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The Anatomy of Banking System Credit and SMEs Growth in Nigeria: A Cointegration and Causality Analysis

Iwedi Marshal[1]

Abstract

The study is an attempt to examine the anatomy of the banking system credit and SMEs growth in Nigeria from 1980-2014 using the econometric tool of the Johansen and Juselius co-integration test and the Engle granger causality test. The co integration approach was applied after determining stationarity of the variables using the ADF statistic, as well as the causality test using the Engle and Granger approach. From the result it was reveal that long run equilibrium exist among the variables studied in the model. This implies that banking system credit to SMEs will bring about more growth in this sector. However, the study concludes that banking system credit to SMEs will accelerate the SMEs growth in particular and the growth of the Nigeria economy in general, knowing full well, that SMEs with its potential can absorb the increasing level of unemployment experienced in the country and has the capability of turning a greater number of Nigerians from their poor state if the sector is accorded it rightful place. Based on this, the study recommends that a well deserved attention be placed by the government and other stakeholders in the sector in the areas of access to funds, legislations, institutional restructuring and protection.

Key Words: Banking System Credit, SMEs, Co-integration, and Causality

1. Introduction

SMEs play valuable roles in the process of industrialization, job creation, and make significant contributions to economic growth in developed and developing economies like Nigeria. As a result, establishing a dynamic SMEs sector features prominently on the economic development agendas of practically all countries around the Sub-Sahara Africa.

Banking system play fundamental roles in the development and growth of an economy both developed and developing. The effectiveness and efficiency in performing these roles, particularly the intermediation functions between the surplus and deficit unit of the economy, depends largely on the level of development of the financial systems (Ogujiuba, Ohuche and Adenuga, 2004 and Iwedi & Igbanibo, 2015). As an important component of the financial system, they channel scare resources from surplus economic units to deficit units.

[1] Department of Banking and Finance, Rivers State University of Science and Technology, Nkpolu- Port Harcourt, Nigeria. Iwedimarshal@yahoo.com

Thus, to a reasonable extent, they exert a lot of influence on the pattern and trend of economic development, through their lending and deposit mobilization activities. Also, as a key participant in the economic development process, they attempt to restructure the economy. It is an accepted fact that the level of economic development determines the extent of sophistication of the banking system. This is primarily due to the fact that the banking system exists to propel and service economic development and thus all shocks in the economic development process affect the banking system positively or negatively (Nzotta, 2004)

The Nigeria small and medium enterprises (SMEs) have experienced continued decline inspite of the so called priority given to the industry Okporobie (1999). The discovery by the apex monetary authority in Nigeria (CBN) that the policy was insufficient by itself prompt the CBN request with effect from 1979 that all deposit money bank must reserve a proportion of the minimum credit allocation to indigenous borrowers for small and medium enterprises in Nigeria. The target prescribed in 1979 was 10% which subsequently rose to 16%. Despite this, available data showed that performance of deposit money banks against this directive has been disappointing. The CBN intends to spare no effort in ensuring that banks fully comply without compromising the smooth functioning of the nation banking system. CBN (2000) also noted that without the development of small and medium enterprises in Nigeria, the country's quest for industrializations, modernization, urbanization, job creation, poverty reduction, wealth creation, income distribution and reduction in income disparities will certainly remain forever at stake. It is on this basis that banking system credit to SMEs remains very critical if they are to achieve the above nominated national developmental objectives.

However, the problem of extending credit to SMEs in Nigeria may not necessarily be as a result of financing insufficiency by banking system but rather for some other reasons among which are: unfriendly business environment in Nigeria, information gaps as to range of funding institutions and scope of service available in these institutions, insufficient preparation on the part of SMEs entrepreneurs in their request for credit assistance, lack of access to modern technology, lack of viable entrepreneurial skill, poor documentation at project proposals as well as inadequate collateral by SMEs operators constitute the problems why deposit money banks are reluctant to granting credit to SMEs in Nigeria. Therefore, it is against this backdrop that the study considers it necessary to examine the effects of banking system credit on the growth of SMEs in Nigeria.

2. Theoretical Framework and Empirical Review

2.1 Theoretical Framework

The study adopted the theory of financial intermediation by Franklin Allen and Anthony Santomero. They assert that banking system credit is an important aspect of financial intermediation that provides funds to those economic entities that can put them to the most productive use. Theoretical studies have established the relationship that exists between financial intermediation, SMEs and economic growth in Nigeria. For instance, Schumpeter (1934), Goldsmith (1969), McKinnon (1973) and Shaw (1973), in their studies, strongly emphasized the role of financial intermediation in economic growth. In the same vein, Greenwood and Jovanovich (1990) observed that financial development can lead to rapid growth. In a related study, Bencivenga and Smith (1991) explained that development of banks and efficient financial intermediation contributes to economic growth by channelling savings to high productive activities and reduction of liquidity risks. They therefore concluded that financial intermediation leads to growth.

2.2 Empirical Review

Plethora of studies has been documented in this regards. Among these studies is the work of Ayuba and Zubairu, (2015). They examine the impact of banking sector credit on the growth of small and medium enterprises in Nigeria. The main objective of the study is to investigate whether banking sector credit has significant impact on the growth of small and medium enterprises in Nigeria. As part of the methodology, annual data between 1985 and 2010 was collected and used in the study while descriptive statistics, correlation matrix and error correction model was used to test the formulated hypotheses which reveals that banking sector credit has significant impact on the growth of small and medium enterprises in Nigeria. Similarly, Anigbogu, Okoli and Nwakoby (2015) study investigates the effect of financial intermediation on small and medium enterprises performance in Nigeria using an econometric model of the Ordinary Least Square (OLS). Findings reveal that with the exception of bank interest rate to SMEs, all other variables - financial intermediation, commercial bank loans and advances to SMEs, bank lending rate to SMEs, exchange rate and monetary policy - have a positive and significant influence on small and medium enterprises performance in Nigeria.

Imoughele and Ismaila (2014) 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 revealed 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's SMEs output. The study also showed that interest rate has adverse effect on SMEs output. In another related study, Omika (2014) examines the necessity and strategies of re-positioning commercial banks in order to enhance the productive capacities of Small and Medium-Scale Enterprises (SMEs). The Ordinary Least Square (OLS) was used. The results showed that there was co-integration between re-positioning of commercial banks and capacities of SMEs to deliver products/services and there was significant dispersion resulting from lending conditions and macroeconomic variables.

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.

Aliyu and Bello (2013) examined the contribution of commercial banks to the growth of SMEs in Nigeria between 1980 and 2009. Using ratio analysis and trend analysis, it was discovered that commercial banks contribute to financing SMEs but their contribution has declined as the government through CBN directives abolished the mandatory bank's credit allocations. Onakoya, Fasanya and Abdulrahman (2013) examine the impact of financing small scale enterprise on economic growth in Nigeria using a quarterly time series data from 1992 to 2009. The findings shows that loan to small scale business entrepreneurs have a positive impact on the economic performance while interest has a negative impact on economic growth. Therefore, it concluded that the greatest problem controlling SMEs in Nigeria is managerial capacity.

Nwosa and Oseni (2013) examined the impact of bank loans to SME's on manufacturing output in Nigeria for the period spanning 1992 to 2010. Employing error correction modelling technique, the study deduced that bank loans to the SME sector had significant impact on manufacturing output both in the long and short run. Mamman and Aminu (2013) assessed the effect of 2004 banking reforms on loan financing of SMEs in Nigeria.

A sample size of 500 was randomly chosen and chi-square test was used which indicated that there is no significant effect of 2004 banking reform on loan financing of SMEs in Nigeria and suggested that there are some constraints which restricted access to loans from the banks for SMEs in Nigeria.

Afolabi (2013) assessing the growth effect of small and medium enterprises financing in Nigeria, employed ordinary least square (OLS) method to estimate the multiple regression model, the estimate model results revealed that SMEs output and deposit banks credit to SMES exert positive influence on economic development while lending rate is found to exert negative effects on economic growth. Akinruwa, Awolusi and Ibojo (2013), carried out a similar study in Ekiti State using regression analysis. Their findings showed that funds, managerial skills, government policy, education and facilities were significantly related with performance. By ranking, funds were considered most significant followed by education, government policy, managerial skill and facilities.

Sokoto and Abdullahi (2013) examined how strengthening the Small and Medium Enterprises (SMEs) can contribute to poverty reduction in north western Nigeria. Using both primary data and secondary information that was analyzed with the use of t-test statistics, the major findings of the study is that large enterprises contribute more in the area of employment provision than the SMEs going by the country – wide data. This contradicts the a priori assumption that small and medium enterprises do contribute to employment generation and use more indigenous technology than large corporations. Yusuf and Dansu (2013) examined the relationship between business risks and the sustainability of SMEs in Nigeria using Chi-square and descriptive statistics. The result revealed that standard risk management strategy by SMEs will result to their sustainability. Omah, Duruwoju, Adeoye and Elegunde (2012) examined the impact of post-bank consolidation on the performance of SMEs in Nigeria, with special reference to Lagos State. A sample size of 50 was drawn from the supra-population of the study within Ikeja Local Government in Lagos State. Applying mean, standard deviation and coefficient of variation in its data analysis, the study revealed that SMEs do not have better access to finance through banks, due to neo-reorganization in banks as a result of post-bank consolidation and SMEs do not have absolute rapport with the financial institutions due to their financial background in Nigeria.

Qureshi (2012) examined the problems and constraints faced by small and medium-sized enterprises (SMEs) in Pakistan with regard to access to financing. The research methodology includes qualitative data and quantitative data. A survey was undertaken from a sample group of 500 respondents of SMEs in Karachi from whom various questions were asked through a structured questionnaire. In addition, one-on-one formal and informal interviews were taken from various businessmen and bankers.

Samples were selected conveniently. A conceptual model/framework was devised to test and ascertain the statistical validity. It includes dependent variable SME financing and independent variables, financing constraints, functional/internal barriers, government support and incentives, and SMEs growth and development. The study finds that Formal financing is the biggest problem of SMEs because a substantial portion of SMEs does not have the security required for collateral. The loan processing time is very lengthy and cumbersome and the loan terms are not succinct and thoroughly understood by the borrower which is a similar scenario to the Nigerian situation.

Aremu and Adeyemi (2011), who findings have show that most SMEs particularly in Nigeria die within their first five years of existence. It was also revealed that smaller percentage goes into extinction between the sixth and tenth year while only about five to ten percent of young companies survive, thrive and grow to maturity. Many factors have been identified as likely contributing factors to the premature death. They include insufficient capital, lack of focus, inadequate market research, over-concentration on one or two markets for finished products, lack of succession plan, inexperience, lack of proper book keeping, irregular power supply, infrastructural inadequacies (water, roads etc), lack of proper records or lack of any records at all, inability to separate business and family or personal finances, lack of business strategy, inability to distinguish between revenue and profit, inability to procure the right plant and machinery, inability to engage or employ the right calibre staff, cut-throat competition (Basil, 2005).

Aremu and Adeyemi (2011) examined that small and medium enterprises have been considered as the engine of economic growth and for promoting equitable development. It was noted that the SME sector is the main driving force behind job creation, poverty reduction, wealth creation, income distribution and reduction in income disparities.

Akingunola (2011) assesses specific financing options available to SMEs in Nigeria and contribution with economic growth via investment level. The spearman's Rho correlation test is employed to determine the relationship between SMEs financing and investment level. The analysis reported a significant Rho value of 0.643 at 100%. This indicated that there is significant positive relationship between SMEs financing and economic growth in Nigeria via investment level. Descriptive statistics were also used to appraisal certain financing indicators. The paper later proffer that accessibility to relative low interest rate finances should be provided to small and medium enterprises in Nigeria in order enhance economic growth. The Spearman's Rho correlation test was employed by Akingunola (2011) to determine the relationship between SMEs financing and investment level.

The analysis reported a significant Rho value of 0.643 at 10%. Indicating that there is significant positive relationship between SMEs financing and economic growth in Nigeria via investment level. Oboro and Ighoroje (2011) reviewed the problems of financing small scale business enterprises in Nigeria and the way forward, the study concluded that adequate funding is important for the successful operations of small scale business enterprises in Nigeria.

Ogunsiji and Ladamu (2010) argued that entrepreneurial orientation is the panacea to the ebbing productivity. They opined that in Nigeria, there is need for a non-stop growth, harmonious and balanced blend of resources with the other engines of growth. Each of these engines of growth like people, market, capital, technology and organization can only flower and blossom fully where the efficacy of entrepreneurial orientation is appreciated and implemented. Oluba (2009) summarized the contribution of SMEs to an economy, especially developing ones as: greater utilization of raw materials, employment, generation, encourage of rural development, development of entrepreneurship, mobilization of local savings, linkages with bigger industries, provision of regional balance by spreading investments more evenly, provision of avenue for self-employment and provision of opportunity for training managers and semi-skilled workers.

Ekanem (2006) summarizes the importance of SMEs to include ensuring rapid development, increased utilization of local resources and provision of a training ground for indigenous managers and semi-skilled workers, reduction of the rural-urban drift, development of indigenous technology and raising the living standard of rural dwellers and so on. In fact, SMEs accounts for the economic development in most developed economies of the world today. Ekpenyong (1997) showed that very little financial supports have been provided by the traditional financial institutions (the deposit banks) to the SMEs. The reasons are that small businesses have serious inherent structural defects that make them high risk borrowers, and the traditional banks are not structured to cater for type of credit demanded by the small businesses owing to the nature of their credit assessment procedures (Hammond, 1995).

2.3 Trends of Deposit Money Banks Credit to Small and Medium Enterprises in Nigeria

Table 1

Period	Commercial Banks Loans To Small Scale Enterprises (N' Million)	Commercial Banks Total Credit to Private Sector (N' Million)	Commercial Banks Loans To Small Scale Enterprises as Percentage of Total Credit (%)
1980	102.00	6,344.00	1.5
1981	185.00	8,604.80	2.1
1982	206.70	10,277.00	2.0
1983	351.30	11,100.00	3.2
1984	705.70	11,550.60	6.1
1985	972.20	12,170.30	8.0
1986	3,587.30	15,701.00	9.3
1987	1,445.30	17,531.90	20.46
1988	5,090.00	24,602.30	20.69
1989	5,789.50	28,108.80	20.60
1990	5,900.00	28,640.80	22.90
1991	7,572.30	32,912.40	23.80
1992	20,400.00	75,456.30	27.04
1993	15,462.90	88,821.00	17.41
1994	20,552.50	143,516.80	14.32
1995	32,374.50	204,090.60	15.86
1996	42,302.10	254,853.10	16.60
1997	40,844.30	311,358.40	13.12
1998	42,260.70	366,544.10	11.53
1999	46,824.00	449,054.30	10.43
2000	44,542.30	587,999.90	7.58
2001	52,428.40	844,486.20	6.21
2002	82,368.40	948,464.10	8.68
2003	90,176.50	1,203,199.00	7.49
2004	54,981.20	1,519,242.70	3.62
2005	50,672.60	1,991,146.42	2.54
2006	25,713.70	2,609,289.40	0.99
2007	41,100.40	4,820,695.70	0.85
2008	13,512.20	7,799,400.11	0.17
2009	16,366.49	9,667,876.68	0.17
2010	12,550.30	9,198,173.06	0.14
2011	15,611.70	9,614,445.80	0.16
2012	13,863.46	10,440,956.33	0.13
2013	15,353.04	11,543,649.93	0.13
2014	16,069.27	13,179,598.11	0.12

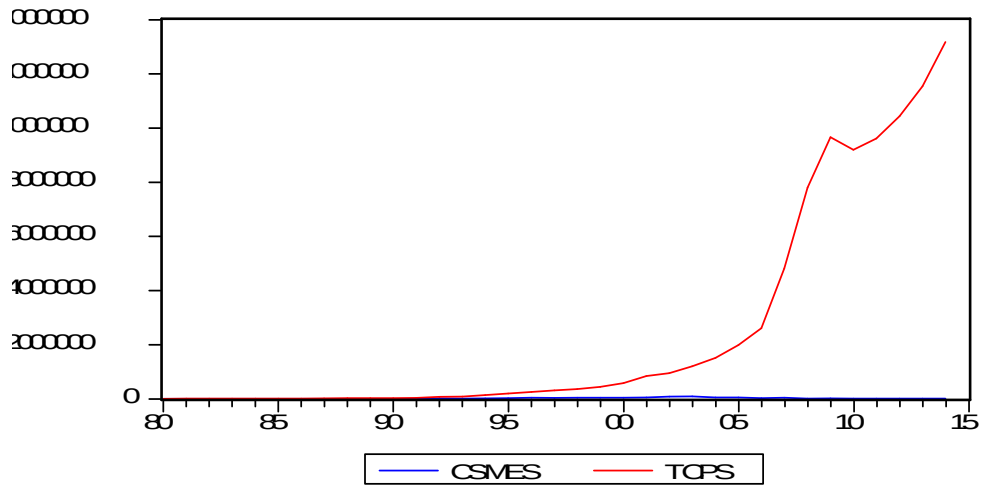
SOURCE: CBN Statistical Bulletin 2014

Give the global recognition of the role of SMEs in industrial and economic development of a nation like Nigeria; one would have expected a progressive increase in credit allocation to the SMEs. However, as shown in table 1 above, the aggregate loans and advances deposit banks extended to SMEs between 1980 and 1999 as a percentage of credit allocation to the private sector shows that between 1980 and 1986, the percentage credit allocation rises from 1.5 percent to 9.3 percent. The period falls within the time government has not mandated deposit banks to assign a given percentage of their total credit to SMEs.

However, from 1986 to 1996, the percentage of credit allocated to the SMEs witnessed a sporadic increase from 9.3 percent to 16.60 percent and within this period also, the credit allocated to the SMEs went up as high as 27.04 percent and 17.41 percent in 1992 and 1993 respectively. This period witnessed the period the government directs deposit banks to mandatorily allocate 20 percent of their total credits to the SMEs. This mandatory credit allocation was abolished in 1996 and this explained the downward trend of credit allocation to the SMEs from 13.12 percent, in 1997, to 11.53 percent in 1998, 10.43 percent in 1999, 7.58 percent in 2000, 6.21 percent in 2001, 8.68 percent in 2002, 7.49 percent in 2003, 3.62 percent in 2004, 2.54 percent in 2005, 0.99 percent in 2006, 0.85 percent in 2007, 0.17 percent in 2008, 0.17 percent in 2009, 0.14 percent in 2010, 0.16 percent in 2011, 0.13 percent in 2012 and 2013, and 0.12 percent in 2014.

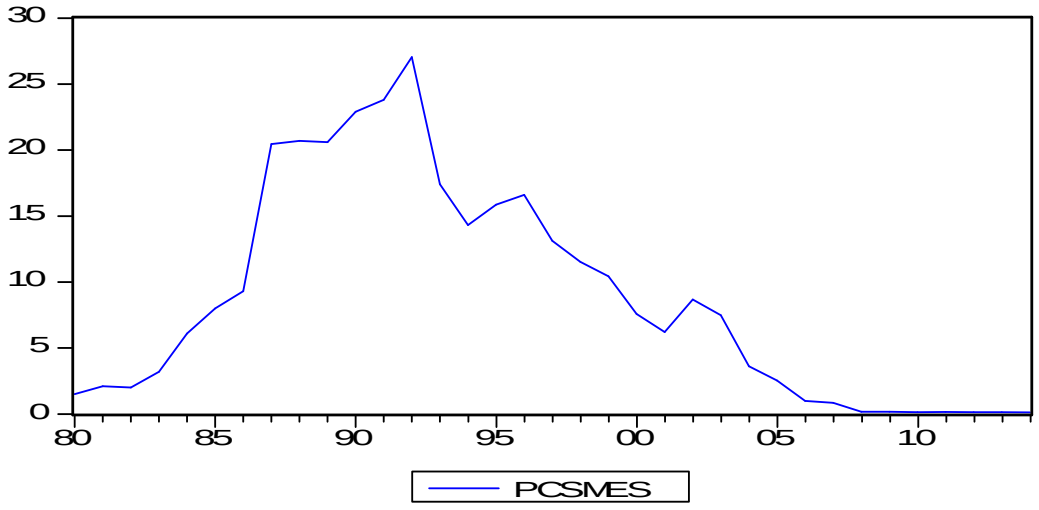
Therefore, there is need to check this downward trend in the percentage credit allocation to the SMEs. The major reasons adduced for this poor credit given to SMEs apart from government policy includes, lack of collateral asset, high administrative costs of processing small loans, delay in disbursement of approved fund, reforms in banking sector coupled with volatile exchange rate regime and prohibitive interest rate. Cookey, 2001; Nnanna, 2001; Onwumere, 2000; Ande and Jat, 1999; Ojaide 1999; and Levy, 1993).

Graph 1 Showing the Trend of Banking System Credit to SMEs and Private Sector



Source: Eview Software 8.0

Graph 2 showing Commercial Banks Loans to SMEs as Percentage of Total Credit



Source: Eview Software 8.0

2.4 Contribution of Small and Medium Enterprises (SMEs) to Nigeria Economy

There has been unstable increase in the percentage contribution of SMEs to the GDP in the period. Between 1985 and 1990 which is a reflection of the increase in deposit bank credit among other factors allocated to SMEs sector. This trend suggests that an increase in deposit banks' credits allocation to SMEs would increase SMEs contribution to total GDP.

Therefore, the reasons for the low contribution of the SMEs to the total gross domestic product (GDP) includes lack of credit facilities, shortage of skills among the entrepreneur, weak infrastructural facilities, inability of the small and medium industrialists to transform ideas into reality, poor demand for finished goods, restricted access to land, difficulties in input procurement and lack of continuity after the death of their owners (Anyanwu 2001 and Usman, 2001).

However, the small and medium enterprises have been considered as the engine of economic growth and for promoting equitable development Aremu and Adeuemi (2011). It was noted that SMEs sub-sector is the main driving force behind job creation, poverty reduction, wealth creation, income distribution and reduction in income disparities. Oluba (2009) summarized the contribution of SMEs to an economy, especially developing ones like Nigeria as greater utilization of raw materials, employment generation, encourage of rural development, development of entrepreneurship, mobilization of local savings, linkages with bigger industries, provision of regional balance by spreading investments more evenly, provision of opportunity for training managers and semi-skilled workers.

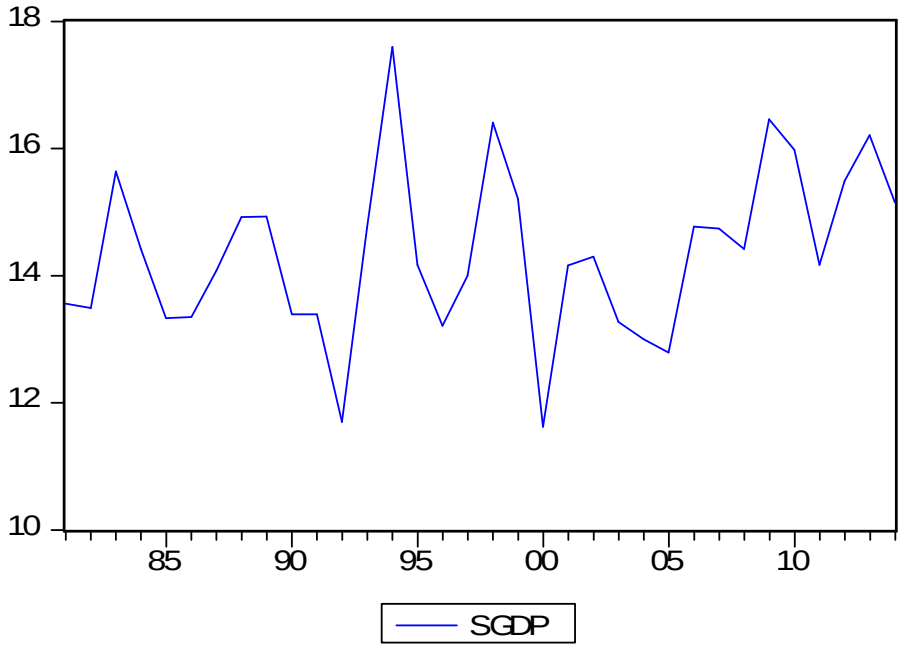
Odubanje (2000) and Nnanna (2001) reiterate that SMEs help in the achievement of improvement in rural infrastructure, living standard of the rural dwellers, employment generation, utilization of local resources, output expansion, transformation of indigenous technology, production of intermediate goods, increase the revenue base of the government, etc (Onwumere 2000). Oboh (2002) also opined that SMEs provide the breeding ground for the emancipation of indigenous entrepreneurs in the generation and development of technical, managerial and marketing skills. SMEs are also important source for the supply of raw material and intermediate inputs for the building of local large-scale industries that have the potential to develop into multinational corporations.

Table 2: Contribution of SMEs to Total Gross Domestic Product (GDP) of Nigeria (1981- 2014)

Year	Total Gross Domestic Product (GDP) N	Contribution of SMEs to Total GDP N	SMEs GDP as a Percentage of Total GDP %
1981	47,619.66	6,458.67	13.56
1982	49,069.30	6,617.91	13.49
1983	53,107.40	8,308.22	15.64
1984	59,622.50	8,596.89	14.42
1985	68,916.30	9,186.65	13.33
1986	71,070.90	9,490.82	13.35
1987	105,22.90	14,815.78	14.08
1988	139,085.30	20,748.28	14.92
1989	216,777.50	32,367.85	14.93
1990	267,550.00	35,837.85	13.39
1991	312,139.80	41,792.20	13.39
1992	532,613.80	62,296.25	11.70
1993	683,869.80	100,848.89	14.75
1994	899,863.20	158,394.50	17.60
1995	1,933,211.60	273,912.72	14.17
1996	2,702,719.10	357,053.01	13.21
1997	2,801,972.60	392,343.38	14.00
1998	2,708,430.90	444,484.92	16.41
1999	3,194,023.60	485,667.00	15.21
2000	4,537,640.00	527,485.40	11.62
2001	4,537,640.00	642,697.21	14.16
2002	5,403,006.80	772,436.94	14.30
2003	6,947,819.90	922,149.87	13.27
2004	11,411,066.90	1,484,422.36	13.00
2005	14,610,881.50	1,868,251.30	12.79
2006	18,564,594.90	2,741,794.53	14.77
2007	20,657,317.80	3,044,773.87	14.74
2008	24,296,329.30	3,503,181.70	14.42
2009	24,794,238.66	4,082,351.76	16.46
2010	29,205,782.96	4,667,658.38	15.98
2011	38,016,971.08	5,385,879.82	14.17
2012	40,566,273.48	6,284,545.92	15.49
2013	44,971,867.54	7,287,900.99	16.21
2014	52,670,645.64	7,980,567.08	15.15

Source: CBN Statistical Bulletin, 2014.

Graph 3 Showing SMEs GDP as a Percentage of Totals GDP



Source: Eview Software 8.0

3. Methodology

3.1 Data

This study uses annual data for the period 1981-2014 collected from the CBN Statistical Bulletin (2014). SME GDP as a percentage of total GDP is the explained variable. The GDP for wholesale and retail trade is used as a proxy for SME Growth, while ratio of deposit money banks loans to small and medium enterprises as percentage of total credit to private sector is used as banking system credit to SMEs in Nigeria and INTR as the banking system lending rate.

3.2 Model Specification

The empirical model for this study was developed following previous studies (Afolabi 2013, Onakoya, Fasanya & Abdulrahman 2013).

$$SGRTt = f\{\ CSMEt\ \ INTRt\ \} \quad (1)$$

Recasting equation (1), into the econometric form gives:

$$\boldsymbol{SGRTt = \alpha + \beta_1 CSMEt + \beta_2\ INTRt + \mathcal{E}t} \quad (2)$$

Where

SGRT = Ratio of wholesale and Retail trade GDP to Total GDP which capture SMEs growth in Nigeria
CSME = Ratio of Deposit Money Bank Credit to SMEs to Total Credit to Private Sector
INTR = Interest Rate and the parameters include; α, β_1-β_2 and εt is the residual term.

3.3 Unit Root Test

Time series properties of all variables used in estimation were examined in order to obtain reliable results. Thus this exercise was carried out through Augmented Dickey full (ADF) test as articulated by Engel and Granger (1987) and Phillip-Perron (pp test). This development arises from the prevalence of substantial co-movements among most economic time series data, which has been argued in the literature as undermining the policy implications that could be inferred from such modeling constructs, Engel and Granger (1987). The ADF and PP tests are used to determine the order of integration that is, the number of times a variable has to be differenced before it becomes stationary. The augmented dickey fuller (ADF) and Phillip Perron equations are specified as

$$\Delta V_t = \eta V_{t-1} + \eta \sum_{i=1}^{n} \Delta V_{t-j} + \varepsilon_i \tag{3}$$

$$\Delta V_t = \alpha_0 + \lambda V_{t-1} + \eta \sum_{i=1}^{n} \Delta V_{t-j} + \varepsilon_i \tag{4}$$

$$\Delta V_t = \alpha_0 + \lambda_{1i} + \eta V_{t-1} + \eta \sum_{i=1}^{n} \Delta V_{t-j} + \varepsilon_i \tag{5}$$

Where in equation (3), (4) and (5) above, V represents the variables used for the unit root test (RGDP, MPR, LDR, CPS, MOS, CPI). In most case, unit root test is conducted on individual variables using either intercept without trend or intercept with trend. Thus, equation (3) represents the model without intercept and no trend, equation (4) represents the model with intercept but no trend while equation (5) represents the model with intercept and trend.

3.4 Long-Run Analysis

To test for the presence of long-run equilibrium relationship, the Johansen's and Juselius (1990) and Johansen (1991) multivariate co-integration technique is employed. The co-integration test is based on the following equation.

$$\Delta Y_t = \alpha + \eta_1 \Delta Y_{t-1} + \eta_2 \Delta Y_{t-2} + \eta_3 \Delta Y_{t-3} + \eta_4 \Delta Y_{t-4} - - \eta_{k-1} \Delta Y_{t-k+1} + \eta\, Y_{t-k} + \mu_t \tag{6}$$

Where n and n are 4x4 matrices and k is the lag length. The tests used here involved co-integration with linear deterministic trend in the vector auto regression (VAR).

3.5 Granger-Causality Test

The test for linear causality or feedback effect between the specified variables was done using granger causality techniques. This test would be conducted to enable us establish the existence of and the direction of causality. The test is based on the following equation below.

$$Y_t = \alpha_0 + \sum_{i=1}^{n} \alpha_1 Y_{t-1} + \sum_{i=1}^{n} \beta_1 X_{t-1} + \mu_{1t} \quad (7)$$

and

$$X_t = \alpha_0 + \sum_{i=1}^{n} \alpha_1 X_{t-1} + \sum_{i=1}^{n} \beta_1 Y_{t-1} + \mu_{2t} \quad (8)$$

Where X_t and Y_t are the variables to be tested while $\mu 1_t$ and $\mu 2_t$ are white noise disturbance terms and n is maximum number of lags. The null hypothesis $\propto_1 = \beta_1 = 0$ for all 1's is tested against the alternative hypothesis $\propto_1$, 0 and β 0, if the coefficient of $\propto_1$ are statistically significant, that of β_1 are not, then X causes Y. If the reserve is true than Y causes X. However, where both coefficient of $\propto_1$ and β_1 are significant then causality is bi-directional.

4. Empirical Results

4.1 Unit Root Test Result

Variable	ADF t-Statistic	Test Critical Value 1%	Test Critical Value 5%	Test Critical Value 10%	Test Result
SGRT	-2.428676	-3.6496	-2.9558	-2.6164	Non Stationary
D(SGRT)	-8.293810	-3.6576	-2.9591	-2.6181	Stationary
CSME	-1.148455	-3.6496	-2.9558	-2.6164	Non Stationary
D(CSME)	-3.587676	-3.6576	-2.9591	-2.6181	Stationary
INTR	-2.428676	-3.6496	-2.9558	-2.6164	Non Stationary
D(INTR)	-5.611987	-3.6576	-2.9591	-2.6181	Stationary

Source: Eview 8.0

The ADF unit root test result is summarize in the table 4.1 above which shows that all the variables employed in this study are non stationary at levels, which implies that they are not integrated of order one. However, the series were stationary at first difference I(1), i.e. they are integrated of order one concluding that the model is suitable for estimating long run model.

4.2 Descriptive Statistic Result

	CSME	INTR	SGRT
Mean	8.994706	17.63853	14.35529
Median	7.535000	17.77000	14.23500
Maximum	27.04000	29.80000	17.60000
Minimum	0.130000	7.750000	11.62000
Std. Dev.	8.255186	4.895781	1.321389
Skewness	0.607567	0.155327	0.195625
Kurtosis	2.112223	3.286300	3.028298
Jarque-Bera	3.208320	0.252837	0.217992
Probability	0.201058	0.881246	0.896734
Observations	34	34	34

Source: Eview 8.0

The above table 4.2 shows the descriptive statistic. The mean value of the CSME, INTR and SGRT variables are 8.994706, 17.63853, and 14.35529 respectively. The median of the series when the values are ordered from the smallest to the largest are 7.535000, 14.23500 and 17.77000 respectively for CSME, SGRT, and INTR variables. It should be noted that the median is a robust measure of the centre of the distribution that is less sensitive to outliers than the mean. The maximum values of each of the series in the current sample are 27.0400 for CSME, 29.80000 for INTR, and 17.60000 for SGRT. On the other hand, the minimum values of the series in the current sample are 0.130000 for CSME, 7.750000 for INTR and 11.62000 for SGRT respectively.

The standard deviations which are measure of dispersion or spread in each of the series are 8.255186 for CSME, 4.895781 for INTR and 1.321389 for SGRT respectively. The skewness which is a measure of asymmetry of the distribution of the series around the mean, is seen to be positive for CSME, INTR and SGRT variables (S=0.607567 for CSME, 0.155327 for INTR and 0.195625 for SGRT), which means that the distribution has a long right tail. The kurtosis statistic that measures the peakedness or flatness of the distribution of each of the series is calculated at 2.112223 for CSME, 3.286300 for INTR and 3.028298 for SGRT. As a rule, the kurtosis of the normal distribution is 3, if the kurtosis exceeds 3, the distribution is peaked (leptokurtic) relative to the normal, if the kurtosis is less than 3, the distribution is flat (palykurtic) relative to the normal. Of all the variables, 2 posted kurtosis of 3, while one variable (CSME 2.112223) has kurtosis less than 3. Hence the distributions can be described as both leptokurtic (peaked) and palykurtic (flat).

The Jarque-Bera statistic, which is a test statistic for testing whether the series is normally distributed, measuring the difference of the skewness and kurtosis of the series with those from the normal distribution is reported at 3.208320 with a probability of 0.20 for CSME. It is reported for 0.252837 with a probability of 0.90 for SGRT.

4.3 Johansen Cointegration Test

Date: 02/21/16 Time: 00:18
Sample: 1981 2014
Included observations: 32
Test assumption: Linear deterministic trend in the data
Series: CSME INTR SGRT
Lags interval: 1 to 1

Eigenvalue	Likelihood Ratio	5 Percent Critical Value	1 Percent Critical Value	Hypothesized No. of CE(s)
0.494853	31.52856	29.68	35.65	None *
0.224346	9.675564	15.41	20.04	At most 1
0.047164	1.546007	3.76	6.65	At most 2

*(**) denotes rejection of the hypothesis at 5%(1%) significance level
L.R. test indicates 1 cointegrating equation(s) at 5% significance level

Source: Eview 8.0

A look at table 4.3 shows that the critical assumption was that of linear deterministic trend in the data series namely SGRT, CSME and INTR. It can be seen that the growth of SMEs is co integrated with the interest rate and banking system credit to SMEs at 1 percent significance level. This indicates that a long run equilibrium relationship exists between the variables studied. Therefore the hypothesis of no co integration cannot be accepted.

4.4 Pairwise Granger Causality Tests

Date: 02/21/16 Time: 00:03
Sample: 1981 2014
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Probability
CSME does not Granger Cause SGRT	32	0.94847	0.39986
SGRT does not Granger Cause CSME		1.11872	0.34137
INTR does not Granger Cause SGRT	32	0.97139	0.39140
SGRT does not Granger Cause INTR		2.19175	0.13120
INTR does not Granger Cause CSME	32	9.93073	0.00059
CSME does not Granger Cause INTR		2.05665	0.14745

Source: Eview 8.0

Table 4.4 shows the result of pairwise granger causality tests lagged by two periods. The result showed an evidence of causality running from banking system interest rate (INTR) to banking system credit to SMEs (CSME), but this is significant at 1 percent level. Furthermore, our result suggest a weak evidence of unidirectional causality running from banking system credit to SMEs (CSME) to SMEs growth in Nigeria and SMEs growth to banking system credit to SMEs. Banking system interest rate influences the growth of SMEs in Nigeria while growth of SMEs does not influence interest rate.

5. Conclusion

The study is an attempt to examine the anatomy of the banking system credit and SMEs growth in Nigeria from 1980-2014 using the econometric tool of the Johansen and Juselius co-integration test and the Engel and granger causality test. The co integration approach was applied after determining stationarity of the variables using the ADF statistic, as well as the causality test using the Engel and Granger approach. From the result it was reveal that long run equilibrium exist among the variables studied in the model. This implies that banking system credit to SMEs will bring about more growth in this sector. However, the study concludes that banking system credit to SMEs will accelerate the SMEs growth in particular and the growth of the Nigeria economy in general, knowing full well, that SMEs with its potential can absorb the increasing level of unemployment experienced in the country and has the capability of turning a greater number of Nigerians from their poor state if the sector is accorded it rightful place. Based on this, the study recommends that a well deserved attention be placed by the government and other stakeholders in the sector in the areas of access to funds, legislations, institutional restructuring and protection.

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