THE PRODUCTION SECTOR CREDIT AND ECONOMIC DEVELOPMENT OF NIGERIA, A COINTEGRATION ANALYSIS

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ABSTRACT

This study examines the effect of commercial bank credit to the production sector on economic development in Nigeria. Adopting the multiple regression model the commercial banks' credit to each of the sub sectors of the production sector namely agriculture, forestry and fishery, manufacturing, mining and quarrying and real estate and construction were regressesd against the gross domestic product for the period 1960-2008 to reveal that a strong long-run relationship exists between credit to the production sector and the level of economic development in Nigeria. Also, there was a high evidence of a two-way causal relationship between two of the explanatory variables and the gross domestic product (GDP) with only the commercial banks' credit through the mining and quarrying sub-sector appearing to be a significant contributor at 1% alpha level. Paper therefore, concludes that in general, the commercial banks' lending to the production sector has not performed well in terms of contribution to Nigeria's economic development and therefore there should be a critical monitoring of the facilities to ensure that the funds are not misappropriated.

Keywords: ECONOMIC DEVELOPMENT, C0MMERCIAL BANKS' CREDIT, PRODUCTION SECTOR

1.1   INTRODUCTION

Commercial banks through their intermediation role engender economic development in every economy. As cited in Nwezeaku and Akujuobi (2010), among the many functions of commercial banks is credit extension to the various sectors of the economy.

They also have several other functions such as acceptance and safe keeping of deposits and other valuables, transferring of funds, money creation, encouragement of banking habit among citizenry, provision of employment opportunities, and execution of government monetary policies, just to mention but a few (Bernanke and Blinder, 1988; Becketti and Morris, 1992; Agen, 1995; Nzotta, 2004).

In order to enhance the development of Nigerian economy, the commercial banks give credits to various sectors in the economy mostly as stipulated by the central bank of Nigeria. According to Adewumi (1984) and Ademiyi (1985) these credits encourage both the internal and international businesses.

The commercial banks mostly give credit on short-term basis except in few instances where they will lend on medium and long-term basis provided it would not hamper the liquidity position of the bank (Nakamura, 1989; Aja, 1995; Ajie, 1995; Carling and Lundberg, 2002; Nzotta, 2004). These commercial bank loans must be given with collaterals or securities to back up the loan in case of a default. There are policies that guide commercial banks lending, which must be adhered to before loans are given out as enshrined in the Central Bank of Nigeria Prudential Guideline (Central Bank of Nigeria Annual Report, 2010).

Commercial banking activities have continued to be of immense advantage to the development of the economy, especially the credit facilities that the commercial banks offer to various sectors of the economy. These credits have improved investments at both internal and international levels and through them commercial banks performance objectives are expected to be met (Diamond, 1984; Casolaro, Forcarelli and Pozzolo, 2002). The foregoing therefore supports the fact that banks play very vital roles in the economy by contributing immensely to the financial, economic and social development of the economy. For instance, commercial banks credit in a developing nation like Nigeria is channeled into so many sectors of the economy. The sectors as pointed out by the Central Bank of Nigeria (2010) include the following:

- Production sectors
- General commerce
- Services
- Others

In their study, Nwezeaku and Akujuobi(2010) employing the OLS model, demonstrate that these sectoral credits bear a significant relationship with both total commercial bank investment and their foreign asset base. This study by Nwezeaku and Akujuobi (2010) further asserts that only the commercial bank credit to the other sectors contributes significantly to the level of commercial bank investment. Similarly, both commercial bank credit to the other sectors and general commerce exert significant effect on commercial bank foreign asset base.

However, no attempt was made by this study by Nwezeaku and Akujuobi (2010) or other similar studies (Schumpeter, 1911; King and Levine, 1993; Levine and Zeros, 1998 Asiegbu and Ebiringa, 2007; Akujuobi and Onuorah, 2007) to empirically determine the influence of commercial bank credit to any sector of the economy on economic development in Nigeria. This obvious gap is what the present study seeks to fill.

Consequently, the broad objective of this study is to empirically determine the influence of commercial banks' credit to the production sector on economic development in Nigeria. Specifically, the study is intended: (i) to determine the relationship between commercial banks' credit to the production sector and economic development in Nigeria. (ii) To ascertain the effect of commercial banks' credit to each of the sub sectors of the production sector namely agriculture, forestry and fishery, manufacturing, mining and quarrying and real estate and construction, on economic development in Nigeria. (iii) Finally, to suggest policy measures towards achieving economic growth in Nigeria through commercial banks' lending activities. Consequently the study therefore, tests the hypothesis;

That the commercial banks' credits to production sector components namely agriculture, forestry and fishery, manufacturing, mining and quarrying and real estate and construction, have no significant impact on economic development in Nigeria.

Furthermore, the significance of this study lies in the fact that besides adding value to the current level of literature in the area of bank lending activities, it equally helps in the assessment of the performance of the Central Bank of Nigeria numerous policies viz-a-viz economic development in Nigeria.

Apart from this first section, the remaining parts are section II on literature review, research methodology in section III, section IV on result discussion while the paper concludes with recommendations in section V.

2.0 REVIEW OF RELATED LITERATURE AND THEORETICAL FRAMEWORK

THEORETICAL FRAMEWORK

Greer (1967), Morgan (1992), and Katherine (2002) and have all asserted that commercial banks' loans do not just occur for any reason. To these scholars, something or a need must instigate it. For instance, savings is encouraged in every economy, but in a situation where the savings is not enough to take care of all the investment needs available, the need for loans arises.

In countries of the world, the maximization of the welfare of citizens is always aimed at by the governments. In doing this, effort is always made to satisfy the human wants by the provision of affordable goods and services (Todaro and Smith, 2006 and Musgrave and Musgrave, 2006). This is why most countries, particularly the developing ones, always have the promotion of economic development as one of their major goals. How do they achieve this? Theories of economic development abound that propound what should be done, and they have always advocated investment of funds in capital goods. Let us look at Harrod-Domar and Rostow development models, for example.

HARROD-DOMAR MODEL

According to Akujuobi (2006), the Harrod-Domar Model developed in the 1930s suggests that savings provide the funds, which are borrowed for investment purposes. The model believes that the economy's rate of growth depends on:

- The level of savings and savings ratio
- The productivity of investment i.e. the economy's capital-output ratio. Following from the last variable, it means that if for example N10 worth of capital equipment produces each N1 worth of annual output, a capital-output ratio of 10:1 is in existence. If the economy later has a capital-output ratio of 2:1 it means the country has improved its efficiency as to use only N2 capital to produce each N1 of output annually.

Further analysis of the model, which was originally developed to analyze business cycles, but later adapted to explain economic growth, shows the following:

- Economic growth depends on amount of capital and labour i.e. $NY = 7 (K, L)$

- Developing countries are endowed with abundant amount of labour. Therefore, it may not be far from the truth to say that it is lack of physical capital that hinders economic growth and hence economic development in these developing economies.
- More physical capital generates economic growth.
- Net investment (i.e. investment over and above that needed to be replaced worn out capital (depreciation). Leads to the availability of producer goods (capital appreciation). This, in turn, leads to higher output and income. With higher income, higher level of savings would be achievable.

Even though this model has some limitations such as being for business cycles, not being able to stimulate desire savings and strict adherence to it leading to large debt over hangs, the need for investment for an economy desiring economic development is highly projected.

ROSTOW DEVELOPMENT MODEL

This is basically a linear theory of development. According to Akujuobi (2006), the model shows that economies can be divided into primary, secondary and tertiary sectors and the economic history of developed countries has amply shown these stages.

Stage 1:Traditional Society

This stage is characterized by subsistence economic activities. This means that producers just produce enough for themselves. Nothing remains for trading. If and when there is any exchange, it is by trade by barter. Agriculture is the mainstay of the economy and highly labour intensive. The use of capital is limited and minimal.

Stage 2: Tradition Stage

This stage is a precondition for takeoff; it is at this stage that surplus goods for trading begin to emerge. Transportation to move these goods beyond their producers begins to emerge also. Entrepreneurs desire to handle the nascent business begin to emerge also.

Stage 3: Take off

Industrialization begins to flourish and attract workers away from land and agriculture-related fields into manufacturing. By this time, economic growth is concentrated in a few regions of the country where one or two industries exist. Associated with this period is the emergence of new political and social institutions to support the growing industrialization.

Stage 4:Drive to Maturity

At this stage, economic growth is now in areas and industries supported by needed technological innovations.

Stage 5:High Consumption

More goods and services are now available for consumption.

Rostow's theory implies that development requires substantial investment in capital equipment. To enhance growth in developing nations, however, the right conditions for such investment would have to be created. In that case, the economy needs to reach stage 2. For Rostow's theory, the following can further be implied.

- Savings and capital formation (accumulation) are essential for the process of economic growth and hence development.

- The central issue to development is to mobilize savings so as to generate investment that would trigger-off self-generating economic growth.

- Development can stall at stage 3 for lack of savings, which is common in developing countries. Most experts suggest 15-20% of GDP as the required savings. It then means that if the local economy is able to save about 3%, it then means that aid and/or loan of 12-17% is needed to plug the "savings gap". The resultant investment would then push the economy to stage 4, which is the drive to maturity and self-generating economic growth. Lack of such investment, on the other hand, means the vicious circle of under-development, according to this theory.

Limitations of this theory, according to Tutor 2u (2004) include the fact that the theory is limited. This authority believes that determinations of a country's stage of economic development are usually broader and include:

- The quantity and quality of resources
- A country's technologies
- A country's institutional structures e.g. law of contract.

Obviously, from the review of these two development theories, the role of investment in economic development is clearly seen. As a result of this, many developing countries out to achieve economic development, have often embarked on policies aimed at promoting investment of capital funds.

These capital funds are, in most cases, sourced from banks as credits so as to fill the gap between what is supposed to be invested and what is saved.

WHAT IS BANK CREDIT?

Various authors from various perspectives have defined credit. The UBS Dictionary of Banking and Finance (1981) for instance, defined credit as:

- The ability to borrow money on the promise of future payment

- In finance, an amount loaned to a borrower.

The above definition presents a narrow perspective of the concept of credit. The definition relates more to fund based lending activities to the exclusion of non-fund based activities. The Prudential Guidelines (1990) succinctly convey a more comprehensive definition of credit it defines credit facilities as the aggregate of all loans advances, overdrafts, commercial papers, bankers acceptances, bills discounted, leases, guarantees and other loss contingencies connected with a bank's credit risks. Also the definition of credit proposed by the CBN Monetary Policy Circular (1992) agrees with the view above. Generally, we could conclude that credit includes all commitments by a bank that has risk exposure and that may result in financial loss to the bank.

TYPES OF BANK CREDITS

From the definitions above, bank credits includes

a.   Loans and Advances Consisting of

   *   Overdrafts

   *   Advances

   *   Medium term loans

   *   Long-term loans

b.   Special Credits Consisting of:

   *   Public Works Bonds, made up of

   (1)   Bid bonds or tender bonds

   (2)   Advance payment guarantee

   (3)   Performance bond

      *   Custom and Excise Bonds

      *   Bill Lading Indemnities

c.   Documentary Bills

d.   Leases

e.   Other credits

   *   Commercial papers

    *   Bankers Acceptance

    *   Bills Discounted

In serving the needs of the society, banks have such obligations as maintenance of adequate sustainable capital which ensures the meeting of the objectives of banks on one hand, and the satisfaction of its customers, on the other hand. According to Oluyemi (1998), the primary aim of bank capital base is to have strong and reliable financial strength in order to handle its financial liabilities with appreciable assets.

Past studies in the area of bank lending seem to be have focused on bank performance (Iwuala, 2008;Uche-Akujobi,2008).The major worry with both studies lies in their inability to select some performance indicators that cut across the entire banking industry (CBN,2006). Added to this, the studies again fell short of expectation by studying only a cross section of the commercial banks as case studies.

One would have expected such studies to apply those performance indicators as suggested by the CBN (2006) which cut across the banking industry so as to permit credibility and generalisation of the results of the studies. Others are the works of Onyeanwu(2008), Aligwekwe(2009) and Chukwendu and Arokoyo (2007) . For instance, Chukwendu and Arokoyo (2007) were of the view that credit to agricultural sector is a necessity in increasing the capital base for farmers in Nigeria since most small-scale farmers in Nigeria do not always have enough funds for farming. This problem the study opined, has in fact, increased in leaps and bounds since most of these farmers do not have easy access to credits from the commercial banks especially with the stringent requirements for obtaining credit from the banks. Some other past studies include that of Enwereuzor(2007) which only focused on the impact of bank credit on the growth of small and medium scale enterprises in Nigeria. This study by Enweruzor(2007), like that of Chikwendu and Arokoyo(2007) fell short of the expectation especially with their individual considerations on one aspect of the economy.

Consequently, this study examines the impact of commercial banks' credit to the production sector on economic development in Nigeria.

3.0 RESEARCH METHODOLOGY

The data came for this study is generated from the Central Bank of Nigeria Statistical Bulletin, covering the period 1960– 2008. The four components of commercial banks' credit to the production sector were regressed on the actual gross domestic product (GDP) figures for the corresponding period.

3.1 RESEARCH MODEL AND ANALYTICAL METHOD

The F-test was used to test the overall significance of the explanatory variables taken together, while the student t-test was used to test for the significance of the contribution of each explanatory variable or components of commercial banks' sectoral credit to production to the level of economic development in Nigeria. The coefficient of multiple determination (R^2) was used to test for goodness of fit of the study.

However, before all these, the unit root test as summarized in table 1, is carried out using the Augmented Dickey Fuller test and Philip-Perron tests in order to determine whether the data set is stationary and the order of integration since many empirical researches conducted in the past utilizing only the OLS, yielded spurious results especially in the developing countries (Engel and Granger, 1987).

Finally, the study as shown in tables 2 and 3 respectively, employed the Granger causality test and the cointegration technique to measure the direction of effect as well as the informational content of the variables, essentially to establish the presence of a long-run relationship between the gross domestic product and the explanatory variables, respectively.

3.2 MODEL SPECIFICATION

Specifically we have;

GDP_t = **Level of gross domestic product in year t**

AFF_t= **Level of Commercial Banks Loan to the Agriculture Forestry and Fishery sub-sector in year t.**

MAN_t=**Level of Commercial Banks Loan to the Manufacturing sub-sector in year t.**

MIQ_t=**Level of Commercial Banks Loan to the Mining and Quarrying sub-sector in year t.**

REC_t=**Level of Commercial Banks Loan to the Real Estate and Construction sub-sector in year t.**

Thus, the functional form is given as:

$GDP_t = f(AFF_t, MAN_t, MIQ_t, REC_t,)$…………1

Mathematically, we have the regression equation as;

GDP_t = $\beta_0 + \beta_1 AFF_t + \beta_2 MAN_t + \beta_3 MIQ_t + \beta_4 REC_t + U_t$ …… 2

Where;

$\beta_{1>}$ 0; $\beta_{2>}$ 0; β_3 > 0; $\beta_{4>}$ 0

4.0 DISCUSSION OF RESULTS

Evidently, from table 1, while three of the variables(AFF_t, MAN_t , MIQ_t) ,under ADF and Philip- Perron, turned out stationary at first difference or 1(1), only real estate and construction as a sub-sector failed to be stationary even at second difference. Thus, meaning that the data set when at first difference can be relied upon for the estimation and this therefore justifies our exclusion of the commercial banks' loan to the real estate and construction, REC_t in the final analysis as seen in model 2 (see table 4).

In tables 4 and 5, model 2 parades the following statistics: R-squared, 55.1%; adjusted r-squared, 52%; log likelihood,-794.65; Akaike information criterion, 33.28; Schwarz criterion, 33.43; Hannan-Quinn information criterion, 33.33 and Durbin-Watson, 1.30 (evidence of no autocorrelation).All these are strong evidence of the high predictive power of the model. Similarly, from table 4, since the F-ratio calculated is 18.03165 with a probability of 0.00000, the null hypothesis is rejected. Hence, there is a significant relationship between the commercial banks' credit to the production sector and the level of economic development in Nigeria., for the respective periods under investigation, 1960-2008 ,and the estimated regression equation is given as;

GDP_t = $1813998 - 94.33AFF_t - 0.65MAN_t + 43.56MIQ_t$ …… 3

Equation 3 shows that only the commercial bank credit through the mining and quarrying sub-sector of the production sector met the a priori expectation given its positive coefficient. The other two included variables, with their negative coefficients, failed the a priori test. Similarly, whereas the mining and quarrying   sub-sector turned significant at 1%, the agriculture, forestry and fishery was significant at 10% and finally manufacturing not significant at all (see tables 4 and 5). Table 3 on the co-integration test, provides evidence of the existence of a long-run relationship between the GDP and three selected variables of commercial banks' credit to the production sector.

This means that a long-run relationship exists between the GDP and the commercial banks' credit to the production sector components namely agriculture, forestry and fishery, manufacturing, mining and quarrying.

Finally, in terms of the informational content of the variables interacting, apart from the fact that the gross domestic product failed to Granger cause the commercial banks' credit to the manufacturing sub-sector, all other pairs showed a two-way causal relationship between the variables (see table 2).

5.0. CONCLUSION AND RECOMMENDATION

The conclusion based on these findings is that generally, the commercial bank lending to the production sector has not performed well in terms of contribution to Nigeria's economic development and therefore there should be a critical monitoring of the facilities .This will ensure that the funding actually goes into the production sector rather than end up into individual pockets.

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Table 1: Summary of Unit Root Test Results

Augmented Dickey-Fuller Unit Root Test					Philip-Perron Unit Root Test			
Variable	T-stat.	Criti-cal vale	Order of Integra-tion	Signifi-cance	T-stat.	Criti-cal value	Order of Integra-tion	Significance
AFF	-7.37115	-3.615588	1(1)	1%	-5.9186	-3.6156	1(1)	1%
MAN	-3.007871	-2.941145	1(1)	1%	-6.3711	-3.3711	1(1)	1%
MIQ	16.02545	-2.035637	1(1)	1%	-4.8370	-3.6463	1(1)	1%
REC	-0.54012	-2.601424	-	NS	-0.54012	-2.601424	-	Not significant

Source: Eviews 7.0 Statistical Package

TABLE 2: Pairwise Granger Causality Tests

Date: 12/01/10   Time: 08:05

Sample: 1960 2008

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
DAFF does not Granger Cause GDP	**46**	**4.79183**	**0.0135**
GDP does not Granger Cause DAFF		**4.40501**	**0.0185**
DMAN does not Granger Cause GDP	**46**	**9.35209**	**0.0005**
GDP does not Granger Cause DMAN		**0.96471**	**0.3896**
DMIQ does not Granger Cause GDP	**46**	**8.63833**	**0.0007**
GDP does not Granger Cause DMIQ		**141.948**	**4.E-19**
DMAN does not Granger Cause DAFF	**46**	**13.8405**	**3.E-05**
DAFF does not Granger Cause DMAN		**7.09336**	**0.0023**
DMIQ does not Granger Cause DAFF	**46**	**13.4034**	**3.E-05**
DAFF does not Granger Cause DMIQ		**26.7364**	**4.E-08**
DMIQ does not Granger Cause DMAN	**46**	**10.5538**	**0.0002**
DMAN does not Granger Cause DMIQ		**43.2699**	**8.E-11**

Source: Eviews 7.0 Statistical Package

TABLE 3: COINTEGRATION TEST

VARIABLE	t-Statistics	t-probability
AFF	**9.75854**	**0.00**
MAN	**8.59682**	**0.01**
MIQ	**15.8484**	**0.00**

Source: E-views 7.0

Table 4: Summary of the Results of the Global Statistics

TEST-STATISTIC	MODEL1 LEAST SQUARE, REC_t INCLUDED ...	MODEL2, EXCLUDING REC_t LEAST SQUARE
R-square	=0.904	0.551
Adjusted R-square	=0.896	0.520
S.E of Regression	=1811881	3912770
Sum of squared residual	=1.44E+14	6.74E+14
Log likelihood	= -772.9750	-794.6491
Durbin-Watson stat	=1.744	1.301
Mean depend. var	=2607087	2661355
S.D. depend. Var	=5606428	5652736
Akaike info criterion	=31.754	33.432
Schwarz criterion	=31.947	33.336
Hannan-Quinn criterion	=31.827	
F-statistic	=103.8932	18.0365
Prob(F-statistic)	=0.000	0.000

Source: Eviews 7.0 Statistical Package

GDP_t = Level of gross domestic product in year t

AFF_t= Level of Commercial Banks Loan to the Agriculture Forestry and Fishery sub-sector in year t.

MAN_t=Level of Commercial Banks Loan to the Manufacturing sub-sector in year t.

MIQ_t= Level of Commercial Banks Loan to the Mining and Quarrying sub-sector in year t.

REC_t= Level of Commercial Banks Loan to the Real Estate and Construction sub-sector in year t.

Table5: Test of Variables Significance

Dependent Variable: GDP

Method: Least Squares

Date: 03/17/11   Time: 04:42

Sample (adjusted): 1961 2008

Included observations: 48 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1813998.	580198.6	3.126511	0.0031
DAFF	-94.33513	52.04722	-1.812491	0.0767
DMAN	-0.648824	10.16579	-0.063824	0.9494
DMIQ	43.55988	8.300277	5.248003	0.0000

R-squared	0.551455	Mean dependent var		2661355.
Adjusted R-squared	0.520872	S.D. dependent var		5652736.
S.E. of regression	3912770.	Akaike info criterion		33.27704
Sum squared resid	6.74E+14	Schwarz criterion		33.43298
Log likelihood	-794.6491	Hannan-Quinn criter.		33.33597
F-statistic	18.03165	Durbin-Watson stat		1.301602
Prob(F-statistic)	0.000000			