

IMPACT OF DEPOSIT MONEY BANK CREDITS ON PERFORMANCE OF SMALL AND MEDIUM SCALE INDUSTRIES IN NIGERIA (1980-2014)

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Abstract

The study evaluated the impact of Deposit Money Bank Credits (DMBC) on the performance of Small and Medium Scale Industries (SMEI) in Nigeria using annual data from 1980 to 2014. The objective of the study is to examine the impact of deposit money bank credit on the performance of small and medium scale industries in Nigeria. Second, To determine the impact of interest rate on the output of small and medium scale industries in Nigeria. Autoregressive Distributive Lag (ARDL) model was employed given the nature of chosen variables to analyze the impact of deposit money bank credit on the performance of SMIs in Nigeria both in the long-run and the short-run. The result revealed that DMBC impacts positively on the performance of SMIs in Nigeria both in the long-run and short-run though has more explanatory power in the long-run. Interest rate has no statistically significant impact on SMIs growth in the short-run but exert a rather weak influence on the SMIs growth in the long-run. The speed at which the SMEs growth adjust to its long-run equilibrium is quite weak as the result shows the speed of convergence to be 0.0120570, which implies that about 1.21% disequilibrium is being corrected in the next period. Savings is also has a statistically significant impact on the SMIs growth in both the short-run and long-run. From the result and investigation it is obvious that financing is critical to the growth of SMIs and hence the study recommends that credit should be provided to SMIs through the use of monetary policy tools of the central bank of Nigeria (CBN). Also, there is the need to monitor loans that are advanced to these enterprises to ensure that such loans are used for what they are meant for. Loans at a reduced interest rate can also spur the growth of SMIs since that will reduce the cost incurred accessing funds for investment.



Introduction

1.1 Background of the study

The necessity of Small and Medium-scale industries to development of an economy has been of very much concern to several scholars. On this very note, Ojo (2009) reacted to the challenges of development in developing economies and stressed the need to encourage entrepreneurial schemes. Since the introduction of economic reformation programmes in 1981, the idea of shifting from capital intensive and large scale industrial projects to small and medium scale enterprises which seems to have better prospects for developing domestic economy by generating the required goods and services that geared towards economic development in Nigeria has been encouraged (Oni and Daniya, 2012). The need for the support for small and medium scale industries is deemed necessary in order to deal with the menace of unemployment which presently stands at 13.3% in second quarter of 2016 from 10.4% in the fourth quarter of 2015 (National Bureau Statistics, 2016). With these in mind the financial institution as a media for promoting the idea of Small and medium scale industries seem to be very important.

Deposit money banks are generally referred to as financial institutions that render financial services like giving loans to investors, mortgage services, accepting deposits, Saving account and certificates of activities deposit. In the view of the mainstream school of thought, they act as financial intermediaries to channel savers' money to firms and individuals who seek funding for their project. Consequently, the bankers committee was formed in Nigeria in 2001 to intervened in ensuring a strong Small and Medium Industries Equity Investment Scheme (SMIEIS). The committee was formed as a result of lapses on the government credit scheme. The bankers committee, as observed by Essyniyi (2003), is a body constituted

by representatives of banks in Nigeria. The scheme was approved at their 246th meeting on December 21, 1999. According to this committee, it was a response to President Obasanjo's concern on the policy measures for the promotion of small and medium industries (SMI) as a vehicle for rapid industrialisation, sustainable economic development, poverty alleviation and employment generation. The scheme requires all banks in Nigeria to set aside 10% of their profit before tax (PBT) for equity investment in small and medium scale industries which started on June 19th 2001.

In addition, another group that was interested in the growth and development of Small and Medium scale Industries was the Nigeria Bank for commerce and industry (NBCI). According to Oni and Daniya (2012), the Nigeria Bank for commerce and Industry was established jointly by the federal government of Nigeria and the Central Bank of Nigeria (CBN) in 1978 as the apex institution for financing Small and Medium Scale Enterprises. The rationale for establishing the bank was to bring financial discipline to bear and to hopefully ensure a more efficient utilization of scarce financial resources for the development of viable Small and Medium Scale Enterprises. Bank was also vested with the power to administer the federal ministry of commerce and industry's special funds for small and medium scale enterprises under a soft loan agreement.

According to The World Bank (2015), Small and Medium Enterprises (SMEs) play major roles in most economies, particularly in developing countries. SMEs contribute up to 45 percent of total employment and up to 33 percent of national income (GDP) in emerging economies (World Bank, 2015). These numbers are significantly higher when informal SMEs are included. According to estimates, 600 million jobs will be needed in the next 15 years to absorb the growing global workforce, mainly in Asia and Sub-Saharan



Africa. In emerging markets, most formal jobs are with SMEs, which also create 4 out of 5 new positions. However, access to finance is a key constraint to SME growth; without it, many SMEs languish and stagnate. Therefore the role of deposit money bank is very crucial in promoting the Small and Medium scale industries for the development and growth of the economy.

The strength of a developing economy is to have adequate deposit money bank. This is to say that for a small and medium scale industries to function appropriately, there should be an efficient or strong deposit money banks. The deposit money bank acts as an engine that drive development and growth to small and medium scale industries or to any individual who wants to start up a meaningful business.

Apparently, reasons for small and medium scale industries became quite interesting because it creates employment, self-actualization, import substitution, effect and efficient utilization of local raw materials and contribute to economic growth in the country.

1.2 Statement of the Problem.

Despite the important roles Small and Medium Scale Industries set to play in the growth and development of Nigeria economy, they still face a lot of challenges. These challenges include: scarcity of fund, unfavourable government policies, insecurity, and host of others.

Scarcities of fund mostly are as a result of banks' unwillingness to lend to the SMEs because most times banks found them less attractive to minimize the risk of losing their loans. Many at times they source fund by themselves or assistance from friend and relatives which hinders the growth and development of the economy by reducing the capacity and level of the small and medium scale industries performance. According to World Bank Financial Sector September 1 (2015), SMEs are less likely to be able to secure bank loans than large firms; instead, they rely on internal or

“personal” funds to launch and initially run their enterprises. Fifty per cent of formal SMEs don't have access to formal credit. The financing gap is even larger when micro and informal enterprises are taken into account. Overall, approximately 70 per cent of all MSMEs in emerging markets lack access to credit. While the gap varies considerably between regions, it's particularly wide in Africa and Asia. The current credit gap for formal SMEs is estimated to be US\$1.2 trillion; the total credit gap for both formal and informal SMEs is as high as US\$2.6 trillion.

The issue of government policy is very uncomfortable by small and medium scale industries such as increase in interest rate and lot of charges and duties. That of Enugu East Local Government Authority is a typical example. Several groups of agencies and task forces have made starting a small and medium scale industries difficult.. For instance any business existing within this local government area must pay a number of fees and levies, like business premises permit, ESWAMA, container permit, local government permit, outrageous electric bill and so many others. All these discourage and reduce the growth of small and medium scale industries and increase the rate of unemployment in the country. A suggestion is that , the government should by its power knowing full well the role of SMIs in the economy in job creation give tax incentive to the new beginners for some years before they begin to pay taxes. It is against this problem that this research is being carried out.

1.3 Objectives of the study: The broad objective of this study is to evaluate the impact of deposit money bank credit on the performance of small and medium scale industries in Nigeria. The specific objectives of the study are:

1. Examine the impact of the deposit money bank credit on the performance of small and medium scale industries in Nigeria.

2. Determine the impact of interest rate on the output of small and medium scale industries in Nigeria.

1.4 Statement of the Hypotheses

For the purpose of this research the following hypothesis in their null forms were formed

1. Deposit money bank credit does not have significance impact on the performance of small and medium scale industries in Nigeria.

2. Interest rate does not have significance impact on the output of small and medium scale industries in Nigeria.

1.6 Scope and Limitations of the Study

The research is centred on impact of deposit money bank credit on the performance of small and medium scale industries in Nigeria. The analysis covers a period of 1980-2014. The limitation of the study was on the finding the expected data in line with the scope of the study. The data for the deposit money bank credit to small and medium scale industries are only available from the year 1992 in statistical bulletin. This implies that we have small sample of 22 years

instead of 34 years. With this the study intends to interpolate the data into quarterly to produce robust estimates of the parameters.

2.0 Review of Related Literature

2.1 Conceptual Framework:

2.1.1 Small & Medium Scale Enterprises

The quantitative approach as they observed from European Union 2005 definition and World Bank definition of Small and Medium Enterprise. European Commission through a guide determines the criteria for defining enterprises as the number of employees, annual turnover and annual balance sheet (European Commission: 2005). It is determined that meeting the criteria of the number of employees is mandatory, while filling another from the two financial criteria is a choice of the enterprise. The definition of SMEs that came into effect from 1 January 2005 is shown in the following table as lifted from the work of Berisha and Pula 2015 including the tables below.

Definition of Small and Medium Enterprises with European Union standards.

Enterprise category	Headcount: Annual Work Unit (AWU)	Annual turnover	or	Annual balance sheet total
Medium-sized	< 250	≤ €50 million	or	≤ €50 million
Small	< 50	≤ €10 million	or	≤ €10 million
Micro	< 10	≤ €2 million	or	≤ €2 million

Source: European Commission (2005)

Another quantitative approach is by World Bank definition. The World Bank uses three quantitative criteria for defining SMEs: number of employees,

total assets in U.S. dollars and annual sales in U.S. dollars (IEG: 2008). A business must meet the quantitative criteria of number of employees and

at least one financial criteria to be categorized as micro, small or medium business. Using the tables below.

Definition of Small and Medium Enterprises by World Bank standards.

Enterprise indicators (2/3)	Number of employees	Total assets	or	Total annual sales
Medium	> 50; ≤ 300	>\$3,000,000; ≤\$15,000,000	or	>\$3,000,000; ≤\$15,000,000
Small	> 10; ≤ 50	>\$100,000; ≤ \$3,000,000	or	>\$100,000; ≤ \$3,000,000
Micro	< 10	≤ \$100,000	or	≤ \$100,000

Source: Independent Evaluation Group (2008)

From the above table the medium number of employment is 300 workers. Different criteria are used in the financial criteria which is inconsistent. EU uses the criteria of annual turnover and total balance sheet while WB uses criteria of total assets and total annual sales which makes the financial criteria of the two institutions not comparability. World Bank criteria seize more minimalist thresholds than the European Union. While for the EU has a micro business has a turnover of up to two million Euros, for WB it must not exceed annual sales of up to one hundred thousand dollars. EU sets maximum threshold of fifty million Euros to distinguish medium businesses from large ones, while WB sets it to only fifteen million dollars for the two financial criteria. Among all SMEs definitions, the one most implemented in SME studies is that of the European Union. However, it remains far from being appropriated by the state governments and policymakers (Berisha and Pula 2015). As sited by

Berisha and Pula in (Ayyagari, et al. 2003), The largest number of sources defines SMEs to have a cut-off range of 0-250 employees.

Definition of SME by qualitative indicators.

SME is defined based on its recognition by majority number of people than the large business. It has principal unity of leadership and capital which means that the company's manager is the same person as the proprietor. The idea of Unification of property and management is mainly to address the issue of responsibility and accountability which is imbued in the criteria of the European Commission (2003), who add to quantitative criteria another criteria expressed the maximum with the ownership percentage of less than 25% from other enterprises and/or outsiders to determine business autonomy (Berisha and Pula 2015). Bolton Report, the primary reference for qualitative definition of SMEs for all subsequent literature in the field, defines three essential characteristics of small firms:



management of firm by its owner(s) in a personalized manner; relatively small share of the market in economic terms; independence in the sense that it does not form part of a larger enterprise is relatively free from outside control in its principal decisions (Bolton: 1971 as quoted in Stokes and Wilson: 2010) and observed by (Berisha and Pula 2015).

Another argument arose from another Author that employment is not a paramount to determine the growth of SME in the developing countries. According to (Gibson and Van der vaart 2008), defining SMEs by number of employees suggests, incorrectly, that the larger an enterprise is, the more employees it will have, and that to grow it must take on more employees. This latter notion would certainly not be welcome among Wall Street analysts of public companies and should be no more welcome among proponents of SME development. Cross-country studies and multi-country policies that use numbers of employees to define SMEs run the risk of classifying businesses by their inefficiency or their lack of value addition. In many developing countries, labour regulations and social security laws impose what amount to penalties for hiring full-time employees. Employee-related taxes are often so high as to constitute an undisguised form of income tax. This encourages the common practice of hiring nominally part-time labour, “consultants,” or “students” who do the work of otherwise full-time employees but on whom their employers are required to pay neither employee taxes nor social security taxes.

These workers often outnumber full-time workers and are generally not reflected in the government statistics on which economists and policymakers often base their work. Therefore, they suggest that the definition of turnover to be more correct in defining SMEs growth in the developing countries. He said, if you ask any entrepreneur (assuming

you are not a tax inspector) how big his or her business is, the response is *not* likely to be, “I’m up to 100 employees now,” or “My net asset value is up to half a million.” Rather, you are more likely hear, “We had 2 million in sales last year.” If you are trying to sell a developing country business that has recently graduated from SME to large, you will surely not promote it on the basis of how many people it employs. Rather, as investment professionals who have actually sold such businesses will tell you, you will pitch it first on the basis of its growth in sales and market share, and only later, in more detailed negotiations, will the focus turn to EBITDA multiples and net asset values. In the world of developing country SMEs, where employment figures and profits are often seriously blurred by tax considerations, one might say that sales are the measure of all things. A definition based on turnover would seem to be both realistically measurable and meaningful (Gibson and Van der Vaart 2008).

Again according to the same author (Gibson and Van der Vaart 2008), determining eligibility by referring to the level of turnover should not pose a serious obstacle to SME policy. Asking for, and receiving, revenue figures from an SME applicant, whether it be for a loan under an SME credit line or a business development service under a technical assistance program, should be de rigueur.¹⁰ Banks, of course, require and scrutinize financial statements before making a business loan and, only the most superficial of business services and technical assistance would not require an understanding of a business’s sales in order to be effective. Turnover information may not always be accurate, but the magnitude of turnover is generally either available or relatively easy to extrapolate.

Finally it was defined by federal ministry of industry at its annual conference (1997) , that small industry is any industry with its capital



investment above N1million with maximum of 10 workers, micro industry, for those with below N1million capital investment and below 10 employees and medium for those that employs between 35-60 workers with capital investment about N15million.

2.2 Theoretical Literature: The theoretical literature of this work focus on the relevancy of deposit money bank credit on the performance of Small and Medium Scale Industry in Nigeria by reviewing the following theories and thoughts of other scholars

2.2.1: Keynesian Theory of Consumption, Savings, Investment, and Interest Rate

According to Uzonwanne (2015), the idea of this theory is that macro economy can be in disequilibrium for a considerable time if government does not intervene to help overcome the aggregate demand to reduce unemployment which results too many factors such as lapses in financial institutions like banks to increase economic growth. According to Keynes, an increase in investment results in an increase in income, while peoples' propensity to consume will lead to lack of savings. Nevertheless, in economic market when a fraction of the individuals is spending, they put back part of the income into the economy. In this way, a small increase in investment has a larger cumulative effect on income and the increased income leads to more purchase and consumption which will definitely raise the GDP.

2.2.2 Theory of financial intermediation

As opined by Samson Ogege and Abass (2013), Financial intermediation theory was first formalized in the works of McKinnon (1973) and Shaw (1973) who see financial markets as playing a pivotal role in economic development, attributing the differences in economic growth across countries to the quantity and quality of services provided by financial institutions. This contrasts with Robinson (1952), who argued that financial

markets are essentially handmaidens to domestic industry, and respond passively to other factors that produced cross-country differences in growth.

2.2.3 Theories of mobilization of savings

According to Samson Ogege and Abass A. Shiro (2013), Mobilization of savings is one of the major functions of financial institutions. By mobilizing the savings of millions of savers in an economy and the channelling of same to the deficit spending units, the funds or capital needed for economic growth and development is enhanced. Saint-Paul (1992) identified capital accumulation as a major determinant factor in the development process in relating the growth rate of an economic output to that of its capital stock. They pointed out the dual role of capital as creating productive capacity and effective demand.

In their model, capital stock (investment) was assumed to be equal to saving that is $I = S$. According to Harrod, who viewed an increase in capital stock as synonymous with investment, is a dependent factor of the rate of growth of income, which determines the level of savings.

2.3: Empirical Literature:

An empirical work have been carried out by different scholars in regard of the effect of deposit money bank credit to the growth of small and medium scale industry in Nigeria. On this note:

Ismaila and Imoughele (2014) examined the impact of commercial bank credit on the growth of small and medium scale enterprises: An Econometric Evidence from Nigeria (1986 - 2012). The study employed Co-integration and Error Correction Modelling (ECM) techniques to investigate empirically the impact of commercial bank credit on Nigeria's Small and Medium Scale enterprises (SMEs) between 1986 and 2012. The results revealed that SMEs and selected macroeconomic variables included in the model have a long run relationship with SMEs output. The study also reveals that savings time deposit and exchange rate has a significant impact on



SMEs output in Nigeria. Furthermore, commercial bank credit to SMEs, total government expenditure and bank density has direct but insignificant impact on the country SMEs output this may be connected with stringent policy in accessing credit facility and the crowd out effect of government expenditure in the economy. The study also shows that interest rate has adverse effect on SMEs output.

Obadeyi and Okhiria, (2015) evaluated impact of Deposit Money Banks (DMBs) on the survival of micro scale enterprises (outdoor catering services) in Nigeria. Primary source of data i.e. questionnaire and interview were used in the study. A simple Ordinary Least Square (OLS) method was further adopted to statistically analyze the responses of the respondents gathered through the research instrument so as achieve a reasonable conclusion for the study. The paper concluded that the growth of MSEs does not depend significantly on the support and activities of Deposit Money banks (DMBs) in Nigeria because of the stringent lending conditions and other funding requirements by most banks.

Afangideh (2009) examined the impact of financial institutions on economic growth in Nigeria using three stage least squares technique on data spanning 1970-2005. They found out that a developed financial institution alleviates growth financing constraint by increasing bank credit (BNC) and investment (INV) activities with resultant rise in output in Nigeria GDP. For this reason, they recommend that financial institutions peroxide by bank credit and investment are important determinants of economic growth in Nigeria.

Adeusi and Aluko, (2014), assessed the role of government in promoting small scale businesses in Kogi State, taking the experience from Kabba/Bunu Local Government Area. The study employs a qualitative approach and a descriptive

survey research design. Qualitative data were gathered through questionnaire structured in closed-end format. They use Government Adequate Measures (GAM), Government Initiatives (GI), Taxation (TAX), Government Policies (GP) and Infrastructure Facilities (INF) as predictor while Small Scale Business (SSB) as dependent variable. ANOVA is used to test whether government play a significant role on small scale businesses. The coefficient of determination or correlation coefficient (r) gives a high positive value of 0.892, indicating that there is positive association between government and small scale business. This implies that as government continue to play its role, small scale businesses grow. The coefficient of multiple determination (R^2) is 0.632; this implies that there is a fairly strong linear relationship between the role of government and the promotion of small scale business.

Mobolaji, (2010) contends that one of the major objectives of any government is the acceleration of economic growth and development. Each country tries to achieve this by various ways and channels. He conducted an empirical study that analyzes the impact of Small and Medium Enterprises (SME) on economic development in Nigeria for the period 1980-2008. The paper employs a time series econometric approach to assess this impact. The study finds that though SME is a catalyst for development, its impact on the development path in the country is still negligible. This dismal performance may reflect the phase and stage of our economic development, and suggests that the country is still a factor-driven economy. This performance may also be due to several reasons such as poor funding facilities, low level of education and weak government support amongst others.

Emeka, Agoke and Josephine (2015) , empirically examined the effect of Interest Rates Deregulation



on the performance of Deposit Money Banks in Nigeria between 1986 and 2014 using OLS regression method. Unit root test was employed to ascertain the stationary levels of the variables before conducting the regression analysis. Findings from the study revealed that deregulated interest rates have positive and significant impact on the ROA of deposit money banks. It showed that as interest rates increase, the ROA also appreciates. The study further revealed that deregulated interest rates have positive and significant relationship with the loans and advances of deposit money banks. It shows that the higher the rates of interests, the higher the performance of deposit money banks.

Uzonwanne (2015), evaluates deposit money bank and financing of small and medium scale enterprise in Nigeria (1995 to 2012). The study employed the descriptive method. Findings from the estimation shows that deposit money banks in Nigeria have been lacking in this aspect. As a result, recommendations were made for its stability and sustainability such that the monetary authority should initiate policies that would redirect the channel of deposit money banks' credits so as to meet the borrowing needs of at least 65% of the medium and small scale enterprises in the economy. This will help to boost economic activities within the country because lack of capital retards investment.

Kadiri (2012) noted that past efforts at providing solution to unemployment problem facing developing nations of the world are often faced with stiff opposition sometime right from beginning. Examining the contributions of small and medium scale enterprises to employment generation in Nigeria using the Binomial Logistic Regression Analysis the result revealed that the sector was unable to achieve this goal due to its inability to obtain adequate business finance for the sector. It was observed that virtually all the SMEs that were sampled relied on the informal

sources of finance to start their business. As a way out, the study suggests the need for the integration of the activities of the formal with that of the informal financial institutions. However, acknowledging the role of commercial bank credit in an economy various banking reformed has been established by the monetary authority in Nigeria in enhancing credit accessibility. The overall intentions of these reforms have been to ensure financial stability so as to influence the growth of the economy and also enhance bank to play critical role of financial intermediation in provision and accessibility of credit in the Nigerian economy.

Dada (2014) noted that the consistently repeated complaint of SMEs about their problem regarding access to finance is highly relevant constraint that endangers the development of the sector in Nigeria and investigating the effect of commercial banks' credit on SMEs development employing Ordinary Least Square (OLS) technique to estimate the multiple regression models. The findings revealed that commercial banks credit to SMEs and the saving and time deposit of commercial banks exert a positive and significant influence on SMEs development proxy by wholesale and retail trade output as a component of GDP, while exchange rate and interest rate exhibit adversative effect on SMEs development.

Methodology

The data to be used for this study would be time series data for the period of 1992-I to 2014-IV. This study employs Autoregressive Distributive Lag (ARDL) Model to analyze the impact of deposit money bank credit on the performance of the SMIs in Nigeria.

3.1 Theoretical Framework

This section basically defines the analytical framework that underpins the study. The framework of this study is based on the finance-led growth theory. Financial systems channel funds from depositors and capital markets to people and institutions with investment opportunities. By

borrowing from and lending to large groups, financial systems are able to produce relevant information and offer risk sharing to investors through the creation of diversified portfolios. The transmission mechanism from finance to growth occur through various channels, such as reducing loss of resources required to allocate capital, increase in the savings ratio and raising of capital productivity. This can be explained using the AK model as below;

The AK model assumes that there exist only one type of good which is produced using only capital as the factor input as shown in model 1 below

$$Y_t = AK_t \quad (1)$$

where Y_t = output at period t , K = capital and A efficiency of capital. The capital stock in the period $t+1$ is;

$$K_t = I_t + (1 - d) K_{t-1} \quad (2)$$

where d = depreciation rate and I = investment. Suppose a saving ratio s and that in the course channelling savings to investment a loss of share of savings = $(1 - \delta)$ where $1 > \delta > 0$, then the fund available for investment are given below;

$$\delta * s * Y_t = I_t \quad (3)$$

But the growth rate $g = \left(\frac{Y_t}{Y_{t-1}} \right) - 1$

$$\text{This implies that } g = \left[\frac{(A * \delta * s) - d}{(1 - A * \delta * s)} \right] = [(A * \delta * s) - d] \quad (4)$$

when $A * \delta * s$ tends towards zero.

Following this model, the possible transmission channel from finance to growth are as follows.

- i. An efficient financial system reduces the loss of resources $(1 - \delta)$ required to allocate capital
- ii. An efficient financial system increases the savings ratio s and

- iii. An efficient financial system raises productivity of capital A

Therefore, the financial institution in the course of their duty promote growth through the provision of credit. Based on this the study intends to examine the extent to which deposit money bank credit to SMIs sector of the economy influences the performance of the sector.

3.2 Model Specification

In line with the theoretical and empirical frame work of this study, the study will employ a multiple regression model to estimate the impact of deposit money bank credit on the performance of small and medium scale industries in Nigeria. Following the above the study specifies the model below as adapted from Dada (2014)

$$\text{SMIQ} = (\text{DMBSMI}, \text{INT}, \text{STCB}, \text{INF}) \quad (5)$$

Where SMIQ = Small and medium scale industries output proxy by wholesale and retail trade output as components of GDP.

DMBSMIs = Deposit money bank credit to small and medium scale industries.

STCB = savings and time deposit with money deposit banks

INT = Interest rate

INF = Inflation rate

Taking the log transformation of (5) and assuming a linear model then we equate below

$$\ln \text{SMIQ}_t = \beta_0 + \beta_1 \ln \text{DMBSMI}_t + \beta_2 \ln \text{STCB}_t + \beta_3 \ln \text{INT}_t + \beta_4 \ln \text{INF}_t + \mu_t \quad (6)$$

To investigate the long-run equilibrium (co-integration) among the time series variables, various econometrics methods such as the Engle and Granger (1987) two step procedure, fully modified OLS procedure by Philips and Hansen (1990) Johanson and Juselius (1990) procedure. However, this study will employ ARDL model of Pesaran et al, (2001) instead due to its advantages over all other ones. For instance unlike the other methods, ARDL bound test does not require that all the times series variable in the model must be

integrated of the same order. Secondly, it is also a dynamic estimation technique and this enables it to correct for endogeneity bias in the regressors. The ARDL framework includes sufficient numbers of lags to capture the data generating process. It

can also be applied to small samples unlike the Engle and Granger, and Johanson and Juselius procedures that are robust only for large samples. An ARDL representation of equation (6) is as follows:

$$\begin{aligned} \Delta \ln SMIQ_t = & \beta_0 + \sum_{i=1}^n \beta_{1i} \Delta \ln SMIQ_{t-i} + \sum_{i=1}^n \beta_{2i} \Delta \ln DMBSMI_{t-i} + \sum_{i=1}^n \beta_{3i} \Delta \ln STCB_{t-i} \\ & + \sum_{i=1}^n \beta_{4i} \Delta INT_{t-i} + \sum_{i=1}^n \beta_{5i} \Delta INF_{t-i} + \beta_{6i} \ln SMIQ_{t-1} + \beta_{7i} \ln DMBSMI_{t-1} \\ & + \beta_{8i} \ln STCB_{t-1} + \beta_{9i} INT_{t-1} \beta_{10i} INF_{t-1} + \mu_t \end{aligned}$$

(7)

where $\Delta \ln SMIQ$ = first difference of the natural log of small and medium scale industries output, $\Delta \ln DMBSMI$ = first difference of the natural log of deposit money bank credit to small and medium scale industries, $\Delta \ln STCB$ = first difference of the natural log of savings and time deposit with money deposit banks, ΔINT first difference of the interest rate and ΔINF is the first difference of inflation rate.

Once the long-run cointegrating relationship is established using the ARDL bound cointegration test, the ARDL model representation of the above equation (7) is restated as below to capture the adjustment mechanism.

$$\begin{aligned} \Delta \ln SMIQ_t = & \beta_0 + \sum_{i=1}^n \beta_{1i} \Delta \ln SMIQ_{t-i} + \sum_{i=0}^n \beta_{2i} \Delta \ln DMBSMI_{t-i} + \sum_{i=0}^n \beta_{3i} \Delta \ln STCB_{t-i} \\ & + \sum_{i=0}^n \beta_{4i} \Delta INT_{t-i} + \sum_{i=0}^n \beta_{5i} \Delta INF_{t-i} + \lambda ECM_{t-1} + \mu_t \end{aligned}$$

(8)

Estimation Procedure

Though the ARDL model is applicable without the need that the variables in model have the same order of integration, it is still necessary to conduct a unit root test of all the variables. This is because ARDL bound test is not valid for Wald of F-test if

any of the variables is integrated of order two (Ang, 2009). Thus, the study will employ augmented Dickey-Fuller (ADF) and

Phillips-Perron to test each of the variables for unit root. Before the application of ARDL bound test, Akaike information criteria will be employed to determine the lag structure for the ARDL model.

The ARDL approach requires the following two steps. In the first step, the existences of any long-term relationship among the variables of interest is determined using an F-test. The second step of the analysis is to estimate the coefficient of the long-run relationship and determine their values, followed by the estimation of the short-run model with the error correction representation of the ARDL model. By applying the ECM version of ARDL, the speed of adjustment to equilibrium will be determined.

3.4 Data Required and Source

The data for all the variables to be used will be sourced from CBN statistical bulletin 2014. The data for the deposit money bank credit to small and medium scale industries (DMBSMIs) are only available in CBN statistical bulletin from 1992 and this implies that we have small sample of 22 years.

Hence the study intends to interpolate the data

3.5 Econometric Software to be used. E-

Variables			Levels			First Differences		
ADF	Lag	Prob.	ADF	Lag	Prob.	Level of Integration		
lnDMBSMI	-1.3924	1	0.5824	-14.257***	0	0.0001	{1}	
INT	-5.0167***	0	0.0001	-----	--	-----	{0}	
INF	-2.2904	0	0.1774	-7.4527***	2	0.0000	{1}	
LnSMIQ	-1.6978	4	0.4287	-3.3420**	3	0.0161	{1}	
LnSTCB	-1.4429	4	0.557	-4.4005***	3	0.0006	{1}	

into quarterly data to produce robust estimates of the parameters.

views version 9.00 will be used in the estimation of the models.

4.1 PRESENTATION AND INTERPRETATION OF RESEARCH FINDINGS

In this chapter, the results of the autoregressive distributed lag model are presented. The analysis of the results involves subjecting the parameter estimates of the model to theoretical (a priori expectation) and statistical (first order) test to determine their reliability or robustness.

Table 4.1 Augmented Dickey Fuller Unit Root Test

*****[**] denotes significant of variable at 1% [5%] significance level respectively**

The variables used in the work were subjected to unit root test using ADF as shown above and the result shows that the variables have different orders of integration, which is one of the justification of the use of ARDL model. As shown, deposit money bank credit to small and medium scale industries (DMBSMI), savings and time deposit with money deposit banks (STCB), inflation (INF) and Small and medium scale industries output proxy by wholesale and retail trade output as components of GDP (SMIQ) have

unit root (null hypotheses for unit root are accepted for these variable) because the probability of their ADF statistics are greater than both 1% and 5% levels of significance. At their first difference forms, they all turned stationary at both 1% and 5% levels as the probabilities of ADF statistics are greater than 1% and 5% level of significance. However, interest rate (INT) was found to be stationary at its level form as it produced ADF values with probability less than 1 % level of significance.

Table 4.2ARDL Bound Cointegration Test Result

F-Statistic at lag 4 = 12.48024				
LOWER BOUND			UPPER BOUND	
10%	2.4		3.52	
5%	2.86		4.01	
1%	3.7		5.06	

A necessary condition for testing for ARDL bound co-integrating test is that each of the variables is

integrated of either of order one or zero or both (Pesaran, Shin and Smith, 2001). Since all the

Variable	Coefficient	t-statistic	prob.
CONSTANT	-0.64135	-2.1280**	0.0368
DLNSMIQ(-1)	0.09028	1.3311	0.1874
DLNSMIQ(-3)	0.10539	1.5178	0.1336
DLNSMIQ(-4)	0.73378	9.9164***	0.0000
DINF(-2)	-0.00018	-0.1173	0.9069
DLNDMBSMI	0.06940	2.89689**	0.0050
INT	-0.00667	-1.28553	0.2028
DlnSTCB	0.11494	2.80622**	0.0065
ECT(-1)	0.12057	-2.05865**	0.0432
R2= 0.9960, Adjusted R2 =0.9953 F-statistic = 1479.76 Prob(F=statistic)			

variables are integrated of order one and zero, we proceeded to estimate the ARDL bound test and the result is shown in table 4.2 above. From table above, since the F-statistics of 12.48 is greater than the upper (I1) bound of 3.61 at 5% level of significance, we reject the null hypothesis and

conclude that there is cointegration in the model. This implies that there is a long run relationship between dependent variable and independent variables. Consequently, we estimated the short run and long run ARDL regression model and the results are presented in tables 4.3 and 4.4.

Table 4.3 Parsimonious Error correction estimates of the impact deposit money bank credit

*****[**] denotes significant of variable at 1% [5%] significance level respectively. Variables were based on their order of integration**

4.2 INTERPRETATION OF SHORT RUN ARDL RESULT

The results shows that the impact of deposit money bank credit to small and medium scale industries is positively significant and thereby suggesting the deposit money bank credit to small and medium scale industries contributed significantly to the growth of the SMEs. The coefficient of deposit money bank credit to small and medium scale industries which is 0.0694 implies that SMEs will grow at that per cent for one per cent increase in the deposit money bank credit to small and medium scale industries. This is in line with the theory and is similar with the study done by Osamwonyi, & Tafamel (2010). The coefficients of first, second and third lags of small and medium scale industries output are positive suggesting a positive relationship between the current and past values of SMEs. However, the

result shows that only at lag four that the past values of SMEs have significant impact on the current values. As the result shows, one per cent increase in the Small and medium scale industries output makes the SMEs to grow at the rate of 0.733 per cent. Inflation at lag 2 is negatively impacting on the growth of SMEs. Specifically, one percentage point increase in inflation reduces the growth of SMEs by about 0.00018. Interest rate is negatively signed implying that raising interest hurts the growth of SMEs. Based on the result from this study, interest rate does not significantly impact on the growth of SMEs. Other studies have shown the interest does not encourage the growth of SMEs. For instance Bawuah, Yakubu, & Alhassan, (2014). Savings and time deposit with money deposit banks was found to significantly impact on the SMEs' growth in the study. For one per cent increase in the Savings and time deposit

of the SMEs in the money deposit banks, SMEs will grow by about 0.1149cent

Table 4.4 Summary of Long Run Determinants of Consumption Result

Variable	Coefficient	t-statistic	prob.
CONSTANT	-5.3194	-1.3256	0.1892
LNDMBSM	0.57556*	1.9038	0.0610
INF	0.05796	1.7433	0.0856
INT	-0.05530	-1.6951	0.0944
LNSTCB	0.95330***	5.7780	0.0000

***[*] denotes significant of variable at 1% [10%] significance level respectively

4.3 INTERPRETATION OF LONG RUN ARDL RESULT

The coefficient of all the long run parameters have all their signs in line with economic a priori expectation except inflation rate. The deposit money bank credit to SMEs is positively related to the growth of SMEs and this implies fund channeled to the SMEs through the deposit money bank impact positively on the growth.

Interest rate which is the cost of borrowing negatively influences the growth of SMEs because a rise in interest rate means the cost of borrowing has gone up and this discourages some of the SMEs from borrowing. Hence, investment will be less and their growth will dwindle. This result corroborates the work of Oke and Aluko (2015) and Dada (2014).

Savings and time deposit of the SMEs positively influences the SMEs growth because of the relationship between savings and investment. In the long-run, it is expected that saving will be equal to investment, thus by implication, saving should influence growth of SMEs through investment.

4.4 Test of Hypotheses

Hypothesis 1

Ho: Deposit money bank credit does not impact on the performance of small and medium scale industries in Nigeria.

The probability of having t-value of 2.897 or more for the coefficient of deposit money bank credit to SMEs in the short-run as shown in table 4.3 is 0.0050. Since this is less than one per cent (0.01) level of significance, the study reject the null hypothesis that deposit money bank credit does not impact on the performance of small and medium scale industries in Nigeria at one per cent significance level. Similarly, in the long-run, the null hypothesis is as well rejected but at 10 per cent level of significance because the probability of having t-value of 1.9 for the coefficient of deposit money bank credit to SMEs in the long-run as shown in table is 0.061 and less than 10 per cent level of significance. Thus, deposit money bank credit determine the performance of small and medium scale industries in Nigeria

Hypothesis 2

Ho: Interest rate does not impact on the performance of small and medium scale industries in Nigeria.

The probability of having t-value of 1.286 in absolute or more for the coefficient of interest in

the short-run as shown in table 4.3 is 0.203 Since this is more than even 10 percent level of significance, the study did not reject the null hypothesis that interest does not impact on the performance of small and medium scale industries in Nigeria at 10 per cent significance level.. Similarly, in the long-run, the null hypothesis is as well not rejected at both 1 % and 5%. However, at 10 per cent level of significance, the study rejected the null hypothesis that interest doe to affect the performance of SMEs. Thus, the impact of interest rate on the performance of small and medium scale industries in Nigeria is rather weak.

4.5 Evaluation Based on Statistical Criteria (First order)

The Coefficient of Multiple Determinations R^2

The R^2 which is the coefficient of multiple determinations is 0.996. That is to say that approximately 99.6 percent of the variation in the SMES growth is attributed to the set of exogenous variables. This result suggests that the exogenous variables highly explain the behaviour of the dependent variable this is quite impressive.

F – Test

F–test is conducted to further ascertain if the model is statistically significant and to know if the data actually fit into the model in order to enable

Table 4.5 Breusch-Godfrey tests

	X^2 Statistics	Probability
Breusch-Godfrey LM test for autocorrelation	11.745	0.0028

From table 7 above, the probability value of B-G statistics is less than 0.05. Since the B-G statistics is less than 0.05, we therefore conclude that there exists q-order serial correlation of stochastic errors terms in the model.

us ascertain the adequacy of the model for our analysis.

Hypothesis

Ho: $\pi_1 = \pi_2 = \pi_3 = \pi_4 = \pi_5 = 0$ (the model is not significant)

H₁: $\pi_1 \neq \pi_2 \neq \pi_3 \neq \pi_4 \neq \pi_5 \neq 0$ (the model is significant)

Where $\alpha = 0.05$ (At 5% level of significance.

Decision Rule: Reject Ho if $F^* > F_{0.05}$, otherwise accept Ho if $F^* < F_{0.05}$

$F^*(4, 132) = 1479.764$, while the P – value = 0.0000

Since the p-value is less than 0.05, we reject Ho and accept H₁ implying that the model is statistically significant and adequate for analysis and policy implications.

4.6 EVALUATION BASED ON ECONOMETRIC CRITERIA (2nd order Test)

Test for Auto- Correlation

The underlying assumption of autocorrelation is that the successive values of the random μ_i are temporally independent. The Breusch-Godfreystatistics is used to test for the presence of autocorrelation of order q in the models.

Test for Heteroscedasticity

The primary reason to test for heteroscedasticity after running for OLS is to detect violation of assumption OLS:5, which is one of the assumptions needed for the usual statistics accompanying OLS regression to be valid. The F –

statistics can be used to verify this assumption, and the hypothesis is formulated as follow:

Hypothesis

H_0 : (There is no hetroscedasticity, i.e. homoscedasticity)

H_1 : (There is hetroscedasticity)

Decision Rule; Reject H_0 if the calculated F value is greater than the tabulated F value, otherwise

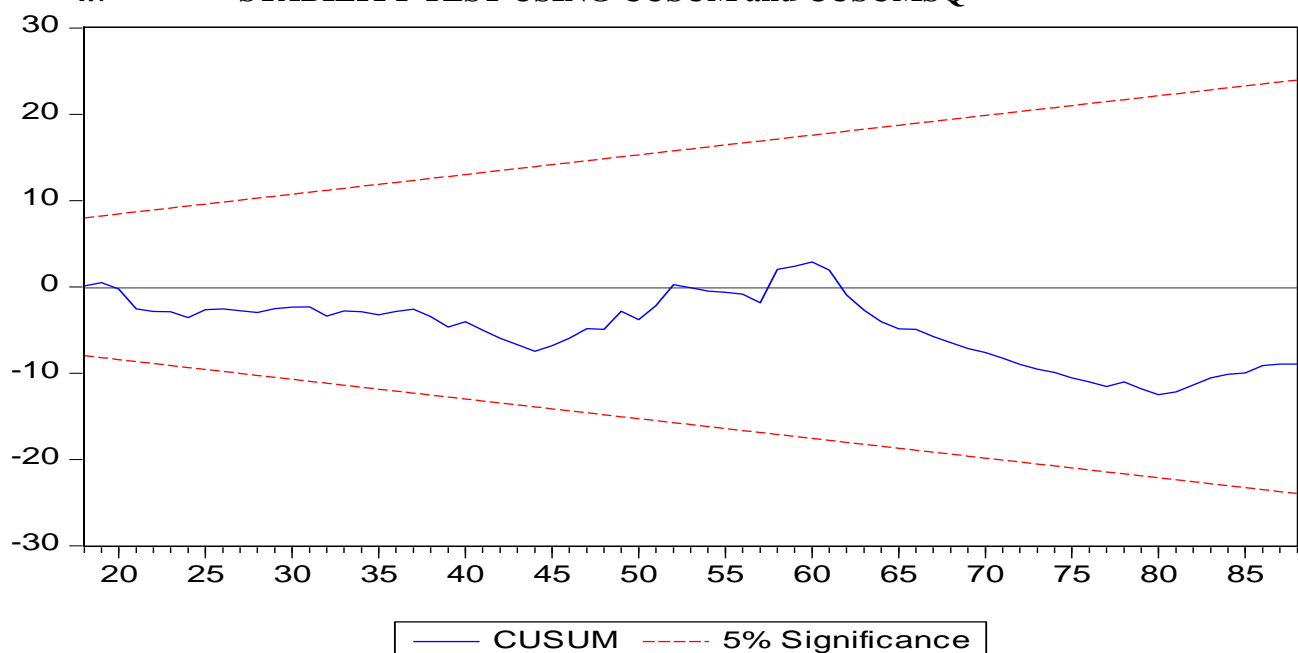
accept H_0 . The hetroscedasticity result is presented as;

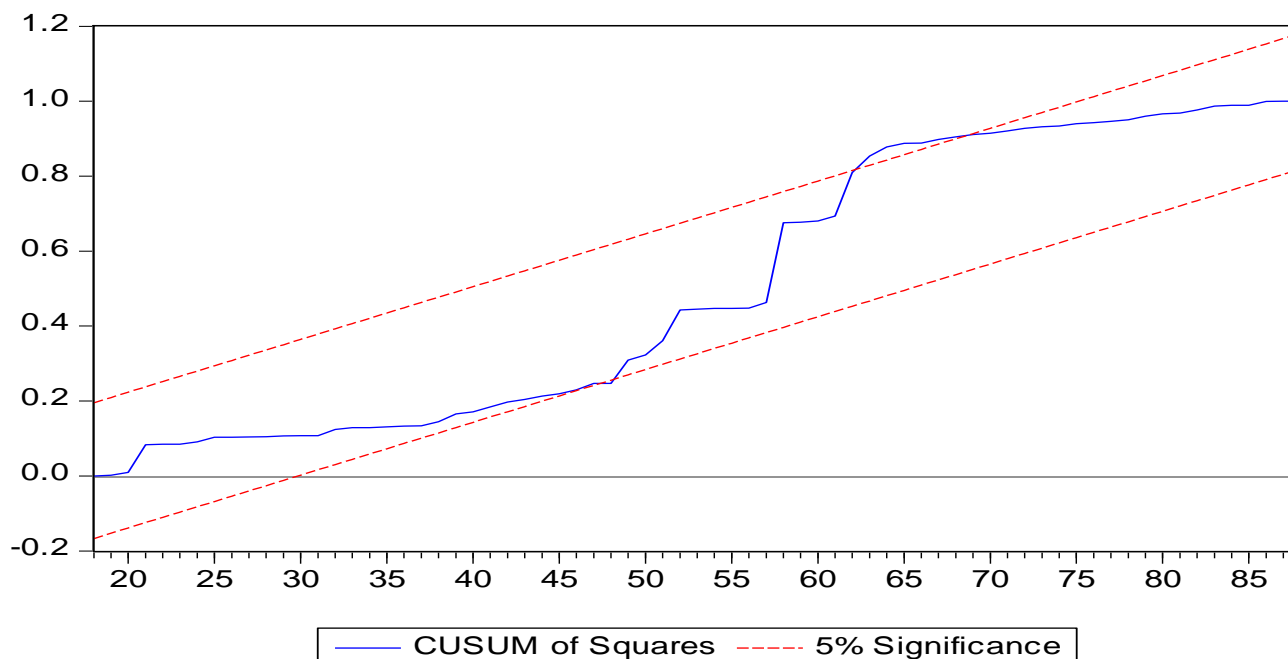
Following the above result, the F probability value = 0.6097. Therefore, since this is greater than 5% level of significance, the study then accept H_0 of homoscedasticity and conclude that the conditional variances of the error terms are equal.

F-statistic	0.0839990	probability	0.6097
Obs*R²	10.4429	probability	0.5772

Table 4.6 White Heteroscedasticity Test

4.7 STABILITY TEST USING CUSUM and CUSUMSQ





The stability tests have been used to investigate the stability of long run and short run parameters. In doing so, cumulative sum (CUSUM) and cumulative sum of squares (CUSUMsq) tests have been employed. The graphs of both CUSUM and CUSUMsq are presented above. The Figures 1 and 2 specify that plots for both CUSUM and CUSUMsq are between critical boundaries at 5% level of significance. This confirms the accuracy of long run and short run parameters which have impact on income SMEs growth in Nigeria. Moreover, both tests also verify the stability of ARDL model for structural stability. This indicates that model seems to be steady and correctly specified.

5.1 Summary of the Findings

The study has investigated the impact of deposit money bank credit on the performance of SMEs in Nigeria. Following the behavioural pattern of the variables, the study employed Auto-Regressive

Distributed Lag (ARDL) model in the study. The summary of findings is itemized below:

1. Deposit money bank credit impact positively on the performance of SMEs in Nigeria both in the long-run and short-run. Deposit money bank credit has more explanatory power in the long-run than in short-run. Interest rate does not have any significant impact on SMEs growth in the short-run but exert a rather weak influence on the SMEs growth in the long-run.

2. The speed at which the SMEs growth adjust to its long-run equilibrium is quite weak. The result shows the speed of convergence to be 0.0120570 per cent, which implies that about 12.1% disequilibrium is being corrected in the next period. Savings are also found to significantly impact on the SMEs growth in both the short-run and long-run.

5.2 Conclusions:

Following the findings of the study, the study concludes that



Deposit money bank credit has more explanatory power in the long-run than in short-run. Interest rate does not have any significant impact on SMEs growth in the short-run but exert a rather weak influence on the SMEs growth in the long-run. The study concludes that Savings are also fund to significantly impact on the SMEs growth in both the short-run and long-run.

5.3 Recommendations

Following from the above findings, the study made the following recommendation

1. Financing is critical to the growth of SMEs and hence the study recommends that credit should be provided to SMEs through the use of monetary policy tools of the central bank of Nigeria (CBN) like expansionary policy. Also, there is the need to monitor loans that are advanced to these enterprise to ensure that such loans are used for what they are meant for. Loans at a reduced interest rate can also spur the growth of SMEs since that will reduce the cost incurred accessing funds for investment

2. Tax concession granted to some of these SMEs especially the new start-ups can go a long way in enhancing their growth since they will have investible fund for growth. There should be sensitization about saving culture as that will make it possible surplus unit will have fund to channel to SMEs which are the deficit unit at a low interest rate.

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