H_{01} : There is no significant impact of credit to the private sector on manufacturing output in Nigeria.

The current p-value (0.5038) of CPS has an insignificant impact on manufacturing output, however, based on the p-value (0.0483) of CPS(-1) i.e. lag of credit to the private sector, the study concludes that has significant impact on manufacturing output in Nigeria. Therefore, the null hypothesis (H_{01}) is rejected and the alternative accepted.

Testing of Hypothesis 2

H0₂: There is no significant impact of interest rate (INTR) on manufacturing output in Nigeria.

From the result of the p-value (0.5544) on interest rate (INTR), the study submits that interest rate (INTR) with a positive coefficient value has no significant impact on manufacturing output in Nigeria. Hence, the null hypothesis (H₀₂) is accepted and the alternative rejected.

Testing of Hypothesis 3

H0₃: Exchange rate has no significant impact on manufacturing output in Nigeria.

On the basis of the result from the p-value (0.0198) on exchange rate (EXRT), we conclude that exchange rate (EXRT) has a significant impact on manufacturing gross domestic product in Nigeria at 5% level of significance. Hence, the null hypothesis (H₀₃) is rejected and the alternative accepted which means that exchange rate (EXRT) positively impacted on manufacturing output during the study period.

DISCUSSION OF RESULT

The study examined the impact of credit to the private sector (CPS) on manufacturing output in Nigeria from 1981-2021. The study employed the ARDL model to test the hypotheses. The first hypothesis revealed that a one-period lag of credit to the private sector (CPS(-1)) has positive coefficient value thereby confirming the apriori expectation and also had a significant impact on agricultural output in Nigeria during the study period.

Secondly, interest rate has no significant impact on manufacturing output as revealed from the result. The variable also has a positive coefficient value thereby negating the apriori expectation.

The result of the third hypothesis revealed that exchange rate has a positive and significant effect on manufacturing output in Nigeria. The result seems to be misleading because over the study period, the naira exchange rate to the dollar and other currencies of the world has been on a rise especially in past eight years. The result will stand if the government tries to diversify its revenue base rather than relying on crude oil revenue only. Diversification of Nigeria's revenue base will attract income from abroad, swell the country's foreign reserves and lead to an injection of foreign currencies to the Nigerian market thereby lowering exchange rate.

The results of R² in the model shows that the independent variables in the model explain reasonably the deviations in the dependent variables and F-statistic value affirms goodness of fit of our model. The result showed that 94% of the variation in manufacturing output was explained by the independent variables. Similarly, Durbin-Watson statistic values in the model

are around the value of 2.00, depicting absence of autocorrelation.

The Error Correction equation (ECM) or co-integration equation that shows the speed of short-run adjustment back to long-run equilibrium for our model exhibited both negative and significant values expected of them. The result shows 54.8% adjustment mechanism back to long run equilibrium.

CONCLUSION

On the basis of the result of our findings, the study therefore concludes as follows;

- i. Credit to the private sector (CPS) in our study has performed moderately on its impact on manufacturing output especially on one-lag period. Similarly, exchange rates impacted significantly while interest variable produced a negative impact on manufacturing output in our model.
- ii. Also, it is instructive to observe that two out of the three key explanatory variables fulfilled the apriori expectation test.

RECOMMENDATIONS

Based on the research findings and discussions so far, the researcher makes the following recommendations:

Firstly, the study revealed that credit to the private sector at one-lag period has a significant impact on manufacturing output. On that note the study encourages banks and other financial institutions to increase the tempo of giving credits to this critical sector that contributes to the national output because manufacturing remains a significant sector of the economy. Central bank of Nigeria as an apex bank should apart from using both direct and indirect controls should strengthen the use of moral suasion to encourage banks not to relent in granting the sector as the government endeavours to diversify the revenue sources of the economy.

It is also the recommendation of the study that Central Bank of Nigeria (CBN) should address interest rate on bank credits to the manufacturing sector through a reduction of cost of funds by banks to a single digit so that manufacturers can easily access credit facilities from banks and other financial institutions in order to boost manufacturing production or output. High interest rate is a disincentive to manufacturing output and economic growth generally. The reason for a single digit interest preference to the sector is because of the significant contributions of the sector in the Nigerian economy in terms of job creation, foreign reserves earnings, gross domestic product growth and food supply to over a population of 200 million.

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