

## **SECTORAL LOANS DEMAND AND PERFORMANCES OF DEPOSIT MONEY BANKS IN NIGERIA**

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### **Abstract**

*The study empirically examined sectoral loans demand and performances of deposit money banks. Data used for the study was extracted from CBN statistical bulletin and audited annual reports of Banks; the study also employed vigorous econometric methods such as: unit root stationary test, johannse co-integration, multiple OLS regression analysis, granger causality test, impulse response analysis and variance decomposition test. The result revealed that loans and advances to agriculture, mining and quarrying sectors have negatively contributed to the performances of banks while manufacturing and real estate construction sectors contributed positively to the performances of deposit money banks. It is therefore recommended that banks should increase their loans to the less preferred sectors (agriculture, mining and quarrying sectors) on the ground that government will fully guarantee such loans as these sectors will have improved performances consequently leading to increase performances of deposit money banks in the future and the overall growth of the economy.*

**Keywords:** agricultural sector, mining & quarrying sector, manufacturing sector, real estate construction sector, return on capital employed, impulse response, variance decomposition

### **INTRODUCTION**

Deposit money banks in recent times have played significant role in financial intermediation and capital formation via loan and advances to various sectors of the economy to promote economic growth by operating in a sound manner within regulative framework of the central Bank of Nigeria (CBN). The bank activities centre on intermediate funds between savers (surplus units) and investor (deficit unit), (Ahmed,1989). They act as catalysts in the process of capital formation (Teriba, 1978).

The establishment of sectoral preferences for deposit money banks lending is to bring about re-allocation of loans and advances away from sectors where it can enhance productivity, from the directives of central bank of Nigeria, banks are required to channel to the preferred sector (production sector) a minimum percentage of their total loans and advances and with a reasonable low rate of interest. Olokoyo (2011) in the same direction, making reference to the

bank and other financial act as amended (BOFIA) (1998), argued that banks loan and advances should be directed to preferred sectors of the economy in order to enhance economic growth and development.

Mordi (1986) Nwankwo (2000) and Chodechi (2004) in regulated and deregulated periods carried out studied on related subject matter and interestingly the results revealed that deposit money banks have failed with the required minimum loans and advances allocated to the non-oil sector while exceeding the required maximum to the less preferred sectors.

### **STATEMENT OF PROBLEM**

The research carry over the years revealed that deposit money banks have been reluctant in granting loan and advances to declined sectors in the economy; recently, central bank of Nigeria mandated banks to lend out credits to the declined sectors or forfeits the cash reserve requirement (CRR). It therefore behoove on the researcher to find out how loan and advances have impacted on the performances of deposit money banks.

### **SIGNIFICANT OF THE STUDY**

The significant of the study cannot be over-emphasized, as findings will contribute, first and foremost to the existing knowledge in the discipline of economics, finance and banking, also serves as working tools at the disposal of policy makers in the areas of formulation of monetary and fiscal policies in addressing macroeconomic problems in Nigeria economy.

### **HYPOTHESES**

H<sub>01</sub>: there is no significant relationship between loans to agricultural sector and return on capital employed.

H<sub>02</sub>: there is no significant relationship between loans to manufacturing sectors and return on capital employed.

H<sub>03</sub>: significant relationship does not exist between loans to mining & quarrying sector and return on capital employed.

H<sub>04</sub>: significant relationship is not in existence between loans and advances to real estate construction sector and return on capital employed.

### **THEORETICAL REVIEWED**

The theoretical frame used in the study will aid in addressing conceptual and methodological issues that are raised in the study; therefore, the theoretical frame work for this study is anchored on the following theories

**Multiple lending theory:** this theory reveals that deposit money banks should be particularly involve in syndicated lending in a developed capital market after concise consolidation. The M&A (merger and acquisition) exercise increase bank's capital base and the lending ability to involve in consortium lending.

**The signaling arguments:** the signaling argument states that companies with good credit rating are better able to attract credits from deposit money banks with lower interest rate charge.

**Loan pricing theory:** deposit money banks should afford to set moderate interest rate to avert the problems of adverse credit selection among borrowers. (stiglitz and weiss, 1981).the problem

of adverse credit selection existed when deposit money banks set high interest rate in order to improve their balance sheet position; risky borrowers will still be attracted to such interest rate, and when they receive such credit facilities, they develop problems of doubtful and bad debts to the banks.

**Credit market theory:** the theory postulates that interest rate is the price that determines the forces of demand and supply of credit in the market. The price increases when the demand for credit surpasses the supply for such credits and vice versa.

### **CONCEPTUAL FRAMEWORK**

Deposit money banks' credit which has a period of short to long term basis, offered credit facilities to individuals, business firms and government parastatals to enable them use such credit assistance on investment potentials and development activities towards contributing to the growth of the economy (Felicia, 2011)..

Deposit money banks played the role of intermediaries (attracting savings and channeling such to deficit areas of the economy). These roles help in capital formation and the overall growth of the economy, in performing such functions, deposit money banks have such financial muscles to carry out intermediaries' roles in the economy in return promote their performances.

Deposit money banks are always inclined in giving credits to their various clients considering the three basic principles guiding their operations which are profitability, liquidity and developmental functions (Adolphus, 2011). However, there are various factors that affect the decision of deposit money banks to give out credits to their clients, prominent among them are : interest rate, liquidity, deposit base, government policies, cash reserves etc.

The practice of giving out loans by deposit money banks could be traced back to the era of industrial revolution which increases the need for large capital investment for profitable projects. Various management of firms were unable to meet immediate changes in the financial position, therefore requested the assistance of deposit money banks. (Ezirim, 2005). Banks lending practice in Nigeria began the era when the African bank corporation was established and the development of other banks during the colonial era. Though, the practice of giving out loans during the then colonial rule was said to be discriminatory and of bad conduct as only expatriates were opportune to receive credits from the banks.

### **EMPERICAL REVIEW**

Some empirical works have been done by scholars on the related study in consideration of the variables factors that determine the forces of demand and supply of loans and advances.

Melites and Pardine in Ojo (1978) investigated the factors that influence the forces of demand and supply of deposit money banks' loans and advances, using a simple simultaneous equation method, and estimation strong results were revealed that the constraints on the capability to grant loans and advances were identified as capacity of deposit money bank' assets, interest on lending, alternative earning assets.

Mordi (1986) empirically identify that the desire level of loan supply is a function of excess liquid assets yield on money deposit banks loans (average deposit money banks lending rate) and cost per naira of deposit.

Ladman and Adams (1978) were able to identify that deposit money banks in the Dominican Republic did not follow the policy of giving out more loans to agricultural sector due to a higher costs of transactions.

## **METHODOLOGY**

Various econometric methods was employed in the study such as: unit root stationary test, multiple OLS regression analysis, johannse co-integration test, granger causality test, impulse response test and variance decomposition; the data for the study was extracted from CBN statistical bulletin and audited annual financial accounts of banks. The sample size for the study ranges between 1981-2014.

## **MODEL SPECIFICATION**

The model specified for the study will include but not limited to the following

### **Functional form of the model**

The functional form expresses the functional relationship between the variables (regressand and regressors) in the study,

$$\text{Roce} = f(\text{As}, \text{Ms}, \text{Mqs}, \text{Rscs}) \dots\dots\dots (1)$$

The **Mathematical model** expresses the exact relationship of the variables by including a constant phenomenon into the model,

$$\log\text{Roce} = \alpha_0 + \alpha_1 \log\text{As} + \alpha_2 \log\text{Ms} + \alpha_3 \log\text{Mqs} + \alpha_4 \log\text{Rscs} \dots\dots\dots (2)$$

Where,

$\alpha, \alpha_1, \alpha_2, \alpha_3, \alpha_4$  are the parameters to be estimated

The **Econometric Model** measures the inexact relationship between the variables by including into the model the error stochastic term to represent all other variables that may affect the dependent variable but are not included in the model.

$$\log\text{Roce} = a_0 + a_1 \log\text{As} + a_2 \log\text{Ms} + a_3 \log\text{Mqs} + a_4 \log\text{Rscs} + \delta \dots\dots\dots (3)$$

Where,

Roce = Return on capital employed.

As = Loans and advances to agricultural sector.

Ms = loans and advances to manufacturing sector.

Mqs = loans and advances to mining and quarrying sector.

Rscs = loans and advances to real estate construction sector.

$\delta$  = Stochastic error term.

## **APARIORI EXPECTATION**

We expect mixed reactions of our variables in its relationship with the dependent variable; such that loans and advances to agricultural, mining and quarrying sectors to contribute negatively to banks performances while the manufacturing and real estate construction sector to contribute positively to banks performances.

$$\alpha < \alpha_1 > \alpha_2 < \alpha_3 > \alpha_4$$

**DATA PRESENTATION AND ANALYSIS OF RESULT**

The data below represent sectoral loans and advances to agricultural, mining and quarrying, manufacturing and real estate construction sector while return on capital employed is a proxy to banks performances, extracted from CBN statistical bulletin and audited reports of Banks.

Year	ROCE	Agricultural sector	Manufacturing sector	Mining & quarrying sector	Real estate construction sector
1981	33.6	0.6	2.7	0.1	1.8
1982	72.81	0.8	3	0.1	2.1
1983	89.45	0.9	3.1	0.1	2.3
1984	31.8	1.1	3.1	0.2	2.4
1985	9.68	1.3	3.2	0.2	2.5
1986	15.8	1.8	4.5	0.2	2.8
1987	6.0	2.4	5	0.2	2.9
1988	14.29	3.1	6.1	0.2	3
1989	18.97	3.5	6.7	0.3	3.2
1990	64.77	4.2	7.9	0.4	3.2
1991	9.12	5	10.9	0.5	3.6
1992	96.02	7	15.4	0.8	4.1
1993	10.24	10.8	23.1	1.4	5.4
1994	39.5	17.8	34.8	0	0
1995	6.51	25.3	58.1	12.1	0
1996	17.53	33.3	72.2	15	0
1997	2.21	27.9	82.8	20.6	0
1998	102.96	27.2	96.7	22.8	0
1999	5.57	31	115.8	24.7	0
2000	236.44	41	141.3	32.3	0
2001	23.58	55.8	206.9	70.5	0
2002	3.25	59.8	233.5	70.2	0
2003	13.06	62.1	294.3	96	0
2004	2.86	67.7	332.1	131.1	0
2005	23.58	48.6	352	172.5	0
2006	403.5	49.4	445.8	215.5	0
2007	94.89	149.6	487.6	490.7	0
2008	0.89	106.4	932.6	846.9	466.8
2009	5.5	135.7	993.5	1,190.70	778.1
2010	9.91	128.4	987.6	1,178.10	670.3
2011	1.47	255.2	1,053.20	1,295.30	453.5
2012	0.5	316.4	1,109.80	1,771.50	539.8

2013	7.45	368.3	1,179.70	2,155.90	726.9
2014	132.34	478.9	1,647.50	45.60	556.2

Source: CBN Statistical Bulletin & Audited annual report of Banks

### UNIT ROOT STATIONARY TEST

The unit root test examine the variables and the result obtain will show whether the data are stationary in directions.

Variables	ADF Statistic	T-Statistics	Differencing order	Remark
LOG(ROCE)	-8.323385	-2.957110	1(1)	Stationary
LOG(MS)	-4.409723	-2.957110	1(1)	Stationary
LOG(AS)	-6.550177	-2.957110	1(1)	Stationary
LOG(MQS)	-1.213748	-2.967767	1(1)	Non-Stationary
LOG(RES)	-0.055138	-3.144920	1(1)	Non-Stationary

Source: Eview, version 8

From the result above, the variables were all stationary (except loan and advances to mining and quarrying sector & real estate construction sector) at first differencing portraying the presence of long run relationship between the variables, we shall therefore proceed to test for long run relationship using the johannse co-integration test.

### LONG RUN TEST (JOHANNSE CO-INTEGRATION)

Co-integration test result reveals the long run relationship between the regressand and regressors variables in the model.

Date: 12/12/15 Time: 12:31

Sample (adjusted): 1983 2014

Included observations: 16 after adjustments

Trend assumption: Linear deterministic trend

Series: LOG(ROCE) LOG(AS) LOG(MQS) LOG(MS) LOG(RES)

Lags interval (in first differences): 1 to 1

### Unrestricted Cointegration Rank Test (Trace)

Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.995668	156.4014	69.81889	0.0000
At most 1 *	0.908788	69.33447	47.85613	0.0002
At most 2 *	0.685070	31.02139	29.79707	0.0360
At most 3	0.526606	12.53491	15.49471	0.1330
At most 4	0.034978	0.569665	3.841466	0.4504
Trace test indicates 3 cointegrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				

**MacKinnon-Haug-Michelis (1999) p-values				
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.995668	87.06696	33.87687	0.0000
At most 1 *	0.908788	38.31308	27.58434	0.0015
At most 2	0.685070	18.48648	21.13162	0.1127
At most 3	0.526606	11.96525	14.26460	0.1120
At most 4	0.034978	0.569665	3.841466	0.4504

Source:Eview

From the table, the result reveals that long run relationship exist between the independent and regressand variables. The trace test indicates three co-integration equations at 5% level of significant denoting rejection of the hypothesis.

### **MULTIPLE OLS REGRESSION ANALYSIS**

The multiple ordinary least square regression analysis (short run test) examined the short run relationship of the variables and the statistical significance of the co-efficient in the model.

Dependent Variable: LOG(ROCE)

Method: Least Squares

Date: 12/12/15 Time: 12:37

Sample: 1981 2014

Included observations: 20

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.407079	1.521018	-0.267636	0.7926
LOG(MS)	0.887889	1.482144	0.599057	0.5581
LOG(AS)	-0.262961	0.861128	-0.305369	0.7643
LOG(MQS)	-1.099343	0.316096	-3.477875	0.0034
LOG(RES)	0.708199	0.979370	0.723117	0.4807
R-squared	0.608087	Mean dependent var		2.595970
Adjusted R-squared	0.503577	S.D. dependent var		1.540165
S.E. of regression	1.085158	Akaike info criterion		3.213647
Sum squared resid	17.66353	Schwarz criterion		3.462580
Log likelihood	-27.13647	Hannan-Quinn criter.		3.262241
F-statistic	5.818454	Durbin-Watson stat		2.189973
Prob(F-statistic)	0.004944			

Source:Eview

The result shows that the model is a good fit and high predictive ability of the explanatory variables on the dependent variable which implies that 50% variations in dependent variable is accounted for variations in the explanatory variables. The relative statistic revealed that the constant is insignificant while loans and advances to agricultural, mining and quarrying sector are inversely related to the dependent variable; loans and advances to manufacturing sector and real estate construction sector are positively related to the return on equity of deposit money banks; by implication, a 1% change in loans and advances to the agriculture and mining sector will lead to about 26% and 1.09% decreased in banks performances respectively. While a 1% change in loans and advances to manufacturing and real estate sector will lead to about 88% and 70% increase in banks performances respectively. The Durbin Watson statistics shows the absent of serial correlation in the model.

### GRANGER CAUSALITY TEST

The causality test result examined the causal flow relationship between the dependent and explanatory variables.

#### Pairwise Granger Causality Tests

Date: 12/12/15 Time: 13:05

Sample: 1981 2014

Lags: 1

Null Hypothesis:	Obs	F-Statistic	Prob.
LOG(AS) does not Granger Cause LOG(ROCE)	33	2.58352	0.1185
LOG(Roce) does not Granger Cause LOG(as)		1.82970	0.1863
LOG(Mqs) does not Granger Cause LOG(roce)	31	1.84526	0.1852
LOG(ROCE) does not Granger Cause LOG(MQS)		0.47168	0.4979
LOG(ms)does not Granger cause log(roce)	33	1.82099	0.1873
LOG(Roce)does not Granger Cause LOG(Ms)		3.13205	0.0869
LOG(RES) does not Granger Cause LOG(ROCE)	18	0.88306	0.3623
LOG(ROCE) does not Granger Cause LOG(RES)		5.61458	0.0317
LOG(MQS) does not Granger Cause LOG(AS)	31	1.71895	0.2005
LOG(AS) does not Granger Cause LOG(MQS)		0.01560	0.9015
LOG(MS) does not Granger Cause LOG(AS)	33	1.66118	0.2073
LOG(AS) does not Granger Cause LOG(MS)		12.9902	0.0011
LOG(RES) does not Granger Cause LOG(AS)	18	0.03564	0.8528
LOG(AS) does not Granger Cause LOG(RES)		0.64258	0.4353
LOG(MS) does not Granger Cause LOG(MQS)	31	5.99804	0.0208
LOG(MQS) does not Granger Cause LOG(MS)		0.00917	0.9244

LOG(RES) does not Granger Cause LOG(MQS)	18	0.00014	0.9909
LOG(MQS) does not Granger Cause LOG(RES)		3.63003	0.0761
LOG(RES) does not Granger Cause LOG(MS)	18	7.66666	0.0143
LOG(MS) does not Granger Cause LOG(RES)		3.82837	0.0693

Source: E-view

The test result revealed that return on capital employed granger cause loans and advances to real estate construction sector which mean that increase in bank's performances is reflected in equal increase in real estate construction sector's performances; we also saw a causal flow emanating from agricultural sector to manufacturing sector showing that increase in loans and advances to agricultural sector will ultimately boost performances in the manufacturing sector. Causal movement from the manufacturing sector to mining and quarrying sector was also identify, implying that an increase in performances in the manufacturing sector will give a boost to the mining and quarrying sector, lastly, the real estate construction sector also granger cause manufacturing sector showing a significant relationship between the both sectors.

### IMPULSE RESPONSE ANALYSIS

The impulse response result is used to forecast into the future by policy makers in the country.

Response of LOG(ROCE):					
Period	LOG(ROCE)	LOG(AS)	LOG(MS)	LOG(RES)	LOG(MQS)
1	1.504916 (0.25082)	0.000000 (0.00000)	0.000000 (0.00000)	0.000000 (0.00000)	0.000000 (0.00000)
2	0.652430 (1.10528)	0.106491 (0.37104)	0.037857 (0.41488)	0.182898 (0.31807)	-0.421984 (0.97769)
3	0.055228 (0.95322)	-0.062410 (0.30311)	-0.232612 (0.33000)	0.173762 (0.38643)	-0.024976 (0.46744)
4	-0.372087 (0.67908)	-0.120586 (0.31060)	-0.144489 (0.36278)	0.106925 (0.29279)	0.024493 (0.23971)
5	-0.408464 (1.12115)	-0.161809 (0.36005)	-0.068589 (0.31982)	0.021205 (0.13933)	0.111761 (0.46835)
6	-0.254855 (1.07532)	-0.141872 (0.30964)	0.032134 (0.20854)	-0.027714 (0.22802)	0.075416 (0.48825)
7	-0.051503 (0.61613)	-0.108278 (0.18864)	0.070258 (0.28982)	-0.036592 (0.27938)	0.030116 (0.32046)
8	0.077295 (0.53077)	-0.076424 (0.11428)	0.066565 (0.31652)	-0.017873 (0.21156)	-0.016835 (0.15748)
9	0.107433 (0.70663)	-0.061647 (0.15562)	0.035815 (0.22131)	0.007027 (0.11071)	-0.035901 (0.21117)
10	0.067346 (0.60650)	-0.061842 (0.16847)	0.005591 (0.11527)	0.024152 (0.10423)	-0.033822 (0.21853)

Source: E-view

From the result, using the third year as a proxy for short run analysis, the impulse response to own shock is 5.5% and responses to shocks emanating from other variables are -6%, -23%, 17% and 2% for agricultural sector, manufacturing sector, real estate construction sector and mining and quarrying sector respectively. From the long run analysis (10<sup>th</sup> year), the impulse response to shock emanating from other variables became positive (except for agriculture, mining and quarrying sectors) which implies a shallow growth in the agriculture, mining and quarrying sectors as reflected in slow growth performances of deposit money banks.

### **VARIANCE DECOMPOSITION ANALYSIS**

The variables are decomposed to effect corrections on the future error envisaged in the impulse response test result.

Variance Decomposition of LOG(ROCE):						
Period	S.E.	LOG(ROCE)	LOG(AS)	LOG(MS)	LOG(MQS)	LOG(RES)
1	1.504916	100.0000	0.000000	0.000000	0.000000	0.000000
2	1.707259	92.30476	0.389068	0.049168	6.537584	0.719415
3	1.733956	89.58572	0.506727	1.847319	6.391749	1.668483
4	1.786758	88.70582	0.932695	2.393692	6.026536	1.941257
5	1.844769	88.11716	1.644302	2.383748	6.005435	1.849359
6	1.869690	87.64183	2.176538	2.350165	6.018555	1.812915
7	1.875446	87.18006	2.496523	2.476100	6.013074	1.834247
8	1.879933	86.93348	2.649883	2.589669	5.990933	1.836035
9	1.884704	86.81878	2.743471	2.612685	5.997901	1.827161
10	1.887387	86.69950	2.843038	2.606142	6.016898	1.834424

Source: E-view

The result revealed consistency of the variables and impacting positively to the performances of deposit money banks. The impulse responses to shocks emanating from other variables are 2.8%, 2.6%, 6.0% and 1.8% respectively. The performances of agriculture, mining and quarrying sectors became positive signaling that increase in loan and advances to these sectors will boost banks performances in the future. Therefore, policy makers can rely heavily on the result for decisions.

### **CONCLUSION AND RECOMMENDATION**

Sectoral loans and advances demand and deposit money bank's performances are key factors that stimulate the growth of every viable economy. In recent times, in one of her monetary policy guidelines, the CBN has instructed banks to channel their loans and advances to the less preferred sectors (agriculture, mining and quarrying sectors) for effective re-distribution of income and growth of the sectors.

The test result revealed that banks attitude towards giving out loans and advances to less preferred sectors is becoming worrisome; owing to such, the performances in such sectors shows negative contribution to the performances of deposit money banks; whereas, manufacturing and

real estate construction sector impacted positively to the performances of banks, it also show that loans to such less preferred sectors have always perform badly (bad and doubtful debt) which has insignificantly contributed poorly to the performances of deposit money banks in Nigeria.

Therefore, it is recommended that CBN in his monetary policy guidelines should encourage banks to increase their lending activities to the less preferred sectors on the grounds that such lending will be fully guarantee by the government to avoid the issue of bad and doubtful debt reoccurring. This policy will help diversify the economy for greater prospects and development.

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